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# DEVELOPMENT OF A S-BAND GROUND STATION TO RECEIVE DATA FROM NANOSATELLITES

**Abstract**

With a growing increase in the launching of small satellites, due to the easy access to space provided by NewSpace, the need arises to develop ground stations capable of collecting data from the missions of these satellites. Thus, the objective of this work is to present the preliminary results of the development of a low cost ground station made for receiving data from the ANTAEUS mission. ANTAEUS is a 2U CubeSat developed by Portuguese universities that aims to observe the domain of High Energy Astrophysics, its payload captures photons between energies 100 keV and 1MeV. This CubeSat works in two frequency bands, one is allocated in the UHF band more specifically in the frequencies of 435 MHz for Uplink and 438 MHz for DownLink (satellite housekeeping data). In addition to the UHF frequencies, ANTAEUS has an S-band transmitter that is exclusively dedicated to downlink payload data to the ground stations. In this frequency is expected a data rate of approximately 15,69 Megabytes per day. As ground stations with UHF frequencies are well defined by the literature, this work will focus on presenting the entire process of the development of a low-cost ground station in S-Band for the LEOP, and Commissioning phases of the operation of ANTAEUS. This work presents all the development process of our ground segment from the simulations of our antenna, the development model through a 3D printed prototype antenna, along with its characterization and link budget calculations, and finally the validation tests of successful receptions with it. This paper is intended to present a new solution for the development of low cost ground segments for Cubesats missions, mainly in the use of s-band frequencies.