2017.9.25

23rd URSI-C Chair
Nobuyoshi Kikuma

Activity Report of URSI-C Committee

- The 9th scientific workshop of the 23rd URSI-C in Japan -

1. Session title: "Approaches to the Advanced Antennas - The frontiers of Hokuriku Microwave Imaging and Sensing Technology"

2. Convener: Dr. Hiroyuki Tsuji, National Institute of Information and Communications

3. Date/time: 13:00 - 17:00, April 14th, 2017

4. Venue: Ishikawa Science Park and NICT Hokuriku StarBED Technology Center (Nomi city, Ishikawa pref.)

5. Registration fee: Free

6. Listed attendees: 11 persons

7. Local arrangement: Dr. Takuji Arima (Tokyo University of Agriculture and Technology)

8. Presentation:

•13:00 - 14:15	Guided tour at NICT Hokuriku StarBED Technology Center and iHouse
•14:15 - 14:20	Opening Remarks, Prof. Nobuyoshi Kikuma, Chair, Commission C of URSI-JNC (Nagoya Institute of Technology)
•14:20 - 15:00	"NICT activities of collaboration with Hokuriku-area", Dr. Junichi Shimada (NICT)

- •15:00 - 15:40 "Studies of antenna signal processing", Prof. Miki Fujimoto (Fukui University)
- •15:40 - 15:50 Coffee Break
- •15:50 - 16:30 "Study for energy harvesting technology using digital terrestrial broadcast waves", Prof. Keisuke Noguchi (Kanazawa Institute of Technology)
- •16:30 Closing

9. Reception: Attendees 11 persons at Matsusaki in Kanazawa Tatsunokuchi Onsen

10. The steering committee meeting took place from 12:00 to 12:50 on April 14th, 2017 at Ishikawa Science Park.

11. Concluding Remarks

The 9th scientific workshop aimed for the lecture to introduce Hokuriku's state-of-the-art technology for holding in the Hokuriku region. As a result, three lecturers were invited to the workshop. Dr. Shimada of the National Institute of Information and Communications Technology introduced the activities of collaboration in the Hokuriku region. In particular, he introduced that they were collaborating with some institutes and companies in Hokuriku using NICT Hokuriku StarBED Technology toward development of products and services relating IoT. The lecture was very interesting.

Professor Fujimoto of Fukui University gave an introduction to accurately estimate the position of indoor radio stations using antennas and signal processing technology. In recent years, position information of wireless terminals is important while IoT in the factory is progressing. Future use is expected. Finally, Professor Noguchi of Kanazawa Institute of Technology gave a lecture on energy harvesting by terrestrial digital broadcasting. In this research, the key technology is how to develop highly efficient antennas. By using this technology, it becomes possible to supply power in a wide area by using radio waves of terrestrial digital broadcasting. In addition, since this technology is an important technology for wireless power transmission, therefore the technology is a hot topic in the wireless power transmission technology.

It was a meaningful workshop including the facility tour for thinking about how to proceed research and development in the future for researchers and engineers of radio science, and it was a good opportunity to understand the outline of Hokuriku's state-of-the-art technology.

- The 10th scientific workshop of the 23rd URSI-C in Japan -

1. Session title: " Standardization Movement of Radio Access Technologies for IoT"

2. Convener: Associate Prof. Hidekazu Murata (Kyoto University) and Dr. Satoshi Tsukamoto (Advanced Telecommunications Research Institute International)

3. Date/time: 14:30 - 17:10, August 4th, 2017

4. Venue: Okayama University Tsushima Campus (Kita-ku, Okayama pref.)

5. Registration fee: Free

6. Listed attendees: 24 persons

7. Local arrangement: Prof. Satoshi Denno (Okayama University)

8. Presentation:

•14:30 - 14:40	Opening Remarks, Prof. Nobuyoshi Kikuma, Chair, Commission C of URSI-JNC (Nagoya Institute of Technology)
•14:40 - 15:25	" Radio Access Technologies for IoT on 3GPP Rel-13/14", Dr.Tetsuya Yamamoto (Panasonic)
•15:25 - 16:10	" Prospect of Radio Access Technologies for IoT on 5G", Dr.Kazumitsu Takeda(NTT Docomo),Dr.Satoshi Nagata(NTT Docomo),Dr.Takehiro Nakamura (NTT Docomo)
•16:10 - 16:20	Coffee Break
•16:20 - 17:05	" LDS, SCMA non orthogonal multiple access technique suitable for Up link of IoT terminals on 5G", Associate Prof. Eiji Okamoto (Nagoya Institute of Technology), Dr. Manabu Mikami (Softbank)
•17:10	Closing

9. Reception: Attendees 15 persons at Hamayu

10. The steering committee meeting took place from 13:20 to 14:00 on August 4th, 2017 at Okayama University.

11. Concluding Remarks

The 10th scientific workshop was held to study standardization movement of radio access technologies for IoT in which three lecturers were invited. In the first presentation, Dr. Yamamoto explained Narrow Band - IoT which was standardized for mobile communication specifications by the 3rd Generation Partnership Project (3GPP). Next, Dr. Takeda explained non-orthogonal multiple access and grant-free access technologies which is being discussed for 5G mobile communication systems. Finally, Associate Prof. Okamoto introduced 'Low-density signature' and 'Sparse code multiple access' to realize multiple access for a large number of terminals.

A lively discussion was held with many questions about future IoT devices and technologies. We have a policy of this meeting to have enough time for discussion, and therefore the question and response time was extended by 5 minutes at each presentation.

This workshop was a good place of information exchange that deepened the understanding about communications technology in the IoT space, and at the same time meaningful comments from prominent professors in the mobile communication field were received.