New receiver system development for new satellite-ground beacon experiment

*Mamoru Yamamoto[1], Keiichi Iwata[1], Mayumi Matsunaga[2], Roland Tsunoda[3]

1. Research Institute for Sustainable Humanosphere, Kyoto University, 2. Graduate School of Science and Engineering, Ehime University, 3. SRI International

GNU Radio Beacon Receiver (GRBR) is the very successful digital receiver developed for dual-band (150/400MHz) beacon experiment. We were successfully conducted observations of total-electron content (TEC) of the ionosphere over Japan and in southeast Asia. But we naw face a problem that number of beacon satellites are decreasing because of satellite aging. In order to overcome this problem we now have a project to start new satellite-ground beacon experiment with new satellite constellations. One of them is TBEx (Tandem Beacon Explorer), a project by SRI International, to fly a constellation of two 3U cubesats with triband beacon transmitters. Another one is a project of FORMOSAT-7/COSMIC-2 by Taiwan/USA. Well-known mission of COSMIC-2 is GNSS occultation experiment, but the satellites carry triband beacon transmitters. All of these satellites will be placed into low-inclination orbits by the same launch vehicle in 2018, which will give us great opportunities to enhance studies of the low-latitude ionosphere. We now develop a receiver system for experiment by using new satellites. In the presentation, we show current status of antenna and digital receiver parts of the new system.

Keywords: Satellite-ground beacon experiment, Development of instrument, Digital receiver

