GNU Radio Beacon Receiver 2 (GRBR2) for new satellite-ground beacon experiment

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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. However, many beacon satellites is now aging, and its number is decreasing. 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. In this presentation we report a new digital receiver, GRBR2, for these new satellite beacon. GRBR2 is a four channel receiver at 150/400/965/1067MHz beacon signals from two satellite constellations. We will soon deploy them into southeast Asian region to catch up the satellite launch in 2018.

Keywords: Satellite beacon experiment, Digital receiver development, Total electron density

