



Telecom **backhails** have migrated to 10Gb Ethernet/IP/MPLS while bunch of synchronization alternatives are available including: a) **TDM** based signals such as E1/T1, b) satellite **GNSS** and c) packet based solutions such as **SyncE** and **PTP**. **Ether10.Genius** is ready to test or monitor these architectures while emulating terminals, multiplexers, clocks and transmission nodes.

Market Analysis

Updated on 22/11/17

PTP/SyncE testing at 10G

Ether10.Genius	VePAL TX320s	MTS-5800	NetBlazer V2	Network Master Pro MT1000A
				
ALBEDO	VEEX	VIAVI	EXFO	ANRITSU

CONFIDENTIAL

PLATFORM					
Size	<ul style="list-style-type: none"> • 210 × 110 × 60 mm • Volume: 1,386 cc • 1.1 kg 	<ul style="list-style-type: none"> • 290 × 140 × 66 mm • Volume: 2,680 cc • 1.58 kg 	<ul style="list-style-type: none"> • 215 × 175 × 42 mm • Volume: 1,580 cc • 1.9kg 	<ul style="list-style-type: none"> • 254 × 210 × 55 mm • Volume: 2,934 cc • 2 kg 	<ul style="list-style-type: none"> • 257 × 164 × 77 mm • Volume: 3,245 cc • 2.7 kg
Architecture	• All interfaces included	• Factory Moduls	• All interfaces included	• Modular equipment	• All interfaces included
Display	<ul style="list-style-type: none"> • 480 x 272 pixels (4.3") • Touchscreen • Keyboard • Mouse 	<ul style="list-style-type: none"> • 840 x 480 pixels (7") • Touchscreen • Keyboard 	<ul style="list-style-type: none"> • 1200 x 600 pixels (7") • Touchscreen 	<ul style="list-style-type: none"> • 8 inch • Touchscreen • Multitouch 	<ul style="list-style-type: none"> • 800 × 480 pixels (9") • Touchscreen
Ruggedness	• 1,5 meters drop	• 1,0 meter drop	• IEC 721	• (?)	• (?)
Remote Control	<ul style="list-style-type: none"> • Standard VNC • SNMP 	• Proprietary (ReVeals)	<ul style="list-style-type: none"> • Standard VNC • SNMP 	• Standard VNC	• Standard VNC
Batteries	<ul style="list-style-type: none"> • 2 x Li-Po • 8 hours in 10 GbE • 24 hours in EI 	<ul style="list-style-type: none"> • Li-Ion • 2-6 hours 	<ul style="list-style-type: none"> • Li-Ion • 4 hours in 10GbE 	<ul style="list-style-type: none"> • Li-Ion • 2 hours 	<ul style="list-style-type: none"> • Li-Ion • 4 hours
Auxiliar Ports	<ul style="list-style-type: none"> • Ethernet RJ45 • 2 x USB • Headset 3.5 mm • SD card 	<ul style="list-style-type: none"> • Ethernet RJ45 • 2 x USB • Bluetooth • Celullar 	<ul style="list-style-type: none"> • 2 x Ethernet RJ45 • 2 x USB • Bluetooth • Celullar 	<ul style="list-style-type: none"> • Ethernet RJ45 • 3 x USB • SD card 	<ul style="list-style-type: none"> • 3 x USB • Ethernet RJ45 • IEEE 802.11 b/g/n • Bluetooth • Headset
GNSS receiver	• Antenna	• Antenna	• Antenna	• No	• Antenna
Optical Interfaces	<ul style="list-style-type: none"> • 2 x SFP+ • C37.94 	• 2 x SFP+	• 2 x SFP+	• 2 x SFP+	• 2 x SFP+
Electrical Interfaces	<ul style="list-style-type: none"> • 2 x RJ-45 • 2 x BNC • 2 x RJ45-balun • External Clock input • VF input • 2 x Datacom DTE/DCE 	<ul style="list-style-type: none"> • 2 x Bantam / RJ45 • 2 x BNC • External Clock input • VF input 	<ul style="list-style-type: none"> • 2 x Bantam • 2 x RJ-45 • 2 x BNC • External Clock input • VF input 	<ul style="list-style-type: none"> • 1 x Bantam • 2 x RJ-45 • 2 x BNC • External Clock input • VF input 	<ul style="list-style-type: none"> • 4 x Bantam • 2 x RJ45 • 2 x RJ48 • 4 x BNC • BNC External Clock input • VF input

Ether10.Genius	VePAL TX320s	MTS-5800	NetBlazer V2	Network Master Pro MT1000A
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CLOCKS					
Internal Clock	<ul style="list-style-type: none"> • Rubidium built-in • GPS built-in receiver • OCXO ±0.1 ppm • Default better ±2.0 ppm 	<ul style="list-style-type: none"> • CSAC built in • GPS built-in receiver • Internat Atomic clock 	<ul style="list-style-type: none"> • Rubidium external • Internal (Stratum 3) 	<ul style="list-style-type: none"> • (?) 	<ul style="list-style-type: none"> • 4.6 ppm,
External Inputs	<ul style="list-style-type: none"> • DSI, EI • 1.5, 2, 10 MHz • 1 pps 	<ul style="list-style-type: none"> • DSI, EI • 1.5, 2, 10 MHz • 1 pps • SyncE, PPT 	<ul style="list-style-type: none"> • DSI, EI • 1.5, 2, 10 MHz • 1 pps 	<ul style="list-style-type: none"> • 1.5, 2 Mb/s, • 1.5, 2 MHz 	<ul style="list-style-type: none"> • DSI, EI • 2, 10 MHz • 1 pps • PTP
Clock outputs	<ul style="list-style-type: none"> • 1 pps • 2Mb/s, • 2.0, 10 MHz 	<ul style="list-style-type: none"> • 1.5, 2.048 Mb/s • 1.5, 2, 10, 25, 125 MHz • 1 pps 	<ul style="list-style-type: none"> • No(?) 	<ul style="list-style-type: none"> • 1.5, 2 Mb/s, • 1.5, 2 MHz 	<ul style="list-style-type: none"> • (?)

SYNCHRONOUS ETHERNET - ITU-T G.8261					
PTP Modes	<ul style="list-style-type: none"> • Master, Slave, Passthrough 	<ul style="list-style-type: none"> • Master, Slave 	<ul style="list-style-type: none"> • Master, Slave 	<ul style="list-style-type: none"> • Master, Slave 	<ul style="list-style-type: none"> • Master, Slave
Frequency	<ul style="list-style-type: none"> • Offset and Drift • Analysis and Generation 	<ul style="list-style-type: none"> • Offset • Analysis and Generation 	<ul style="list-style-type: none"> • Offset • Analysis and Generation 	<ul style="list-style-type: none"> • Offset • Analysis 	<ul style="list-style-type: none"> • Offset • Analysis
ESMC / SSM (QL)	<ul style="list-style-type: none"> • Monitor, decode, generat. 	<ul style="list-style-type: none"> • Monitor, decode, generat. 	<ul style="list-style-type: none"> • Monitor, decode, generat. 	<ul style="list-style-type: none"> • Monitor, decode, generat. 	<ul style="list-style-type: none"> • Monitor, decode
SyncE Wander	<ul style="list-style-type: none"> • Built-in and real-time measurement • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • Built-in and real-time measurement • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No
Wander Generation	<ul style="list-style-type: none"> • SyncE Sinusoidal wander 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No

PTP - 1588v2					
PTP modes	<ul style="list-style-type: none"> • Master, Slave, Transparnt • 1-step GM emulation • Protocol Decode/Generate • Freq. offset, drift 	<ul style="list-style-type: none"> • Master, Slave, Transparnt • Protocol Decode/Generate • Freq. offset, drift 	<ul style="list-style-type: none"> Requires external device!! • Master, Slave • Protocol Decode/Generate 	<ul style="list-style-type: none"> • Master, Slave • Protocol Decode/Generate 	<ul style="list-style-type: none"> • Master, Slave • Protocol Decode/Generate
PTP Phase analysis	<ul style="list-style-type: none"> • Time Error (TE) • Dynamic TE • Constant TE 	<ul style="list-style-type: none"> • Time Error (TE) 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • (?) 	<ul style="list-style-type: none"> • (?)
PTP Profiles	<ul style="list-style-type: none"> • Telecom • Electrical 	<ul style="list-style-type: none"> • Telecom 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No(?) 	<ul style="list-style-type: none"> • No(?)
PTP Wander	<ul style="list-style-type: none"> • Built-in and real-time • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • Built-in and real-time • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No
Floor metrics	<ul style="list-style-type: none"> • FPR, FPP, FPC • Pass / Fail theshold 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No

1 pps					
1pps Wander	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • (?)
Time Error (TE)	<ul style="list-style-type: none"> • TE, max TE 	<ul style="list-style-type: none"> • TE, max TE 	<ul style="list-style-type: none"> • TE, max TE 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

1544 MHz, 2048 MHz, 10 MHz					
MHz Wander	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • TIE, MTIE, TDEV 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • (?)
MHz Jitter	<ul style="list-style-type: none"> • YES 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No 	<ul style="list-style-type: none"> • No

	Ether10.Genius	VePAL TX320s	MTS-5800	NetBlazer V2	Network Master Pro MT1000A
ETHERNET - IP					
Test Ports	<ul style="list-style-type: none"> 10G WAN, 1000BASE-X, 10/100/1000BASE-T, 100BASE-FX Dual Port 	<ul style="list-style-type: none"> 10G WAN, 1000BASE-X, 10/100/1000BASE-T, 100BASE-FX Dual Port 	<ul style="list-style-type: none"> 10G WAN, 1000BASE-X, 10/100/1000BASE-T, 100BASE-FX Dual Port 	<ul style="list-style-type: none"> 10G WAN, 1000BASE-X, 10/100/1000BASE-T, 100BASE-FX Dual Port 	<ul style="list-style-type: none"> 10G WAN, 1000BASE-X, 10/100/1000BASE-T, 100BASE-FX Dual Port
Frames	<ul style="list-style-type: none"> IEEE 802.3 / DIX VLAN, 802.1ad / Q-in-Q MPLS FCS error insertion IPv4 and IPv6 	<ul style="list-style-type: none"> IEEE 802.3 / DIX VLAN, 802.1ad / Q-in-Q MPLS IPv4 and IPv6 	<ul style="list-style-type: none"> IEEE 802.3 / DIX VLAN, 802.1ad / Q-in-Q MPLS IPv4 and IPv6 	<ul style="list-style-type: none"> IEEE 802.3 / DIX VLAN, 802.1ad / Q-in-Q MPLS IPv4 and IPv6 	<ul style="list-style-type: none"> IEEE 802.3 / DIX VLAN, 802.1ad / Q-in-Q MPLS IPv4 and IPv6
Optical	<ul style="list-style-type: none"> Power Meter 	<ul style="list-style-type: none"> Power Meter OTDR 	<ul style="list-style-type: none"> Power Meter 	<ul style="list-style-type: none"> Power Meter 	<ul style="list-style-type: none"> No
PoE Plus	<ul style="list-style-type: none"> Yes PoE Plus 	<ul style="list-style-type: none"> No(?) 	<ul style="list-style-type: none"> No(?) 	<ul style="list-style-type: none"> Only standard PoE 	<ul style="list-style-type: none"> Only standard PoE
Cable test	<ul style="list-style-type: none"> TDR: Open, Short distance to fault Active links: MDI / MDIX Wiremap: Open, Short, Straight, Crossed, Polarity, Pair skew, Crosstalk 	<ul style="list-style-type: none"> TDR: Open/Short distance fault 	<ul style="list-style-type: none"> TDR: Distance to fault Wiremap: Polarity, Skew 	<ul style="list-style-type: none"> TDR: Open, Short distance to fault Cable length Wiremap: Open, Short, Straight, Crossed, Polarity, Pair skew 	<ul style="list-style-type: none"> No
Operation Modes	<ul style="list-style-type: none"> Terminal: IP, Ethernet, LI Pass through, Monitor Loop-back 	<ul style="list-style-type: none"> Terminal Monitor Loop-back 	<ul style="list-style-type: none"> Pass through Terminal Monitor Loop-back 	<ul style="list-style-type: none"> Pass through Terminal Loop-back 	<ul style="list-style-type: none"> Terminal Pass through, Monitor Loop-back
Latency	<ul style="list-style-type: none"> One-way delay with GPS Round Trip Delay (RTD) 	<ul style="list-style-type: none"> No OWD Round Trip Delay (RTD) 	<ul style="list-style-type: none"> OWD with GPS and CDMA Round Trip Delay (RTD) 	<ul style="list-style-type: none"> No OWD Round Trip Delay (RTD) 	<ul style="list-style-type: none"> No OWD Round Trip Delay (RTD)
Packet Capture	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> No
Streams	<ul style="list-style-type: none"> 8 streams 	<ul style="list-style-type: none"> 8 streams 	<ul style="list-style-type: none"> 10 streams 	<ul style="list-style-type: none"> 16 streams 	<ul style="list-style-type: none"> 16 streams
Measurements	<ul style="list-style-type: none"> BERT Alarm Detection/Genera 	<ul style="list-style-type: none"> BERT Alarm Detection Service Disruption Time PBB (MAC-in-MAC) 	<ul style="list-style-type: none"> BERT Alarm Detection Service Disruption Time 	<ul style="list-style-type: none"> BERT Alarm Detection Service Disruption Time 	<ul style="list-style-type: none"> BERT Alarm Detection/Genera Service Disruption Time PBB (MAC-in-MAC)
Protocols	<ul style="list-style-type: none"> DHCP, ARP, DNS Ping, Traceroute 	<ul style="list-style-type: none"> DHCP, ARP, DNS Ping, Traceroute FTP, HTTP 	<ul style="list-style-type: none"> DHCP, ARP, DNS Ping, Traceroute FTP, HTTP 	<ul style="list-style-type: none"> DHCP, ARP, DNS Ping, Traceroute FTP, HTTP 	<ul style="list-style-type: none"> DHCP, ARP, DNS Ping, Traceroute
Bandwidth Profiles	<ul style="list-style-type: none"> Constant, Burst, Ramp, Random 	<ul style="list-style-type: none"> Constant, Burst, Ramp 	<ul style="list-style-type: none"> Constant, Ramp, Bursty, Flood 	<ul style="list-style-type: none"> Constant, Burst, Ramp 	<ul style="list-style-type: none"> Constant, (Burst), Ramp
Ethernet OAM	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes
RFC-6349	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes
RFC-2544	<ul style="list-style-type: none"> Symmetric Asymmetric (with GPS) Throughput, Back-to-back, Frame loss, Latency, System recovery 	<ul style="list-style-type: none"> Symmetric Asymmetric Throughput, Back-to-back, Frame Loss, Latency 	<ul style="list-style-type: none"> Symmetric Asymmetric Throughput, Back-to-back, Frame loss, (jitter), Latency, System recovery 	<ul style="list-style-type: none"> Symmetric Throughput, back-to-back, frame loss and latency 	<ul style="list-style-type: none"> Symmetric Asymmetric (with GPS) Throughput, back-to-back, frame loss and latency
Y.1564 (eSAM)	<ul style="list-style-type: none"> Symmetric Asymmetric (with GPS) 	<ul style="list-style-type: none"> Symmetric 	<ul style="list-style-type: none"> Symmetric Asymmetric 	<ul style="list-style-type: none"> Symmetric Asymmetric (?) 	<ul style="list-style-type: none"> Symmetric Asymmetric (with GPS)
E 1 - T 1					
Frames	<ul style="list-style-type: none"> E1 (PCM-30/C, PCM-31/C) DS1 (Q4-2015) 	<ul style="list-style-type: none"> E1, E2, E3 DS1, DS3 	<ul style="list-style-type: none"> E1, OC-3 to OC192 STM-1 to STM-64 	<ul style="list-style-type: none"> E1, OC-3 to OC192 STM-1 to STM-64 	<ul style="list-style-type: none"> E1, OC-3 to OC192 STM-1 to STM-64

	Ether10.Genius	VePAL TX320s	MTS-5800	NetBlazer V2	Network Master Pro MT1000A
Modes	• Terminal Monitor, Pass-through, Loop-back, Mux-Demux, Analogue	• Terminal Monitor, Pass-through, Loop-back, Analogue	• Terminal Monitor, Pass-through, Loop-back, Analogue	• Terminal Monitor, Pass-through, Loop-back, Analogue	• Terminal Monitor, Pass-through, Loop-back, Analogue
Measurements	• Attenuation • Frequency, Freq. deviation	• Attenuation • Frequency	• Attenuation • Frequency, Freq. deviation	• Attenuation • Frequency, Freq. deviation	• Attenuation • Frequency, Freq. deviation
Analysis I	• G821, G826, M2100 • CAS, G711	• G821, G826, M2100 • CAS, G711	• G821, G826, M2100 • CAS, G711	• G.821, G.826, G.828, G.829, M.2100, M.2101	• G.821, G.826, M.2100
Latency	• Round Trip Delay (RTD) • One-Way Delay (OWD)	• Round Trip Delay (RTD)	• Round Trip Delay (RTD)	• Round Trip Delay (RTD)	• Round Trip Delay (RTD)
Pulse Mask	• Yes	• Yes	• Yes	• No(?)	• No(?)
EI/TI Jitter	• Analysis • Jitter Generation	• Analysis • Jitter Generation	• Analysis • Jitter Generation	• No	• No
EI/TI Wander	• TIE, MTIE, TDEV • Wander Generation	• TIE, MTIE, TDEV • Wander Generation	• TIE, MTIE, TDEV	• No	• No

C 37 . 9 4					
SFP	• Special SFP developed with manufacturers for C37.94 • SMF and MMF	• SMF and MMF	• No	• No	• No
Modes	• Terminal	• Terminal and Pass	• No	• No	• No
Settings	• Unframed or framed operation • Bit-rate from 64 kb/s to 768 kb/s	• Framed operation • Bit-rate from 64 kb/s to 768 kb/s	• No	• No	• No
Clock	• GPS, 1pps, Recovered and Internal	• External, Recovered and Internal	• No	• No	• No
Impairments	• Freq. offset generation 25000ppm	• Freq. offset generation 25000ppm	• No	• No	• No
Tests	• BER and ITU-T G.821 • Defects: LOS, AIS, LOF, RDI, LSS, All 0, All 1 detection & generation • Anomalies: FAS, TSE, Slip detection & generation • Pass / fail indications	• BER and ITU-T G.821 • LOS, AIS, RDI, FAS, LSS, TSE detection • BITS, FAS, LOS, AIS, RDI generation	• No	• No	• No
Measurements	• Optical Power meter • Frequency, Freq. Deviation • Data rate	• Optical Power meter • Data rate	• No	• No	• No
Latency	• Round Trip Delay (RTD) • One-Way Delay (OWD) with GPS	• Round Trip Delay (RTD) • One-Way Delay (OWD) with GPS	• No	• No	• No

Analog Voice Frequency					
Voice Frequency (VF)	• Measurement, generation • Add/drop	• Measurement, generation • Add/drop	• Yes	• No	• No
Latency	• Round Trip Delay (RTD) • One-Way Delay (OWD) with GPS	•	•	•	•