

iSAFT SpaceFibre Simulator Compact System



The iSAFT SpaceFibre Simulator is an advanced Data Front End with 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 on-board communication protocols and data networks implementing the SpaceFibre protocol family.

It provides a 4 port SpaceFibre interface 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 implement 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 single lane data ports (Type C connectors) supporting up to 16VCs total and link rates of 1, 1.25, 2, 2.5, 3.125 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
- SpFi physical link capturing and decoding of SpFi characters for debugging purposes
- Built-in recording function for received / transmitted packets (spy function)
- Integrated Wireshark Protocol Analyser
- Programmable transmission triggers per packet, selective tracing (filtering) support
- Real-Time Statistics per port / virtual channel (packet and SpFi characters statistics)
- Recordings management, export to XML, Postscript, etc.
- Software APIs in C#, C++, Python, standard Web services (Windows, Linux)
- EDEN / C&C CCSDS protocol support for communication with the Central Checkout System (CCS)
- IRIG support for time synchronization with other components in a testbed
- Expandable with additional interfaces (SpaceWire, MIL-STD-1553, CAN/CANOpen)
- Flight equipment protection according to the SpaceFibre standard

Key Benefits

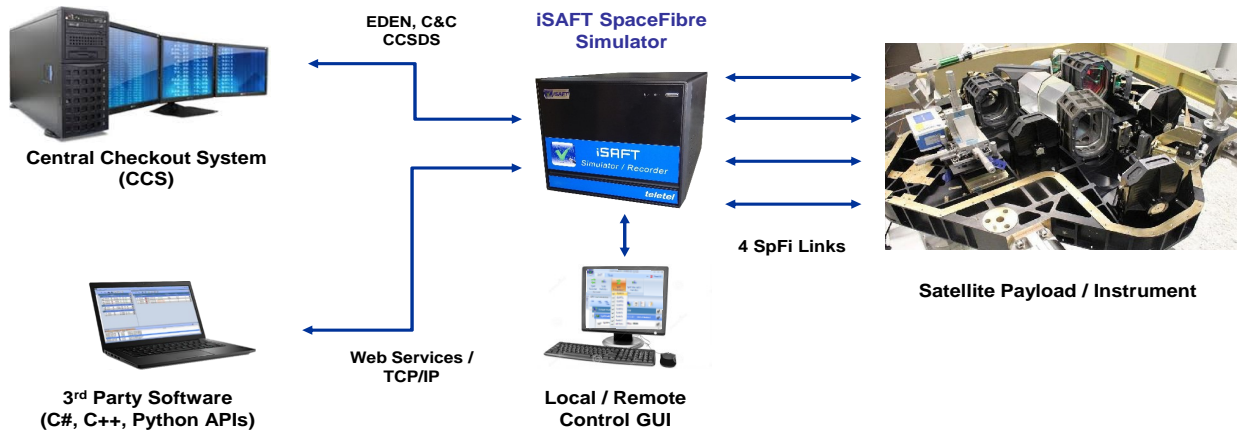
- Unique product in the market supporting SpaceFibre networks validation
- Modern graphical user interface with packet editors
- Powerful remote control APIs supporting rich functionalities
- 100% internal design, can be customised to customer needs
- First class support at both SW & HW level

Application Areas

- Design & development of on-board data networks
- Simulation / Recording / Error Injection / 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	
Form factor	Compact size, mini system
Dimensions	215 x 332 x 190 mm (W x D x H)
Interfaces	2 x 1Gbps Ethernet 2 x RS-232 1 x HDMI 1.4a, 2 x DP 1.2 8 x USB 3, 2 x USB 2 optional WiFi
PCI slots	2 x PCIe (x16, x4)
CPU	Quad core i5 intel processor
Memory	16GB DDR 4
Storage	128GB SSD drive for OS 1TB HDD for data and Archive
Power supply	100-240V 500W
Operating temp range	0°C to 40°C
Storage temperature	-10°C to 60°C
Storage Humidity	10 ~ 90%
Compliances / Standards	CE, RoHS
Warranty	1 year (extendable)

SpaceFibre Interface	
Number of ports	4
Connector	SpFi Type C
Link speed	From 1 to 3.125 Gbps per port (independently set per port)
IP Core	ESA SpFi
Protocols	SpaceFibre which can be extended with RMAP, CPTP
Functionalities	Simulation, Recording, Error Injection, Traffic Generation, Timestamping support
Electrical standards	CML signaling (galvanically isolated)

Software	
Supported 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, statis- tics, Wireshark protocol analyzer
APIs	C#, C++, Python, standard Web services (Windows, Linux)
Optional	iSAFT EDEN or CCSDS C&C Remote Control - SpFi

IRIG Interface	
Type	IRIG-B002/006 (DCLS)
Functionality	IRIG generator, IRIG receiver 8 ns timestamping resolution
Electrical standards	TTL / RS-422 (selectable)
Connector	Omnetics MNCP-06-WD Circular Nano connector

Order Information

- iSAFT11.CS-05-304

Contact

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