

## **SpaceWire and SpaceFibre Network Study**

SpaceFibre is a next generation of spacecraft on-board interconnection network which is being designed to support the very high data-rates required by sensors like SAR and multi-spectral imagers. SpaceFibre is compatible with the widely used SpaceWire protocol at the packet level allowing existing SpaceWire devices to be readily incorporated into a SpaceFibre network. A SpaceFibre routing switch is an essential component in a SpaceFibre network. Bridging between SpaceWire and SpaceFibre is also important so that existing equipment with SpaceWire interfaces can be incorporated into a SpaceFibre network. In the context of the "SpaceWire and SpaceFibre Network Study" (ESTEC Contract No. 4000116562), STAR-Dundee designed and prototyped a critical SpaceFibre-SpaceWire router technology necessary for future on-board data-handling systems, which will lay a vital foundation for future very high data rate sensor and telecommunications systems. TELETEL SA extended its iSAFT protocol validation platform with SpaceFibre validation capabilities (namely iSAFT SpaceFibre Simulator) and used it together with the iSAFT SpaceWire Simulator to connect (through both SpaceWire and SpaceFibre links), configure and validate the SpaceFibre-SpaceWire router, through a set of representative validation scenarios. This paper presents the main features of the SpaceFibre-SpaceWire router, the main features of the iSAFT SpaceFibre Simulator and the validation results using a testbed that was setup for this purpose.