Conference Report

Outlook from Torre di San Pasncrazio (The central tower shows T-Hotel)

Attendance at Ka & Broadband Com. Conf. and Visit to Museo Marconi

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This is a report of attendance at the Ka & Broadband Communication Conference held in the end of September, 2009. This also includes a brief report of visiting the Marconi Museum in a suburb of Bologna, Italy on my way home to Japan.

Ka & Broadband Com. Conf.

The 15th Ka and Broadband Communications, Navigation and Earth Observation Conference was held on September 23-25, 2009 at Cagliari in the Sardinia Island, Italy. The name of the conference is fused in three fields of communication, navigation and remote sensing this time. Furthermore, vanishing a special feeling to the Ka band, optical field is added and it was placed in BroadSky Workshop in the conference before last, then it has been treated as a session in the conference since last year.

T-Hotel where the conference is held.

Sardinia is an island of size of approximately 1.3 times as much as Shikoku, Japan, located in south of Corsica Island, and Cagliari, whose population is about 160 thousands, is located in the southernmost extreme of the island and a provincial capital of Sardinia state. The conference was held at a new hotel (T-Hotel, see Photo) over there. The number of participants was almost a little over 130 as almost the same number as last year, and there was participation from U.S.A., Canada, Japan, Korea as well as Europe. Prof. Fukuchi, Tokyo Metropolitan University, Dr. Kimura, Tokyo University of Science, Dr. Yamakawa, JAXA, Mr. Kadowaki, Dr. Kawase, Ms. Yoshimura, Dr. Takayama, Dr. Toyoshima, all of NICT, Mr. Nakahira, NTT, Mr. Tashima, SED, Mr. Tsuji, JEPICO and I, author, attended from Japan.

Snapshot of Opening Ceremony, Dr. Saggese and Dr. Marconicchio from left.

The program of this conference is shown in Table. At an opening ceremony on September 23, Mr. Saggese, President of Italian Space Agency gave a lecture after

Program of 15th Ka and Broadband Com. Conf.

Wednesday, September 23, 2009		
09:00 – 09:15	Opening Session	
09:15 – 09:30	Invited Speech	
09:30 – 10:45	Session 1: Earth Observation Systems	
10:45 – 11:15	Coffee Break	
11:15 – 12:45	Session 2: Ka Band Becoming Reality	
12:45 – 14:30	Lunch Break	
14:30 – 15:45	7th BroadSky Workshop on "Is the space safe enough?"	Session 3: Military and Dual Use Systems and Applications I
15:45 – 16:15	Coffee Break	
16:15 – 17:45	7th BroadSky Workshop on "Is the space safe enough?"	Session 4: Propagation and Fade Mitigation
18:00	Visit of the SkyLogic Mediterraneo Teleport Plant	
19:30	Guided Tour of Cagliari and Welcome Cocktail Reception	
Thursday, September 24, 2009		
09:00 – 10:45	Session 5: Earth Observation Applications	Session 6: Navigation: Galileo/GPS Applications
10:45 - 11:15	Coffee Break	
11:15 – 12:45	Session 7: Broadband Network Systems	Session 8: Military and Dual Use Systems and Applications II
12.45 – 14:00	Lunch Break	
14:00 – 15:30	Session 9: Earth Observation Systems II	Session 10: Communication Protocols I
15:30 - 16:00	Coffee Break	
16:00 – 17:30	Session 11: Satellite Architectures	Session 12: Satellite-aided Navigation
20:30	Conference Dinner	
Friday, September 25, 2009		
09:00 – 10:45	Session 13: Optical Communications	Session 14: Antennas
10:45 -11:15	Coffee Break	
11:15 – 12:45	Session 15: Advances in Components	Session 16: Communications Protocols II
12:45 – 13:00	Invited Speech	
13:00 – 13:15	Closing Session	
13:15 – 15:00	Lunch Break	

BroadSky Workshop chaired by Prof. Fukuchi.


Tour of Teleport Plant under construction.

greetings by Dr. Marconicchio, Space Consultant, Italy, and Co-chair of Steering & Organizing Committee. Two sessions followed the ceremony; Earth Observation Systems and Ka Band Becoming Realty. In the afternoon of the same day, the 7th BroadSky Workshop sponsored by NICT was held. This workshop is chaired by Prof. Fukuchi as shown in Photo and coordinated by Mr. Kadowaki, performing space debris related presentations. In this workshop, each of Dr. Kawase and Dr. Kimura presented his paper related debris research in Japan, and two papers were presented by Italian participants. I presented a way of thinking of "Gigabit-2 satellite" design which aims at the post-WINDS as a future communication satellite project.

At the sessions of this conference, the papers were presented with regard to the Ka band service of ViaSat, KA-SAT aiming at 2 Million subscribers of bidirectional services, development of Ka-band 500W transmitter, report of 1.2 Gbps transmission experiment of WINDS, communication protocol (including a paper by Mr. Nakahira), optical communication (including papers by Dr. Takayama, Dr. Toyoshima, Dr. Yamakawa and Mr. Tashima), Italian radar satellite of 1 meter resolution and dual use for military and commercial. Finally, the invited lecture was presented by Mr. Rusch, TeleAstra, under the title of "Where is Ka-band Service Headed?". Mr. Gargione, Satellite Systems Consultant, U.S.A. and General Chair of Conference Committee concluded this conference.

A tour to Skylogic Mediterraneo Teleport Plant under construction was performed by bus (see Photo) after completing the first day of the conference. In addition, from an evening of the second day to the mid-night, a reception was performed in Convento San Gluseppe. In this reception, participants of each country sang their proud songs as an annual event. The etymology itself of Conference or Symposium means that people concerned meet together to do discussion with opened mind through such a reception. This reception is right an event according to the etymology.

After concluding the conference, a visit tour for Sardinia radio telescope constructing site located at about 40 km north from Cagliari was taken place. It was explained that the telescope is an antenna of a diameter of 64 m and could receive radio wave of frequency 300 MHz – 100 GHz with high efficiency. A main base has been completed as shown in Photo and it will be completed in the middle of 2010.

Saldinia radio telescope under construction.

I have the following impression of this conference:

- The Ka band is going to thrive in Europe and examination of KA-SAT of Eutelsat is advanced in particular.
- 6 m class mesh reflectors designed for operation at the Ka band frequency and above are now becoming available on the market.
- A study of super wide band phase shifter with photonic technology is performed.
- Communication related examination about earth observation mission is performed prosperously as well as communication.

Visit to Museo Marconi

I visited the Marconi Museum on the way home from the Ka & Broadband Conference. The Marconi Museum is located at about 15km south from Bologna, and its building that is placed at large premises, where squirrels live, and that Marconi himself lived, just becomes a museum (it seems to be an institution affiliated to University of Bologna) (see Photo). At the museum, Prof. Falciasecca, President of Marconi Foundation, gave explanation to me.

The wave detector “Choherer” to be a thing of those days is stored carefully, but the other exhibits are reproduced radio equipment of those days. A transmitter shown in Photo is a reproduced spark producing radio transmitter that let the first radio communication succeed in the world in 1895. The transmitter itself is not originally created by Marconi, but an antenna in top and the ground earth bottom are originally developed by him. This antenna and earth transfers an electric wave to the air to jump out of a laboratory, and to reach over an obstacle in the way which seems to be a hill in front of the museum (see Photo), and long-distance communication of 1.5 km was succeeded. This reproduction radio transmitter was operated by producing a spark in a room at the museum. I felt that after all the place where the world first thing was conducted is the most significant historical site. His result was not evaluated in those days in Italy and moved to the U.K. that was his mother’s country

Marconi Museum.

Hillside yard in front of the museum where Marconi conducted his world first experiment.

because rather the U.K. evaluated his result and he could make the basics of development afterward. It is clarified that the reason why his experimental result has been accepted by the world was based on his parents' eager support as well as on his family's wealth. Marconi won Nobel Prize in Physics in 1909.

At the museum, the laboratory that Marconi conducted various experiments in his 21 years old is reproduced by desks, appliance and even dust on the desk in detail. In addition, a ship radio communication operating room of a spark discharge-type was reproduced, and some BC-611 transceivers which were used at the time of World War II are displayed and really operated. I surprised that the real battery of the BC-611 transceiver is maintained to work.

Spark producing radio transmitter.

Marconi improved the choherer or an electromagnetic wave detector as a signal wave detector to increase communications distance and let Atlantic Ocean crossing succeed. The radio communication has been expanded greatly by invention of a vacuum tube afterwards. I am deeply impressive with that the radio communication, furthermore, comes to our today's satellite communications.

Prof.Falciasecca（left）explains Marconi electric tube receiver to the author (right).

Impression and Acknowledgement

The Ka & Broadband Com. Conf. has a characteristic that there are many presentations to overlook the utilization of European and the U.S. commercial satellite communications as well as military communication. The conference this time was performed in the midst of the world economical recession, but almost all the seats in the airplane was occupied, and construction was performed here and there as far as traveled in Italy so that the influence of recession was not felt so much. This conference has been held every year since the first one was held in 1995 and I would like to express respect for an effort of concerned persons including Mr. Gargione and Mr. Kadowaki who is a committee member from Japan. Also, I thank Mr. Gargione and Dr. Marconicchio for their kind arrangement on my visit to Marconi Museum.

(All photos taken by the author except Saldinia radio telescope which is taken by Prof.Fukuchi)