

# Newsletter ARIB SEASON



## Event

### The 13th Technology Lecture of Electromagnetic Compatibility Conference Japan (EMCC)

On 21 December 2015, the 13th Technology Lecture of EMCC was held in the conference room of the ARIB office.



**The 13th Technology Lecture of EMCC**

In the Lecture, following three themes were presented.

(1) Research activities of the Interference Committee of EMCC in 2014 fiscal year

Title : Survey report on verification of the subjects about conical metal housing in CISPR15

Speaker : Yoshimitsu Hiratomo, Japan Lighting Manufacturers Association

(2) Research activities of the Immunity Committee of the EMCC in 2014 fiscal year

Title : Review and study of the proposed amendments in the audible noise evaluation method in CISPR35 draft

Speaker : Yoshihisa Aotani, Communications and Information network Association of Japan

(3) CISPR archives activities in 2014 fiscal year

Title : Grounds of tolerance on the interference wave

Speaker : Akira Sugiura, Professor Emeritus of Tohoku University

About 50 people had participated in the Lecture, and lively question-and-answer session was held after each lecture.

EMCC: Electromagnetic Compatibility Conference Japan  
( [http://www.emcc-info.net/about\\_emcc/seturitu.html](http://www.emcc-info.net/about_emcc/seturitu.html) )

CISPR: Comité International Spécial des Perturbations Radioélectriques  
(International Special Committee on Radio Interference)

### **International Seminar on Digital Terrestrial TV and ICT held in Peru**

The International Seminar on Digital Terrestrial TV and ICT (Information and Communication Technology) was held on 14 and 15 January 2016, in Lima, Peru, organized by the Ministry of Internal Affairs and Communications of Japan (MIC) and the Ministry of Transport and Communications of Peru, intending to further solidify mutual relationships in the field of ICT. From Japan, the ICT Public/Private Mission, comprising approximately 50 people from 18 companies and institutions, headed by Mr. Y. Sakamoto, Vice Minister, participated in this seminar; and ARIB joined this mission to promote ISDB-T.

The Seminar started with a grand Opening Ceremony where more than 300 people joined; and the Memorandum of Understanding was signed to confirm to expand bilateral cooperation in digital terrestrial TV to more diversified areas of ICT. The ceremony was followed by keynote speeches by the representatives from Japan and Peru, then from neighboring countries: Brazil, Chile and Ecuador; and proceeded with panel discussions on optical fiber technologies and digital terrestrial TV, together with exhibitions by the Japanese and Peruvian participants.



**Grand Opening Ceremony**

In the panel discussion on digital terrestrial TV, Dr. M. Sugawara, Chairman of DiBEG, joined as the moderator, where Mr. T. Endo, Deputy Director of MIC, Mr. N. Okabe, JICA Expert of digital TV in Peru, Mr. Y. Homma, Vice Director General of ARIB participated in the discussion. Through the discussion they exchanged opinions on the challenges to the nationwide implementation of digital terrestrial TV in Peru, including the ASO (Analog Switch-Off) and the EWBS (Emergency Warning Broadcast System), and agreed that further cooperation is necessary for these promotions.



**MoU signed by**  
**Mr. Jose Gallardo**  
 (Minister of Transport and Communications of Peru)  
**and**  
**Mr. Yasuo Sakamoto**  
 (Vice-Minister for Policy Coordination of MIC, Japan)



**Panel discussion on digital terrestrial TV**



**Dr. Masayuki Sugawara**  
 (Chairman of DiBEG)  
 as the moderator of the panel discussion

At the exhibition, ARIB/DiBEG performed EWBS demonstration and promotional activities with panels and brochures of Spanish version.

Because Peru is susceptible to natural disasters such as quakes, tsunami, etc. like Japan, the Seminar participants showed strong interests and expectations on EWBS through the panel discussions and the exhibition.



**Exhibition booth of ARIB/DiBEG**



## 44th CJK IMT Working Group Meeting

CJK IMT Working Group Meeting aims to exchange information and views about the activities of international IMT standardizations in ITU-R, APT, 3GPPs and so on, among members of SDOs in China, Japan and South Korea.

On 20 and 21 January 2016, the 44th Meeting was held in Jeju Island, South Korea. 4 people from ARIB, 6 people from CCSA (China) and 17 people from TTA (South Korea) had participated.

CCSA : China Communications Standards Association  
TTA : Telecommunications Technology Association

In the Meeting, following actions were carried out.

- (1) Confirmed the results on WRC-15 held in November 2015
- (2) Shared the information about the status of preparation towards the 23rd WP5D meeting
- (3) Determined the joint work towards the submission of Contributions in the 23rd WP5D meeting
- (4) Discussed the way to facilitate the operation of three Special Interest Group

The next CJK IMT Working Group Meeting was scheduled on 16 and 17 May 2016 in Japan.



**44th CJK IMT Working Group Meeting**



**Participants of the Meeting**

**APT Training Course 2015 in ARIB**  
**- Actions for Next Generation and NEW Mobile Communication Systems**  
**in Japan -**

From 20 to 27 January 2016, APT (Asia-Pacific Telecommunity) training Course "Actions for Next Generation and NEW Mobile Communication Systems in Japan" was held. This event was co-organized by Ministry of Internal Affairs and Communications (MIC) and YRP R&D Promotion Committee, and supported by ARIB.

As parts of this Training Course, Lectures by ARIB members and Country Reports by trainees were carried out on 20 and 21 January in the ARIB office.



**Trainees and support members of APT Training Course in the ARIB office**

On 20 January, following the lectures of telecom operators and manufacturers, three lectures listed below were carried out, and lively question-and-answer session was held after each lecture.

- (1) "Standardization system of ARIB" by Mr. Ken Sugawara, Director of Planning and International Affairs Department of ARIB
- (2) "The latest activities related to IMT standardization" by Dr. Kohei Satoh, Executive Manager on Standardization of ARIB
- (3) "Activities of the Fifth Generation Mobile Communications Promotion Forum (5GMF) in Japan" by Mr. Takaharu Nakamura, Acting Chairman of Technical Committee of 5GMF

On 21 January, the presentation of country report was carried out by each trainee. Participants from MIC, YRP R&D Promotion Committee, ARIB and ARIB member companies took part in the meeting.

In the presentations, overview of telecommunications administrations, current status of frequency assignment, regulation and policy of the mobile communication, latest trend of mobile communication technologies and services, etc. were introduced. The 3G service has rapidly spread in all countries, and the LTE service has already started in some countries. The country reports gave a good opportunity to know the remarkable development in the Asia-Pacific Ocean region for all participants.



**Presentation of the country report**

### **The 7th Study Group on Radio utilization system for robots**

The 7th Study Group on Radio utilization system for robots was held on 2 February 2016 in the ARIB office.

In this Study Group, in order to ensure the frequency band required for various types of robots, such as drones, study of technical conditions and frequency sharing conditions of radio utilization systems for robots had been performed, and the results had been reflected in the deliberations of the Information and Communications Council of MIC.

In the 7th Study Group meeting, overview of "Report of the Land Radio Communications Subcommittee (Draft)", in which the study results of the technical conditions on advancement of radio utilization system for robots (including research results of ARIB) had been summarized, was introduced.

In addition, in order to ensure the smooth operation of radio utilization systems for robots, construction of mechanism for operational arrangement between systems was important. So, the Study Group had determined to study this issue, and following actions had been performed in the Study Group meeting.

- (1) “Explanation of the points in the study of this issue” by the Secretariat
- (2) “Introduction of operations' coordination on TV white space, etc. as case studies” by Radio Engineering & Electronics Association
- (3) “Report of activities in Disaster response robot Promotion Coordinating Committee” by Council on Competitiveness-Nippon



**The 7th Study Group on Radio utilization system for robots**

### **The 19th APT Wireless Group Meeting (AWG-19)**

The 19th APT Wireless Group Meeting (AWG-19) was held from 2 to 5 February 2016 in Chiang Mai, Thailand. About 170 participants from 21 organizations of Asia-Pacific countries, private organizations around the world and international organizations participated in the meeting.

The Meeting aims to make a consensus on the harmonization and standardization of frequency for wireless communication systems in the Asia-Pacific region in order to achieve sophistication, dissemination and promotion of wireless communication systems.

In the Meeting, Dr. Kohei Satoh, Executive Manager on Standardization of ARIB served as the chairman. From Japan, 41 peoples headed by Mr. Iwama, Deputy Director of the International Frequency Policy Office of MIC participated, and from ARIB, 5 peoples participated.



In the Meeting, following actions had been carried out.

(1) IMT (fifth-generation mobile communication systems, etc.)

In response to the approval of “Investigation of 24.25-86GHz band for 5G system” as an agenda of the forthcoming WRC-19, work plans of usage research and sharing study in this frequency band were made. In addition, work plans of sharing study and frequency arrangements in the frequency band less than 6GHz region specified to the IMT were made.

(2) Short-range wireless communication technique using terahertz waves (over 275GHz)

In response to the approval of “Study of frequency assignment to the land mobile service and the fixed service in the 275-450Ghz region” as an agenda of the forthcoming WRC-19, updates of working documents related to the progress of terahertz technology and the frequency band that is suitable for short-range wireless communication applications were conducted on the basis of Japanese proposal.

(3) Intelligent Transport Systems (ITS)

In response to the approval of “Study on the harmonization of the ITS frequency” as an agenda of the forthcoming WRC-19, information sharing to promote consensus making and update of working documents were conducted on the basis of Japanese proposal.

(4) Railway radio system

In response to the approval of “Study of the railway radio system” as an agenda of the forthcoming WRC-19, discussion of future work plan towards the creation of the APT report was conducted. It was determined that the railway radio Task Group would be established in the next AWG Meeting, and the terms of reference of the Task Group was approved. In addition, it was determined that the exchange of information in the correspondence group would be carried out in the Meeting period.

The next AWG-20 Meeting was scheduled in September 2016.



**Opening remarks by Dr. Kohei Satoh  
as the Chairman of the AWG Meeting**



**The 19th AWG Meeting**



## **The EU-Japan Symposium on the fifth generation mobile communication system (5G)**

The EU-Japan Symposium on 5G was held on 8 and 10 February 2016 at the Delegation of the European Union to Japan in Hiroo, Tokyo. The symposium was organized by the EU delegation to Japan and the Embassy of France to Japan, with the cooperation of the MIC, the EU's 5G PPP and Japan's 5GMF.

### **EU-Japan Symposium on 5G: From challenges to standardization**

Date : 8 and 10 February 2016 (Monday, Wednesday)  
Location : Delegation of the European Union to Japan (Hiroo, Tokyo)  
Organizers : Embassy of France in Japan, Delegation of the European Union to Japan with the cooperation of 5G PPP, 5GMF and the MIC  
Participants : 150 invited participants from Japan and the EU

#### **[ Details ]**

The symposium began with opening remarks by Mr. Jonathan Hatwell, Deputy Head of the Delegation of the European Union to Japan, and Mr. Paul-Bertrand Baretts, Minister-Counselor, Embassy of France in Japan, followed by keynote speeches by Mr. Junichi Nakazawa, Director, Land Mobile Communications Division, MIC and Mr. Bernard Barani, Deputy Head of Network Technologies Unit, DG Connect, European Commission.



**Jonathan Hatwell**

Deputy Head of the  
Delegation of the  
European Union to Japan



**Paul-Bertrand Baretts**

Minister-Counselor,  
Embassy of France in Japan



**Junichi Nakazawa**

Land Mobile  
Communications Division  
Director of MIC



**Bernard Barani**

Deputy Head of Network  
Technologies Unit,  
DG Connect,  
European Commission

Five sessions with a total of 24 individual presentations were held on the following topics: Vision, Challenges and Roadmap of 5G, Enablers and key technologies (Radio Access and Networks), Ongoing EU-Japan Collaborative Projects and Standardization.



**A Presentation at the Symposium**

The symposium concluded with a panel discussion on the implementation of 5G moderated by Mr. Bernard Barani, European Commission, and Mr. Yuji Nakamura, Director, New-Generation Mobile Communications Office, MIC, with 7 key presenters from the symposium as discussants.

Seven members of the 5GMF gave presentations at the symposium, including Prof. Emeritus Susumu Yoshida, 5GMF chair. Dr. Kohei Satoh, 5GMF Secretary General and Prof. Akihiro Nakao, 5GMF Network Architecture Committee Chair moderated panel discussions.



**Symposium Participants**

## **The 24th Wireless LAN System Development Group Meeting - Approved the 2015 fiscal year Activity Report -**

On 18 February 2016, the 24th Wireless LAN System Development Group Meeting was held in the ARIB office. In the Meeting, the 2015 fiscal year Activity Report was approved and the agendas of 2016 fiscal year were proposed.

In the Activity Report, status of following three issues and current status of IEEE802 TGax were reported.

- (1)Fixed-point observation of the public wireless LAN environment
- (2)Investigation of the adjacent channel interference on 5GHz band
- (3)Traffic surge in deployment environment overcrowded with Stations

As agendas of the 2016 fiscal year, following four items were proposed.

- (1)Measurement of public wireless LAN environment (continuing from 2015 fiscal year)
- (2)Evaluation of the MU-MIMO function equipped with next-generation wireless LAN
- (3)Improvement of performance evaluation environment of wireless LAN
- (4)Study for avoidance of frame collision in deployment environment overcrowded with Stations

The 2016 fiscal year activity plan will be established in the 25th Meeting.



**The 24th Wireless LAN System Development Group Meeting**



## The 8th Study Group on Radio utilization system for robots

The 8th Study Group on Radio utilization system for robots had been held on 2 March 2016 in ARIB office.

As for the radio utilization system for robots including drones, in order to advance its radio wave use, it is scheduled to carry out the required institutional arrangements by this summer.

On the other hand, in order to ensure the smooth operation of radio utilization systems for robots, construction of mechanism for operational arrangement between systems was important. So, this issue was decided to study in the 7th and 8th Study Group.

In the 8th meeting, following reports were made, and lively discussions were carried out.

- (1) "Consideration of the Radio Regulatory system" by National Institute of Information and Communications Technology (NICT)
- (2) "Consideration of the mechanism of operations coordination and draft of operational guideline" by the Secretariat



**The 8th Study Group on Radio utilization system for robots**



**Dr. Yasushi Hada**

Chairman of the Study Group  
(Associate professor of Kogakuin University)



**Dr. Ryu Miura**

Vice-Chairman of the Study Group

(Director of Dependable Wireless Laboratory, NICT)

## **CISPR Stresa Conference Briefing Session**

CISPR Stresa Conference Briefing Session was held in Tokyo on 3 March 2016 under the sponsorship of Electromagnetic Compatibility Conference Japan (EMCC). ARIB is a secretariat of EMCC. 65 peoples were participated in the Session.

The Session covered CISPR meeting held in Stresa, Italy from 21 September to 1 October 2015 with 40 participants including Prof. Masao Taki of Tokyo Metropolitan University Graduate School from Japan.

Following the opening remarks by Dr. Yoshio Kami (Professor Emeritus of the University of Electro-Communications), chairman of EMCC, 6 lecturers who participated in the CISPR Stresa Conference had lectured on deliberation overview of the plenary meeting and subcommittee meeting.

CISPR: Comité International Spécial des Perturbations Radioélectriques  
(International Special Committee on Radio Interference)



**CISPR Stresa Conference Briefing Session**

## **73rd Study Group Meeting on Quality Evaluation Method for Broadcasting**

The 73rd Study Group Meeting on Quality Evaluation Method for Broadcasting was held on 3 March 2016. Dr. Nishida, Chairman of this Study Group, reported that this SG would be the end of the activity at the end of March 2016.

This Study Group was established in 1996 for researching the quality evaluation method of program production and video and sound quality of transmission. In those days, we stood at the dawn of the digital broadcasting and the dissemination of flat panel display and larger screen size were advanced, so that establish of quality evaluation systems for the display such as evaluation method, measurement methods and viewing environment were desired.

Results of this SG were as follows.

### **(1) Reports**

- Evaluation method of digital video program
- Study of concrete evaluation examples for the subjective quality evaluation method of IP/mobile service
- Research of monitoring and quality evaluation system for digital broadcasting
- Experiment of SAMVIQ method
- Research and experiment result of the quality of flat display

### **(2) Technical Reports**

- Metadata to Monitor Errors of Video and Audio Signals on a Broadcasting Chain (ARIB TR-B29)
- Guidelines on quality control in real-time video transmission over IP networks for program production and news gathering (ARIB TR-B34)

### **(3) Test charts**

- Reference evaluation images for High-vision system
- Ultra-high definition/wide-color-gamut standard test still images
- Ultra-high definition/wide-color-gamut standard test video images

Standard images are distributed from the Institute of Image Information and Television Engineers, and are inflected widely in production companies, broadcasting companies and research organizations.

This SG contributed to creation of contribution draft of such ITU-R recommendation and report in the activity of the International standardization activities.

Since then, bigger result would be expected by being active with the R&D Group of Program Production Systems, so the SG of Quality Evaluation Method for Broadcasting, studying for 20 years, was decided to be the end of the activity.



## ISDB-T Seminar in Maldives

The first ISDB-T Seminar in Maldives was held on Bandos Island on Sunday 13 March 2016, jointly organized by the Maldivian Ministry of Home Affairs and the Japanese Ministry of Internal Affairs and Communications (MIC).

The Republic of Maldives decided to adopt ISDB-T as its digital terrestrial television standard in April, 2014; and has been progressing toward its nationwide broadcasting with the help and cooperation by Japan in such areas as channel planning. DiBEG has also been extending its technical support and assistance to Maldives in documenting the Maldivian domestic ISDB-T standard.

This time, with the study and analysis of ISDB-T implementation much accumulated, the ISDB-T seminar was organized by the bilateral governments, targeting the government people, broadcasters and those people related to digital television in Maldives, to introduce them the technologies and experiences of ISDB-T in Japan; and DiBEG contributed to this occasion by dispatching its presenters of various aspects of ISDB-T as well as extending its support for the seminar preparation works.



**ISDB-T Seminar in Maldives**

At the opening of the seminar, Dr. R. Kondo, Director for Digital Broadcasting Technology of MIC and Hon. Umar Naseer, Minister of Home Affairs, representing Japan and Maldives respectively, made a welcome speech to the seminar participants. They both expressed their desire to further solidify the bilateral relationships with this seminar as a momentum.



**Dr. R. Kondo from MIC, Japan**



**Hon. Umar Naseer,  
Minister of Home Affairs of Maldives**

Then the experts from DiBEG followed with their presentation, introducing various themes and subjects such as the outline of ISDB-T, transmission and multiplexing technology, studio equipment, receiver products, datacasting and area-specified service, EWBS (Emergency Warning Broadcast System), experiences of Japanese broadcasters, etc.

In addition, a representative of the JICA Study Team showed the latest status of the Maldivian nationwide frequency planning study to which JICA has been giving its assistance and cooperation. And Mr. T. Sato, Deputy Director of Broadcasting Technology Division of MIC, introduced Japan's experience in the analog switch-off at the final stage of migration to digital terrestrial TV broadcasting.



**Hon. Nasser having a look at demo of ISDB-T reception**

## **The 9th Study Group on Radio utilization system for robots - Approved the summary of results and ended its activities -**

The 9th Study Group on Radio utilization system for robots (Chairman: Associate prof. Yasushi Hada of Kogakuin University) was held on 23 March 2016 in ARIB office.

In the Study Group meeting, the draft reports of investigation results and the way of using deliverables were proposed by the secretariat, and all of them were approved.

In this meeting, the Study Group had been able to carry out the initial purpose, so it was decided to end the activities as scheduled at the start time.

At the end of the meeting, a summary address was given by the chairman Yasushi Hada, From Mr. Hideki Baba (Deputy Director of Fixed Radio Communications Division, MIC), a closing speech was given on behalf of the observers. From Mr. Hidekazu Tanaka (Advisor of ARIB), acknowledgments were described. The meeting was closed with round of applause.



**The 9th Study Group on Radio utilization system for robots**



**Dr. Yasushi Hada**

Chairman of the Study Group  
(Associate professor of  
Kogakuin University)



**Mr. Hideki Baba**

Deputy Director of Fixed Radio  
Communications Division,  
MIC



**Mr. Hidekazu Tanaka**

Advisor of ARIB



### Monthly seminars on radio wave use

<b>No.137</b>	9 February 2016
<b>Title</b>	Trend and future perspective on the way of the new information and communication policy towards the IoT / Big Data era
<b>Speaker</b>	Ms. Yuu Kitabayashi Deputy Director of Advanced Information Systems and Software Division, Information and Communications Bureau, Ministry of Internal Affairs and Communications
<b>Summary</b>	The seminar covered the way of Japan's information and communication policy with an eye to the IoT / Big Data era. In the seminar, challenges, priority measures, promotion measures, etc. which had been proposed in the intermediate report from the Information and Communications Council were explained.
<b>No.138</b>	29 March 2016
<b>Title</b>	Study situation of the intelligent transport systems (ITS) toward the World Radiocommunication Conference (WRC-19)
<b>Speaker</b>	Mr. Satoshi Oyama Senior Researcher of ITS Group, Research & Development Headquarters, Association of Radio Industries and Businesses (ARIB)
<b>Summary</b>	The seminar covered the current situation and future perspective of ITS, the way of international cooperation toward the WRC-19 in ITU-R, especially Study Group 5 Working Party 5A (SG5 WP5A) and APT Wireless Group (AWG), etc.

## *Standards*

### EXCHANGE FORMAT OF THE DIGITAL CLOSED CAPTION FILE FOR DIGITAL TELEVISION BROADCASTING SYSTEM (SECOND GENERATION) (STD-B69 Ver.1.0)

This standard specifies the exchange format of the closed caption file which is corresponding to the closed caption broadcasting system and defined in ARIB STD-B62 "Multimedia Coding Specification for Digital Broadcasting (Second Edition)".

## Study for Telecommunication System

### 1. Radio utilization system for robots

Study Group on Radio utilization system for robots was established in November 2014 in order to grasp a wireless communication needs for robots, consider technical conditions of telecommunication system and possibility of frequency sharing with other systems and summarize the measures assisting smooth introduction of robots in various fields based on the current status and utilization trend of disaster and industrial robots.

The 7th, 8th and 9th Study Group Meetings were held on 2 January, 2 February and 23 March 2016. Outlines of these Meetings are described in the “Event” section of this Newsletter.

### 2. Private Wireless Communication

Study Group on Private Wireless Communication was established in April 2015 in order to provide major players in private wireless communication field (governments, manufacturers and users) with a place of gathering, investigate technologies and user trends in Japan and overseas and consider sophistication of private wireless communication.

On 16 October 2015, the 3rd study group meeting was held under the theme of "shared use of private wireless communication system".

In the meeting, following presentations had been carried out.

- (1) " Trend of digitization on mobile radio system for business use" by the Ministry of Internal Affairs and Communications
- (2) " Shared use of the prefectural and municipal disaster prevention administrative radio" by Shizuoka Prefectural Government
- (3) " Shared use of MCA radio system" by The MRC Foundation
- (4) " Shared use of Business transceiver service" by NTT DOCOMO
- (5) "Shared use of IP wireless service" by SoftBank

After the presentation, lively free discussion about the needs and countermeasures of the shared use of private wireless communication systems in the fields of public and general use had been carried out.

This Study Group will be held in the next two years until March 2018.

## R&D for Telecommunication System

### 1. Wireless LAN System

Wireless LAN System Development Group is aiming to conduct research and development for reliability improvement, sophistication of wireless LAN system and standardization.

The 22nd meeting was held on 21 October 2015.

The progresses of the study on "Investigation of the interference by adjacent channels in 5GHz band" and "Up Link traffic surge in Station overcrowded deployment environment" were reported from each ad hoc group.

Study and analysis of the way for survey and measurement will be continued

### 2. Advanced Wireless Communications Study Committee

The Advanced Wireless Communications Study Committee (ADWICS) was established in ARIB on 1 April 2006. Cooperating with other related international/domestic bodies, the Committee conducts technical studies on Advanced Wireless Communications Systems and contributes to their international standardization in the following four subcommittees and one AdHoc.

- Mobile Partnership Subcommittee
- Standardization Subcommittee
- Broadband Wireless Access Subcommittee
- Mobile Commerce Subcommittee
- 2020 and Beyond AdHoc

#### (1) Mobile partnership subcommittee

This Subcommittee contributes to the international standardization of IMT and M2M and the transposition to standards in Japan through the contribution and the participation in 3GPP, 3GPP2 and oneM2M.

On 3 December 2015, revised drafts of following ARIB Standards and Technical Report were proposed to the Standard Assembly and approved.

- ARIB STD-T63 IMT-2000 DS-CDMA and TDD-CDMA System
- ARIB TR-T12 IMT-2000 DS-CDMA and TDD-CDMA System
- ARIB STD-T104 LTE-Advanced System ARIB STANDARD

#### (2) Broadband Wireless Access Subcommittee

This Subcommittee conducts technical studies on Broadband Wireless Access and promotes its standardization.



In order to perform a detailed study for each theme, following four WG are installed under the Broadband Wireless Access Subcommittee.

- International Relations WG
- WiMAX WG
- 802.20 WG
- XGP WG

#### <XGP WG>

Following the Revised Ministerial Ordinances until September 2014 and the newly established specifications of XGP Forum on September 2015, the work to revise the ARIB Standard had been conducted, and revised ARIB Standard was proposed and approved in Standard Assembly on 3 December 2015.

### (3) Mobile-Commerce Subcommittee

This Subcommittee conducts technical studies on Mobile Commerce and promotes its standardization. In this Subcommittee, technical expert committee and propulsion expert committee have been set up.

The 52nd and 53rd technical expert committee meetings were held on 21 October and 27 November 2015. During the technical expert committee, the following subjects on promotion and improvement of mobile public key infrastructure (PKI) were discussed.

- Access to e-government, etc. from a mobile phone
- Methods for mounting a public personal authentication certificate to a mobile phone

The propulsion expert committee dealt with the following.

- Development of voucher profile using NFC
- Overseas inspection and NFC related market research
- Held study group meeting on mobile commerce

## **Study for Broadcasting System**

### **1 Quality Evaluation Method for Broadcasting**

#### (1) Evaluation Sequence

With a view to providing reference video image (4K・8K) for UHDTV, the issues were discussed in cooperation with the Institute of Image Information and Television Engineers (ITE).

As a first step, a suitable material as UHDTV standard video image was selected from the existing full resolution 8K material, and distributed them from January 2016. And

as a second stage, creation of the new video for standard video image is being selected with the target of distribution by this summer.

## **2 New Technology for the Next generation Broadcasting System**

A lecture on "research and development trend of the next-generation terrestrial broadcasting service" was given by Mr. Kenichi Tsuchida of NHK Science and Technology Research Laboratories.

As a trend of the next-generation terrestrial broadcasting service, possibility of the enforcement isn't made and isn't the sign of situation change, we decided to terminate the Study Group of New Technology for the Next generation Broadcasting System in October 2015.

# **R&D for Broadcasting System**

## **1 Digital Broadcasting Systems**

Following 8 revised ARIB standards were deliberated and approved by the 98th Standard Assembly.

- ① ARIB STD-B10 (Service Information for Digital Broadcasting System) V5.7
- ② ARIB STD-B21 (Receiver for Digital Broadcasting) V5.7
- ③ ARIB STD-B24 (Data Coding and Transmission Specification for Digital Broadcasting) V6.2
- ④ ARIB STD-B32 (Video Coding, Audio Coding and Multiplexing Specifications for Digital Broadcasting) V3.5
- ⑤ ARIB STD-B60 (MMT Based Media Transport Scheme in Digital Broadcasting Systems) V1.5
- ⑥ ARIB STD-B61 (Conditional Access System <2nd Generation> and CAS Program Download System Specifications for Digital Broadcasting) V1.2
- ⑦ ARIB STD-B62 (Multimedia Coding Specification for Digital Broadcasting [Second Edition]) V1.3
- ⑧ ARIB STD-B63 (Receiver for Advanced Wide Band Digital Satellite Broadcasting) V1.4

Since proposal of the technical conditions relating to the higher quality of UHD TV was offered from the Broadcast System Committee of the Information and Communications Council, we submitted the HDR-TV broadcasting system defined in the standard ARIB STD-B32, to the Ministry of Internal Affairs and Communications.

### **(1) Multiplexing Technology**

The introduction of the HDR-TV into UHD TV satellite broadcasting system was studied. As a result, revised proposals to add an identification of the video signal

transfer characteristics in descriptors defined in ARIB STD-B10 and ARIB STD-B60 were drafted.

For the media transport system using MMT, corresponding to the reflection of study result of the Conditional Access System and the request to allow the operation of urgent newflash and logo transmission etc. from the Next Generation Television & Broadcasting Promotion Forum (NexTV-F), revision of STD-B60 was drafted.

HDR-TV: High Dynamic Range Television

MMT: MPEG Media Transport

## (2) Video Coding Technology

Introduction of the high dynamic range television system (HDR-TV) to UHDTV was studied, and revision of ARIB STD-B32 was drafted.

Proposal of the HDR-TV was drafted for the Broadcasting System Committee of the Information and Communications Council.

## (3) Data Coding Technology

ARIB STD-B24 was revised following items.

- Modification of reference standard associated with the revised UCS standard of ISO / IEC standard
- Revising to be consistent with the additional Chinese characters and symbols in the revised ISO / IEC standard
- Provisions to cope with leap seconds

UCS: Universal multi-octet coded Character Set

## (4) Data Broadcasting

Revision of ARIB STD-B24 (Data Coding and Transmission Specification for Digital Broadcasting) was discussed to add the external application control descriptor and the recording and playback-related descriptors to the application control scheme.

Revision of ARIB STD-B62 (Multimedia Coding Specification for Digital Broadcasting <2nd Generation>) was discussed to add the CAS related function.

CAS : Conditional Access System

## (5) Access control technology / Rights protection

Revision of ARIB STD-B61 (Conditional Access System <2nd Generation> and CAS Program Download System Specifications for Digital Broadcasting) was discussed to specify the functional specifications and technical specifications of Conditional Access

System to be applied to UHDTV.

(6) Receiver for Digital Broadcasting

ARIB STD-B63 (Receiver for Advanced Wide Band Digital Satellite Broadcasting) was revised following items.

- Correction of Identification number of common data for all receivers
- Reflection of the evaluation experiment results (Intermodulation of the optical transmitter, Image rejection ratio of the converter, Local oscillator leakage level of the converter)
- Additional provisions relating to the decoding of the lower hierarchy video signal at the time of hierarchy transmission

The Identification number of common data for all receivers applied in advanced wide band digital satellite broadcasting, which should be defined in ARIB STD-B21 (Receiver for Digital Broadcasting) was conducted.

## 2 Program Production Systems

Following 2 revised ARIB standards, 1 new standard and 1 new technical report were deliberated and approved by the 98th Standard Assembly.

- ① ARIB STD-B32 (Video Coding, Audio Coding and Multiplexing Specifications for Digital Broadcasting) V1.4
- ② ARIB STD-B66 (UHDTV Multiformat Color Bar) V1.1
- ③ ARIB STD-B68 (Time Code Format in the Interface for UHDTV Production Systems) V1.0
- ④ ARIB TR-B36 (Metric of Color-space Coverage of UHDTV Displays for Program Production) V1.0

(1) Video Program Production Systems

Survey results of the signal level of telop in HDR -TV broadcasting were reported to the video coding technology working group.

Contribution of the color system conversion was drafted.

(2) Sound Program Production Systems

In response to the result of ITU-R SG6 held on July 2015, contributions of following 3 items were drafted.

- Channel allocation of the transmission system for sound program contribution
- Audio distribution and playback adapted to the listening environment
- Modification of the specification of channel base of advanced sound system

For the subjective sound quality evaluation method of the advanced sound system, it was decided to cooperate with the creation of contribution.



Regarding the conversion of stereo program to monaural program, it was decided to consider by adding to the TR-B30 (The Technology Guideline of Production for Surround Broadcast Program).

### (3) Interface between Program Production Equipment

The time code format of Interface between UHDTV studio equipment was confirmed. Operation of the validity flag was the equivalent of SMPTE ST12-2, and chapter configuration was revised as a final draft.

On the basis of summarizing of the mechanical specification of mount and electrical interfaces, Technical Report of the Interconnection for UHDTV Camera and Lens was discussed, and submitted to the 99th standard Assembly.

### (4) Digital Closed caption Production

New ARIB standard of the exchange format of the digital closed caption file including the conversion from digital subtitles to ARIB-TTML subtitles (recommended) was discussed, and submitted to the 99th standard Assembly.

Base on the research result of each broadcasting station, program and page management information were selected and drafted, then liaison was sent to the Next Generation Television & Broadcasting Promotion Forum (NexTV-F), discussing the operational guideline of advanced BS digital broadcasting.

Reflecting the results of liaison, program and page management information were defined.

## 3 Transmission of Television Program Contribution

### (1) SNG Transmission System

To the provisions based on the experimental results, experiment conditions and experimental items were studied with a view to revision of adding a DVB-S2X standard to ARIB STD-B26 (HDTV digital SNG transmission systems).

For the indoor experiments, test items, test equipments and test place should be determined and plan to experiment in May 2016. The satellite communication experiments are planning to study, including the possibility.



**Association of Radio Industries and Businesses**

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