SAVITRI
TELECOM SERVICES

ONT-800 Optical Network Testers

Simplify and Accelerate High Speed Network Test in Lab and Production

The ONT-800 mainframe is a highly-configurable, multi-protocol, multi-port test platform for R&D and system verification of optical transport ICs, modules, and systems. The ONT-800 builds on its predecessor, the industry reference ONT-600, to deliver the bandwidth, power and cooling requirements for testing at 600G per lambda and beyond. The ONT family features multiple mainframe options and compatible application modules, ranging from "singleslot" point tools up to a full rack-mounted multi-slot, multi-port and multi-user solution that satisfies sophisticated R&D SVT and manufacturing needs. All application modules share the same GUI, automation and scripting, for ease of use and versatility throughout product development cycles.

ONT-800 Use Cases

R&D Design Testing
System Development
System Verification Testing
Manufacturing Testing

ONT-800 Mainframe Features

- Designed to meet power and cooling for 800G optics
- Highest port density in the ONT family
- Compatible for ONT-600 modules
- One common architecture for SW Scripts on ONT family
- High accuracy clock module to synchronize modules and test ports
- ONT-804D with built in touchscreen
- Linux operating system
- Modules are hot swappable
- Rack mountable

ONT-800 Key Benefits

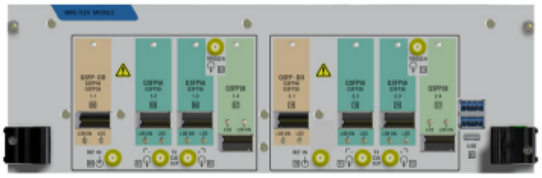
- Ensures eco-system interoperability
- Enables reliable performance
- Accelerates product validation

Available Modules for the ONT-800 Platform

800G FLEX XPM Module

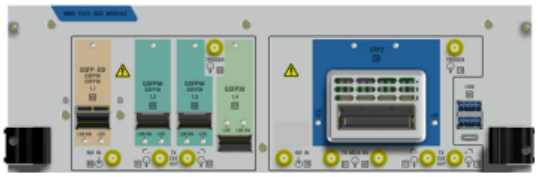
- 800G Transponder Test and Validation including OSFP 800G and QSFP-DD800
- 800G Unframed BERT
- 2 x 400GE, 8 x 100GE and 4 x 200GE
- Native QSFP-DD and SFP-DD
- Hardware Validation
- FEC Stress Testing

800G FLEX V2 Module



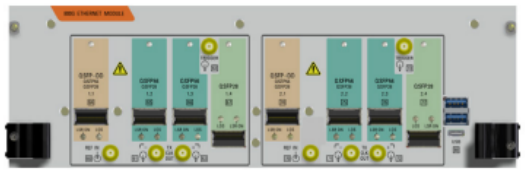
- Support for 2 x QSFP-DD / 6 x QSFP-56 / 8 x QSFP-28
- Unframed testing
- Ethernet 400GE and 200GE
- 4 x 100GE, 2 x 200GE and 8 x 50GE breakout
- Hardware Validation
- FEC Validation including FEC Stress Testing
- FOIC, OTUCn - OTUC1/ODUC1 to OTUC8/ODUC8
- ODUFlex with 400GE, 200GE and Bulk, ODU4 with 100GE
- OTL4.2/4.4 with ODU4 Bulk
- FlexE up to 400G via 100G or 200G PHY

800G FLEX DCO Module



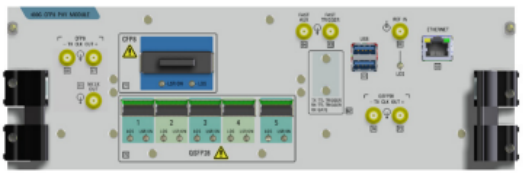
- Support for QSFP-DD, QSFP-56/28 and 400G CFP2-DCO
- Unframed testing
- Ethernet 400GE and 200GE, native and OTN client
- 4 x 100GE, 2 x 200GE and 8 x 50GE breakout
- Hardware Validation
- Support for QSFP-DD, QSFP-56/28 and 400G CFP2-DCO
- Unframed testing
- Ethernet 400GE and 200GE, native and OTN client
- 4 x 100GE, 2 x 200GE and 8 x 50GE breakout
- Hardware Validation

800G ETHERNET V2 Module



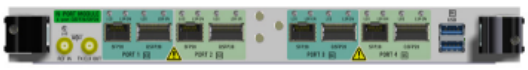
- Support for 2 x QSFP-DD / 6 x QSFP-56 / 8 x QSFP-28
- Unframed testing
- Ethernet 400GE and 200GE
- 4 x 100GE, 2 x 200GE and 8 x 50GE breakout
- Hardware Validation
- FEC Validation including FEC Stress Testing

400G CFP8 and QFLEX Modules



- CFP8-based 400GE testing
- Unframed, PCS, Ethernet IP, OTUCn, FlexE and FlexO testing up to 400G via QSFP28 or CFP8
- Static and dynamic (NRZ) skew insertion
- PAM-4 and NRZ electrical adapters
- Support for QSFP-DD and OSFP via adapters

N-PORT Module



- Native support for 4 x SFP28 / 4 x QSFP28
- Ethernet including 1GE, 10GE, 25GE, 40GE, 50GE and 100GE
- eCPRI over 10GE, 25GE, 40GE, 50GE and 100GE
- OTN OTU-4, OTU-3, OTU2, OTU1, OTLC1, ODU Multi Channel
- Fibre Channel 1/2/4/8G, 10G, 16G, 32G
- SDH/SONET 10G/2.5G

N-PORT ETHERNET Module

- Native support for 4 x SFP28 / 4 x QSFP28
- Ethernet including 1GE, 10GE, 25GE, 40GE, 50GE and 100GE
- eCPRI over 10GE, 25GE, 40GE, 50GE and 100GE

Mainframe Controller and Clock Module

- HDMI for external monitor connection
- 4 x USB for external keyboard/mouse and data transfer
- BNC, Bantam and Time of Day (ToD) inputs for external synchronization
- Optional Rb and GNSS synchronization

ONT-800 Mainframes

ONT-804D

- 4 slots for application modules
- 15" TFT touch screen
- LINUX OS with support for VNC-based remote operation
- Runs stand-alone software like Wireshark
- Ideal for stand-alone lab use

ONT-804, ONT-812 and ONT-812A

- 4 or 12 slots for application modules
- LINUX OS with support for VNC-based remote operation
- Runs stand-alone software like Wireshark
- Connectors for external keyboard, mouse, and display
- Ideal for cost-sensitive and scripted applications in SVT and manufacturing

Mainframe Specifications

Power supply (nominal range of use)				
AC Line	ONT-804	ONT-804D	ONT-812	ONT-812A
Nominal voltage range	100 to 240 V		200 to 240 V	100 to 240 V
Operating voltage range	85 to 265 V		170 to 265 V	85 to 265 V
Operating frequency		50/60 Hz		
Max AC power (fully loaded mainframe)	1600 VA	1600 VA	4400 VA (2 x 2200 VA)	3200 VA (2 x 1600 VA)
Max DC Power to Application Modules	1200 W	1200 W	3600 W	2400 W
Dimensions and weight (w/o modules)				
Dimensions, including handle/bumpers (w x h x d)	400 x 200 x 495 mm	400 x 495 x 215 mm	483 x 666 x 460 mm	483 x 666 x 460 mm
Weight	11.7 kg	14.2 kg	24 kg	24 kg

Touch screen display (ONT-804D only)	
Color TFT	15 inches
Resolution	1024 x 768 (XGA)
Interfaces, storage, data transfer	
Interfaces	Ethernet (Rj45), 4 x USB, external keyboard, mouse, HDMI
Processor	Intel, 16GB RAM
Hard drive for data/setup storage	≥ 64 GB
Instrument operation	
The ONT-800 uses the Linux operating system Local GUI via built-in touch screen and by connecting screen/mouse/keyboard. Remote operation is provided via Java Web Start or VNC. Individual user programs may run on the controller board, for example Wireshark or similar tools used to analyze captured data.	
Instrument operation	
The ONT-800 can be controlled remotely via SCPI commands sent by the customer's program using the LAN port. Modules are addressed independently and in parallel and may be shared among multiple users and across multiple mainframes network-wide. Universal driver libraries facilitate automation with specific support for individual applications. Scripting support is provided for Tcl/Tk, Python, C libraries, and LabView. The interactive GUI also works in parallel with remote control making it easy to develop automated scripts.	
Instrument operation	
Nominal range of use	+5 to +35°C
Storage	−20 to +65°C
Transport	−20 to +65°C
Local Mini LCD display	
Display type	Graphic LCD display 128 x 32 pixels
2 push buttons	Display and control: IP address, mainframe reference clock settings and module connectivity check
Clock and synchronization	
nternal master clock module accuracy	±1.0 ppm (Exceeds T1.101 stratum 3/3E accuracy)
External synchronization input / output	
Clock and time of day synchronization	NTP, PTP, external GPS, 1PPS, Time of Day
Connector, unbalanced	50 Ω, BNC jack
Clock source	Ds1, E1; 1544, 2048 kHz, 1, 5, 10 MHz, 6312 kHz
Connector, balanced	110 Ω, Bantam jack
Clock source	Ds1, E1; 1544, 2048 kHz, 1 MHZ

Clock output	
Connector, unbalanced	50 Ω, BNC jac
Connector, balanced	110 Ω, Bantam jack
Clock frequencies	AC Line
E1, DS1, 2048 kHz, 1544 MHz RJ45 Clock in/out 1 pps and time of day, ITU and YD/T 2375-2011, cascade	

GNSS synchronization and Rubidium oscillator (optional)

GNSS synchronization	
Antenna input [10]	Connector type: SMA 1.6/5.6, 50 Ω RF input power max. +10 dBm 3.0 V / 50 mA max
Supported satellite systems	GPS, Glonass, Beidou, Galileo
Time to first fix	< 30 s
Warm up time Rb oscillator	< 8 min to reach frequency accuracy better than ± 1E-9 at ambient temperature 25°C
Overall synchronization time typical:	< 30 min depends on satellite constellation and received signal quality
Time accuracy	< ± 2 ns (clear sky, good signal quality)
Frequency accuracy	< ± 1E-10 without receiving satellites (Rb oscillator)
	< ± 2E-8 during synchronization synchronized: long time stability of satellite system

Available ONT-800 Modules and their Capabilities

This table provides a portfolio overview to help you making the right module selection. Additional applications will be added over time, especially for the N-PORT and 800G FLEX Modules.

	N-PORT	400G CFP8	800G FLEX
Transponder Validation	Yes	Yes	Yes
PHY – Advanced Error Analysis		Yes	Yes
Dynamic Skew Insertion		Yes	Yes
Electrical Adapter		Yes	Yes
400GE		Yes	Yes
200GE		Yes	Yes
100GE NRZ	Yes		Yes
100GE PAM-4			Yes
50GE	Yes		Breakout 50GE
40GE	Yes		
25GE	Yes		
10GE	Yes		
1GE	Yes		
2 x 200GE, 4 x 100GE, 8 x 50GE breakout 8 x 100GE, 4 x 200GE, 2 x 400GE breakout			Yes
FlexE		Yes	Yes
FOIC-OTUCn		Yes	Yes
OTN OTU 1/2	Yes		
OTN OTU 3/4	Yes		
MultiChannel OTN	Yes		
Fibre Channel up to 10G	Yes		

	N-PORT	400G CFP8	800G FLEX
Fibre Channel 16G / 32G	Yes	Yes	Yes
eCPRI	Yes		
SONET/SDH	Yes		
Configuration Details			
Number of ports	4	1 - 4	2 - 8
Number of slots occupied in mainframe	1	3	3
DC Power Consumption (max)	250 W	450 W	700 W

ONT-800 Mainframes and Accessories

3078/04 ONT-804D	Mainframe with touchscreen display
3078/05 ONT-804	Mainframe without display, 19" / 21 " rack mount included
3078/07 ONT-812	Mainframe 12 slot rack mount version
3078/08 ONT-812A	Mainframe 12 slot rack mount version for 110V AC with reduced power profile
3078/92.05	Rack Mount Kit 19" and 21" for ONT-804D
3078/92.02	ONT-800 Ultra High Accuracy GNSS Rb Clock. Hardware option, can only be fitted in the factory
Power Cables (1 for ONT-804, 2 for ONT-812 included)	
K 810	European IEC C19 Schuko 250 V 16 A
K 811	UK C19 250 V 13 A
K 812	Australia 250 V 15 A
K 814	US NEMA 5-20 125 V 20 A
K 815	US NEMA 6L-20 250 V 20 A

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