ALBEDO Ether.Giga is a Gigabit tester equipped with all the standard features of field testers, plus the new ones like RFC 2544, Y.1564 and capable to verify the QoS and SLA of brand new Multiplay and IP services.

Datasheet
Updated on 23/10/15

ALBEDO Ether.Giga

ALBEDO Ether.Giga is an Ethernet & IP tester equipped with all the features of legacy testers such as BER and RFC2544, plus the new ones like Y.1564, Y.1731, and FCS error insertion in pass mode therefore it is capable to verify the QoS and SLA of new Multiplay services offering field technicians tools to quickly and easily validate and troubleshoot Ethernet services, including multiplay applications such as VoIP, IPTV, VoD, high-performance Computing, Virtualization Services, Data Centers and Storage that require significant levels of bandwidth.

1. General

1.1 Interfaces
- Port A - B: 2 x SFP
- Port A - B: 2 x RJ45

1.2 Operation Modes

Ethernet
- End-point
- Monitor
- Pass-through
- Loop-back

TCP/IP
- End-point
- Monitor
- Pass-through
- Loop-back

2. Ethernet Phy

2.1 Interfaces
- SFP ports: 1000BASE-T, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX, 1000BASE-BX, 100BASE-FX, 100BASE-TX, 10BASE-T
- RJ-45 ports: 10BASE-T, 100BASE-TX, 1000BASE-T
- On / Off laser control
- Insertion of code errors

Auto-Negotiation
- Bit rate: 10 Mbit/s, 100 Mbit/s, 1 Gbit/s
- Master and Slave roles in the 1000BASE-T
- Disable auto-negotiation, force line settings

Power over Ethernet (PoE)
- Interfaces: 10BASE-T, 100BASE-T, 1000BASE-TX
- PoE pass-through in transparent mode

2.2 Time References
- Internal time ref $< \pm 3.0$ ppm (Optionally $< \pm 0.1$ ppm)
- Ethernet through Port A & B

3. Ethernet MAC
- Formats: DIX, IEEE 802.3, IEEE 802.1Q, IEEE 802.1ad

- Jumbo frames up to 10 kB
- Sour / Dest MAC address setting
- Type / Length Setting
- Enable / Disable VLAN and Q-in-Q modes
- VLAN VID / User Priority setting
- S-VLAN VID, DEI, PCP, C-VLAN VID, User Priority
- FCS errors insertion

4. IP

4.1 IPv4
- Sour / Dest IPv4 address setting
- Dest. MAC address by hand or ARP
- DSCP CoS labels, TTL and transport protocol
- IP checksum errors insertion

4.2 Protocols
- ARP
- DHCP
- DNS
- Ping
- Trace route

4.3 MPLS
- MPLS generation / analysis
- Double label stack support
- TTL exp, label fields

5. Traffic Generator
Generation over 8 independent streams

5.1 Bandwidth Profile

Operation Modes
- Continuous
- Periodic
- Ramp
- Random

5.2 Test Patterns and Payloads
- Layer 1 BER: HF, LF, MF, Long/Short continuous random
- Layer 2-4: PRBS 2^{11}-1, PRBS 2^{15}-1, PRBS 2^{20}-1, PRBS 2^{23}-1, PRBS 2^{31}-1
- Along with their inverted versions, user (32 bits).
- These patters apply to stream 1 only
- SLA payload
- All zeros
- Insertion of TSE: single, rate, random

6. Filters
- Up to 8 simultaneous filters to be applied to the traffic
- Selection by Ethernet, IP, TCP/UDP fields
- Generic filter by using 16 bit mask and arbitrary offset

6.1 Ethernet Selection
- MAC Address: Source and Destination
- Type / Length value with selection mask
- C-VID and S-VID with selection mask
- Service and Customer priority codepoint

6.2 MPLS Selection
- Top and Bottom MPLS headers
- Label value
- Exp field

6.3 IPv4 Selection
- IPv4 Source and Destination address
- IPv4 Protocol
- DSCP fields

6.4 IPv6 Selection
- IPv6 Source and Destination address
- IPv6 flow label
- DSCP
- Next Header

6.5 UDP Selection
- Port: single value or or ranges of values

7. PHY Results

7.1 Cable Tests
- Optical power (over compatible SFP/SFP+)
- Inactive links: Open/short, distance to fault
- 10/100 Mbit/s links: current local port MDI/MDI-X status
- 1000 Mbit/s links: current, polarities, skew

7.2 Auto-Negotiation
- Bit rate and duplex mode
- Master / Slave role indication (1000BASE-T)

7.3 Synchronous Ethernet
- Frequency (MHz), offset (ppm), drift (ppm/s)
- TIE / MTIE / TDEV
- Decoding of the QL transported in SSM

8. Frame Analysis
- Modes: One-way (port A - A), two-way (port A - B)
- Separate statistics for Port A / B, Tx / Rx, Filter

8.1 Ethernet Statistics
- Counts: Ethernet, VLAN, IEEE 802.1ad frames, Q-in-Q, Control, Pause, IEEE 1588-2008
- Frames: unicast, multicast, broadcast
- FCS errors, Undersized, Oversized, Fragments, Jabbers
- Size: < 64, 65-127, 128-255, 256-511, 512-1023, 1024-1518, 1519-1522, 1523-1526 and 1527-MTU bytes

8.2 MPLS Statistics
- MPLS stack size: max, min

8.3 IP Statistics
- Packet counts: IPv4 packets, IPv6 packets
- Packet counts: unicast, multicast and broadcast
- UDP, ICMP, IEEE 1588 packets
- IPv4 checksum errors, IPv6 checksum errors

8.4 Bandwidth Statistics
- Current, max, min, avrg (Tx / Rx, Port A / B)
- Unicast, multicast and broadcast counts
- IP and UDP statistics

8.5 SLA Statistics
- Delay (FTD): current, min, max, mean
- Delay variation (FDV or jitter): current, min, max, mean
- Reordering: Out-of-order, Duplicated count and ratio
- Loss (FLR): count, ratio
- Availability: SES count, PEU, PEA

8.6 BER
- Count, seconds, ratio and pattern loss secs at layer 1-4

8.7 Network Exploration
- Top talkers: 25 most popular MAC / IPv4 / IPv6 addr
- Top C-VID and S-VID: 25+25 most popular tags
- Atomatic setup of 8 filtering blocks

9. Automatic Tests
Automatic RFC 2544 / Y.1564 tests in one/two ways mode

9.1 Port Loopback
- Layer 1-4 loopback with Filtering conditions
- MPLS loop control
- Loop controls for broadcast and ICMP

9.2 RFC 2544
- Throughput, Frame-loss, Latency, Back-to-back, Recovery
- Asymmetric RFC based on Ethernet and IP RMP

9.3 Y.1564
- Ethernet service activation
- Eight / four services (colour / not) CIR, EIR, max, througput
- FTD, FDV, FLR, availability objectives

Test Phases
- Phase 1: steps, step duration
- Phase 2: duration, bandwidth profile (deterministic, random)

10. Platform

10.1 Ergonomics
- Size 223 x 144 x 65 mm
- Weight: 1.2 kg (with rubber boot, one battery pack)
- 4.3 inch TFT colour screen (480 x 272 pixels)

10.2 Graphical User Interface
- GUI controlled by Touch-screen, Keyboard or Mouse
- Direct configuration and management in graphical mode
- User interface by touch-screen, keyboard and mouse
- Full remote control with VNC
- Configuration up/down through Internet, USB and SNMP
- Local management with CLI
- Full remote control: SNMP, SSH, VNC

10.3 Results
- Local storage in txt and pdf files
- File transfer to SD card and USB port
- File management through web interface and SNMP

10.4 Board
- 2 x USB ports
- 1 x RJ45 port
- 2 x LEDs
- Software upgrade through USB port

10.5 Batteries
- Li Ion Polymer
- Up to 22 hours of operation in E1 (with two packs)
- Up to 10 hours of operation in Ethernet (with two packs)

10.6 Operational Ranges
- IP rating: 54
- Operational range: -10ºC to +50ºC
- Storage range: -20ºC to +70ºC
- Operation humidity: 5% - 95%

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