

## TestPort Ethernet Impairment Tester

Inserts packet delay, jitter, loss, duplication, reordering, error and bandwidth variations

### GIGABIT ETHERNET IMPAIRMENT

TestPort Ethernet Impairment Tester enables engineers to model and modify arbitrary performance dynamics including *packet delay, jitter, bandwidth limitations, congestion, packet loss, errors and duplication* on live IP packets at speeds up to 1,000 Mbps at full linespeed.

### SPECIFICATION OVERVIEW:

- Hardware (FPGA) based
- Up to 15 user defined filters
- MAC, IP, TCP, UDP etc. filters
- Full Gigabit performance
- Hand-held battery operated
- Real traffic conditions
- Advanced traffic statistics
- Remote Control via VNC
- Configurable: deterministic or random, time delays can be inserted at every filter
- FEC errors, IP checksum errors
- Impairments ITU-T Y.1541.
- Detailed event log
- 100% verification of network stability
- Check tolerance to QoS degradation
- Assure Service and SLA
- Easy identification of degradation sources



### PLATFORM

- Configuration, report storage and export through USB port or SD card
- TFT display true Color 4.3" LCD, 480 x 272px
- Operation time on batteries: up to 8 hours
- Serial RS232C port
- Dimensions: 223 mm x 144 mm x 65 mm
- Weight: 1.1 kg (2.6lbs)

## ETHERNET IMPAIRMENT

The TestPort Impairment Tester is a tool for developers debugging new IP equipment, acceptance test laboratories, design and configuration of unified Ethernet/IP networks, QoS/QoE test, HDTV, IPTV, VoIP, Internet radio, Video Streaming, VPN data, High Speed Internet, Satellite and Undersea traffic applications.

Use this device to test Multiplay applications including Critical Data Access, Internet, VoIP, IMS, and IPTV including routers, VoIP hand sets, VoIP PBXs, set-top boxes and VoD servers.

TestPort Impairment Tester is designed to address the testing requirements of this growing diversity of network hardware and software, and to provide a controlled, reproducible environment for testing all devices, protocols and terminals used in the new IP applications. It can provide the ability to generate common network impairments such as packet loss, duplication, delay, congestion, packet errors and bandwidth limitations.

It offers the ability to reproduce a wide range of network behaviours at up to 1,000Mbps with 1ms accuracy.

### IP Testing

IP networks can be very diverse and are capable of carrying many types of traffic. They vary considerably in bandwidth, latency, error and loss rates. QoS can fluctuate widely too due to of congestion, failures and routing.

## APPLICATIONS

- **Network Design.** Verification and debugging of Ethernet and IP networks.
- **IP Applications Design:** Including Internet access, Voice over IP, Fax over IP, Gaming, Streaming audio and video, IPTV, VoD, and real/time services.
- **Approval and Acceptance Tests:** Certify behaviour of IP equipment including Phones, Fax, Gateways, Set-Top-Box, IMS core, Application servers, Gateways, ADSL/VDSL/FTTx routers, and PLCs.
- **IEEE 188v2 PTP.** Test the synchronization between master/slave clocks.
- **QoS level verification** Configure terminals, gateways and routers.
- **Laboratories.** Generation of controlled QoS to emulate and repeat network impairments.
- **Emulation network conditions** found on the Internet and enterprise networks: latency, jitter, packet loss, packet reordering, bandwidth limitations.
- **Protocol testing:** Multiplay Application such as H.323, SIP, MPEG2, MPEG4, and VC1.



## Features

### NETWORK FEATURES

#### Formats & Protocols

- 10, 100, 1000 Mbit/s Ethernet
- IP, TCP/UDP, IEEE 802.3, IEEE 802.1Q support

#### Traffic Impairments

- Traffic impairments can be defined over up to 16 traffic flows
- Independent criteria can be used for each branch
- Actions: Packet loss, error, duplication, delay, reordering

#### Ethernet Filters

- Ethernet flow: MAC origin, destination, group of address based on defined masks
- Ethernet type and selection mask
- VLAN and selection mask
- CoS and selection mask

#### IP Filters

- IP address origin, destination, and masks.
- Traffic flow selection per transported protocol
- Traffic flow selection based on DSCP with optional DSCP filters
- Field contents at TCP/UDP layer port with optional port filters

#### Delay

- Uniform distribution: minimum delay ( $T_{min}$ ) and maximum delay ( $T_{max}$ )
- Shaping filter defined by transmission rate ( $r$ ) and depth ( $T$ )

#### Jitter

- Predefined deterministic latency or random jitter using uniform and exponential distribution
- Uniform distribution: minimum delay ( $T_{min}$ ) and maximum delay ( $T_{max}$ )
- Exponential distribution: minimum delay ( $T_{min}$ ) and average delay ( $T_{avg}$ )

#### Loss

- Traffic error deterministic and random
- Deterministic errors defined by time start, or frame number
- Random errors defined by probability

*Continued . . .*



## Features continued

### Loss

- Traffic loss deterministic and random
- Loss defined by time start / time duration, or first frame / number of frames
- Deterministic loss: unique, burst, periodical burst
- Random loss: constant and Gilbert-Elliott

### Duplicates/Reordering

- Traffic duplication defined by deterministic and random events
- Deterministic duplication defined by time or frame number
- Random duplication defined by event probability

### Results

- Minimum, average and max delay
- Counters and statistics for packet loss, errors, duplications and reordering

### Performance

- Jumbo frame support up to 17 kBytes
- Full Duplex operation at 1 Gbit/s
- Accuracy better than  $10^{-6}$  secs. at 1 Gbit/s
- Performance and accuracy 100% independent of line rate

### Interfaces

- 2xGigabit Ethernet interfaces electrical and optical (SFPs based)
- Bidirectional operation through Ethernet supporting 10BASE-T, 100BASE-TX, 1000BASE-T, 1000BASE-SX and 1000BASE-LX
- Management Fast Ethernet

### Service and Support

Absolute Analysis provides unsurpassed service to all TestPort™ users including remote diagnostics, extended warranties, and upgrade paths to current offerings from any system.

### Training

Absolute Analysis offers comprehensive training courses for products and protocols. Training can be provided at your location or remotely, and can be customized to your requirements.

### For More Information

Contact

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