

## Radio Environment Survey for the Development of Wideband Receiver Antenna of VLBI2010 Specification.

Mamoru Sekido<sup>1\*</sup>, Kazuhiro Takeufji<sup>1</sup>, Ryuichi Ichikawa<sup>1</sup>, Yasuhiro Koyama<sup>2</sup>

<sup>1</sup>NICT, Kashima Space Technology Center, Space-Time Standards Laboratory, <sup>2</sup>NICT,International Cooperation Office

The VLBI2010 specification, which is under the development in the international geodetic VLBI community as the next generation observation system, is targeting to improve the measurement precision by increasing sensitivity through wide radio frequency observations. VLBI group of NICT has developed 2.4m diameter radio telescope with wide band receiver system (MARBLE), and we are going to use it for 10km baseline validation and for a tool of time-frequency transfer over the long distances. Furthermore, upgrading of MARBLE for the new VLBI antenna of Antarctica is being considered.

However wideband receiver system has disadvantage of vulnerability to radio frequency interference (RFI) such as increasing number of base stations of mobile phone. We have made radio environment survey at Kashima and Koganei sites, where MARBLE1 and 2 are placed, with another type of wideband receiver system. Its results indicated that radio frequency range lower than 3GHz was suffered from strong interference of mobile phone, wireless LAN, ground-TV broadcasting and so on. Thus VLBI systems of VLBI2010 specification need workaround to avoid these radio signals. MARBLE systems at NICT are suffered from these RFI and we are going to introduce high-pass-filter (HPF) to cut radio signal below 3GHz. This paper will present the results of radio environment survey and will show some test observation results after the workaround of the RFI.

Keywords: VLBI2010, Wideband Receiver, Radio Frequency Interference