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TECHNICAL PARAMETERS OF THE NANOSATC-BR PROGRAM'S GROUND STATIONS NETWORK

Abstract

This paper aims to present the technical parameters of the NANOSATC-BR Program's Ground Station Network (GS). The Program has been designed and executed in the facilities built on the partnership between the Southern Regional Space Research Center from the National Institute for Space Research and the Santa Maria Space Science Laboratory from the Technological Center at the Federal University of Santa Maria (CRS/INPE-MCTI x LACESM/CT-UFSM). It aims to develop the design, scientific payload, qualification and launch national scientific nanosatellites, in CubeSats standards: the NANOSATC-BR 1 (1U) & 2 (2U) and is expected to operate then in orbit for at least 12 months each. The GS's systems are equipped with three antennas, which receives the UHF, VHF and S-Band radio signals, rotors, control box and a rack which is the interface to control the rotors, radio, transceiver and orbit prediction and they are full Azimuth and Elevation tracking stations. The GS's Network communications was specifically designed for small satellites in Low Earth Orbit – LEO, using radio amateur frequencies from IARU - International Amateur Radio Union. The frequency ranges for these systems are: 144-146 MHz for the UHF, 430-450 MHz for the VHF and 2400-2402 MHz for the S-band antennas. The modulations type supported are SSB (USB and LSB), AM, FM and CW and the data rate modulation and demodulation is 1200 to 9600 db. The GS's Network is a compact turnkey setup and Global Educational Network for Satellite Operations (GENSO) initiative ready. The technical parameters of the NANOSATC-BR Program Ground Station Network are presented together with the antennas and the system's specifications. The NANOSATC-BR Brazilian Ground Stations Network has support from The Brazilian Space Agency (AEB).