

# **COMMISSION F: Electromagnetic Metrology (November 2020 – May 2023)**

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## **1. Summary**

Scientific research on electromagnetic wave propagation for wireless communication in urban and indoor conditions have been very active in the commission. In addition, radar and remote sensing related works were reported in the meeting.

Due to COVID-19, in-face meetings have been limited, but we use online and hybrid methods for the meetings. It seems that the condition is recovering to the conventional situation, and re-started in-face meetings.

## **2. Activity Report**

### **2.1 Commission meetings in the period of 2021-2023**

May 13, 2021 Online meeting (Main venue: Center for Northeast Asian Studies, Tohoku University, Sendai, Miyagi)

9 committee members attended

Committee composition

Schedule of meetings in FY 2021

Selection of speakers for special lectures

June 11, 2021, Online meeting

9 committee members attended

Schedule of meetings in FY 2021

Selection of speakers for special lectures

September 2, 2022, Hybrid (Online meeting and Chuo University, Bunkyo-ku, Tokyo)

8 committee members attended

Schedule of meetings in FY 2022

Selection of speakers for special lectures

May 24, 2023, NICT, Koganei, Tokyo (planned)

Schedule of meetings in FY 2023

Selection of speakers for special lectures

## 2.2 Meetings

(For more detail, please see <http://ursi-f.nict.go.jp/>)

(1) No. 648 Meeting October 2, 2020, Online

This meeting is co-sponsored by IEICE Technical Committee on AP, and IEEE AP Society Fukuoka Chapter.

(2) No. 649 Meeting November 25, 2020, Online

This meeting is co-sponsored by IEICE Technical Committee on SANE, and IEEE AES Society Japan Chapter.

(3) No. 650 Adjournment due to COVID-19

(4) No. 651 Meeting January 21-22, 2021, Online meeting

This meeting is co-sponsored by IEICE Technical Committee on AP and IEEE AP-S Tokyo Chapter.  
Special Lecture

[1] Experimental Study to Estimate the Reduction Range of Transmission Power Control at Client Terminals in IEEE 802.11ax Uplink Multi-User Transmission Using OFDMA

(5) No.652 Meeting

Adjournment

(6) No.653 Meeting

Adjournment

(7) No.654 Meeting 21 May, 2021, Online meeting

This meeting was co-sponsored by IEICE Technical Committee on AP and IEEE AP-S Tokyo Chapter.

(8) No.655 Meeting 21 June, 2021, Online meeting

[1] Radio Propagation Extrapolation Based on Propagation Path Division Using Surrounding Transmitter Information

[2] The Effects of Ground Wind Velocity and Upper Air Rain Area Motion on the Rain

Attenuation Characteristics in Satellite Communications Links

- [3] Observation of water vapor content near the surface of the earth using terrestrial digital broadcasting waves - preparation status for the Kyushu observation campaign -

(9) No.656 Meeting 28-30 July, 2021, Online meeting

This meeting was co-sponsored by IEICE Technical Committee on AP, SAT, SANE, and IEEE AP-S Tokyo Chapter.

Special Lecture

- [1] Research and development of radio wave propagation model in the sky for BVLOS flight of unmanned aircraft

(10) No.657 Meeting 30 September, 2021, Online meeting

- [1] Measuring Radio Wave Propagation Characteristics by a Private 5G Radio System in the 4.8 GHz Band Deployed in an Indoor Data Center Environment

(11) No.658 Meeting 7-8 October, 2021, Online meeting

This meeting was co-sponsored by IEICE Technical Committee on AP and IEEE AP-S Tokyo Chapter.

(12) No.659 Meeting 11-12 November, 2021, Online meeting

This meeting was co-sponsored by IEICE Technical Committee on SANE and IEEE AES Society Japan Chapter.

(13) No.660 Meeting

Adjournment

(14) No.661 Meeting 17-18 February, 2022, Online meeting

This meeting was co-sponsored by IEICE Technical Committee on AP and IEEE AP-S Nagoya Chapter.

Special Lecture

- [1] Examination of the fundamental propagation loss model of mobile propagation

(15) No.662 Meeting

Adjournment

(16) No.663 Meeting

Adjournment

(17) No.664 Meeting

Adjournment

(18) No.665 Meeting

Adjournment

(19) No.666 Meeting

Adjournment

(20) No.667 Meeting

Adjournment

(21) No.668 Meeting

Adjournment

(22) No.669 Meeting

Adjournment

(23) No.670 Meeting 26 January, 2023, NICT, Koganei, Tokyo

[1] Prototype of 79 GHz band 786 (Tx24, Rx32) virtual array MIMO type radar

[2] Vibration measurement by 79 GHz band MIMO radar

[3] Development of 79 GHz band MIMO type GB-SAR

(24) No.671 Meeting 15-17 February, 2023, Online meeting

This meeting was co-sponsored by IEICE Technical Committee on AP and IEEE AP-S Tokyo Chapter.

Special Lecture

[1] Point to Area Propagation Research Focusing on Microwave Band

(25) No.672 Meeting

Adjournment

(26) No.673 Meeting 11-12 May, 2023, Tiruru (Okinawa Gender Equality Center), Naha, Okinawa

This meeting is co-sponsored by IEICE Technical Committee on AP and IEEE AP-S Fukuoka Chapter.

(27) No.674 Meeting 24 May, 2023, NICT, Koganei, Tokyo

Planned

### **3 Others**

URSI-JRSM 2022, 1-2 September, 2022, Chuo University, Tokyo

Invited Lecture

- [1] Constitutive effective ray-tracing parameters for mobile propagation prediction

Oral Session

- [1] Scenario-Based Radio Channel Modeling in Cyber-Physical Wireless Emulator
- [2] Study of Radio Environment and Propagation for Low Altitude UAV Communication
- [3] Fundamental Study of Heartbeat and Respiration Rates Estimation with Two Wave Models  
by Using mm Wave MIMO FM-CW Radar
- [4] Phased Array Weather Radar Observation and Application
- [5] Application of Passive Radar for Current Measurement by Ocean Surface Radar System
- [6] Electromagnetic Wave Propagation Inside the Great Pyramid in Egypt

Poster Papers

- [1] Calibration approach of ground-based weather radar network using dual-frequency precipitation radar on the global precipitation measurement