TFN FT100-D550S

40G/100G TESTER

EVERYTHING STEMS FROM THE ATTACHMENT TO GOOD SOUND QUALITY
NOT JUST A PRODUCT, BUT ALSO A SPIRIT, A BELIEF.

TFN FT100 network test platform provides a full range of communication technology connection and service testing functions, supporting OTN, SDH/SONET, MSTP, PDH/DSN,PTN/IP RAN, SYNCE, IEEE1588V2 PTP,OTDR, Ethernet, optical cable censer, antenna feeder analysis, spectrum analysis, etc.

Strong and compact design, easy to carry

Powerful modular intelligent network test platform graphical user interface easy to operate

Rich key design, support knob, number key and function key, convenient and flexible input and selection

Outdoor enhanced LCD touch color display for outdoor environments Fast export of test results using USB 2.0 interface

Up to 2 hours of lithium battery life for remote access and control based on 10/100M BASE-T interface

FUNCTIONAL CHARACTERISTICS

The only portable 100G ultra-high speed test solution in China;

CFP,QSFP28/QSFP+(using CFP adapter) interface;

OTU4 and 100GIGE interface testing; OTU3 and 40GIGE interface test

Test external clock interface;

200PPM clock shift function;

Eye map reference clock output;

OTN

OTU4/OTU3 test;

Full multilevel mapping/multiplexing;

ETHERNET OVER OTN;

Service interruption time test;

Cascade monitoring function;

Overhead monitoring and byte decoding;

Test mode supports terminal connection, clean load transparent transmission, line transparent transmission;

Support load transparent transmission and line transparent transmission monitoring mode;

The optical power of each channel can be displayed;

External reference clock interface

ETHERNET

100 GBPS/40 GBPS Ethernet test;

PCS layer testing with SKEW generation/monitoring functions;

Multi-data stream testing supports 512 independent test data streams;

Support Q IN Q (VLAN stack),MPLS, MPLS-TP;

MAC flooding and VLAN flooding;

RFC2544 and Y.1564 tests;

Service interruption test;

IPV4 and IPV6 data flow generation;

BERT, throughput and loopback testing for Layers 1, 2, 3 and 4

Full speed packet capture;

Error and alarm insertion;

CFP

PCS layer testing with SKEW generation/monitoring functions;

Transmit and receive optical power testing;

Module status display;

CFP

R&d, manufacturing, installation and maintenance of OTN core and metro networks;

Manufacture, installation and troubleshooting of carrier-grade Ethernet equipment;

Installation and testing of mobile forward and back passes;

BERT, RFC2544 and SLA verification tests

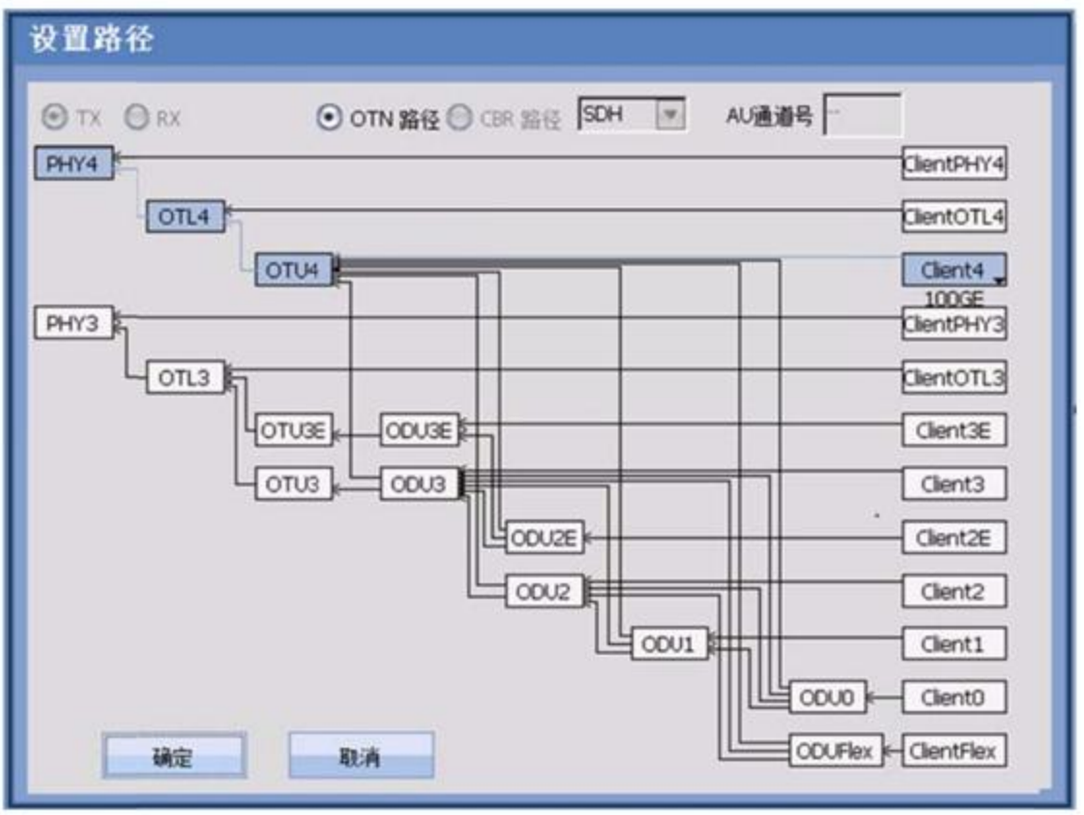
Generation and analysis of 40G/100G data streams.

GENERAL CHARACTERISTIC

User interface	
Display screen	TFT Touch display (640×480 resolution)
Service interface	
USB data port	USB2.0, Type A interface, 2; USB2.0 MiniB interface, 1
Ethernet port	Ethernet 10/100, interface: RJ45 (port)
Storage space	8G, optional 16G,32G,64G
Other interface	
Audio interface	3.5mm diameter jack for connecting optional earphones
Other functions	
Size and weight	OTP6200：319(H)x 202 (W) x 105(D) mm; 2.8kg OTM2620：50(H)x 97 (W) x 259(D) mm；1.2kg
temperature	Operating temperature: -10° C to 50° C; Storage temperature: -40° C to 70 ° C
Relative humidity	0% to 95% (non-condensing)
Vibration	<1.5g from 10Hz to 500Hz (on three main spindles)
Mechanical impact	<760 cm on six sides and eight main edges (according to GR-196-CORE standard)
EMC	EN55022/CIPSR22, EN61000-3-2,EN55024
Battery and power supply	
battery	Rechargeable and replaceable lithium-ion batteries Working time: 2 hours (typical value) (OTM2620 100Gbps Ethernet operation) Charging time: 6 hours (typical) (25° C)
Power supply	Input: 100 to 240V (AC), 50Hz/60Hz, 1.6A Output: 24V, 4A

TECHNICAL SPECIFICATION
OTN TESTING

OTN testing	
Test interface	CFP module, OTU3, OTU4 interface
frame	Complies with ITU-T G.709 standard FEC: Meets G.709, RS(255, 239) standard, can control on/off
Operation mode	Point-to-point testing mode Punch through mode
Send clock	· Internal clock accuracy: 4.6ppm, clock offset: ±200ppm · Receive line clock · External clock support: 2.048MHz, 2.048Mbps, 1.544MHz
Received signal frequency	±200ppm
scrambling	Complies with ITU-T G.709 standard

OTN mapping	
OTN alarm	Detectable alarms: OTU layer: OSU-AIS,LOF,OOF,LOM,OOM,SM-TIM,SM-BIAE,SM-BDI,SM-IAE ODU layer: ODU-AIS,ODU-OCI,ODU-LCK,PM-TIM,PM-BDI ODU reuse: ODU-IOF,ODU-OOF,ODU-LOM,ODU-OOM OPU layer: PLM,OPU-MSIM, CSF,LSS TCM layer: TCMi-TIM,TCMi-BIAE,TCMi-BDI,TCMi-IAE(i=1-6) OTL layer: LOF OOF, OOR, LOR, OOM, LOM, ILA/OLA Possible alarms: OTU layer: OSU-AIS,LOF,OOF,LOM,OOM,SM-TIM,SM-BIAE,SM-BDI,SM-IAE ODU layer: ODU-AIS,ODU-OCI,ODU-LCK,PM-TIM,PM-BDI ODU compound: ODU-IOF,ODU-OOF,ODU-LOM,ODU-OOM OPU layer :LSS,CSF TCM layer: TCMi-TIM,TCMi-BIAE,TCMi-BDI,TCMi-IAE(i=1-6) OTL layer :LOF,OOF,OOR,LOR Alarm generation mode: · Continued · Alternate

	Break out
OTN error	Detectable errors: OTU layer :FAS,MFAS,SM-BEI,SM-BIP8,FEC-Correctable,FEC-Uncorrectable ODU layer: PM-BIP8,PM-BEI OPU layer: BIT TCM layer: TCMi-BEI,TCMi-BIP8(i=1-6) OTL layer :FAS,MFAS,LLM Possible errors: OTU layer :FAS,MFAS,SM-BEI,SM-BIP8 ODU layer: PM-BIP8,PM-BEI, ODU-FAS OPU layer: BIT TCM layer: TCMi-BEI,TCMi-BIP8(i=1-6) OTL layer :FAS,MFAS,LLM Error insertion method: · Continued · Alternate · Speed · Single · Burst
Mapping adjustment	Mapping adjustment (per AMP) · Negative (-1) · Positive (+1) · Positive (+2) Cm (t) (per GMP)

	· Support based on Cm (t) (ppm)
Bit error test pattern	Supports the following pattern generation and detection: · Test code type PRBS9, PRBS11, PRBS15, PRBS20, PRBS23, PRBS31 Supports reverse PRBS patterns · Support 32bit user-defined patterns
FEC test	Random error insertion according to ITU-T O.182
expenditure	The user can edit the following header bytes: OTU layer: FAS,SM-TTI,SM-BEI/BIDE,BDI,IAE,GCCO, RES ODU layer: PM - TTI, PM - BEI, BDI, IAE, FTFL, APS/PCC, GCC1, GCC2, RES, EXP, High order TCMi-TTI (i=1-6), TCMi-BEI/BIAE,TCMi-BDI,TCMi-IAE,TCMi-RES(i=1-6) OPU layer :PSI Supports capturing and displaying current overhead byte information The following signals can be decoded: high order TTI (SM,PM,TCMi (i=1-6)),FTFL,PT Supports capture of 256 consecutive frame overhead bytes
OTL migration	OTU3, OTU3e1, OTU3e2, OTU4 Insert bit: 0-32000 (TX channel) Detection Relative offset, mark mapping
Punch through mode	Transparent mode Overwrite mode The cost of OUT,ODU and OPU can be changed FEC codec can be set to on/off
OTN test results	
status	Current information Monitors line alarms and errors Optical signal input level indication frequency Frequency offset
Statistics	Log information: Alarms (seconds), errors (number or number and ratio)
APS	APS(Automatic Protection Switching) Test and analysis:
	Measuring APS switching time, Start and end triggers can be selected independently Trigger events can be selected from high level OTUs and ODUs Save and display the conversion time, number of transitions, pass/fail, minimum, maximum and average APS switching time measurement resolution: 0.01ms
Loopback delay measurement	Resolution: 1us Maximum test time: 60.0s
Ethernet net load RFC2544 test	
RFC2544 test	When GE, 10GE, 40GE, or 100GE is mapped to OTN as a net load, you can perform Ethernet performance tests for the net load Throughput, frame loss, delay or packet jitter, back-to-back frames (burst capability)

ETHERNET TEST

Test interface	One 100GE,CFP, or QSFP28 port One 40GE,CFP, or QSFP+ port
Test configuration	Monitor/Generate, punch through mode
encapsulation	Ethernet Type II, IEEE802.3 with 802.2, IEEE802.3 with SNAP
Configure, monitor, and build patterns	
Traffic generation	Variable line flow generation up to line speed Traffic duration: Duration, configurable number of seconds or frames Variable frame length from 46 to 16000 bytes Frame length: fixed, increasing, decreasing, random (the same below) User-defined traffic for hybrid unicast and broadcast frames Fixed or self-growing IP address indication Configurable IP and Ethernet source/destination addresses (IPv4 and IPv6 addresses supported) Supports self-growing, self-decreasing or random addresses Users can edit TCP/UDP addresses Supports generation and response of PAUSE frames
Multilayer VLAN	Layer 3 optional vlans are supported VLAN tag parameters: Ethernet Type II Ox8100(802.1Q),0x88a8(802.1ad),0x9100 or Ox9200 User-defined VLAN ID,CFI, and VLAN priority VLAN ids can be automatically increased, automatically decreased, and randomly generated
multiflow	Number of streams: Supports production and analysis of up to 512 data streams
Timing function	Optional clock source: Internal, received clock, 2.048MHz, 2.048Mbps, 1.544 MHz,1.544Mbp frequency offset: ±200ppm (0.1ppm step size) The frequency offset of the received Ethernet signal can be measured by comparing it with an internal clock source
Error generation	FCS, incorrect IP checksum, CRC4 Error, BIT, error sequence error 40Gbps/100Gbps: Invalid block type (0x00,0x2d, 0x33,0x66), invalid sync header (00,11), invalid alignment mark, BIP error
Alarm generation	No connection, remote failure, local failure, high bit error rate (BER)
PCS migration	40Gbps, 100Gbps interposition

	100G TX channel: 0-4096bits
	40G,100G Physical channels: 0 to 8448 Detection Relative offset, mark mapping
status	Link Status, Interface type, Ultra-small frame detection, Frame, MPLS/EoMPLSVLAN, Rate, Signal, Received Ethernet signal Rate Connection capability: Speed Utilization indicator, throughput and number of error frames
Performance statistics	Utilization, throughput, frame rate
Frame statistics	Total number of frames, total valid frames, unicast/multicast/broadcast frames, PAUSE frames VLAN frame count MPLS frame sum Total number of error frames, super long and super short frames, FCS error frames,
Frame distribution statistics	Total valid frame，<64,64-127,128-511,512-1023,1024-1518，>1518 Frame size
Multistream statistics	Information about each stream: Frame loss/rate, throughput, delay, packet jitter, number of frames and bytes received and sent
Sending statistics	Total frame count, unicast/multicast/broadcast frames,
filter	The filtering criteria can be IP/MAC source address, IP/MAC destination address, broadcast address, encapsulation type, VLAN ID and VLAN priority, MPLS, and TCP/UDP source and destination port
Error test and service outage time	
Error testing	Generate and detect test patterns, number of errors received, pattern generation non-framing (Layer 1), framing Ethernet MAC headers (Layer 2), framing Ethernet MAC headers and IP headers (Layer 3) or framing MAC headers, IP headers and TCP/UDP headers (Layer 4) Frame loss and frame loss ratio The throughput measurement results contain the following information: Physical layer, link layer, network layer and data layer Test pattern: PRBS9, PRBS11, PRBS15, PRBS20, PRBS23, PRBS31,HF test pattern, CRPRJ,JTPAT,SPAT, user programmable 32bits
Error generation	FCS, incorrect IP checksum, CRC4 Error, BIT, error sequence error
Alarm generation	The remote end is faulty
Service interruption test	Service interruption testing is part of error testing Maximum/average service interruption tests with a resolution of 1us

	Service interruption times
Loopback test	
Loopback test	Non-framing (Layer 1), framing Ethernet MAC headers (Layer 2), framing Ethernet MAC headers and IP headers (Layer 3), or framing MAC headers, IP headers and TCP/UDP headers (Layer 4) Loopback test Advanced loopback damage test function · Packet loss Settings: according to the ratio, according to the number of packets, according to the time · Loopback discard enabled: protocol discard, protocol pass, control frame, CRC error, IP/TCP/UDP error
RFC2544	
RFC2544 test	Switch/Router testing and single-ended network testing modes: · Throughput, frame loss, delay or packet jitter, back-to-back frames (burst capability) End-to-end network test mode (2 OTM2620 meters in local and remote mode) · Throughput, frame loss, back-to-back (burst capability)
Business Activation Test (Y.1564)	
Service activation test	ITU-T Y.1564 Service activation test: Each port supports 512 service flows Color perception and non-color perception Test mode: single-ended (unidirectional or bidirectional, symmetric or asymmetric), loop Service acceptance criteria: CIR, EIR, overshoot, frame transmission delay, frame jitter, frame loss rate,
Service configuration test	· Sub-test: CIR(Information flow), EIR (Excess information flow), Traffic shaping, CBS (burst size), EBS (excess burst size) Step length: 1-60s (user configurable) · Result: Pass/fail indicator, IR(min/average/Max), FL (Count/FLR), FTD,FDV(min/average/Max/(during test))
Service performance test	All services at the CIR rate are tested simultaneously Test time 15 minutes, 2 hours, 24 hours or user-defined Result: Pass/Fail indicator, IR(min/average/Max), FL (Count/FLR), FTD,FDV(min/average/Max/(during test)),
IP advanced test tool	
PING	For connection and configuration checks: Loop time (RTT) IPv4 and IP addresses are supported
Trace Route	Track IP routes on an IP network · Information of each hop: PING time (maximum/minimum/average) and PING timeout times
FTP Upload/Download	For FTP server and client simulation tests: · Support IPv4, address · Username/Password

	· File upload/download Result: Pass/fail, upload and download time displayed
HTTP	WEB browsing IPv4 and address are supported Page opening success/failure
Online service scanning	Online scan for service types on the network, including MAC, IP, VLAN ID, MPLS Label, and port number.
Advanced PING (Topology)	The PING test within an IP address range starts and ends Transmission times Timeout (ms) Status: Passed/failed
MPLS	
Indicates the number of MPLS headers	You can configure three MPLS headers
Parameters for each MPLS header	In each MPLS header, the user can define Label, Exp, and TTL fields Labels are incremented, decremented and randomly generated
Statistics	· Number of MPLS-TP frames
Ethernet frame capture Capture cache	100MB When the capture cache is full: Stop
Capture frame packet length interception	If activated, the first 64 or 128 bytes of the frame are captured (the rest of the frame is ignored), and the byte length is definable
Capture data	The CAP format can be displayed in the Wireshark

ORDERING INFORMATION

Model number	Product name
Host machine	
FT100	Intelligent, modular test platform
D550S	OTU4 and 100GE test modules
Standard fittings	
02030320	One 100G optical module
16080010	Meter interface - LC/PC fiber test jumper, 3 m long
18080010	OTP6200 100G electronic disc.
43160031	OTP6200 platform and four strings of lithium-ion rechargeable lithium batteries
43170020	OTP6200 platform 24V power adapter
16060010	2 m power cable
18080010	OTP6200 electronic disc
16120080	SMA test jumper
19070060	Portable meter case
	Three year warranty for the console, one year warranty for the adapter and battery
Software option	
FT100-OTU3A6200A	OTU3 interface test function; The purchase of this option also requires the purchase of 40G CFP optical modules
FT100--40GEA6200A	40G Ethernet test function (including error code, frame analysis, RFC2544, loopback, IP tool, service interruption, network cable fault test and other functions); The purchase of this option also requires the purchase of 40G CFP optical modules
FT100--ODU3Mapping	ODU3 Mapping path test function
FT100--ODU2Mapping	ODU2 Mapping path test function
FT100-ODU2eMapping	ODU2e Mapping path test function
FT100--ODU1Mapping	ODU1 Mapping path test function
FT100--ODU0Mapping	ODUO Mapping path test function
FT100-ODUflexMapping	**ODUflex Mapping path test function**
FT100--256OHcapture	256-frame OTN frame overhead continuous capture test functio
FT100--Y1564100GeEth	100GE Y.1564 Testing functions
FT100-IPv6100GeEth	100GE IPv6 test function
FT100--Scan100GeEth	100GE Online service scan function
FT100--LoneBand100GeEth	100GE Layer 1 bandwidth test function
FT100--EPING100GeEth	100GE Advanced PING test function
FT100--3MPLS100GeEth	100GE Layer 3 MPLS test
FT100-100GECapture	100GE Packet capture and resolution
Hardware option	
43160031	FT100 platform 2 and four strings of lithium-ion rechargeable batteries
	CFP to QSFP28/QSFP+ adapter
	Dual-rate QSFP28 100G 1310nm 10km optical module
	Dual-rate QSFP+ 40G 1310nm 10km optical module