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COMPARING ON-ORBIT AND GROUND PERFORMANCE FOR AN S-BAND SOFTWARE
DEFINED RADIO

Abstract

NASA's Space Communications and Navigation Testbed was installed on an external truss of the International Space Station in 2012. The testbed contains several software-defined radios (SDRs), including the Jet Propulsion Laboratory (JPL) SDR, which underwent performance testing throughout 2013 with NASA's Tracking and Data Relay Satellite System (TDRSS). On-orbit testing of the JPL SDR was conducted at S-band with the Glenn Goddard TDRSS waveform and compared against an extensive dataset collected on the ground prior to launch. This presentation will discuss some of the significant performance considerations as well as lessons learned for improved ground testing of future space SDRs.