OPWILL TECHNOLOGIES (BEIJING) CO., LTD

OTM2612 Gigabit Ethernet/PTN/SDH Test Module Operation Guide

Version: V1.03



Revision History

Date	Version	Revision
28/JUN/2018	1.00	Initial release
17/JULY/2018	1.01	Add the description of Loopback and Through
06/AUG/2018	1.02	Add the SDH test
14/AUG/2018	1.03	Change Figure Title to two level

The following table shows the revision for this document.

The document is based on the platform and module with following hardware and software version:

	Hardware	Software
OTP6200	OTP_MCU_VER_A4	V.2.0.1.3
OTM2612	A1	V1.0.0.7

The product and the operation guide could be upgraded or modified without notice. Please visit the website of OPWILL (<u>www.opwillsolution.com</u>) or contact us for the further information.



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Document Briefs

Initial speaking, OTM2612 is one of modular product of OPWILL, which means OTM2612 module needs to be worked with OTP6200 platform.

The purpose of this document is to help the engineers to use OTM2612 module with OTP6200 platform to test Ethernet network successfully, and also with high efficiency.

This manual is based on the assumption that the users who have basic computer experience and are familiar with basic telecommunication concepts, terminology, and safety.

This manual will introduce the task-based instructions of OTM2612 which describe how to configure, use, and troubleshoot the general functions of the instrument.

Safety information, detail physical or technical specification information, or other information could be helpful, please see our **OTM2612 Datasheet**, **OTM2612 User Guide**, and **OTP6200 User Guide**.

Finally, this manual is demonstrated complete **Standard** and **Optional** test functions of OTM2612.



Platform

1. OTP6200 Platform

1.1 OTP6200 Platform Introduction

Front Panel of OTP6200 Platform



Figure 1.1.1 OTP6200 Network Test Platform Front Panel View

LED Indicators

LED	Status	Description		
	Green	OnOff, and the battery is under fully charged condition		
	Green, (Flashing Quickly)	Off, and the battery is under abnormal condition		
U	Green, (Flashing Slowly)	Off, and the battery is on charge		
	Off	Off, and unplugged in		
	Green	Plugged in and battery is fully charged		
	Green, (Flashing)	Battery is on charge		
~ſŧ	Red, (Flashing)	Unplugged in, and battery is weak		
	Red	Battery error		
	Off	 Off Unplugged in, and battery level is above the 'critical threshold' 		
(1)	Green	Result status: success (Current result of the application does not exceed the predefined threshold)		

Table 1.1 LED Indicator Definitions



$O{\sf TM2612}\ {\sf Gigabit}\ {\sf Ethernet/PTN/SDH}\ {\sf Test}\ {\sf Module}$



LED	Status	Description
	Red	Result status: failure (<i>Current result of the application exceeds</i> the predefined threshold)
۵	Green (Flashing)	Laser status LED, at least one module is transmitting an optical signal
<u> 7#7</u>	Off	No module is transmitting signal

Buttons

Button	Description		
F1 / MENU	Switch from the current application to main menu		
F2 / SAVE	Save the current configuration of the device		
F3 / PRINT SCREEN	Copy the screenshot		
F4 / HELP	Display help information		
F5 \sim F8	ShortCut buttons (Different definitions for different modules, detail information can be seen in the individual module user handbook)		
F9 / SYSTEM	System setting		
CANCEL	Cancel/Exit		
SELECT	Select/OK		
ل	On/Off (Specific operation information can be seen in Section 5.1)		
RUN / STOP	Run/Stop		

Right Panel of OTP6200 Platform



Figure 1.1.2 OTP6200 Network Test Platform Right Panel View





Interfaces

Interfaces	Quantity	Description		
RJ-45 Port 1		Connect to Ethernet network		
USB Host Ports 2		 Connect USB memory drive Connect keyboard And connect mouse device, etc. 		
Mini USB port		Connect a USB cable for data transferring between the device and a computer		
Audio Output Port	1	Connect headphone/microphone		
DC Connector	1	Connect A/C adapter		

Table 1.3 Interfaces Description

Top Panel of OTP6200 Platform



Figure 1.1.3 OTP6200 Network Test Platform Top Panel View

Bottom Panel of OTP6200 Platform



Figure 1.1.4 OTP6200 Network Test Platform Bottom Panel View



2. OTM2612 Module

2.1 OTM2612 Transmission Interface Information

Front Panel View





Interfaces

Table 2.1	Interfaces	Description
-----------	------------	-------------

Interfaces	Quantity	Description	
100/1000M BASE-X Optical port	2	Signal: 100/1000Mb/s optical signalType: SFP optical port	
10G BASE-X Optical port	2	 Signal: 10Gb/s optical signal Type: SFP+ optical port 	
10/100/1000M BASE-TX Electrical port	2	 Signal: 10/100/1000Mb/s electrical signal Type: RJ-45 	
EXT External clock port	1	 Signal: DS1/E1/2MHz electrical signal Type: SMA 	

LED Indicators

Table 2.2 LED Indicator Definitions

Interface	LED	Status	Description		
		Green	Link has been established successfully		
100M/1000M/10G	LINK	Off	Link has not been established		
BASE-X	ACT	Red	Data is transmitting		
		Off	No data transmission		
10/100 /1000M BASE-TX	SPEED	Orange	1000Mb/s		
		Green	100Mb/s		
		Off	10Mb/s		
	LINK/ACT	Green	Link has been established successfully, but no data frame transmission		
		Green (Flashing)	Link has been established successfully, data is transmitting		
		Off	Link has not been established		



Basic - ETH

3. Ethernet Testing

3.1 Basic Steps of Ethernet Testing

Step 1: Start Ethernet/PTN Application

Start the Ethernet/PTN application needs to follow the following steps:

- After the module has been installed into the platform properly, start OTP6200 platform;
- OTM2612 module will be displayed on the platform's main window, then select the module;
- Click right side 'Run' button, or double-click the module to run OTM2612 Module.

For details about OTP6200 Platform Set Up, please refer to OTP6200 User Guide.



Figure 3.1.2 Start 10G Ethernet/PTN Application-2



Step 2: Select a Test Application

After OTM2612 Ethernet/PTN Module has been started, the main interface of OTM2612 will be displayed on the screen. Select a test application needs to follow the following steps:

- Select one test application from 'Function';
- Then test application will appear, select one test application.

Note: Test application list could be shown different with Figure 3.3, because some test functions are optional, please check these functions have been purchased or not.

For details about OTM2612 Interface Description, please refer to OTM2612 User Guide.



Figure 3.1.3 Main Interface of 10GE Ethernet/PTN Application



Figure 3.1.4 Test Application List



Basic - ETH

Step 3: Configure a Test

After one test application has been selected, please follow the following steps to configure the test:

- Click 'Setting', then select 'Port Setup' for setting parameters of test ports;
- Or, click 'Link Box' to enter port setup, see Figure 3.1.5;
- Then, after all parameters of ports have been set completely, click 'Setting', then select 'Stream Generation' for setting test data stream.

Note: Some test application will not require to set data stream.

Following sections will demonstrate the configuration steps case by case:

- For RFC2544, please see details in Section RFC2544;
- For RFC6349, please see detail in Section RFC6349;
- For Frame Analysis, please see details in Section Frame Analysis;
- For Bit Error, please see details in Section Bit Error;
- For Loopback and Through, please see details in Section Loopback and Through;
- For Y.1564, please see details in Section Y.1564;
- For Jitter, please see details in <u>Section Jitter</u>;
- For User Defined Frame, please see details in Section User Defined Frame;

For details about OTM2612 Configuration Description, please refer to OTM2612 User Guide.



Figure 3.1.5 Configuration Box



Step 4: Connect with the Circuit

After configuration of one test has been done completely, connect the instrument with circuit. Please note:

• Test ports type and speed;

Note: for OTM2612 ports description, please see <u>Section OTM2612 Module;</u>

- When test with optical circuit, please check the instrument has equipped optical transmission module or not, and its transmission wavelength (*ssonm*, *1310nm*, *1550nm*) and power (*transmission distance*) is appropriate or not;
- Data needs to be looped back to the instrument.

How to loopback data:

• If remote switch supports layer 1 to layer 4 data loopback, use switch to loopback;



Figure 3.1.6 Data Loopback by Remote Switch

• If remote switch does not support data loopback, use OTM2612 dual ports to

complete test.

Figure 3.1.7 Data Loopback by Dual Ports



Basic - ETH

 If test environment cannot support OTM2612 to perform the test with dual ports, please use other OTM2612 or other instrument which has loopback function in the remote side to do data loopback. For details, please refer to Section: Loopback and Through.



Figure 3.1.8 Data Loopback by Remote Device

Step 5: Start and End Test

After the instrument has been connected with the circuit successfully, please follow the following steps to start or end the test:

- Click 'Test', then select 'Start' or 'Stop' to start or end the test;
- Or, click 'Start and Stop' button to start or end the test, see Figure 3.1.9;
- Or, push 'Run/Stop' on OTP6200 Platform to start or end the test, see <u>Section</u> OTP6200 Platform: Figure 1.1.



Figure 3.1.9 Start of End Test



Basic – ETH

Setting			
Cetton control Cetton mode Custom mode Day Hour Minute Second		→	Enable to control test duration.
Test Starttime Control Denaile lest starttime control 2016 year [0 mon [14] day [15] hour [53] min [2] sec	5	+	Enable to control test start time.
Alarm Bell Control			

Figure 3.1.10 Test Control

Step 6: View Result

After the test has been done completely, please follow the following steps to view the results:

• To see the result, click 'Results';

Following sections will demonstrate the results case by case:

- For RFC2544, please see details in Section RFC2544;
- For RFC6349, please see details in Section RFC6349;
- For Frame Analysis, please see details in Section Frame Analysis;
- For Bit Error, please see details in Section Bit Error;
- For Loopback and Through, please see details in Section Loopback and Through;
- For Y.1564, please see details in Section Y.1564;
- For Jitter, please see details in <u>Section Jitter</u>;
- For User Defined Frame, please see details in Section User Defined Frame;



Basic - ETH



Figure 3.1.12 View Test Results -2



Basic – ETH

Step 7: Generate and Save Test Report

To generate and save test report, please follow the following the steps:

- Click 'Reports', then select 'Report Generation' to generate report;
- Click 'Preview' to preview the report which has been generated;
- Click 'Print' to print the report which has been generated.

	01 tx RX Port1 Electrical 1000M Full Duplex tx RX DUT	File File Setting	
Click 'Report Generation' to enter	TX count 0 RX count 0 TX Rate(%) 0 RX Rate(%) 0 Port2 Olobal Alarm H H C H	Test	→ Click 'Report'.
'Report Generation and Save' dialog box.	TX Rate(%) RX Rate(%) Preview Olobal Alarm H Function RFC2544 O Port1 Port2 Dual Port Throughput Ø Backto-Back Ø Frame Loss Ø Latency Stot1 RFC 2544 Single port Test Status Stop Duration: 00 00:00:18	About	
		OP.WILL	

Figure 3.1.13 Report Generation

How to generate the test report:

• After click 'Report Generation', the dialog box of report generation will appear, see

Figure 3.1.14;

'Stop Test Generation', enable this function, the report will be generated automatically after the	01 Report Ceneration	File Setting	'Time Generation', enable this function, the report will be generated automatically after the time interval has been selected.
test has been stopped.	Port Path USER/WuldSave_TimeT.N.T Select Port Report Title Company Dic Disc 244	Test	Note: Under RFC2544 and Y.1564, cannot enable this function.
Click 'Select' to select the report saving path,	TXF Customer Tester	Results	Fill the general information of
Support TXT; PDF; EXCEL; and HTML.	TX:c TX:F	Reports	the report.
Click 'Preview' to preview the test report. Click 'Generation' to	Cont Fun	About	
generate the test report. Click 'Open' to view the report previously saved.	→ c Close C	P'WILL	

Figure 3.1.14 Report Generation Dialog Box



3.2 RFC2544

Preparation before the test

- Click 'File', and select 'New' to start a new test;
- Also, it can select 'Open' to open the previous saved test configuration;
- Also, it can select 'Save' to save this test configuration.

Select 'New' to		File	
Select 'Open' to	Open	🎎 Setting	
configuration; Select 'Save' to	02 Port2 Electrical 100M Full Duplex	у е тооі	
configuration.	TX count 0 RX count 0	🥖 Test	
	TX Rate(%) I ^o RX Rate(%) I ^o Port2 Global Alarm H 🙆 C 🖨	Kesults	
	TX count	😰 Reports	
	Config Global Alarm H Q C Q	🔒 About	
	Function BERT Port1 O Port2 O Dual Port		
	Slot:1 BERT Dual port		
		OP'WILL	

Figure 3.2.1 Preparation before the Test

Steps for RFC2544 test

• Step 1: Select 'RFC2544' from configuration box, select test ports, and select sub test functions:



Figure 3.2.2 Select RFC2544 and Sub Test Functions





 Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters:



Figure 3.2.3 Enter Port Setting

Select test port, then configure the parameters of this port. If test with dual ports, port and ports? parameters need to be configure d respectively. Select electrical port type, duplex mode, and MDI/MDIX type. Must be in accordance with the circuit. If auto negotiation

function has been enabled, port's rate will be adapted to the maximum speed. If advanced auto negotiation function is enabled, it allows port to negotiate with other speed.

Show optical ports status.

P	Port Setup Set Net					×
	Configuration	Port1	O Port2	Dual 1G		
	Interface rate	10Gbps	 1Gbps 	100Mbps	10Mbps	
	Transceiver Mode Duplex	Electrical Full Duplex	Optical	MDI/MDIX	Auto	
	Auto-negotiation	Advanced Au	to-negotiation	RX Flow C	ontrol	
	Port-Power TX((dBm) Power	RX(dBm) Free	quency(bps)	Offset	N
	Port1 Port2					
Ż					Close	

Figure 3.2.4 Port Setup -1

Select optical port type, including 'Dual 10G Lan', 'Dual 1G', 'Dual 10G WAN', 'Por1-1G, Port2-10G Lan'. Only when Transceiver Mode has selected 'Optical', this function can be used.

Select interface transmission rate. If auto negotiation function is enabled, interface rate will be adapted automatically. Enable RX flow control, which is only available under Frame Analysis; BERT; and User Define.

If negotiation has been done successfully, status box will display the message 'Negotiation Completed'. Also the link status box will show message 'Link Up' to indicate the link has been established successfully. Additionally, please see Figure 4.2 and Figure 4.3 **Red Box**, if the link is up, the indicator of the link box will be turned to green. If the link is down, the indicator will be turned to red.





After link has been established successfully, move to network page to set port

network's parameters, see Figure 3.2.5:



Figure 3.2.5 Port Setup -2

Step 3: After all parameters of port have been set completely, select 'Stream Generation' from 'Setting' sub menu: See detail in <u>Section Frame Analysis</u>, about 'Stream Generation'. This part in RFC2455 is the same as Frame Analysis.

Or, click 'Link Box' here to configure stream's parameters.	01 TX RX 02 K RX Port1 Electrica	II 1000M Full Duplex P(rt Setup(F5) II 1000M Full Duplex Seam Generation(F6)	File Setting	Click 'Stream Generation' to configure stream's parameters.
	Port1	RFC 2544 Setup Bit error injection	Test	
	TX Rate(%) 0 Port2	RX Rate(%) Frame LostTest Global Alarm Loop/Through Set	Kesults	
	TX count 0 TX Rate(%) 0	RX count 0 RX Rate(%)	Reports	
	Config Function RFC2544	Global Alarm H e C e	About	
	Slot1 RFC 2544 Dual port Slot1 G		OPWILL	

Figure 3.2.6 Enter Stream Generation



Step 4: After all parameters of data stream have been set completely, select

'RFC2544 Setup' from 'Setting' sub menu to configure RFC2544 parameters:



Figure 3.2.8 RFC2544 -1



OTM2612 Gigabit Ethernet/PTN/SDH Test Module

	RFC2544 Setting				×	
	Global Throughput Back	<pre>white-Back Frame Loss</pre>	Latency			
	Configuration Test Time 60 No of trials to average	S	Accura 0.50 Accep	acy table Loss Rate	*	
l	1 Initial Rate	P1->P2	0.00	P2->P1		Configure 'Throughput' parameters.
l	Maximum Rate Threshold Enable	10.00 100.00 Enable	%	10.00 100.00 Enable		
	Threshold Value	10.00	%	10.00	% Close	

Figure 3.2.9 RFC2544 -2

RFC2544 Setting Olobal Throughput Back-1	to-Back Frame Loss Late	ncy		×		
Configuration Test Time 2 No of trials to average 5	S	Accur	racy	~ %		
Initial Time ratio	P1->P2	- %	P2->P1	%	Configure 'Back- parameters.	to-Back'
Minimum Time ratio	50.0	- % - %	50.0	% %		
Threshold Enable Threshold Value	Enable	- %	Enable	%		
				Close		

Figure 3.2.10 RFC2544 -3

RFC2544 Setting Global Throughout Back- Configuration Test Time [10 No of trials to average [1	to-Back Frame Loss Latency			×		
Initial Rate Step Rate Maximum Rate Threshold Enable Threshold Value	P1->P2 [00.00 10 D100.00 Enable 5.00	% % %	P2->P1 [90.00 [10 [100.00 [Enable [5.00]	- % - % - %	J	Configure 'Frame Loss' parameters.

Figure 3.2.11 RFC2544 -4

OTM2612 Gigabit Ethernet/PTN/SDH Test Module

Configuration Test Time				1	ור	
20	S 💌					
No of trials to average	8					
3						
Initial Rate	P1->P2	- %	P2->P1	%	١Ц	Configure 'Latency'
Step Rate	10	- %	10	- %		parameters.
Maximum Rate	100.00	- %	100.00	- %		
Threshold Enable	Enable		Enable			
Threshold Value	1.00	ms	1.00	ms		
	J	_			וע	Click 'X' or 'Close' to close
				Close	Ч	after parameters have

Figure 3.2.12 RFC2544 -5

Step 5: Click 'Start' button to start test. RFC2544 test will be stopped automatically.



Figure 3.2.13 Start Test





View test results



Figure 3.2.15 Enter Overall Results



OTM2612 Gigabit Ethernet/PTN/SDH Test Module

	Traf	fic Analyz	er					×
	Alam	n/Bert Ethern	et statistics	FrameType statis	tics	Graph Logger Ala	irm Graph	
	Por	t Selection —		[^{Global}		(ʻ	Narm Enable –	
Select port1 or		Port1		Port1		Θ	🕑 Oversiz	e Alarm Enable
statistics.		O Port2		Port2		Θ	🗹 Unders	ize Alarm Enable
	F		Seconds	Count		L	Seconds	Count
		Link Error	0		Θ	LOS		-
	0	Symbol	0	0	Θ	Collision	0	0
	0	Idle	0	0	0	Excessive Collisio	n O	0
		FCS	0	0	Θ	Late Collision	0	0
		Bit Error	0	0	0	IP Error	0	0
	0	Oversize	0	0	0	UDP Error	0	0
		Undersize	0	0	0	TCP Error	0	0
								Close







	Traffic An	alyzer				X
	Alarm/Bert E	Ethernet statistics Fra	ameType statist	ics Graph Logger	Alarm Graph	
Select port1 or port2 to view data statistics.	Port Selection	on Port2				
	Frame Type Test	8899229	VLAN1	0		
	MAC	8899229	VLAN2 VLAN3	0		
	IP IPv6	0	MPLS1 MPLS2	0		
	TCP	0	MPL83 Pause	0		
						Close

Figure 3.2.18 Overall Results -3













OTM2612 Gigabit Ethernet/PTN/SDH Test Module

View RFC2544 result:

01 RX Port1 Electrical 1000M Full Duplex Port2 Electrical 1000M Full Duplex Port1		File Setting	
TX count 1825488 RX count T TX Rate(%) 0.000000 RX Rate(%) 0 Port2 Global Alarm 6	625488 1.000000 Result Overview(F7)	V Test	
TX count 1625488 RX count 1 TX Rate(%) 0 000000 RX Rate(%) 0 Config Global Alarm	RFC2544 Results(F8) RFC6349 Results(F8)	Reports	 Click 'RFC2544' to view RFC2544 result.
Function RFC 2544 Image: Comparing the second sec	1588 Results(F8) V/IB Results		
		OP WILL	

Figure 3.2.22 Enter RFC2544 Results



Test Status	Test M compl	essage eted					┦	Show test stat
France Count	compl	eted]	
TX Frame Count	P1 to P2		P2 to P1 487646	3	_			
RX Frame Cou	nt 4876463		487646	3	_			
Throughput Res	ult	D04- D4						
74	100.00%	100.00%						
128	100.00%	100.00%		Unit				
256	100.00%	100.00%		%	-			
512	100.00%	100.00%		bps	Ê			
1024	100.00%	100.00%		Bps				
1280	100.00%	100.00%		Khns				Select unit.
1518	100.00%	100.00%		KBps				
				Mbps	-	Close		



Fest Status Test completed		complet	ssage ed ed			 ⊬→	Show test st
Frame Count- TX Frame Coun RX Frame Cour	P1 t 162 t 162	o P2 549		P2 to P1 162549 162549			
Back-to-Back Re Frame Size 74 128 256 512 1024 1280 1518	P1 to P2 19680855 21621632 23188428 24060160 24521113 24615424 24674938	i0 10 18 10 16 10 10	P2 to P1 196808550 216216320 231884288 240601600 245211136 246154240 246749382		Unit Byte/Burst Byte/Burst Frame/Burst		Select unit.

Figure 3.2.24 RFC2544 Result -2



Throughput Back-to-Back Frame Loss L	atency Graph	
Test Mes Test Status Test completed completed	sage dd	Show test status.
P1 to P2 TX Frame Count @12744 RX Frame Count @12744	P2 to P1 912744 912744	
r Frame Loss Pesult Frame Size P1 to P2 [74 0 000000% [256 0 000000% [512 0 000000% [1024 0 000000% [1280 0 000000% [1510 0 000000%	P2 to P1 [0.00000% [0.000000% [0.000000% [0.00000% [0.00000% [0.00000% [0.000000% [0.00000% [0.000000% [0.000000% [0.000000% [0.000000% [0.000000% [0.000000% [0.000000% [0.000000% [0.000000% [0.000000% [0.0000% [0.00000% [0.00000% [0.00000% [0.00000% [0.0000% [0.0000% [0.0000% [0.0000% [0.0000% [0.0000% [0.0000% [0.000% [0.0000% [0.0000% [0.000% [0.0000% [0.000% [0.0000% [0.0000% [0.	Select unit.
	Close	









Figure 3.2.27 RFC2544 Result -5



3.3 RFC6349

Preparation before the test

See <u>Section RFC2544: preparation before the test.</u>

Steps for RFC6349

• Step 1: Select 'RFC6349' from configuration box, select test ports:

	01 TX RX 02 TX RX Port2 Electrical 1000M Full Duplex RX Port2 Electrical 1000M Full Duplex RX Port2 Electrical 1000M Full Duplex RX Port2 Electrical 1000M Full Duplex	File Setting	
	TX count 0 PX count 0 PX Rate(%) 0 C @ C @ C @ C @ C @ C @ C @ C @ C @ C	V Test	
	TX count I0 RX count I0 TX Rate(%) 0 RX Rate(%) 0 Config Global Alarm H C O	About	
Select RFC6349.	Function [NFC 6349 Port1 Port2 Dual Port Slot1 RFC 6349 Dual port Test Status Stop Duration: 00 00.37.06		Select test port.
		OP WILL	

Figure 3.3.1 Select RFC6349

 Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> <u>test steps;</u>



RFC6349 - ETH

• Step 3: After all parameters of port have been set completely, select 'RFC6349 Setup' to configure RFC6349 parameters. Select server port to be the server equipment and then set server port number.

	al 1000M Full Duploy	X	📄 File	
		RX Port Setup(F5)	Setting	
02 RX Port2 Electric	al 1000M Full Duplex 🤇		77 Тооі	Click 'RFC63
TX count 1674123	RX count	RFC 6349 Setup	🌶 Test	 Setup' to se RFC6349 parameters
TX Rate(%) [10.000322 Port2	RX Rate(%) I Global Alarm		Kesults	parameters
TX count 1705458 TX Rate(%) 9.999178	RX count		Reports	
Config	Global Alarm		🔒 About	
Function INFC 0349	Porta Porta			
Slot:1 RFC 6349 Dual port	Test Status:Start	Duration: 00 00:03:33		
0 🔂 💿			OP'WILL	

Figure 3.3.2 Enter RFC6349 Server

	RFC6349
Select Config.	Config Server Summary
Select Server equipment.	Port1 Server Port2 Server Port Symmetry Test Port Setting
Set Server port 🗲	Direction Diductional Server Port 5000 Server IP 192.168.000.020 Start
number.	[TCP Config [Path MTU Config
	Connection 1 Path MTU Discovery
	Client->Server Server->Client Client->Server Server->Client
	CIR(Mbps) 100.000 100.000
	Baseline RTT Config
	TOSIDS 00 00 Baseline RTI Discovery Client->Server.>Client
	TOS/DS TOS/DS Baseline RTT(ms) 10.000 10.000
	TCP Throughput Config [Windows Scan Config
	Windows Scan Enable
	Stép Tést Time(s) 1000 Stép 1 Stép 2 Step 3 Step 4
	Web 1 Otep 2 Otep 3 Otep 3 </th

Figure 3.3.3 Configure Server equipment parameters



RFC6349-ETH

OTM2612 Gigabit Ethernet/PTN/SDH Test Module

	RFC6349	×
Select Server Summary.	Server Summary	
	Connection 1	
View the Server	Client Mac 68:db:96:02:22:02	
equipment Summary.	Client IP 192.168.000.020	
	Cilent Port 5000	

Figure 3.3.4 View the Server equipment Summary



RFC6349 - ETH

• Step 4: After the configuration of Server equipment, need to configure Client equipment parameters.



Figure 3.3.5 Enter RFC6349 Client

	RFC6349	
Select Config.	Config Summary Windows Scan TCP Throughput	
Select Server equipment.	Port1 Client Port2 Server V IPERF Symmetry Test Port Setting	
Select the transmission direction and Sever Port	Direction Bidirectional Server Port 5000 Server IP 192 188 000 020 Start	Input the Server IP address.
number. Configure TCP parameter.	CPE Condg Path MTU Condg Connection 1 □ □ Client>Server Server>Client □ CIRMbps) 100000 □0000 TOSIDS 00 00 Baseline RTT Discovery Client-Server Client>Server Server>Client TBaseline RTT Discovery Client-Server	
	TOSIDE TOSIDE Baseline RTTm(s) TOUDU TOUDU TCP Throughput Config	

Figure 3.3.6 Configure Client equipment parameters

• Step 5: After the configurations of Server equipment and Client equipment have been set completely, Press 'start' in the 'Config' interface meanwhile or Press the start icon in the main interface to start RFC6349 test.



RFC6349-ETH

OTM2612 Gigabit Ethernet/PTN/SDH Test Module

Port1 and port2 current TX and RX data display here.	01 + TX Port Electrical 1000M Full Duplex + TX + TX 02 - <th>File Setting Tool Tool Test Show history and current alarms. 'H' stands for 'History' 'C' stands for 'Current' About CURRENT</th>	File Setting Tool Tool Test Show history and current alarms. 'H' stands for 'History' 'C' stands for 'Current' About CURRENT
View overall result	Figure 3.3.7 View Results	
	01 RX Port Electrical 1000M Full Duplex C	File Setting
	TX count 1832279 RX count 1833312 TX Rate(%) 10.000198 RX Rate(%) 10.000189 Port2 Global Alarm Result Overview(F7) TX count Prove Discovery Result Overview(F7) TX count RX count Review Discovery TX count RV/20 Discovery Review Discovery TX Rate(%) RV Rate(%) RV Rate(%)	Click 'Result', to view overall results. Or, click 'here'.
Or, Click 'Alarm Overview' button to	Config Function PFC 6349 P Prot Prot Prot + Slot1 RFC 6349 Single port Test Status Start - Config - Config - 1568 Reputp(F6) - 1568 Reputp(F	

View test results

Figure 3.3.8 Enter Overall Results

Supplements: the RFC6349 Overall results, see detail in Section RFC2544 View test

results.





View RFC6349 Results:

01 01 02 Port1 Electrical 1000M Full Dupler C Port1		File Setting	
TX count 972350 PX count 9 TX Pate(%) 0.00000 PX Pate(%) PX Pate(190314 Result Overview(F7) Service Disruption RFC2544 Results(F8)	Test	 Click 'RFC6349' to
Config Global Alarm Function RFC 6349 P Ort1 O Port2 Stot1 RFC 6349 Single port Test Status Stop	RFC6349 Results(F8) Y.1564 Results(F8) 1568 Results(F8) W/B Results Duration: 00 00:02:00	About	view RFC6349 result.
		OP WILL	

Figure 3.3.9 Enter RFC6349 Results



REC6349

est Status lest	finish			Test Time	e 302s		Show test st
ITU/Baseline RT	T/BDP	Aug PTT/m/	Min PTT/m	(a) Max PTT(max)	PDP/Puto)		
Client - Copor	1500	0.186	0.063	0.189	4614		
Cilenter Server	1600	0.160	0.188	0.171	4814		
Server->Client	11000	10.100	0.100	0.171	14014		
Vindows Scan Ad	tual L4 Throug	hput					
	Step1	Step2	Step3	Step4			
Client->Server	96.229	96.229	96.229	96.229	Mbps		
Server->Client	96.229	96.229	96.230	96.228	Mbps		
CP Throughput-						_	
	ldeal L4 (Mbps)	Actual L4 (Mbps)	Efficiency E (%)	Buffer Delay Trans (%) Time	ifer (%) Result		
Client->Server	96.229	96.229	100.000	175.317 100.00	0 Pass		
	06.220	06.220	100.000	0.210	0 Raco	·	

Figure 3.3.10 View overall Results -1



Figure 3.3.11 View Results -2



RFC6349-ETH

 $O{\sf TM2612}\ {\sf Gigabit}\ {\sf Ethernet/PTN/SDH}\ {\sf Test}\ {\sf Module}$



Figure 3.3.12 View Results -3



3.4 Frame Analysis

Preparation before the test

See <u>Section RFC2544</u>: preparation before the test.

Steps for Frame Analysis

• Step 1: Select 'Frame Analysis' from configuration box, select test ports:

	01 TX RX Port1 Electrical 1000M Full Duplex • TX RX Port2 Electrical 1000M Full Duplex • TX RX DUT Port2 Electrical 1000M Full Duplex • TX RX DUT	File Setting	
	D RX count D TX Rate(%) D RX Rate(%) D Port2 Olobal Alarm H O C O	🥖 Test 🎸 Kesuits	
	D RX count D TX Rate(%) 0 RX Rate(%) 0 Config Oliobal Alarm H O C	Reports	
Select Frame Analysis. 🗲	Function: Frame Analysis Dial Port O Dual Port		Select test port.
		OP 'WILL	

Figure 3.4.1 Select Frame Analysis

 Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> <u>test steps</u>;


• Step 3: After all parameters of port have been set completely, select 'Stream Generation'.



Figure 3.4.2 Enter Stream Generation (Frame Analysis)

	Stream Generation		×	
Frame analysis can support to	₱ Num Rate(%) Length Layer Dest	ination MAC Source MAC VLAN 🔶	Port1	Select 'Port1' or 'Port2' to configure.
Frame analysis can support to generate at most 512 streams.	I 1000 fet Mac footo Ponnise Burst N-Frame N-Eurst Constant Overview Frame configuration R amp		New Copy IMIX Delete Delete All eview	Select stream send mode.
	Scheduling mode Node FPS FPS FPS FPS F000 FPS 1.000 % FPS F000 Frame	(8) 5 Staptime(8) 7 nt 7 Pausetime(9) 7 5 Step(%) 70		

Figure 3.4.3 Stream Generation -1 (Frame Analysis)



OTM2612 Gigabit Ethernet/PTN/SDH Test Module



										_	Select port1 or port			
	Length	Layer	Destinati	on MAC	Source M	IAC	VLAN		^	Port1	4	┢	 to configure. 	or portz
	64	MAC	00.00.00.0	0.00.01	68.DB.96.P	FF:FF:00				N	ew			
										C	opy			
										- Ib	lix			
										De	lete			
										Dele	te All			
	<													
Select to 'VIAN'	OVEIVIEW	rame co	mgurauor	MINC	VLAN	MPLS	IP I	DP/TCP	Payload	Preview				
to configure	ctacked	ani/o.ir		VLAN-							h			
	Statked	Driv(Gri	(G)	Mode	Fixed		2	Max						
	O		-	ID				Min						
	VLAN La	yer No.		Priority				Step						
				Туре				a	'					
												Co	onfigure VLAN p	arameters
					UCFI									

Figure 3.4.6 Stream Generation -4 (Frame Analysis)



	Stream Generation		Select port1 or port2
Select to 'MPLS'	MPLS	SNAP Destination IP	Select port1 or port2 to configure.
	Enable MPLS Layer	Exp Step Max SBIt	Configure VLAN parameters
	Figure 3.4.7 Stream	Generation -5 (Frame Ar	nalvsis)



		S	tream	Gene	ration						×				
			Destina	tion IP		So	ource IP		^	ſ	Port1	2	┝→	Select port1 or po to configure.	rt2
			192.168	000.001		192	2.168.000.201				New		Í		
											Сору				
											IMIX				
											Delete				
							_				Delete All				
Select	to 'IP' to ┥		N						Developed]	. tem	d			
	configure		Overview	Pram	e configuration MAU	S VLAN	MPLS IP U	Course	Payload	Pre	wew				
				Mode	Fixed 💌	TTL 10	_	Mode	Fixed						
			● IPv4	IP	192.168.000.001	Ping	Advanced TOS/DS	IP	192.16	8.00	00.201				
			_	Мах	255.255.255.255	IP TOS/DS	s 00	Max	255.255	5.25	55.255				
			O IPv6	Min	000.000.000.000		📄 Binary	Min	000.001	0.00	10.000				
				Step	1			Step	1			н		Configure IP address	i.

Figure 3.4.8 Stream Generation -6 (Frame Analysis)

	Stream	Generation				×	Colort worth an worth?
Select to 'UDP/TCP' to configure	01	v Frame configura	Destination Port	Source Port	Payload PRBS 247 VDP/TCP Payloa	Port1 New Copy INIX Delete Delete All Preview	to configure.
	For Por	tination sed vr t M	ax 65535 in 0 ep 1	Source Mode Fixed Port 0	Max Min Step	66535 0 1	Configure UDP/TCP address

Figure 3.4.9 Stream Generation -7 (Frame Analysis)



OTM2612 Gigabit Ethernet/PTN/SDH Test Module

Copy IMIX Delete Delete All

٦v

	Stream Generation	Soloct port1 or port2
Select to 'Payload'	Destination Port Source Port Payload	to configure.
to configure	Verview Farme configuration MAC VLAX MPLS IP OUP1 Pandos reverv Parload Type Data Pattern PR852*7 P Invert Max PFFFFFF Value 00000000 Invert Max PFFFFFF Min 0000000 Step 1	Configure 'Payload' parameters
	Figure 3.4.10 Stream Generation -8 (Frame Generation)	_
	Stream Generation Destination Port Source Port Payload Destination Port Source Port Payload Port New New	Select port1 or port2 to configure.

Figure 3.4.11 Stream Generation -9 (Frame Generation)

Frame configuration MAC VLAN MPLS IP UDP/TCP Payloa Preview

• Step 4: Click 'Start' button to start test, then click 'End' button to end test.



Select to 'Preview' to view.

Ow

View test results

Frame analysis only has overall result to view. View overall result, please see

details in <u>Section RFC2544: view test results</u>, and Figure 6.12:

	Traffic Analyzer				×		
	Alam/Bert Ethemet st	O Port2	Stream Select	Stream statistics		┝	Under Frame Analysis, 'Stream Statistics' tab will appear. Other tabs' content remain
Select to show different stream's data statistics.	Stream Statistics	200184977 180164567 12811836528 0 0 0 0 0 0	Min Delay Max Delay Acc Delay Average Delay Min Jitter Max Jitter Acc Jitter Average Jitter	0 00 0 00 0 00 0 00 0 00 0 00 0 00 0 0	US US US US US US US US		same with RFC2544.
					Close		

Figure 3.4.12 Overall Results (Frame Analysis)



Bit Error - ETH

3.5 Bit Error

Preparation before the test

See Section RFC2544: preparation before the test.

Steps for Bit Error

• Step 1: Select 'BERT' from configuration box, select test ports:

	01 TX RX Port1 Electrical 1000M Full Duplex TX RX DUT TX RX DUT DUT Port2 Electrical 1000M Full Duplex DUT	File Setting	
	Image: TX count Image: Image: Image: TX count Image: Imag	🥖 Test 🎸 Kesults	
	TX count 0 RX count 0 TX Rate(%) 0 RX Rate(%) 0 Config Olobal Alarm H ● C ●	Reports	
Select Bit Error. 🗲	Function DERT Port Port Ord Dual Port Slot1 BERT Dual port Test Status Stop Duration: 00 00 32 38		Select test port.

Figure 3.5.1 Select BERT

- Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> <u>test steps</u>;
- Step 3: After all parameters of port have been set completely, select 'Stream Generation' from 'Setting' sub menu, or click 'Link Box' to configure data stream parameters: see details in <u>Section RFC2544: test steps</u>, and <u>Section Frame Analysis:</u> <u>test steps</u>;



• Step 4: Click 'Start' button to start test, then select 'Bit Error Injection' from 'Setting' sub menu to insert bit error, then the test has been started:



Figure 3.5.2 Enter Bit Error Injection

Port1 TX count TX cale(%) Port2 TX cale(%) Port2 TX cale(%) Confg Function [DE]	Port Electrical 1000M Full Duplex T T T T T T T T T T T T T	File Setting Tool File Tool File Results About	 Insert errors. Click 'X' to close this page and return to main interface. Insert errors manually or automatically.
		OP'WILL	

Figure 3.5.3 Bit Error Injection





View test results

Bit error only has overall result to view. View overall result, please see details in <u>Section RFC2544: view test results</u>, Figure 3.5.4, and Figure 3.5.5:

01 TX Port1 Electrical 1000M Full Duplex TX 02 TX Port2 Electrical 1000M Full Duplex TX Port1 Port1 Port2	File Setting	
TX count 154331956 RX count 1394397567 TX Rate(%) 9 999967 RX Rate(%) 99 99965 Port2 Olobal Alarm H	/ Test	Alarms turn red, when errors occurred.
TX count 139439569 PX count 154931954 TX Rate(%) 99.999970 PX Rate(%) 10.000003 Config Ollobal Alarm H • C	Reports	
Function BERT Port Operat Operat		
	OP WILL	

Figure 3.5.4 Bit Error Result



Figure 3.5.5 Overall Results (Bit Error)



3.6 Loopback and Through

Description of Loopback and Through

For Example, Prepare two sets of OTM2612.And then suppose the two ports on the left side of the device are Port1A and Port2A respectively; Suppose the two ports on the right side of the device are Port1B and Port2B respectively. Under Loopback and Through function, the transmission direction of data streams displayed in figure 3.6.1.



Figure 3.6.1 Description of Loopback and Through



Loopback and Through - ETH OTM2612 Gigabit Ethernet/PTN/SDH Test Module

Preparation before the test

See <u>Section RFC2544: preparation before the test</u>.

Steps for Loopback or Through

• Step 1: Select 'Loopback' or 'Through' from configuration box, select test ports, loopback test needs to select loopback layers:



Figure 3.6.2 Select Loopback

	01 TX RX Port Electrical 1000M Full Duplex TX RX Port Electrical 1000M Full Duplex TX RX DUT Port 2 Electrical 1000M Full Duplex Port Electrical 1	File Setting	
	TX count 0 FX count 0 FX count 0 FX cate(%) 0 FX Rate(%)	🥖 Test 🎸 Results	
	Image: Tx count Image: Tx	Reports	
Select Through. 🗲	Function Through Port Port O Dual Port		-> Select test port.

Figure 3.6.3 Select Through

 Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> <u>test steps</u>;



• Step 3: After all parameters of port have been set completely, select 'Loop/Through Set' from 'Setting' sub menu to configure loopback parameters:



Figure 3.6.4 Enter Loopback/Through Setting



Figure 3.6.5 Loopback/Through Set



Loopback and Through - ETH OTM2612 Gigabit Ethernet/PTN/SDH Test Module

• Step 4: Click 'Start' button to start test. Additionally, 'Frame Lost Test' can be enabled under loopback/through:



Figure 3.6.7 Frame Lost Control

View test results

Loopback and Through only has overall result to view. View overall result, please see details in <u>Section RFC2544: view test results</u>.



3.7 Y.1564

Preparation before the test

See <u>Section RFC2544</u>: preparation before the test.

Steps for Y.1564

• Step 1: Select 'Y.1564' from configuration box, select test ports:

	01 TX RX Port1 Electrical 1000M Full Duples • TX RX 02 TX RX Port2 Electrical 1000M Full Duples • TX RX DUT DUT	File File Setting	
	TX count 0 RX count 0 TX Rate(%) 0 RX Rate(%) 0	🥖 Test	
	Port2 Global Alarm H O C O TX count 0 RX count 0	Results	
	TX Rate(%) 0 RX Rate(%) 0 Config Global Alarm H C O	About	
Select Y.1564.	Function Y.1564 Port1 OPort2 ODual Port		Select test port.
	Coll 1.100 Dataport Test Status.Stop Duration.00.0047.56	OP WILL	

Figure 3.7.1 Select Y.1564

• Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> test steps;



Y.1564 - ETH

• Step 3: After all parameters of port have been set completely, select 'Service Setup' from 'Setting' sub menu, or click 'Link Box' to configure data stream parameters: Figure 3.7.2, and Figure 3.7.3:

Or, click 'Link Box' here to configure stream	Image: Control of the second secon	I 1000M Fuil Duplex I 1000M Fuil Duplex RX count RX count RX caunt RX caunt RX caunt RX caunt RX caunt RX caunt RX count RX caunt RX count RX caunt RX caunt RX count RX caunt RX c	The second secon	→ Click 'Service Setup' to configure stream's parameters.
	Slot1 Y.1564 Dual port		OP WILL	

Figure 3.7.2 Enter Y.1564

	Ser	vice Se	tup							×		
Y.1564 can generate	#	Service	CIR(Mbps)	Length	Layer	Destination MAC	Source MAC		Port2	-	\mapsto	Select Port1 or Port2
512 streams at ◀		1	800.00	64	IP	68.DB:96.FF:FF:01	68:DB:96:FF:FF:01		New		ſ	to comgure.
most.		2	100.00	64	MAC	00.00.00.00.00.00.01	68:DB:96:FF:FF:01		Copy			
									IMIX			
									Delete	e		
	E							-	Delete	All		
	राम टाम टाम उक्त क	564 Fram Infiguration R Step Tes Enable Enable 0.25 ep 1 0.25 ep 2 0.50 ep 3 0.75 ep 4 1.00	Time(s) 5 t Color Color Gree Yello Confi CiR(1 800	tion MAC Performanc Control r Mode Disabi n 7, w 0, ig Service	VLAN e Timei le ps) M. [1.0	MPLS IP I 000 15 Direction AVAIL 50.0 AVAIL 50.0 SES 0.1 MAX FD(ms) 500 5.000	JDP/TCP Payload Bidrectional ♥ Tr able ♥ Pe % Pe MAX FDV(ms) 5 000	Pre affic F	Have IFG Policing Ena nance Enab	able Ile	•	Other tabs' contents remain same with RFC2544 data stream. Configure parameters for each data stream.

Figure 3.7.3 Data Stream (Y.1564)

• Step 4: Click 'Start' button to start test. Y.1564 test will be stopped automatically.

View test results

View overall result, please see details in Section RFC2544: view test results.

View Y.1564 results:

01 TX RX Port1 Electrical 02 TX RX Port2 Electrical Port1	1000M Full Duplex		ile Ming Tool
TX count 7440477 TX Rate(%) 0.000000 Port2	RX count 7440477 RX Rate(%) 0.000000 Global Alarm Result O	verview(F7)	est
TX count 7440477 TX Rate(%) 0.000000	RX count 7 RX Rate(%) 0 Global Alarm RFC8345	Fresults(F8)	ports
Function ▼.1564	rt1 O Port2 Y.1564 R 1588 Rei VIB Resi VIB Resi	esults(F8) sulte(F8) ults	Click Y.1564 result.
		OPV	VILL

Figure 3.7.4 Enter Y.1564 Results

Γ	Y.1564 Results							×
•	P1-P2 Test State	Test Stop	Test Message					-
1.		Result	ULR (Mbps)	FLR	MAX FTD(ms)	MAX FDV(ms)	AVAIL(%)	
	S. 1 CIR Step1	Pass	200.00	0.0E+0	0.004	0.000		
	S. 1 CIR Step2	Pass	400.00	0.0E+0	0.004	0.000		
	S. 1 CIR Step3	Pass	600.00	0.0E+0	0.004	0.000		
	S. 1 CIR Step4	Pass	800.008	0.0E+0	0.004	0.000		
	S. 1 CIR/EIR	Pass	900.00	0.92+0	0.004	0.000		
	S. 1 Policing	Fail	1000.00	0.0E+0	0.004	0.000		•
	P2-P1 Test State	Test Stop	Test Message					
		Result	ULR(Mbps)	FLR	MAX FTD(ms)	MAX FDV(ms)	AVAIL(%)	^
	S. 1 CIR Step1	Pass	200.00	0.0E+0	0.004	0.000		
	S. 1 CIR Step2	Pass	400.00	0.0E+0	0.004	0.000		
	S. 1 CIR Step3	Pass	600.00	0.0E+0	0.004	0.000		
	S. 1 CIR Step4	Pass	800.00	0.0E+0	0.004	0.000		
	S. 1 CIR/EIR	Pass	900.00	0.0E+0	0.004	0.000		
_	S. 1 Policing	Fail	1000.00	0.0E+0	0.005	0.000		-

Figure 3.7.5 Y.1564 Result



Jitter - ETH

3.8 Jitter

Preparation before the test

See Section RFC2544: preparation before the test.

Steps for Jitter

• Step 1: Select 'Jitter' from configuration box, select test ports, and jitter packets:



Figure 3.8.1 Select Jitter and Jitter Packet

- Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> <u>test steps</u>;
- Step 3: After all parameters of port have been set completely,
 - If selected pre-defined jitter packets, such VoIP G.711, please go to step 4 start the test directly;
 - If selected user defined, please select 'stream generation' to configure data stream parameters: see details in <u>Section RFC2544: test steps</u>;
- Step 4: Click 'Start' button to start test, then click 'End' button to end test.



View test results

Jitter only has overall result to view. View overall result, please see details in <u>Section</u> <u>RFC2544: view test results</u>, and Figure 3.8.2:

Traffic Analyzer	×	1	
Alarm/Bert Ethernet statistics F	ameType statistics Graph Logger Alarm Graph Uitter statistics	→	Under Jitter, 'Jitter Statistics' tab will
Port Selection	Delayvariation statistics Sampling number Current(us) [6342 0.000		appear. Other tabs' content remain same with RFC2544.
O Port2	Minimum(us) average(us) 0.000 0.001		
	Maximum(us) 0.064		
	Close		

Figure 3.8.2 Overall Results (Jitter)



User defined - ETH

3.9 User-defined Frame Test

Preparation before the test

See Section RFC2544: preparation before the test.

Steps for User Define Frame

• Step 1: Select 'User Define' from configuration box, select test ports:

	01 TX Port1 Electrical 1000M Full Duples TX Rx 02 TX Fort2 Electrical 1000M Full Duples TX Rx Port1 Fort2 Electrical 1000M Full Duples TX Rx DUT	File Setting	
	TX count 12184546 RX count 12184538 TX Rate(%) 88.361729 RX Rate(%) 88.361656 Portz Global Alarm H • • •	🖋 Test 🎸 Results	
Select User Define. 🗲	TX count 12194538 RX count 12194546 TX Rate(%) 99.361729 RX Rate(%) 99.361724 Confg Olobal Alarm H C Eurocion UserCenne Port1 Port2 D put Port1	Reports	Select test port.
	Slot1 UserDefine Dual port Test Status Stop Duration: 00 00:0009 O O	OP WILL	

Figure 3.9.1 Select User Define

 Step 2: Select 'Port Setup' from 'Setting' sub menu to configure port parameters, or click 'Link Box' to configure port parameters: see details in <u>Section RFC2544:</u> <u>test steps</u>;



• Step 3: After all parameters of port have been set completely, select 'User Define Set' from 'Setting' sub menu, or click 'Link Box' to configure user define packet parameters:

Or, click 'Link Box' here	01 Pott Electrical 1000M Full Duplex File File File File File File File File	
packet parameters.	02 Port2 Electrical 1000M Full Duplex Port2 Electrical 1000M Full Port2 Electrical 1000M Full Port2 Electrical 1000M Full Port2 Electrical 1000M Full Port2 Electrical 1000M	Click 'User Define' to configure user define packet parameters.
	Full 12184546 Fix count 1218 Bit enorthicition TX count 193.361729 Fix Rate(%) 199.32 Fixme LostTest VC adde(%) Global Alarm H LoopTmough Set. Test	
	Full 12184538 PX count 1218 Bidrestornal TX count 12184538 PX count 1218 Bidrestornal TX cale(%) 98.381729 PX Rate(%) 98.381724 PX Rate(%)	
	Function UserDefine OPort1 OPort2 ODual Port	

Figure 3.9.2 Enter User Define Packet

	Packet Set	
When select different type of packet, the content of configuration will show different as well. Note: for details description, please refer to OTM2612 User Guide.	Pont Selection Pont Count 10 Oup To0 me Type APP/IRARD MAC FrameState 78 Count 10 Oup To0 me Type MAC FrameState 78 Count 10 Oup To0 me Type MAC Bource 9x50 BS FF 0.00x MPLS MELS Vian MAC Destination FF FF FF FF FF FF Per/koad FF Config Vian In -Config Vian Vian Vian In In Per/Lappin -Config Vian Vian Vian Vian In Per/Lappin In In -Config Vian Vian Vian Vian Vian In In Per/Lappin In In Per/Lappin In In Per/Lappin In In Per/Lappin In Per/Lappin In Per/Lappin In Per/Lappin In Per/Lappin Per/Lappin In Per/Lappin Per/Lappin Per/Lappin	→ Click to select type of packet.

Figure 3.9.3 User Define Packet

• Step 4: Click 'Start' button to start test, then click 'End' button to end test.

View test results

User Define Frame Test only has overall result to view. View overall result, please see details in <u>Section RFC2544</u>: view test results.



3.10Tool - Ethernet

Preparation before the test

Before the test, please make sure the link has been established successfully. Then click 'Tool', and select one function to do test.



Figure 3.10.1 Enter Tool Box

Ping

Ping needs to follow the following step:

- Step 1: Select 'Ping Setup' from 'Tool' sub menu to set ping;
- Step 2: Select test port and set IP address or URL for destination;
- Step 3: Click the 'Ping' button to start.



Figure 3.10.2 Ping -1





Ping port1 or port2:

Before ping port1 or por2, please enable parameters of port1 or port2, otherwise,

ping test will be failed.

Example: ping to port2:

Note: OTM2612 cannot do the ping from port1 to port2.



Figure 3.10.4 Ping -3



Advanced Ping

Advanced Ping needs to follow the following step:

- Step 1: Select 'Advance Ping' from 'Tool' sub menu to set ping;
- Step 2: Select the test port, and a group of IP addresses;
- Step 3: Click 'Start' button to start, then click 'Stop' to end, or wait the test stopped automatically.



Figure 3.10.6 Advance Ping -2



$O{\tt TM2612} \ {\tt Gigabit} \ {\tt Ethernet/PTN/SDH} \ {\tt Test} \ {\tt Module}$

Advanced Ping Quick Ping Calculate MTU		×	
Port Selection	Link Status link Up TimeOut(ms) 10 IP Address 192 . 168 . 0 from	000 SentTime 4	
IP Address	MAC Address	Return Information	
192.168.0.3	68:DB:96:2C:37:43	Online	
			Click 'Simple Result' to only show the
			successful ping result.
Start	Stop GraphMode Simple	eResult Save	

Figure 3.10.7 Advance Ping -3

elect MTU tab. 🗲	Advanced Ping			×	
	Port Selection	link Up	Start		
؛lect MTU tab. ←	IP Address 192.168.000.100	Packet Length	Ping Result 🔶		
	<u> </u>	64	Success		
	Initial Length 64	65	Success		
	Max Longth 1518	66	Success		
	max congar proce	67	Success		
	SentTime 4	68	Success		Set parameters, and
		69	Success		result shows here.
	Step 1	70	Success		
		71	Success		
	TimeOut(ms) 1000	72	Success		
		73	Success		
	Result	74	Success		
		30	~		

Figure 3.10.8 Advance Ping -4



Trace Route

Trace Route needs to follow the following step:

- Step 1: Select 'Trace Route' from 'Tool' sub menu to set trace route;
- Step 2: Select test port, then set IP Address or URL for destination;
- Step 3: Click 'Start' to start test.



Figure 3.10.9 Trace Route



VCT

VCT needs to follow the following step:

- Step 1: Select 'VCT Test' from 'Tool' sub menu to set VCT test;
- Step 2: Select test port;
- Step 3: Click 'Start' button to start manual VCT test, then 'Exit' to end test.

select test ports. 🗲	Port Selection		T Mode		Phot	x ing	Click 'Start' to start VCT
	Port2		Test completed	L	olan	st	manually.
	Status	1-2 Good	3-6 Good	4-5 Good	7-8 Good	uits	
	Defect Location	0.0m	0.0m	0.0m	0.0m	- orts	
	Channel	A	B	c	P	put	
	Polarity	Normal	Normal	Normal	Normal		
	Pair Skew	Ons	8ns	8ns	Ons		
					Exit		

Figure 3.10.10 VCT



Flow Control

This is TX flow control. Flow Control needs to follow the following step:

- Step 1: Select 'Flow Control' from 'Tool' sub menu to set flow control.
- Step 2: Select test port, then set suspended time in 'us' Unit.
- Step 3: Click 'Send' button to insert the suspended time during package transmission.

Note: Flow control can be enabled when Frame Analysis, BERT, and User-defined these tests are running.

		File
	02	Setting
Select test ports.	Port1 Port2	Tool
	Port1	,
Set the nause	TX cour Packet Pause Unit	Test
time and packets.	IX Rate 51.200 US Send	,
	Port2	Results
	Statistics	Donordo
	TV Dote Total 0.000	Reports
		About
	Config Last 0.000 RX 0	
	Functio Maximum 0.000	
	Minimum 0.000 Unit US	
	In Slot	
		P'WILL

Figure 3.10.11 Flow Control



FTP

FTP needs to follow the following step:

- Step 1: Select 'FTP' from 'Tool' sub menu to set FTP;
- Step 2: Input server IP address in 'Host', input user name in 'User', and input FTP password in 'Pass';
- Step 3: Click 'Connect' button to connect the FTP site;
- Step 4: Click 'Stop' to stop connection.

Note: FTP can be enabled when all test applications are running.

Input FTP server information here. Then click 'Connect' to connect FTP server. Click 'Stop' to end connection.	FTP X	Display the information of which files have been unloaded or downloaded.
Show current FTP connection status.	Connect Failed Remote site FileName FileSize(BYTE)	
Highlight the file, then click 'Download' to download the file.		
Click 'Upload' to select a local file to upload to FTP server.	Connect Download Upload D_Rate Test Stop	Click 'D_Rate Test' to test download speed. Click 'U_Rate Test' to test upload speed.

Figure 3.10.12 FTP



HTTP

HTTP needs to follow the following step:

- Step 1: Select 'HTTP' from 'Tool' sub menu to set HTTP;
- Step 2: Input HTTP address;
- Step 3: Click 'Start' button to start HTTP test, then click 'Start' button again to stop the test.

Note: HTTP can be enabled when all test applications are running.



Figure 3.10.13 HTTP





Online Service Scan

Online Service Scan needs to follow the following step:

- Step 1: Select 'Online Service Scan' from 'Tool' sub menu to set online service scan;
- Step 2: Select test port and scan mode,
 - Auto mode: start to scan automatically;
 - Manual mode: need to input scan destination address;
- Step 3: Select 'Scan Type';
- Step 4: Click 'Start' to start.

Note: Online Service Scan can be enabled when all test applications are running.



Figure 3.10.14 Online Service Scan



Filter

Filter needs to follow the following step:

- Step 1: Select 'Filter or Capture' from 'Tool' sub menu to set filter;
- Step 2: Select 'Filter' tab, then select test port.

Note: Filter can be enabled when all test applications are running.

	Filter/Capture				×		
	Filter Capture						
Select test ports.	Port Selection						
	Dest Mac Src Mac IP Protocol Dest IP	00:00:00:00:00:01 68:DB:96:FF:FF:00 00 192:168:000:001	Dest Port Src Port VLAN MPLS	0 0 0 00000			
	Dest IPv6	0000:0000:0000:0000:0000	:0000:C0A8:0001			Select filter type.	
	Src IPv6	0000:0000:0000:0000:0000	:0000:C0A8:00C9				
View Result. 🗲	FCS 0 Jabber 0	Oversize 0 Filter Count 0	Speed 0.000 Bandwidth 0.000	(%) (Mbps)			

Figure 3.10.15 Filter



Capture

Capture needs to follow the following step:

- Step 1: Select 'Filter or Capture' from 'Tool' sub menu to set filter;
- Step 2: Select 'Capture', then select test port;
- Step 3: Click 'Start' to start capture packet.

Note: Filter can be enabled when all test applications are running.



Figure 3.10.17 Capture -2



Basic - SDH

4. SDH Testing

4.1 Basic Steps of SDH Testing

Step 1: Start SDH analysis Application

Start the SDH analysis application needs to follow the following steps:

- After the module has been installed into the platform properly, start OTP6200 platform;
- OTM2612 module will be displayed on the platform's main window, then select the module;
- Click right side 'Run' button, or double-click the module to run OTM2612 Module.

For details about OTP6200 Platform Set Up, please refer to OTP6200 User Guide.



Figure 4.1.2 Start SDH Application-2



Step 2: Select the testing path

After OTM2612 SDH analysis Module has been started, the main interface of OTM2612 will be displayed on the screen. Select the test path needing to follow the following steps:

- Click the 'setting' icon to select the 'Mapping Setting' into the configuration page.
- Select the transmission type, before select, please ensure that the corresponding interfaces were connected to the network
- Select the testing path.

For details about OTM2612 Interface Description, please refer to OTM2612 User Guide.



Figure 4.1.3 SDH main interface



Basic - SDH



Figure 4.1.4 Mapping Setting -1

Mapping Setting	
	STS Ch Number
	ГЛ. (0.) H (77.4,) H (77.4
ок	ancel

Figure 4.1.5 Mapping Setting -2



Step 3: Configure the port

After configuration of one test path has been done completely, please follow the following steps to configure the port.

- Click the 'Setting' and select 'Port' into the port setting page.
- Select the relevant parameters and click 'close ' to confirm



Figure 4.1.6 Enter port setting page



Here can configure the frequency offset, OTM2612 can support frequency offset from -100 to 100.

Figure 4.1.7 Port Setting -1



Basic - SDH



Figure 4.1.9 Port Setting -3

Step 4: Connect with the network

After configurations of one test has been done completely, connect the instrument with network. Please note:

 According to different interface type in the network ,please select the relevant port;

Note: for OTM2612 ports description, please see <u>Section OTM2612 Module;</u>

- When connected, TX and RX need to correspond with the correct port of network.
- When test with optical circuit, please check the instrument has equipped optical transmission module or not, and its transmission wavelength (*ssonm*, *1310nm*, *1550nm*) and power(*transmission distance*) is appropriate or not;


Step 5: Start and End Test

After the instrument has been connected with the network successfully, please follow the following steps to start or end the test:

- Click 'Test', then select 'Start' or 'Stop' to start or end the test;
- Or, Click 'Start and Stop' button to start or end the test, see Figure 4.1.10;

Or, push 'Run/Stop' on OTP6200 Platform to start or end the test, see Section

OTP6200 Platform: Figure 1.1.

	TX Pattern BULK VT_5 STS_1 0C_192 RX	File Setting
	RX Pattern BULK VT.6 STS.1 0 Start State Clear(Fi) Clear(Fi) Clear(Fi) Clear(Fi) Clear(Fi)	Click 'Test', to start or end the test.
	Global H C Port SOH LOH POH VTPOH PDH H C H G G G G G G G G G G G G G G G G G	Results Reports Reports Reports
	Configuration Clock Mode Internal Clock 💌 🕑 RV/TX Coupled 🗋 Through Mode	about
Or, click 'Start and Stop' button to start or end the test.		op WILL

Test duration control -						
Enable test du	ation control					Enable to contr
Fixed mod	15 minutes	T			Ľ	test duration.
🖯 Custom m	ide 0 Day 1	Hour 0 1	Minute J0 S	Becond		
- Test Starttime Control -	ttime control				Ι.	Enable to cont
2018 year 6	mon 14 day	15 hour 53	min 2 s	ec	Г	test start time
- Alarm Bell Control						
Priam Den Consol						
-Main Bei Conto	📄 Enable Alar	m Bell				

Figure 4.1.11 Test Control



Basic - SDH

Step 6: View Result

After the test has been done completely, please follow the following steps to view the results:

- To see the result, click the 'results' and select the 'Alarm overview' to view the alarm result, select the 'PM overview' to view the PM results
- Or click the shortcuts icon to view the related results.
- Or click the 'reports' and select the 'preview' to view the result



Click it to clear the results.



Clear

Close



Basic - SDH

OTM2612 Gigabit Ethernet/PTN/SDH Test Module

Click to select PM page.	Soft LOH Prode Pattern Insertion Standard SES SES SES SES 9 0 0.0E-000 0.0E-000 EB UAS BBE BBER BBE BBER BBE BBER BBE BBER 0.0E-000 ES ES ESR 0.0E-000 ES ESR ESR 0.0E-000 ES ESR ESR	I results.
Click it to clear the results.	Ciew	

Figure 4.1.14 PM Overview

Step 7: Generate and Save Test Report

To generate and save test report, please follow the following the steps:

- Click 'Reports', then select 'Report Generation' to generate report;
- Click 'Preview' to preview the report which has been generated;
- Click 'Print' to print the report which has been generated.



Figure 4.1.15 Report Generation



Basic - SDH

How to generate the test report:

• After click 'Report Generation', the dialog box of report generation will appear, see Figure 4.1.16;

'Stop Test Generation', enable this function, the report will be generated automatically after the test has been stopped.	TX Report Generation X Stop Test Generation Interval 244 RX Path USERVAU058vm_Tmme*TXT Select	File Betting Test	'Time Generation', enable this function, the report will be generated automatically after the time interval has been selected.
Click 'Select' to select the report saving path, and report format. Support TXT; PDF; EXCEL; and HTML.	Stat Report Tile Company Stat State Customer Tester H Remark	Tool tesuits teports	Fill the general information of the report.
Click 'Preview' to preview the test report. Click 'Generation' to generate the test report. Click 'Open' to view the report previously saved.	Con Cit Preview Generation Open Close Ciose Ciose Ciose Ciose Ciose Ciose	About	





BERT - SDH

4.2 BERT for 10G or 2.5G

Preparation before the test

- Click 'File', and select 'New' to start a new test;
- Also, it can select 'Open' to open the previous saved test configuration;
- Also, it can select 'Save' to save this test configuration.

TX Patern BULK VT_6 STS_1 Open RX Patern BULK VT_6 State Save RX Patern BULK VT_6 STS_1 O Ent State State State State State State State	Click 'File', Select 'New' to create a new test; Select 'Open' to previous saved test configuration; Select 'Save' to save current test configuration.
Configuration	Kesuts Reports About
Clock Mode Internal Clock ▼ RWTX:Coupled Through Mode → Slot1 Run Time: 0d 00:00:00 RX Power: -1.26 RX Freq Offset 0 ○ Time: 0d 00:00:00 RX Power: -1.26 RX Freq Offset 0	

Figure 4.2.1 Preparation before the Test

Steps for 10G or 2.5G BERT

- Step 1: Enter the 'Mapping Setting' page , please see details in step 2 of <u>section</u> <u>Basic steps of testing</u>
- Step 2: Select the SDH in the 'Mapping Setting' page, click the 10G or 2.5G path and click 'ok' to save the testing path



Figure 4.2.2 Select testing path



BERT - SDH

Step 3: Click 'Start' button to start test, please see details in step 5 of section Basic

steps of Testing

View the test results

Click the 'results' and select the 'Alarm overview' to view the alarm result, select the 'PM overview' to view the PM results



Figure 4.2.4 Result overview 10G or 2.5G BERT -2



BERT - SDH

$O{\sf TM2612}\ {\sf Gigabit}\ {\sf Ethernet/PTN/SDH}\ {\sf Test}\ {\sf Module}$

Click to select PM page.	RS MS HP LP I	PDH Pattern Inser	rtion		
	G.826 ISM	EFS 214 EB 0	UAS	SES 0 BBE 0	SESR 0.0E+000 BBER 0.0E+000
Select different standard and related results will appear on the right		E8 0	ESR 0.0E+000		
				Clear	Close

Figure 4.2.5 Result overview 10G or 2.5G BERT -3



4.3 Parameter Setting - SDH

Basic introduction

- Before the test, the Operators can insert some parameters into data flow in advance, such as error bit, alarm bit, overhead bytes, background traffic, pointer, and pattern.
- Make sure that testing path was already selected before set the related parameters.
- Also, the external clock setting is introduced in this section.

Set RS of SDH

• Step 1: Click the 'setting' and click 'SDH' - 'RS' to set RS parameters.



Figure 4.3.1 RS Setting



• Step 2: Input the overhead bytes in following page

Select RS page 🖪	RS BBTX E8 RX: Status Monitoring PM Overhead STM-1 Channel	×
Overhead parameters can be set here	Image: Processing state Processing	
Select the 'enable trace' and the message contents can be modified	JO Trace Mossage Format Opwill_SDH	Dick 'Updating' to
	Updatu	save the settings



• Step 3: According to the above steps, the MS, PH, and LP can be set.



Parameter Setting - SDH

Set ROH of SONET

• Step 1: Click the 'setting' and click 'SONET' - 'ROH' to set ROH parameters.



Figure 4.3.3 ROH Setting

		SOH					×	1		
Select SOH	-	SOHITX	OH RX Status Mo	nitoring PM						
L-9		Overhead- STS-1 CI	nannel	2						
Overhead parameters can be set here.	-	A1	F6	A2	28	JO	00			
		B1	00	E1	00	F1	00			
		D1	00	D2	00	D3	0			
Select the 'enable trace' and the message contents can be modified.	•	JO Trace Enab Format	le Trace	Message Opwill_S	DH		F1 (bit1-bit2) [Normal(00)			
							Updating	Þ	Click 'Updat save the set	ing' to tings

Figure 4.3.4 ROH Setting -1

• Step 3: According to the above steps, the LOH can be set.



Set Pattern

• Step 1: Click the 'setting' and click 'pattern' into the pattern setting page.



Figure 4.3.5 Pattern Setting-1

• Step 2: Input the parameters and click 'updating' to save the settings.

		Pattern		×	
Select pattern page	≁(Pattern Setting Status Monitoring Patter	n PM		
Set the test pattern type and value. Click 'updating' on the ← right to save the settings.	•	TX Test Pattern PR652-15 Customize Pattern AAAA PRC Test Pattern PR52-15 Invert	- Binary		
		Customize Patiern	Updating		Click 'Updating' to save the settings

Figure 4.3.6 Pattern Setting -2



How to Insert BERT - SDH

This function is used for the scenario that SDH network has just been built without any traffic. Before begin the relevant path testing, the insertion should be completed, it can help operators to detect the performance of network as well as network element.

• Step 1: Click the 'setting' and click 'Alarm Bert' into alarm and BERT insertion page.





Figure 4.3.8 BERT insertion



Set background traffic

• Step 1: Click the 'setting' and click 'Background Traffic' into background traffic setting page.



Figure 4.3.9 background traffic setting -1

Select traffic loading parameters and click	TX Pattern BULK VT_6 STS_1 OC_192 RX PRBS15 BULK BULK DT II,1,1,1 DUT RX Pattern Background Traffic TX	File Setting
updating on the right to save the configuration.	State SONET AU/TUPointer Updating Ciobal Prime P	Tool
	H C SONET POHATPOH	Reports
	Configuration	🕣 About
	Slot1 Run Time: 00 00.05:35 RX Power: -4.24 RX Freq Offset 0	
		OP'WILL

Figure 4.3.10 background traffic setting -2



Parameter Setting - SDH

Set external clock

• Step 1: Click the 'setting' and click 'external clock' into clock setting page.



Figure 4.3.11 Set External clock -1

	External Clock Setting	
Select external clock parameters and click updating to save the configuration.	TX Interac Code Clock Mode MALL Image: Solution of the sol	
	Updstng Close	

Figure 4.3.12 Set External clock -2



Set pointer

• Step 1: Click the 'setting' and click 'pointer' into pointer setting page.



Figure 4.3.13 Set pointer -1

• Step 2: Input the parameters and click 'start' to begin the testing.

Figure 4.3.14 Set pointer -2



Tool - SDH

4.4 Tool - SDH

Preparation before the test

Before the test, please make sure the link has been established successfully. Then click 'Tool', and select one function to do test.



Figure 4.4.1 Enter Tool Box

Capture

Capture needs to follow the following step:

- Step 1: Select 'Overhead Capture' from 'Tool' sub menu to set parameters of capture;
- Step 2: Select 'SOH,LOH,CH No' and 'Capture mode';
- Step 3: Click 'Start' to start capture packet.







SDT

SDT needs to follow the following step:

- Step 1: Select 'SDT' from 'Tool' sub menu to set parameters of SDT;
- Step 2: Select parameters of SDH;
- Step 3: Click 'Start' to start the testing.

	Service Dis	ruption				×	
	Configuration						
	LOS RDI_L Als_P B3 RDI_V LSS FAS 8.1E- Ms_RE[2:0]	LOF B2 RDLP RELP UNEQ_V Bit Error 006 B1 2 E-008 H	FAS REI_L LOM_P TU_AIS SLM_V 0E-008 4.1E-006	B1 AU_AIS UNEQ_P LOP_V PDH_AIS B1 4.1E-006 Bit Errol 25	AI8_L LOP_P SLM_P AIS_V PDH_LOF B3 4.1E-006 B6-005	J	Select the parameters of SDH
After click 'start', the tested result will show in the here	Statistics Test Count Current(MS) Shorlest(MS)	Г. Т Г. Lo Г. Ам	est State	Count	Time(MS)	Start Export Data Close	Click 'start' to start the testing Click the 'export Date' to save the related information Click the 'close' to close this page

Figure 4.4.3 SDT Configuration

RTD

RTD needs to follow the following step:

- Step 1: Select 'RTD' from 'Tool' sub menu to set parameters of RTD ;
- Step 2: Select 'Unit';
- Step 3: Click 'Start' to start delay testing.

TX + Patern PRBS15 RX + Patern PRBS15 State Global H C Configuration Clock Mode [Int + Stott Run T	BULK VT 6 STS 1 OC 192 RX Statistics Count VIII VIII VIII Delay Unit 0 VIII VIII Maximum Average VIII VIII Count 0 0 VIII Statistic 0 0 VIII	Fie Setting Test Tod Secure Results Results About	Select delay unit click 'start' and the test result will show in the here.
		OP WILL	

Figure 4.4.4 RTD Configuration



Tool - SDH

Channel Scan

Channel scan needs to follow the following step:

- Step 1: Select 'Channel scan' from 'Tool' sub menu to enter the page of channel scan;
- Step 2: Click 'Start' to start scan and waiting the result appearance.



Figure 4.4.5 channel scan

Overhead PRBS

Overhead PRBS needs to follow the following step:

- Step 1: Select 'Overhead PRBS' from 'Tool' sub menu to set parameters of Overhead PRBS;
- Step 2: Select 'RS/MS CH NO', 'type select' and 'test pattern';
- Step 3: Click 'Start' to start PRBS testing base on overhead.



Figure 4.4.6 Overhead Setting





5. Remote Control

5.1 Remote Control Configuration

OTP6200 platform allows PC or laptop to do remote control. Enable remote control needs to follow the following steps:

- Step 1: Install OPWILL remote control software on PC or laptop, the software can be found in the disc or contact OPWILL support team;
- Step 2: Set OTP6200 platform IP address:



Figure 5.1.2 Setting OTP6200 IP Address -2







Figure 5.1.3 Setting OTP6200 IP Address -3

• Step 3: Enable remote control on OTP6200 platform:

OTP6200	OP'WILL	
Tool Sutch Language English(English) Software Recovered Back Light Renote Desktop IP Address Ping Lock Screen Password Power OK OK	Run Control Explorer Tool Safety 20177 /3 (S 12:56:43 13:56	Click 'Remote Desktop' to start remote control.

Figure 5.1.4 Enable Remote Control -1



Remote

$O{\sf TM2612}\ {\sf Gigabit}\ {\sf Ethernet/PTN/SDH}\ {\sf Test}\ {\sf Module}$



Figure 5.1.5 Enable Remote Control -2

• Step 4: Open remote desktop on PC, and connect with OTP6200 platform:

OTP6200	ol		Setting Port: 987 IPAddress: 102 158 0 40	► Input OTP620
Already connected	Refresh time(ms):	К Сонто К Сонто К Сонто С С С С С С С С С С С С С С С С С С С	Connect Disconnect Print Screen About Exit	IP address.

Figure 5.1.6 Remote Desktop on PC



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