

WiSAT: Wireless Intra-SAT Communication

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The WiSAT project has investigated the feasibility of a robust spacecraft communication system built to replace, to complement and/or to extend the standard data communication systems with the aim to reduce the overall dry mass of the spacecraft and the effort of assembling and testing tasks while enhancing the design flexibility and late redesign tasks.

Along with these lines, WiSAT project has investigated the fulfillment of detailed requirements by bread-boarding a communication system based on four wireless nodes with namely VN360 UWB wireless modules.

The overall test and validation results confirm that the VN360 UWB modules capacity is able to establish a reliable ultra-wide band (UWB) connection in a wireless sensor network. These good results are a good confidence basis to consider the UWB technology as a potential candidate to replace the intra-satellite wired communication system.

More specific, the Packet Success Rate (PSR) analysis shows that the VN360 UWB-based solution provides high performance for low power UWB transmissions in the low gigahertz band (channels 1 to 4) and the high gigahertz band (channels 5 and 7) independently of the node placement inside the mock-up.