



xGenius is a transmission & synchronization tester equipped with a 8' capacitive creen to facilitate the use and results interpretation and supports all the features you need to design, install and maintain telecom, power, railway, finance, military and industrial networks using Ethernet/IP, PTP, SyncE and T1/E1. It has never been so straightforward the use of a tester.

Market Analysis

Updated on 3/4/18

Transmission & Sync test @ 10G

xGenius	VePAL TX320s	MTS-5800	NetBlazer V2	MT1000A
 ALBEDO	 VEEX	 VIAVI	 EXFO	 ANRITSU

CONFIDENTIAL

PLATFORM					
Size	All together • 260 x 160 x 63 mm • Volume: 2,620 cc • Weight: 1.8 kg	All together • 290 x 140 x 66 mm • Volume: 2,680 cc • 1.58 kg	All together • 241 x 178 x 106 mm • Volume: 4,550 cc • 2,3 kg Platform • 241 x 178 x 76 mm • Volume: 3,260cc / 1.9kg Sync Module • 125 x 125 x 38 mm • Volume: 593cc / 0.4kg	All together • 254 x 210 x 55 mm • Volume: 2,934 cc • 2 kg	All together • 257 x 164 x 77 mm • Volume: 3,245 cc • 2.7 kg
Architecture	• All interfaces included	• Factory Modules	• All interfaces included	• Modular equipment	• All interfaces included
Display	• 8 inch (800 x 480 pix) • Touchscreen • Keyboard • Mouse	• 7 inch (840 x 480 pixels) • Touchscreen • Keyboard	• 7 inch (1200 x 600 pix) • Touchscreen	• 8 inch • Touchscreen • Multitouch	• 9 inch (800 x 480 pix) • Touchscreen
Ruggedness	• 1,5 meters drop	• 1,0 meter drop	• IEC 721	• (?)	• (?)
Remote Control	• Standard VNC • SNMP	• Proprietary (ReVeals)	• Standard VNC • SNMP	• Standard VNC	• Standard VNC
Battery Duration	OCXO • E1/T1: 12h 20min • 1G: 9h 20min • 10G: 6h 30min Rubidium • Wander test 6h 20min • 1G elec: 5h 45min • 10G opt: 4h 30min • 24 hours in E1	• Li-Ion • 2-6 hours	• Li-Ion • 4 hours in 10GbE	• Li-Ion • 2 hours	• Li-Ion • 4 hours
GNSS receiver	• Antenna	• Antenna	• Antenna	• No	• Antenna
Optical Interfaces	• 2 x SFP+	• 2 x SFP+	• 2 x SFP+	• 2 x SFP+	• 2 x SFP+

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Electrical Interfaces	<ul style="list-style-type: none"> - 2 x RJ-45 - 2 x BNC - 2 x RJ45-balun - 4 x SMA in/out clock 	<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
Auxiliar Ports	<ul style="list-style-type: none"> - Ethernet RJ45 - 2 x USB - mini SD card - Headset 	<ul style="list-style-type: none"> - Ethernet RJ45 - 2 x USB - Bluetooth - Cellular 	<ul style="list-style-type: none"> - 2 x Ethernet RJ45 - 2 x USB - Bluetooth - Cellular 	<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

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 - Internal 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 - SyncE, PTP 	<ul style="list-style-type: none"> - DSI, EI - 1.5, 2, 10 MHz - 1 pps - SyncE, PTP 	<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 - 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 1-step GM	<ul style="list-style-type: none"> - 1-step GM emulation 	<ul style="list-style-type: none"> - No 	<ul style="list-style-type: none"> - 1-step GM emulation 	<ul style="list-style-type: none"> - No 	<ul style="list-style-type: none"> - No
PTP 2-step GM	<ul style="list-style-type: none"> - 2-step GM emulation 	<ul style="list-style-type: none"> - 2-step GM emulation 	<ul style="list-style-type: none"> - No 	<ul style="list-style-type: none"> - No 	<ul style="list-style-type: none"> - No
PTP PDV statistics	<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"> - (?) 	<ul style="list-style-type: none"> - (?)
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"> - NoTime Error (TE) - Dynamic TE - Constant TE 	<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 in realtime - Requieres a tool-kit 	<ul style="list-style-type: none"> - No 	<ul style="list-style-type: none"> - No

	xGenius	VePAL TX320s	MTS-5800	NetBlazer V2	MT1000A
Floor metrics	<ul style="list-style-type: none"> - FPR, FPP, FPC - Pass / Fail threshold 	- No	- No	- No	- No

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Ipps 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 	- No	• (?)
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 	• (?)	• (?)

1 5 4 4 M H Z , 2 0 4 8 M H Z , 1 0 M H Z					
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 	- No	• (?)
MHz Jitter	<ul style="list-style-type: none"> - YES 	- No	- No	- No	- No

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 	- No
PoE Plus	- Yes	- No(?)	- No(?)	- Only standard PoE	- Only standard PoE
Cable test	<ul style="list-style-type: none"> - TDR: Open, Short distance to fault - Active links: MDI / MDIX - Wire-map: 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 - Wire map: Polarity, Skew 	<ul style="list-style-type: none"> - TDR: Open, Short distance to fault - Cable length - Wire-map: Open, Short, Straight, Crossed, Polarity, Pair skew 	- 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	- No	- Yes	- Yes	- Yes	- No
Streams	- 8 streams	- 8 streams	- 10 streams	- 16 streams	- 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, Trace-route 	<ul style="list-style-type: none"> - DHCP, ARP, DNS - Ping, Trace-route - FTP, HTTP 	<ul style="list-style-type: none"> - DHCP, ARP, DNS - Ping, Trace-route - FTP, HTTP 	<ul style="list-style-type: none"> - DHCP, ARP, DNS - Ping, Trace-route - FTP, HTTP 	<ul style="list-style-type: none"> - DHCP, ARP, DNS - Ping, Trace-route
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	- No	- Yes	- Yes	- Yes	- Yes

	xGenius	VePAL TX320s	MTS-5800	NetBlazer V2	MT1000A
RFC-6349	- No	- Yes	- Yes	- Yes	- Yes
RFC-2544	- Symmetric - Asymmetric (with GPS) - Throughput, Back-to-back, Frame loss, Latency, System recovery	- Symmetric - Asymmetric - Throughput, Back-to-back, Frame Loss, Latency	- Symmetric - Asymmetric - Throughput, Back-to-back, Frame loss, (Jitter), Latency, System recovery	- Symmetric - Throughput, back-to-back, frame loss and latency	- Symmetric - Asymmetric (with GPS) - Throughput, back-to-back, frame loss and latency
Y.1564 (eSAM)	- Symmetric - Asymmetric (with GPS)	- Symmetric	- Symmetric - Asymmetric	- Symmetric - Asymmetric (?)	- Symmetric - Asymmetric (with GPS)

E1 - T1					
Frames	- E1 (PCM-30/C, PCM-31/C) - DSI (Q4-2015)	- E1, E2, E3 - DSI, DS3	- E1, OC-3 to OC192 - STM-1 to STM-64	- E1, OC-3 to OC192 - STM-1 to STM-64	- E1, OC-3 to OC192 - STM-1 to STM-64
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(?)
Voice Frequency (VF)	- Measurement, generation - Add/drop	- Measurement, generation - Add/drop	- Yes	- No	- No
E1/T1 Jitter	- Analysis - Jitter Generation	- Analysis - Jitter Generation	- Analysis - Jitter Generation	- No	- No
E1/T1 Wander	- TIE, MTIE, TDEV - Wander Generation	- TIE, MTIE, TDEV - Wander Generation	- TIE, MTIE, TDEV	- No	- No

Comments:

- EXFO and ANRITSU are not really in the transmission and synchronization field testing because of several reasons, the most important is that they are not up to date in features and regarding prices are not consistent with the market.
- ALBEDO xGenius is the only test equipment that can compute the constant TE (cTE) and dynamic TE (dTE) components of the Time Error. Sometimes, ITU-T performance figures are given in terms of the TE but sometimes they are given in terms of cTE and dTE. You need to know which of them to apply to know if your test is passed or failed.
- Veex includes a CSAC with has a performance level between Rubidium and the best OCXOs available in the market. Frequency accuracy, and holdover time is longer for Rubidium than in the CSAC.
- xGenius includes generation capabilities in most interfaces and not only an analysis function. You can for example generate wander in E1 or SyncE interfaces. We are again quite unique in this kind of generation features.
- Only xGenius can run the Floor Delay Population test. I admit that this metric is important in frequency delivery application only and not in phase / frequency applications that are likely to be the most important for most customers today.
- Many current timing distribution solutions require physical layer synchronization through SyncE to be added to packet synchronization. In these deployments it is important a solution that enables simultaneous verification of IEEE 1588 and SyncE. Only xGenius is able to run it.
- xGenius offers an OCXO configuration which works perfectly well in many applications and supports the same tests that the Rubidium configuration. Many times there is no need to go to an expensive Rubidium configuration like in the Viavi solution.
- Ergonomics: Carrying with a bulky module for the MTS5800 does not seem a very convenient solution (or at least not very elegant solution) for a field testing tool.



MTS5800 sync module is a real patch