10G XCM

XAUI Conversion Module

Conversion between XAUI and 10 GigE

10 Gbps flight hardware data interfaces

Data recording, playback, and analysis

FEATURES

CAPABILITES:

The 10G XCM supports testing of flight systems that use the high-speed XGMII Attachment Unit Interface (XAUI) to transmit or receive data. The 10G XCM performs data routing and handles the low-level protocol processing associated with XAUI and 10 Gigabit Ethernet.

BI-DIRECTIONAL DATAFLOW:

The 10G XCM receives up to 10 Gbps data over the four lane XAUI interface, extracts data frames, and outputs the frames as UDP packets. The module supports data flow in the other direction as well, accepting data from the test system in UDP packets and sending frames to the flight hardware via XAUI. The 1-G XCM can also loop back the input at the XAUI PHY level to the XAUI output lines.

FLIGHT TEST CONFIGURATIONS:

Test systems can easily interface with the flight hardware's native XAUI interface, with the 10G XCM converting to/from standard UDP packets over 10GigE. The details of the XAUI interface and specialized protocols are handled by the 10G XCM.

STANDALONE PCIe CARD:

The 10G XCM is a PCIe card, with a QSFP connector for the XAUI interface and a SFP+ connector for the 10GigE interface. The QSFP connector provides XAUI's four lanes of bi-directional data flow (four lanes in and four lanes out). The XAUI input data flow and XAUI output data flow are independent and can be simultaneous. Data flow between the XAUI and 10GigE interfaces is self contained on the module.

SOFTWARE EXTENSIONS:

The commercial server hosting the 10G XCM can load and execute ARKA applications (Apps), extending the processing to include data recording, data playback, real-time data processing, offline data processing, network transport, and file transfer. High-speed DMA transfers move data between the server's memory and the 10G XCM.

SPECIFICATIONS

KEY FUNCTIONS	SPECIFICATIONS
XAUI Interface	*4 * 3.125 Gbps* *10 Gbps effective rate* *QSFP connector*
10GigE Interface	*Full rate* *SFP+ connector*
PCIe Interface	*8-Lane, Gen1*
FPGA	*Altera Strafix V*
Other	*Integration with* *SOFTLINK® architecture*

PHYSICAL / ENVIRONMENTAL	SPECIFICATIONS
Dimensions	*Half height PCI Express (PCIe)* *(174 mm x 53.9 mm)*
Power	*<6 W @ 3.3 V* *<3 W @ 12 V*
Temperature	*5-30°C operating* *0-35°C non-operating*
Humidity	*< 90% non-condensing*

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## EXAMPLE CONFIGURATIONS

INTERFACE CONVERSION
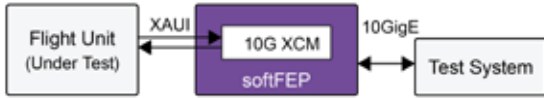
XAUI data frames are converted to UDP packets and UDP packets are converted to XAUI data frames. Connect data streams between flight units using XAUI and test systems using 10GigE.

DATA CONVERSION

Record the flight hardware's XAUI output to RAID5 disk storage/network storage. Using the XAUI loopback feature creates a "T" in the data flow to capture hardware-to-hardware data transfers. Transfer recorded files for analysis or archive.

### DATA GENERATION / PLAYBACK
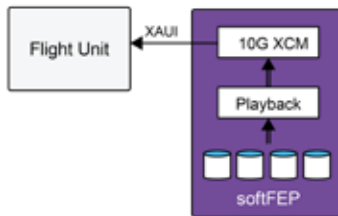
Generate and send data to a flight unit. Playback can be user-defined data from file, test patterns generated in real time by the App, or data from a previous recording session. Playback data has priority on the XAUI output.

OFFLINE DATA ANALYSIS
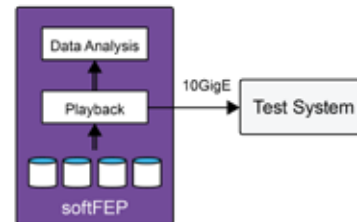
Perform post-processing to analyze recorded data, confirm data patterns, and view data at event triggers. Allows the offline analysis to be non-real time.
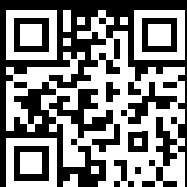
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