



**Timing &
Synchronization**



**Test &
Measurement**



**Remote Fiber Testing
& Monitoring Solutions**



**PoE Ethernet
Switches**

KHUSHI COMMUNICATIONS PVT. LTD.

705-706, 7th Floor, Kirti Shikhar Building, District Centre, Janak Puri, New Delhi-110058, INDIA.

T: +91-11-41615459 E: info@khushicomms.com W: www.khushicomms.com



• **DELHI**

• **BANGALORE**

• **MUMBAI**

ABOUT US



We are technological solutions provider of Timing & Synchronization, Test & Measurement, Service Assurance & Fiber Management and RF Planning tools. Our solution has disrupted the market by converging the transport and timing for 5G xHaul Networks. We consistently strive to bring latest and introduce new product offering and services that meet and exceed the ongoing needs of our markets and customers.

OUR PARTNERS



LIST OF PRODUCTS

1 Timing and Synchronization

- Timing Aware Switch with PTP Grandmaster
- PTP Grandmaster & NTP Server
- Time & Frequency Distributor & GPS Accessories

2 Test & Measurement

- Transport, Datacom & Optical
- GPON Protocol Analyzer & OLT Emulator
- Network Emulator
- TAPs (Copper & Fiber)
- Network Packet Brokers
- Traffic Capture & Analysis
- RF Spectrum Analyzer
- Fiber Optics
- Copper Tester & Cable Fault Locator

3 Remote Fiber Testing & Monitoring Solutions

4 PoE Ethernet Switches

Timing and Synchronization

Timing Aware Switch with PTP Grandmaster

Integrated PTP GM

OCXO / Rubidium Osc

Supports LLS C1-C4

OC, BC, TC Support



μFalcon-RX

- 6 x 1/2.5/10G (SFP/SFP+)
- 2 x 1/2.5/10/25G (SFP/SFP+/SFP28)
- L2 Throughput: 110Gbps
- OCXO



μFalcon-MX/G

- 4 x 1/2.5G (SFP) | 2 x 1G (RJ45)
- 2 x 1/2.5/10G (SFP/SFP+)
- L2 Throughput: 34Gbps
- OCXO



Falcon RX

- 12 x 1/10G (SFP/SFP+)
- 8 x 1/10/25G (SFP/SFP+/SFP28)
- L2 Throughput: 200Gbps
- OCXO / Rb



Falcon MX/G

- 24 x 1G (SFP)
- 4 x 1G (RJ45)
- 4 x 1/2.5/10G (SFP/SFP+)
- L2 Throughput: 160 Gbps
- OCXO / Rb

PTP Grandmaster & NTP Server



Net.Time

- 2x 1GbE RJ45/SFP Combo Ports
- GNSS, PTP, NTP and SyncE Support
- OCXO/Rubidium Oscillator
- I/O: BITS, MHz, 1PPS, 1RIG-B, ToD etc



μFalcon-ST/G

- 4x 1GbE RJ45 Ports | 4x 1GbE SFP ports
- 8x E1/MHz Balanced Port (120 ohm)
- OC, BC & TC configuration supported
- GNSS, PTP, NTP and SyncE Support
- OCXO Oscillator

Time & Frequency Distributor & GPS Accessories



TFD-100/TFD-200



GNSS Antenna



GPS In-Line Amplifier



Surge Arrestor

- 1U, 19" Rack mount
- Frequency from 1PPS up to 10MHz
- Time Code Signals: IRIG, AFNOR, NASA
- Decoded signals GNSS, DCF77, TDF, WWVB
- GNSS, PTP, NTP input option available
- TCXO/OCXO Oscillator option
- 1 to 32 Signal Splitter



**GPS Repeater
Indoor GPS Coverage**



GPS Splitter

Test and Measurement

Transport, Datacom & Optical



FTB Platforms

Hand-held Multi-test Platform (1/2/4)

- Designed for Field/Lab & MDR applications



LTB Platforms

Rack-mountable Multi-test Platform (2/8/12)

- Designed for Lab & Manufacturing applications

► Modules (Ethernet/SDH/PDH/OTN/OSA/OTDR/PM/LS/ Fiber Channel/eCPRI)



FTBx-8870/8880
10G Multiservice



FTBx-88260
100G Multiservice Test



FTBx-88460
400G Ethernet



FTBx-88800 Series
800G Ethernet



FTBx-720C
OTDR



FTBx-1750
High performance
Power Meter



FTBx-2150
Light Source



FTBx-5245/5255
Optical Spectrum Analyzer

- Most flexible and future proof 1G to 800G multiservice test solution
- EtherBERT, RFC 2544, EtherSAM Y.1564, smart loopback and traffic TX & RX
- Supports QSFP28 ports and QSFP-DD port
- OTN testing - OTU1, OTU2, OTU3, OTU4 (ITU-T G.709), including FEC
- OTUCn/FlexO BER testing capabilities supporting 100G, 200G, 300G and 400G mapped in ODUflex over 400G interfaces
- DS_n testing - DS1, DS3 and dual DS1/DS3 RX; PDH testing - E1, E3 and E4
- SDH Interfaces - STM-0, STM-1, STM-4, STM-16 and STM-64



Max 800 Series

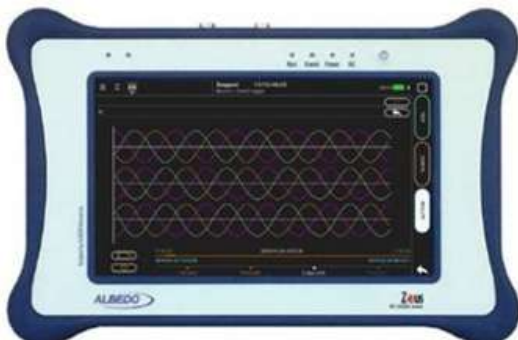
Ethernet & Transport Tester upto 100G

- Comprehensive testing for DS_n/PDH, ISDN, SONET/SDH,
- OTN and Ethernet interfaces up to 100 Gbit/s
- Complete RFC 2544, eSAM & RFC 6349 test suite
- Quad-port testing up to 4 x 100GE links
- Multi-stream traffic generation, remote loopback, Ethernet traffic filter & capture
- OTN Testing (OTU1-4) including forward error correction
- L1-L4 testing with user defined parameters
- Simplified BER testing with pass/fail indicators based on user-defined thresholds



xGenius
PTP/NTP Sync Tester

- PTP/SyncE/NTP Emulation & Test
- Clock Testing (MHz, BITS, ToD, PPS & 1RIG-B)
- MTIE/TDEV Measurement & TE Measurement
- BC/TC Testing
- 5G-ORAN Sync Testing
- Built in GNSS Receiver
- Clock Module: Ocxo/ Rubidium
- Dual port 10GbE Eth./IP traffic generation & monitoring
- Packet Capture



Zeus
1GbE/Sync/C37.94/ Datacom/
GOOSE/SV

- Dual port 1GbE Eth./IP traffic generation & monitoring
- Performance Test: RFC 2544, RFC 6349, eSAM, Y.1731, L1-L4 BERT
- C37.94, GOOSE, SV
- E1/T1 & Datacom Testing
- OWD Testing
- Built in GNSS Receiver
- PTP/SyncE/NTP Emulation & Test
- Clock Testing (MHz, BITS, ToD, PPS & 1RIG-B)
- MTIE/TDEV & TE Measurement



Ether.Genius
1GbE/Sync/E1/T1/ Datacom Tester

- Dual port 1GbE Eth./IP traffic generation & monitoring
- Performance Test: RFC 2544, eSAM, Y.1731
- Ping/Traceroute
- L1-L4 BERT
- PTP/SyncE Emulation & Test
- Clock Testing (MHz, BITS, ToD)
- MTIE/TDEV Measurement
- E1/T1/Datacom Testing



AT.2048/AT.ONE
E1/T1 BER & Datacom

- Dual Port 2048 kbps (E1)/1544 Kbps(T1)/ Generation/Analysis
- E0(Nx64Kbps) Generation/Analysis
- Datacom (V.11, V.24, V.35, V.36, EIA-530)
- Jitter & Wander Generation/Analysis
- Pulse Mask Analysis
- Voice Frequency Test
- Latency/Round Trip Delay Test
- Performance Test (G.821, G.826 & M.2100)
- Event Insertion & Pattern Analysis
- CAS signalling generation and monitoring

GPON Protocol Analyzer & OLT Emulator



GPON DOCTOR 4K7/9K7/10K7
GPON/XGS-PON Protocol Analyzer

- Portable battery Operated; Chip-set Independent operation
- Diagnosis and analysis of incidents and operation in an established XGS-PON/GPON network
- Evaluation of compliance with the protocol in the development of OLTs/ONTs XGS
- ITU-T G.9807.x / ITU-T G.984.x / ITU-T G.988 interoperability test
- Evaluates the degree of compliance with the ITU-T G.9807.x, ITU-T G.984.x and ITU-T G.988 standard
- Captures OAM + PLOAM control data and OMCI messages + negotiation in real time
- Bandwidth analysis per T-CONT for each ONT



GPON DOCTOR OLT-e
OLT Emulator

- Meets the requirements of ITU-G984.3
- Supports management entities defined in ITU-T G.988
- Assess protocol compliance in OLT/ONT development
- Generation of PLOAM messages to activate and configure a detected ONT
- Generating and forwarding Ethernet traffic encapsulated in GEM frames

Network Emulator



WanRaptor
Multiport Network Emulator (up to 40G)

- 2U 19" Rack mountable modular design
- Traffic generation & emulation up-to 40 Gb/s
- Emulation Supported:
Bandwidth, Latency, Jitter, BER, Packet Loss, Packet re-ordering, Packet duplication
- Bridge & Router mode operation for Ethernet & IP traffic
- HTTP web browser based GUI for real-time statistics



PDS - 1/10G
LAN/WAN Emulator (up to 10G)

- 1U desktop design
- Fixed 1G/10G Electrical & Optical slots
- Emulation Supported:
Bandwidth, Latency, Jitter, BER, Packet Loss, Packet re-ordering, Packet duplication
- Bridge & Router mode operation for Ethernet & IP traffic
- HTTP web browser based GUI for real-time statistics



Net.Storm
Impairment Generator (1G)

- Hand-held, battery operated & in-built display
- Fixed 1G Electrical & optical slots
- Emulation Supported:
Bandwidth, Latency, Jitter, Packet Loss, Packet duplication
- Real time statistics
- VNC based remote control

TAPs (Copper & Fiber)



Copper TAPs (100M/1G/10G)

Portable / Rack Mountable (Multiple Links)

- Portable & modular (up-to 3) chassis-based design
- Non-intrusive, zero failover, redundant power supply operation
- Link speed: 100M/1000M/10G
- Smooth operation up-to 100 meters
- IEEE 802.3/802.3af, VoIP and PoE compliant



Fiber TAPs (1-400Gbps)

Portable / Rack Mountable (Multiple Ports)

- Portable & modular (24 TAP) chassis-based design
- Non-intrusive, zero failover, Passive operation
- Fiber TAPs: Diode, LC, SC, MTP & BiDi
- Link Speed: up-to 400G
- Single mode and Multi mode fiber support
- Available Split Ratio: 50/50, 60/40 70/30

Network Packet Brokers

- L2-L7 Filtering, DPI
- Load Balancing
- Any-to-any Replication and Aggregation
- Passive SSL/TLS decryption SSL 3.0, TLS 1.0 - TLS 1.2
- Data masking, Packet deduplication
- TCP packet reordering and fragments re-assembling
- Full tunnelling capability, Packet Slicing
- IMSI Filtering, Timestamping
- Export NetFlow V5/V9
- Redundant AC/DC power supply
- Management: Local CLI, SSH, SNMPv2/v3, HTTP/HTTPS



X2/X3 Series

Advanced Network Packet Brokers

Traffic Capture & Analysis



IOTA (Probe, Capture & Analyze)

All-in-One Network Traffic Monitoring Solution

- Portable 1G/10G Non-intrusive monitoring
- SPAN and In-Line modes
- Integrated software to help analyze the captured data in real-time
- Packet slicing
- Programmable autonomous capture functions
- 8 ns hardware timestamp
- Real-time traffic analysis
- 1 TB or 2 TB swappable SSD in-built storage
- GNSS (GPS/GLONASS) UTC timestamping



Profishark (1G/1G+/10G/10G+)

TAP with Traffic Capture & Analysis

- Portable 1G/10G Non-intrusive monitoring
- SPAN and In-Line modes
- Hardware filtering, deep packet inspection
- Packet slicing
- Capture and configuration options, through the ProfiShark Manager
- 5 ns hardware timestamp
- Real-time traffic analysis
- Direct capture to disk over 3.0 USB
- GNSS (GPS/GLONASS) UTC timestamping

RF Spectrum Analyzer



5G Pro
5G FR1/FR2
Spectrum Analyzer

- Compact & Modular RF testing solution
- Real-time spectrum analyzer (RTSA)
- FR1 (450 MHz - 6 GHz)
- FR2 (24.25 GHz - 40 GHz)
- Spectrum and signal analysis bandwidth up to 100MHz
- 5G NR signal and beam analysis (upto 64 beams)
- LTE signal analysis
- Digital RF power measurements
- TDD support
- OTDR, RF over CPRI, CPRI/eCPRI, timing and synchronization
- Ethernet testing up to 100G

Electrical BER Testing , MCB & Loopbacks and Sampling Oscilloscope



BA-4000
Electrical 800G BER Tester



EA-4000 Eye Analyzer
Optical & Electrical Sampling Oscilloscope



CD-4000 Clock Data Recovery
Optical and electrical CDR for 28 GBd/56 GBd



MCB-Module Compliance Board
MCB to test next-gen transceivers

Fiber Optics

OTDR



MAX Series
OTDR (up to 45dB)



FTB-1 Pro platform
OTDR Modules (up to 50dB)



Mercury Series
OTDR (up to 46dB)

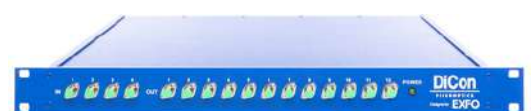
Tunable Optical Filter, Optical Component Tester and Optical Switch



XTA-50
Tunable Optical Filter



CTP-10
Passive Optical Component
Testing Platform



MXS-9100
MEMS Matrix Optical Switch

Tunable Laser Source, Optical Spectrum Analyzer & PMD and CD Analyzer



T200S/T500S/T100
Tunable Laser Source



OSA20
Optical Spectrum Analyzer



FTB-500 with FTB-5500B
PMD and CD Analyzer

Handheld Optical Testers



Optical Power Expert
Optical Power Meter



PPM-350D
Next-gen PON
Power meter



KI-2600XL Series
POF Optical Power Meter



FLS-600
Light Source



FOT-600
Optical Loss
Test Set



FVA-600
Variable Optical
Attenuator



FIP-500
Fiber Inspection Scope



LED-300B /TG-300B
Fiber Identifier



ARGUS 300
10GbE/GPON/Optical
/Wi-Fi Testing



EX-1
Gigabit, GPON &
Wi-Fi testing

Copper Tester & Cable Fault Locator



ACT 6000
Selective Level Meter
& Generator



Max Tester 610
Smart Copper Testing



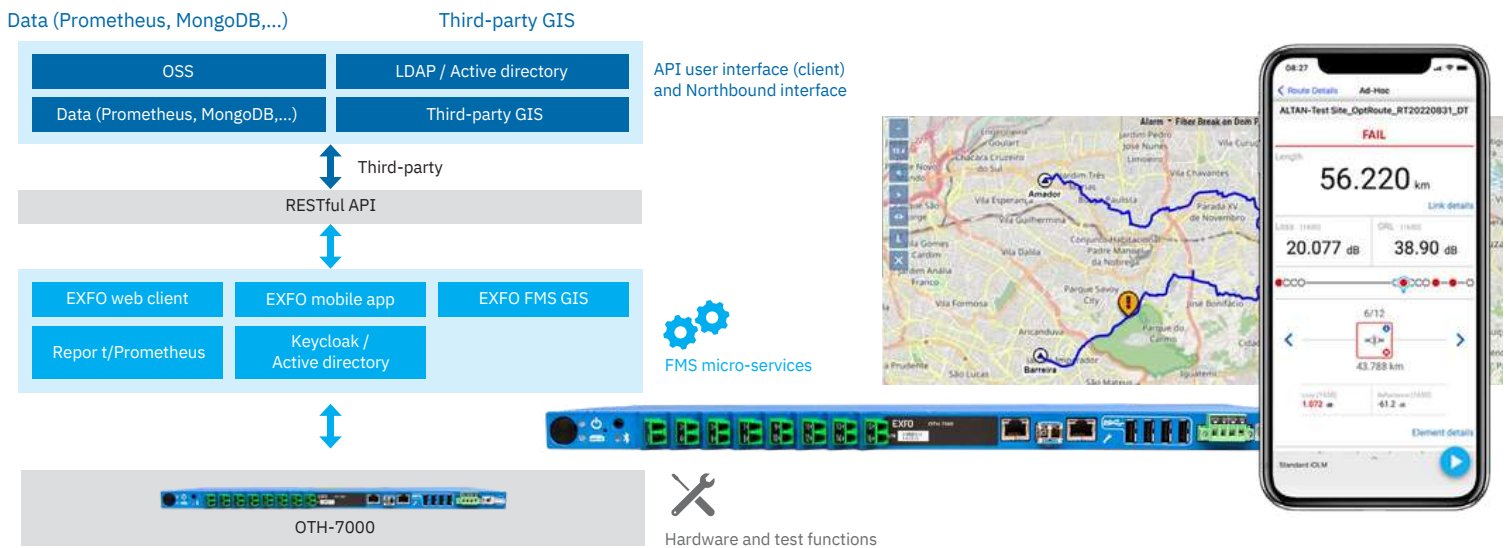
BLL-200
Locator Buried Line



EML-100
Electronic Marker Locator

Remote Fiber Testing and Monitoring Solutions

OTH-7000 Remote Optical Test Head & Scalable System with Great Flexibility



Compact OTDR-based remote test unit designed for FTTH PON deployments, fiber-optic network monitoring and troubleshooting.

PoE Ethernet Switches

Gigabit DIN Rail Switch & Gigabit Rackmount Switch



GigaLine 5080

DIN Rail Layer 3 Ethernet Switch

- High Density Managed 10GE switch – 16 ports
- Industrial Design - Harsh environments, wide temperature range compact IP30
- Indoor or Outdoor operations
- Flexible Network Redundancy - RSTP, MSTP, ERPS, LACP
- Advanced Traffic Management - QoS- CoS, DSCP, WRR/SPQ Queuing, Storm Protection
- L2 wire speed switching, 9K Jumbo frames
- L3 Routing capabilities - RIP, OSPF, VRRP
- Multicasting - IGMP Snooping - v1/v2/v3, up to 512 groups
- Advanced Security: IEEE 802.1x, RADIUS & TACACS+
- SNMP v1/v2c/v3
- Easy Deployment / Configuration - USB storage, configuration-free replacement
- Industrial automation protocols Ethernet/IP and Modbus TCP



GigaLine 6040 - 10 Gigabit L3 Ethernet Switches

36 port ruggedized network switch with four 10 Gigabit Ethernet interfaces

Hardened, cost-optimized, fiber-fed only unit offering full Ethernet switching capabilities, supporting four 10GE SFP ports, and a total of 32 1G client ports on each device.



SUPPORT & SLA

Service Level Agreement	GOLD	SILVER
TECHNICAL SUPPORT Response Time/Initial Troubleshooting	04/08 Hours	08/24 Hours
ONSITE RESPONSE Resolution/Timeline	Included 03 working days	Paid 05 working days
ADVANCE REPLACEMENT Resolution/Timeline	Included 05 working days	Paid Sub. Availability
REPAIR & RETURN Timeline/Logistics	Within 30 days Both Ways	Within 30 days One Way
HARDWARE REPAIR	Full Repair	Full Repair
SOFTWARE RELEASE	Full Support	Full Support

Our Services



Repair
Calibration Services



I&C and
Acceptance Testing



Rentals & Engineering
Services



Synchronization
Audit & Testing



SLA, Support &
Maintenance



Training



011-4161 5459



info@khushicomms.com



www.khushicomms.com