

The iSAFT SpaceFibre Front-End is a SpaceFibre data interface with advanced asynchronous transmission and traffic generation capabilities that simulates SpaceFibre devices or instruments, enabling S/C integration tests before the availability of Flight Models.

It also includes a built-in recording function for received / transmitted packets (spy function), suitable for the validation of satellite/spacecraft flight devices and ground testbed devices implementing the SpaceFibre protocol family.

It is provided as a rackmount system with 4 - 8 port SpaceFibre interfaces with advanced traffic generation and asynchronous transmission capabilities. It is capable of transmitting/receiving data packets over multiple SpaceFibre links, time stamping received packets, and capturing transmitted/received traffic to a powerful Protocol Analyser. It is based on the iSAFT graphical tool chain, for the configuration/management of the simulation (locally or remotely). The iSAFT SpaceFibre simulator is a powerful device for the validation of on-board data networks at early stages, minimizing costs and schedule. It can be part of EGSE Data Front Ends and implements the core functionality of an EGSE controller.

Using its built-in recording function, it is capable of capturing data packets on multiple SpaceFibre links and delivering them to a powerful Protocol Analyzer for further processing & analysis. Operating on a multi-Gbytes powerful HW platform, the SW environment is based on the iSAFT graphical tool chain, thus allowing the management, filtering & searching of the recordings. It is used for troubleshooting and problem solving at various development stages, minimizing the impact on cost and schedule.

Main Features & Competitive Advantages

- Four / Eight single lane data ports (SpFi Type-C) supporting up to 16VCs total and link rates of 1, 1.25, 2, 2.5, 3.125, 6.25 Gbps according to ECSS-E-ST-50-11C DIR1
- Complete graphical software environment for controlling and monitoring the hardware
- Packet Editors (SpaceFibre, RMAP, CPTP)
- Asynchronous SpaceFibre transmission and traffic generation support
- Programmable packet-to-packet delay for link throughput control
- Built-in recording function for received / transmitted packets (spy function, various filters & triggers available)
- SpaceFibre physical link capturing and decoding of SpaceFibre characters for debugging purposes (various filters & triggers available)
- Integrated Wireshark Protocol Analyser
- Real-Time Statistics per port / virtual channel (packet and SpaceFibre characters statistics)
- Recordings management, export to XML, JSON, CSV or plain text
- Remote Access APIs in C++, Python, Java (Windows, Linux)
- EDEN / C&C CCSDS protocol & S2K MIB support for communication with a Central Checkout System (CCS)
- IRIG support for time synchronization with other components in a testbed
- Flight equipment protection according to the SpaceFibre standard

Key Benefits

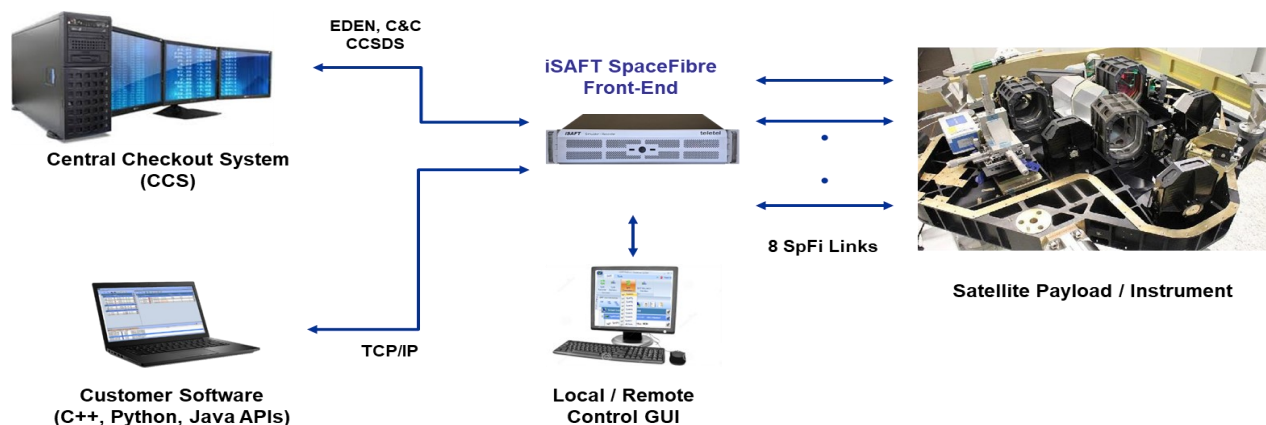
- Unique product in the market supporting SpaceFibre networks validation
- Modern graphical user interface with packet editors
- Powerful remote control APIs supporting rich functionalities
- 100% internal design, can be customised to customer needs
- First class support at both SW & HW level

Application Areas

- Design & development of on-board data networks
- Simulation / Recording / Traffic Generation / Test equipment
- EGSE / Test Benches
- Data Front Ends
- Hardware in the Loop Simulation
- Experimentation with new protocols and various protocol features



Use Case Example - Validating Scientific Payloads / Instruments



Technical Data

General	1U	2U
Dimensions (W x D x H)	448 x 357 x 44.5 mm	448 x 370 x 89 mm
Interfaces	10GbE Display Port / HDMI 4 x USB 3	
PCI slots	1 x PCIe	2 x PCIe
CPU	8 to 24 cores i7 intel processor	
Memory	64GB	
Storage	256GB SSD drive for OS 1TB SSD NVMe for data 2TB HDD for Archive	
Power supply	110-230V 250W	110-230V 450W
Operating temp range	0°C to 40°C	
Storage temperature / humidity	-40°C to 85°C 10 ~ 95%	
Standards	CE, RoHS, FMEA available	

SpaceFibre Interface	1U	2U
Number of ports	4	8
Connector	SpFi Type-C (e-SATA)	
Link speed	From 1 to 6.25 Gbps per port (independently set per port)	
IP Core	ESA SpFi	
Protocols	SpaceFibre which can be extended with RMAP, CPTP	
Functionalities	Simulation, Recording, Traffic Generation, Timestamping support	
Electrical standards	CML signaling (galvanically isolated)	

Software	
Built-In OS	Windows 10 64bit
Main features (supported by a modern GUI)	Board management, SpaceFibre / RMAP / CPTP packet editors, simulation, traffic generation, recording, off-line analysis, statistics, Wireshark protocol analyzer
Remote Access APIs	C++, Python, Java (Windows, Linux)
Optional	RMAP, CPTP, iSAFT EDEN or CCSDS C&C Remote Control & S2K MIB - SpFi

IRIG Interface	
Type	IRIG-B002/006 (DCLS)
Functionality	IRIG receiver
Electrical standards	TTL
Connector	Omnetics MNCP-06-WD Circular Nano connector

Order Information

- iSAFT06.CS-07-Y01 (Y indicates the form factor: 1, 2)

Contact

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