

RESEARCH ON VERIFICATION TECHNOLOGY OF APPLICATION MODE OF SPACEWIRE BUS BASED SATELLITE PAYLOAD SYSTEM

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Short Paper

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ABSTRACT

In this paper, we build SpaceWire bus based multiple application modes of satellite payload system to make both qualitative and quantitative evaluation of SpaceWire bus in terms of its efficiency and usability index like information time-delay and system's throughput capability on condition that there is multiple load or other bursty data load during transmission. In order to test, verify and conduct the correctness and integrity of payload communication system design, we also discuss the defect mode in application design of payload that affects the reliability of bus system and meanwhile analyze the possibility of bus overloading to check the system's actual response features such as fail-safe capacity, fault-tolerant capacity, fault checking and locating capacity, fault-quarantine capacity, fault-correct capacity, system-monitor capacity and system-recovery capacity. The analytical data indicates that in many aspects, the performance of SpaceWire bus is superior to those of 1553B bus and CAN bus which are currently in service.