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Author: Dr. Yung-Fu Tsai
National Space Organization, Taipei, raymond@tasa.org.tw

Prof. Jyh-Ching Juang
National Cheng Kung University, Taipei, juang@mail.ncku.edu.tw
Mr. Chen-Tsung Lin
National Space Organization, Taipei, tomlin@narlabs.org.tw

A MINIATURIZED SOFTWARE DEFINED RADIO FOR WILDLIFE TRACKING MISSION

Abstract

Several features of the trend for space technology are small, standard, and software. A software-defined radio (SDR) system literally is a system that uses software for the processing of radio signals. Moreover, in order to verify the miniaturization of space-based modules or instruments, it is important to gain flight heritage. A miniaturized GPS/QZSS receiver that complies with the CubeSat standard has been developed by Taiwan Space Agency (TASA) and installed in National Cheng Kung University (NCKU) IRIS-A CubeSat which was launched in Q1 2022. In the paper, the design and flight test of the miniaturized GPS/QZSS receiver for CubeSats are presented. Based on the experience, TASA research team move forwards to the SDR platform for more general-purpose missions, such as wildlife tracking. Because of the flexibility of SDR, in the beginning the prototype would be developed as an automatic identification system (AIS) receiver for ship tracking to demonstrate the functionality of wildlife tracking mission payload. In addition, in order to know where animals are, it is necessary to deploy several CubeSats in the same orbit plane. Hence, the payload design, the CubeSat mission, as well as the mission configuration would be dressed in this paper.