

Commission E (Electromagnetic Noise and Interference) Activity Report

April 2019 - Aug 2020

Commission E in Japan is holding technical meetings and sub-committee activities in collaboration with the Technical Committee on Electromagnetic Compatibility (EMCJ) of the Institute of Electronics, Information and Communication Engineers (IEICE), the Technical Committee on Electromagnetic Compatibility of the Institute of Electrical Engineers of Japan (IEEJ-EMC), IEEE EMC Society Japan Joint Chapter and Sendai Chapter, and some related technical groups.

Domestic academic activities of EMCJ and IEEJ-EMC:

1. Regular EMCJ Meetings

The EMCJ of IEICE had 13 regular technical meetings in the period of April 2019 to August 2020. From March 2020, two meetings were restricted to technical report publication and the rest were held on line to deal with COVID-19. These regular meetings were technically co-sponsored by IEEE EMC Society Japan Joint Chapter and IEEE EMC Society Sendai Chapter. Three of them were co-organized with Technical Committee on Electromagnetic Compatibility of the Institute of Electrical Engineers of Japan (IEEJ-EMC). In total 120 regular technical reports including 5 invited talks were presented.

(<http://www.ieice.org/ken/program/index.php?instsoc=IEICE-B&tgid=IEICE-EMCJ>)

The featuring technical topic of the October meeting was “EM Simulation , EMC and Microwaves” and co-organized with the Technical Committee on Microwaves (MW of IEICE) and Electronics Simulation Technology (EST of IEICE). Each first day of the meetings in July 2019 and July 2020 was held as the annual “EMCJ Young Researchers' Presentation Meeting” which is co-sponsored by the Japan Institute of Electronics Packaging (JIEP) Electromagnetic Technology Committee. The March meeting was co-organized by the Technical Committee on Healthcare and Medical Information Communication Technology (MICT) of IEICE.

2. Regular IEEJ-EMC Meetings

The IEEJ-EMC had 5 technical meetings in the period of April 2019 to August 2020. These are two sponsored regular meeting and three technically co-sponsored by the IEICE-EMCJ and IEEE EMC Society Sendai Chapter and IEEE EMC Society Japan Joint Chapter. However, in after March, due to the impact of COVID-19, no meetings were held between March 2020 and August 2020.

(1) Aug. 2019, The Central Research Institute of Electric Power Industry (CRIEPI), Tokyo, Japan (sponsored, 4 regular reports)

- (2) Oct. 2019, Tohoku Gakuin University, Tagajo, Miyagi, Japan (co-sponsored, 35 regular reports, 3 invited talks)
 - (3) Dec. 2019, Chukyo University, Nagoya, Aichi, Japan (co-sponsored, 7 regular reports)
 - (4) Jan. 2020, Ehime University, Takamatsu, Ehime, Japan (co-sponsored, 10 regular reports, 1 invited talk)
 - (5) Feb. 2020, The Central Research Institute of Electric Power Industry (CRIEPI), Akagi Testing Center, Maebashi, Gunma, Japan (sponsored, 5 regular reports)
- In the meetings, 61 regular reports and 4 invited talks were presented. The total number of presentations is 65.

3. Activity of sub-committees of IEEJ-EMC

As of April 2019, the following four sub-committees are continuing activities under the technical committee on EMC in IEEJ. These are (1) Investigation committee on trend of evaluation method on electromagnetic field exposure (Dec. 2016 – Nov. 2019), (2) Investigation committee on the health risk analysis of electromagnetic field. (July 2014 – June 2016/ June 2016 – May 2020 (Phase II)), (3) Investigation committee on assessment of transient electromagnetic field in ESD for electronic devices (Aug. 2017 – July 2020), and (4) Investigation committee on Systems and EMC in the IoT (April 2018 – March 2021). As of March 2020, the “Investigation committee on trend of evaluation method on electromagnetic field exposure (Dec. 2016 – Nov. 2019)” has completed its activities in Nov. 2019 and is now preparing to issue the report. In addition, two new investigation committees are currently under consideration. One is a relation to the biological effects of electromagnetic fields, and the other is the EMC problems of electromagnetic noise in ESD phenomena.

4. International Meetings and Symposiums on EMC

“2019 Joint International Symposium on Electromagnetic Compatibility and Asia-Pacific International Symposium on Electromagnetic Compatibility”, Sapporo (EMC Sapporo & APEMC 2019) was held at Sapporo Convention Center, Hokkaido, Japan, from June 3 to 7, 2019. It was organized by IEICE Technical Committee on Electromagnetic Compatibility (EMCJ), sponsored by IEICE Communications Society. The symposium was technically co-sponsored by the IEEE Electromagnetic Compatibility Society and the Technical Committee on EMC of the Institute of Electrical Engineers of Japan (IEEJ-EMC). And so, it was also technically cooperated by several national and international organizations related to academic and standardization activities on electromagnetic compatibility, including URSI. The Organizing Committee of the EMC Sapporo & APEMC 2019 was formed under IEICE-CS and international steering committee of APEMC, with the chairperson Prof. Hideaki Sone (Tohoku University).

Totally 432 persons, from 25 countries attended the symposium. Attendees consisted of 209 persons from Japan and 223 persons from foreign countries. Total of 317 papers were submitted and 268 (without papers of no show) papers were presented.

Domestic academic activities in the field of natural electromagnetic noise:

Commission E members in Japan working actively in the field of natural electromagnetic noise are presented their research results in the following meetings and symposium.

1. International conference/workshop

(1) 2019 URSI-Japan Radio Science Meeting (JRSM)

This third URSI-JRSM was organized by the Japan National Committee of URSI (JNC-URSI) and held in the University of Electro-Communications in Tokyo on 5-6 September, 2019. More than 200 people were attended. Prof. emeritus Masashi Hayakawa (UEC) gave the keynote lecture entitled ‘Study of Radio Noise for 45 Years’. Invited oral talk entitled ‘Optical and radio observations of lightning from space’ was given by Prof. Tomoo Ushio (Osaka University) from commission E. Regular oral (Commissions A-K parallel) and poster sessions were organized and 7 oral and 4 poster papers were presented both from the field of natural and man-made electromagnetic noise. (<http://www.ursi.jp/conference/jrsm2019/>)

(2) American Geophysical Union (AGU) Fall Meeting 2019

This international conference is held every year in December in USA and is the largest international Earth and space science meeting in the world. In 2019, the meeting was held in Moscone Center in Francisco, California from 9 to 13 December. More than 25,000 scientists from over 100 countries were attended. Several URSI-E committee members working in natural electromagnetic noise were presented scientific papers in the field of atmospheric and space electricity and seismo-electromagnetics during this conference.

(<https://www.agu.org/fall-meeting-2019>)

2. Domestic conference/workshop

(1) Society of Atmospheric Electricity of Japan (JAE) annual meeting 2019

This is an annual meeting held in January. In 2019, the 98th meeting was held in Shizuoka on 10 and 11 January and more than 45 scientific papers were presented. Several URSI-E committee members were presented the papers. (<https://www.saej.jp/conference/index.html>)

(2) Japan Geoscience Union (JpGU) Meeting 2020

This is the largest domestic meeting in the field of geoscience. In 2020, this meeting is jointly organized by AGU (American Geophysical Union), and many international sessions were allocated. The meeting was held from 12 to 16 July (shifted from May) by online for the first time due to COVID-19 rampant. Several URSI-E committee members were organized the scientific sessions such as Atmospheric Electricity (EM noise related to lightning discharges, severe weather, space weather and so on) and Seismo-electromagnetics. Many scientific papers were presented in iPoster session and oral session (DFS (Discussion Forum Session)).

(http://www.jpгу.org/meeting_2020/)