

SPACEWIRE-RTC DEVELOPMENT SUITE

Session: SpaceWire onboard equipment and software

Short Paper

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ABSTRACT

The objective of the SpaceWire Remote Terminal Controller (SpaceWire-RTC) ASIC development has been to provide the European space industry with a single-chip solution for their SpaceWire and Controller Area Network (CAN) needs for the decade to come. With the ASIC development nearing its completion, the next challenge is to provide the users with a complete development suite to simplify the hardware and software design of applications using the SpaceWire-RTC ASIC.

The *SpaceWire-RTC Development Suite* that will be presented in this paper is composed of several elements covering hardware, software and development tools. The objective is to provide the customers with a ready-to-use off-the-shelf product.

The development suite comprises the following elements:

- Hardware:
 - ASIC development board with housing
- Software:
 - LEON Bare-C Cross Compilation System (BCC)
 - RTEMS Cross Compilation System (RCC) - BSP
 - VxWorks - BSP
- Tools:
 - GRMON - debug monitor
 - TSIM2 - instruction simulator with a loadable SpaceWire-RTC module
 - GRESB - Ethernet to SpaceWire and CAN bridge (optional)

The ASIC development board comprises all the memory, interfaces, transceivers and connectors that a designer would need. The board is enclosed in a housing to simplify its handling, but a can also be used without the housing and allows for expansion.

The BSP for RTEMS and VxWorks comprise drivers for interfaces such as CAN and SpaceWire, and structures and functions for the simpler interfaces such as ADC/DAC.

The GRMON debug monitor is extended to support the specific functions of the SpaceWire-RTC ASIC. And finally, a loadable simulation module is developed for the TSIM2 instruction simulator that will emulate the complete SpaceWire-RTC ASIC with all its interfaces.