

VCOM: CONTROLLING A REMOTE RS232 INTERFACE OVER SPACEWIRE

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Short Paper

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ABSTRACT

STAR-Dundee Ltd is developing a prototype wideband spectrometer instrument with the University of Dundee, Astrium Ltd and RAL. This device samples an analogue signal at around 3 Gsamples/s and performs spectral analysis to extract a signal buried deeply in noise. The prototype instrument is targeted at atmospheric chemistry missions. A Xilinx FPGA is used to implement the prototype Fast Fourier Transform (FFT) with the FFT code itself being developed by Astrium.

To simplify integration in the development environment an RS232 interface was required for controlling the FPGA along with a JTAG port for programming it. However, for flight applications a SpaceWire interface is preferable. A novel solution was proposed which enabled a standard PC COM port driver to be used to send information over a SpaceWire interface. This paper describes the COM port software.

The STAR-Dundee Virtual COM Port (VCOM) provides a serial interface from a Windows based PC to a remote UART, tunnelled over SpaceWire. It provides the ability to communicate with and test remote serial devices and applications in the lab environment. The features provided by the VCOM software, including remote UART configuration, and a protocol allowing serial errors and status to be propagated across SpaceWire are described, along with the application of this technology to the configuration of the prototype wideband spectrometer.