



FrontLine GigE Ethernet Test



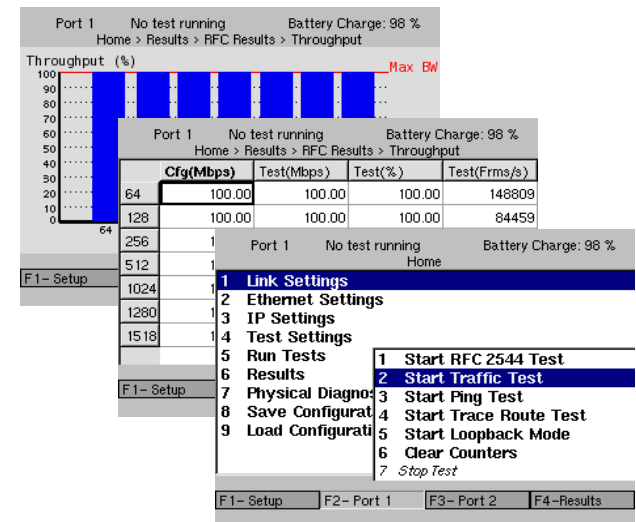
*Dual Port
GigE Ethernet IPTV
with Browser Tester*





❑ Features / Benefits

- **Dual-port Electric 10/100/1000 (RJ45)** and dual Optical **GigE (SFP)** ports for simultaneous traffic generation and reception at Gigabit Ethernet and or 10/100/1000 Mbps traffic analysis.
- **Optical Level Measurement** capability. Layer1 connectivity test.
- Ports can be configured as Electrical **RJ45** or Optical **SFP** interface.
- (Optional) **Scripting capability**, custom and automatic tests
- User-definable **RFC 2544** benchmark test routines.
- Bit-error-rate testing (**BERT**) capability.
- **Class of Service (CoS – via VLAN)** and IP type of Service (TOS/DSCP) traffic prioritization settings
- **Multiple Streams Testing** (up to 8 traffic flows per port)



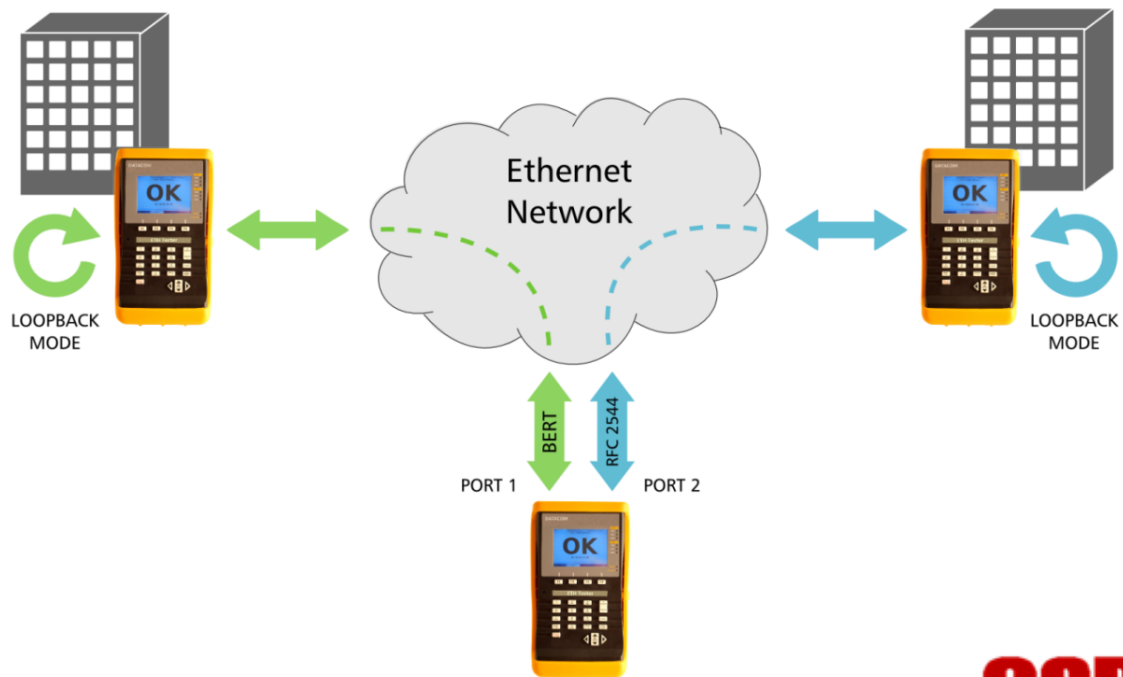
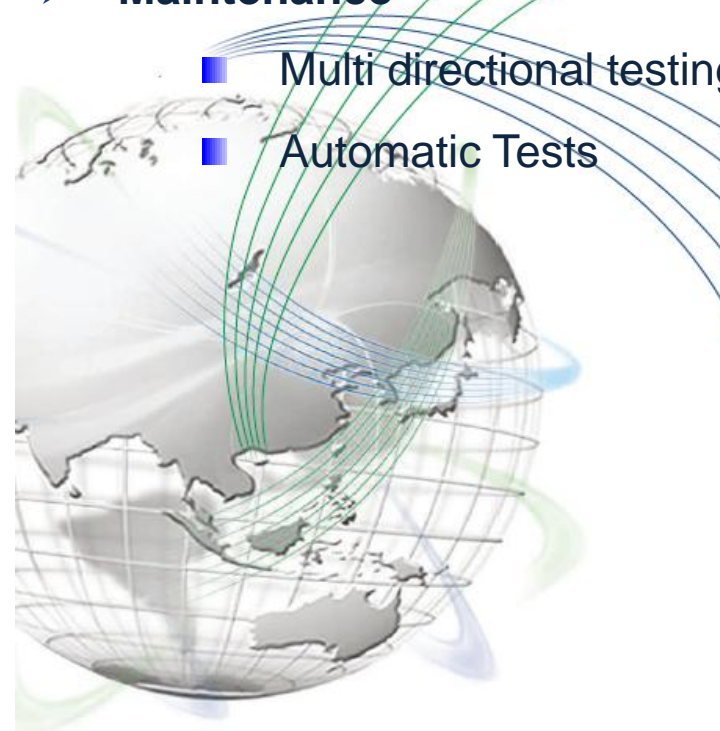


➤ Service Installation and Commissioning

- Analyzing and verifying connectivity of physical layer, (Cooper or Fiber)
- Verify performance assessment for Layer 2/3 10/100 or Gigabit Ethernet Services.
- Validate Service Level Agreements (SLA or QoA) for Service providers or customers.

➤ Maintenance

- Multi directional testing and maintenance certification of GigE Ethernet and IP Services
- Automatic Tests





❑ Traffic Generation

- Layer 1, Layer 2 or Layer 3 Traffic test.
- MAC address - Source and Destination (Unicast, Broadcast, Multicast and random test)
- 802.1q VLAN tag and 802.1p priority
- IP address (Source and destination – IPv4)
- Frame rate from 0% to 100% bandwidth utilization with 0.01% accuracy
- Frame length: Undersized, Normal, Jumbo or Random (from 40 bytes to 10 Kbytes)
- Traffic type: Flood, constant, burst or ramp test.
- Payload: Time-Stamp, BERT or customizable patterns.
- IP headers fields (TOS/DSCP, TTL) for QoS verification test.
- Error injection: Bit and or CRC.
- Single or multiples streams (up to 8 traffic flows per port)





❑ Measurements / Monitoring

➤ Configurable filters

- VLAN ID, Priority, SVLAN ID, Priority
- Source and destination MAC address
- IP headers filters (IP address, TOS/DSCP, TTL)

➤ Performance Statistics

- Received bandwidth and Frame Rate (Min, Max, Current, Average)
- Transmission and Reception Line Rate and Data Rate (L1, L2 Mbps)
- Delay and Jitter Measurement (Min, Max and Average)

➤ Link Counters

- Transmitted and Received Frames and Bytes
- Number of received: Valid Frames, Timestamp, Unicast, Multicast, Broadcast, VLAN, Q-in-Q, Pause frames, Groups of frame sizes and valid packets

Port 1		0h0m24s running	Battery Charge: 6 %
Home > Results > Link Counters			
VLAN Frames	:		0
Q-in-Q Frames	:		28744239
Last VLAN ID	:		1
Last VLAN Priority	:		0
Last SVLAN ID	:		1
Last SVLAN Priority	:		0
Last SVLAN DEI	:		0
Last SVLAN TPID	:		0x8100
Pause frames	:		0

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Information About the Received Frames			
F1- Setup	F2- Port 1	F3- Port 2	F4-Home



❑ Measurements / Monitoring

➤ Error Statistics

- FCS errored frames, Runts, Jabbers, Out of Sequence Frames, Lost Frames, Frame Loss Ratio, Collisions, Checksum packet errors, Length packet errors.

➤ BERT Statistics

- Pattern Sync Indication
- Received BERT Frames
- Bit Errors
- Seconds with Errors
- Error-free seconds

➤ Link Information

- Link Status
- Link Loss / Down
- Errors Present

Port 1	0h0m20s running	Battery Charge: 90 %
Home > Results > Link Counters		
All Received Frames	:	3585947
Valid Received Frames:		3586048
Transmitted Frames	:	8972175
RX Bytes	:	2449348446
TX Bytes	:	2296859346
Timestamp Frames	:	3556785
Unicast frames	:	3585973
Multicast frames	:	0
Broadcast frames	:	0
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F1- Setup	F2- Port 1	F3- Port 2
F4-Home		



□ Testing

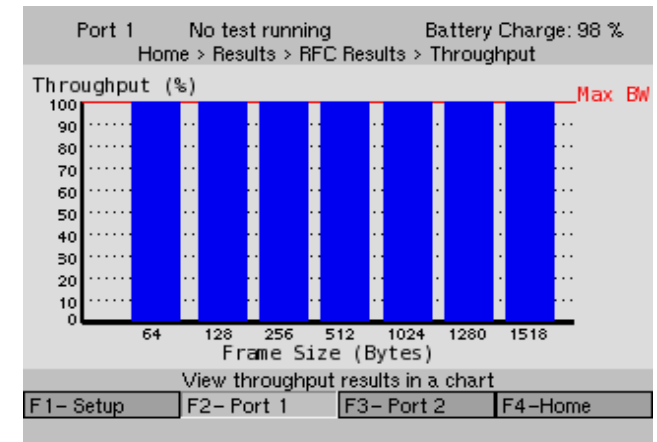
- **Loopback**
 - Automatically swapping source and destination MAC/IP address
 - Manual or remote control
- **Traffic Test** (Timestamp or BERT – Single or Multiple Streams)
- **RFC2544**
 - Throughput, Latency, Frame loss and Back to Back frames tests in conformance with RFC2544 standards.
 - Configurable tests, Frame sizes, duration and headers
 - Available for Layer 2 and layer 3
- **BERT**
 - Pattern 2²³-1, 2³¹-1, (capability to invert), all ones, all zeros or user define.
- **ARP and DHCP Support**
- **Ping and Trace Route**





❑ Other Functions

- **Results Management**
 - RFC2544 graphical reports shown in the LCD and Web Browser.
- **Multiple User Profiles**
 - Test profiles saved and loaded easily.
- **Configuration by Web Browser**
 - All configuration, start of tests and measurements can be made at a distance by Web Browser.



Port 1 No Test running Battery Charge: 6 %
Home > Ethernet Settings > VLAN Configuration

Tagging	Q-in-Q
VLAN ID	1
VLAN Priority	0
SVLAN ID	1
SVLAN Priority	0
SVLAN DEI	0
SVLAN TPID	0x8100

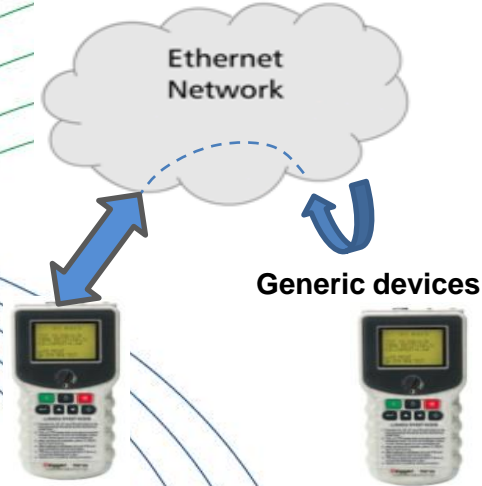
Min: 0 - Max: 4095

F1- Setup F2- Port 1 F3- Port 2 F4-Home

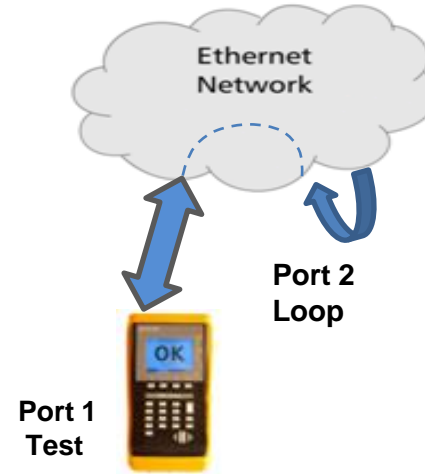


UNIQUE FEATURES

Traditional Ethernet test using **two** devices



Same test **one** device



Full IPTV service test may require **Multiple** devices



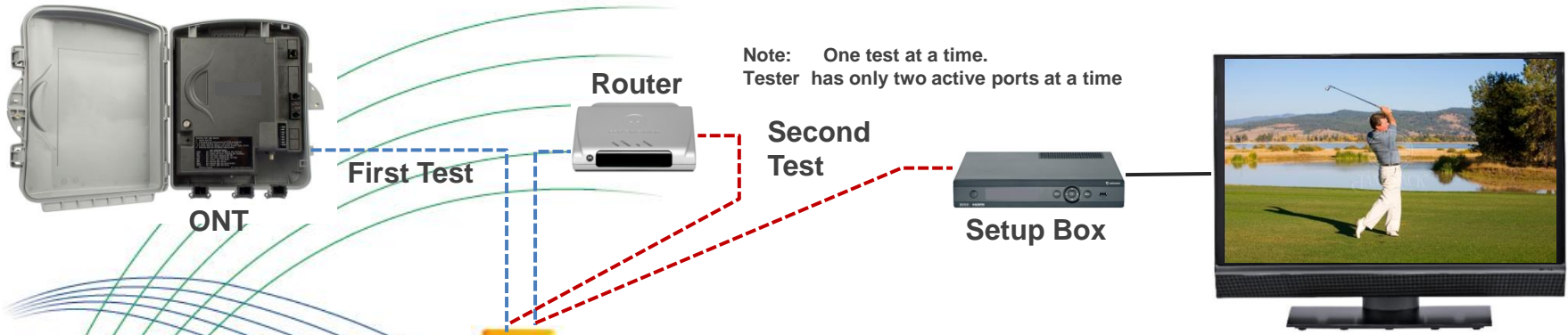
Same test **one** device



+ SCRIPTING automation



IPTV over 10/100/GigE



➤ IPTV module is capable measuring

- Error Indicator
- Continuity errors
- Packet Loss
- Oos Packets
- Received Packets
- Received TS (Video, audio, data)
- Stream rate (Video audio, data)
- IGMP Latency
- MDI Measurements
- PID MAP.
- PCR Jitter
- Packet Jitter
- In-Out Traffic Comparison

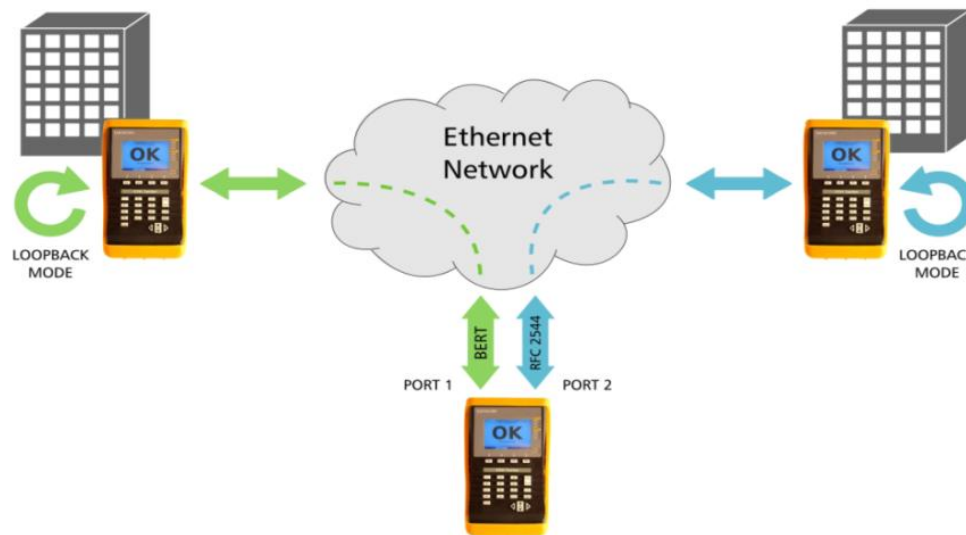
Note: The FrontLine Eth can only use two test ports at a time.
 Test one must be concluded before test two can be activated.
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UNIQUE FEATURES

Simultaneous Circuit Testing

The FontLine Eth features a full dual-port capability. Dual RJ-45 for electrical testing and dual SFP for optical testing combo ports (10/100/1000Base-T or SFP). This feature enable field technicians to perform simultaneous testing of two interchangeable circuits. These circuits may be provisioned for two fully independent customers, or they may represent two routes in a single network.



Dual Optical SFP
Dual Electrical RJ45

Other Features

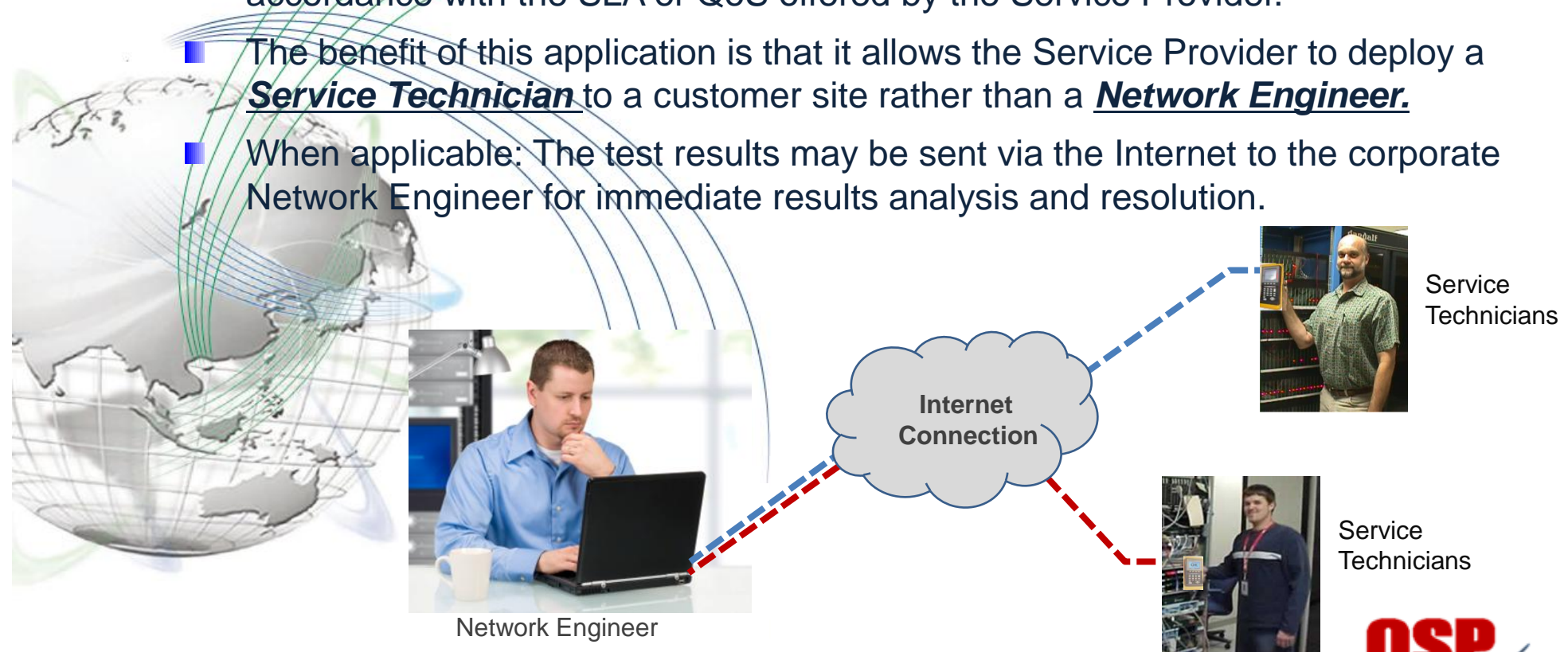
Multiple user profiles: Test profiles saved and loaded easily.
Results: RFC2544 graphical reporting. LCD and Web Browser.

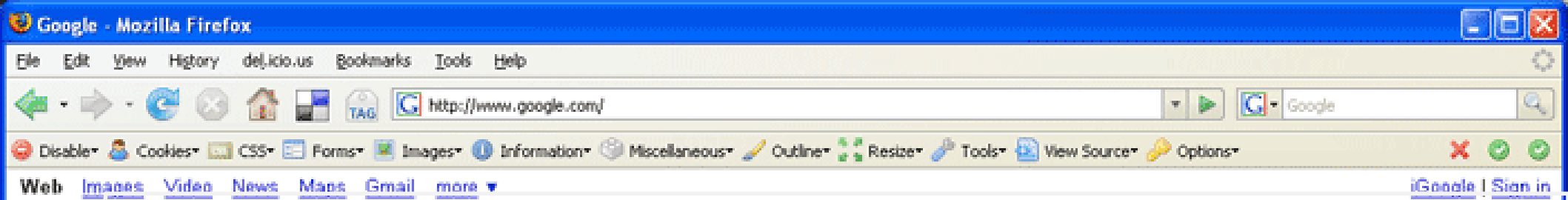


□ Scripts

➤ Automating your tests – Run any tests the way you need !

- **Test Automation:** Set up all your testing in a concise methodical manner.
- The FrontLine GigE allows you to pre-configure numerous test configurations in accordance with the SLA or QoS offered by the Service Provider.
- The benefit of this application is that it allows the Service Provider to deploy a **Service Technician** to a customer site rather than a **Network Engineer**.
- When applicable: The test results may be sent via the Internet to the corporate Network Engineer for immediate results analysis and resolution.





Web Browser Results Interface

Product ID: 1000787
 Product Revision: 3
 Software Version: 3.1.1-2.21
 Firmware Version: 13

Main Update Results License Configuration Scripts

Port 1 No test running

Link Settings Ethernet Settings IP Settings Test Settings Run Tests Results

RFC 2544
 Traffic
 Ping
 Trace Route

Traffic Test Type
 Frame Settings
 Traffic Settings
 Stream Settings

General Settings
 Stream Rates
 Stream Setup

Stream 1
 Stream 2
 Stream 3
 Stream 4
 Stream 5
 Stream 6
 Stream 7
 Stream 8

Ethernet Settings
 VLAN Configuration
 IP Configuration
 Frame Settings





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Sample Results Unit A

Port 1	0h0m20s running	Battery Charge: 90 %
Home > Results > Link Counters		
All Received Frames	:	3585947
Valid Received Frames	:	3586048
Transmitted Frames	:	8972175
RX Bytes	:	2449348446
TX Bytes	:	2296859346
Timestamp Frames	:	3556785
Unicast frames	:	3585973
Multicast frames	:	0
Broadcast frames	:	0
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Sample Results Unit B



Characteristic	FrontLine GigE	JDSU Smart Class	SunLite GigE	EXFO AXS 200/850
				
Interfaces (Electric and optic)	2 port	1 port	1 port	1 port
Electric Interface	10/100/1000	10/100/1000	10/100/1000	10/100/1000
Optical Interfaces	100/1000	1000	100/1000	100/1000
Management	Ethernet 10/100 (update reports in Web browser)	USB (update / reports to excel)	USB	Ethernet FTP/USB
RFC2544 (Throughput, Latency, Frame Loss, Back to back)	Yes	Yes	Yes	Yes
Bit Error testing	(2 ²³ -1 e 2 ³¹ -1) normal or inv. All 1s, All 0s, user define (1 byte)	(2 ²³ -1, 2 ³¹ -1) normal or inv., All 0s, All 1s, user define	(2 ⁷ , 2 ¹⁵ , 2 ²⁰ , 2 ²³ , 2 ³¹) normal or inv. User define (2 bytes)	(2 ⁹ , 2 ¹¹ , 2 ¹⁵ , 2 ²⁰ , 2 ²³ , 2 ³¹) normal or inv. User define .
IPTV Support	Yes	No	No	No
Copper test (L1)	Yes	Yes	Yes	Yes
LoopBack Mode	Manual and automatic loops	Automatically loops (Remote LLB)	Automatically loops	Automatically loops
Frame rate step (traffic load incr.)	0.01%	0.001%	.1%	0.1%
Jumbo frames	Up to 10K	9600 bytes	Up to 12K	9600 bytes
Multiple User Profiles (load/save)	More than 16. (unlimited)	yes	Up to 16 configs	More than 16
Streams (traffic flows)	Up to 16 (8 per port)	Up to 8	Up to 8	1 + 3 background
IPv4/IPv6	IPv4	IPv4	IPv4	IPv4 / IPv6
Scripts (Remote and embedded)	Yes	No	No	No
Configuration by Browser	Yes	No	No	VNC
Ping, traceroute, ARP, DHCP	Yes	Yes	Yes	Yes



□ Road Map

➤ Future Upgrades and Features

Features	Description
Asymmetric RFC2544	Bidirectional RFC2544 (between 2 test sets).
Multiple bit errors	Injection and measurement of multiple bit errors at the same frame.
MPLS encapsulation	Allow to transmit layer 3 IP traffic over a MPLS network by specifying MPLS label settings when configuring a traffic.
IPv6	Enable support to IP version 6 testing.

□ OTHER PRODUCTS



FrontLine xDSL with IPTV



VDSL, ADSL, ADSL2, ADSL2+, G.DMT
IPTV: MPEG-2 Broadcast, (UDP and RTP, MPEG-2 VOD (RTSP-UDP)
10/100 Ethernet
PPoE, RFC 2684, (Metro Ethernet), RFC 2684 (IpoA)
Subscriber Modem Emulation.
Router Protocols: DHCP, DNS, Ping, HTTP
Browser (PC like Navigation)
Numerous Modem Emulations.
QoS video Stream, errors, Jitter, PID Map.

FrontLine T1

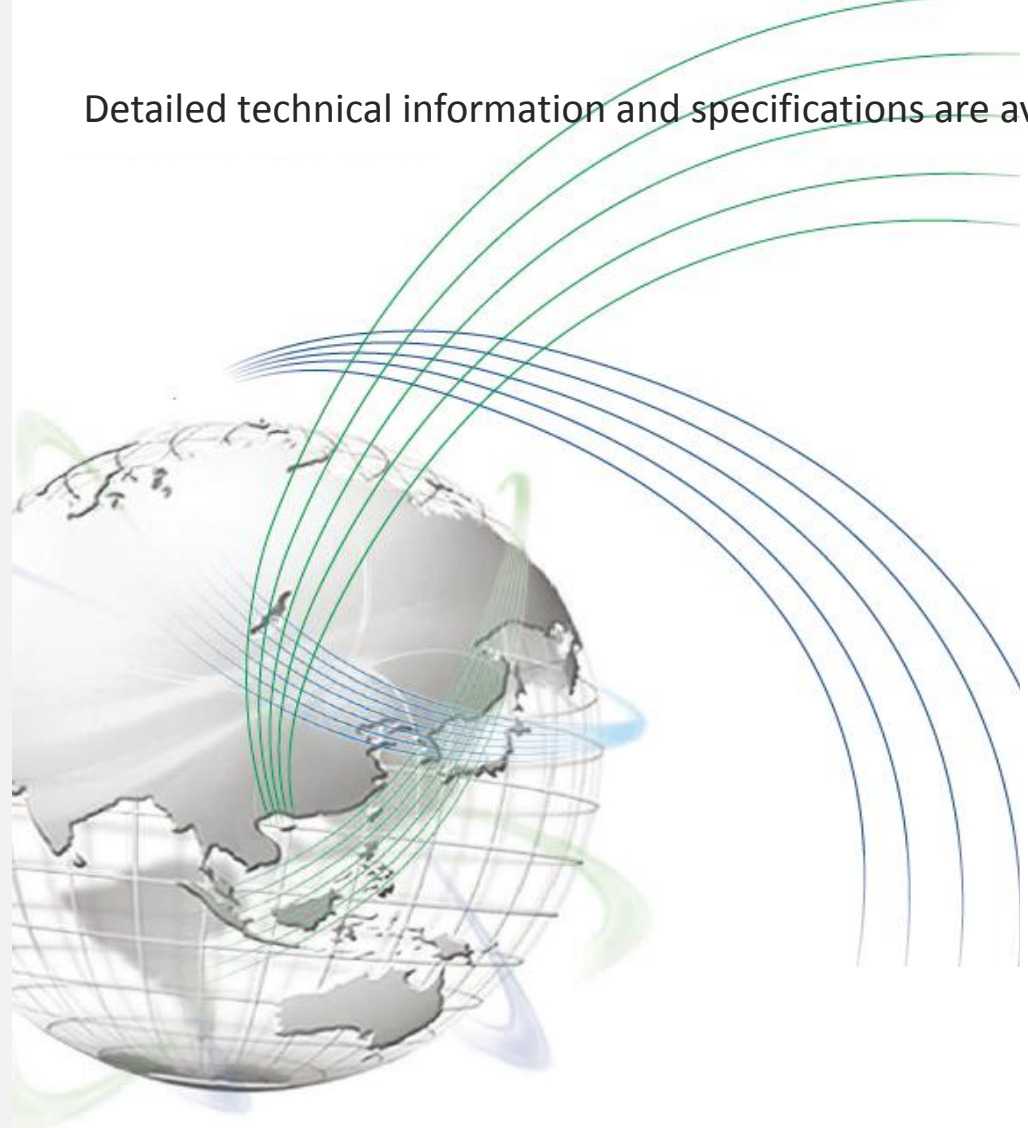


Dual T1
V35, V11, V36, RS232
BERT/BLERT
Basic Errors
Histogram
TX/RX Framed Errors
D4, ESF, SLC96
Internal External Clocks
Pulse Mask Graphics

Sync / Async Test
10M Ethernet Test
DTE / DCE
Frame Relay Test
PPP
HDLC Cisco
X25/xDLC



Detailed technical information and specifications are available on our home page: www.ospnetworks.com



Contact your regional distributor for additional information or contact OSP Networks direct.

OSP Networks
10248 NW 47 Street
Sunrise FL 33351
Main: 954-474-8485