

20th IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Interactive Presentations - 20th IAA SYMPOSIUM ON SPACE DEBRIS (IP)

Author: Mr. João Pandeirada
Instituto de Telecomunicações (Portugal), Portugal, joao.pandeirada@av.it.pt

Dr. Miguel Bergano
Portugal, jbergano@av.it.pt

Prof. Paulo Marques
Portugal, paulo.marques@isiel.pt

Dr. Domingos Barbosa
Instituto de Telecomunicações (Portugal), Portugal, dbarbosa@av.it.pt

Dr. Bruno Coelho
Instituto de Telecomunicações (Portugal), Portugal, brunodfcoelho@av.it.pt

Mr. José Freitas
Portugal, jose.freitas@defesa.pt

Mr. Domingos Nunes
Portugal, dfsn@av.it.pt

ATLAS: DEPLOYMENT, CONTROL PLATFORM AND FIRST RSO MEASUREMENTS.

Abstract

The ever increasing dependence of modern societies in space based services results in a rising number of objects in orbit which grows the probability of collisions between them. The increase in space debris is a threat to space assets, space based-operations and led to a common effort to develop programs for dealing with it.

As part of the Portuguese Space Surveillance and Tracking (SST) project, led by the Portuguese Ministry of Defense (MoD), Instituto de Telecomunicações (IT) is developing the rAdio TeLescope pAmpilhosa Serra (ATLAS), a new monostatic radar tracking sensor located at the Pampilhosa da Serra Space Observatory (PASO), Portugal. The system operates at 5.56 GHz and aims to provide information on objects in low earth orbit (LEO), with cross sections above 10 cm² at 1000 km. The sensor will be tasked by the Portuguese Network Operations Center (NOC), located in the Azores island, which interfaces with the EU-SST network.

ATLAS was deployed in the first half of 2022 and is currently being tested in real case scenarios by taking range and range-rate measurements of various resident space objects (RSO). In the near future, the sensor will be completely integrated in the SST-PT network, improving the NOC services.

This paper presents images of the mounting of the radar system in the antenna as well as the control platform. The control platform allows remote configuration, operations scheduling and can trigger the radar system through a user friendly graphical interface. This article showcases some of the measurements taken with the sensor for various resident space objects such as the ISS, CRYOSAT 2, STELLA and STARLETTE. With those measurements an accuracy assessment method is explained and used to draw conclusion about the current performance of the sensor as well as next steps to improve it.