

## STT® ONE

OTN and Next-Generation SDH/SONET Testing

## Data Sheet



The STT ONE is part of a family of test modules for the STT Platform

The STT Optical Network Expert (ONE) is a powerful and versatile test module for the Scalable Test Toolkit (STT) for testing emerging technologies such as OTN (ITU-T G.709) and next-generation SDH/SONET, as well as traditional SDH/SONET, offering service providers a complete solution for today's metro and core networks. By integrating OTN and EoS (VCAT, GFP, and LCAS) testing into a single, compact unit, the STT ONE module is extremely cost effective because it eliminates the need for multiple instruments.

## KEY FEATURES

- OTN, EoS, SDH, SONET in one instrument
- Dual wavelength optical transmitters up to 2.66 Gbps
- Advanced differential delay measurement, generation, and payload reassembly
- Fully independent or can be combined with other test modules to enhance application
- Ethernet traffic generation over SDH/SONET without extra equipment
- Auto-configuration and Channel Master

## BENEFITS

- All-in-one test solution
- Single, compact unit
- Extremely cost-effective
- Eliminates the need for multiple instruments
- Intuitive user-friendly GUI

## TEST FEATURES

The STT ONE allows the user to perform routine and advanced testing on transport and access networks, legacy and next-generation networks with a single test set. Its price to performance ratio makes this product ideal.

### Optical Transport Network (OTN)

STT ONE provides Forward Error Correction (FEC), verifies conformance to ITU-T G.709 and a wide range of network performance standards, including end-to-end connectivity at OTU1 and OTU2 bit rates, and complete synchronous/asynchronous mapping of SDH/SONET client signals.

- OTU1 (2.66 Gbps) and OTU2 (10.7 Gbps) interfaces
- ODU Time Division Multiplexing (ODU1 into OPU2)
- Synchronous/asynchronous mapping of SDH/SONET signals
- OTN/SDH, OTN/SONET mux test
- Error performance analysis per ITU-T G.8201 and M.2401
- OTU, ODU, OPU error injection & alarm generation
- OTU, ODU, and OPU bytes control and decode

### Next-Generation SDH/SONET

With the growth of IP services and the increasing need to leverage existing SDH/SONET networks, service providers must routinely monitor and test NGN to ensure packet-based traffic is properly delivered across the network. STT ONE offers a complete solution for NGN.

In addition, high and low order virtual concatenation capabilities help verify end-to-end connectivity. Its differential delay detection and generation functions help measure the delay in the existing network and stress the far end payload assembly circuitry.

### Virtual Concatenation (VCAT)

- Conforms to ITU-T G.707, Telcordia GR-253 & ANSI T1.105-2001
- SDH/SONET error performance analysis per ITU-T G.821, G.828, G.829, M.2101, M.2110, M.2120, and Telcordia GR-253
- Virtual Concatenation Testing, VC-4-X-v, VC-3-X-v, VC-12-X-v, VC-11-X-v / STS-3-X-v, STS-1-X-v, VT1.5-X-v, VT2-X-v
- Differential delay generation, measurement, and payload reassembly up to 256 ms
- Path overhead bytes control and decode on each member
- Error injection/alarm generation on each member

### Generic Framing Procedure (GFP)

- Conforms to ITU-T G.7041 and ANSI T1.105-2001
- GFP-F, GFP-T support
- GFP header control, error injection, and error detection
- Mapping/demapping of GigE payloads into SDH via GFP-T port

### Ethernet over SDH/SONET (EoS)

- Ethernet frames generation via GFP-F
- Layer 2, Layer 3 testing including VLAN and MPLS tags
- RFC 2544, IP Ping, and Ethernet packet capture

### Link Capacity Adjustment Scheme (LCAS)

- Conforms to ITU-T G.7042 and ANSI T1.105-2001
- Emulation of Source and Sink state machines (per member)
- Generation and capture of member status information

### Traditional SDH/SONET

- Mapping/demapping of payloads from VC4-64c/STS-192c down to VC11, VC12/VT1.5, VT2
- SDH/SONET errors/alarms detection and generation
- SDH/SONET overhead control and decode
- Pointer monitoring and adjustment
- APS timing measurement

### PDH/T-Carrier Testing

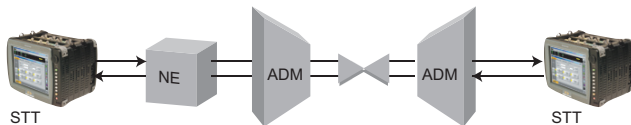
- Error performance analysis per ITU-T G.826, M.2100
- 1.5M, 2M, 34M, and 45M pulse mask analysis
- VF testing

## APPLICATIONS

STT ONE allows the user to perform testing on transport and access networks, legacy and next generation networks with a single product.

### Out-of-Service Testing

#### OTN/SDH/SONET/PDH/T-Carrier

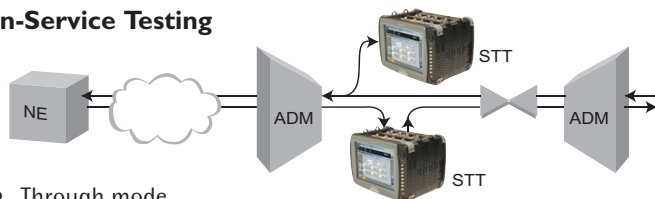


- End-to-end error free transmission verification
- SDH/SONET network routing verification

#### EoS (VCAT, GFP, and LCAS)

- End-to-end Ethernet over SDH/SONET tests
- Verification of path connectivity
- Stressing far end payload assembly structure by generating additional differential delay to each VCG member
- RFC 2544
- IP tests

### In-Service Testing

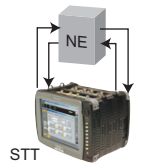


- Through mode
- In-service monitoring through protected monitoring points or optical splitters
- Overhead bytes monitoring and decoding
- Pointer monitoring
- LCAS protocol monitoring
- VCAT and LCAS interaction monitoring
- Ethernet/IP packet capture and decode

### Mux Test

#### OTN

- OTN/SDH, OTN/SONET Mux/demux testing
- Asynchronous/synchronous mapping/demapping of SDH/SONET client signals into OTU1/2



#### EoS

- Verification of proper mapping of Ethernet frames into GFP cells
- Testing GFP behavior

### Mux Mode

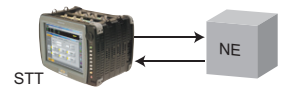
#### OTN

- OTN/SDH, OTN/SONET Mux/demux emulation

### Network Element Verification

#### OTN/SDH/SONET

- Error injection, alarm generation to verify NE remote indication
- FEC error generation to verify NE Forward Error Correction capabilities
- ODU Time Division Multiplexing test



#### VCAT/GFP/LCAS

- VCAT bandwidth availability verification
- VCAT differential delay generation to stress NE payload assembly circuitry
- LCAS state machines generation to verify NE response by increasing or decreasing bandwidth

## ABOUT STT PLATFORM

The Scalable Test Toolkit is an advanced, modular, and flexible testing solution that addresses Layer 1 through Layer 7 requirements, from fiber optics to Quality of Service. Designed to meet the challenges of designing, installing, maintaining, and troubleshooting core, metro, and access networks, the STT combines an innovative test platform with revolutionary test features, supporting a complete suite of capabilities and technologies for the converging global communications market.

All STT modules are equipped with a unique standalone feature and can operate at 100% of their capabilities outside of the platform, maximizing test resources.

- STT DTM. Measures Polarization Mode Dispersion (PMD) and Chromatic Dispersion (CD).
- STT xWDM. OSA for the O, E, S, C and L bands. Channel drop and tunable laser for the C and L bands.
- STT 10G Ethernet. Ethernet testing for Layers 1, 2, and 3, from 10 Mbps to 10 GigE LAN/WAN and Fibre Channel. Advanced test features include MPLS, VLAN stacking, and packet capture and decode up to Layer 7.