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SEQUENCE TEST FOR X-BAND TRANSMITTER OF KOREA PATHFINDER LUNAR ORBITER

Abstract

The Rep. of Korea has begun moon exploration and has produced a X-band transmitter unit (XTXU), which transmits data from the Korean Lunar Orbiter to the ground station. This paper describes functional tests of the XTXU, such as a telecommand, telemetries, and error rates, besides, monitoring of a center frequency, a 3dB-bandwidth, and a RF peak power through an Auto test, a Loopback test, and a Sequence test with its own test equipment, an Electrical Ground Support Equipment (EGSE). A CORTEX receiver demodulates modulated signals which have random data with the 32-bit frame sync from the XTXU, then decodes and calculates matching data to each frame sync, and then shows constellations. In this paper, we describe test methods and results from the Auto test, the Loopback test, and the Sequence test, in addition to showing RF spectrums and constellations on the CORTEX display. The verified XTXU will be used in the Korean Lunar Orbiter.