X2-400G Test Module

5G, cloud, and data centers have brought people unprecedented internet experiences. The ultra-high bandwidth, massive connectivity, low latency and high reliability of 5G will become a strong foundation for building a digital society. Service providers and large-scale data centers are deploying multi-rate network infrastructure solutions to meet the growing market demands. Due to these multi-rate requirements, customers require higher density tester, and verifying next-generation routers and data center structures requires flexibility. The X2-400G series test module is launched by Xinertel for high-end routers, high-end switches, and data center switch to help operators, network equipment manufacturers, and enterprise users easily cope with the rapid testing business growth and future business development.

With the leading L2-3 traffic generation and analysis capabilities, Xinertel X2-400G multi-speed test module supports large-scale routing and switching protocols and traffic test, and benchmark tests(such as RFC2544/RFC2889/RFC3918), functional testing, performance testing, long-term stability and reliability testing for network equipment.

Key Features

- Native QSFP-DD 400G interface
- Support large-scale L2-3 traffic and routing&switch protocol simulation
- Support the performance test of routing, multicast, access, MPLS, VXLAN, segmentrouting(SR) and other protocols
- FPGA based 100% line speed traffic generation, statistics and capture
- Support RFC2544, RFC2889, RFC3918 and other benchmark test suites

Models

Product name	Product description	Product classification
X2-400G-2QDD test module	2-port, 400G test module	DarYu series test module

Specifications

Hardware and electrical characteristics

Port speed	PAM4: 400G Support 101% line speed
Port density	2
Interface standards	PAM4 400G: 400GAUI-8 (PAM4), 400GBASE-LR8, 400GBASE-FR8
User reservation	Reservation by port
Port speed switching	Switch speed by port
Module weight(kg)	8.4
Dimensions (W x H x D)	438mm x 46mm x 580mm
Temperature	0 ° C to 35 ° C
Humidity	20% to 85%
Max power consumption(W)	450W(2 ports)

Traffic

Max streams per port	32K
Frame length(byte)	64~16004 bytes
Frame length controls	Fixed, Increment, Decrement, Random, Auto, and IMIX
Dynamic fields	6 dynamic fields are available for each stream ; Support multiple dynamic controls such as Fixed, increment, Decrement, List, and Random.
Transmit mode	Continuous, Burst, and Time Burst modes based on port; Continuous and Burst modes based on flow
Bandwidth modification	Modify by port or flow
Latency and jitter	LIFO, FIFO, LILO, and FILO
Timestamp resolution	2.5 nanoseconds
Built-in protocol templates	Built in multiple message templates, such as VLAN, ICMP, PPPoE, GRE, DHCP, L2TP, IPv6, MPLS, GTP, GOOSE, VXLAN, OSPF, TCP, UDP, etc
Customized frame	Support user-defined frame, and the edited frame template can be saved; Supports the checksum check of custom fields
Customized payload	Support importing the 256K bytes customized payload and the first 16K bytes can be adjusted with jumping
Flow control	Full duplex flow control
Packet error generation	CRC error, Oversize frame

Statistics

Statistical streams per port	32K
Statistical pattern	Csv statistics, chart statistics, automatic saving of csv files
Statistics(Port)	Tx/Rx Frames, Tx/Rx Frame Rate, Rx Bandwidth, Error Frame Statistics, Filter Statistics, and Customized Statistics, FCS Error Statistics, TCP/UDP Checksum Errors, Pause Frame Statistics, etc.
Statistics(Flow)	Tx/Rx Frames, Tx/Rx Flow rate, Rx Bandwidth, Error frame statistics, Real-time packet loss statistics, out of order statistics, delay, jitter and customized statistics, etc.
Statistics operation	Support sorting of statistical results, performing mathematical operations such as addition, subtraction, multiplication, and division, and customizing the number of statistical entries for each page, etc.

Capture

Capture buffer(Byte)	1M
Capture pattern	Capture of data and receive frames of the control plane; Capture of transmitted and received frames of the control plane; Capture based on filter templates; Capture filtered error packets; Capture buffer overwriting; Support specifying the number of downloaded capture packets.

Protocol

Routing and MPLS	RIPv1/v2, RIPng, OSPFv2, OSPFv3, ISISv4, ISISv6, BGP, BGP4+, SR for BGP/OSPF/ISIS, SRv6 for ISISv6/BGP BGP SR TE Policy, LDP, MPLS IP VPN, 6VPE/6PE, BGP VPLS, LDP VPLS, PWE, LSP Ping
Access	PPPoE Client/Server, DHCPv4 Client/Server, DHCPv6 Client/Server, DHCPv6 PD Client/Server, L2TPv2, 802.1x
Multicast	IGMPv1/v2/v3, MLDv1/v2, IGMP/MLD Querier, PIM-SM
Data center	VXLAN IPv4/IPv6, VXLAN EVPN IPv4/IPv6, OVSDB, OpenFlow 1.3 Controller, BGP/EVPN for VxLAN, LACP
Other	BFD, 802.1ag, 802.1ah, IPv6 automatic configuration, Y.1731
Test suite	RFC2544, RFC2889, RFC3918, Asymmetric Test, Y.1564, Smart Scripter

Software platform

Client software	Renix
API	Tcl, Python3.x, GUIToTcl, GUIToPython
GUI language	English, Simplified Chinese

Hardware platform

Chassis	DarYu 3000, DarYu 12000
Chassis operating system	Linux CentOS7. X