Paper ID: 58162
oral

IAF SPACE OPERATIONS SYMPOSIUM (B6)
Ground Operations - Systems and Solutions (1)

Author: Dr. Marcus Knopp
German Aerospace Center (DLR), Germany, marcus.knopp@dlr.de

Dr. Rolf Kozlowski
DLR (German Aerospace Center), Germany, rolf.kozlowski@dlr.de

THE OPTICAL GROUND STATION ALMERIA – STATUS AND OUTLOOK

Abstract

Owing to an ever increasing demand for bandwidth and capacity the microwave spectrum has become a highly limited resource in satellite communications. Therefore, free-space optical communication is being deployed in operational space systems like the European Data Relay Satellite system. Besides, laser-based space-to-ground connections will supplement radio downlinks in upcoming Earth observation and science missions allowing for data rates in the 10 to 100 Gbps range. On this backdrop, the German Space Operations Center is currently implementing its first optical ground station at the Spanish Pataforma Solar de Almeria. Derived from robotic astronomic telescopes, this ground-based receiver will connect to the OSIRIS series of space-based optical terminals developed by the German Aerospace Center. It features remote monitoring and control capability and robust construction for a long lifetime under diverse weather conditions. Here, we give an update of the developmental efforts at the German Space Operations Center. In particular, we survey the climatic conditions at the ground site and detail the design of the optical ground station. Moreover, we present initial results of an ongoing test campaign with the PixL mission, a 3U cubesat carrying a miniaturized laser communication terminal.