DEVISER

TC722 All-in-One 10G Transport Tester

Key Benefits

- 7" LCD touchscreen; professional, efficient UI experience
- Two 10Gbps SFP+ ports, two 10/100/1000Mbps RJ45 ports
- Dual ports can test different setups independently
- Complies with RFC 2544 standard Throughput, Latency, Frame Loss and Back-to-Back benchmarking
- Complies with ITU-T Y.1564 Service Activation Methodology (SAM) up to 10 independent streams
- Supports 3 VLAN tags (QinQ), 3 MPLS encapsulation labels, IPv6 protocol, runt and jumbo frame configuration
- Supports Terminal and Transparent Transmission test models
- Supports OTN, OTU-1, OTU-1e, OTU-1f, OTU-2, OTU-2e, OTU-2f test
- Supports SDH, STM-1, STM-4, STM-16, STM-64
- Supports external synchronize clock input
- Supports optical power measurement
- Supports remote control
- Supports packet filtering and capturing

Product Overview

The TC722 is an all-in-one Transport Layer Tester released by Deviser to support full protocol testing at rates up to 10Gbps. The TC722 provides expert analysis for next-generation high-speed Metro and Carrier Transport networks, validating performance and connectivity while cutting OPEX and CAPEX. It is an efficient testing tool for service providers to satisfy client service level agreements (SLAs).

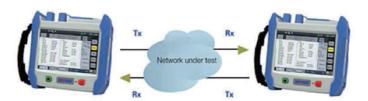
The TC722 is ideal for any transport testing task. It is fully equipped for Ethernet performance assessment; Metro Ethernet/SONET/SDH, and Mobile Backhaul installation, activation, or maintenance; point-to-point Ethernet access deployment; online troubleshooting for real-time information flow; and more. The tester supports multiple communication protocols to meet different testing requirements, including E1/T1 (Option), SDH/SONET (Option), and OTN (Option).



Application Note

- Network engineering site installation and activation test
- Service providers can evaluate data transmission network performance with complete end-to-end testing
- PTN/IPRAN network configuring and performance testing
- Local, Metro Ethernet construction, deployment and maintenance
- Communication Teaching and Research

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Common functions and operations:

The TC722 supports independent dual-port testing, allowing each port to conduct its own measurement. Functions include Ethernet RFC 2544, Y.1564, traffic generation and monitoring, BERT, loopback, pass through mode, SDH BER, RTD, APS, insert/ discard specified tributary test, OTN BER, RTD, and APS main test functions - as well as ping, traceroute, HTTP, FTP, and other auxiliary test functions.

Ethernet RFC 2544 measurement:

The RFC 2544 measurement function offers two modes: remote loopback and dual-sites. Use dual-sites mode to easily perform point-to-point symmetric and asymmetrical tests. The RFC 2544 application's test frame structure supports VLAN/QinQ/MPLS labels, and the maximum test rate can be matched to the line rate. For throughput measurements, users can freely define frame lengths once testing achieves up to eight different frame lengths.

Table Display Gra	ph Display	Alarms/Errors Log	010	
Start Time 00:06:	36 Tx Fran	mes 29598791 Rx Frames 29598791	Sto	
End Time		Result		
Unit	50	96.000	Setu	
O Mbit/s	128	96.000		
	256	96.000		
O Frames/s	512	-	Resu	
	1024			
Result Layer	1280	-	File	
	1518	-	File	
03 04				
			Clos	
Summary Throughp	ut Latency/Jit	ter Frame Loss Back-to-back		

RFC 2544 throughput measurement results

Ethernet BERT measurement:

The BERT measurement allows encapsulation testing on up to 4 layers. It supports VLAN/QinQ/MPLS label frame structures, eight PRBS (or user-defined) pattern bit error rate tests, and service interruption time tests. Encapsulate any test pattern into Ethernet frames in order to verify point-to-point characteristics on an Ethernet network, and insert bit errors or FCS errors during BERT testing in real-time. The BERT function also includes reverse-pattern settings.



Ethernet BERT results. Click "Insert" to insert a specified number of bit/FCS errors.

Ethernet Y.1564 measurement

Test network service configurations and performance in accordance with ITU-T Y.1564 standards, easily verifying the network's achievement of SLA. The TC722 supports 10 traffic channels, which can be independently configured with different IP addresses, VLAN tags, MPLS labels, frame size, bandwidth, and more. It can also detect 0-CIR $\$ CIR-EIR $\$ overshot bandwidth, frame delay, frame jitter, frame loss rate, and frame out-of-order.

Ethernet traffic generation and monitoring function

With up to 10 independently configurable traffic channels, each channel can have its own MAC address, IP address, frame length, and header format. Traffic can be generated in multiple ways: constant speed, sudden mode, ladder mode, or incremental mode. The TC722 can simulate multi-service test environment for triple play test scenarios.

Intelligently discover and connect to devices, then remotely trigger a loopback state or verify QoS point-to-point performance. Also included with this application is a packet test, returning accurate readings on CRC error frames, jabber frames, runt frame signal loss alarm, optical power measurement, unicast frames, multicast frames, broadcast frames, pause frames, frame delay, frame jitter, frame loss, frames of different length range, and symbol error.

	■ ② 0			品。	÷ 🕫	01:14:14
Po	Summary Stream Test Status	Traffic	Alarms/En Start Ti			Start
r t	Throughput Frame Los	ss Jitter	Latency	Out of Seq.	Verdict	Setup
P	3 4 5					Result
o r t	6 7 8 9					File
2	10					Close
	Port 1		Port 2		?	I_I×

Ethernet traffic generation measurement screen

Ethernet Loopback

Up to 4 layers Smart Loopback function. This mode is divided into Transparent loopback: all traffic is looped back; **L2 loopback**:

All traffic is looped back after switching MAC address L2 Full unicast loopback:

- All unicast traffic is looped back after switching MAC address L3 loopback:
 - All traffic is looped back after switching MAC address and IP address

L4 loopback:

All traffic is looped back after switching MAC address, the IP address and Port.





Ethernet Loopback measurement screen

Ethernet Pass Through Function

When the passthrough function is activated, the dual ports exchange data packets - those received by Port 1 are transmitted from Port 2, and vice versa - while the TC722 records send/receive and transmission rate readings. This function aids online troubleshooting of live traffic among customers, service providers, and carriers.

SDH BERT Measurement

Designate either PRBS or fixed-sequence patterns as the payload. This tool supports c-12, c-3, c-4 to vc-4 multiplexing cascade, as well as four different rates: STM-1, STM-4, STM-16, and STM-64. Users can simulate real channels to complete basic error and alarm insertion, using the TC722 as the receiver to detect channel error.

Summary	Point	novement	Event Log Sta	atistics
BER		Error Cos	int Rate	Transport Related imper(SDC LOS)
Pattern Er	rors	0.00	0.00	Below Limits(SDG-LOS)
Threshold		0	0	Current Lower Upper
Statistics (Category	/ 9	tatus	Pattern
SDH - Alar	ms/Erro	rs		
SDH - Qua	aliv			Test
SDH - Performance			Pattern Error Insertion	
				Insertion:
SDH - TCH	м			Burst length: Resul
				Burst length:
Defects/And	malies	Pointer	8)	Retur
LOF	-	Defect	FAS Word	Single Anomaly
Defect Type		Insert	Anomaly Type	Insertion Style Insert

SDH BERT measurement screen

SDH APS/OTN APS Measurement

The RTD test determines the network's Round Trip Delay and QoS information.

E 😧 (格 ~	I7:14:59
Control Threshold				
Test Condition				
Mode:	Single			Start
Measurement peric	0.5 seconds			
				Setup
				Test
				Result
				Return
SDH Test RTD Port	1 1000Mbps	dBm Port2	1000Mbps	dBm 🖌 🗙

SDH RTD measurement screen

SDH APS/OTN APS Measurement

Directly test the device-switching function under various switching conditions, and conduct accurate measurements of the SDH/OTN network automatic protection switching (APS) and service disruption time. The TC722 can simulate a real device to record and monitor K1, K2 bytes in an ITU-T G.783 linear network in real time.

reshold			
Mesurement conditon	-		St
	•		
Error free periods:			Se
Threshold			
Max reference duration:		ms	Te
			Re
			Ret

SDH APS measurement screen

SDH Insert/Discard Tributary Measurement

Inserts or discards the specified tributary. Also supports various error insertion operations: single, BER, Burst, alternating, continuous, and frame.



SDH insert / discard specified tributary measurement screen

OTN BERT Measurement

Measure BER and FEC performance, and analyze OTU-1, OTU-2, OTU-1E, OTU-2E, OTU-1F, OTU-2F optical signals in accordance with ITU-T G.709. The instrument supports a variety of in-service and out-of-service tests, and can do single-error, error rate, alternating, continuous, or random error insertion.

	E (0, 0	몲•	÷ 🖸	18:20:46
		2 - ODTU12(PT=21)#1 - ODTU01#1 - OPU J2 - ODTU12(PT=21) - ODTU01#1 - OPU		Start
PORT1	Mapping FEC Control R5(235.239)	TTI Encoding	Tx Mode Normal LOS Rx signal level -9.21 dBm	Setup
P	Dummy GI Copy V x4 D COU2 COU2 (FT=20) DUDI	Dummy D1 Copy V ODTU01 0000 PRB5	OTN LOF ODU-AIS FEC Corr.	Test Result
PORT2	HO IT HO	TF#1 OH Configure	OH Capture Tributary scan Transceiver	File Return
0"	IN Test-BERT Port1 1000Mbps	dBm Port2 1000Mbps	dBm	

OTN BERT measurement screen



Specifications

Function					
		RFC 2544	Throughput, Delay, Packet Delay Variation, Frame Loss, Back to Back		
		Y.1564	Service configuration testing, service performance testing, supports up to 10 different traffic		
		BERT	Support L1-L4 BERT support, insert error, frame error, PRBS, user-defined patterns		
		Traffic generation and monitor Supports up to 10 different traffic QoS and BER testing			
		Smart Loopback L2-L4			
		Pass Through mode Support			
Ethernet Measur	ement	Delay measurement	Round Trip Delay		
		SyncE	Support BITS, Ethernet line clock, internal high-stability clock source		
		VLAN	3 layers VLAN (QinQ)		
		MPLS	3 layers MPLS		
		IPv6	Support		
		BERT	Insert errors, detect error		
		RTD	Get network round trip delay and network QoS information		
SDH measureme	ent (Optional)	APS	Automatic protection switching time and service interruption time test		
		Insert/discard specified tributary test	Insert the specified tributary, discard the specified tributary.		
		BERT	Insert errors, detect error		
OTN measureme	ent (Optional)	RID	Get network round trip delay and network QoS information		
		APS	Automatic protection switching time and service interruption time test		
Online help					
Recovery factor	v settings	Support Support			
Name file in Chi		Support Support			
File format		PDF, CSV			
Configure file		Save personalized configure file, can import and export			
Screen shot fund	tion	Support			
		Support			
Touch-screen soft keyboard input Browser		Support			
Auto shutdown ,	/ sleen	Support			
Language	3000	English, Chinese			
Languagu			General		
Display		7" 800 × 480 dot-matrix TFT touchscre			
		USB2.0 × 2, USB power supply DC5V±0.05V@500mA			
Interface		LAN RJ-45 x 1			
		MicroSD × 1, up to 32GB			
		Internal 8GB Flash memory			
Storage		External support U disk storage			
Battery		7.4V 5300mAh Battery, 39.22Wh Maximum 4 hours operating time			
Supported Rates	5	10Base-T, 100Base-T, 1000Base-T, 1000Base-SX, 1000Base-LX, 1000Base-ZX, 10GBase-SR/SW, 10GBase-LR/LW, 10GBase-ER/EW			
Supported Stand		IEEE802.3, RFC 2544, RFC 3393, Y.1564, G.707, G.709			
Supported Cloc		Internal high stability clock source, Ethernet line recovery clock, external clock (2.048Mbps, 1.544Mbps, 2.048MHz)			
Total Power Cor					
	AC parameters	100-240V 600mA 50~60Hz			
Power Supply	DC parameters	100-240V 600mA 50~60Hz 12V 5A maximum			
r en er eeppiy	Total power	60W maximum			
			nical and Environmental		
Dimensions (length × width × height)					
Weight		2.06 min x 7/1 min x 75 min, (6.11 x 6.73 x 2.75) 1.5kg (3.3 lbs)			
Operating Temperature Range		-10°C~+50°C			
Storage Temper		-20°C~+70°C			
Relative Humidit		0%-95% Non-condensing			
Battery Life	1	Over 3 hours			
	Time	5 hours for full charge			
Battery Charge Time		s nous to toil charge			

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