Data Sheet

# VIAVI

# OneAdvisor 1000

Portable Test Unit up to 400G

VIAVI Solutions

## OneAdvisor 1000 Platform

| Attributes | |
|---|---|
| The OneAdvisor 1000 (ONA-1000A-MF) is a mainframe which supports modules providing test functionality | |
| Always delivered with a soft case | |
| Operating system is Linux to ensure optimum stability and offer high security | |
| ***Mainframe components*** | Display enclosure which includes the following components:<br>• 10-inch display<br>• Lit power button<br>• 2 batteries<br>• Storage for operation<br>• GNSS<br>• Back termination which is either:<br>• Blank termination (ONA10-BACK)<br>• Dual Module Carrier (ONA10-DMC)<br>• Power Supply |
| ***Modules available*** | • 400G Module<br>• 100G Module<br>• Concurrent support of 1 400G module and 1 100G Module<br>• Concurrent support of 2 400G modules including battery operation<br>• When equipped with Dual Module Carrier:<br>- OTDR modules of type E4100<br>- Channel Checkers<br>• OCV-4100 and OSA-4100<br>• Optical USB pluggables such as fiber inspection scopes and power meters |

### Mainframe Interfaces

The OneAdvisor 1000 supports the following interfaces:

- 2 USB ports
- 1 RJ-45 management port
- SMA antenna connector for GNSS
- WiFi and Bluetooth (optional, version available without radios)
- MicroSD port

### Instrument Control and Management

- Local User Interface, same as all T-BERD/MTS
- SmartAccess Anywhere
  - Cloud access (Android, IOS, Windows) via SSH with encryption or locally
- Mobile Tech
  - Supports file transfer, instrument management, StrataSync
- StrataSync
  - Cloud fleet management tool with automatic updates
- Job Manager
  - Workflow and Test plan management
- Report Generation
  - HTML, PDF, TXT, CSV, XML
- NTP server support
- Built-in web browser and video player
- Onscreen Lock



| Power and Battery | |
|---|---|
| Supports battery operation with seamless swapping between AC and DC | |
| Built-in battery charger as unit operates | |
| Each of the 2 batteries is 96W hours, Lithium Ion | |
| Batteries are field replaceable | |
| Power supply | 330 Watts |
| Can perform a 400GE test for at least 1:30 hours on battery power including with ZR optics | |
| Can perform a 100GE test for at least 2:20 hours on battery power | |

| Industry Standards and Compliance | |
|---|---|
| EMC | IEC/EN 61326-1, FCC part 15B, ICES-003 |
| Safety | IEC/EN/UL/CSA 61010-1 |

| Environmental | |
|---|---|
| Operating Temperature Range | 0°C to +45°C (32°F to +113°F) |
| Storage Temperature Range | - 20°C to +60°C (-4°F to +140°F) |
| Operating Humidity | 10-95% without condensing |

| Drop Test and Vibration | |
|---|---|
| Shock and vibration | MIL-PRF-28800F |
| Drop | MIL-PRF-28800F, ETSI EN 300 019-2-7 |

| Warranty |
|---|
| Standard 3 years |

| Calibration |
|---|
| Interval of 3 years |

| Size and Weight | | |
|---|---|---|
| ***Size*** | | |
| OneAdvisor 1000 with dual batteries | 24.1x30.9x8.3 cm | 9.5x12.2x3.3 in |
| 400G Module | 24.1x30.9x5.5 cm | 9.5x12.2x2.2 in |
| 100G Module | 24.1x30.9x5.5 cm | 9.5x12.2x2.2 in |
| Dual Module Carrier | 23.7x30.5x2.0 cm | 9.3x12.0x0.8 in |
| Blank Termination | 23.7x30.5x1.5 cm | 9.3x12.0x0.6 in |
| OneAdvisor 1000 400G Mod Blk Term | 24.1x30.9x15.3 cm | 9.5x12.2x6.0 in |
| ***Weight*** | | |
| OneAdvisor 1000 with dual batteries | 3.9 kg | 8.5 lbs |
| 400G Module | 2.3 kg | 5.1 lbs |
| 100G Module | 1.9 kg | 4.1 lbs |
| Dual Module Carrier | 0.9 kg | 1.9 lbs |
| Blank Termination | 0.4 kg | 1.0 lbs |
| OneAdvisor 1000 400G Mod Blk Term | 6.6 kg | 14.6 lbs |

## 400G Module




| Physical Interfaces |
|---|
| The 400G Module (TM400GA) provides the following physical ports:<br>• 2 x QSFP56-DD<br>• 2 x QSFP56 (QSFP28 capable)<br>• 2 x SFP56-DD (SFP capable)<br>• 1 x EXT CLK REF<br>• 1 x CLK OUT (future)<br>• 1 x 1PPS IN REF (future) |

| Application Control | |
|---|---|
| Test Time Control | Not Timed, Timed Test, Delayed Start |
| Auto Create Report upon Completion | |
| Automatic Timed Report Creation | |
| Auto-start traffic with laser on | |
| Split Screen Reporting | Results in 1 to 4 areas |
| Full customization of result presentation information on screen | |
| On screen help via 'What's This?' | |
| On UI Screen capture into PNG | |
| On Unit User Manuals | |
| Remote automation via SCPI | |

| Timing | |
|---|---|
| Internal Reference | +/-1.5 ppm. Designed for Stratum 3. Yearly degradation 1 ppm/year |
| Clocking | Internal, recovered, external |
| PPM offset | Report incoming in PPM and Hz, injection +/-150 ppm range |

| Interface Type and Applications | |
|---|---|
| QSFP56-DD | Application: 400GigE, Unframed BERT |
| QSFP56 | Application: 200GigE |
| QSFP28 | Application: 100GigE, OTU4 |
| QSFP+ | Application: 40GigE |
| SFP56 | Application: 50GigE |
| SFP28 | Application: 25GigE |
| SFP+ | Application: 10GigE LAN |

| QSFP Optics Support | |
|---|---|
| ***QSFP Optics Support*** | Nominal Wavelength, Vendor, Part Number, Serial Number, Vendor Rev, Date Code, Lot Code, Connector Type, Max Link Length, Transceiver Info, Rx Power level Type, Rx Max Lambda Power, Tx max Lambda power, Power Class, Module ID, Rev Compliance, Cable Length if applicable |
| ***QSFP Expert Mode*** | Advanced host transmit settings with Pre-emphasis settings with Pre-Cursor, Post-Cursor and Swing |
| | Advanced Module Rx Output Pre-emphasis Settings with Pre-Cursor, Post-Cursor and Swing |
| ***QSFP I2C Peek/ Poke*** | Full read and write device register access, Full register dump to .txt file upon module insertion and app loading (in bert/reports) |
| ***Per Lambda*** | Signal present, Rx optical power, Tx optical power, Laser Bias current CMIS Host-Media Apps Support As per CMIS4.0/5.0 up to 16 applications |
| ***Pluggable Power Reporting*** | Module voltage, current, power Current, minimum, maximum values |
| **Temperature** | |
| **400GE ZR Tunable Support** | |
| ***Grid Spacing Reporting and Setting*** | 12.5GHz to 100GHz |
| ***Tuning Mode*** | Channel number, Frequency (THz), Wavelength (nm) |
| Fine Tuning support (GHz) | |
| Output Power setting support (dBm) | |
| Report Current Frequency, Tuning in Progress, Wavelength lock/unlock | |
| Display First and Last Tunable Frequency, Fine tuning Low and High offset, Min and Max Output Power | |
| **SFP Optics Support** | |
| ***SFP Optics Support*** | Wavelength, Recommended Rates, Vendor, Vendor PN, Vendor SN, Vendor Rev, Min Rx Level, Min Tx Level, Diagnostic Monitoring, Module ID, Transceiver, Nominal Rate, Min Rate, Max Rate, Power Level Type, Max Rx Level, Max Tx Level, Diagnostic Byte |
| ***SFP Expert Mode*** | Ignore LOS, Rate Select |
| ***SFP I2C Peek/Poke*** | Full read and write device register access, Full register dump to .txt file upon module insertion and app loading (in bert/reports) |
| ***Pluggable Power Reporting*** | Module voltage, current, power, current, minimum, maximum values |
| **Temperature** | |
| **Optics Self-Test** | |
| Built-in PRBS theory test duration calculator | |
| User controlled test duration or auto calculated | |
| BER pass/fail threshold with choice of pre or post FEC (except 10GE) | |
| PPM max offset settings | |
| Reporting of QSFP Info or SFP Info | |
| Monitoring of temperature, optical power, and total power consumed by the pluggable | |
| Pre-FEC and Post-FEC results as applicable | |
| Report generation with full information | |
| Integration into job manager | |
| **Unframed BERT** | |
| Support of independent BERT engines on 4 or 8 lanes on QSFP56-DD pluggable | |
| ***LED Indicators*** | Per Lane Signal Present<br>Overall Pattern Sync<br>Per Lane Pattern Sync |
| ***Per lane Statistics*** | Bit Count<br>Bit Error Count<br>Bit Error Rate<br>Pattern Sync Losses<br>Sync Loss Seconds |
| ***Settings*** | |
| PAM4 patterns for Tx and Rx BER | PRBS31Q regular and invert, PRBS13Q regular and invert, SSPRQ |
| Rx threshold settings for pass fail | $10^{-3}$ to $10^{-11}$ |
| Pattern Bit Error Injections | Single, Rate: $10^{-4}$ to $10^{-9}$ |

## Ethernet

| Ethernet Rates | |
|---|---|
| ***Rates*** | |
| 400GigE (425 Gbps) with RS (544,514) FEC | Supports 400GBASE-ZR pluggables |
| 200GigE (212.5 Gbps) with RS (544,514) FEC | |
| 100GigE (103.125 Gbps) with no FEC or RS (528,514) FEC selectable. Also supports 106.25 Gbps via single lambda QSFP28 | |
| 50GigE (53.125Gbps) with RS (544,514) FEC | |
| 40GigE (41.25Gbps) | |
| 25GigE (25.78125Gbps) with no FEC or RS (528,514) FEC selectable | |
| 10GigE (10.3125 Gbps) LAN | |
| **FEC** | |
| ***FEC Types*** | |
| RS (544,514) FEC | Application: 400GigE, 200GE, 50GigE |
| RS (528,514) FEC | Application: 100GigE or 25GigE used with or without FEC. OTU4 also uses this FEC |
| ***Alarms and LEDs*** | |
| LOAMPS | Loss of Alignment Marker Payload Sequence |
| LOA | Loss of Alignment |
| HI SER | |
| ***Errors and Stats*** | |
| RS-FEC Error Stats | Correctable counts and rates per codeword symbol and bits, uncorrectable counts and rates per codewords, A and B per engine and aggregate for 400GE, 200GE |
| RS-FEC Per Lane | Physical to virtual mappings, Corr. Symbol Errors, Corr. Bit Errors, Corr. BER, A and B per engine and aggregate for 400GE, 200GE |
| RS-FEC Error Distribution | Correctable per symbol bin, error count, and error%, Uncorrectable codeword count |
| ***Injections*** | |
| LOAMPS, LOAML, LOCWMS | |
| HI SER | |
| FEC Error Injections | Correctable, uncorrectable, single, burst, rates $10^{-2}$ to $10^{-9}$ |
| FEC Per Engine (400GE, 200GE) | Aggregate, A FEC, B FEC |
| Local Degraded SER (400GE, 200GE) | |
| Remote Degraded SER (400GE, 200GE) | |
| ***Setups*** | |
| Incoming FEC settings | Find and fix errors, Find but don't fix errors, Ignore FEC |
| FEC Type (100GE, 25GE) | No FEC, RS (528,514) FEC |
| Disable Hi SER Alarm | |
| Enable Degrade SER (400GE, 200GE) | |
| Enable Local/Remote Degrade SER (400GE, 200GE) | |
| Correctable RS-FEC BER Threshold Alarm support (400GE, 200GE), defaults to $2.4x10^{-4}$ | |
| **PCS** | |
| ***Alarms and LEDs*** | |
| Signal Present | |
| Sync Acquired and link active | |
| Marker Lock | LOAML (Loss of Alignment Marker Lock) |
| HI BER | |
| Excessive skew | User settable threshold defaults to 180ns |
| Local Fault | |
| Remote Fault | |
| ***Errors and Stats*** | |
| Invalid alignment markers | Counts and rates |
| Alignment marker lock | |
| BIP-8 Alignment Marker | Errors, rate |
| PCS Invalid Blocks | |
| Skew reporting | Per lane, max, min, current |
| Results per lane | Sync acquired, marker locked, code violations, invalid alignment markers, BIP-8 bit and block errors |
| ***Injections*** | |
| LOAML | Loss of Alignment Marker Lock, Per lane |
| LOAMPS | Loss of Alignment Marker Payload Sequence |
| LOCWMS | Loss of Codeword Marker Sequence |
| LOBL | Loss of Block Lock. Per lane |
| HI BER | |
| Local Fault | |
| Remote Fault | |
| Invalid Alignment Marker | Per lane, single, burst, rate $10^{-3}$ to $10^{-10}$ |

| | |
|---|---|
| BIP-8 | Per lane, single, burst, rate $10^{-3}$ to $10^{-10}$ |
| Coding error | Per lane, single, burst, rate $10^{-3}$ to $10^{-10}$ |
| Skew injection per lane (100GE no FEC) | |

**MAC**

***LED Indicators***

| |
|---|
| Frame Detect |
| ATP (Acterna Type Packet) Detect |
| VLAN and SVLAN Detect, up to 4-VLAN tags deep |

***Statistics***

| | |
|---|---|
| Link Stats | Util % stats, Frame Rate, Frame Size, Tx/Rx Mbps at L1/L2, ATP Util %, Round Trip Delay, Packet Jitter, VLAN info |
| Link Counts | Tx/Rx Frame Counts, Tx/Rx ATP Frame Counts, Rx VLAN Frames, Unicast, Multicast, Broadcast, Tx/Rx Byte Counts, Frame size bin counts |
| Filter Stats | Util % stats, Frame Rate, Frame Size, Tx/Rx Mbps at L1/L2, Round Trip Delay, Packet Jitter, VLAN info |
| Filter Counts | Rx Frame Counts, Rx ATP Frame Counts, Rx VLAN Frames, Unicast, Multicast, Broadcast, Rx Byte Counts, Frame size bin counts |
| Peak Interframe Gap (service disruption) | |
| BERT | Pattern Losses, BER, Bit Errors, Bit Error Second |
| Errors | Undersized Frames, Runts, Jabbers, FCS errors, Errored Frames, Errored Seconds, Acterna Payload Errors, Packet Error Rate, Lost Frames, Frame Loss Ratio, Out of Sequence Frames |
| Graphs | Throughput, Frame Loss, Packet Jitter, Latency, Errors |

***Injections***

| | |
|---|---|
| Undersize | Single, burst |
| Runts | Single, burst |
| FCS | Single, burst |

***Setups***

| | |
|---|---|
| MAC Address types | Unicast, Multicast, Broadcast |
| Encapsulation | None, VLAN, Q-in-Q, up to 4 levels of VLAN tags |
| VLAN/CVLAN edits | ID, User priority |
| SVLAN edits | ID, User priority, DEI bit, TPID |
| Ethertype value | |
| Frame Type | DIX, 802.3 |
| Payload type | ATPv3 (Acterna Test Payload) with fill byte, BERT |
| BERT payload | PRBS2[31], PRBS2[31] Inv, User defined byte (10GE, 100GE), and for 10GE |
| Frame Size | 64 to 16,000 bytes |
| Frame Variations | Fixed including Jumbo, Random, EMIX |
| Filters | Destination Address, Source Address, VLAN/CVLAN/SVLAN ID, DEI Bit, User priority, TPID, Payload Analysis |

**IPv4**

***LED Indicators***

| |
|---|
| IP Packet Detect |

***Statistics***

| | |
|---|---|
| Link Stats | Util % stats, Packet Rate, Packet Size, Tx/Rx Mbps at L3, TOS |
| Link Counts | Tx/Rx Packet Counts, Unicast, Multicast, Broadcast |
| Config Status | Source IP, Gateway, Subnet Mask, Dest IP, Dest MAC |
| Errors | IP Checksum Errors, IP Packet Length Errors, Acterna Payload Errors, Packet Error Rate, Lost Frames, Frame Loss Ratio, Out of Sequence Frames |
| Graphs | Throughput, Frame Loss, Packet Jitter, Latency, Errors |

***Injections***

| | |
|---|---|
| Errors | IP Checksum |

***Setups***

| | |
|---|---|
| Ping Support | |
| ARP Support | |
| IP Source Address | Address, Default Gateway, Subnet Mask |
| IP Destination Address | |
| TOS Type | TOS, DSCP |
| TTL Value | |
| Protocol Value | |
| Payload type | ATPv3 (Acterna Test Payload), Fill Byte |

| IPv6 | |
|---|---|
| ***LED Indicators*** | |
| IP Packet Detect | |
| ***Statistics*** | |
| Link Stats | Util % stats, Packet Rate, Packet Size, Tx/Rx Mbps at L3 |
| Link Counts | Tx/Rx Packet Counts, Tx Router Solicitations, Rx Router Advertisements, Unicast Packets, Multicase Packets, Binned sized packets in categories |
| Config Status | Src Global IP Address, Src Link-Local IP Addresss, IP Gateway, Subnet Prefix Length, Dest IP Address, Dest MAC Address |
| Errors | IP Packet Length Errors, Acterna Payload Errors, Packet Error Rate, Lost Frames, Frame Loss Ratio, Out of Sequence Frames |
| Graphs | Throughput, Frame Loss, Packet Jitter, Latency, Errors |
| ***Setups*** | |
| Ping Support | |
| IP Source Address | Manual, Stateful, Stateless |
| IP Destination Address | |
| Traffic Class | |
| Flow Label | |
| Hop Limit | |
| Payload Type | ATPv3 (Acterna Test Payload), Fill Byte |
| **Traffic Load** | |
| Load Type | Constant, Burst, Ramp |
| Constant Load Unit | Bit rate, Percent, Frames per second |
| Burst Load Unit | Bytes and Information Rate, Burst Time and Information Rate, Bytes and Gap Time, Burst Time and Gap Time, Frames and Duty Cycle |
| Ramp | Time step and load step |
| **Enhanced RFC 2544** | |
| VLAN Q-IN-Q Support, up to 4 levels | |
| Throughput | |
| Latency | |
| Frame Loss | |
| Back-to-back | |
| Packet Jitter | |
| Burst Test (advanced) | |
| Extended Load | |
| Throughput, latency, packet jitter run concurrently for speed | |
| Up to 10 frame sizes | |
| Built-in QuickCheck | |
| Graphical results | |
| Integration into job manager | |
| **Y.1564 SAMComplete** | |
| Service Configuration Test | |
| Service Performance Test | |
| VLAN Q-IN-Q Support, up to 4 levels | |
| Committed Information Rate (CIR) | |
| Extended IR (EIR) | |
| Maximum IR (MIR) | |
| Frame Loss Rate (FLR) | |
| Frame Delay (FD) | |
| Frame Delay Variation (FDV) | |
| Committed Burst Size (CBS) | |
| Policer Test | |
| Additional throughput test like RFC 2544 | |
| Built-in QuickCheck | |
| Graphical results | |
| Integration into job manager | |
| **QuickCheck** | |
| VLAN Discovery | |
| Frame length setting | |
| Measures maximum throughput | |
| Integration into job manager | |
| **VLAN Scan** | |
| Workflow to scan VLANs that are present | |

## OTN

| OTN Rates | |
|---|---|
| ***Rates*** | |
| OTU4 (111.8Gbps) with RS (528,154) FEC | |
| **FEC** | |
| See FEC under Ethernet, OTN uses RS (528,514) FEC | |
| **Traffic Mappings** | |
| OTU4 Bulk BERT | |
| PRBS Patterns | $2^{9-1}$, $2^{9-1}$ Inv, $2^{23-1}$, $2^{23-1}$ Inv, $2^{31-1}$, $2^{31-1}$ Inverse, Delay |
| **OTL/OTN Injection/Detection** | |
| Set Tx Scramble on/off | |
| Set Rx Descramble on/off | |

| | |
|---|---|
| Skew injection per Virtual Lane: | |
| Skew alarm (Rx) threshold settings | Defaults to 180nsec |
| Skew reporting per virtual lane | |
| Transcoding HI BER Detection on/off | |
| ***Errors*** | |
| OTL FAS | Per lane/all lanes; Single/Burst (up to 128)/Rate (10-3 to 10-10) |
| OTL MFAS | Per lane/all lanes; Single/Burst (up to 128)/Rate (10-3 to 10-10) |
| OTL LLM | Per lane/all lanes; Single/Burst (up to 128)/Rate (10-3 to 10-10) |
| FEC Uncorrectable | Single/Rate (10-2 to 10-5) |
| FEC Correctable | Single/Rate (10-2 to 10-5) |
| OOM | |
| SM-BIP | Single/Rate (10-5 to 10-7) |
| SM-BEI | Single/Rate (10-5 to 10-7) |
| PM-BIP | Single/Rate (10-5 to 10-7) |
| PM-BEI | Single/Rate (10-5 to 10-7) |
| TCM1-6 BIP | Single/Rate (10-5 to 10-7) |
| TCM1-6 BEI | Single/Rate (10-5 to 10-7) |
| Bit Error/TSE | Single/Rate (10-3 to 10-10) |
| ***Alarms*** | |
| OTL OOF | |
| OTL LOF | |
| LOM | |
| SM-IAE | |
| SM-TIM | |
| SM-BDI | |
| SM-BIAE | |
| ODU AIS | |
| ODU LCK | |
| ODU OCI | |
| PM-BDI | |
| PM-TIM | |
| Fwd Sig Fail | |
| Fwd Sig Degrade | |
| Bwd Sig Fail | |
| Bwd Sig Degrade | |
| TCM1-6 IAE | |
| TCM1-6 BDI | |
| TCM1-6 BIAE | |
| TCM1-6 TIM | |
| PT Mismatch | |
| Client Loss | |

| **OTN Overhead** | |
|---|---|
| Support of AMP, GMP, BMP as per client mapping | |
| GCC Transparency Test | Selection of GCC0, GCC1, GCC2, GCC1+2. PRBS verification on Rx interface with bits, errors, and BER. |
| Round-Trip Delay (RTD) as per G.709 section 15.8 (100 nsec accuracy) | Selection of PM or TCM1-6 |
| Overhead Manipulation Analysis | |
| Setting of Tx and Rx Tributary Ports | |
| SM/PM and TCM1-6 Trace (TTI) messages | |
| Fault Signaling (FTFL) processing | |
| Payload Type (PT) Label generation/display | |
| ***FEC Settings*** | |
| Outgoing FEC: GFEC (G.709 FEC) or all-zeroes | |
| Incoming FEC: ignore, correct errors, do not correct errors | |
| **Service Disruption Measurement** | |
| ***Measurement Parameters*** | |
| SD Separation/Debounce Time Setting | |
| SD Threshold Time Settings | |
| ***Triggers*** | |
| Signal Loss / LOS | |
| Bit/ TSE Error | |
| LOF | |
| FAS | |
| MFAS | |
| OTL LLM | |
| OTU LOM | |
| OTU OOM | |
| OTU SM-IAE | |
| OTU SM-BIAE | |
| ODU PM-BIP | |
| ODU PM-BEI | |
| ODU AIS | |
| ODU LCK | |
| ODU OCI | |
| ODU PM-BDI | |
| **Results** | |
| ***LEDs*** | |
| Signal Present | |
| Frame Sync | |
| OTL Lanes Aligned (OTU4) | |
| OTL Marker Lock (OTU4) | |
| OTU OH Pattern Sync | |

| | |
|---|---|
| Pattern Sync | |
| Summary Status | |
| Event Log | |
| Histogram | |
| Service Disruption | Summary Table, Disruption Details, Disruption Statistics Time |

***Interface***

- Invalid Rx Signal Seconds
- Signal Losses / LOS
- Signal Losses Seconds / LOS Seconds
- QSFP/SFP State
- Optical Rx Level (dBm)
- Rx Frequency (Hz)
- Rx Frequency Deviation (ppm)
- Rx Frequency Max Deviation (ppm)
- Tx Clock Source
- Tx Frequency (Hz)
- Tx Frequency Deviation (ppm)
- Tx Freq Max Deviation (ppm)
- Round-Trip Delay Current, Avg, Min, Max (100 nsec res.)

***OTL***

- Frame Sync Loss Seconds / LOF Seconds
- OOF Seconds
- OOMFAS Seconds
- Marker Lock Loss Seconds / LOR Seconds
- OOR Errors (out of recovery)
- Lane Aligned Loss Seconds / LOL Seconds
- OOL Seconds
- OOLLM Seconds
- FAS Errors, Rate, Seconds
- MFAS Errors, Rate, Seconds
- Logical Lane Marker Errors, Rate, Seconds
- Max Skew (Bits)
- Current Max Skew (Bits)
- Max Skew (ns)
- Current Max Skew (ns)
- Max Logical Lane Skew (LL ID)
- Min Logical Lane Skew (LL ID)
- Multiple per lane statistics

***FEC***

- Uncorrected Word Errors, Rate, Seconds
- Corrected Word Errors, Rate, Seconds
- Corrected Bit Errors, Rate, Seconds

***Framing***

- OOM Seconds

***OTU***

- OOM Seconds
- AIS Seconds
- SM-IAE Seconds
- SM-BIP Errors, Rate
- SM-BDI Seconds
- SM-BIAE Seconds
- SM-BEI Errors, Rate
- SM-BEI Error Rate
- SM-SAPI
- SM-DAPI
- SM-Operator Specific
- GCC BERT Bits
- GCC BERT Bit Errors
- GCC BERT Bit Error Rate

***ODU***

- ODU-AIS Seconds
- ODU-LCK Seconds
- ODU-OCI Seconds
- PM-BIP Errors
- PM BIP Error Rate
- PM-BDI Seconds
- PM-BEI Errors
- PM-BEI Error Rate
- PM-SAPI
- PM-DAPI
- PM-Operator Specific
- GCC BERT Bits
- GCC BERT Bit Errors
- GCC BERT Bit Error Rate
- PM Round Trip Delay Recent
- PM Round Trip Delay Last

***OPU***

- Payload Type
- PT Mismatch Seconds

***FTFL***

- Forward-Fault Type
- Forward-SF Seconds
- Forward-SD Seconds
- Forward-Operator Identifier
- Forward-Operator Specific
- Backward-Fault Type
- Backward-SF Seconds

| |
|---|
| Backward-SD Seconds |
| Backward-Operator Identifier |
| Backward-Operator Specific |
| ***TCM1-6*** |
| IAE Seconds |
| BIP Errors |
| BIP Error Rate |
| BDI Seconds |
| BIAE Seconds |
| BEI Errors |
| BEI Error Rate |
| SAPI |
| DAPI |
| Operator Specific |
| PM Round Trip Delay Recent |
| PM Round Trip Delay Previous |
| ***Payload*** |
| Pattern Sync Losses \ LSSs |
| Pattern Sync Loss Seconds \ LLS Seconds |
| TSE/Bit Errors |
| TSE/Bit Error Rate |
| TSE/Bit Error Seconds |
| Bit Error-Free Seconds |
| Bit Error-Free Seconds, % |

| **OTN Check** | |
|---|---|
| Automated workfolw is available at all OTN rates for OTN Bulk | **Comments:**<br>· Key use case is OTN service activation |
| Set test duration based on Bit Error Rate Theory or actual time | |
| Bit Error Rate Therory paramters for test duration: | |
| Data Rate (e.g. OTU4) | |
| BER Threshold | |
| Confidence Level (% value) | **Comments:**<br>· Statistical degree of certainty |

| |
|---|
| Key automated tests |
| Payload BERT |
| PRBS pattern selection |
| Pass/Fail BER Threshold |
| Round Trip Delay |
| Selection of applicable OH fields: PM, TCM1-6 |
| Measurement Frequency |
| Pass/Fail Threshold (ms) |
| GCC Transparency/encryption keys |
| Selection of GCC0, GCC1, GCC2, GCC1+2 |
| Pass/Fail BER Threshold |
| Far-end loopback auto-detect function |
| Report generation and formats |

## 100G Module



| **Physical Interfaces** |
|---|
| The 100G Module (TM100GA) provides the following physical ports:<br>• 1 x CFP4<br>• 2 x QSFP28<br>• 2 x SFP28<br>• 1 x RJ-45 for 10/100/1000Base-T<br>• 1 x RJ-48c<br>• 2 x Mini-BNC<br>• 1 x SMA for GNSS Antenna<br>• 1 x CLK IN/OUT<br>• 1 x 1PPS IN REF<br>• 1 x EXT |
| **Functionality** |
| The functionality on the 100G module is analogous to that of the MAP-2100. More information can be found in the 5800-100G/MAP-2100 datasheet (5800-100g-ds-tfs-nse-ae). |
| The 100G Module has its own onboard processor and storage just as with 5800-100G/MAP-2100. |
| The 100G Module runs the same software applications as 5800-100G/MAP-2100 |

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