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A SOFTWARE DEFINED RADIO TRANSCEIVER FOR THE ESA PRETTY NANOSATELLITE
MISSION

Abstract

After successful launch of the ESA OPS-SAT Nanosatellite in December 2019, the Institute of Communication Networks at Graz University of Technology has started its work on a next generation Software Defined Radio platform for the ESA PRETTY mission. The mission goal is the demonstration of the passive reflectometry concept with a Software Defined Radio (SDR) on a 3U Nanosatellite. The paper describes the SDR architecture, the RF frontend and the baseband processing platform. The requirements and restrictions for SDRs on Nanosatellites and technical solutions for thermal control, radiation hardness and mechanical sustainability are discussed. Finally, the SDR hardware design is presented and special concepts are discussed.