# GEA-8130A

# Network Analyzer

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# Content

# 1 Revision History

The history of revision mentioned here concerns the revisions of this user's manual due to the upgrading of the product and the improvements of the user's manual itself. In this manual, all these as well as the related chapters or sections are listed for reference. The experienced users can skip over these contents and go to the new ones directl y .

Of which, the meaning of every item is as follows:

- Version: the version of the systems software
- Date: the date when this version is released
- Revision coverage: the revised contents involved in this version
  - ✓ Product: if the description item belongs to the revision of product, mark the sign of "√" before it; otherwise nothing is required to be checked into the blank.
  - ✓ Manual: If the description item belongs to the revision of the manual, tick the sign of " √ " before it; otherwise nothing is needed to be filled into the blank.
- Reference chapters and sections: the reference chapters and sectioned concerning this modification

| Version | Date | Revision coverage | | Revision Description | Refered chapter |
|---|---|---|---|---|---|
| | | Products | Manual | | |
| 1.00 | 2010-3-31 | √ | √ | Intial Version | All |

# 2 Agreement on Discription

For convenience and stressing of the description, we have agreed on some terms and icons within the range of this manual, about which you are sure to know.

【】: The bracket is used to identify the content or object on the interface or chassis. For example, the 【OK】in "click on in the 【OK】button" indicates the **"Confirm"** button displayed on the interface.

: Useful prompting message, which contributes to the efficient use of this system.

: Precautions, which indicate the common mistakes easily to be neglected by users.

: Warnings, if no attention is paid to these points, data loss or severe errors may be caused.

# 3 General

GEA-8130A Network Analyzer is the hand-held Ethernet tester, which supports the deployment of Ethernet of 10M/100M/1000Mbit/s.It can be used for Sending and Receiving Traffic, RFC2544 Performance Test, PPPoE Networking Test, Cable Length Test, Cable Map Test, Cable Find Test, PoE Test, Ping Test, Traceroute Test, FTP Test, Web Browsing, Blinking Port, NetScan, Network Problems Discovery, meeting the function requirements of the Ethernet for installation test, maintenance test and so on.

# 4 Product Functions and Characteristics

## 4.1 Funtions

1. Flexible IP address acquisition way;
2. PPPoE test: it can test popular broadband dial-up internet access function, check if there is any problem in the process of dial-up internet access;
3. Traffic Test: send Ethernet traffic in constant way, support DIX, IEEE 802.3 SNAP frame generation, support two traffic setting ways: percentage and bps, traffic generate in wire speed and support VLAN frame generation;
4. RFC2544 network performance benchmark test including throughput, latency, frame loss rate and back-to-back buffer capacity, with upstream or downstream mode available for users configurable VLAN and QoS settings;
5. Cable length test: test cable's length;
6. Cable map test: check the wiring order of twisted-pair and the wiring whether or not short, open, crosstalk or polarity reversal;
7. Cable find: discover the cable the user needs in disordered wires;
8. PoE test: check network connection equipment (router, switch and so on) can provide power for terminal equipment; test if terminal equipment is PSE; in addition, if the device is between PSE and PD, it can transport electrical power from PSE to PD;
9. PING: support the sending of long PING package, the sending of PING information to multiple equipments is suppoted
10. Traceroute:finding all routers and gateways in the path from GEA-8130A to tested device.
11. Blinking port:finding the port that connected with GEA-8130A.
12. FTP download speed test;
13. Web browsing: test internet browsing after successful connection with Internet;
14. L2 filter: it can filter including in the type of broadcast ,the type of frame,the type of IP address, VLAN and QinQ,L2 protocols,and so on;
15. L3 filter: it can filter including in the type of source and destination IP address and TOS/DSCP,L3 protocols,and so on;
16. L4 filter: it can filter including in type of source and destination port number of TCP/UDP;
17. Information capture: it can capture various information in the network, help for network trouble shooting and network file finding;
18. Network health check: indicate if the present operation state of network is stable and if there is any potential problem by analyzing and judging various information in network;
19. Network discovery: it can discover the operating equipment in network and the operating service in the equipment;
20. Network problem discovery: it can find various problems in network;

21. Data management: all testing results can be stored, checked, deleted and copied;

### 4.2 Characteristics

1. Small and portable, long battery endurance time;
2. Colorful touch screen, easy and flexible operaton;
3. Support two 10/100/1000Mbps electrical port and two 100/1000Mbps optical port;
4. Support mainstream Ethernet protocols DIX, IEEE802.3 SNAP;
5. Support DHCP checking and IP address acquisition way of static setting;
6. Support PPPoE dial-up connection test;
7. Traffic generation and analysis and 8 matched multiple streams;
8. Support RFC2544 network performance test;
9. Rich testing tools, include: cable length test, Cable map test, Cable find test, PoE test, Ping test, Traceroute test and Blinking port test etc.
10. Support high-speed FTP download test, WEB browsing test;
11. Support statistics, filtration, capture and decoding function for various information in network;
12. Support network health check., network discovery and problem finding;
13. Flexible data management function, convenient for copy and tested data check;
14. Support system help function, acquire online help in any interface.

## 5 Appearance and Interfaces

### 5.1 Appearance


Figure 5.1.1 Outside View

### 5.2 Interfaces

1. Electrical ports: electrical ports adopt RJ45 port, which are located at the top of equipment (the right side is port 1; the left side is Port 2) and support electrical packages 10/100/1000M;
2. Optical port: optical port adopts SFP, which is located at the top of the equipment and supports 100/1000M;
3. Power: this equipment adopts external 15V/3A DC adaptor power, which is located on the left side of the equipment;
4. USB: it is used for the tested data copy, system upgrading and so on, which is located on the right side of the equipment;
5. System network card: RJ45 network interface, match relevant parameters in 【system setting】, it is located on the right side of the equipment;

## 5.3 Illustrations of the Key Board

1. 【POWER】:power on/power off;
2. 【►/■】:start/stop test;
3. 【HOME】:Return to main interface or previous menu.

## 5.4 indicator

The indicator is designed to show the corresponding port settings and status. The upper row indicates signal for Port 1 and the lower row indicates signal for Port 2. As is shown in Figure 5.4.1.

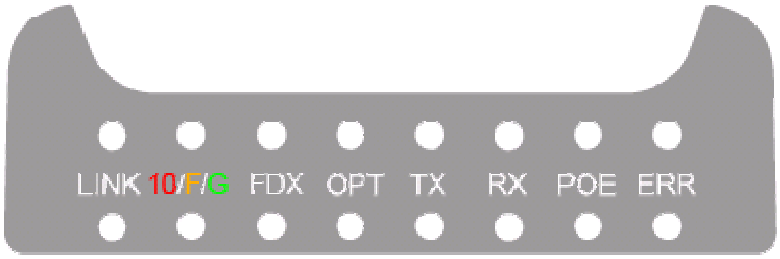



Figure 5.4.1Indicator Diagram

1. 【LINK】:link activation instruction;
2. 【10/F/G】:link rate instruction: 10M electrical port for red indicator;100M electrical port or optical fiber for yellow indicator and 1000M electrical port or optical fiber for green indicator;
3. 【FDX】: link full duplex instruction: when the light is on, the port link is full duplex ;
4. 【OPT】:optical port instruction, when the light is on, it is optical package or else it is electrical package;
5. 【TX】:port data sending instruction;
6. 【RX】:port data receiving instruction;
7. 【POE】:under terminal mode, port 1 shows POE power supply equipment; under put-through mode, port1 shows power supply equipment, port2 shows power receiving equipment;
8. 【ERR】:it instructs the port has received the wrong data;
9. 【POWER】:it is located at the right side of the indicator in the aboving picture, when the light is on, it is red.

# 6 Installation and Initial Operation

## 6.1 Appearance and Interface Check

1. Open the package and check whether the equipment is worn and whether the structure is kept securely. If there is any question, please contact our customer service department;
2. Check whether the interfaces have been configurated fully and kept in clean condition. Additionally, check whether the test cable/fiber has been provided as specified in the item list.

## 6.2 Self-test

1. As is shown in figure 6.2.1, connect port1, port2 electrical package and optical package;


Figure 6.2.1 Self-Test

2. Plug in the external power adapter and push down the key [Pwr]. At this time, the [PWR] Indicator should be ON; if not, please unplug the power adapter immediately and contact our company's technicians.
3. When the system is starting, the screen is in the black status. After waiting for about 20 seconds, the system starts up and carries out hardware settings, followed by the automatic start-up of the software.
4. Press 【Start】 menu and enter into 【Port Set】, set dual ports as the electrical packages with the rate of 10M. Double click【10/F/G】, the indicator is red.
5. Enter into 【Tx Set】 in 【Start】menu, select 100% traffic and sending single traffic: testing layer is 【MAC Layer】, select default BERT pattern 【$2^7$-1】. Ensure the setting.
6. Enter into【Traffic Test】, start sending traffic, the normal traffic is 10Mbps. The receiving data of Port 2 in 【TOP】of whole staticstics function is the same as the sending data of Port 1, and the error code digit and error code rate is 0.
7. Return to 【Traffic Test】interface, stop sending traffic
8. Configurate dual ports as 100M electrical packages, repeat aboving steps 5~7;
9. Configurate dual ports as 1000M electrical packages, repeat aboving steps 5~7;
10. Configurate dual ports as 100M optical packages, repeat aboving steps 5~7;
11. Configurate dual ports as 1000M optical packages, repeat aboving steps 5~7;
12. If aboving functions are normal, the self-test passes.

# 7 Operation Reference

## 7.1 User interface

The user main interface defines the basic information of user operation, the main interface is shown as figure 7.1.1:

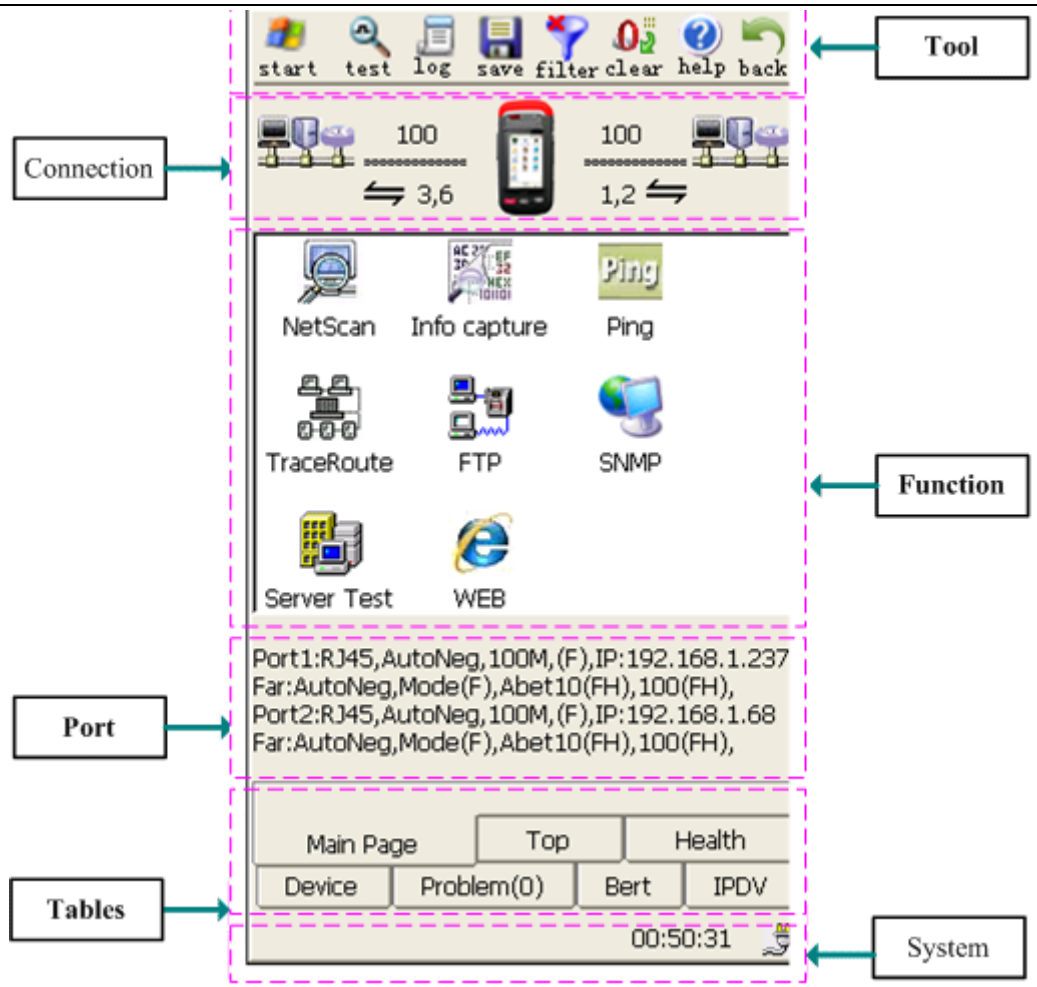



Figure 7.1.1 GEA-8130A Main Interface

The user main interface can be divided: tool button, connection information, function selection, port parameter, interface switching, system information etc. here are the introductions of this six areas.

### 7.1.1 Tool button

The tool buttons at the top of the main interface from left to right are: start, diary, save, filter, zero, help and retrun.

#### 7.1.1.1 Start menu

Click 

in the main interface, the system will pop up the start menu. As is shown in figure 7.1.2.

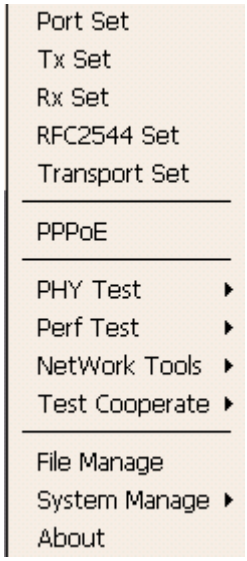



Figure 7.1.2 Start Menu

Start menu is divided into 4 parts: parameter setting, PPPOE, functions test and others.

1. Parameter setting: the items are port setting, sending setting, receiving setting, RFC2544 setting, transmission layer setting and system management;
2. PPPOE: PPPoE dial-up function;
3. Functions test: include physical test, performance test, network tool, cooperation test, of which every item includes corresponding secondary menu and make corresponding testing functions;
4. Others: others include file management, system management and about. System management has secondary menu: system setting, screen calibration, factory-set, system upgrading and remote control.

#### 7.1.1.2 Other buttons

1. Log (  ) :when you press this button, it will show all the testing logs from the boot and does not appear after bouncing;
2. Save (  ) :save the test configuration, statistics information or testing result of present page;
3. Filter (  ) :receiving setting interface pops up for checking and setting receiving filtration;
4. Zero (  ) :clear whole statistics or testing function as zero and this needs to be assured;
5. Help (  ) :help files will pop up;
6. Return (  ) :when it returns to main interface from other interface and is located in main interface, it shows  .

#### 7.1.2 Connection information

Port connection information shows actual physical connection information of dual ports and device's working mode:

| | | | |
|---|---|---|---|
|  | Corresponding port has already connected to network |  | The present connection rate is 100M |
|  | The present connection is full duplex |  | The present connection is half duplex |
| 1，2 | Cable's receiving pairs are 1, 2 | 3，6 | Cable's receiving pairs are 3, 6 |
|  | Normal level, normal polarity |  | Normal level, reverse polarity |

| | | | |
|---|---|---|---|
| | Low level, normal polarity | | Low level, reverse polarity |
|  | It works under terminal mode |  | It works under put-through mode (some functions will be prohibited) |
| AutoTest | Test the port's connection information again after click | | |

### 7.1.2.1 Working Mode

GEA-8130A supports two working modes: terminal mode and put-through mode. Terminal mode can realize all testing functions except PoE test; put-throug mode can realize whole statistics function, information capture and POE test. Click above working mode icon, selection interface of working mode will pop up, as is shown in figure 7.1.3:

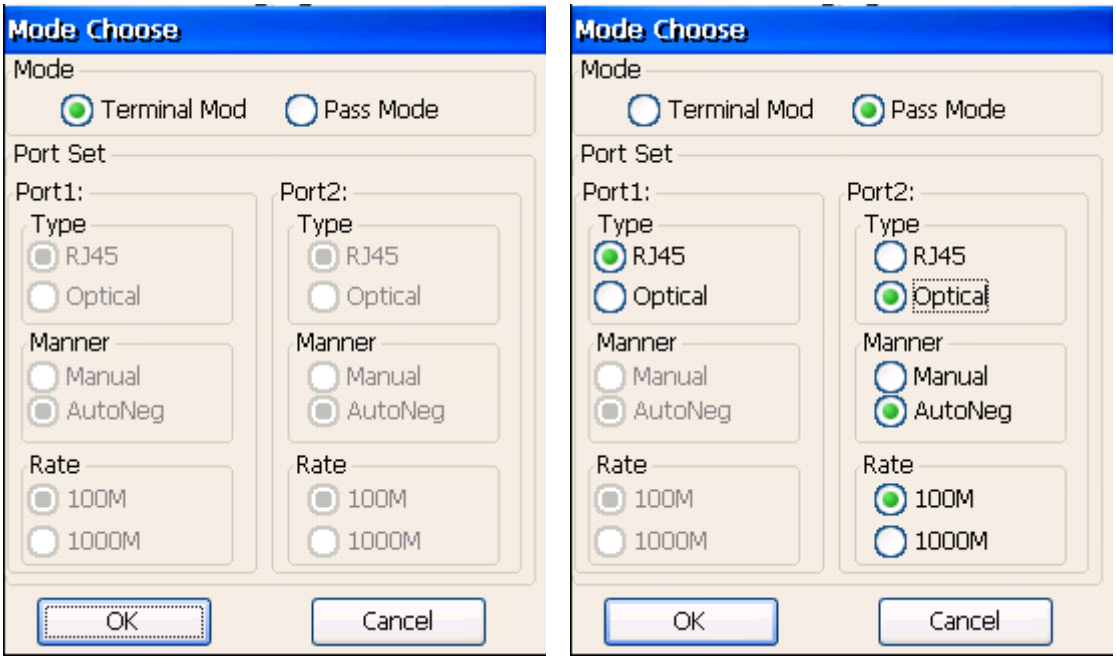



Figure 7.1.3 Mode Selections

As above pictures, the put-through mode needs port setting, so the software can automatically arrange port rate match. Set respectively type of Port 1, 2 (including RJ45, i.e., electrical package and optical fiber), way (optical package is effective when you select optical fiber, including manual setting and auto-negotiation), rate (optical package is effective when you select optical fiber, including 100M and 1000M). Under terminal mode, you can set port setting in【Start】→【Port Set】.

### 7.1.2.2 Self-test

When port connection changes, you can click AutoTest and automatically test port's connection information: connection rate, duplex type, receiving pairs, level and polarity etc.

Here it shows the link's connection information, so line duplex mode does not match port duplex mode.

### 7.1.3 Function

Enter into detailed function interface by clicking interface icons. GEA-8130A supports the following functions: physical test, performance test, network tool, test cooperation. They all include secondary function items.

Physical tests include cable length test, line sequence test, flashing port, Cable Find, POE test, port identification; performance tests include traffic test, RFC2544; network tool includes network scanning, information capture, Ping, TraceRoute, FTP test, SNMP query, application layer test, WEB browsing; test cooperation includes mutual test cooperation, data loop back.

In addition, the tab at the end of the interface is whole statistics function: statistics, health, equipment, problem.

### 7.1.4 Port Parameter

Display present working parameter of port, including port settings of Port1 and Port 2, such as optical package/electrical package, rate 10/100/1000M, working mode (full duplex/half duplex/auto-negotiation), IP address etc. At the same time, GEA-8130A will check the status of far-end port, such as negotiation way, working mode and supported port rate and working mode.

1) The auto-negotiation mode of near-end supports the test for far-end working status. When it is manual, it doesn't support far-end test;
2) When far-end mode is manual setting, it doesn't support working mode test and test functions of far end's port rate and working mode;
3) 【Unabet】means not to support far-end test, 【Unknown】means not to identify far-end status, 【H】means half duplex, 【F】means full duplex.

### 7.1.5 Interface Switching

It is used for the switching of different testing interfaces, including home (or some detiled test funtion), statistics, health, equipment, problem etc.

The four functions: statistics (network statistics), health (network health), equipment (equipment identification), problem (problem discovery) are always in the statistics monitoring status during the operation period.

### 7.1.6 System Information

Display external U Disk, PPPOE connection status, remote control state, optical power test, system time, battery state and so on:

1. External U Disk（  ）:when the instrument identifies U disk is inserted into USB port, it shows U disk insertion state with icon  ;
2. PPPOE status（  ）:this connection will show after successful PPPOE dial-up；
3. Remote control state（  ）:it shows remote control function has started and control end has connected to the instrument;
4. Optical power test（  ）:it will show as the interface type selects optical fiber, click it, sending power interface and receiving power interface of Port1、Port2 pop up, when you click other space, they will diappear；
5. Power supply（  ）:when the system uses battery, it shows battery capacity; when it uses enternal power, it shows enteranl power instruction.

## 7.2 Port Set

Port setting is used for setting port parameters of Port1 and Port 2. Two layers tab pages respectively

select ports and parameter setting, ports include Port 1 and Port 2 and parameters of selected ports include: parameter summary, physical parameter and network parameter.

### 7.2.1 Parameter Summary

Parameter Summary page is used for displaying setting content of physical parameter and network parameter of selected ports (select from upper tab), as is shown in figure 7.2.1:

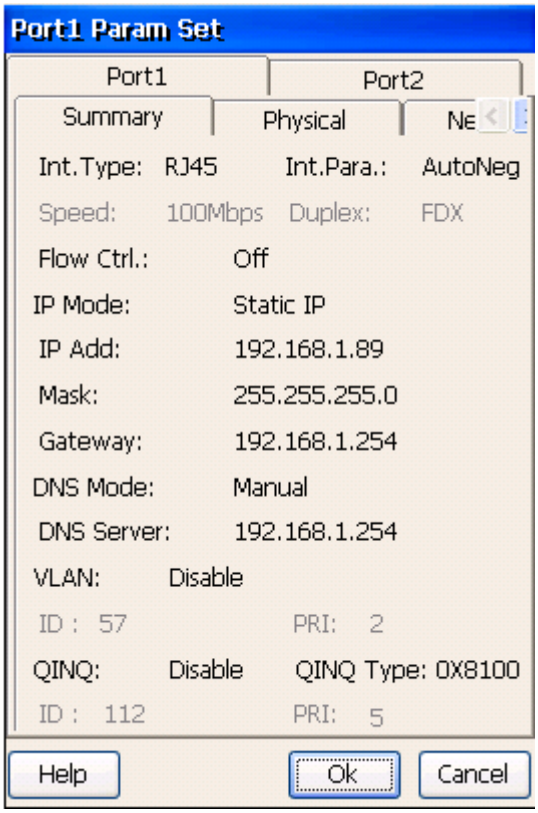



Figure 7.2.1 Parameter Summary Setting of Ports Set

### 7.2.2 Physical Parameter

Physical parameter interface is shown as in figure 7.2.2.

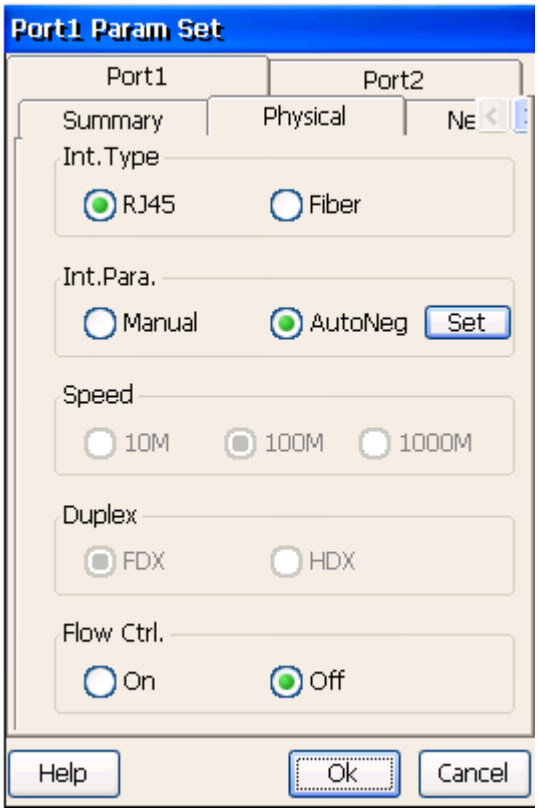



Figure 7.2.2 Physical Parameters Setting of Ports Set

1. 【Int. Type】:select interface type of tested port, support RJ45 interface or optical interface;
2. 【Int. Para.】:set configuration way of port's physical parameter, select manual setting and auto-negotiation;
3. 【Speed】:set port's rate. For electrical package, manual configuration is effective but auto-negotiation is ineffective; for optical package, both manual setting and auto-negotiation are effective. Electrical package can select 10/100/1000M, optical package can select 100/1000M;
4. 【Duplx】:set port's duplex mode.manual setting is effective and selects full duplex or half duplex. Optical package is ineffective and selects only full duplex mode。
5. 【Flow Ctrl.】: traffic control is on or off, the default is off.

1. when you select optical package, negotiation mode (manual setting or auto-negotiation) and rate should be consistent with opposite end;
2. 1000M electrical package can only support full duplex mode.。

**When electrical package starts, please don't look at Tx illuminous port of SFP directly so as to avoid hurting eyes.**

### 7.2.3 Network Parameter

Network parameter setting is shown as in figure 7.2.3.

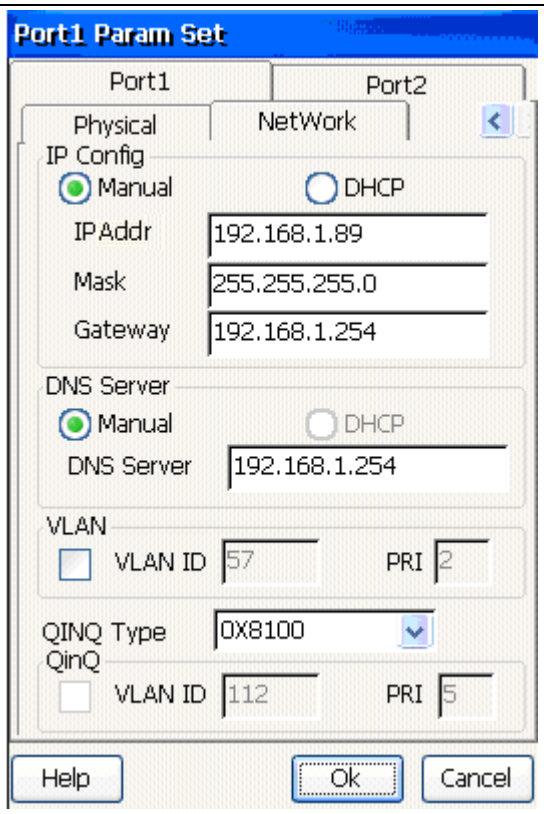



Figure 7.2.3 Network Parameter Setting of Ports Set

1. 【IP Config】:select manual setting or DHCP to configurate IP address;
2. 【IP Addr】:set port's IP address, the format is 192.168.1.1, click input box, the address input interface will pop up;
3. 【Mask】:set subnet mask of IP address;
4. 【Gateway】:set gateway address of network;
5. 【DNS Server】:set configuration way of domain server, select manual setting or DHCP to configurate DNS server. If you set static IP address manually, DNS server can only adapt manual setting. If you acquire dynamic IP address with DHCP way, DNS server configuration can adapt DHCP or manual setting;
6. 【DNS server】:set DNS server's address, manual setting for DNS server is effective;
7. 【VLAN】:start VLAN or not, if VLAN starts, you can set【VLAN ID】value, the range is 0~4095; when you set 【PRI】of VLAN, the range is 0~7；;
8. 【QINQ】:start QINQ or not, if QINQ starts, you can set【QINQ ID】value, the range is 0~4095; when you set 【PRI】 of QINQ, the range is 0~7。

If you select DHCP, the system will acquire dynamic address from DHCP server after parameter setting.

## 7.3 Sending Setting

Sending setting is used for setting traffic sending parameters of port, including: parameter summary, traffic and stream.

### 7.3.1 Parameter Summary

There are 4 configuration items, the present selected configuration item can be as the present using configuration, as is shown in figure 7.3.1:

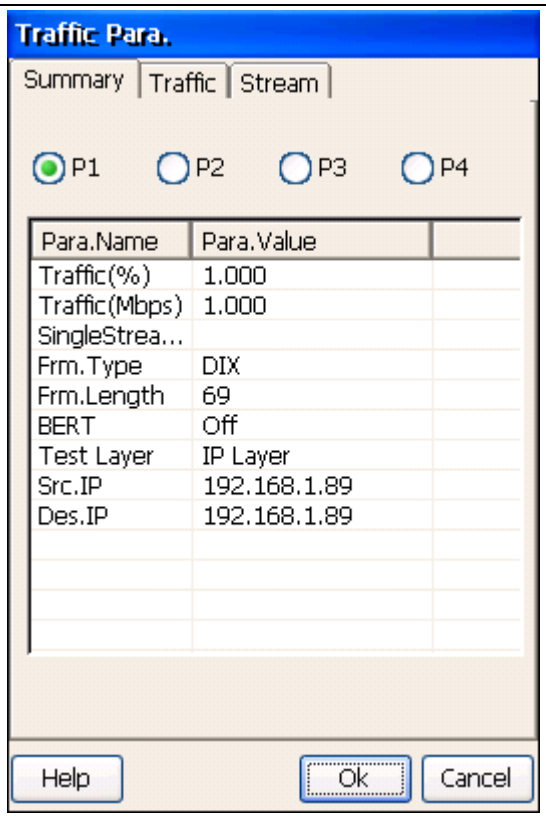



Figure 7.3.1 Parameter Summary in Tx Set

### 7.3.2 Traffic

Select 【Tx Set】 in sending setting interface and set traffic, as is shown in figure 7.3.2:

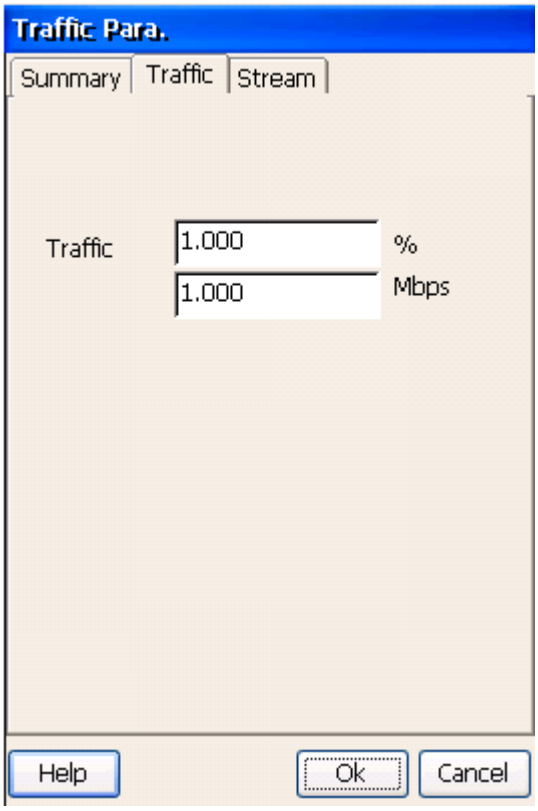



Figure 7.3.2 Traffic Parameter in Tx Set

【Traffic】:set produced traffic size, there are two ways: %、Mbps.

### 7.3.3 Traffice Modify

Select【Stream】in sending setting interface and set sending traffic:

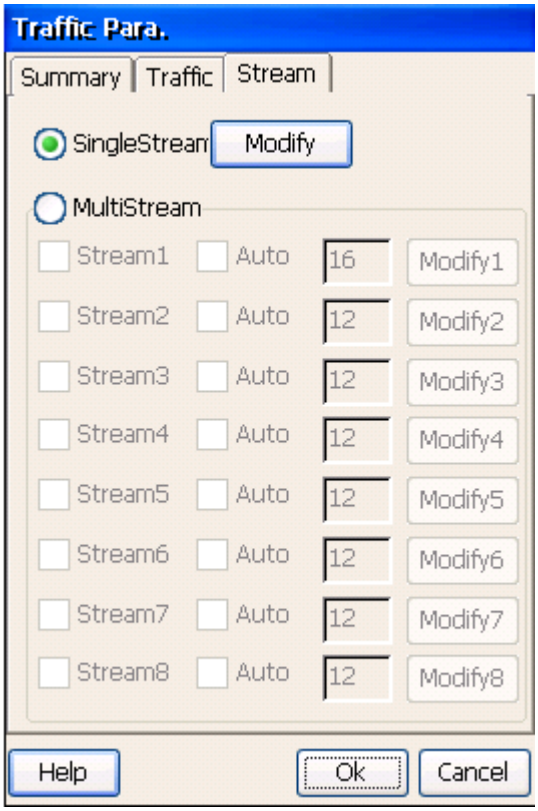



Figure 7.3.3 Stream of Tx Set

GEA-8130Acan send single traffic or multiple traffic, if you select single traffic, click【Modify】and modigy single traffic setting; If you select multiple traffic, select the traffic number you need to send and corresponding traffic percentage, click【Modify X】(X shows corresponding traffic number) and modigy multiple traffic setting. Here,【Modify】of single traffic and multiple traffic are introduced together, the differences of single traffic setting and multiple traffic setting will be distinguished.

There are three setting items: testing layer, link layer and network layer

#### 7.3.3.1 Test Layer

【Test Layer】: select test's layer, data link layer or network layer available, as is shown in figure 7.3.4:

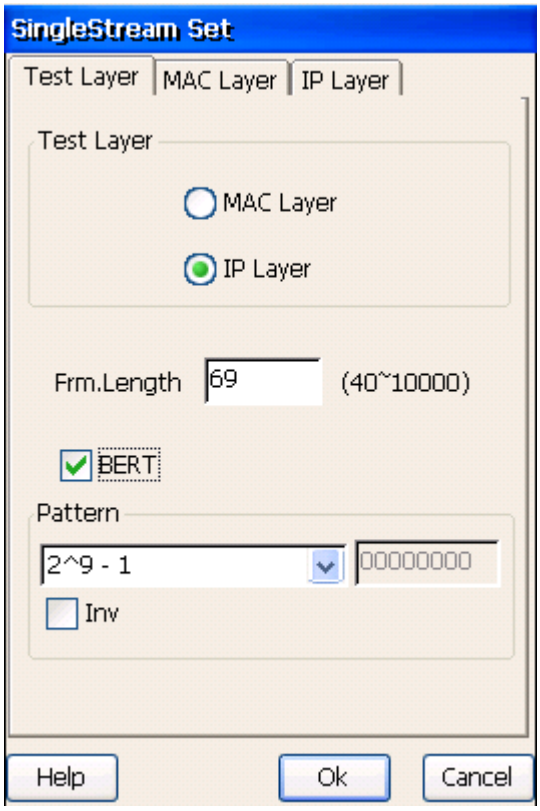



Figure 7.3.4 Test Layer in Tx Set

1. 【Frm. Length】:set frame length of tested data, the range is 40~10000;
2. 【BERT】:send test error code or not, default is not to send. The setting for single traffic is effective;
3. 【Patern】:when you select to send error code and set sending error code patter, the optional patterns are: $2^7$-1, $2^7$-1ones complement code, $2^9$-1, $2^9$-1 ones complement code, $2^{11}$-1, $2^{11}$-1 ones complement code, $2^{15}$-1, $2^{15}$-1 ones complement code, $2^{20}$-1, $2^{20}$-1 ones complement code, $2^{23}$-1, $2^{23}$-1 ones complement code, $2^{31}$-1、$2^{31}$-1 ones complement code, full 1, full 0 and user-defined (hexadecimal system). The setting for single traffic is effective.

#### 7.3.3.2 MAC Layer

Select 【MAC Layer】 in【Test Layer】and set data link layer parameter, as is shown in figure 7.3.5:

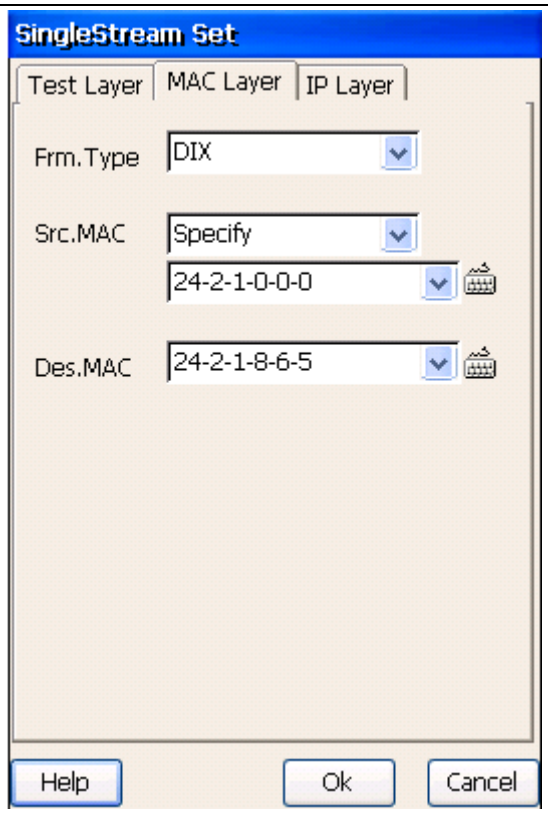



Figure 7.3.5 MAC Layer Parameter in Tx Set

1. 【Frm. type】:select data frame type, select DIX (Ethernet II frame ) and 802.3 SNAP；
2. 【Src. MAC】:set source MAC address producing traffic, select host's port address or specified MAC address;
3. 【Ees. MAC】:set destination MAC address producing traffic；
4. 【VLAN】: start VLAN or not, if VLAN starts, you can set 【VLAN ID】value, the range is 0~4095; when you set 【PRI】of VLAN, the range is 0~7, the setting for multiple traffic is effective；
5. 【QINQ】:start QINQ or not, if QINQ starts, you can set 【QINQ ID】 value, the range is 0~4095; when you set 【PRI】of QINQ, the range is 0~7, the setting for multiple traffic is effective。

#### 7.3.3.3 IP Layer

Select 【IP Layer】 in 【Test Layer】and set network layer parameter,as is shown in figure 7.3.6。

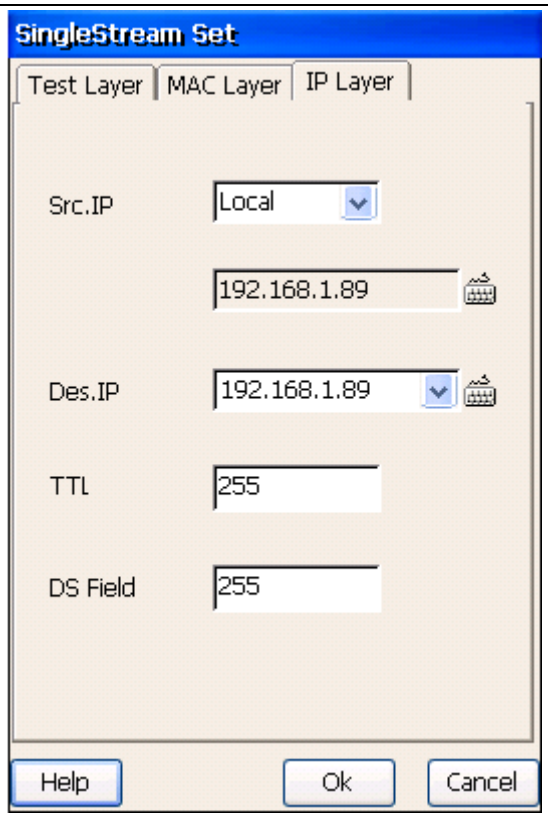



Figure 7.3.6 IP layer Parameter of Tx Set

1. 【Src. IP】:set IP address producing traffic, set host's port address or specified IP address;
2. 【Des. IP】:set destination IP producing traffic;
3. 【TTL】:define TTL value of IP protocol layer, the range is 1~255;
4. 【DS Field】:define DS Field value of IP protocol layer, the range is 1~255;

## 7.4 Receiving Setting

Receiving setting is used for setting receiving filter parameters of port1, port 2. Select respectively ports and parameter setting in two-layer tab pages, ports include port1, port 2, selected ports' parameters include 6 setting items: parameter summary, MAC layer, IP layer, Transport layer, Stream Filter, BERT Set.

Filter function makes filtering statistics only for cared message.

### 7.4.1 Parameter Summary

There are four configuration items, the present selected configuration item can be used as the present using configuration, as is shown in figure 7.4.1.

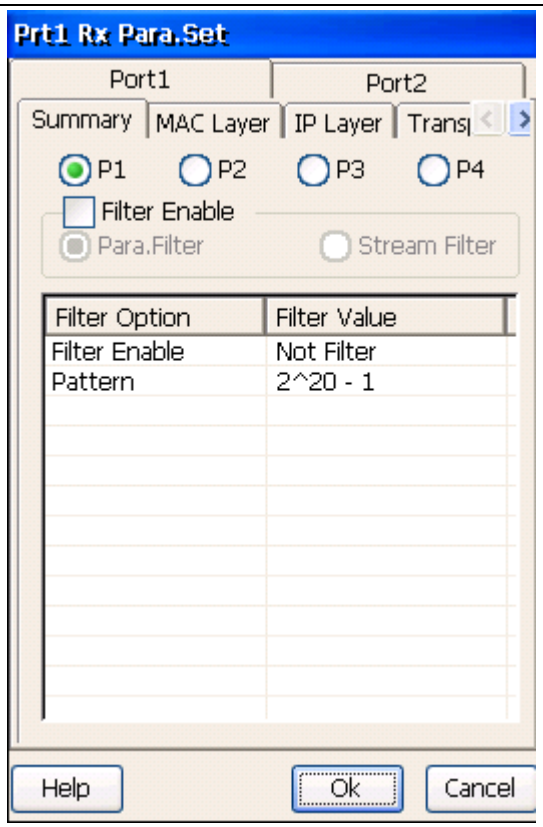



Figure 7.4.1 Parameter Summary of Rx Set

【Filter Enable】:filtering starts or not. When filtering starts, you can select parameterfiltering or traffic filtering.

### 7.4.2 MAC Layer

Select 【Para. Filter】 in 【Filter Enable】, click【MAC Layer】and set parameter, by checking MAC layer information in receiving frame, you can not make corresponding statistics for frame not consistent with fitering conditions

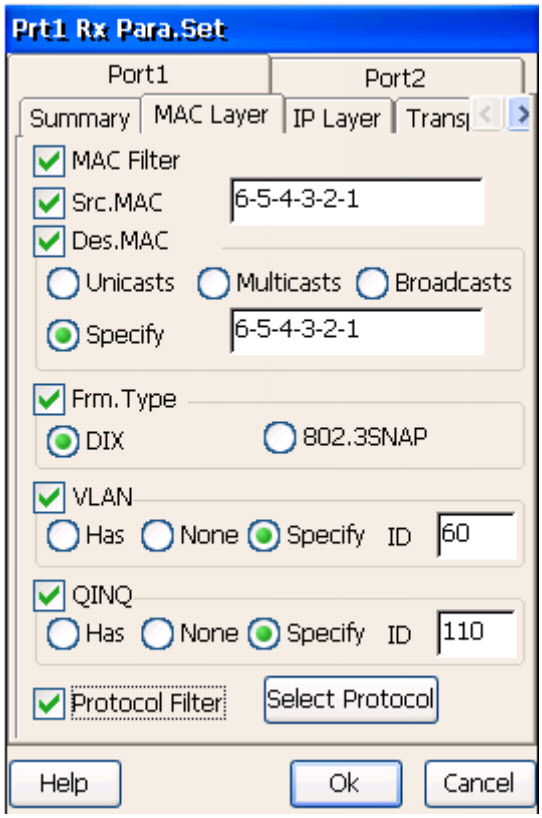



Figure 7.4.2 MAC Layer Parameter of Rx Set

1. 【MAC Filter】:link layer parameter filters or not, tick√to be effective;
2. 【Src. MAC】:when link layer fiters enabling, tick√and set source MAC address needs to be filtered, statistics for cooperation, or else not;
3. 【Des. MAC】:when link layer fiters enabling, tick√and set destination MAC address needs to be filtered, four ways for statistics: unicast, multicast, broadcast, designated, cooperation for statistics, or else not;
4. 【Frm. Type】:when link layer fiters enabling, tick√and set frame type needs to be filtered, there are two items DIX, 802.3 SNAP, statistics for cooperation, or else not;
5. 【VLAN】:when link layer fiters enabling, tick√and set VLAN needs to be filtered, there are three ways: yes, no, designated, you can input VLAN ID needs to be filtered when it is designated, statistics for cooperation, or else not;
6. 【QINQ】:when link layer fiters enabling, tick√and set QINQ needs to be filtered, there are threee ways: yes, no, designated, you can input QINQ ID needs to be filtered when it is designated, statistics for cooperation, or else not;
7. 【Protocol Filter】:when link layer fiters enabling, tick√and set protocol needs to be filtered, the link layer protocols GEA-8130A supports are: IP, ARP, RARP, LLDP, AARP, IPX, SNA, BANYAN, MPLS, PPPOE, CDP, DECNET, APPLETALK and user-defined protocol NO.

### 7.4.3 IP Layer

Select 【Para. Filter】 in 【Filter Enable】, click 【IP Layer】and set parameter, by checking IP layer information in receiving frame, you can not make corresponding statistics for frame not consistent with fitering conditions, as is shown in figure 7.4.3 。

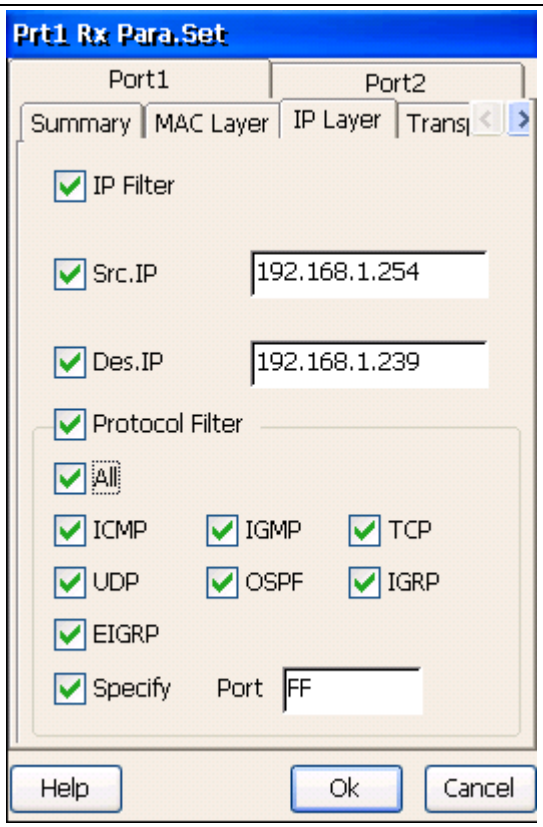



Figure 7.4.3 IP layer Parameter of Tx Set

1. 【IP Filter】: network layer parameter filter or not, tick√to be effective;
2. 【Src. IP】: when link layer fiters enabling, tick√and set source IP address needs to be filtered, statistics for cooperation, or else not;
3. 【Des. IP】: when link layer fiters enabling, tick√and set destination IP address needs to be filtered, statistics for cooperation, or else not;
4. 【Protocol Filter】:when link layer fiters enabling, tick√and set protocol needs to be filtered, the network layer protocols GEA-8130A supports are: ICMP, I GMP, TCP, UD, OSPF, IGRP, EIGRP and user-defined protocol NO.

### 7.4.4 Transport Layer

Select【Para. Filter】in 【Filtering Enable】, click【Transport】and set parameter, by checking IP layer information in receiving frame, you can not make corresponding statistics for frame not consistent with fitering conditions, as is shown in figure 7.4.4

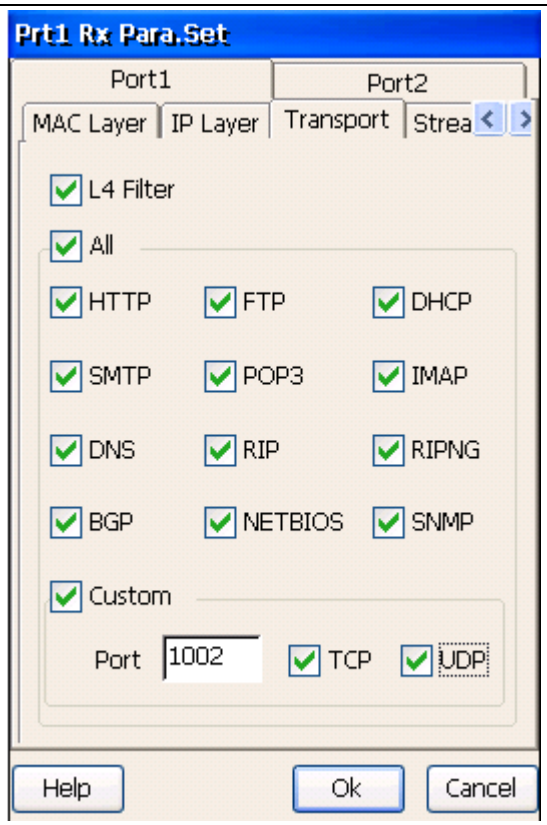



Figure 7.4.4 Transport Layer Parameter in Rx Set

【L4 Filter】:filter transmission layer parameter or not, tick√to be effective and set the protocol needs to be filtered, the transmission protocols that GEA-8130A supports are: HTTP, FTP, HCP, SMTP, POP3, IMAP, DNS, RIP, RIPING, BGP, NETBIOS, SNMP and user-defined protocol NO.

### 7.4.5 Stream Filter

Select【Para. Filter】 in 【Filter Enable】, click 【Stream Filter】and set parameter, by checking traffic NO. of received DADI frame, you can make statistics for specific traffic NO. data, as is shown in figure 7.4.5. The supported traffic no. are stream 1~ stream 8.

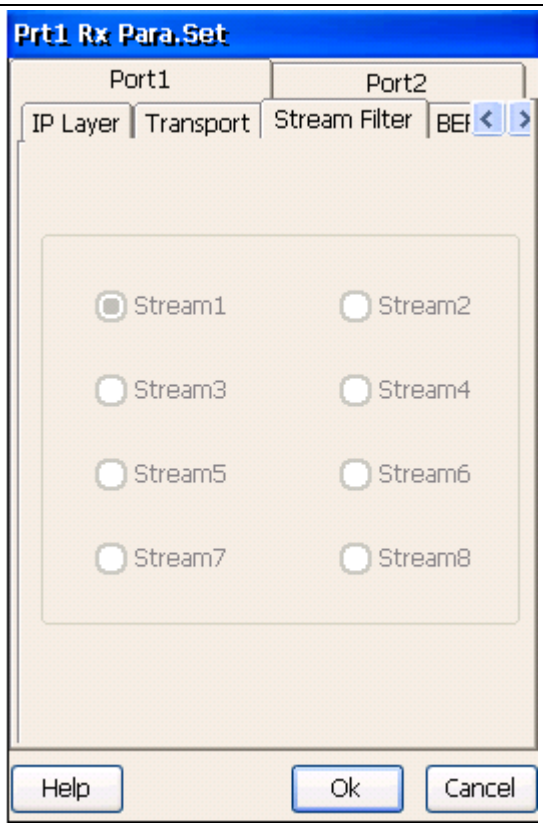



Figure 7.4.5 Stream Filter of Rx Set

### 7.4.6 BERT Set

Set BEAT Set, make statistics for data package whose receiving patten is consistent with set error code pattern, as is shown in figure 7.4.6.

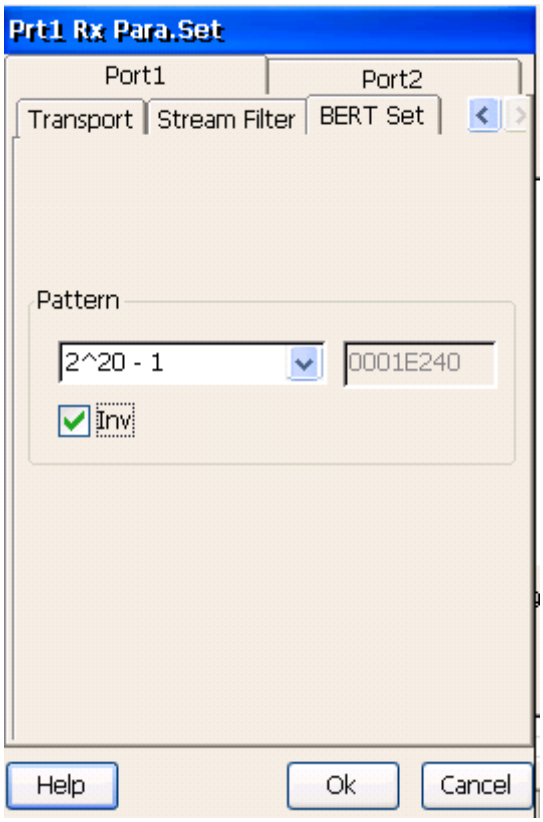



Figure7.4.6 BERT setting of Rx Set

【Pattern】:set error code pattern needs to be made statistics: $2^7$-1, $2^7$-1 ones complement code, $2^9$-1, $2^9$-1 ones complement code, $2^{11}$-1, $2^{11}$-1 ones complement code, $2^{15}$-1, $2^{15}$-1 ones complement code, $2^{20}$-1, $2^{20}$-1 ones complement code, $2^{23}$-1, $2^{23}$-1 ones complement code, $2^{31}$-1、$2^{31}$-1 ones complement code, full 1, full 0 and user-defined (hexadecimal system).

## 7.5 RFC2544 Setting

It is used for setting parameters of RFC2544 performance test, including parameter summary, mode, Para.1, Para.2 and Para.3.

### 7.5.1 Parameter Summary

There are 4 configuration items, the present selected configuration item can be as the present using configuration, as is shown in figure 7.5.1:

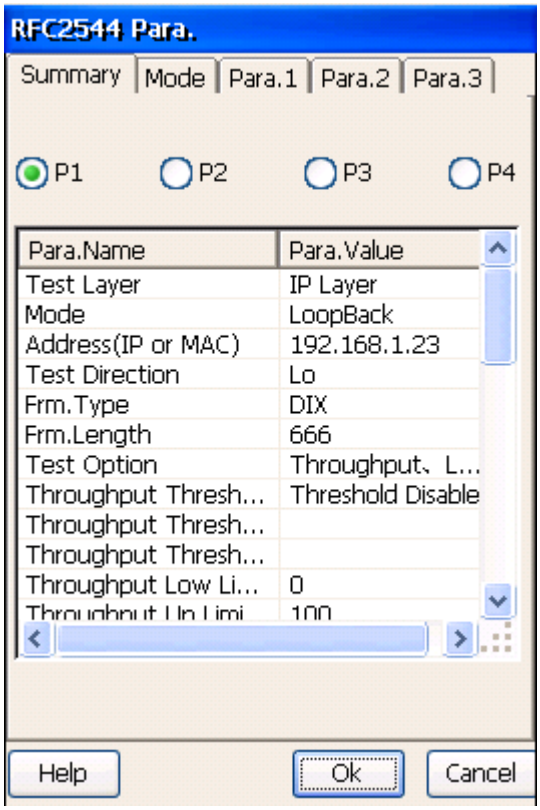



Figure7.5.1 RFC2544 Parameter Summary

### 7.5.2 Mode

Select test layer and mode, as is shown in figure 7.5.2。

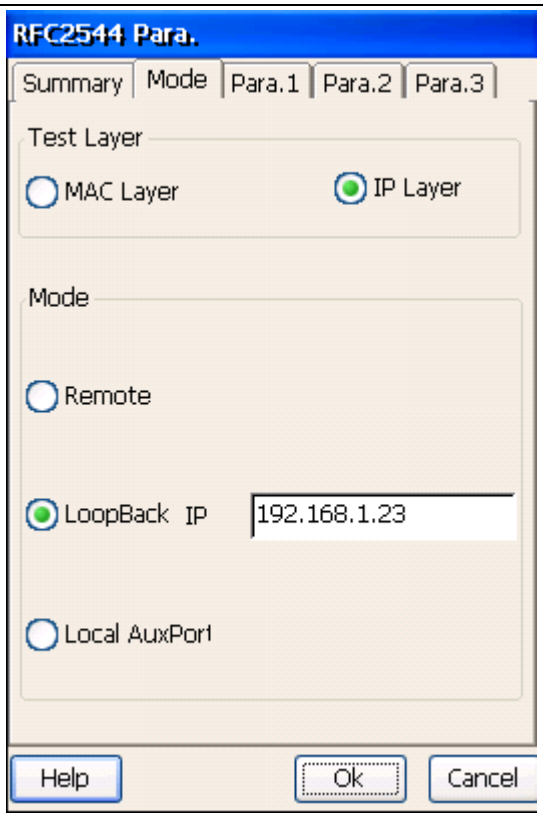



Figure7.5.2 Mode

1. 【Test Layer】:set test's layer, select data link layer, network layer.
2. 【Mode】:select far-end equipment, loop back equipment and host's aux port mode.
   a） 【Remote】:the port1 of near-end tester is control end, far-end tester is controlled end (work on "mutual test cooperation"), the near-end connects and realizes control through far-end's IP address or name;
   b） 【Loop-back】:port 1 sends data, opposite end's instrument or equipment works on "data loop back", port 1 receives the testing mode of loop back data frame;
   c） 【Local AuxPort】:port1 sends data, port2 receives testing mode of data frame.

### 7.5.3 Parameter Set 1

Set RFC2544 test's testing items and PASS threshold value, as is shown in figure 7.5.3.

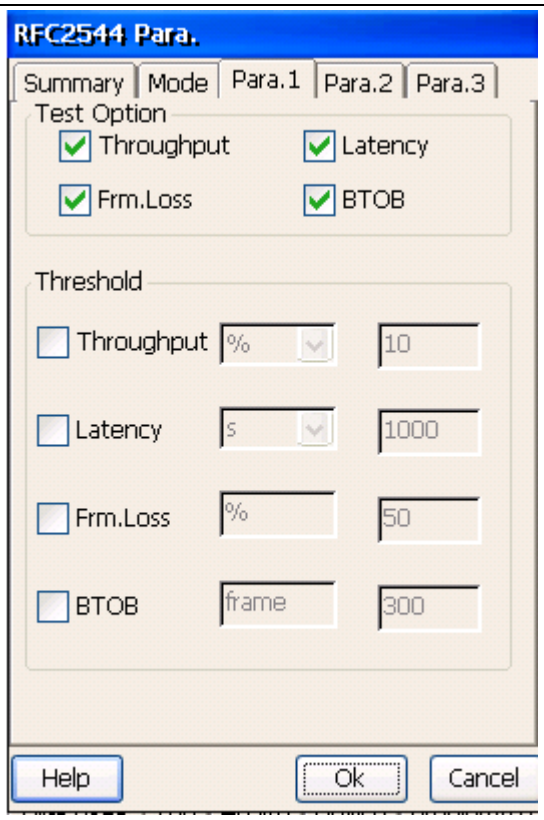



Figure7.5.3 RFC2544 Parameter 1

1. 【Test Option】:tick√for setting test items, there are four test items for selection:throughput, time delay, package loss, back to back, you can select one or multiple;
2. 【Threshold】:set threshold for passing test:
   a) 【Throughput】:tick√and set threshold value of throughput test, the threshold units are Mbps, %;
   b) 【Latency】:tick√and set threshold value of time delay test, the threshold units are s, ms, us;
   c) 【Frm. Loss】:tick√and set threshold value of package loss rate test, the threshold unit is %;
   d) 【BTOB】:tick√and set threshold value of back to back test, the threshold unit is frame.

### 7.5.4 Parameter Set 2

RFC2544 parameter setting 2 of performance test is shown in figure7.5.4

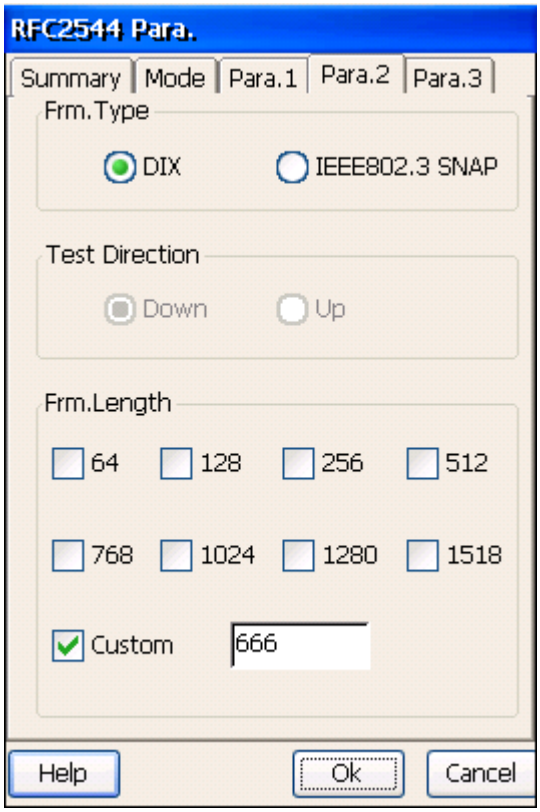



Figure7.5.4 RFC2544 Parameters Set 2

1. 【Frm. Type】:set sending test frame type, including DIX, IEEE802.3 SNAP;
2. 【Test Direction】:set sending direction of test data traffic, including upstream and downstream;
3. 【Frm. Length】:set frame length of test sequence, there are eight designated frame length: 64, 128, 256, 512, 768, 1024, 1280, 1518 and customized frame length. you can select one or multiple.

### 7.5.5 Parameter Set 3

RFC2544 parameter setting 3 of performance test is shown as in figure 7.5.5。

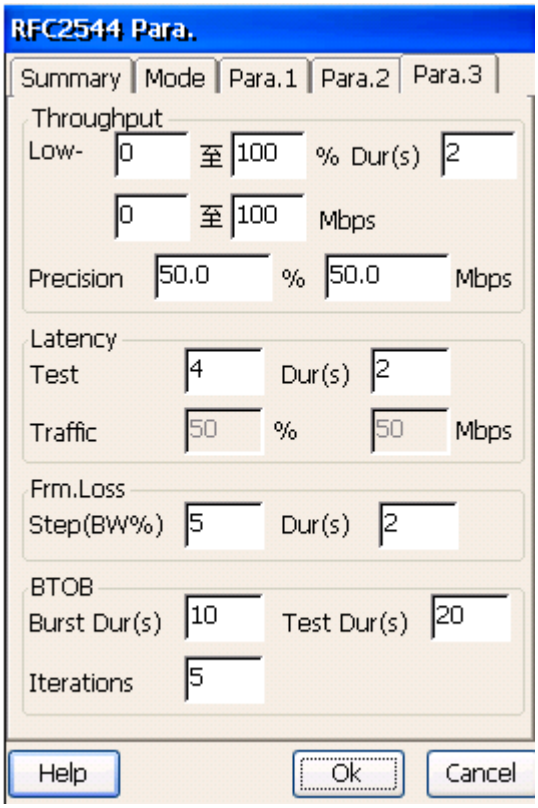



Figure7.5.5 RFC2544 Parameter 3

【Throughput】:

1. 【LOW-UP】:set max and min value of throughput. In the throughput test, you can estimate network's throughput value and set test's threshold value according to estimated throughput test. Combined with throughput resolution, you can shorten testing time. There are two forms: %, Mbps;
2. 【Dur(s)】:set the endurance time of sending test data every time, the range is 2～3600s;
3. 【Precision】:there are two forms to show the error range between throughput test value and real value: %、Mbps.

【Latency】:

1. 【Test】:set sending times of test data, the rang is 2～9999;
2. 【Dur(s)】:set the endurance time of sending test data every time, the range is 2～3600s;
3. 【Traffic】:set sending rate of test data, the units are %、Mbps.

【BTOB】:

1. 【Step(BW%)】:set bandwidth adjust steplength of test sequence, the range is 1%～10%;
2. 【Dur(s)】:set the endurance time of sending teste data every time, the range is 2～3600s。

【BTOB】:

1. 【Burst Dur(s)】:set endurance time of every burst, the range is 2～99s;
2. 【Test Dur (s)】:set test time of every burst, the test length is longer than burst length;
3. 【Iterations】:set sending times of test data, the rang is 5～9999.

## 7.6 Transport Set

Set corresponding transmission layer port no. of different application layer protocols. Relevant function items are: network scanning and equipment identification :

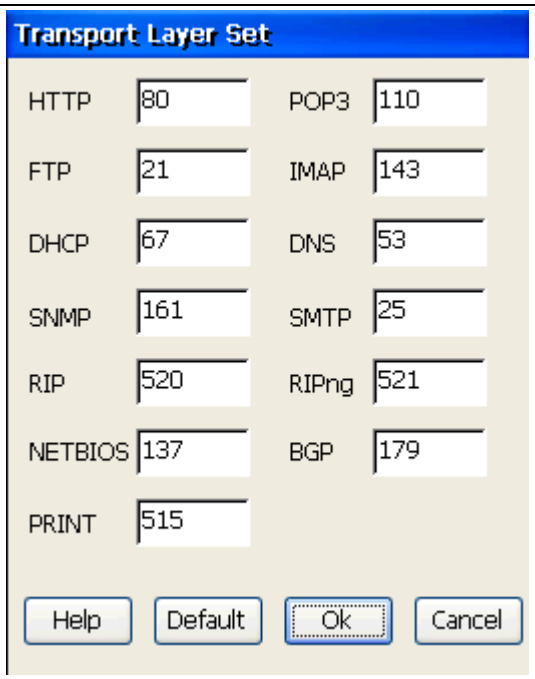



Figure7.6.1 Transport Layer Set

The following application layer protocols can be set: HTTP, POP3, FTP, IMAP, DHCP, DNS, SNMP, SMTP, RIP, RIPng, NETBIOS, BGP.【Default】can be used to restore default transmission layer ports no. of application layer protocols.

## 7.7 PPPOE Dial-up

### 7.7.1 Basic Functions

Make dial-up test or simple test after successful dial-up, as is shown in figure 7.7.1

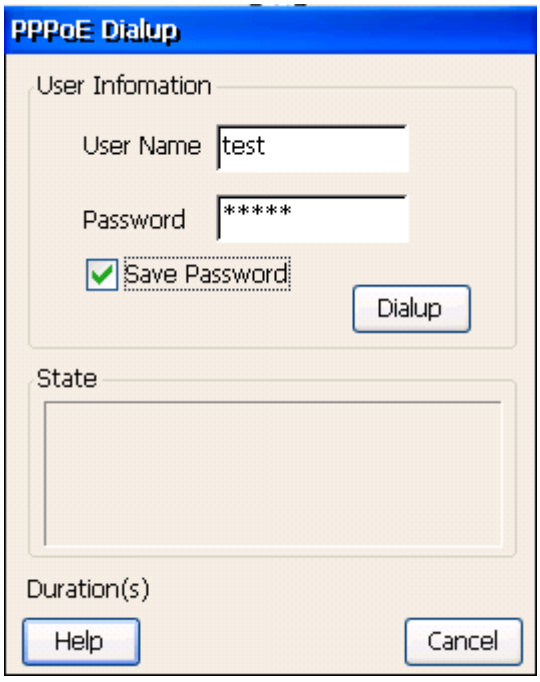



Figure 7.7.1 PPPOE Dial-up

The status interface can be hidden after successful connection; click on the left lower corner of the instrument. It only supports simple test after successful PPPOE connection: information capture, PING, TraceRoute, application layer test, WEB browsing.

### 7.7.2Topological Structure

PPPOE topological structure is shown in figure 7.7.2.

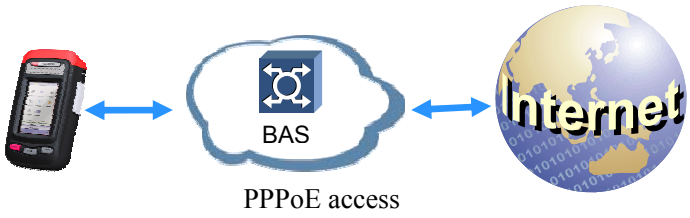



Figure 7.7.2 PPPOE Test

## 7.8 Physical Test

Physical tests: Cable Length test, Cable Map test, Blinking Port, Cable Find, POE test, Port Identify. POE test is the test item under Pass Mode, others are test items under Terminal Mode.

### 7.8.1 Cable Length Test

#### 7.8.1.1 Basic Function

Cable length test can test cable length of twisted pair's every pair, the test accuracy is 1 meter, as is shown in figure 7.8.1 .

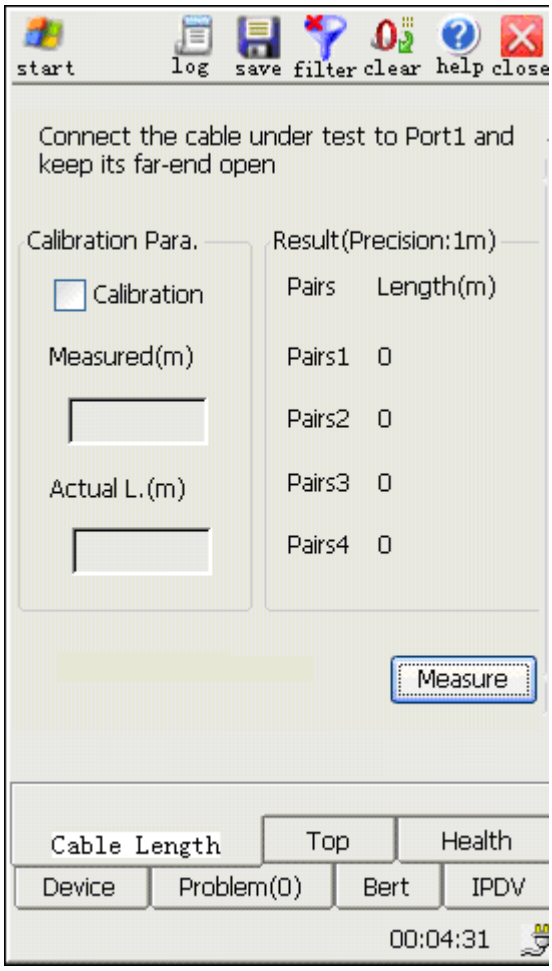



Figure 7.8.1Cable Length Test

1. 【Calibration Para.】:set instance calibration parameter;

   a） caliberation:you can decide whether to calibrate the measurement result. Options include ON and OFF.select yes or no;

b） measured length:measured length of the reference cable；

c） actual length:The actual length of the reference cable.

2. 【Result】:display test results of cable length
3. 【Measure】:click test button and start cable length measurement

1. The actual length of the unreferenced cable = (The actual length of the reference cable -The measured length of the reference cable)+The measured length of the unreferenced cable.
2. Cable length measurement is valid only the electrical package is 1000M. If the port configuration is electrical package, the system will automatically configurate 1000M electrical package, when cable length is done.
3. When cable length is done, one end of cable is connected to Port1, the other end doesn't connect to any equipment.

#### 7.8.1.2 Topological Structure

test structure of cable length is shown as in figure 7.8.2 。

Figure 7.8.2 Cable Length Test Toplogy

### 7.8.2 Cable Map Test

#### 7.8.2.1 Basic Functions

Realize line sequence test of twised pair, ensure wiring order of twised pair or if short circuit, open circuit, crosstalk etc. happens, as is shown in figure 7.8.3.

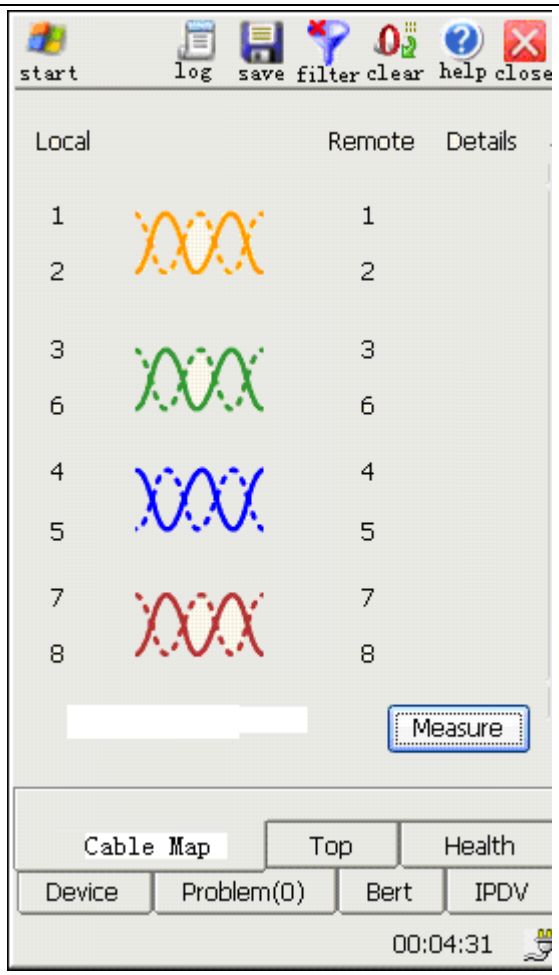



Figure 7.8.3 Cable Map

1. 【Local】、【Remote】:the end connects to the instrument is local end, the end connects to line sequence tester is far end, the test results are displayed with different colors;
2. 【Details】:the instructions for open circuit, short circuit, invalid, crosstalk etc；
3. 【Measure】:start/stop line sequence test. This item is only valid for 1000M electrical package.

#### 7.8.2.2 Topological Structure

Line sequence test needs line sequence tester's cooperation, as is shown in figure 7.8.4

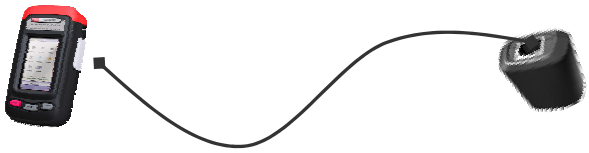


Figure 7.8.4 Cable Map Test Topology

### 7.8.3 Blinking Port

#### 7.8.3.1 Basic Function

This tool can realize the function of flashing port, which can make the port LED indicators of Ethernet hubs or switch flash and is usually used to locate the ports of the switch or hub connected to the other end of the network cable ( Figure 7.8.5).

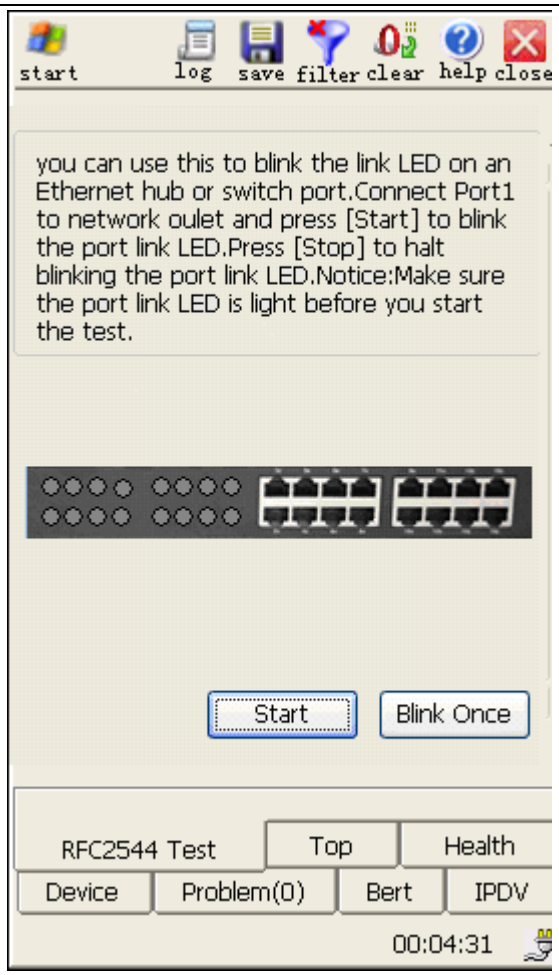



Figure7.8.5 Blinking Port

1. 【Start/Stop】:Start/Stop continuous flashing port;
2. 【Blink Once】:flashing one time by pressing one time;

#### 7.8.3.2 Topological structure

Topological structure of flashing port is shown as in figure 7.8.6.

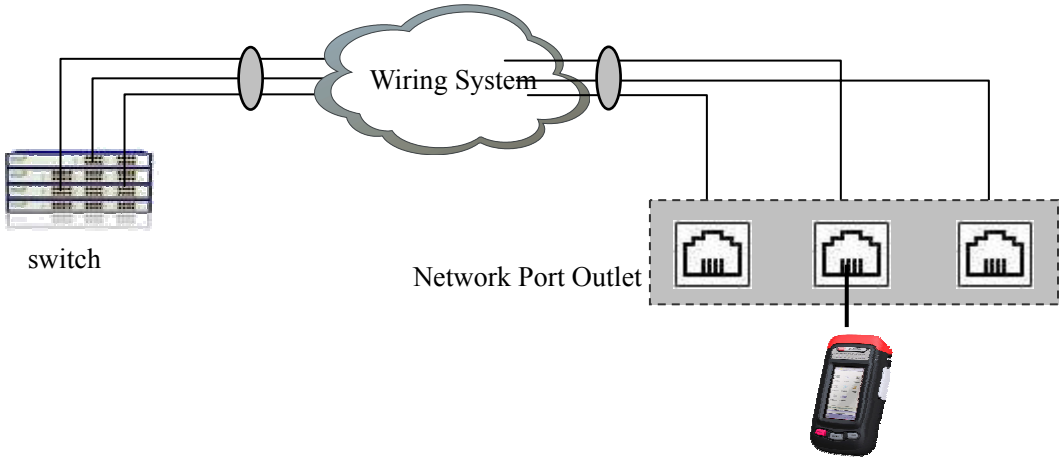



Figure 7.8.6 Blinking Port Topology

### 7.8.4 Cable Find

#### 7.8.4.1 Basic Function

Realize the checking function of destination cable, find cable through sending audio signal to cable

and matching the Cable Find (beeping):

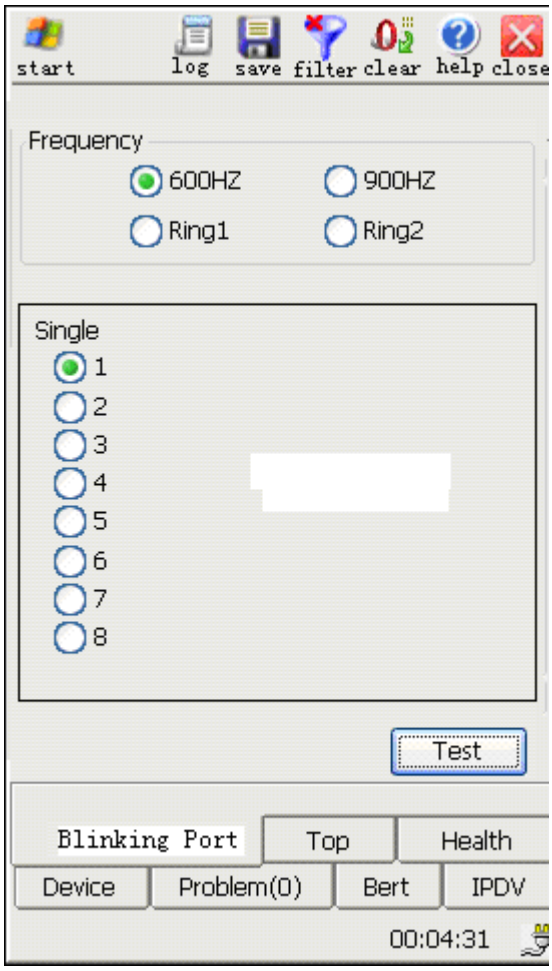



Figure 7.8.7 Cable Find

【Frequency】:select frequency of cable's sending audio signal: 600HZ, 900HZ, ring1, ring2;

### 7.8.4.2 Topological Structure

Audio line tracking test can be done when GEA-8130A matches Cable Find, topology structure is shown in figure 7.8.8.

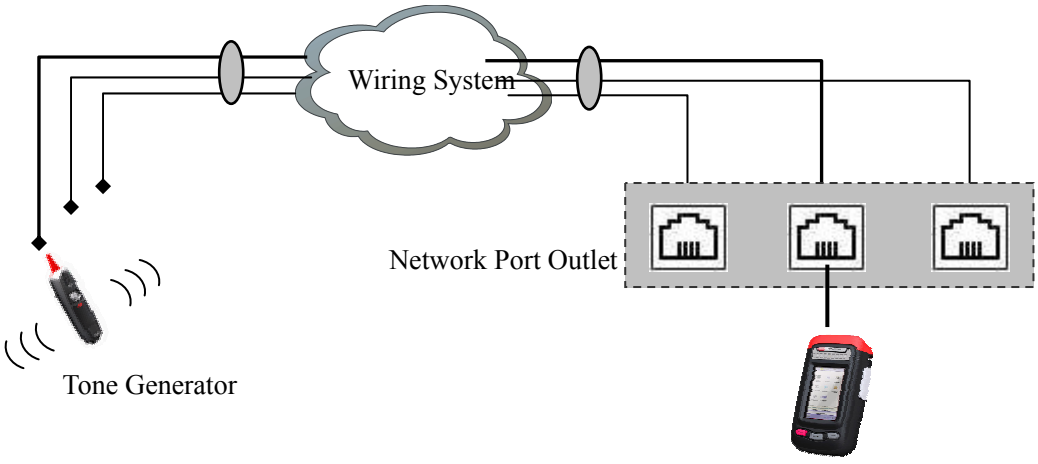



Figure 7.8.8 Test topology of Cable Find

### 7.8.5 POE Test

#### 7.8.5.1 Basic Functions

Test if network connection equipment (router or switch) can supply power for terminal equipment. Test if terminal equipment is PoE's PD equipment; In addition, if the instrument is between PSE and PD, it can transfer the power from PSE to PD, as is shown in figure 7.8.9:

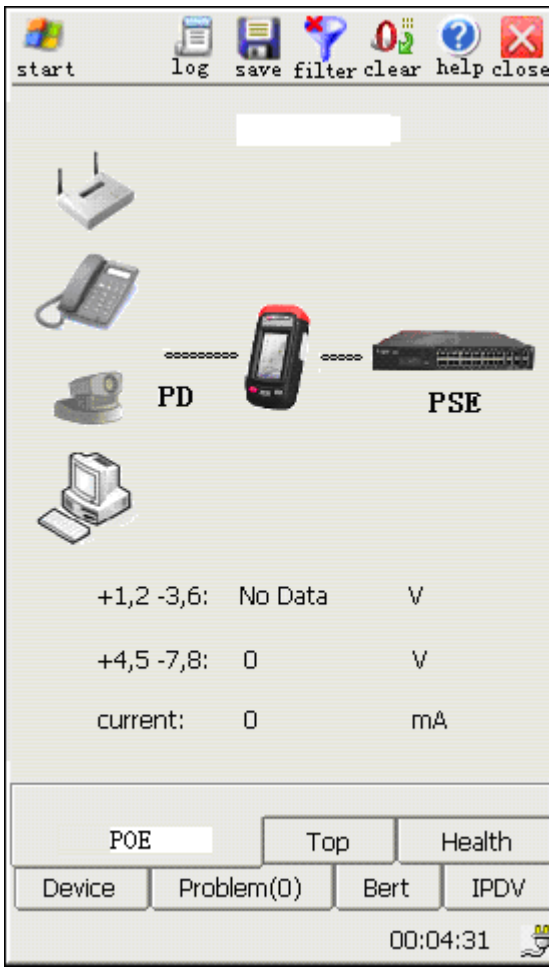



Figure 7.8.9 POE Test

POE test is under through mode, you need to select "through mode" in the main interface. The terminal equipment port1 connects is PSE or not; The terminal equipment port2 connects is PD or not. Under terminal mode, it only checks if the equipment port1 connects is PSE equipment, if the POE light of port1 is on, it shows the connected equipment is PSE equipment.

#### 7.8.5.2 Topological Structure

Topological structure of POE test is shown in figure 7.8.10:

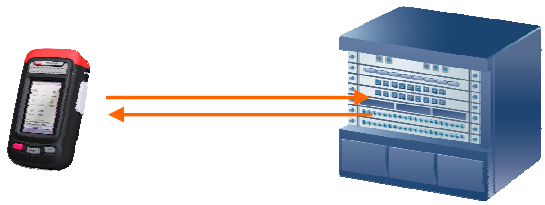


Figure 7.8.10 POE Test Topology

### 7.8.6 Port Identify

Identify the cable types connect with port 1:Ethernet port( 

), telephone(  ), token ring ( 

)、the equipment without power (  )、the cable that is not connected to equipment (  ) , as is shown in figure 7.8.11:

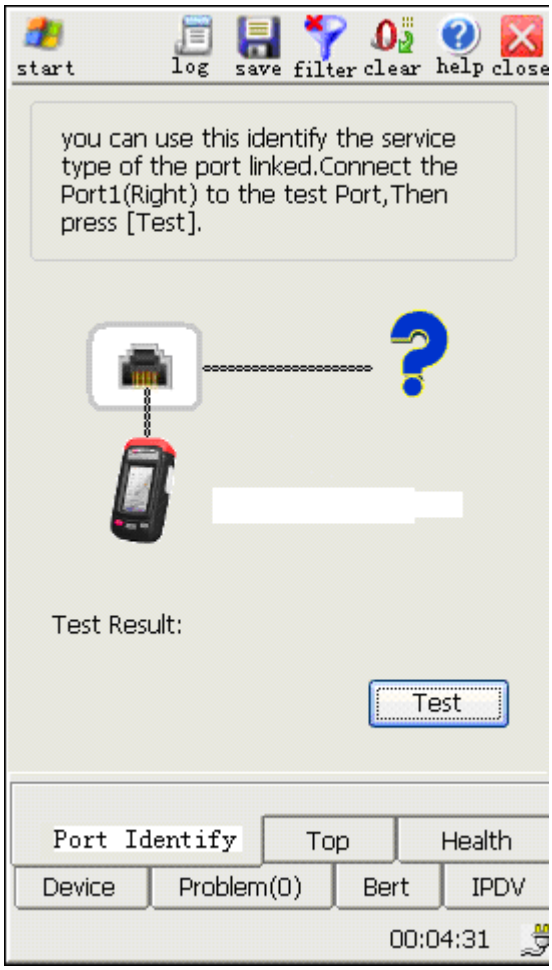



Figure 7.8.11 Port Identify Test

## 7.9 Performance Test

### 7.9.1 Traffic Test

Traffic parameter setting can refer to sending setting and receiving setting

#### 7.9.1.1 Basic Function

Traffic test can generate test data from port1 and display ststistics information such as receiving and sending data frame of port1 at the same time, as is shown in figure 7.9.1:

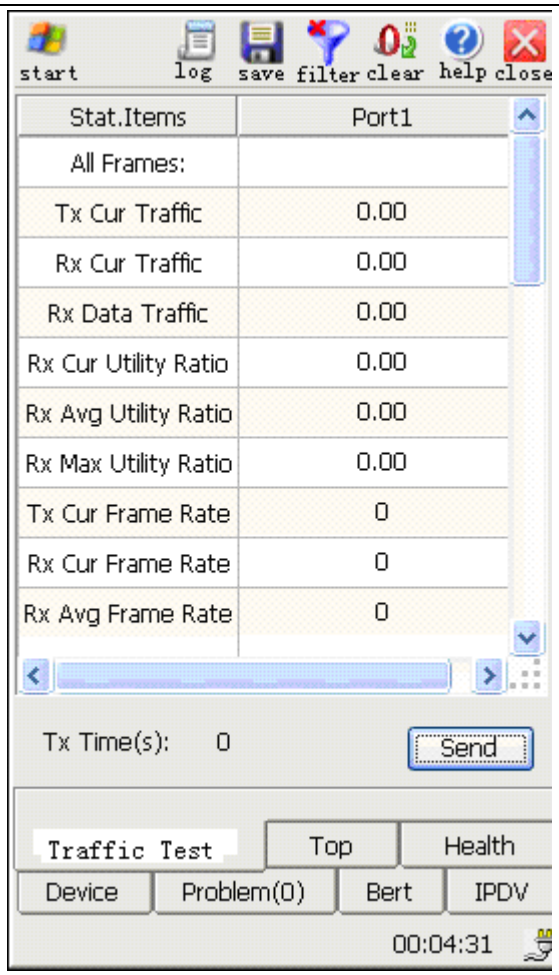



Figure 7.9.1 Traffic test

【Tx Time(s)】:calculate present time length from sending the first data frame;

Statistics items incluce all frames and test frames. The statistics items are as follows:

【All Frames】

1. 【Tx Cur Traffic】:sending data is displayed in Mbps, the accuracy is 0.01Mbps;
2. 【Rx Cur Traffic】:the traffic receives one layer data is displayed in Mbps, the accuracy is 0.01Mbps;
3. 【Rx Data Traffic】:the traffic receives two layers data is displayed in Mbps, the accuracy is 0.01Mbps;
4. 【Rx Cur Utility Ratio】:receive two layers data bandwidth utilization current value, the accurancy is 0.01%;
5. 【Rx Avg Utility Ratio】:receive two layers data bandwidth utilization average value, the accurancy is 0.01%;
6. 【Rx Max Utility Ratio】:receive two layers data bandwidth max utilization value, the accurancy is 0.01%;
7. 【Tx Cur Frame Rate】:the current value of sending data frames every second;
8. 【Rx Cur Frame Rate】: the current value of receiving data frames every second
9. 【Rx Avg Frame Rate】: the average value of receiving data frames every second
10. 【Rx Max Frame rate】:max value of receiving data frames every second
11. 【Tx Fames】: total sending frames
12. 【Rx Frames】: total receiving frames

13. 【Tx Bytes】: total sending bytes
14. 【Rx Bytes】: total receiving bytes
15. 【Rx Error】:receiving error frames
16. 【Rx Bit Errors】:checked total error code bits；
17. 【Avg.BER】: In the synchronous status, the ratio of error code bits and all received random code bits
18. 【BES/Sec】: In the synchronous status, the ratio of present second error code bits and present second received random code bits
19. 【BES】:In the synchronous status, existed error code seconds；

【Test Frames】

1. 【Tx Cur Traffic】:sending data is displayed in Mbps, the accuracy is 0.01Mbps；
2. 【Rx Cur Traffic】:the traffic receives one layer data is displayed in Mbps, the accuracy is 0.01Mbps；
3. 【Rx Data Traffic】:the traffic receives two layers data is displayed in Mbps, the accuracy is 0.01Mbps
4. 【Rx Cur Utility Ratio】:receive two layers data bandwidth utilization current value, the accurancy is 0.01%；
5. 【Rx Avg Utility Ratio】:receive two layers data bandwidth utilization average value, the accurancy is 0.01%；
6. 【Rx Max Utility Ratio】:receive two layers data bandwidth max utilization value, the accurancy is 0.01%；
7. 【Tx Frames】: total sending frames
8. 【Rx Frames】:total receiving frames
9. 【Tx Bytes】:total sending bytes
10. 【Rx Bytes】:total receiving bytes
11. 【Rx Out Of Seq.】:total receiving disordered frames
12. 【Rx Error】: receiving error frames
13. 【Drop Frames】:lost frames in sending process

1. Enter into traffic test, the system starts data statistics
2. When protocol layer selects network layer, the traffic can be sent only the the system ARP to destination address.

#### 7.9.1.2 Topological Structure

Traffic test can be done with one instrument for network traffic monitoring statistics or with two instruments for cooperation. Their topological structures are shown in figure7.9.2 and figure 7.9.3.

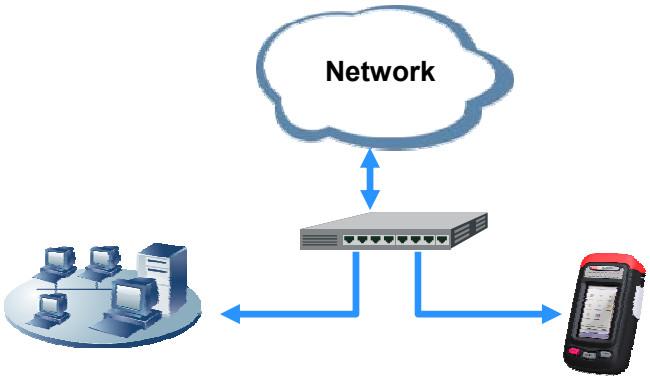



Figure7.9.2 Traffic monitoring statistics


Figure 7.9.3traffic cooperation test mode

### 7.9.2 RFC2544 Test

Parameter setting refers to chapter RFC2544 parameter setting.

performance based on RFC2544 test can make network interconnection equipment benchmark test, including: Throughput, Latency, Frame Loss and Back-to-Back.

#### 7.9.2.1 Test Progress

RFC2544 performance test defaults the entry of test progress display screen, 【Test Progress】displays present test status and test time, as is shown in figure 7.9.4

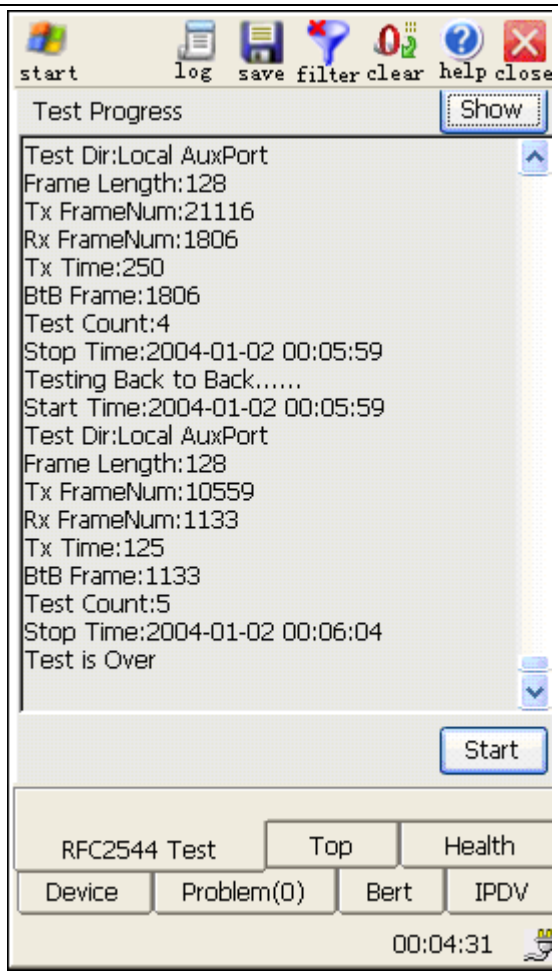



Figure7.9.4 RFC254 Test

1. 【Start/Stop】:start/stop sending data and make RFC2544 test;
2. 【Show】:display present test progress, real-time statistics value and every test result of RFC2544. Click and the interface pops up, as is shown in the following figure. The items include test progress, result overview, throughput, time delay, package loss rate and back-to-back.

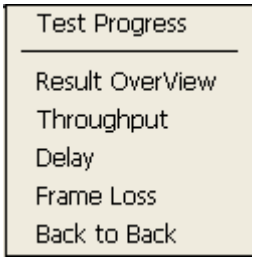



Figure 7.9.5 RFC2544 Show

### 7.9.2.2 Result Overview

Click 【Show】and select【Result Overview】, display test result table after the test, as is shown in the following figure:

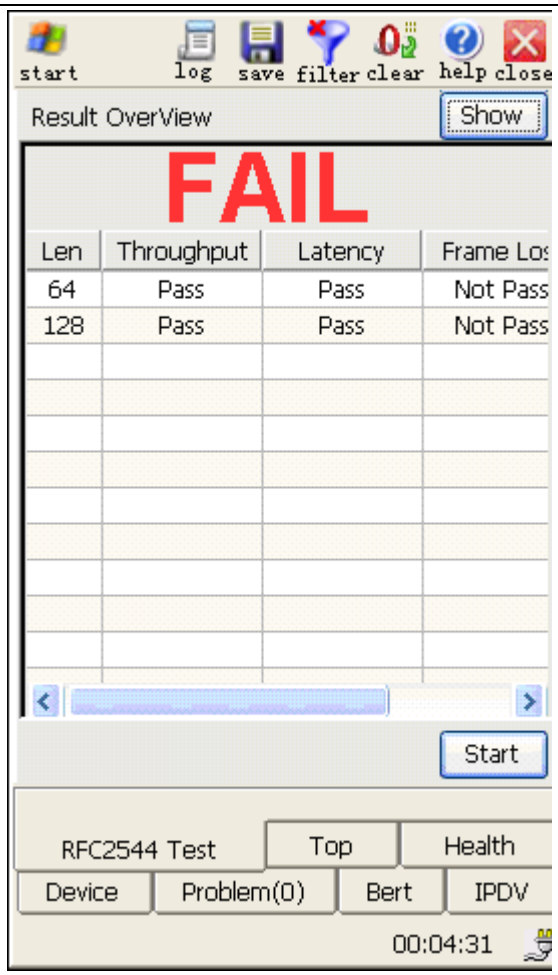



Figure 7.9.6 FC2544 result overview

"PASS"or"FAIL"in result overview displays if PASS threshold has passed, no display without PASS threshold. In the result overview, "PASS","FAIL" or "——" displays if the test item has passed under different frame length or PASS threshold is not set.

#### 7.9.2.3 Throughput

Throughput test means max rate the equipment can accept without frame loss.

Slect 【Throughput】 and display throughput test result, as is shown in the following figure:


Figure 7.9.7 RFC2544 Test—Throughput

1. 【Afps】、【Tfps】:Practical and theoretical frame rate value of different frame length, they are displayed in the histograms with different colors: Afps is red and Tfps is green
2. 【Dir】:display throughput test's direction: aux port, upstream and downstream
3. 【Len】:display test frame length of throughput test
4. 【Theo. FPS】、【Actual FPS】:display theory frame rate and actual frame rate of different frame length;
5. 【Theo. L1】、【Actual L1】:display different frame's theoretical and actual traffic values displayed in Mbps;
6. 【Theo. L2】、【Actual L2】: display different frame length's theoretical and actual data traffic value displayed in Mbps

#### 7.9.2.4 Delay

Time delay test, test total transmission time from sour port to destination port

Click 【Show】, select 【Delay】and display time delay result, as is shown in the following figure:

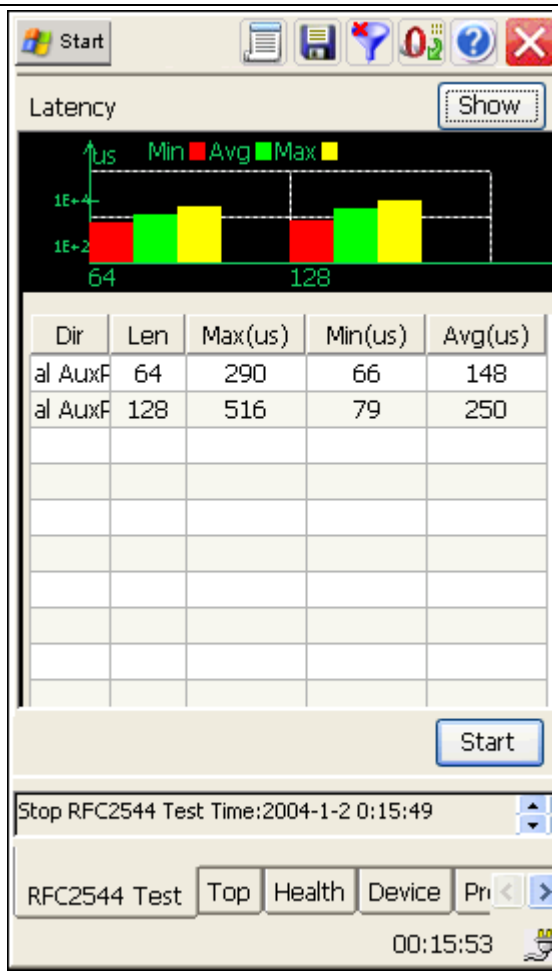



Figure 7.9.8 RFC2544 Test—Delay

1. 【Min】、【Avg】、【Max】:min, average, max time delay value of different frame length, displayed in the histograms with different colors: Min is red, Avg is green and Max is yellow;
2. 【Dir】:display test direction of time delay test
3. 【Len】:display test frame length of throughput test
4. 【Max (us)】,【Min(us)】,【Avg(us)】:display max, min and average time delay value of different frame length, the unit is (us).

#### 7.9.2.5 Frame Loss

Package loss rate test means, under fixed load status, the percentage of the frames have not been transmitted by network equipment due to lack of resources and frames and frames should be transmitted.

Click【Show】, select 【Frame Loss】and display package loss rate test result, as is shown in the following figure:

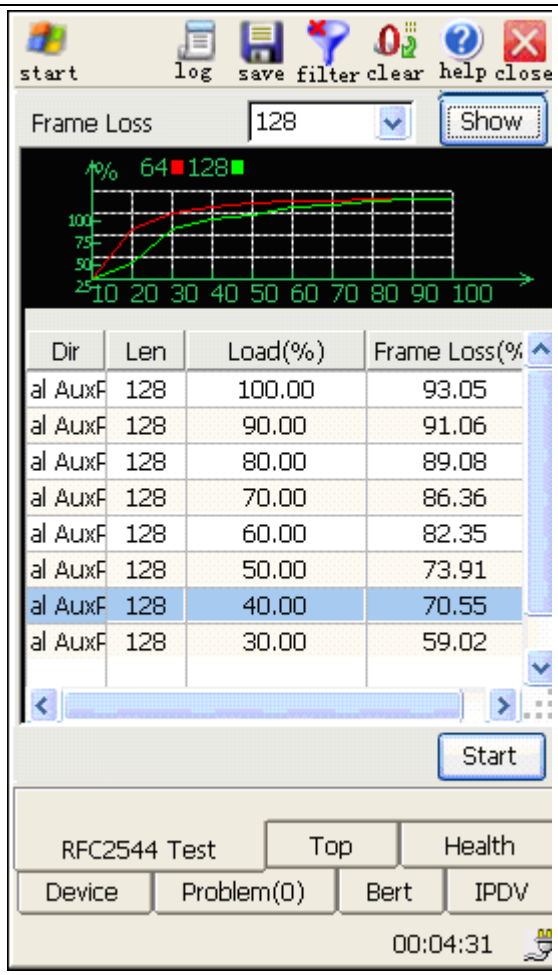



Figure7.9.9 RFC2544 Test—Frame Loss

1. 【64】、【128】、。。。、【1518】:different sent frame length of package loss rate, they are displayed in the histograms with different colors;
2. 【Dir】:display test direction of package loss test
3. 【Len】:display test frame length of package loss rate test, select different frame length form drop-down list box at the top of histogram;
4. 【Load (%)】:display package loss test's sending load of different frame length
5. 【Frame Loss(%)】:Display different package loss rate value of different frame length under different load

#### 7.9.2.6 Back-to- Back

Back-to-back buffer frames test means max packages that equipment of testing network can deal with in min package interval transmission without package loss.

Click【Show】 and select【Back to Back】and display back-to-back test result:

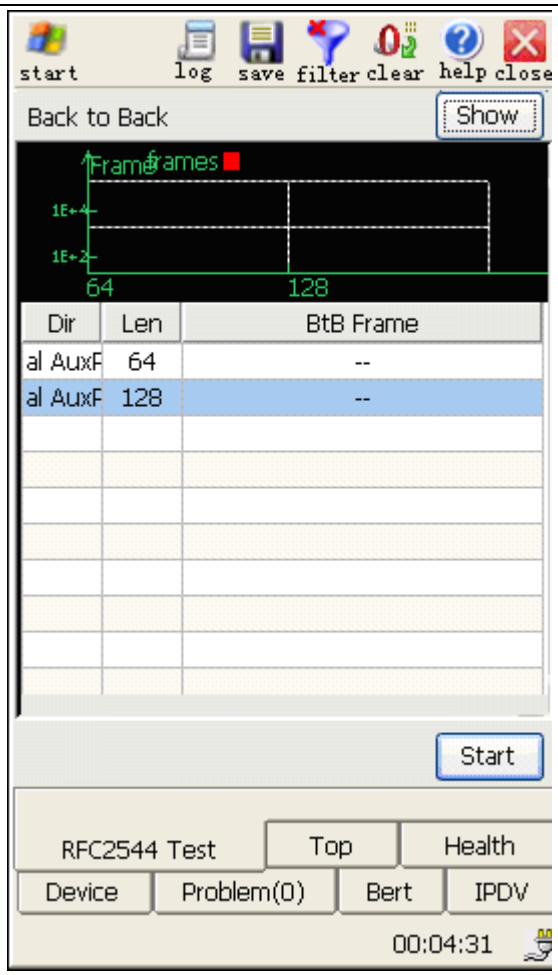



Figure 7.9.10 RFC2544 Test— Back-to-Back

1. 【Frames】:display back-to-back buffer frames of different frame length
2. 【Dir】:display test direction of back-to-back test
3. 【BTB Frame】:Display back-to-back test's buffer frames of different frame length.

### 7.9.2.7 Topological Structure

There are three test modes for RFC2544 test: far-end mode, loop-back mode and host's auxport. It can cooperate with GEA-8130A or other products of this company. Their topological structures are shown in figures 7.9.11, 7.9.12 and 7.9.13. RFC2544

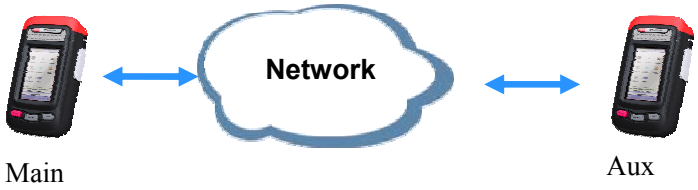



Figure 7.9.11 Remote mode


Figure 7.9.12 LoopBack mode

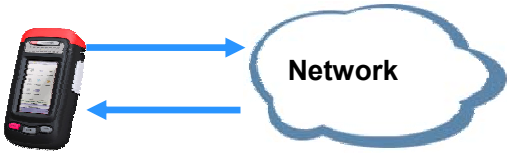



Figure 7.9.13 Local AuxPort mode

## 7.10 Network Tool

GEA-8130A provides following Ethernet diagnosis tools: NetScan, Information Capture, PING, Traceroute, FTP Download Test, SNMP Query, Application Layer Server Test and WEB Browsing.

### 7.10.1 NetScan

#### 7.10.1.1 Basic Function

Network scanning is used for finding the equipment and its service within a certain range.

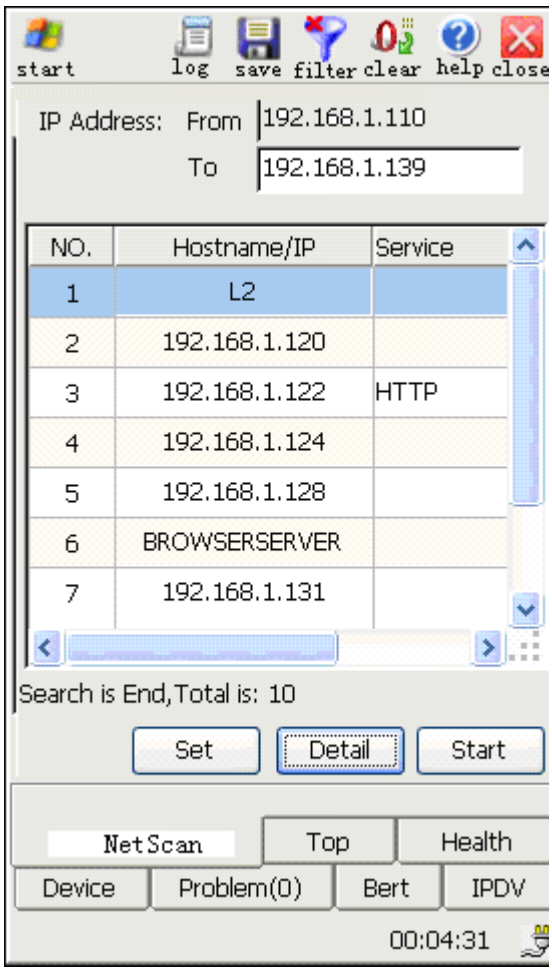



Figure 7.10.1 NetScan

1. 【IP Address】:set scanning's start/end IP address, set IP address and host IP address should be in the same network segment;
2. 【Result】:display scanning result, including host name/IP, service;
3. 【Set】:set network service needs to be scanned, including HTTP, POP3, FTP, IMAP, DHCP, DNS, SMTP and customized TCP/UDP port no.;
4. 【Detail】: check detailed information of selected equipment, including: equipment type, host name, IP address, MAC address, service and SNMP;

5. 【Start】:start/stip test.

Service port No. of network scanning is the designated port No. in transmission layer setting. The customized part in network scanning setting is this function's self-owned information.

#### 7.10.1.2 Topological Structure

Network scanning's topological structure is shown in figure 7.10.2

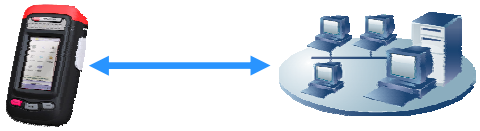


Figure 7.10.2 NetScan Topology

### 7.10.2 Information Capture

#### 7.10.2.1 Basic Function

Information capture captures data package the port receives and prints them. The user can judge whether the network equipment has problems by checking detailed information.

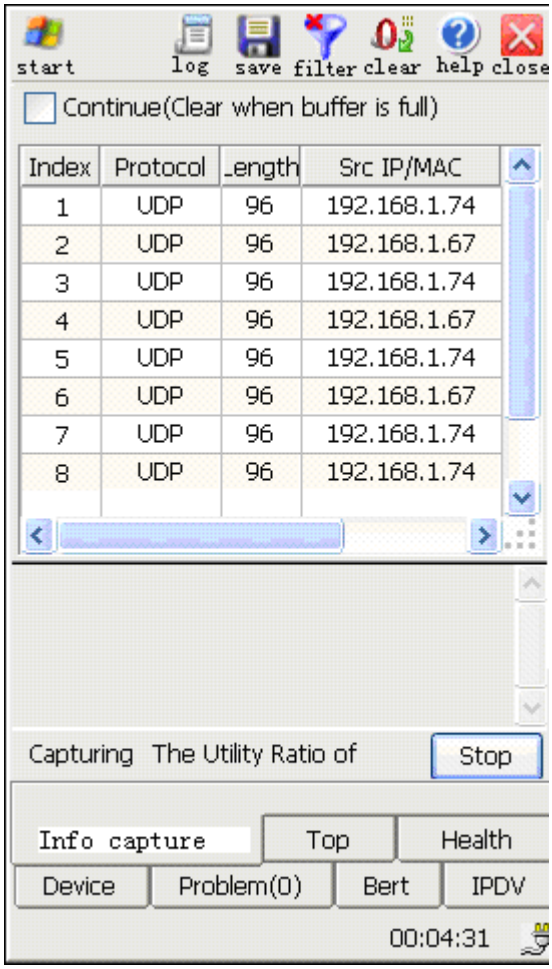



Figure 7.10.3 Information Capture

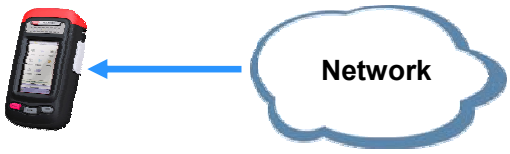
1. 【Continue(Clear when buffer is full)】: select solutions of full storage area, tick √ for continuous capture, clear all for full storage area, or else it will not capture when storage area is full
2. 【Result】:display captured data package in tabular form and relavant information with package:

protocol, length, source MAC/IP and destination MAC/IP

3. 【Info】:display detailed information of selected data package by using 16 hex；
4. 【Capture/Stop】: Start/stop information capture

#### 7.10.2.2 Topological Structre

Information capture's topological structure is shown in figure 7.10.4:




Fiugre 7.10.4 Information Capture Topology

### 7.10.3 Ping

Realize the basic network tool Ping function, as is shown in figure 7.10.5:

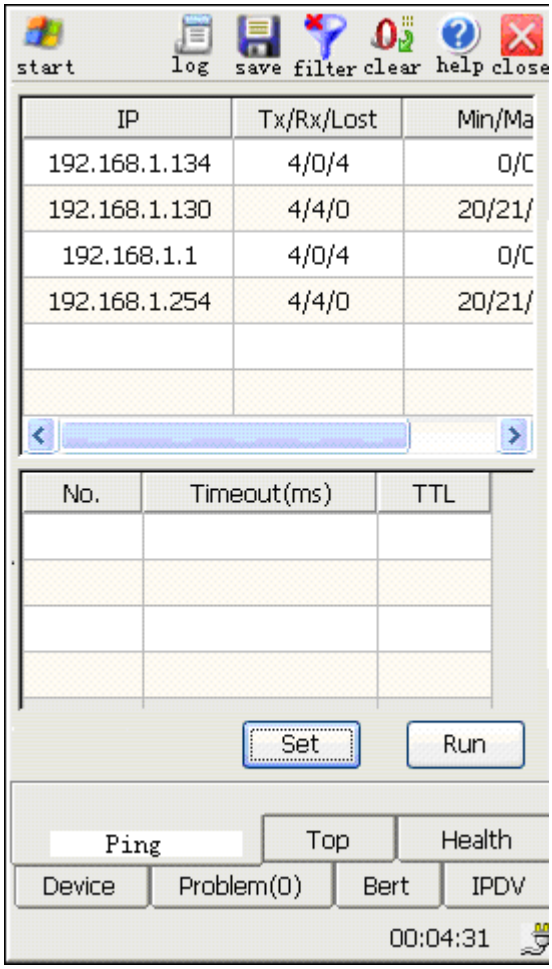



Figure 7.10.5 PING

【Run/Stop】:start/stop Ping test

【Set】:set PING parameter, the interface is shown in the following figure:

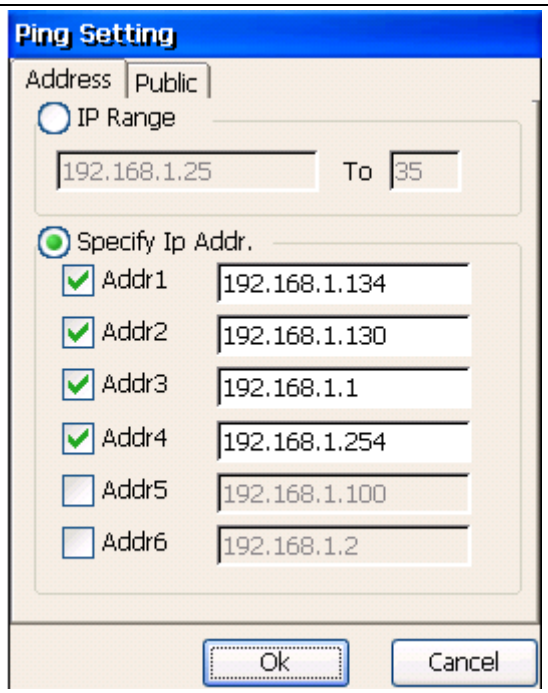



图 7.10.6 PING parameter setting

【Address】:Set address of Ping's destination host

a） 【IP Range 】:set IP address range of Ping's destination host;

b） 【Specify IP Addr.】:designate address of Ping's destination host, set 6 different destination host at most;

【Public】:Set Ping frame's parameter

a） 【Iteration】:set sending Ping frame's times, including designated and continuous

b） 【Timeout(ms)】:set response timeout, including designated and default（100）;

c） 【Interval(ms)】:set Ping's interval time every time, including designated and default（100）;

d） 【Length】:Set the length of sending message with the range 0~65500. The length here is data length of sending message, including designated and default

### 7.10.4 Traceroute

Traceroute can realize route tracking function of basic network tool, realize IP address passing by router for arriving aim host and every hop's lantency :

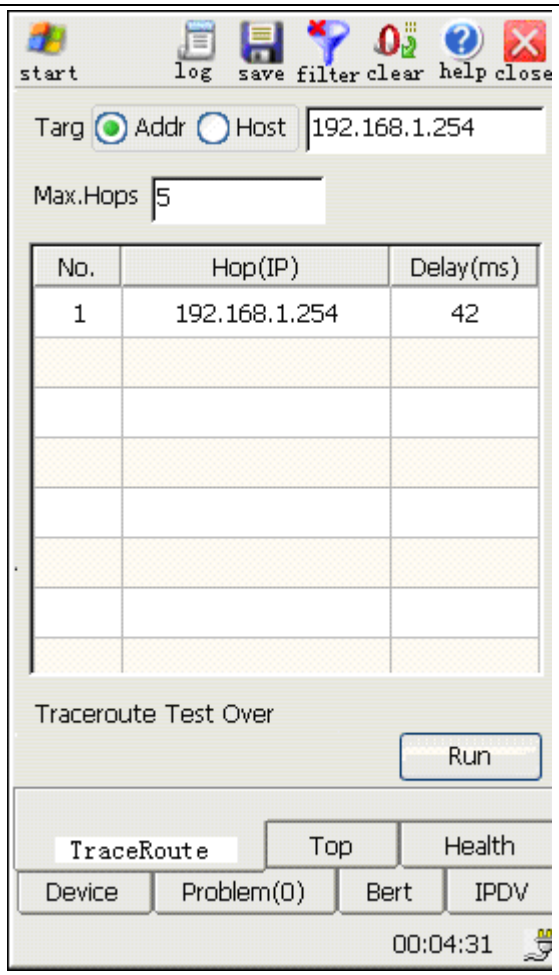



Figure7.10.7 Traceroute

1. 【Targ】:set destination host's address or name;
2. 【Max. Hops】:set max hops of hop router
3. 【Run/Stop】:start/stop route tracking test

### 7.10.5 FTP

This function is used for FTP connectivity test and high-speed FTP download test, as is shown in figure 7.10.8.

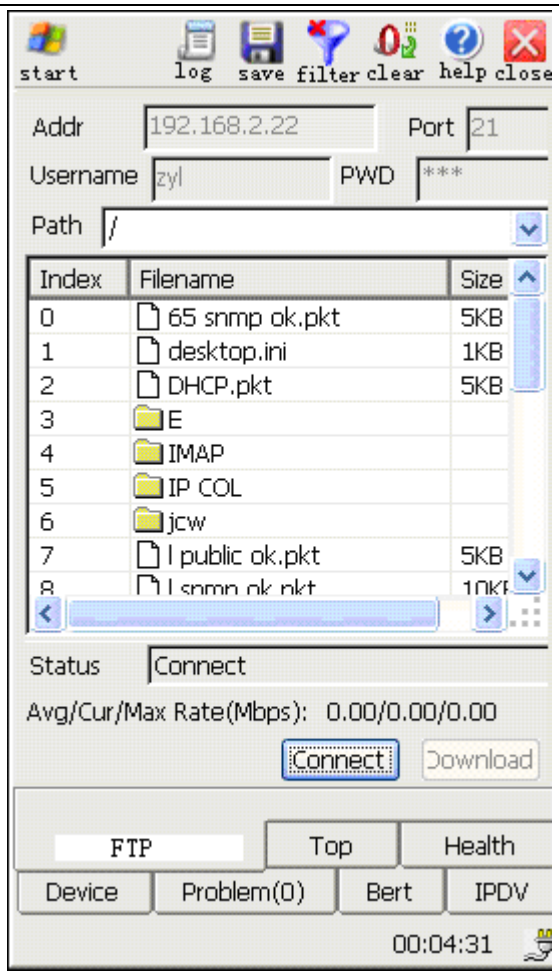



Figure 7.10.8 FTP Test

FTP test is used for testing download rate of server and needs to connect test port with test network. It supports FTP high-speed download test.

1. 【Addr】: input server address;
2. 【Port】:input server Port No., the default is 21;
3. 【Username】:input user name;
4. 【PWD】:input login passwords;
5. 【Path】:display connected FTP server file path and select to enter into file;
6. 【Status】:Display connection status information in FTP test process.
7. 【Avg/Cur/Max Rate(Mbps)】:Real-time display download rate, current value, average value, Max value and Min value.
8. 【Connect/Stop】:connect/stop remote server;
9. 【Download/Stop】:Start/stop FTP download test.

### 7.10.6 SNMP Query

This function can realize information query to network equipment such as switch or router according to SNMP. The supported query functions include basic information query, interface statistics query and business statistics query.

#### 7.10.6.1 Basic Information

Check system group information in tested equipment MIB library, including system description,

provided service and physical location, as is shown in figure 7.10.9.

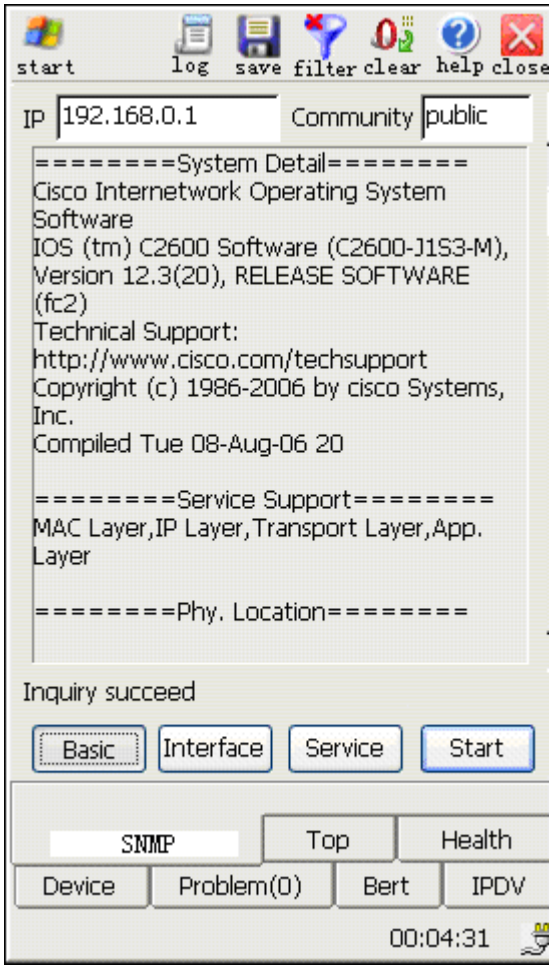


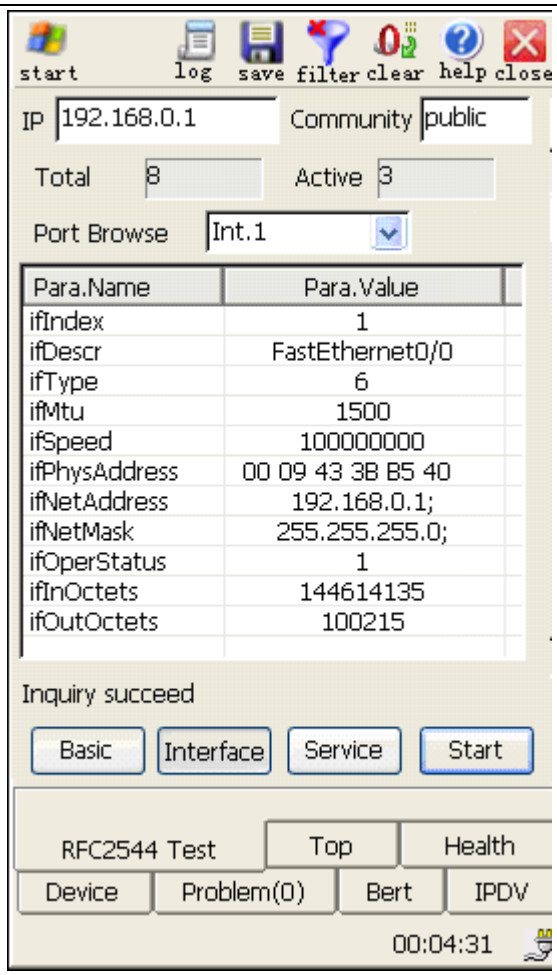

Figure 7.10.9 SNMP basic information of SNMP query

1. 【IP】:set IP address' tested equipment interface;
2. 【Community】:Set community name of tested equipment.
3. 【Basic】:click and check query's basic information;
4. 【Interface】:click and check query's interface statistics;
5. 【Service】:Click and check query's business statistics.

1. Note the case of community input and query limit;
2. Using the same IP address and Community for basic information, interface statistics and business statistics, check results among these three query items.

### 7.10.6.2 Interface Statistics

Check interface group's information in tested equipment MIB, including total interfaces, activity number, every interface's parameter, as is shown in figure 7.10.10.




7.10.10 SNMP interface statistics of SNMP query

Parameter name and meaning of every interface's statistics item are as follows:

| Parameter name | parameter meaning |
|---|---|
| ifIndex | interface index, among 1~ifNumber |
| ifDescr | interface description |
| ifType | interface type |
| ifMtu | interface's MTU |
| ifSpeed | rate with the unit b/s |
| ifPhysAddress | Physical address, interface without address can be displayed with a string of 0 |
| ifNetAddress | interface network address （IP） |
| ifNetMask | interface subnet mask |
| ifOperStatus | current interface's status:1=working，2=no working，3=test |
| ifInOctets | received total bytes, including framing characters |
| ifOutOctets | sent total bytes, including framing characters |

1. 【Total】:display checked equipment's total interfaces;
2. 【Active】:display checked active interfaces;
3. 【Port Browse】:List all interfaces and select and check corresponding port information.

#### 7.10.6.3 Service Statistics

Check IP group, TCP group, UDP group information in tested equipment MIB, including IP statistis, TCP statistics, UDP statistics, IP route table etc., as is shown in figure 7.10.11.

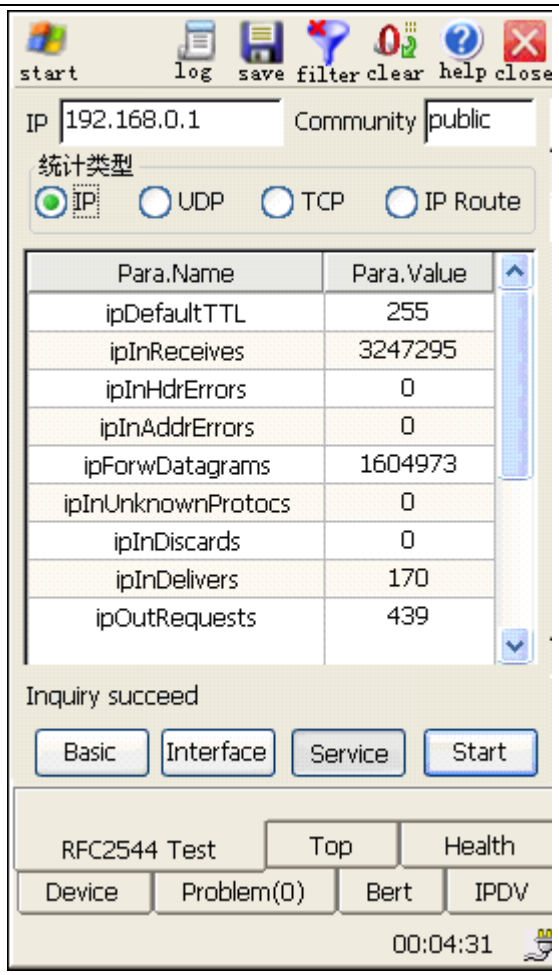



Figure 7.10.11 SNMP query

Parameter name and meaning of every interface's statistics item are as follows:

| Statistics type | parameter name | parameter meaning |
|---|---|---|
| **IP statistics** | ipDefaultTTL | value is default when the transmission layer does not provide TTL value |
| | ipInReceives | total IP datagrams received from all interfaces |
| | ipInHdrErrors | deserted datagrams because of header error |
| | ipInAddrErrors | deserted datagrams because of incorrect destination address |
| | ipForwDatagrams | datagrams that has tried retransmission once |
| | ipInUnknownProtocs | datagrams which has sent to local because of ineffective protocol field |
| | ipInDiscards | deserted received datagrams because of insufficient buffers |
| | ipInDelivers | IP datagrams delivered to appropriated protocol module |
| | ipOutRequests | IP datagrams passed to IP layer for transmission, not including those calculated in ipForwDatagrams |
| | ipOutDiscards | deserted output datagrams because of insufficien t buffers |
| | ipOutNoRoutes | deserted datagrams because the route can not be found |
| | ipReasmTimeout | reserved max seconds of received datagram films when you wait for reload |
| | ipReasmReqds | received IP datagram films that needs reload |
| | ipReasmOKs | IP datagrams that has reloaded successfuly |
| | ipReasmFails | failure caculation times of IP reload |
| | ipFragOKs | IP datagrams has been successful fragmented |

| | | |
|---|---|---|
| | ipFragFails | IP datagrams that need to be fragmented but fails becausue the sign of "no fragment" |
| | ipFragCreates | IP datagram films because of fragment |
| **TCP statistics** | tcpRtoMin | min retransmission timeout value caculated in millisecond |
| | tcpRtoMax | max retransmission timeout value caculated in millisecond |
| | tcpMaxConn | max TCP connection, if it is dynamic, the value is -1 |
| | tcpActiveOpens | status changes from CLOSED to SYN_SENT |
| | tcpPassiveOpens | status changes from LISTEN to SYN_RCVD |
| | tcpAttemptFails | Status changes from SYN_SENT or SYN_RCVD to CLOSED plus status changes form SYN_RCVD to LISTEN |
| | tcpEstabResets | status changes from ESTABLISHED or CLOSE_WAIT status to CLOSED |
| | tcpCurrEstab | Current status connectivity number at ESTABLISHED or CLOSE_WAIT |
| | tcpInSegs | 收到的报文段的总数 total input message segments |
| | tcpOutSegs | Total output message segments, except those include retransmission bytes |
| | tcpRetransSegs | total retransmitted message segments |
| **UDP statistics** | udpInDatagrams | UDP input datagrams |
| | udpNoPorts | UDP datagrams not sent to effective ports |
| | udpInErrors | UDP datagrams that input errrors |
| | udpOutDatagrams | UDP output datagrams |

in route table, the value meaning of "routing" protocol is shown in the following table:

| value | Route protocol | value | Route protocol |
|---|---|---|---|
| **1** | other | **8** | rip |
| **2** | local | **9** | is-is |
| **3** | netmgmt | **10** | es-is |
| **4** | icmp | **11** | ciscolgrp |
| **5** | egp | **12** | bbnSpflgp |
| **6** | ggp | **13** | ospf |
| **7** | hello | **14** | bgp |

### 7.10.7 Application Layer Performance

This function tests application layer server's response time, including MAX, MIN, AVG and "no response" times

#### 7.10.7.1 DNS Service

Test DNS server's domain name response time, as is shown in figure 7.10.12

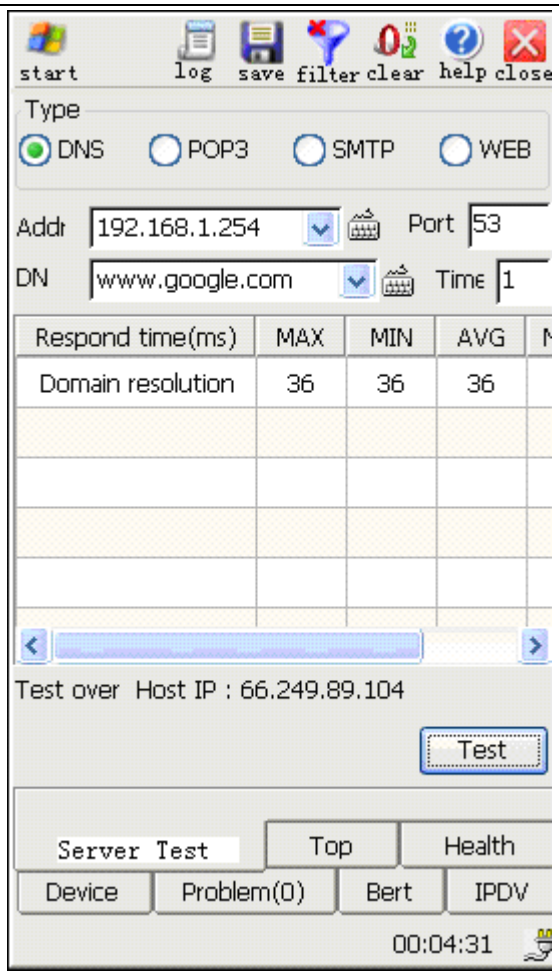



Figure 7.10.12 Application Layer Server Test——DNS

1. 【Addr】:Set IP address of DNS server, use DNS server found in "network scanning" function
2. 【Port】:Set Port No. of DNS service
3. 【Time】:Set times of repeated test
4. 【DN】:Set daomain name needs to be checked

1. The default port no. of DNS service is 53.
2. Display resolved IP address of domain name host on the left lower corner test status for successful response.

### 7.10.7.2 POP3 Service

Test POP3 mail server's response time, including user authentication, password authentication, status display, list search and no operation command etc.

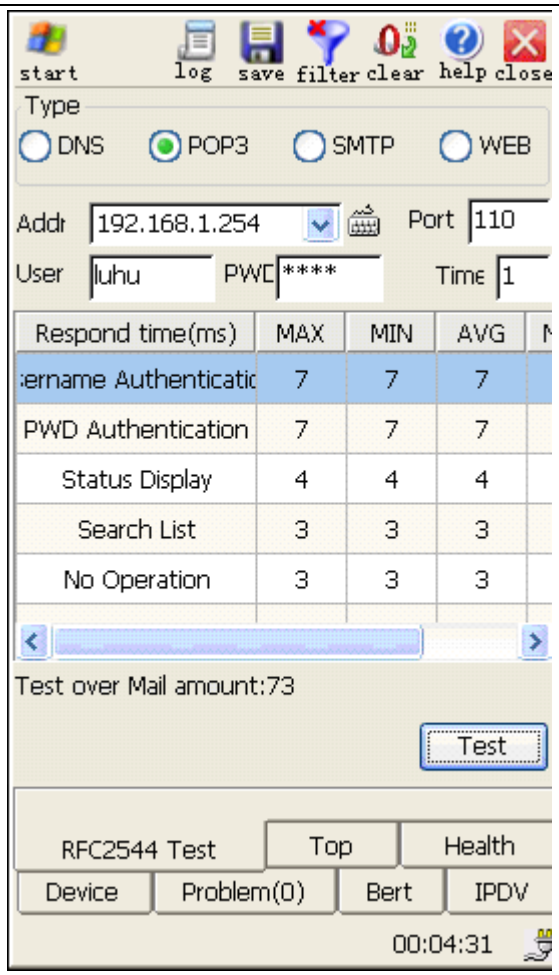


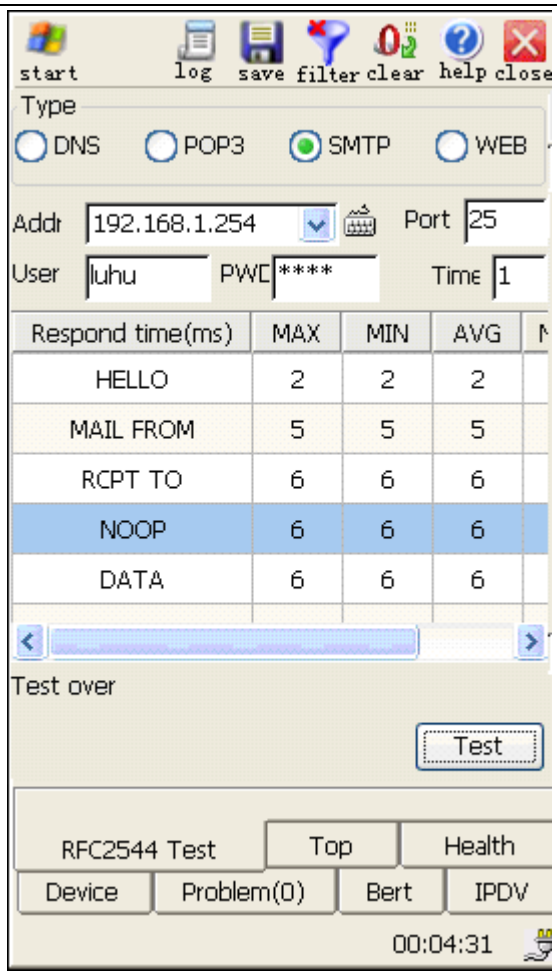

Figure 7.10.13 Application Layer Server Test——POP3

1. 【Address】:Set IP address of POP3 server, use checked POP3 server in "network scanning", or use DNS host address by checking DNS service.
2. 【Port】:Set port No. of POP3 service.
3. 【Time】:Set times of repeated test
4. 【User】:Set user name of login account
5. 【PWD】:Set login account's passwords

The default port No. of POP3 service is 110.

### 7.10.7.3 SMTP Service

Test response time of SMTP mail server, including HELLO, MAIL FROM, RCPT TO, DATA and NOOP etc., as is shown in figure 7.10.14.




Fiugre 7.10.14 Application Layer Server Test——SMTP

1. 【Address】:Set IP address of SMTP server, use checked SMTP server in "network scanning", or use DNS host address by checking DNS service.
2. 【Port】:Set port No. of SMTP service.
3. 【Time】:Set times of repeated test
4. 【User】:Set user name of login account
5. 【PWD】:Set login account's login account

The default port No. of SMTP service is 25.

#### 7.10.7.4 WEB Service

Test response time of WEB server, including HEAD and GET of customer request page, as is shown in figure 7.10.15

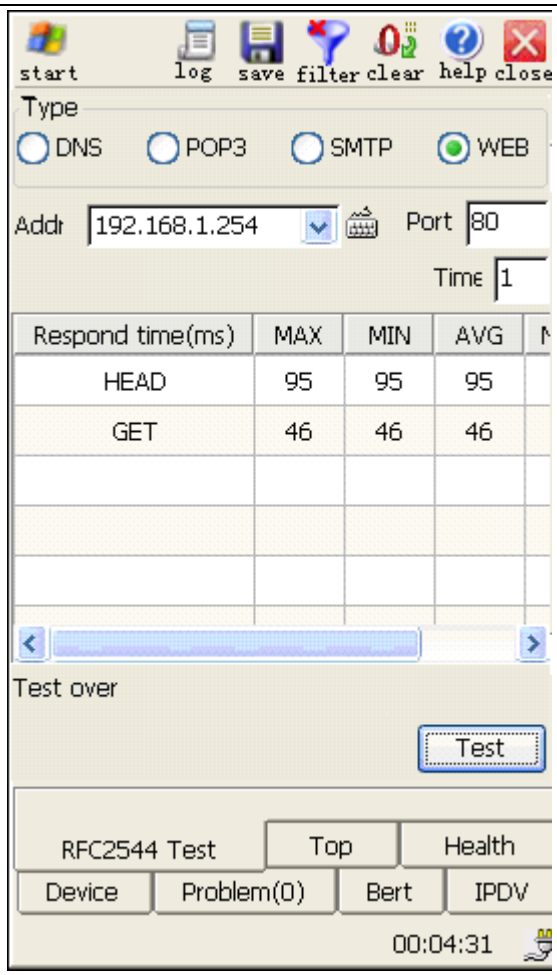



Figure 7.10.15 Application Layer Server Test——WEB

1. 【Addr】:Set IP address of SMTP server, use checked SMTP server in "network scanning", or use DNS host address by checking DNS service.
2. 【Port】:Set Port No. of WEB service
3. 【Respond time(ms)】:Set times of repeated tests

The default port No. of WEB service is 80.

### 7.10.8 WEB Browsing

GEA-8130A supports WEB browsing in LAN way and PPPOE way, as is shown in figure 7.10.6.


Figure 7.10.16 WEB Browsing

Connect to LAN through port 1, set port 1's IP address and DNS, enter into "network tool→ WEB browsing" and start IE explorer for web browsing

If LAN uses deputy internet, you need to set deputy parameter. Click explorer "check→Internet"and set deputy server IP and port, as is shown in figure 7.10.17.


Figure 7.10.17 IE Deputy Set

1. Suggest to open 1～2 pages for WEB browsing
2. The speed is slow when there are so many page content

When there are too many pages to be opened, the storage will not be sufficient

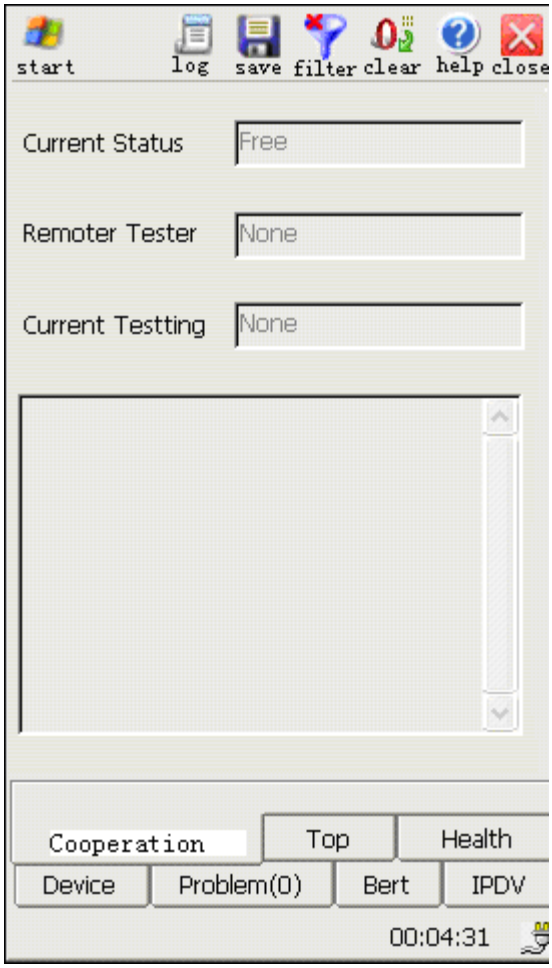
## 7.11 Test Cooperation

Test cooperation means the instrument is in the cooperation test status and cooperates other instrument to complete corresponding testing function

### 7.11.1 Mutual Cooperation

#### 7.11.1.1 Basic Function

Mutual cooperation is mainly used for cooperating far oppsite end tester for performance test. When tested networks' distances are far and two equipments are needed, far-end wokes under the cooperation of opposite end, as is shown in figure 7.11.1




Fiugre 7.11.1 Mutual Cooperation

1. 【Current Status】:display free or cooperation status;
2. 【Remoter Tester】:display far-end tester's IP address;
3. 【Current Testing】:When far-end tester is connected to this tester, display current testing item

#### 7.11.1.2 Topological Structure

Mutual cooperation's topological structure is shown in figure 7.11.2.


Fiugre 7.11.2 Mutual Cooperation Topology

### 7.11.2 Data Loopback

#### 7.11.2.1 Basic Function

Data loop back function can return the received data to sending end according to corresponding layer. GEA-8130A dual-ports can realize data loopback and select the layer of data loop back, as is shown in figure 7.11.3

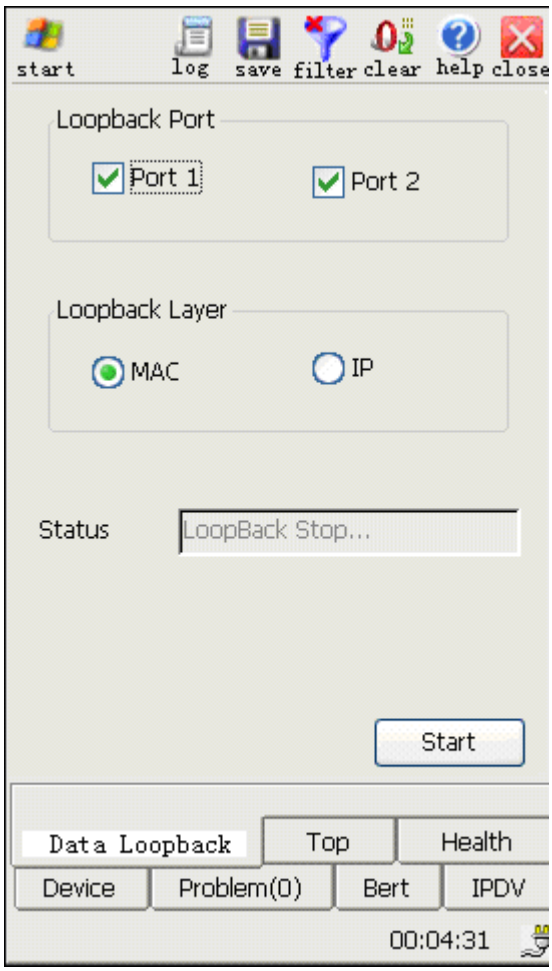



Figure 7.11.3 Data Loopback

1. 【Loopback Port】:select loop back's port, you can select port1 or port2;
2. 【Loopback Layer】:select MAC layer or IP layer:If you select MAC layer, you can send after you exchange source and destination MAC address for received data package; if you select IP layer, you can send after you exchange source and destination MAC address and IP address for received data package;
3. 【Status】:Display loop back status of current port, including data looping back or stopped data loopback.
4. 【Start】:Start or stop data loop back

#### 7.11.2.2 Topological Sturcture

Data loop back's topological structure is shown in figure 7.11.2.


Figure 7.11.4 Data Loopback Topology

## 7.12 Global Statistics Function

Whole statistics function is on Page 2～5 in "system information", including statistics (network statistics), health (network health), equipment (equipment identification) and problem (problem discovery), these statistics will always be in statistics monitoring status during the instrument operation period.

### 7.12.1 network statistics

Network Statistics is used for categories statistics of all data frames from boot or zero. According to different statistics, they can be divided into: general, length, broadcast / Pause, two-layer protocol statistics, three-layer protocol statistics, application layer protocol statistics, error, VLAN, DADI frame and error code, as is shown in Figure 7.12.1

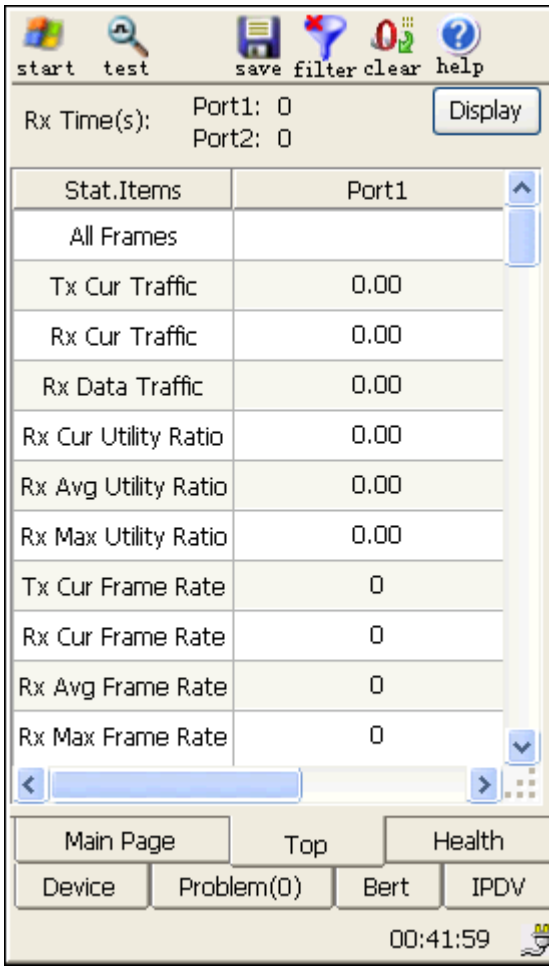



Figure7.12.1 Network Statistics

【Rx Time(s)】:Display respectively received data length of Port1 or Port 2 from boot to zero

【Display】:Click button and select category needs to be displayed, as is shown in figure 7.12.2

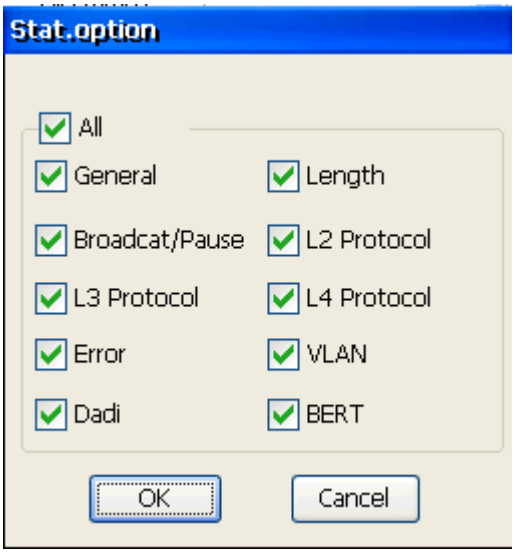



Figure 7.12.2 Display Items of Network Statistics

【General】:

1. 【Tx Cur Traffic】:traffic's sending data is displayed in Mbps, the accuracy is 0.01Mbps
2. 【Tx Cur Traffic】:Traffic receives one layer data is displayed in Mbps, the accuracy is 0.01Mbps
3. 【Rx Data Traffic】:the traffic receives two layers data is displayed in Mbps, the accuracy is 0.01Mbps
4. 【Rx Cur Utility Ratio】:receive two-layer data bandwidth utilization current value, the accurancy is 0.01%
5. 【Rx Avg Utility Ratio】:bandwidth utilization receives two-layer data average value, the accurancy is 0.01%
6. 【Rx Max Utility Ratio】:bandwidth receives two-layer data max utilization value, the accurancy is 0.01%
7. 【Tx Cur Frame Rate】:the current value of sending data frames every second
8. 【Rx Cur Frame Rate】:the current value of receiving data frames every second
9. 【Rx Avg Frame Rate】:the average value of receiving data frames every second
10. 【Rx Max Frame Rate】:max value of receiving data frames every second
11. 【Tx Frames】:total sending frames
12. 【Rx Frames】:total receiving frames
13. 【Tx Bytes】:total sending bytes
14. 【Rx Bytes】:total receiving bytes
15. 【Rx Error】:received error frames

【Length】:

1. 【Rx Min Len】:min received frame length
2. 【Rx Max Len】:max received frame length
3. 【Rx <64】:received frames whose length is less than 64
4. 【Rx =64】:received frames whose length is equal to 64
5. 【Rx 65~127】:received frames whose length is between 65-127;
6. 【Rx 128~255】:received frames whose length is between 128-255;
7. 【Rx 256~511】:received frames whose length is between 256-511;
8. 【Rx 512~1023】:received frames whose length is between 512-1023;
9. 【Rx 1024~1518】:received frames whose length is between 1024-1518;

10. 【Rx >1518】:received frames whose length is more than 1518

【Broadcast/Pause】:

1. 【Rx Unicast】:received unicast frames
2. 【Rx Multicast】:received multicast frames
3. 【Rx Broadcast】:received broadcast frames
4. 【Rx PAUSE】:received Pause frames

【L2 Protocol】:

1. 【Rx IP Frm.】:received IP frames
2. 【Rx IPX Frm.】:received IPX frames
3. 【Rx ARP Frm.】:received ARP frames
4. 【Rx RARP Frm.】:received RARP frames
5. 【Rx Banyan Frm.】:received Banyan frames
6. 【Rx DECnet Frm.】:received DECnet frames
7. 【Rx SNA Frm.】:received SNA frames
8. 【Rx Apple Talk Frm.】:received Apple Talk frames
9. 【Rx LLDP Frm.】:received LLDP frames
10. 【Rx AARP Frm.】:received AARP frames
11. 【Rx STP Frm.】:received STP frames
12. 【Rx IPV6 Frm.】:received IPV6 frames
13. 【Rx CDP Frm.】:received CDP frames
14. 【Rx PPPOE Frm.】:received PPPOE frames

【L3 Protocol】:

1. 【Rx TCP Frm.】:received TCP frames
2. 【Rx UDP Frm.】:received UDP frames
3. 【Rx OSPF Frm.】:received OSPF frames
4. 【Rx IGRP Frm.】:received IGRP frames
5. 【Rx ICMP Frm.】:received ICMP frames
6. 【Rx IGMP Frm.】:received IGMP frames
7. 【Rx EIGRP Frm.】:received EIGRP frames

【L4 Protocol】:

1. 【Rx HTTP Frm.】:received HTTP frames
2. 【Rx FTP Frm.】:received FTP frames
3. 【Rx DHCP Frm.】:received DHCP frames
4. 【Rx SMTP Frm.】:received SMTP frames
5. 【Rx POP3 Frm.】:received POP3 frames
6. 【Rx IMAP Frm.】:received IMAP frames
7. 【Rx DNS Frm.】:received DNS frames
8. 【Rx RIP Frm.】:received RIP frames
9. 【Rx RIP2 Frm.】:received RIP2 frames
10. 【Rx RIPNG Frm.】:received RIPNG frames
11. 【Rx BGP Frm.】:received BGP frames

12. 【Rx NETBIOS Frm.】:received NETBIOS frames
13. 【Rx SNMP Frm.】:received SNMP frames

【Error】:

1. 【Rx FCS Err】:received FCS error frames
2. 【Rx IP Err】:received IP checked error frames
3. 【Collision】:Total checked conflict frames

【VLAN】:

1. 【Rx VLAN Frm.】:received VLAN frames;
2. 【VLAN ID 】:the last received VLAN ID with VLAN;
3. 【VLAN Pri】:the last received VLAN priority with VLAN
4. 【Rx QinQ Frm.】:received QinQ frames
5. 【QinQ ID】:the last received QinQ ID with QinQ
6. 【QinQ Pri】:the last received QinQ priority with QinQ

【DADI】:

1. 【Tx Cur Traffic】:traffic's sending data is displayed in Mbps, the accuracy is 0.01Mbps
2. 【Tx Cur Traffic】:traffic receives one-layer data is displayed in Mbps, the accuracy is 0.01Mbps
3. 【Rx Data Traffic】:the traffic receives two-layer data is displayed in Mbps, the accuracy is 0.01Mbps
4. 【Rx Cur Utility Ratio】:bandwidth utilization receives two-layer data current value, the accurancy is 0.01%
5. 【Rx Avg Utility Ratio】:bandwidth utilization receives two-layer data average value, the accurancy is 0.01%
6. 【Rx Max Utility Ratio】:bandwidth utilization receives two-layer data max Rx utilization value, the accurancy is 0.01%
7. 【Tx Frames】:total sending frames
8. 【Rx Frame】:total receiving frames
9. 【Tx Bytes】:total sending bytes
10. 【Rx Bytes】:total receiving bytes
11. 【Rx Out Of Seq.】:received total disordered frames
12. 【Rx Err Frm.】:received error frames
13. 【Drop Frm.】:lost frames in sending precess

### 7.12.2 Network Health

Received data in the network through statistics, display network's operation status at present: stable or not, there exists potential problems or not, as is shown in figure 7.12.3:

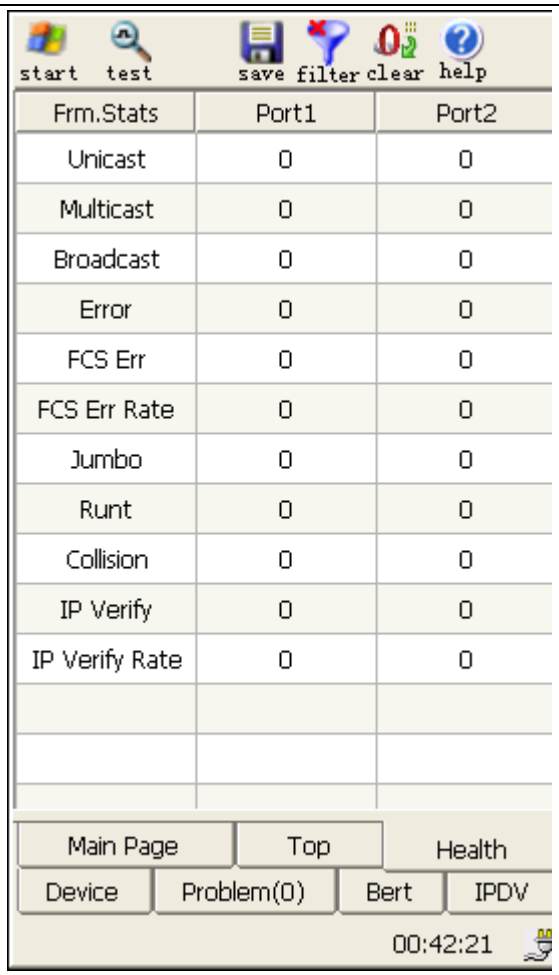



Figure 7.12.3 Network Health

Statistics Items:

1. 【Unicast】:received unicast frames
2. 【Multicast】:received multicast frames
3. 【Broadcast】:received broadcast frames
4. 【Error】:error frames received by port
5. 【FCS Error】:FCS error frames received by port
6. 【Jumbo】:ultra-long frames received by port
7. 【Runt】:ultra-short frames received by port
8. 【conflict frames】:conflict frames received by port
9. 【IP check error frame】:Received IP check error frames

### 7.12.3 Equipment Identification

Equipment identification can indentify existed equipment in the network through monitoring various information sent by network equipment, which is shown in figure 7.12.4:

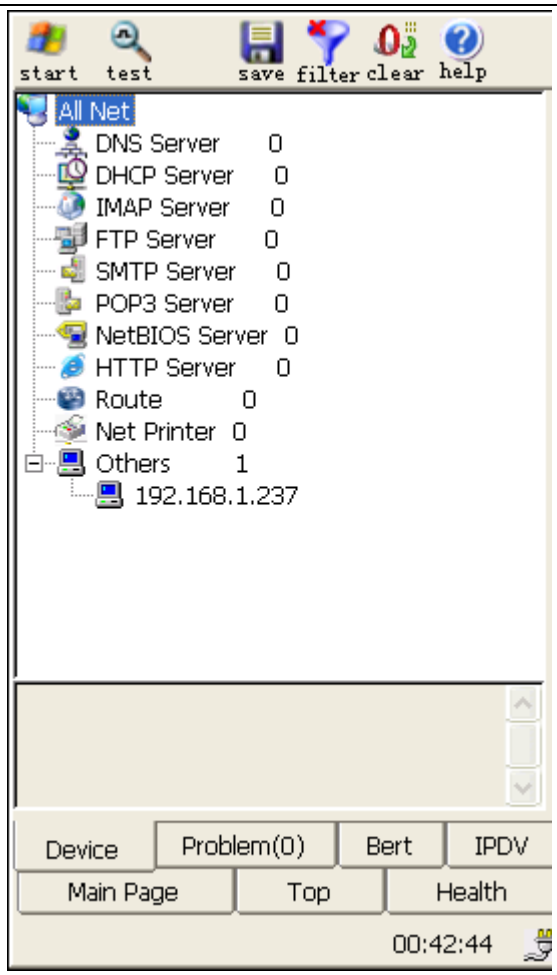



Figure 7.12.4 Equipment Identification

【Result】:display discovered equipment and type, the equipments that can be analyzed include DNS server, IMAP server, FTP server, SMTP server, POP3 server, NETBIOS server, router, network printer and other equipment (such as computer)

【Detail】:Click equipmet and display detailed description below, including equipment's IP address, MAC address and setting information.

The instrument defaults host's port1 is another equipment.

### 7.12.4 Problem Discovery

Problem discovery is used to report all network problems from boot or zero, including physical connectivity, traffic problem and application layer problem, as is shown in figure 7.12.5

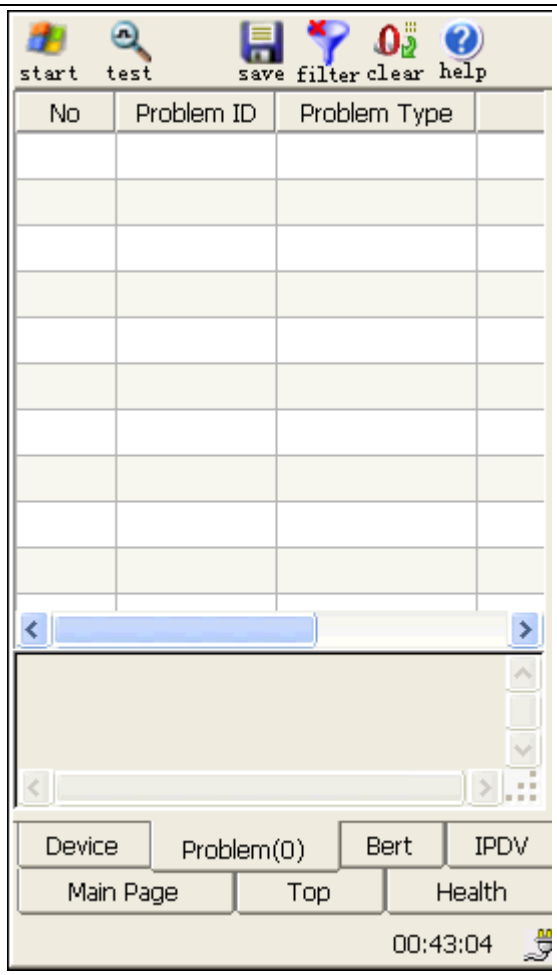



Figure7.12.5 problem discovery

【Result】:display discovered problems overview, including problem no, problem type, IP address of host that found problems and discovered time;

【Detail】:Click problem and display detailed problem description below the table.

## 7.13 File Management

### 7.13.1 File Storage

Click  at the top of every tested page and save present test configuration, statistics information or test results. The file storage dialogue box is shown in figure 7.13.1:

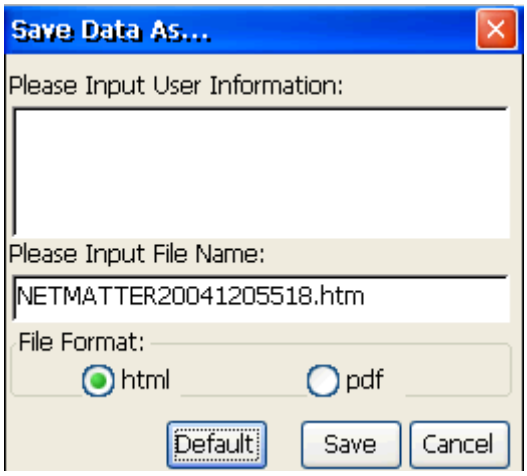



Figure 7.13.1 :file storage

1. 【User Information】:user can input and store relevant information for checking
2. 【File Format】:Set stored file type, GEA-8130A supports HTML and PDF.
3. 【Default】:Use default file name, composed by the test function's English name and test time.
4. 【Save】:click and save file
5. 【Cancel】:Cancel stored operation

### 7.13.2 File Manage

Realize the check, management and output of stored test results and configurate file's input and output, as is shown in figure 7.13.2.

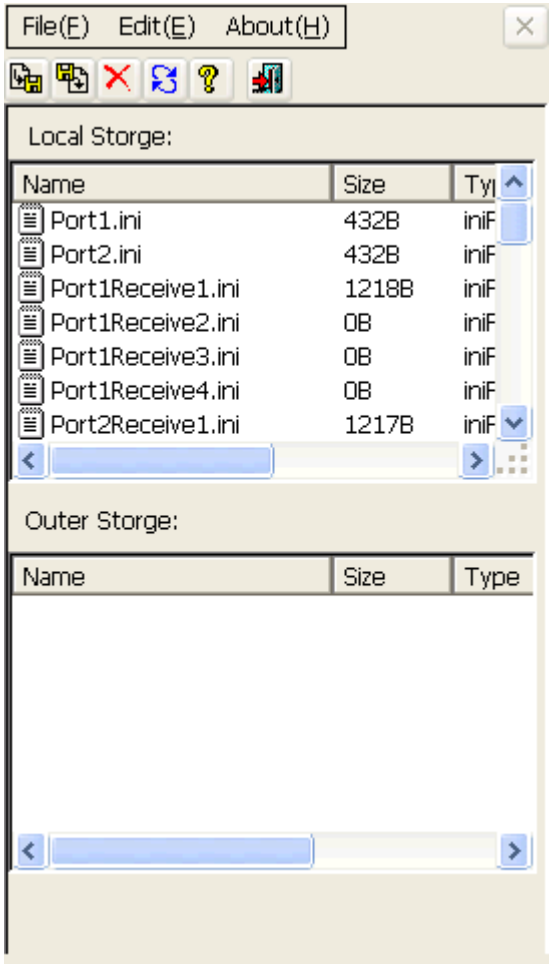



Figure 7.13.2 test data management

1. 【File】menu:Click and select checked test file, configuration file or exit system.
   a） 【Test file】:select test data's file and check stored data, including traffic test, network statistics, RFC2544 performance test, Ping test, Traceroute, network scanning, network health, problem discovery, main interface, SNMP query, application layer performance test and information capture
   b） 【Config】:select configuration data and display system configuration parameter in local stored list
   c） 【Exit】:Click and quit data management system
2. 【Edit】menu:Click and manage stored data, including input, output, delete, delete all and refresh.
3. 【About】:Click and check file manager version information

Toolbutton

1. 【Input】:Import the file to local storage from an external storage device, such as copy to instrument's memory card from U disk;
2. 【Output】:Export the file to external storage from local storage equipment, such as copy to U disk form instrument's memory card
3. 【Delete】:delete selected data
4. 【Refresh】:refresh the page
5. 【Help】:help file pops up
6. 【Exit】:Exit data management

Before copy the data, please ensure if the U disk has been inserted and indentifed coccrectly (existing icon )

## 7.14 System Management

System management is used for setting system's relevant parameter.

### 7.14.1 System Setting

System parameter setting is shown in figure 7.14.1

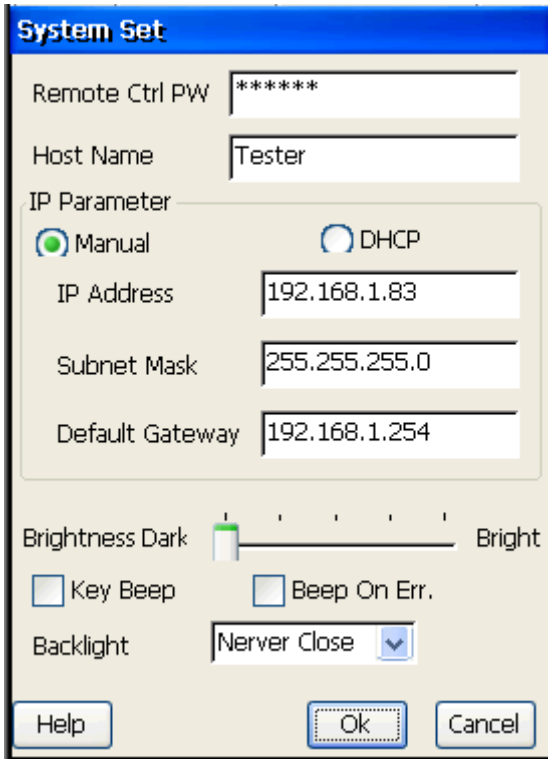



Figure 7.14.1systme setting

1. 【Remote Ctrl PWD】:input remote control password and start remote control (tick √ 【Remoted Control】in 【Start】→【System Manage】)
2. 【Host Name】:set equipment name
3. 【IP Parameter】:Set configuration way of system network parameter, select manual setting or DHCP;It can not be modified in remote control status.
   a） 【IP Address】:It is effective for manaual setting and set port's static IP address, such as

192.168.1.1; the text box is grey for DHCP and display automatically acquired IP address;

b） 【Subnet Mask】:It is effective for manaual setting and set IP address' subnet mask; the text box is grey for DHCP and display automatically acquired IP address;

c） 【Default Gateway】:it is effective for manaual setting and set network's default gateway address; The text box is grey for DHCP and display automatically acquired IP address (if DHCP server can configurate gateway);

d） 【Brightness Dark】:User can drag the "bright / dark" scroll bar according to test environment and adjust the screen brightness;

4. 【Key Beep】:Start key sound or not. If the function starts, there will be key sound when you press the button every time;
5. 【Beep On Err.】:Start error code sound or not. If the function starts, there will be alarming in error code second;
6. 【Backlight】:For saving power, user can close screen backlight without long time operation and select 15 seconds～30 minutes waiting time without operation or never close. User click touch screen or any button (except power button) then the backlight will be opened automatically.

### 7.14.2 Scrren Calibration

GEA-8130A adapts touch screen stylus operation and needs screen calibration before use, the steps are as follows:

the first step:click 【System Manage】, enter into【Screen Adjust】.

As is shown in figure 7.14.2

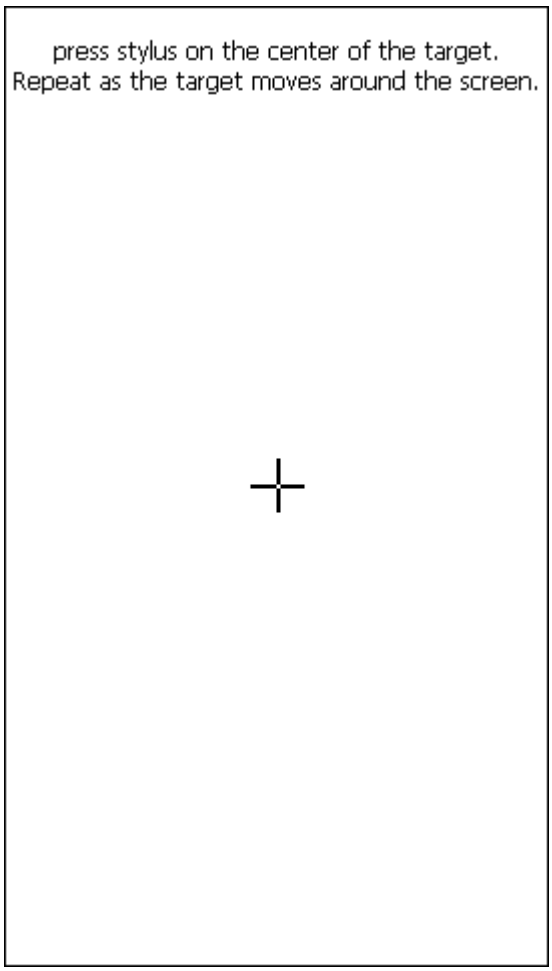



Figure 7.14.2 Screen Adjust

the second step:Use stylus to click slightly the central point of cross cursor on the screen until the cursor moves.

the third step:The cursor will move in order from the screen's central point to the left upper corner, left lower corner, right lower corner and right upper corner. At every location, you need to repeat the third step's operation precess for calibration

the fourth step:After finishing the calibration, exit【Screen Adjust】.

The click should be perpendicular to the touch screen and click the central point of the cross cursor. The calibration will be repeated if the calibration is not successful

### 7.14.3 Factory set

Click 【Factory Set】 and set all parameters as default factory-set. If the default parameters must be effective, you must manually restart system.

### 7.14.4 Version Upgrading

At present the system only support U disk upgrading way.

The steps are as follows:

1. Copy upgrading package to root directory of U disk;
2. Insert U disk to the right USB port of tester;
3. 【System Manage】→【System Update】,The system will automatically retrieve the software upgrading package, select the software version needs upgrading. If it upgrades, it will display upgrading status and complete, or else error message will appear;
4. After the upgrading, restart the system, the upgrading succeeds and the instrument can work normally.

In the process of upgrading, please keep U disk is always in the connection status.

### 7.14.5 Remote Control

Tick √ for remote control and connect GEA-8130A remotedly and remote control GEA-8130A. Set remote login password in 【Start】→【System Manage】→【System Set】

User can connect in the PC with incidental remote connection software.

## 7.15 About

Click【Start】→【About】, user can check authorization of instrument product version, system version, software version, product SN, hardware SN and software and hardware configuration.

# 8 Technical Index

1. test port:10/100/1000BASE-T electrical package、100/1000BASE-X 光口 optical package
2. suppport protocol: DIX（Ethernet II）/802.3 SNAP
3. operation mode: touch screen
4. data storage: memory card
5. display: color 4.3"LED, resolution 480×272 pixels
6. weight:(including battery)
7. power supply:
   a) removable battery, continuous test time is more than 7 hours
   b) external DC adapter, input 100V~240V 50/60Hz，output 15V/3A

8. Dimensions (length×width×height): 210×110×60 (mm)$^3$
9. external interface:ethernet interface, power interface

# 9 Service Information

Web Site: www.lzdd.com

Business Telephone: (0086)-10-82511182

Technical Support Telephone: (0086)-10-82867177

# 10 Parapharazing

## 10.1 DIX Frame Format

The DIX frame consists of header, destination address, source address, type, netload and FCS. The length of the internal overhead field is fixed; The size of the data field ranges from 46 bytes to 1500 bytes.

| 6 Bytes | 6 | 2 | 变长(46~1500) | 4 |
|---|---|---|---|---|
| **Destination MAC** | **Source MAC** | **Frame Type** | **Data** | **FCS** |

## 10.2 802.3 SNAP Frame Format

The 802.3 SNAP frame consists of destination address, source address, 802.2 DSAP, SSAP, control byte, 802.2 SNAP code, type and FCS. The length of the internal overhead field is fixed; The size of the net load field ranges from 38 bytes to 1492 bytes.

| 802.3 | | | 802.2 | | | 802.2 SNAP | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 Bytes | 6 | 2 | 1 | 1 | 1 | 3 | 2 | Variable Length (38~1492) | 4 |
| **Destination MAC** | **Source MAC** | **length** | **DSAP** | **SSAP** | **CNTRL** | **Code** | **type** | **data** | **FCS** |

## 10.3 VLAN Frame Format

| 6 Bytes | 6 | 4 | | 2 | 46~1500 | 4 |
|---|---|---|---|---|---|---|
| **Destination MAC** | **Source MAC** | **802.1Q** | | **Length/type** | **data** | **FCS** |
| | | TPID | TCI | | | |

The 4-byte 802.1Q Tag head includes a 2-byte Tag Protocol Identifier (TPID, its value is 8100), and a 2-byte Tag Control Information (TCI), The TPID is a new type defined by IEEE, which indicating the text with 802.1Q Tag. For details about the 802.1Q Tag head, see the Figure shown below.

### 10.3.1 802.1Q Frame Head Format

VLAN Identified( VLAN ID ):This is a 12-bit domain, indicating the ID of a VLAN. There are altogether 4096 IDs. Each data packet sent out from the 802.1Q protocol supported host contains this domain to indicate which VLAN network it belongs.

Canonical Format Indicator( cfi ):It is the frame format for the data switching between the bus-type Ethernet and the FDDI and token ring networks.

Priority:These 3 bits indicate the priority (PRI) of the frame, which has 8 levels altogether and is mainly for the judgment of which data packet has priority to be transmitted.

| Byte1 | | | | | | | | Byte2 | | | | | | | | Byte3 | | | | | | | | Byte4 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPID(TAG Protocol Indentified) | | | | | | | | | | | | | | | | TCI(Tag Control Information) | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Priority | | | CFI | Vlan ID | | | | | | | | | | | |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

# 11 Troubleshooting

| PENOMENON | SOLUTIONS |
|---|---|
| The instrument can not be opened when you press POWER | The battery gauge may be insufficient, connect adaptor and check if the charging indicator is blinking. |
| You can not copy data after you insert U disk | When you insert U disk, does not appear after a period of time, possibly U disk is not compatible with GEA-8130A, change U disk and try it again. |
| Rx light is always on when you connect 1000M electrical package | Please check used twised pair for connection, you should use super 5e UTP or CAT 6 cable. |
| Instrument rate indicator is not on when you connect 100/1000M optical package | Check port configuration and confirm if the interface type is "fiber";<br>Confirm if Tx and Rx are reversed;<br>Confirm if instrument SFP type cooperates with other end (wavelength and mode);<br>Confirm if interface rate/working mode cooperates with opposite end interface. |
| Detect a large amount of conflicts when you send traffic | The tested link may be in half-duplex status, please check port parameter setting. |
| | |
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| | |