

# Newsletter ARIB SEASON



No.0017

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### *Standards :*

- Newly established Standards
- Revised or abolished Standards

### *Event*

#### The 4th meeting of the ITU-R TG5/1 in Geneva

The 4th meeting of the ITU-R TG5/1 was held in Geneva from 17 to 26 January 2018.

TG 5/1 is responsible for the development of draft CPM text under WRC-19 Agenda item 1.13 (Addition of mobile service in the 24.25-86 GHz band for future IMT development), and frequency sharing between radiosystems is studied there.



## 1. Outline of the Meeting

Schedule : From 17 to 26 January 2018

Venue : Headquarters of ITU (Geneva, Switzerland)

Participants :

About 230 people from each country's Administration, Operator, Vendor, etc.

As the Japanese delegation, 11 people headed by Mr. Kobashi of MIC participated. Mr. Nishioka and Mr. Kato participated from ARIB.



ITU-R TG5/1 4th meeting

## 2. Main results

About 110 contributions were input (including liaison documents from WP etc) to the meeting. Following the previous meeting, update of working documents based on contribution from each country, and development of the guideline for draft CPM text was conducted.

### (1) Study of frequency sharing with existing applications in each band

- Working documents (11 documents, total 29 including attachments) that compiled the results of study of frequency sharing for each frequency band, or for each service was created / updated. From this meeting, preparation of a summary started, based on the individual review results. The frequency bands and services on which working documents were created are as follows. (The number in [ ] shows the number of the study results.)

24.25 - 27.5GHz	EESS/SRS[6], EESS/RAS(passive)[9], FSS[11], ISS[4], FS[7]
31-33.4GHz	RNS[4], SRS(s to E)[2], EESS(passive)[3], RAS[1]
37-43.5GHz	FSS(space to Earth)[7], EESS/SRS[3], EESS/SRS(passive)[2], FS[1], RAS[1]
42.5 - 43.5GHz	FSS/MSS/BSS(Earth to space)[5]
45.5 - 47GHz	AMS[1]
47-47.2GHz	(No contribution input)



47.2 - 50.2GHz	EESS(passive)[3], FSS(E to s)[5]
50.4 - 52.6GHz	EESS(passive)[3], FSS(E to s)[3]
66-71GHz	ISS[1]
71-76GHz	FS[3], Automotive radar[2]
81-86GHz	EESS(passive)[3], FS[2], RAS[1], RAS(adjacent)[1], Automotive radar[1]

## (2) Creation of draft CPM text

- A concrete draft CPM text has been input from the meeting this time and guidelines for draft CPM text preparation were formulated. The proposed draft CPM text was arranged to be discussed at the next meeting.

## 3. Future meeting schedule

- The 5th : 2-11 May 2018 @ Geneva, Switzerland  
Completion of frequency sharing study, Drafting CPM text
- The 6th : 20-29 August 2018 @ Geneva, Switzerland  
Completion of CPM text

## Seminar and Exhibition on Digital Terrestrial TV in Bolivia

Since Bolivia decided to adopt ISDB-T in July 2010 as its national digital TV standard, digital terrestrial TV service has already been put in service by Bolivia TV (BTV) in several major cities, including La Paz. With the Supreme Decree No.3152 issued by the Bolivian government as of 19 April 2017, it is expected that the implementation of digital terrestrial TV service in Bolivia would be accelerated.

Under such situation, expecting that the Bolivian broadcasters would get better acquainted with the latest progress of digital terrestrial TV technologies for their implementation, and also to introduce the technical and engineering capabilities of the Japanese companies on their transmission equipment and systems, there was a seminar and exhibition on digital terrestrial TV held on 30 January 2018 in La Paz, Bolivia, organized by the Vice Ministry of Telecommunications of Bolivia, co-hosted by Ministry of Internal Affairs and Communications of Japan (MIC).

At this opportunity of being requested by MIC to participate together, ARIB/DiBEG decided to dispatch its representative for this seminar and technical demonstration.

Representing the Bolivian side, Mr. Marco Antonio Vásquez, Vice Minister of Telecommunications and government officials, as well as executives from private broadcasters, academia, etc. attended the seminar and exhibition, where approximately 120 people attended.

Mr. S. Takagi, Director-General of the Global ICT Strategy Bureau and Mr. H. Ogawa,



Director for Digital Broadcasting Technology Division respectively from MIC headed the Japanese delegation. Ms. K. Koga, Ambassador Extraordinary and Plenipotentiary of Japan in Bolivia, also attended the Seminar. Among the ARIB/DiBEG member companies, Hitachi Kokusai Electric, NEC and Toshiba participated in the presentation and exhibition, together with one representative from ARIB/DiBEG secretariat.

During the Seminar, following the welcome speeches by Mr. Vásquez and Mr. Takagi, there were 3 presentations by the Bolivian representatives, and 5 presentations by the Japanese delegation.



Seminar Hall

At the exhibition area, Toshiba exhibited encoder/multiplexer equipment and an EWBS server; NEC displayed transmission infrastructure-related equipment; Hitachi Kokusai exhibited TV transmission systems and head-end equipment; and ARIB/DiBEG showed and demonstrated an EWBS receiving module and display.



EWBS Demo



Exhibit Area

## **oneM2M Developers' Tutorial in Tokyo**

A tutorial seminar to explain IoT application development step by step using oneM2M was held on 2 February 2018, co-sponsored by ARIB and TTC.

### **1. Outline of the Seminar**

Title: Tutorial for IoT developers using oneM2M - How to proceed with application development using "oneM2M" IoT service platform -



Date: 2 February 2018

Venue: Headquarters of Telecommunication Technology Committee (Tokyo, Japan)

Sponsor: ARIB, TTC

Participants: About 75 people

## 2. Detail

Since oneM2M is the unique open international standard that defines one-set functions necessary for building IoT service and it is a standard with which development and verification can be started quickly and easily, application development based on this standard is a very effective.

In this tutorial seminar, IoT application development using oneM2M was explained in step-by-step using the open source compliant with oneM2M and two kinds of commonly available IoT devices. And demonstrations were also presented for system development engineers and application development engineers.

Despite bad weather, the event had numerous participants, showing a strong interest and expectation for application development using oneM2M.

## 3. Program

Title	Presenter
Fundamentals of oneM2M service layer, resources used in application development and explanation of each function	Mr. Uchida (Qualcomm)
Demonstration of IoT controlling application development using oneM2M	Mr. Uchida (Qualcomm)
Demonstration of IoT sensing application development using oneM2M	Mr. Okui (KDDI Research, Inc.)
Commentary on oneM2M application program	Mr. Satoh (TOKYO SYSTEM HOUSE Co., Ltd)
Introduction of case of oneM2M applied to IoT	Mr. Hamano (TTC)



Seminar



Demonstration



## The 29th ITU-R WP5D Meeting

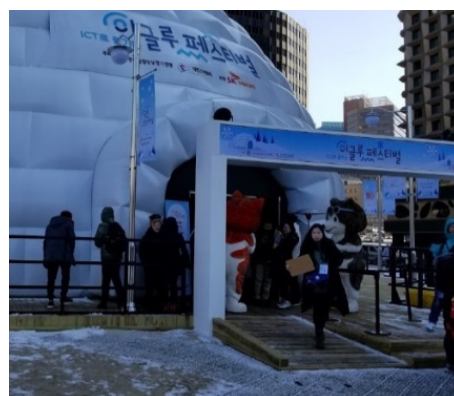
The 29th ITU-R WP5D Meeting was held as below.

### 1. Overview of the meeting

Schedule	From 31 January to 7 February 2018
Venue	Millennium Seoul Hilton HOTEL (Seoul, Korea)
Participants	About 190 people from 35 countries (33 organizations)
Participants from Japan	14 people (including 3 people from ARIB) headed by Ms. Kawasaki (Land Mobile Communications Division, MIC)



The 29th ITU-R WP5D Opening Plenary



5G Experience

### 2. Main results

- (1) Initial description templates related to the proposal of candidate IMT-2020 radio interfaces were received from 3GPP Individual Member, Korea and China, and new IMT-2020 documents (IMT-2020/3, 4 and 5) describing the input history were created. The liaison statement notifying these inputs were issued to the proponents and independent evaluation groups. In addition, an input history of evaluation reports from independent evaluation groups was also decided to be created. Independent evaluation groups other than ITU members can also view these history documents.
- (2) With regard to the evaluation of the IMT - 2020 radio interface, the source code for the simulation from TTA and the source code for IMT-2020 channel model simulation from Beijing Post and Telecommunications University, were provided. These are to be shared on the website of "IMT-2020 submission and evaluation process in future.
- (3) For 1427-1518MHz, frequency arrangements for FDD and TDD that did not use 1512-1518MHz were proposed by ESOA (EMEA Satellite Operator's Association) with the intention of protecting MSS (mobile satellite service). Japan, Brazil, Finland, etc. opposed this proposal because the large number of arrangements had been already proposed, and also it lacked compatibility with the G2



arrangement for FDD proposed by Japan etc.

On the other hand, Russia and Egypt supported the addition of arrangements, insisting that their proposal should be taken into consideration in a situation where sharing studies with MSS had not been completed. As a result of that, the proposed arrangements were added to the working document as G6 and G7.

For notes on this frequency arrangement, there was confrontation between two parties. Japan, Germany, Brazil, and Finland argued that description indicating frequency usage restriction should be avoided, while Russia, Inmarsat, and ESOA insisted protection of the existing services provided on the frequencies below 1427MHz and above 1518MHz. It was decided that argument on the notes would be continued.

- (4) With regard to compatibility study of IMT L-band and BSS (WRC-19 AI 9.1, Issue 9.1.2), France, Japan and Korea proposed that a PFD (Power Flux Density) limitation should be set, whereas China suggested that the conventional adjustment procedure should be maintained due to fears that derived PFD limitation interferes with BSS operation. In addition, the United States asserted that this study should be limited to Regions 1 and 3, and all these claims were reflected in the working document of the preliminary draft new report on the compatibility study, and the working document of the draft CPM text for WRC-19 issue 9.1.2.
- (5) Regarding the preliminary draft new report on MTC (Machine Type Communication), a background section was made on the basis of the Japanese contribution, and forecast information on MTC connection number by 2020 was added. In addition, the information was added to the preliminary draft new report showing use cases, transmission speed, coverage area where the device is deployed, battery life, and even the relationship between narrowband and broadband MTC.
- (6) Tours to experience 5G, "SK Telecom 5G Experience" and "LG U+5G & Home Media Experience" were offered at lunchtime or on the weekend during the meeting period, and many participants joined the Tours.

### **The 1st Study Group Meeting on Terahertz wave**

The 1st Study Group Meeting was held on 16 February 2018, participated by 21 people from member companies of ARIB, NICT (National Institute of Information and Communications Technology), including observers from MIC (Ministry of Internal Affairs and Communications).

This study group was founded to clarify the field and systems on which terahertz waves expected to be applied, extensively study issues in development, frequency requirements, regulation, etc., promoting R&D and realization in industry section.

At this meeting, Mr. Hosako, who is the Director General of Advanced ICT Research Institute, NICT was elected as a chairman. He presented the progress and issues toward



dissemination of Terahertz wave application, and intensive discussion was held on how to proceed and the direction of study.



The 1st Study Group Meeting on Terahertz wave

<p style="text-align: center;"><b>APT Training Course 2017 in ARIB</b> <b>"Actions for Next and New Generation Mobile Communication Systems"</b></p>
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As a part of APT (Asia-Pacific Telecommunity) training course "Actions for Next and New Generation Mobile Communication Systems" (co-organized by MIC (Ministry of Internal Affairs and Communications) and YRP R&D Promotion Association, supported by ARIB), the lectures by ARIB and the Country Report presentation from each trainee were held on 21-22 February 2018 at ARIB. Twelve trainees from twelve governmental organizations in Asia and the Pacific (Hong Kong, India, Indonesia, Iran, Laos, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam) participated.

On the afternoon of 21 February, the lecture titled "International Standardization activities on ITS Info-Communication Systems" was delivered by ARIB Resercher Mr. Oyama, along with the lectures given by the presentor from telecommunications carriers and manufacturers.

On the afternoon of 22 February, following the previous day, the lectures titled "ARIB and Standardization" by Mr. Sugawara, Director of Planning and International Affairs Department, and "Recent Activities of IMT-2020 Standardization" by Mr. Nishioka, Executive Director on Mobile communications, were delivered. After that, "Country Report Presentation" session in which trainees presented an outline of the telecommunications administration agency, frequency allocation situation, regulations and policies related to mobile communication, latest trends related to mobile communication technologies and services, etc. was held, attended by the people of MIC, YRP R&D Promotion Committee, ARIB member companies as audience. Q&A were also exchanged actively.





Trainees and Lecturers



Lecture session



Country Report Presentation



## Seminar for Electromagnetic Environment Committee members 2017

The seminar organized by the Public Relations Subcommittee of Electromagnetic Environment Committee was held on 21 February 2018 at Yotsuya (Tokyo, Japan), attended by 33 people. This seminar is held every year, aiming at introducing to the committee members the latest research trends on radio wave safety and radio wave protection compatibility, the latest research of the international institutions such as WHO (World Health Organization), ICNIRP (International Commission on Non-Ionizing Radiation Protection, IEEE (The Institute of Electrical and Electronics Engineers, Inc.) and NTP (National Toxicology Program).

The program was as follows.

	Speaker	Title
(1)	Dr. Akimasa Hirata Professor of graduate school, Nagoya Institute of Technology	On the bioelectromagnetic environment focusing on introduction of 5G-related protection guidelines'
(2)	Dr. Akira Ushiyama Chief Senior Researcher, Department of Environmental Health	Tutorial on long-term carcinogenicity test results by NTP in the US, and trends of research on biological impact of RF band



Electromagnetic Environment Committee Seminar

After the lecture, an informal meeting was held to exchange information mainly on the electromagnetic environment between the lecturers and attendees.



## **The 12th Study Group Meeting on Private wireless communication**

The Study Group on Private wireless communication, composed of academics, manufacturers and users, was established on April 2015 in order to provide a place to investigate both domestic and international technology trends and usages, and to study enhancement of private wireless communication. The 12th study group meeting was held on 27 February 2018 with approximately 72 participants.

Since this was the final round of the meeting that had been originally planned, Chairman Mr. Fujii summarized the activities from the technical viewpoint, and so did Vice-chair Mr. Yuguchi from the regulation viewpoint.

Some members were so interested in the trend of the policy and technology, that they expressed desire for continuation of the SG. As a result, the extension of the SG was suggested to the Technical Committee, and the extension has been approved.



Study Group Meeting

## **Joint Thailand-Japan Workshop on 5G Mobile Communication System**

"5G Workshop" and related events, co-organized by MIC and NBTC (The National Broadcasting and Telecommunications Commission) and jointly hosted by 5GMF, was held on 20-21 February 2018 in Bangkok, Thailand.

### **1. 5G Workshop**

The workshop was held on the afternoon of 20 February.

From Thailand, about 120 people from the government, telecommunications carriers, manufacturers, universities and research institutes participated, including NBTC's



Commissioner Mr. Prasert Silphiphat, Spectrum Management Bureau Executive Director Saneh Saiwong.

From Japan, 11 people participated, including Mr. Takeuchi and Mr. Onga of MIC, Prof. Mitsutomo of Waseda University, Mr. Nakamura of Fujitsu who represented 5GMF (chairman of Technical Committee), Mr. Ishizu of NICT (National Institute of Information and Communications Technology).

In this workshop, a speech of welcome from representatives of the organizer / co-host, a keynote speech, followed by a technical lecture on 5G and a lively question-and-answer session.

In the workshop, a technical lecture on 5G and a lively question-and-answer session were held following a welcome speech and a keynote speech.

## **2. Technical exchange meeting on 5G between the fora**

On the same day prior to the workshop, a technical exchange meeting was held with the aim of exchanging information and opinions on future cooperation between 5GMF and NBTC. It was agreed that 5GMF and NBTC would make effort to continue the meeting in the future.

## **3. 5G Seminar**

Furthermore, in the morning of 21 February, 5G seminar for introducing Japanese activities related to 5G and exchanging opinions was held for Japanese companies located in Thailand.



Lecturers





Workshop

### The 3rd APG-19 meeting in Australia

APG-19 (Asia-Pacific Telecommunity Conference Preparatory Group for WRC-19) has responsibility to create the APT Common Proposal towards the World Radiocommunication Conference to be held in 2019 (WRC-19). Dr. Kyu-Jin Wee (Korea) serve as chairman, Mr. Xiaoyang Gao (China) and Mr. Neil Meaney (Australia) as vice chairmen.

The 3rd meeting of APG-19 was held on March 2018. Overview and Major results of the meeting are as follows.

#### 1. Overview of the meeting

Schedule	From 12 to 16 March 2018
Venue	Rendezvous Hotel Perth (Perth, Australia)
Participants	About 398 people from 24 countries
Participants from Japan	57 people (including 4 people from ARIB) headed by Mr. Kimura (Director of International Frequency Policy Office, MIC)

#### 2. Major results

At this meeting, the draft APT proposal documents which are the basis for continuing the previous meeting has been updated, for formulating the APT joint proposal in each Agenda Item (AI) of WRC-19. The results of discussion on the main agenda are shown below.

- (1) AI 1.11: To facilitate global or regional harmonized frequency bands to support railway radiocommunication systems between train and trackside within existing mobile service allocations

Currently, the study is underway at the ITU-R for harmonization of frequency usage. At this meeting, the following were agreed.



- Supporting the study at ITU-R would be continued.
- It would be a provisional view that frequency harmonization of RSTT would not restrict other primary work, that the study of RSTT in ITU-R would not be not restricted to a specific technology, and that the study of frequency harmonization of RSTT would support railway operation at the border..

In addition, it was agreed on a correction proposal of the draft CPM text (adding an option to clarify that the revision of ITU-R Recommendation M.[RSTT\_FRQ] is included in the new decision) to WP5A

- (2) AI 1.12: To consider possible global or regional harmonized frequency bands, to the maximum extent possible, for the implementation of evolving Intelligent Transport Systems (ITS) under existing mobile-service allocations

Currently, the study is underway at the ITU-R for harmonization of frequency usage. At this meeting, the following were agreed.

- Supporting the study at ITU-R would be continued.
- It would be a provisional view that the development of ITS is not limited or excluded by specific technologies including LTE based V2X, that frequency utilization by ITS does not further restrict the primary work already being used elsewhere, and that appropriate consideration should be given to the interference from other primary work including mobile satellite service earth station uplink.

- (3) AI 1.13: To consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis

This AI is about the study of IMT system allocation for eleven candidate bands from 24.25GHz to 86GHz.

Currently, the study is underway at the ITU-R for harmonization of frequency usage. At this meeting, the following were agreed.

- Supporting the study at ITU-R would be continued.
- It would be a provisional view that priority should be given to 24.25-27.5 GHz for identifying IMT on premises that the frequency sharing is possible, and that overlapping of frequencies with other services should be discussed on the basis of the proposal at WRC-19.

Also, as a key point for future discussion, the priorities for each frequency band to be studied for sharing and candidate for IMT identification of each country were summarized. (Shown below)

	Frequency bands (GHz) mentioned in Resolution <b>238 (WRC-15)</b>											
	24.25-27.5	31.8-33.4	37-40.5	40.5-42.5	42.5-43.5	45.5-47	47-47.2	47.2-50.2	50.4-52.6	66-71	71-76	81-86
IND	S	S	S									
KOR	I	I	I									
NZL	X	X		X	X							



	Frequency bands (GHz) mentioned in Resolution <b>238 (WRC-15)</b>											
	24.25-27.5	31.8-33.4	37-40.5	40.5-42.5	42.5-43.5	45.5-47	47-47.2	47.2-50.2	50.4-52.6	66-71	71-76	81-86
AUS	S		S	S	S					S	S	
JPN	S	S	S	S	S							
SNG	S	S	S	S	S							
MLA	X											
VTN	I	S	S	S	S							
CHN	X		X	X						X	X	X
BGD	X	X										
LAO	S											

Note:

S: To be studied for frequency sharing

X: Candidate for IMT identification if sharing is possible

I: Candidate for IMT identification depending on the results of the studies carried out in each country and ITU-R

- (4) AI 1.15: To consider identification of frequency bands for use by administrations for the land-mobile and fixed services applications operating in the frequency range 275-450 GHz

Currently, the study is underway at the ITU-R for harmonization of frequency usage. At this meeting, the following were agreed.

- Supporting the study at ITU-R would be continued.
- It would be a provisional view that a new footnote should be added to the relevant part of the Radio Regulation when identifying the frequency.

- (5) AI 1.16: To consider issues related to wireless access systems, including radio local area networks (WAS/RLAN), in the frequency bands between 5 150 MHz and 5 925 MHz, and take the appropriate regulatory actions, including additional spectrum allocations to the mobile service

Currently, the study is underway at the ITU-R for harmonization of frequency usage. At this meeting, the following were agreed.

- Supporting the study at ITU-R would be continued.
- It would be a provisional view that 5150-5350MHz, 5350-5470MHz, 5725-5850MHz, 5850-5925MHz should be protected, and that Radio Regulation should not be changed for 5350-5470MHz.

- (6) The following liaison statement to AWG (APT Wireless Group) were agreed to be issued.

- “Information on AWG’s work on IoT/MTC” (Relating to WRC-19 AI 9.1, 9.1.8)
- “Identification to use HAPS as base stations to provide IMT in the frequency bands around and below 2GHz” (Relating to WRC-23 AI)





The 3rd APG-19 meeting

### 3. Future meeting schedule

Meeting	Date	Venue	Agenda
4th	7-12 January 2019	Korea	Completion of the CPM19-2 proposal Revision of the APT provisional view
5th	31 July - 6 August 2019	Japan	Complete the APT joint proposal

### Digital Terrestrial TV Seminar in Guatemala

While there are two broadcasters which started test transmission of ISDB-T broadcasting in December, 2017, the government of Guatemala is expected to soon establish a decree which is equivalent to the master plan of transition to digital terrestrial TV broadcasting. Under such circumstances a digital terrestrial TV seminar was held in City, Guatemala on 19 March 2018, organized by MIC (Ministry of Internal Affairs and Communications) of Japan and SIT (Superintendencia de Telecomunicaciones) of Guatemala.

The Japanese delegation was headed by Mr. S. Takagi, Director-General for International Affairs of Global Strategy Bureau of MIC, together with Mr. H. Ogawa, Director for Digital Broadcasting Technology Division, as well as Mr. H. Horikawa, JICA Expert in digital TV broadcasting, the representatives from DiBEG member companies such as NEC, Hitachi Kokusai, Maspro and Toshiba, and also including ARIB/DiBEG secretariat. Approximately 60 Guatemalan people participated in the seminar, including Mr. Selvin Juarez, Superintendent of SIT, government officials, broadcasters, etc.

At the opening of the seminar, Mr. S. Juarez and Mr. S. Takagi each made opening remarks, followed by the Guatemalan representatives presenting the latest situation of the study of the draft decree for the introduction of digital terrestrial television and also on the result of comparisons between the actual field measurement data taken by the measuring instruments offered by Japan and the data of simulation by SIT, etc.



Each of the Japanese delegation members made presentation on their own products, technologies and knowhow on the transmitting and receiving equipment and products.



Seminar

At the seminar hall there was an exhibition area provided, where ARIB demonstrated EWBS signage application, and DiBEG member companies exhibited their own transmitting and receiving systems and products.



Exhibition



Representatives



## Expo Festival of Digital Terrestrial TV in Nicaragua

An expo festival of digital terrestrial TV was held in Managua, Nicaragua on 21 March 2018.

Since May 2017 when MIC signed a memorandum with TELCOR (Instituto Nicaragüense de Telecomunicaciones y Correos) on terrestrial digital television, MIC has been extending its support and cooperation to Nicaragua for the trial broadcasting.

This time TELCOR organized a ceremony to celebrate their start of trial digital terrestrial TV broadcasting, and also to show various benefits and advantages of digital terrestrial television to the general public.

The Japanese delegation to celebrate this festival was headed by Mr. S. Takagi, Director-General for International Affairs of Global Strategy Bureau of MIC, together with Mr. H Ogawa, Director for Digital Broadcasting Technology Division, as well as Mr. H. Horikawa, JICA Expert in digital TV broadcasting, the representatives from DiBEG member companies such as NHK ITEC, Hitachi Kokusai, Maspro, and also including ARIB/DiBEG secretariat.

The Nicaraguan side was represented by Mr. Orlando Castillo, Director General of TELCOR, together with Dr. Guillermo González, Ministro-Director of SINAPRED (Sistema Nacional para la Prevención, Mitigación y Atención de Desastres), and Mr. Aarón Peralta, Director of National TV (Canal-6).

Approximately 120 people, including Mr. Y. Suzuki, Ambassador Extraordinary and Plenipotentiary of Japan to Nicaragua, representatives from JICA Nicaragua Office, representatives from neighboring countries, local broadcasters and Nicaraguan government officials, attended the ceremony.

After the national anthems of both countries were played, the ceremony started; where Mr. O. Castillo, Mr. S. Takagi and Dr. M. Sugawara, Chairman of DiBEG, each made a congratulatory speech. Mr. Yasuji Sakaguchi of NHK ITEC, who undertook the MIC project for the support of the trial digital terrestrial TV broadcasting, made a presentation on the outline of the digital TV system delivered to Canal-6 this time.

The Digital Switch-On was performed by Mr. O. Castillo of TELCOR.

With the successful digital terrestrial TV reception, the ceremony was fully completed.



Digital Switch-On



Speakers



## 5G International Symposium 2018 in Tokyo

Hosted by MIC (Ministry of Internal Affairs and Communications), co-hosted by 5GMF (The Fifth Generation Mobile Communications Promotion Forum), ARIB (Association of Radio Industries and Businesses), and TTC (The Telecommunication Technology Committee), 5G International Symposium 2018 was held. Its objective was that participants would “Come, See, and Learn” the change that will be brought to society in the future with the realization of the 5G (5th Generation Mobile Communication System), which is expected by 2020.

On the symposium, there were on-site presentations and hands-on demonstrations inside the venue due to openly publishing of the results of the MIC 5G Field Trials, which have been held from this year, and giving 5G experience. Experts and specialists from 5G related industries around the world give us presentations and participate in panel discussions. They shared their ideas and experiences on the ICT foundations of a fully realized Internet of Things that 5G will bring as well as the issues and environment needed in order to accelerate its realization.

There were more than 1,100 participants in two days of event. Some participants were unable to have seats at the symposium, so there was not enough room to pass in the exhibition hall. The symposium was finished successfully.

### 1. Overview of the symposium

Schedule	27 and 28 March 2018
Venue	Tokyo International Exchange Center, Odaiba (Tokyo, Japan)
Participants	About 1,100 people

### 2. Symposium Summary

Representative Manabu Sakai, Vice Minister of the MIC, provided the opening remarks for the event. This was followed by the keynote speech, which was given by Professor Emeritus Susumu Yoshida, 5GMF Chairman (Kyoto University).

#### 1) Session 1: What are the capabilities of 5G? – Achievement of 5G Field Trials

##### ◆ Moderator:

Professor Seiichi Sampei, Chairman, 5GMF Technical Committee (Osaka University)

##### ◆ Presentation (Group 1)

##### - NTT DOCOMO, Inc.:

5G Field Trials of Ultra High Speed Transmissions in Densely Populated Urban Environments – in the Use Fields of Entertainment, Smart Cities, and Medical application field –

##### - NTT Communications Corporation:



5G Field Trials of Ultra High Speed Transmissions in Rural Environments while Moving at High Speeds – in the Use Field of Entertainment –

◆ Presentation (Group 2)

- KDDI, CORPORATION:

Field Trials on the Uses of 5G's Low Latency – Remote Controlled Construction Equipment, Connected Cars, and the Transmission of HD Video from Drones –

- ATR (Advanced Telecommunications Research Institute International):

Field Trials on the Uses of 5G's Ultra High Speeds in Enclosed Environments – Stadium Entertainment, Improving Safety and Security Inside Train Stations, and Using ICT for Educational Purposes at Schools –

◆ Presentations (Group 3)

- Softbank Corp.:

5G Ultra Low Latency Field Trials Supporting Autonomous Vehicles – in the Use Case of Truck Platooning

- NICT (National Institute of Information and Communications Technology):

Field Trials on the Uses of 5G's Assistive Multiple Simultaneous Connections – in the Use Cases of Disaster Evacuation Sites and Smart Offices –

**2) Special Event: Expectations for 5G**

◆ Moderator:

Professor Hiroyuki Morikawa, Chairman, 5GMF Strategy & Planning Committee (The University of Tokyo)

◆ Keynote Presentation:

Mr. Masaaki Matsushashi (Managing Executive Officer, Seven Bank, Ltd.) lectured on activities of Seven Lab and his expectations for 5G.

◆ Special Discussion:

Professor Morikawa moderated a panel discussion with Mr. Keiichiro Shimada (Corporate Executive, Sony Corporation), Mr. Yasuyuki Tanida (CTO, JVC Kenwood Corporation), Mr. Masanobu Fujioka (CTO, Ericsson Japan), and Mr. Tango Matsumoto (Executive Vice President, Fujitsu Ltd.). The panelists discussed their expectations for 5G, how 5G will affect businesses, and what the requirements for human resources and organizations generally will be in the age of 5G.

**3) Session 2: How will 5G change our lives and work? – Social impact of 5G**

◆ Moderator:

Mr. Gota Iwanami, Chairman, 5GMF Service & Application Committee (Representative Director, INFOCITY, Inc.)

◆ Presentation

Ms. Yoshimi Ui (CEO, aba Inc.) lectured on activities and future plans of aba, Inc. and her expectations for 5G.



◆ Panel Discussion

Mr. Iwanami moderated a discussion between Mr. Takumi Iwasa (CEO, Cerevo Inc.), Ms. Ui (aba Inc.), and Mr. Kiyoshige Nagase (Corporate Officer, CyberAgent, Inc.). The panelists discussed the impact of smartphones over the past 10 years and how communications technology might change society over the next 10 years, including their expectations about 5G.

**4) Session 3: How will 5G be realized? – Crossover Collaboration of 5G**

◆ Moderator:

Mr. Waichi Sekiguchi (Senior Staff Writer, Nikkei Inc.)

◆ Short Presentations:

Mr. Ko Ishiyama (Representative Director & President, ExaWizards Inc.)

Mr. Naomi Tomita (President and CEO, hapi-robo st, Inc.)

Mr. Sekiguchi moderated a discussion between Mr. Ishiyama and Mr. Tomita following their presentations.

They discussed their expectations for 5G, what ways would applications and businesses utilize 5G, how would 5G be implemented and regulated in Japan, and in what ways would 5G bring about changes to Japanese business, industry and education.

**5) International Cooperation in the Utilization of 5G**

◆ Moderator:

Mr. Waichi Sekiguchi (Senior Staff Writer, Nikkei, Inc.)

◆ Panelists:

- Dr. Pang-An Ting (Taiwan),
- Dr. Ramazan Yilmaz (Turkey)
- Dr. Khoirul Anwar (Indonesia)
- Mr. Saneh Saiwong (Thailand)
- Prof. Gérard Pogorel (France)
- Prof. Pierre-Jean Benghozi (France)
- Prof. Erik Bohlin (Sweden)
- Prof. Martin Cave (the UK)

Mr. Sekiguchi moderated this panel discussion. Members exchanged information and ideas about the activities of 5G related organizations in their respective countries, their different overall perspectives about 5G, the major issues related to 5G in their respective countries and how they are going about resolving those issues, and how 5G relates to Japan and their expectations for Japan in the realization of 5G.

The two-day symposium was concluded after closing remarks by Mr. Fusaki Matsui (Senior Managing Director, ARIB).

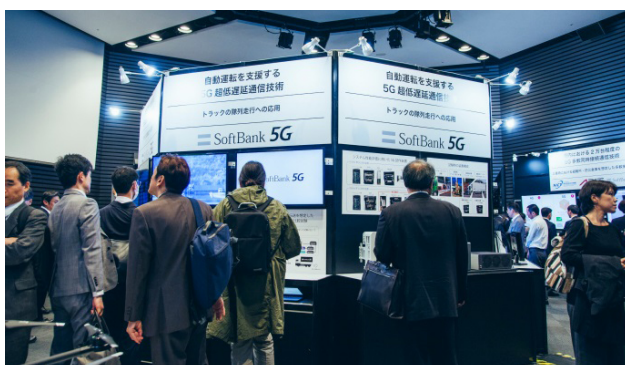




Symposium

### 3. Overview of the 5G Field Trial Exhibition and Demonstration Rooms

Several 5G Field Trial exhibition booths were on display in the Media Hall just outside the conference room of the symposium. Many participants of the symposium were seen engaging in lively discussions at these booths throughout the event.



Exhibition and Demonstration



<b>Monthly seminars on radio wave use</b>
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<b>No.157</b>	19 January 2018
<b>Title</b>	R&D trend of 100Gbit/s class wireless communication technology using THz (300GHz) band wave
<b>Speaker</b>	Mr. Iwao Hosako Director General, Advanced ICT Research Institute, NICT (National Institute of Information and Communications Technology)



## 1. Newly established Standards at Standard Assembly on 22 January 2018

**MICROWAVE BAND  
PORTABLE OFDM DIGITAL TRANSMISSION SYSTEM  
FOR UHDTV TELEVISION PROGRAM CONTRIBUTION**  
\* Provisional name: English Translation not available  
**(STD-B71 Ver.1.0)**

This standard specifies the portable system (FPU: Field Pick-up Unit) which transmits compressed UHDTV (4K/8K) or HDTV (2K) signal using OFDM on Microwave band.

**Colour Bar Test Pattern for the Hybrid Log-Gamma (HLG)  
High Dynamic Range Television (HDR-TV) System**  
**(STD-B72 Ver.1.0)**

This standard establishes a colour bar test pattern for Hybrid Log-Gamma (HLG) high dynamic range television (HDR-TV) video format specified in ARIB standard STD-B67 to facilitate video level control and monitor adjustment.

## 2. Revised or abolished Standards at Standard Assembly on 22 January 2018

### (1) Telecommunications field

STD Number	Standard Name	Version
(RCR) STD-28	PERSONAL HANDY PHONE SYSTEM	Ver.7.0
STD-T63	IMT-2000 DS-CDMA and TDD-CDMA System	Ver.13.10
STD-T101	RADIO EQUIPMENT USED FOR TDMA DIGITAL ENHANCED CORDLESS TELECOMMUNICATIONS	Ver.2.0
STD-T104	LTE-Advanced System	Ver.5.10
STD-T108	920MHz-Band RFID Equipment for Premises Radio Station	Ver.1.2



(2) Broadcasting field

STD Number	Standard Name	Version
STD-B33	PORTABLE OFDM DIGITAL TRANSMISSION SYSTEM FOR TELEVISION PROGRAM CONTRIBUTION	Ver.1.3
STD-B39	STRUCTURE OF INTER-STATIONARY CONTROL DATA CONVEYED BY ANCILLARY DATA PACKETS	Ver.1.4
STD-B43	PORTABLE MILLIMETER-WAVE DIGITAL TRANSMISSION SYSTEM FOR TELEVISION PROGRAM CONTRIBUTION	Ver.2.1
STD-B57	1.2GHz/2.3GHz BAND PORTABLE OFDM DIGITAL TRANSMISSION SYSTEM FOR TELEVISION PROGRAM CONTRIBUTION * Provisional name: English Translation not available	Ver.2.2
STD-B60	MMT-BASED MEDIA TRANSPORT SCHEME IN DIGITAL BROADCASTING SYSTEMS	Ver.1.11
STD-B62	MULTIMEDIA CODING SPECIFICATION FOR DIGITAL BROADCASTING (SECOND GENERATION)	Ver.1.8
STD-B67	Parameter Values for the Hybrid Log-Gamma (HLG) High Dynamic Range Television (HDR-TV) System for Program Production	Ver.2.0



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