

Status of GNU Radio Beacon Receiver 2 (GRBR2) development

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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. We develop 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. Now The receiver system was finally fixed. Problem of the project of delay of the satellite launch. But it is now on schedule for launch by 2019 summer. We start deploying GRBR2 in southeast Asian countries. In this presentation, we will report GRBR2 system and its performance including results from test experiment in the field.

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