

SPACE WIRE PROTOCOL ANALYSER ON SPACE CUBE®

Session: SpaceWire test and verification

Short Paper

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ABSTRACT

Protocol analyser for SpaceWire with RMAP (Remote Memory Access Protocol) has been developed for heterogeneous computer platforms. SpaceWire CUBA software (Space Cube Analysis Software) is a portable protocol analyser supporting RMAP (Remote Memory Access Protocol), which is developed in collaboration among University of Dundee (UoD), NEC TOSHIBA Space Systems, Osaka University and ISAS /JAXA (Institute of Space and Astronautical Science / Japan Aerospace Exploration Agency).

The aims of the analyser are:

- a) To design and develop software to support the development and testing of SpaceWire units that can run on both the STAR-Dundee SpaceWire-USB Brick and Space Cube.

b) To support the SpaceWire RMAP protocol with this tool.

c) To define a suitable driver API (Application Programming Interface) based on the API used for the SpaceWire-USB Brick.

The software is based on UoD PETRI (The Powerful Easy-to-Use Transmit Receive Interface) software, and versatile API is developed in order to make the software portable for various operating systems. The API is developed on Windows operating system for UoD USB-bricks and T-Kernel real-time operating system running on Space Cube, and the same protocol analyser software is now running on Windows personal computer and Space Cube by exploiting the API.

SpaceWire CUBA software is now used for the development of routing devices for the integrated onboard computer of MMO (Mercury Magnetospheric Orbiter) of Bepicolombo project, which is the joint collaboration mission between JAXA and ESA, and the software supports participants to establish interoperability among SpaceWire community in Japan and Europe.