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SPACE SYSTEMS SYMPOSIUM (D1)
Lessons Learned in Space Systems (5)

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LESSONS LEARNED FROM THE DEFICIENCIES IN THE DESIGN OF THE TT&C TRANSPONDER FOR THE SMALL SATELLITE FOR REMOTE SENSING EGYPTSAT-1

Abstract

Since the lost of communication with the Egyptian small satellite for remote sensing Egyptsat-1 in 19 July 2010, after almost 3 years of operation, many trails have been made to provide a technical justification for the underlying reasons (in which this data must be provided by the telemetry system via the transmitter of the TTC transponder). The communication subsystem was designed with special communication link scenario which does not allow communication with the satellite in case of failure of the receiver of the TTC transponder (i.e. the receiver and transmitter of TTC transponder are not independent). This dependency does not allow communication between the satellite and the ground segment in case of failure of only the receiver of the TTC transponder. This paper discusses the design of the TTC transponder of Egypsat-1 and the deficiencies inherent in this design and its reflection on blocking any information about the satellite for purpose of at least documentation of failures and/or gathering information of the experimental platforms on-board satellite and provides suggestions for avoiding such deficiencies in the next generation small satellites TTC transponders.