SUNRISE TELECOM

Gigabit Ethernet Module

SSMTT-29/SSMTT-29L

Data Sheet

The GigE Module is part of a family of Plug-In modules for the SunSet MTT and xDSL test sets

The SSMTT-29 Gigabit Ethernet Module, part of the SunSet® Modular Test Toolkit (MTT) family of products, is a rugged, battery-operated handheld test solution for the installation and maintenance of Metro Ethernet and IP services. A complete set of testing capabilities makes the SSMTT-29 ideal for the field technician who needs to verify end-to-end transport of Gigabit Ethernet/IP traffic, perform BER tests, determine throughput, link utilization, round trip delay, and IP connectivity.

The intuitive user interface of the SSMTT-29, along with the straightforward creation and sharing of test profiles, allow technicians with limited Ethernet or IP testing experience to verify performance parameters for Gigabit Ethernet services. The wide range of test functionalities of the SSMTT-29 Gigabit Ethernet Module provides all of the tools needed for verifying Service Level Agreements (SLAs) between service providers and their customers.

KEY FEATURES

- Full Gigabit Ethernet (1000 Mbps) line rate traffic generation
- Performs throughput, latency, frame loss, and back-to-back tests per RFC 2544
- BER testing at Layer 1, Layer 2, and Layer 3 (IP) for Gigabit Ethernet and IP services
- IP verification with Ping, Trace Route, Echo Response, and IP Throughput across a routed network
- Generate up to 64 traffic flows with different MAC address, VLAN tag, and IP address configurations
- Class of Service (CoS) (via VLAN P-bit) and IP Type of Service (TOS)/DSCP traffic prioritization settings
- Dual Port capability for network element prequalification testing
- VLAN Scan feature to quickly verify the VLAN ID configuration on a given test interface
- Control/Respond Loopback feature to loop-up/down a far end MTT with a SSMTT-29 or SSMTT-28 (Ethernet/Fast Ethernet) module
- Test Profiles for fast and efficient test set configuration and operation

BENEFITS

- Lightweight
- Flexible modular design
- Eliminates the need for multiple instruments
- Complete solution for Installation & Maintenance (I&M) of Gigabit Ethernet and IP services
- Leverages existing MTT platform
- Cost-effective and future-proof
- Completely interoperable with the SSMTT-28 Ethernet Module for mixed 10/100/1000 Ethernet deployments and STT® Ethernet Module

TEST FEATURES

- Enables service providers and operators to turn-up and troubleshoot Gigabit Ethernet and IP services
- Allows service providers to verify SLAs between themselves and their customers
- Automated SLA verification with RFC 2544 testing
- Layer 2 CoS settings for verifying Metro Ethernet services
- Test profile storing and loading for fast deployment of Gigabit Ethernet services

SPECIFICATIONS

Connectivity

Gigabit Ethernet 1000Base-X and 1000Base-T (per IEEE 802.3, 2000 Edition)
Connector type: Dual (SSMTT-29), Single (SSMTT-29L)
  Duplex LC for 1000Base-X
  RJ-45 UTP for 1000Base-T
Optical transceiver type: SFP (small GBIC) field interchangeable
SA580-850 (1000Base-SX)
  Transmitter
  – Wavelength: 850 nm multi-mode
  – Power: -9.5 dBm to -4 dBm
  Receiver
  – Wavelength: 770 nm to 860 nm
  – Signal: -21 dBm to 0 dBm max
  Optical Power Measurement (OPM) function available
SA580-1310 (1000Base-LX)
  Transmitter
  – Wavelength: 1310 nm single-mode
  – Power: -9.5 dBm to -4 dBm
  Receiver
  – Wavelength: 1270 nm to 1600 nm
  – Signal: -25.5 dBm to -3 dBm max
  Optical Power Measurement (OPM) function available
SA580-1550 (1000Base-ZX)
  Transmitter
  – Wavelength: 1550 nm single-mode
  – Power: +3 dBm to -2 dBm
  Receiver
  – Wavelength: 1270 nm to 1570 nm
  – Signal: -24 dBm to -3 dBm max
  Optical Power Measurement (OPM) function not available
SA580-RJ (1000Base-T)
  1000Base-T SFP transceiver

Operation Mode

Point-to-Point mode
Monitor mode (with or without splitter) (SSMTT-29 only)
Auto-negotiation enabled or disabled
Auto-negotiation parameters: Pause flow control, asymmetric pause
Pause flow control frame injection

BER/Throughput Testing

End-to-end testing with two test sets
Single-ended testing with loop on the other end
Singe test set bench testing (see Dual Port Operation)

Traffic Generation

Layer 1, Layer 2, or Layer 3 traffic
Configurable source and destination MAC address
Configurable 802.1q VLAN tag and 802.1p priority
Configurable source and destination IP address (IPv4)
Configurable IP header fields (TOS, TTL, Protocol, and Frame Offset) for QoS verification testing
Up to 64 traffic flows (MAC address, IP address, VLAN tag)
Test patterns: All 1s, All 0s, Alt1010, ITU-T PRBS (2e9, 2e11, 2e15, 2e20, 2e23, 2e31) normal or invert, CJPAT, CRPAT, CSPAT, or user defined (2 bytes)
Frame length 64 to 1518 bytes or Jumbo frame (up to 12 kbytes)
Frame rate 0% to 100% bandwidth utilization with steps of 0.01%
Traffic shaping: Constant, ramp, or burst
Error/Alarm injection: Bit, CRC error and rate injection, CRC + 8B/10B symbol error injection
Test duration

Measurements

Performance statistics: Transmitted and received bandwidth utilization (Min, Max, Average), frame rate (Min, Max, Average), transmitted and received line rate and data rate (kbps)
Frame statistics: Total number of transmitted & received frames, total number of received VLAN tagged frames, number of lost, out of sequence frames, number of received runt, oversized, multicast, flow control, broadcast and unicast frames, frame inter-arrival time measurement (Min, Max, Avg, Variation)
Link statistics: Bit, CRC, 8B/10B symbol error count and rate, loss of signal, loss of synchronization, and out of service seconds counters
Events recorder with timestamp

Dual Port Operation

Perform Layer 1 & Layer 2 BER/Throughput tests with a single test set
  Adds the ability to wrap test a Layer 1 or Layer 2 network element
  Adds the ability to perform a Layer 1 or Layer 2 network bench test

Loopback Mode

Automatically loops all incoming frames with or without swapping the source and destination MAC address fields and IP address source and destination fields
Manual or controller/responder mode

IP Features

PING Test

Step by step results showing connectivity to the router
Summary and detailed result screens
Statistics on PING messages
  Number of sent/received/missing/unreached messages
  Current/average/max/min round trip delay
Following parameters can be configured:
  IP mode (Static/DHCP mode)
  Local IP address
  Destination IP address
  Gateway address
  Number and rate of PING messages
  Frame length

Trace Route

Trace the IP route over the IP network up to 30 hops
Gateway, Router IP address traceability

ECHO Response

Automatic PING Echo response and record

MAC Address Resolver

Discover the MAC address of devices on the network by entering a single or a range of IP addresses

Web Access Test

HTTP web page download and FTP file download: Server response time, download size and duration, average download rate
FTP file upload with user defined file size: Server response time, upload duration, average upload rate

Note: Web Access feature is only available with the color chassis

Round Trip Delay Measurement

Round trip latency measurement
Configurable IP header fields (TOS, TTL, Protocol, and Frame Offset) for QoS verification testing

Bandwidth Sweep

Automatically sweeps bandwidth with configurable start, stop, and step rate and stops upon detecting lost frames and/or pause flow control frames
Configurable IP Header fields (TOS, TTL, Protocol, and Frame Offset) for QoS verification testing

RFC 2544

Throughput, latency, frame loss rate, and back-to-back frames tests conform to RFC 2544 standard
Recommended frame sizes (64, 128, 256, 512, 1024, and 1518 byte) plus one user configurable frame size (64-12000 byte) can be tested
Configurable PASS/FAIL threshold
Tests can be run individually or in sequence
Available for Layer 1, Layer 2, and Layer 3 testing, including Ethernet routed circuits
Configurable IP header fields (TOS, TTL, Protocol, and Frame Offset) for QoS verification testing

VLAN Scan

Discover the VLAN IDs that are configured on an interface by scanning up to 5 different VLAN IDs
Verify the VLAN ID configuration by performing a quick PASS/FAIL connectivity test

Monitoring and Analysis (SSMTT-29 only)

In-service monitoring with or without splitter
Measurements
- Signal and Frame Synchronization
- Bandwidth Utilization
- Rx Frames Count
- CRC Error

Events recorder with timestamp

Other Features

Multiple User Profiles

Up to 10 different test configuration profiles may be saved
Test profiles saved and loaded with the press of a button
Profiles can be shared across multiple chassis for fast and efficient test set configuration and operation

IP Address List

Commonly used IP addresses can be stored and retrieved into an IP address list
User may access the IP address list anywhere a destination IP address needs to be configured for fast and efficient test set operation

Results

Test results are saved in .CSV format for easy retrieval, sharing, and analysis of data

PRODUCT DESCRIPTION

Module Size (WxLxH): 5.0 x 3.5 x 0.9 in (12.6 x 9 x 2.2 cm)
Operating Temperature: 32˚ to 122˚F (0˚ to 50˚C)
Storage Temperature: -4˚ to 158˚F (-20˚ to 70˚C)
Humidity: 5% to 85% noncondensing

ORDERING INFORMATION

SSMTT-29	Gigabit Ethernet Module with 850 nm Transceivers Bundle *[Includes two 850 nm SFP Optical Transceivers (SA580-850), two Optical Patch Cords (SA561), and Optics Container (SA148)]*
SSMTT-29B	Gigabit Ethernet Module with 1310 nm Transceivers Bundle *[Includes two 1310 nm SFP Optical Transceivers (SA580-1310), two SM Optical Patch Cords (SA562), and Optics Container (SA148)]*
SSMTT-29C	Gigabit Ethernet Module with 1000BaseT Transceivers Bundle *[Includes two RJ-45 1000BaseT SFP Transceivers (SA580-RJ) and Optics Container (SA148)]*
SSMTT-29D	Gigabit Ethernet Module with 1550 nm Transceivers Bundle *[Includes two 1550 nm SFP Optical Transceivers (SA580-1550), two SM Optical Patch Cords (SA562), and Optics Container (SA148)]*
SSMTT-29E	Gigabit Ethernet Module only No accessories included. *[No options, no patch cords.]*
SSMTT-29L	Gigabit Ethernet Light Module with 850 nm Transceivers Bundle *[Includes one 850 nm SFP Optical Transceiver (SA580-850), one Optical Patch Cord (SA561), and Optics Container (SA148)]*
SSMTT-29LE	Gigabit Ethernet Light Module only No accessories included. *[No options, no patch cords.]*
SSMTT-29L-B	Gigabit Ethernet Module Light Module with 1310 nm Transceivers Bundle *[Includes one 1310 nm SFP Optical Transceiver (SA580-1310), one SM Optical Patch Cord (SA562), and Optics Container (SA148)]*
SA580-850	850 nm LC SFP Field Interchangeable Optical Transceiver
SA580-1310	1310 nm LC SFP Field Interchangeable Optical Transceiver
SA580-1550	1550 nm LC SFP Field Interchangeable Optical Transceiver
SA580-RJ	1000BaseT SFP Transceiver

For more information or a directory of sales offices: **info@sunrisetelecom.com** | **www.sunrisetelecom.com**