Newsletter ARIB SEASON

No.0018

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The 2nd Workshop for Connected Vehicles using LTE/5G in Tokyo

The 2nd Workshop for Connected Vehicles using LTE/5G was held on March 30th. This workshop was jointly organized by the ARIB's Advanced Wireless Communications Study Committee's Mobile Partnership Subcommittee's LTE-V2X Ad Hoc Group, the 5GMF's 5G Connected Vehicle Ad Hoc Committee, and the ITS Info-communications Forum's Advanced ITS Info Communication Systems Committee's Cellular System Application Task Group.

This workshop was held the aim of providing participants a better understanding of the newest trends on connected vehicles using LTE/5G, as well as the state of activities related to LTE/5G V2X both in Japan and oversea. This aim was realized through presentations by experts on the progress towards the agreement of standards for LTE/5G V2X communications, the newest trends in China, Europe, and the United States, and the state of activities at the ITS Info-communications Forum.

1. Workshop name: Second Workshop for Connected Vehicles using LTE/5G
2. Date and Time: March 30 (Friday) 2 pm to 5 pm
3. Location: ARIB (Tokyo, Japan)
4. Organizers:
   Jointly organized by
   - LTE V2X Support Ad-Hoc, Mobile Partnership Subcommittee, Advanced Wireless Communications Study Committee, ARIB
   - 5G Connected-Vehicle Ad-Hoc Committee, 5GMF
   - Cellular System Applications Task Group, Advanced ITS Info-communication Systems Committee, ITS Info-communications Forum
5. Participants: About 120
6. Event Overview:

   Prof. Sadao Obana (The University of Electro-Communications), Chairman, ITS Info-communications Forum's Advanced ITS Info-communication Systems Committee gave the opening remarks. Mr. Takehito Nakamura, Leader of the Cellular Systems Applications Task Group of the ITS Info-communications Forum's Advanced ITS Info-communication Systems Committee and Leader of the 5GMF Connected Vehicle Ad-Hoc Committee, provided an overview of the workshop itself, followed by presentations which are summarized below.

   6.1. Latest Trends in LTE-V2X standards discussions at the 3GPP

   Mr. Satoshi Nagata, Leader of ARIB's Mobile Partnership Subcommittee, LTE V2X (Vehicle to everything) ad Hoc, explained the profile of cellular V2X using LTE / 5G and the progress in 5G standardization, as a current state of V2X at 3GPP.

   6.2. Current International Trends of the utilization of LTE / 5G in V2X

   Mr. Zhu Houdao from Huawei Japan, presented the policies and strategies of the Chinese government towards cellular V2X, activities of the

telecommunication industries including chip set R&D, cellular V2X trials and marketization projects, as the latest trends in China.

Next Mr. Yoshio Honda of Ericsson Japan gave introduction of V2X trends of Europe, such as collaborative activities between the automobile and telecommunication industries, activities related to 5G, and various research projects on the utilization of LTE-V2X in automobiles.

Finally, Qualcomm Japan's Mr. Masakazu Shirota introduced current and future plans for trials related to C-V2X in the United States, ITS bandwidth allocation and activities by the SAE (US based Society of Automotive Engineers).

6.3. Activities by the ITS Info-communications Forum's Advanced ITS Info-communication Systems Committee, Radio System Technology Task Group

Mr. Masaharu Hamaguchi, Chairman of the Task Group introduced how the work of the Radio System Technology Task Group was progressing, including studies on effective radio systems technologies in automobile systems which are based upon use cases provided by the Japan Automobile Manufacturers Association. These studies have been carried out with the participation of automobile makers, telecommunication makers, and telecommunication carriers. He also introduced future research activities, including LTE-V2X application studies.

About 120 people participated in the workshop, which exceeded the number expected. These participants asked many questions after each presentation. Participants showed a strong interest and held high expectations in the future progress of connected vehicles.

Workshop Participants Listening to a Presentation

The 23rd Meeting of APT Wireless Group (AWG-23) in Da nang

The 23rd Meeting of APT Wireless Group (AWG-23) was held as follows.

1. About the APT Wireless Group

APT (Asia-Pacific Telecommunity) Wireless Group is a meeting to study the harmonization and standardization of the frequency and technical matters of wireless communication systems in the Asia-Pacific region for the purpose of advancement, dissemination and promotion of wireless communication systems. It has been held usually about twice a year, and the experts of the wireless technology of each country in this region join the meeting. The group meeting is chaired by Dr. Kohei Sato (ARIB), with two vice chair Mr. K. Zhu (China) and LV Tuan (Vietnam).

2. Outline of the Meeting

Schedule	From 9 to 13 April 2018
Venue	The Nalod Da Nang Hotel (Da nang, Vietnam)
Participants	193 people from administrations, private organizations and international organizations in the Asia-Pacific region As the Japanese delegation, 41 people headed by Mr. Yasuda from the international frequency Policy Office of MIC participated.

The 23rd Meeting of APT Wireless Group

3. Main results

In the APT Wireless Group, 3 working groups (WG) (frequency, technology and service /application) had been set. In each WG, sub working group or task group had been established for each issue, and consideration and deliberation was carried out. The main results of the meeting were as follows.

(1) IMT (The 5th generation mobile communication systems, etc.)

Regarding the working document of the APT report on the usage survey of each country concerning the WRC-19 Agenda 1.13, the 24.25-86 GHz band, the input contribution at the meeting was reflected.

Regarding the study of minimum technical requirement to support technical neutrality, preparation of a draft APT report summarizing the responses of each country to the questionnaire started.

Questionnaire to gather information about the progress on the introduction of 5G system in each country was decided to be newly created and to be sent to each of them.

Regarding the common bands specified by IMT at 6 GHz and below in WRC-15, frequency arrangement and band sharing is studied, and the working document was revised.

For the frequency arrangement of 1427-1518 MHz, based on the input from Japan, the working document was updated. But its completion was postponed until the meeting after the next because study of frequency band sharing with Mobile-satellite service had not completed.

(2) ITS (Intelligent transport systems)

Regarding the APT report that summarizes the introduction and usage of ITS in each country, the revision draft was updated based on the proposal from Japan etc. This report revision proposal suggests sending a liaison to WP 5 A.

As new agenda, a work on the APT report started on application of millimeter wave to ITS, and on the application of Cellular-V2X to ITS respectively, in accordance with the suggestion from Japan.

(3) Railway radio system

The APT report draft concerning system development and test of Railway Radio-communication System between Train and Trackside (RSTT), was updated based on the proposal from Japan etc. The report draft is expected to be completed at the next meeting or at the time after the next.

(4) IoT (Internet of Things)

A Task Group which had been addressing short range telecommunications developed into the new one which in charge of studying IoT as a whole.

As it was agreed at the prior meeting that the survey on the frequency band and the systems which are dedicated to IoT in each country would be conducted, drafting of working document summarizing the reply to the research from each country started toward APT draft report.

(5) HAPS (High Altitude Platform Station)

As Japan suggested at APG19-3 (The 3rd conference of Asia-Pacific Telecommunity Preparatory Group for WRC-19) held in March 2018 that the study of telecommunications using the IMT band below 2GHz for realization of HAPS as IMT base station should be conducted, technical studies and provision of information are being requested to AWG.

Discussions about the agenda mentioned above were held at the ad-hoc group which was created at this meeting and it was decided that questionnaire inquiring utilization characteristics of IMT and needs for HAPS would be sent to each APT member countries.

4. Next meeting schedule

The next AWG-24 meeting will be held on 17-21 September 2018 at Bangkok, Thailand.

The 5th Meeting with Brazilian SBTVD Forum in Las Vegas

The regular meeting between ARIB/DiBEG and the SBTVD Forum was held on April 11, 2018 at the Las Vegas Convention Center. Both parties have held meeting twice a year since April, 2016; and this was the 5th meeting, at the opportunity of the NAB Show 2018.
The Brazilian side consisted of 12 members, including Mr. Moises Queiroz Moreira, Secretary of Broadcasting, MCTIC – Ministry of Science, Technology, Innovation and Communications, Mr. Jose Marcelo do Amaral, President of SBTVD Forum, Mr. Roberto Franco, Former President of SBTVD, Ms. Liliana Nakonechnyj, President, Sociedad Brasilena de Ingenieria de Television (SET).
The Japanese side included Dr. M. Sugawara, Chairman of DiBEG, Mr. K. Murayama, Chair of the DiBEG Task Force for Next-Generation Broadcasting Technology, Mr. H. Ogawa, Director for Digital Broadcasting Technology, Ministry of Internal Affairs and Communications (MIC), and Mr. K. Kono, Vice Director General, R&D Headquarters, ARIB.

- Next-Generation of Digital Terrestrial TV

The Japanese side started with the explanation of the latest status on the new 4K/8K broadcasting, R&D of further enhancement of terrestrial TV technologies, development of the technology of 2K broadcasting simultaneous with terrestrial 4K broadcasting in the promotion of advanced TV broadcasting services, etc.
The Brazilian side explained that, in respect to next-generation of digital terrestrial TV broadcasting now being studied in the SBTVD Forum, a draft of the revision of standards on those enhancement of functionality attainable in a short time-frame (such as the advancement of broadcasting and communication convergence services utilizing the new Ginga profile, HDR, advanced audio system, etc.) would be complete for public review and comments by June, 2018.
They also explained the standardization of next-generation broadcasting technologies as a long-term challenge would include advancement of video and audio quality, enhancement of IP application to broadcasting, improvement of accessibility and emergency alerts as well as the system scalability; which would be ready for public review and comments by the end of 2020.

- Harmonization between Ginga and Hybridcast

The Japanese side explained that the revised standard of Hybridcast is expected to be approved shortly.

The Brazilian side explained that they have decided to develop a middleware based on HTML5 in Ginga-IPP (Integrated Broadcast Broadband), and that they are studying the feasibility.

- EWBS (Emergency Warning Broadcasting System)

The Brazilian side explained to the Japanese side that, while the ABNT (Associação Brasileira de Normas Técnicas: Brazilian national standards organization) standard of EWBS does not have any problem, the actual introduction and implementation of EWBS in Brazil being stalled. The Brazilian side suggested to the Japanese side that, in order to stimulate and promote the study of EWBS adoption by the Brazilian Government, MIC might work toward the Brazilian counterpart accordingly.

- Next-Generation DTTB Technology Work-shop

Both parties discussed the details of the Next-Generation DTTB (Digital Terrestrial Television Broadcasting) Technology Workshop scheduled on 18 May 2018 in Tokyo, including the presenters and the contents of presentations.

- Next Meeting Opportunity

Both parties agreed that the next (6th) meeting would be held in Sao Paulo in August, 2018 at the occasion of SET EXPO 2018.

The 5th Meeting with Brazilian SBTVD Forum

The 2nd Study Group Meeting on Terahertz wave

The 2nd Study Group Meeting was held on 17 April 2018, participated by 25 people.
This study group had been founded to research broad issues on development and regulation, requirement for frequency, etc.

At this 2nd meeting, it was agreed that "inter-chip / inter-board communications" and "drone-ground communications" would be prioritized as the use case for the immediate research target, after active exchange of opinions.
Also, the preparation process toward WRC-19 was provided for information by Ms. Amino, Deputy Director of Radio Policy Division, MIC.

COSPAS-SARSAT Experts Working Group Meeting (EWG-1/2018) in Montreal

The 1st Meeting of Experts Working Group Meeting on SGBs and SGB/FGB ELT (DT) (EWG-1/2018) was held as follows.

1. About the COSPAS-SARSAT

COSPAS-SARSAT is the system mainly founded by USA, France, Russia and Canada, which receives the warning of aircraft or marine accidents and distribute them to the world using the satellites. Transformation of the systems to the middle-orbit-satellites including global positioning satellites such as Galileo, is underway.

2. Outline of the Meeting

Schedule	From 10 to 16 April 2018
Venue	Hilton Garden Inn Centre Ville (Montreal, Canada)
Participants	56 people from 10 countries including USA, France, Russia, Canada, and 2 organizations 4 people of Maritime Safety Agency or ARIB participated from Japan.

3. Main results

- Inspection standards draft for 2nd generation beacons using SS (spread spectrum) technology for medium orbiting satellite systems were worked on, and it was decided to be published as a preliminary standard (C/T T.021).
- The 2nd generation beacon standard (C/T T.018) was revised, in which some opinions from Japan on ship beacons were adopted.
- Regarding the beacon (ELT (DT)) used for emergency calls of aircraft that ICAO is planning to introduce in 2021, the standard such as the by built-in battery life was revised.

Participants to EWG-1 / 2018

The 16th ITS Asia-Pacific Forum FUKUOKA

The 16th ITS Asia-Pacific Forum Fukuoka was held from 8 to 10 May 2018 in Fukuoka, Japan. The ITS Info-communications Forum and The Fifth Generation Mobile Communication Promotion Forum (5GMF) participated in the Forum, where the both had exhibitions.

Specialists gathered mainly from the Asia-Pacific region, and arranged various lectures and exhibitions on the latest ITS technology, demonstrations and ideasons using automated driving vehicles. There were many visitors at the exhibitions, and the video presenting the 5G system trials attracted much attention.

1. Outline of the Event

Schedule	From 8 to 10 May 2018
Venue	Fukuoka International Congress Center (Fukuoka, Japan)
Participants	About 2,500
Organizer	The 16th ITS Asia-Pacific Forum FUKUOKA 2018 Executive Committee
Supported	MIC, METI, MLTI, National Police Agency, Fukuoka Prefecture, Fukuoka City, etc.

2. Lecture. Session

- PL(Plenary Session)01 : Impact on society by new era of mobility:
  New efforts based on the social issue and traffic environment in each country were introduced, after the keynote address by Mr. Ogawa, the governor of Fukuoka.
- PL(Plenary Session)02 : ITS, contributing to the solution of the social challenges:
  Mr. Takeuchi, Director-General of the Radio Department, MIC delivered the keynote

address about the progress in development of ITS and 5G in Japan, to which application would be expected. Then, attempts to transforming society in each country were introduced.

- HL(Host High Level Panels)01 : Government Panel - Automated driving for the realization of Society 5.0:
  Mr. Nakazato, Director of the New-Generation Mobile Communications Office, MIC gave the lecture on the progress of ITS and 5G in Japan.
- More than 40 panels and poster sessions other than introduced above were held.

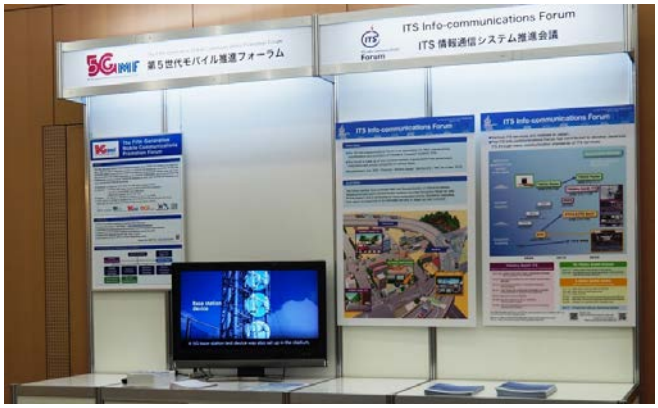
3. Exhibition, Demonstration

- ITS Info-communications Forum and 5GMF presented each activity by having exhibition booths. 5GMF showed the video on 5G trials, and handed out the booklet "The Report on 5G System Trials in Japan" to visitors. There were many questions about telecom charge in ITS, and about time of introduction and technical features in 5G.
- Demonstrations or test rides promoting automated driving cars were provided both inside and outside the exhibition hall.

Congress Center

Opening Ceremony

Exhibition



Booth presented by 5GMF and ITS Info-communications Forum

The 5th meeting of the ITU-R TG5/1 in Geneva

The 5th meeting of the ITU-R TG5/1 was held in Geneva from 2 to 11 May 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 2 to 11 May 2018
Venue	Headquarters of ITU (Geneva, Switzerland)
Participants	About 250 people from each country's Administration, Operator, Vendor, etc. As the Japanese delegation, 10 people headed by Mr. Kobashi of MIC participated. Mr. Nishioka and Mr. Kato participated from ARIB.

ITU-R TG5/1 5th meeting

2. Main results

About 110 contributions were input (including liaison documents from WP etc) to the meeting. At this meeting, finalization of the document on study of frequency sharing and drafting of CPM text started.

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

- Working documents (11 documents, total 30 including attachments) that compiled the results of study of frequency sharing for each frequency band, or for each service was created / updated. As the discussion was considered to be insufficient with respect to the description of the overall conclusion, finalization of some working documents has been carried over to the next meeting, in spite of the initial plan that had been scheduled to be completed at this meeting. The frequency bands and services on which working documents have been created are as follows. (The number in [ ] shows the number of the study results.)

24.25 - 27.5GHz	EESS/SRS[6], EESS/RAS(passive)[13], FSS[14], ISS[5], FS[7]
31-33.4GHz	RNS[4], SRS(space-to-Earth)[2], EESS(passive)[3], RAS[1]
37-43.5GHz	FSS(space to Earth)[8], EESS/SRS[3], EESS/SRS(passive)[3], FS[1], RAS[3]
42.5 - 43.5GHz	FSS/MSS/BSS (Earth to space)[8]
45.5 - 47GHz	AMS[1]
47-47.2GHz	(No contribution)
47.2 - 50.2GHz	EESS(passive)[4], FSS(Earth-to-space)[8]
50.4 - 52.6GHz	EESS(passive)[4], FSS(Earth-to-space)[8]
66-71GHz	ISS[1]
71-76GHz	FS[3], Automotive radar[2], FSS[1]
81-86GHz	EESS(passive)[3], FS[2], RAS[2], RAS(adjacent)[2], Automotive radar[2], FSS[1]

AMS: Aeronautical Mobile Service
EESS: Earth Exploration Satellite Service
BSS: Broadcast Satellite Service
FSS: Fixed Satellite Service
FS: Fixed Service
ISS: Inter-Satellite Service
MSS: Mobile Satellite Service
RAS: Radio Astronomy Service
RNS: Radio Navigation Service
SRS: Space Research Service

- For the 26 GHz band where the assignment to 5G system is being considered in Europe and which is drawing high attention as the 5 G candidate frequency, it was concluded that it was roughly possible to be shared with the FSS. On the other hand, it was also pointed out that there would be certain conditions in which the interference with FSS would not able to be avoided.
- As for EESS (passive), the result was shown that unwanted emission of the IMT needs to be reduced further than the current assumption.

(2) Creation of draft CPM text

- Prior to the concreate discussion, options on the actions on RR (Radio Regulation) such as revision, condition (mandatory / arbitrary) were clarified, in order to ensure consistency between frequency bands on which working documents would be drafted.
- As for discussion on concreate CPM text, working documents were created mainly focusing on merging the contributions, organizing the item to be described, and clarifying issues, as the study of frequency sharing had not be concluded.
- Guidelines for drafting CPM text were developed, whereas the CPM text drafts contributed at this meeting were decided to be discussed at the next meeting.

3. Next meeting schedule

- The 6th (Final): 20-29 August 2018 in Geneva, Switzerland:
  Completion of CPM text

The 52nd CJK IMT Working Group Meeting in Hangzhou

CJK IMT Working Group Meeting is aiming 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, Korea, and Japan.

1. Outline of the Meeting

Schedule	From 16 to 17 May 2018
Venue	Hangzhou Haihua Hotel (Hangzhou, China)
Participants	8 people from ARIB, 16 people from CCSA (China) and 5 people from TTA (Korea)

The 52nd CJK IMT meeting

2. Main results

- The results of the 23rd AWG (ASIA-PACIFIC TELECOMMUNITY Wireless Group) held in April, the 5th ITU-R TG 5/1 held in May, and the 29th ITU-R SG 5 WP 5D held in February were confirmed. And also, reports of each SDO's activities and discussions at 3 GPP were shared.
- Information was shared regarding the status update on IMT-2020 technical proposals to ITU-R in each country, and the activities of independent evaluation group.
- Information was shared on preparation progress of each country for the 30th WP 5D meeting scheduled to be held from 13 June, and based on the activities of the two Special Interest Groups (SIG - Spectrum, SIG - Evaluation), it was decided that China, Korea and Japan would work for two joint contributions.
- A new SIG, Cellular V2X (SIG-V2X) was established and chaired by Mr. Park of TTA reflecting the suggestion from TTA, and it was decided that information sharing and discussion would begin at the next CJK IMT WG.

3. Next meeting schedule

- The next CJK IMT Working Group Meeting will be scheduled on 5 and 6 September 2018 in Jeju, Korea.

The 5th Global 5G Event in Austin

The 5th Global 5G event, organized by 5G Americas, was held in Austin, Texas in the United States on 16 and 17 May 2018. This Event was given the title "5G New Horizons Wireless Symposium" and over 300 participants, including specialists and industry experts from the United States and around the world, met and held lively discussions around this theme. In addition, the 5G North America exhibition was co-located with this Global 5G Event.

1. Overview of the Event

Schedule	From 16 to 17 May 2018
Venue	Austin Convention Center (Austin, Texas, USA)
Host	5G Americas

2. Presentations, Sessions

- There were over 300 participants from Japan, the United States, Europe, China, Korea, and Brazil, including representatives from government agencies and 5G promotion organizations.
- Mr. Chris Pearson, President of 5G Americas, provided some welcoming remarks. This was followed by a keynote address given in the dialogue between Mr. Pearson and Dr. Umair Javed, FCC Legal Advisor. Their discussion focused on the allocation of frequencies, including potential spectrum auctions.
- Over the two days of the event, there were seven keynote presentations and nine panel discussions which included short presentations. There were lively discussions around the theme of commercialization.
- Other discussions at the event included overviews of the state of spectrum allocation, field trials and timelines for when services would begin in various countries. It was noted that although 5G has reached the trial stage, further discussion and preparation are needed on topics such as system expansion, regulations, business models, and frequencies. It was pointed that the importance of collaboration with vertical industries was a common understanding.
- Finally, 5G Brazil Project's Dr. Jose Marcos C. Brito announced that the 6th Global 5G event will be held in Rio de Janeiro, Brazil from November 28 to November 30, 2018.
- The Technical Program Committee (TPC) of Global 5G Event announced that it had decided that in 2019 and 2020 there would be only one event a year and that the 5G-IA would co-locate the 2019 event with EuCNC 2019 in Spain.

Austin Convention Center

Mr. Chris Pearson
(President of 5G Americas)

Presentations

Exhibitions

DiBEG Next-Generation DTTB Technology Workshop in Tokyo

DiBEG, together with the MIC (Ministry of Internal Affairs and Communications), organized and held the "Next-Generation DTTB Technology Workshop" on 18 May 2018 in Tokyo. The Workshop was supported by the Institute of Image Information and Television Engineers. This workshop was held in order to broadly introduce an overview of the technological development related to the next-generation terrestrial broadcasting from wider perspective. For this purpose, experts as presenters were invited not only from inside Japan but also from Brazil, one of the ISDB-T adopting countries.
Presentations delivered were as follows.

Presenter	Title
Dr. M. Sugawara : Chairman of DiBEG	(Opening Speech)
Mr. Raymundo Barros : Broadcasting Director, Sociedade Brasileira de Engenharia de Televisão (SET)	Future of Broadcasting
Mr. K. Murayama : Chairman of the DiBEG Taskforce for the Japan-Brazil Joint Study of Next Generation Broadcasting	Global Technical Trend of the Next-Generation DTTB
Mr. José Marcelo do Amaral : President, Forum SBTVD (Sistema Brasileiro de TV Digital)	Brazilian Analogue TV Switch-Off — Current Status — May 2018
Mr. David Britto : Market Module Coordinator, Forum SBTVD	GINGA — Background and Roadmap
Mr. H. Ogawa : Director for Digital Broadcasting Technology Division of MIC	Overview of the R&D on the next-generation DTTB in Japan

Mr. I. Namikawa： Kansai Telecasting Corporation	Hybrid system of 4K and current HD DTTB
Mr. H. Okada： Tokyo Broadcasting System Television	Using LDM system to current digital terrestrial broadcasting and 4K-UHD broadcasting — Study on technical method to transmit on the same channel
Mr. M. Okano： NHK Science & Technology Research Laboratories	Research and Development for Advanced Digital Terrestrial TV Broadcasting System
Mr. Y. Sakanaka Director, Broadcasting Technology Division of MIC	(Closing Remarks)

Workshop

Brazilian Participants and Lecturers

Reflecting affluent interests in this field, approximately 80 people, which were more than had been expected, participated in the workshop. In the coffee break arranged between presentations, various information and opinions were exchanged among participants from Japan and Brazil, and strong interests and expectations for future progress of next-generation broadcasting technologies were observed.

The 2nd Workshop in Tokyo on 5G-era Smartphone applications Development Trends

Aiming for better understanding and promoting services and applications utilizing the Fifth Generation Mobile Communications Network (5G), ARIB and TAICS (Taiwan Association of Information and Communication Standard) held the 2nd workshop on 24 May 2018 in Tokyo, as one of the seminars in Wireless Technology Park, the exhibition.

[Background of the Workshop]

The 5GMF Application Committee (Chairperson: Mr. Iwanami) had conducted a user trend survey targeting users of smartphones twice (once a year) in Japan, and started the survey in Taiwan in January 2017. Following the survey, the 1st workshop was held in Taipei in October last year. It was targeted at individual users, communications firms, and equipment vendors. By continuing research for the trends of smartphone users in Taiwan and Japan, it is expected to research potential needs for 5G system.

Seminar

1. Overview of the 2nd Workshop

Schedule	13:30 - 16:50, 24 May 2018
Venue	Tokyo Big Site (Tokyo, Japan)
Organizer	TAICS, ARIB
Supported	5GMF (Coordinator)
Audience	About 120

2. Lectures, Sessions

Presenter	Title
Dr. Shigeki MORIYAMA Executive Director ARIB	(Opening Remarks)
Session1 : Activities for 5G in Taiwan	
Mr. Dong-Yang HSU Deputy Director 5G Office, Ministry of Economic Affairs	Overview of Taiwan 5G Program
Ms. Meiling CHEN Researcher ITRI (Industrial Technology Research Institute)	User Behavior Survey and its implication to 5G services - Taiwan's View
Dr. Howard YAOU Deputy Managing Director Chunghwa Telecom	Stepping on the wave of 5G – CHT Pilot Project
Mr. Po-Chou SU CEO KDAN MOBILE SOFTWARE Ltd.	A Software Provider's Perspectives on 5G Application
Q&A Session	
Session2 : Activities for 5G in Japan	
Mr. Takuya NAKAGAWA Deputy Director Land Mobile Communications Division MIC (Ministry of Internal Affairs and Communications)	5G Initiatives in Japan
Mr. Gota IWANAMI President and CEO INFOCITY, Inc. and Chairman Application Committee, 5GMF	Application Development for 5G Mobile Communications - Expectation and development image for the 5G mobile network judging from the application side -

Mr. Hitoshi UCHIDA CEO iDEAfront	Mobile usage trend of citizens in Japan and Taiwan - The expectation for 5G mobile service -
Mr. Ryuichi SUMI Vice President, General Manager Research and Development Planning Department, NIPPON TELEGRAPH AND TELEPHONE CORPORATION	NTT Group's Efforts to create 5G services
Mr. Sadao TANAKA Deputy Head R&D Headquarters, SECOM CO.,LTD.	Expectation for 5G - Providing reliable peace of mind -
Q&A Session	
Dr. Shyueching LU Standard Counsel Committee Chair TAICS	(Closing Address)

Radio Day Memorial Lecture

"Radio Day Memorial Lecture" was held in Tokyo on 28 May 2018, co-organized by ARIB and the Council for Info-Communications Promotion Month, and supported by the MIC. This event had been originally established in 1951 memorizing the enforcement of the laws related to radio wave regulations on 1 June 1950 in Japan.
Main theme of the Lecture was "Current status and future prospects of radio wave usage", and the lectures were delivered from executives of MIC, companies and organizations involved in radio wave use. The program was as follows.

Lecturer	Title
Mr. Kazuya Watanabe : Director-General of the Telecommunications Bureau, MIC	Toward Realization of Wireless Society in 2020
Mr. Takashi Tanaka : Chairman, Representative Director KDDI CORPORATION	Toward the creation of a new "customer experience value"
Mr. Toshio Fukuda : Board Chairman The Association for Promotion of Advanced Broadcasting Services (A-PAB)	Horizon of 4K & 8K Super Hi-Vision

Mr. Kaichiro Sakuma： President and Chief Executive Officer Hitachi Kokusai Electric Inc.	Social innovation developed by radio waves

Radio Day Memorial Lecture

The 22nd General Assembly of Electromagnetic Environment Committee and Briefing session on sponsored researches

The 22nd General Assembly of Electromagnetic Environment Committee (EEC) was held at ARIB in Tokyo on 11 June 2018, where business / financial report was accepted and business / financial plan was approved. Following the General Assembly, briefing session on sponsored researches from EEC was also held. The content of the briefing was as follows.

Contractor	Title of briefing
Prof. Tomonori Sakurai： Gifu Pharmaceutical University	Evaluation of influence of high frequency magnetic field on calcium dynamics
Prof. Ayumi Masuchi： Hokkai-Gakuen University	Domestic survey on radio wave risk cognition
Prof. Yoshikazu Ugawa： Assistant Prof. Setsu Enomoto： Fukushima Medical University	Study on the influence of LTE on event related potential using human auditory stimulation

Briefing session on sponsored researches

COSPAS-SARSAT Task Group Meeting (TG-1/2018) in Prague

The 1st Meeting of Task Group Meeting on MEOSAR System Evolution (TG-1/2018) was held as follows.

1. About the COSPAS-SARSAT

COSPAS-SARSAT is the system mainly founded by USA, France, Russia and Canada, which receives the warning of aircraft or marine accidents and distribute them to the world using the satellites. Transformation of the systems to the middle-orbit-satellites including global positioning satellites such as Galileo is underway, aiming to achieve IOC (Initial Operational Capability) in October 2019.

2. Outline of the Meeting

Schedule	From 5 to 11 June 2018
Venue	GSA (Global Navigation Satellite Systems Agency) (Prague, Czech)
Participants	78 people from 16 countries including USA, France, Russia, Canada, and 1 organization 4 people of Maritime Safety Agency or ARIB participated from Japan.

3. Main results

Purpose of this meeting was to develop documents on operation and settle remaining technical issues regarding land systems.

・ Problem of possible error alerts

It has been reported that there has been alerts that was normal in format but received only once. America reported that this alerts were reduced by 80% by deleting the alert which needed error correction 3 times or more.

・ The issue of slowly moving beacon

Russia and France proposed method to tackle the issue of large degradation of accuracy in identifying the position of moving beacon at low speed, and positioning accuracy for every speed classification was provisionally defined as a result.

Definitive conclusion was not reached because of the intention of the satellite providing country, the result of which will be reported to JC-32 (32nd Meeting of the Joint Committee) in October.

COSPAS-SARSAT, TG-1/2018 Meeting

The 30th ITU-R WP5D Meeting in Cancun

The 30th ITU-R WP5D Meeting was held as described below.

1. Overview of the meeting

Schedule	From 13 to 20 June 2018
Venue	Hotel Paradisus Cancun (Cancun, Mexico)
Participants	About 196 people from 33 countries (34 organizations)
Participants from Japan	15 people (including 3 people from ARIB) headed by Mr. Nishioka (Executive Director, ARIB)

The 30th WP5D Meeting

2. Main results

(1) 3GPP and China gave updates of proposal for IMT-2020 radio interface, and IMT-2020 documents (IMT-2020/3, 4 and 5) describing the input history were revised reflecting the updates. (No update from Korea) Since ETSI / DECT Forum and TSDSI (India) also made inputs for the initial proposal, IMT-2020 documents (IMT-2020/6 and 7) were created in the same way. In addition, a liaison statement was created to inform the proponents and the independent evaluation groups about the inputs at this meeting.

(2) As the chairperson of AH-WORKPLAN proposed to hold workshop on IMT-2020 Terrestrial Radio Interface evaluation during the 32nd WP 5D meeting in July 2019, it was decided that workshop should be compiled at the 31st WP 5D meeting in October.

(3) With regard to the evaluation of the IMT-2020 radio interface, information was updated for the simulator from TTA and for the channel model related information from Beijing Post and Telecommunications University and others, and they agreed to be shared on the website for IMT-2020 evaluation.

(4) The draft CPM text on the compatibility study of IMT L-band and BSS (WRC-19 AI 9.1, Issue 9.1.2), summarizes regulatory actions to be discussed in WRC-19. France and Japan jointly proposed the configuration change of the assumed regulatory actions in the CPM text, which was deliberated at the meeting. After that, compromise was reached by adding the two actions suggested by China : ((1) action to set the PFD (Power Flux Density) limitation values both for satellite and IMT, (2) action to specify threshold to adjust satellite and IMT), while keeping all the actions described in the joint proposal unchanged. The draft CPM texts for which WP 5D was responsible were finalized, and liaison statement was sent to WP 4A where the same agenda was being deliberated from the viewpoint of BSS (sound) receiver protection.

(5) Regarding the study on co-existence and compatibility of terrestrial and satellite component of IMT (WRC-19 AI9.1, Issue9.1.1), America and other sector members disagreed in various points such as description about MTC (Machine Type Communication), about interference mitigation factors, about conclusion related to

regulatory matter. The draft CPM texts for which WP5D was responsible were finalized with the opinions from both sides described in them, and by adding the text requesting resolution at the CPM19-2 (The 2nd Conference Preparatory Meeting for WRC-19). Liaison statement was sent to WP4C.

(6) Regarding the commencement of drafting the recommendation / report on the technical and operational guidance on using HAPS (High Altitude Platform Station) as IMT base stations proposed from Japan, America expressed concern that it should be discussed in an appropriate meeting if it is proposed as a new WRC (World Radiocommunication Conference) agenda item. America and Iran etc. also suggested beginning with revision of the recommendation related to existing HAPS.

(7) Although it had been agreed on the point that MTC could be introduced flexibly within the existing IMT identified frequency bands, UAE suggested specifying the frequency bands (3MHz-width-band x2 around 700MHz), whereas India insisted not to specify them. After the deliberation, compromise was reached by adding text referring to the report M.[IMT.MTC] under development, the draft CPM text was finalized, and liaison statement was sent to WP 1B and WP 5A.

(8) In response to the liaison statement from WP 7A inquiring about the influence of the change of UTC (Coordinated Universal Time) on IMT system, a reply liaison statement was created based on the contribution from experts from Japan and America, and issued to WP 7A.

3. Next meeting schedule

The next 31st meeting is scheduled to be held in Japan from 9 to 16 October 2018.

The 3rd Study Group Meeting on Terahertz wave

The 3rd Study Group Meeting was held on 21 June 2018, participated by 23 people.
On the two issues of "inter-chip / inter-board communication" and "drone-ground com munication" which had been selected prior to the meeting, active discussion was held over their application fields, and priorities of issues to be studied. Finally, the way to proceed in the study toward business, and task assignment were agreed.

The 8th Annual General Meeting and the 23rd Board of Directors of ARIB

The 8th Annual General Meeting, and the 23rd Board of Directors of ARIB were held on 27 June 2018, at the Hotel New Otani, Tokyo.
Business and financial report of the fiscal year 2017, elected officers and Management Advisory Committee members had been approved at the General Meeting, and Mr. Kenichiro Yoshida was elected as a new chairman at the Board of Directors held after the General Meeting.

The 8th Annual General Meeting

The 29th Radio Achievement Award

The 29th Radio Achievement Award ceremony was held on 27 June 2018, just after the 8th Annual General Meeting of ARIB. This award is presented every year by the Minister of Internal Affairs and Communications and the Chairman of the Board of ARIB to individuals and groups who have made a significant achievement relating to effective and proper use of radio wave.
This year's winners are as follows.

1. The Award of the Minister of Internal Affairs and Communications

(1) "Development of portable wireless links for 4K/8K-UHDTV program production"
NHK (Japan Broadcasting Corporation)

(2) "Commercialization of eDRX function that reduces power consumption for IoT devices"
NTT DOCOMO, INC.

2. The Award of the Chairman of the Board of ARIB

(1) "Portable Wireless Access System for Disaster Use in 400MHz Band"
NIPPON TELEGRAPH AND TELEPHONE CORPORATION (NTT), NTT EAST, NTT WEST

(2) "Practical use of microwave sensor for toilet seat"
TOTO LTD.

(3) "Commercial development of Network Function Virtualization (NFV) technology for multi-vender telecommunication software"
NTT DOCOMO, INC.

(4) "Implementation of Single Frequency Network for FM Radio broadcast network by the wired audio IP transmission system"
RCC BROADCASTING CO., LTD., Japan Communication Equipment Co., Ltd., NHK Integrated Technology Inc.

(5) "Commercialization of Japan's fastest LTE uplink peak throughput by using Carrier-Aggregation and spectrum efficiency improvement"
KDDI CORPORATION

(6) "Development and Practical Utilization of the Broadband Wireless Communication System for Public Safety"
Kyoto University, Hitachi Kokusai Electric Inc., National Institute of Information and Communications Technology

Commemorative photo with awarded members

The 1st meeting of Study Group on future perspectives of fixed wireless communications

The 1st meeting of Study Group on future perspectives of fixed wireless communications was held at ARIB in Tokyo on 26 June 2018, attended by 51 members (including observers) from companies, Waseda University, MIC, etc.

For fixed wireless communication systems, it is expected that future perspectives will be clarified for broad frequency band from VHF to submillimeter wave in order to meet the need for high speed and wide area. The study group had been established aiming to study the service and technical requirements, taking account of cost reduction of the system and international standardization, from the viewpoint of dissemination to the world.

At this meeting, Prof. Maehara of Waseda University was elected as a chairman and Mr Kita of NTT Access Service System Laboratories as a vice chairman. Mr. Kita gave the

introduction about approach to future perspectives, and discussion was held focusing on policies and on how to proceed with.

The 1st meeting of Study Group on future perspectives of fixed wireless telecommunications

Monthly seminars on radio wave use

No.158	23 April 2018
Title	An environment surrounding automated driving, and truck platooning
Speaker	Mr. Haruo MARUYAMA Director, ITS and Autonomous Driving Promotion Office Automobile Division Ministry of Economy, Trade and Industry
Summary	Mr. Maruyama gave an explanation of the current state of automated driving as a whole first, then aim of truck platooning, the results of trials and problems to be solved for the future.

Standards

1. Newly established Standards at Standard Assembly on 12 April 2018

OFDMA/TDMA TDD for digital cordless telephone (sXGP)
(STD-T118 Ver.1.0)

(English Version not available)
This standard specifies the radio interface between a mobile station and a base station of a digital cordless telephone (time division, orthogonal frequency division multiple access system) referred as "sXGP".

200 MHz-Band Broadband Wireless Relay Communication Systems between Portable BS and MSs
(STD-T119 Ver.1.0)

(English Version not available)
This standard specifies the Physical (PHY), Media Access Control (MAC), and Radio Network Control (RNC) layer of the portable radio equipment for 200MHz-Band Broadband Wireless Relay Communication Systems.

2. Revised or abolished Standards at Standard Assembly on 12 April 2018

(1) Telecommunications field

STD Number	Standard Name	Version
(RCR) STD-28	PERSONAL HANDY PHONE SYSTEM	Ver.7.1
STD-T63	IMT-2000 DS-CDMA and TDD-CDMA System	Ver.13.20
STD-T86	REGIONAL DIGITAL SIMULTANEOUS COMMUNICATION SYSTEM	Ver.3.1
STD-T94	Broadband Mobile Wireless Access System (WiMAX™ applied in Japan)	Ver.3.6
STD-T95	OFDMA / TDMA TDD Broadband Wireless Access System (XGP)	Ver.3.6
STD-T104	LTE-Advanced System	Ver.5.20
STD-T115	REGIONAL DIGITAL SIMULTANEOUS COMMUNICATION SYSTEM TYPE2	Ver.2.1

(2) Broadcasting field

STD Number	Standard Name	Version
STD-B1	DIGITAL RECEIVER FOR DIGITAL SATELLITE BROADCASTING SERVICES USING COMMUNICATION SATELLITES	Ver.3.2
STD-B10	SERVICE INFORMATION FOR DIGITAL BROADCASTING SYSTEM	Ver.5.12
STD-B21	RECEIVER FOR DIGITAL BROADCASTING	Ver.5.10
STD-B25	CONDITIONAL ACCESS SYSTEM SPECIFICATIONS FOR DIGITAL BROADCASTING	Ver.6.6
STD-B32	VIDEO CODING, AUDIO CODING AND MULTIPLEXING SPECIFICATIONS FOR DIGITAL BROADCASTING	Ver.3.10
STD-B60	MMT-BASED MEDIA TRANSPORT SCHEME IN DIGITAL BROADCASTING SYSTEMS	Ver.1.12
STD-B61	CONDITIONAL ACCESS SYSTEM (SECOND GENERATION) AND CAS PROGRAM DOWNLOAD SYSTEM SPECIFICATIONS FOR DIGITAL BROADCASTING	Ver.1.4
STD-B62	MULTIMEDIA CODING SPECIFICATION FOR DIGITAL BROADCASTING (SECOND GENERATION)	Ver.1.9
STD-B63	RECEIVER FOR ADVANCED WIDE BAND DIGITAL SATELLITE BROADCASTING	Ver.1.7