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LINK PERFORMANCE ANALYSIS OF THE VHF TRANSCEIVER CHAIN ON THE PRETTY  
SPACECRAFT

**Abstract**

The PRETTY satellite is designed for passive reflectometry and dosimetry. With these measurement systems, it will measure environmental changes, especially in the area of the oceans and ice caps.

The satellite was initially to be equipped with transceivers in the UHF and S-bands for communication purposes. However, the originally planned UHF link had to be dropped due to ITU performance limitations in this band using existing COTS antenna technology. A high-power, wide-aperture antenna would overcome these limitations, but would violate the strict ITU specifications regarding PFD. Therefore, a VHF system was set up on board the PRETTY satellite to distribute the signal power from the PRETTY satellite at a data rate of 4.8kbps over a wider bandwidth of up to 120kHz.

In this paper, the requirements of the PRETTY VHF chain in relation to the PFD are explained and the link budgets are given. Furthermore, the BER of the ground station module, and the satellite module of the PRETTY satellite VHF communication chain is presented and analysed as a function of the bandwidth used.