

**LINEEYE**

# **LE-580FX QoS User's Manual**

V 4

March, 2011

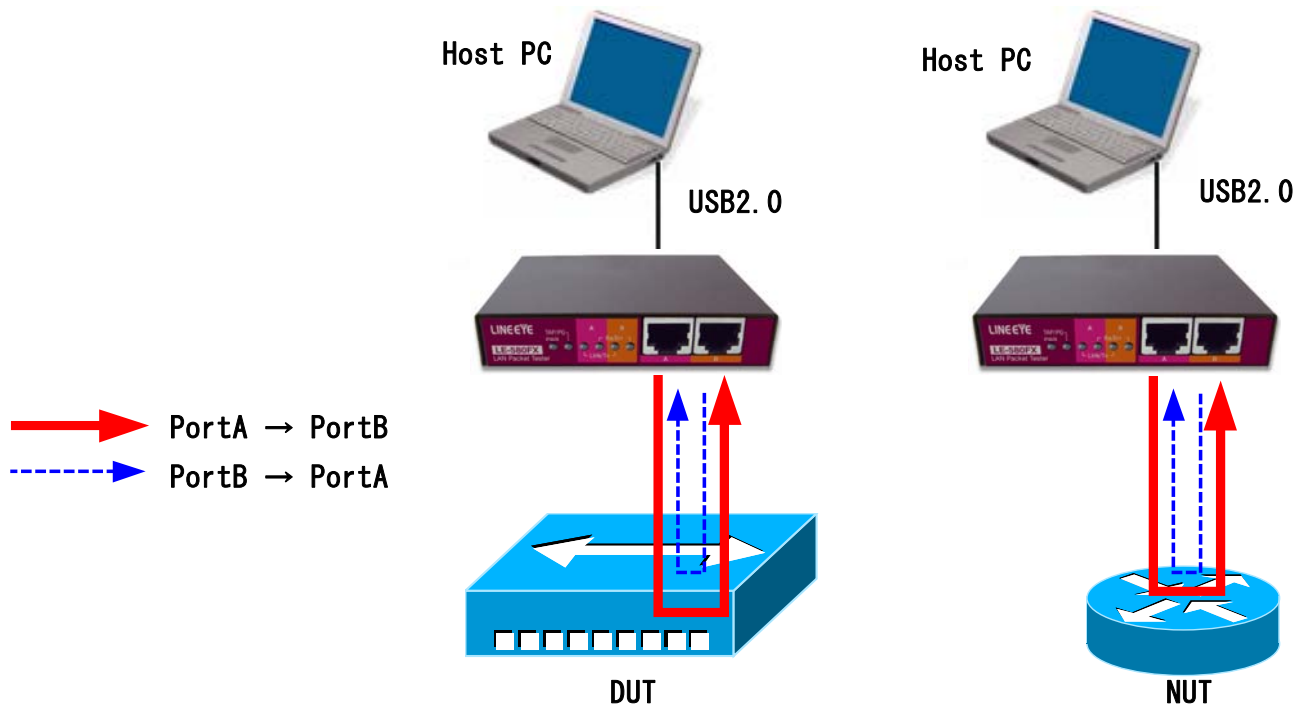
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## 1. Function Description

LE-580FX QoS only runs test in Packet Generation (PG) mode. Choose the target DUT (device under test) or NUT (network under test) and connect two ports (A and B) of LE-580FX to it. Test data is either transmitted from Port A to Port B or from Port B to Port A

When both Ports are linked, the LED of PG (used as TAP indicator as well) will be Amber.



## 2. LE-580FX QoS Software Installation

### 2.1 Installation

<Notice>

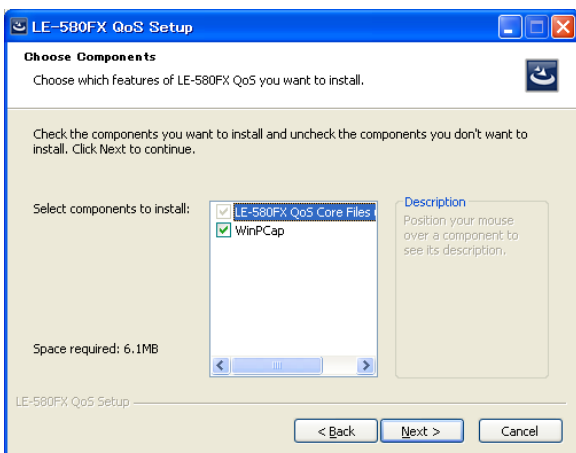
When you install the LE-580FX QoS, WinPcap **Ver4.1.1** will automatically be installed. If you have other version of WinPcap in your PC already, please uninstall it and then install LE-580FX QoS.



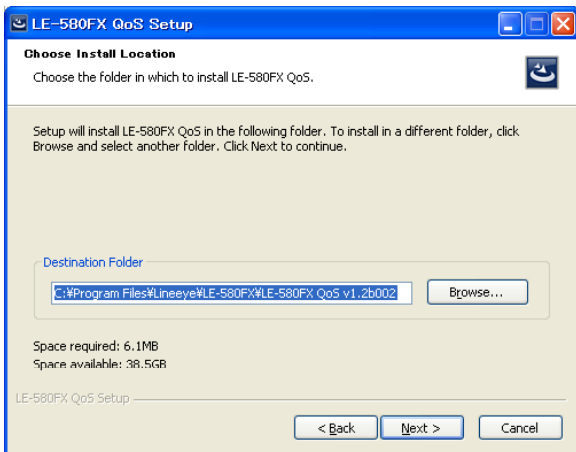
Setup program indicating LE-580FX QoS will be installed. Click **Next** for next step.



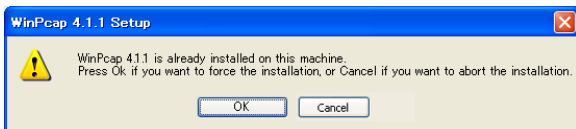
Please read license agreement.  
If confirm, please click **I Agree** for next step.



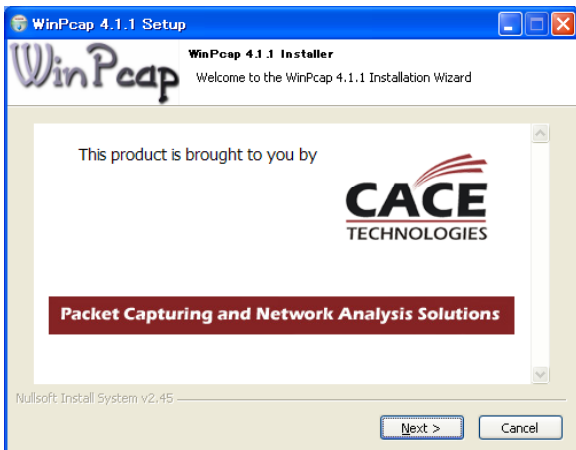
Please select installation of WinPcap or not.  
Click **Next** for next step.



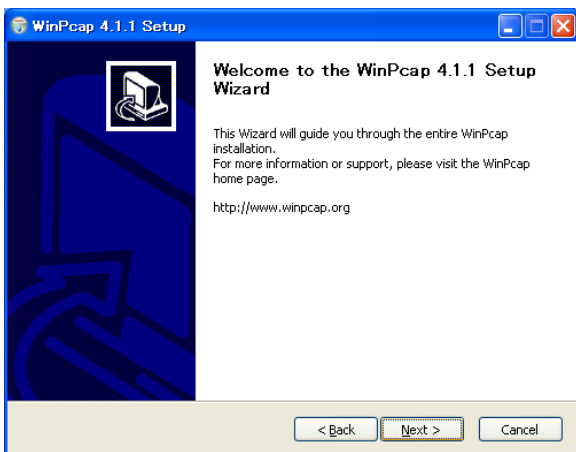
Click **Next** to begin the installation.



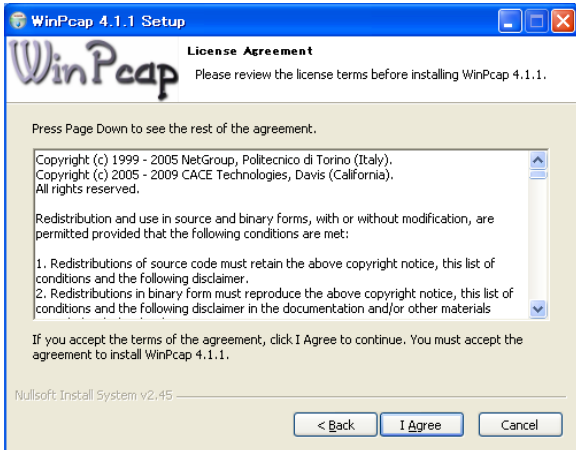
This message will appear if you already have WinPcap4.1.1. Click **OK**.



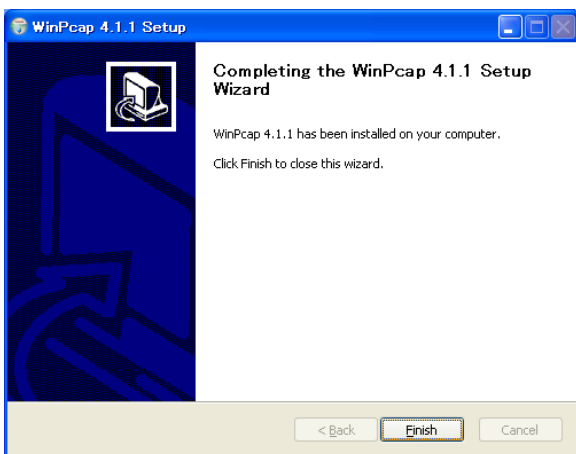
WinPcap installer will start.  
Click **Next**.



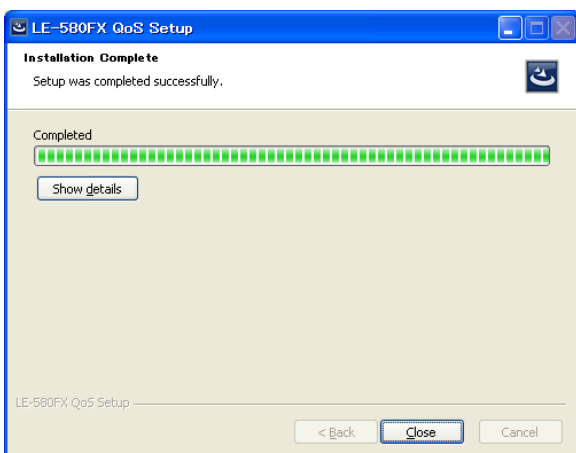
Click **Next** and start installation of WinPcap.



Read the License Agreement and click **I Agree** if you agree with the license.



This window will appear when WinPcap installation is finished. Click **Finish**.



Click **Close** to complete installation.



LE-580FX QoS shortcut icon appears on desktop.

## 2.2 Uninstallation

Click Start menu and then , select “Uninstall LE-580FX QoS” at “Program(All programs)”->“Lineeye”->“LE-580FX”->“LE-580FX QoS”.

Otherwise:

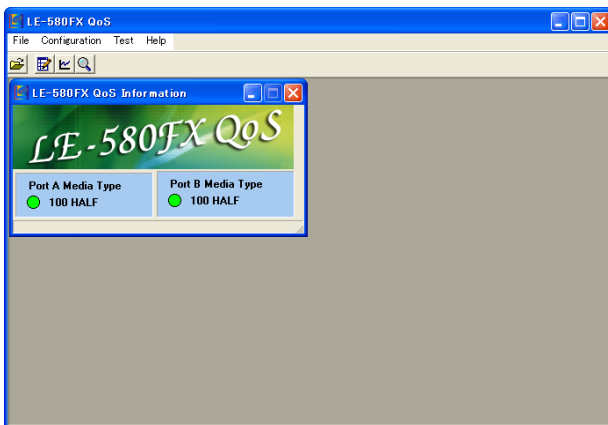
For Windows Vista, open “Programs and Features” in the Control Panel, choose “LE-580FX QoS” and then click “Uninstall” to uninstall.

For Windows XP, open “Add or Remove Programs” in the Control Panel, choose “LE-580FX QoS” and then click “Change/Remove” to uninstall.

For Windows 2000, open “Add or Remove Programs” in the Control Panel, choose “LE-580FX QoS” and then click “Remove” to uninstall.

(Note: WinPcap will not be uninstalled automatically.)

## 3. Main Window



Top-level menu in toolbar includes **File** menu, **Configuration** menu, **Test** menu, and **Help** menu.

LE-580FX QoS Information appears to show Media Type of Port A and B.

Options for **File** menu are described below:

Menu Option	Usage
Load	Loads a saved log file (*.csv) and display in the window
Exit	Exits LE-580FX QoS

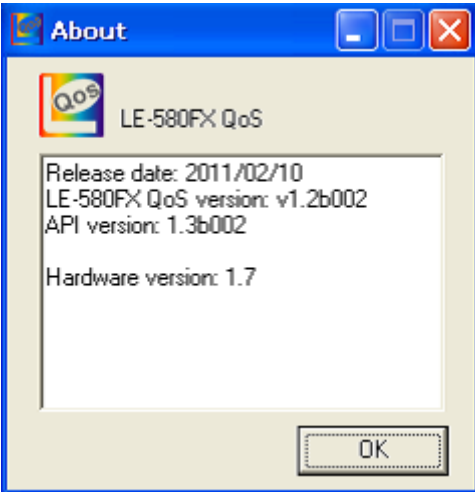
Options for **Configuration** menu are described below:

Menu Choice	Usage
Set Test Configuration	Shows a window to set configuration to run test
Set Chart Color	Shows a window to select items to edit color.





Options for **Test** menu are described below:

Menu Option	Usage
Test Panel	Shows all result data in tables and charts.
Detailed Counter	Shows a window to view detailed statistics of both ports.

Options for **Help** menu are described below:

Menu Option	Usage
About	 <p>Provide information about the current version of LE-580FX QoS.</p>

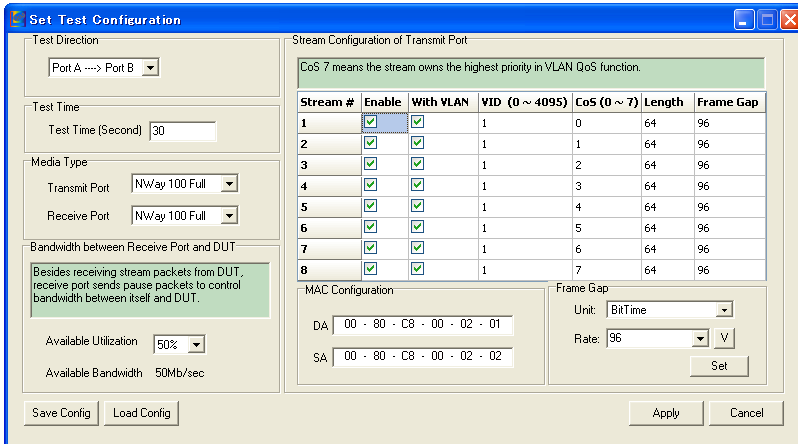
The buttons in toolbar are described in the table below:

Figure	Function
	Opens a saved log file.
	Shows configuration panel, which operates the same as "Set Test Configuration".
	Shows "Test Panel".
	Shows "Detailed Counter".

## 4. Configuration Window

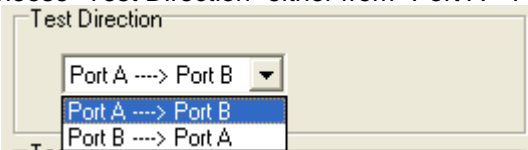
### 4.1 Set Test Configuration

Go to **Configuration =>Set Test Configuration** to show "Set Test Configuration Window".

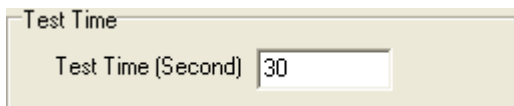


To setup configuration for transmit port, there are **Test Direction** pane, **Test Time** pane, **Media Type** pane, **Bandwidth** pane, **Stream Configuration** table, **MAC Configuration** pane, and **Frame Gap** pane.

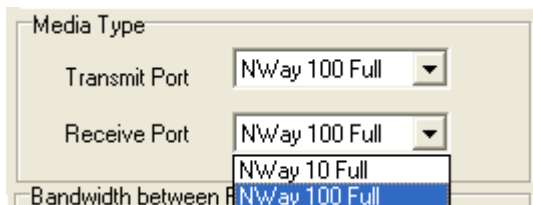
Choose "Test Direction" either from "Port A→Port B" or "Port B→Port A".



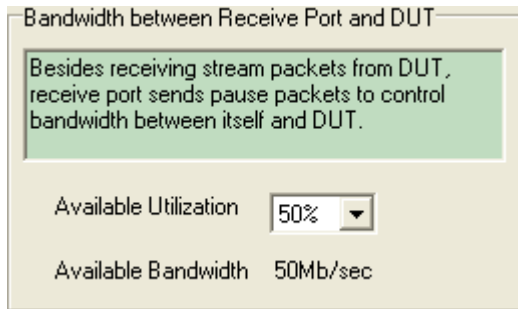
**Test Time** ranges from 5 to 3,600 (default) seconds.



**Media Type** controls the use of auto-negotiation to notify various speeds and modes of transmission and receiving.



**Bandwidth** between Receive Port and DUT allows receive Port to send pause packets to control bandwidth between itself and DUT in order to diminish/reduce packet losses by choosing available utilization field. It could also demonstrate the priorities of streams in VLAN CoS function.



In **Stream Configuration** table, there are total of eight (8) streams to be activated by checking “Enable” boxes. Check with VLAN boxes to provide additional VID (0~4095) and CoS (0~7) parameters in VLAN function.

Stream Configuration

CoS 7 means the stream owns the highest priority in VLAN QoS function.

Stream #	Enable	With VLAN	VID (0 ~ 4095)	CoS (0 ~ 7)	Length	Frame Gap
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	0	64	96
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	3	64	96
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	7	64	96
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5	3	64	96
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6	4	64	96
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	7	5	64	96
7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8	6	64	96
8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9	7	64	96

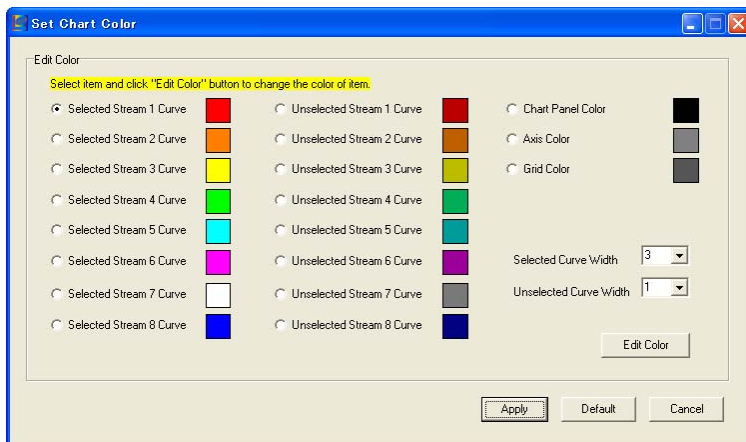
**Frame Gap:** Choose desired unit and rate for Frame Gap and then click **Set** to setup frame gap for selected streams which you have checked the Enable boxes. Set the speed to transmit packets by clicking **V** button to pop up conversion table of all kinds of units. The same value will be shown in the different units.

nsec:	960
usec:	0.96
msec:	0.00096
sec:	0.00000096
packet/sec:	142045.5
%Utilization:	100.00
DataBits/sec:	72727273
FrameBits/sec:	77272727
TotalBits/sec:	86363636
BitTime:	96

Click **Apply** button **Apply** after setting all configuration completely.

Click **Save Config** button to save the configuration that you have made. Click **Load Config** button to load the configuration that you have made.

### 4.2 Set Chart Color



Change the color of each curve to distinguish the curves in the chart. Select item and click **Edit Color** button

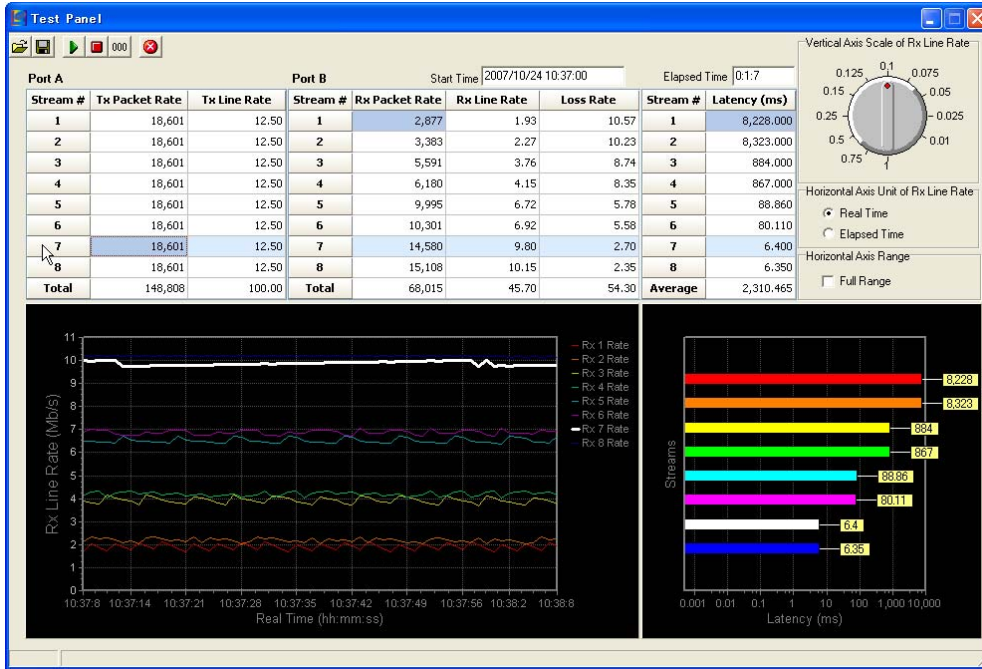


in right lower corner to bring out a palette to choose color. After all selections are complete,

click **Apply** button **Apply** to enforce them.

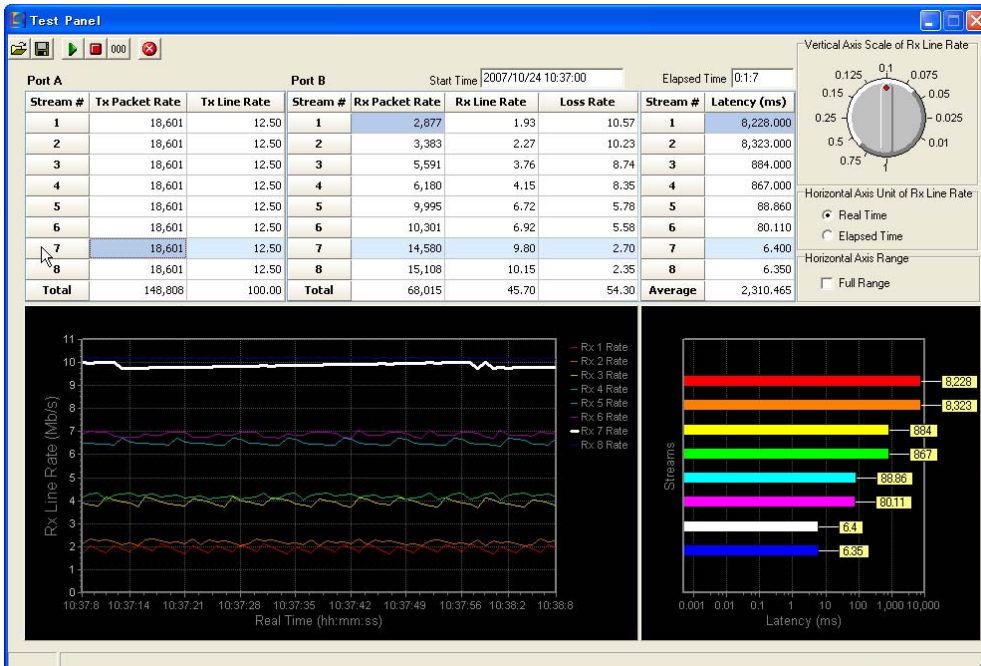
<Example>

Click any pane in "stream 7". Then the curve will be shown in bold white. Clicks any pane in "stream 2". Then the curve will be shown in bold orange while the curve of "stream 7" turns into gray.



## 5. Test Window

### 5.1 Test Panel



The buttons in **Test Panel** toolbar are described in the table below:

Figure	Function/Usage
	Opens the saved file (*.csv).
	Saves current log to *.csv file.
	Starts test.
	Stops test.
	Clears counter.
	Closes Test Panel.

Table Port A

Port A		
Stream #	Tx Packet Rate	Tx Line Rate
1	18,601	12.50
2	18,601	12.50
3	18,601	12.50
4	18,601	12.50
5	18,601	12.50
6	18,601	12.50
7	18,601	12.50
8	18,601	12.50
<b>Total</b>	148,808	100.00

Tx Packet Rate indicates the number of packets each stream transmits per second. Tx Line Rate is the bandwidth(Mbps) of each stream transmits.

Table Port B

Port B		Start Time 2007/10/18 20:04:05	
Stream #	Rx Packet Rate	Rx Line Rate	Loss Rate
1	2,865	1.93	10.57
2	3,260	2.19	10.31
3	6,143	4.13	8.37
4	6,441	4.33	8.17
5	9,818	6.60	5.90
6	10,071	6.77	5.73
7	14,869	9.99	2.51
8	15,121	10.16	2.34
<b>Total</b>	68,588	46.10	53.90

Rx Packet Rate indicates the number of packets of each stream receives per second. Rx Line Rate indicates the bandwidth of received stream packet. Loss Rate is the difference between Tx Line Rate and Rx Line Rate.

In another word, Tx Line Rate is equivalent to the total of Rx Line Rate and Loss Rate. For example, at the "stream 8", Tx Line Rate is 12.5 Mbps, which is equal to Rx Line Rate of 10.16Mbps plus Loss Rate of 2.34 Mbps.

**Latency**

Latency indicates the time of each stream spends transmitting from one port to the other.

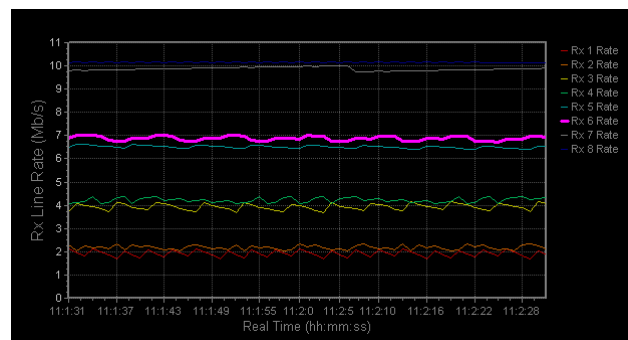
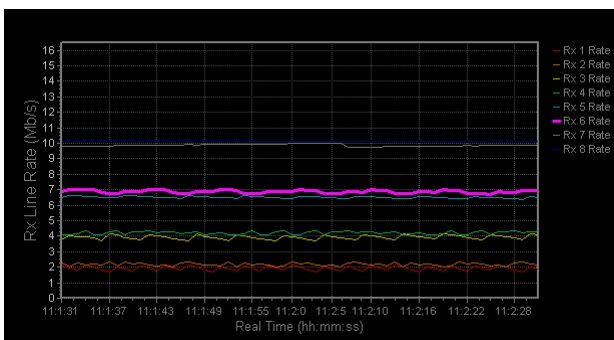
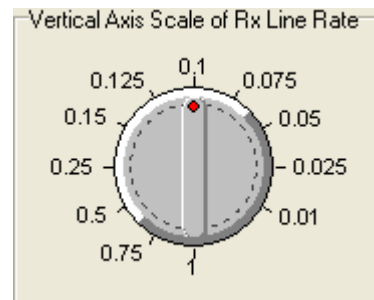
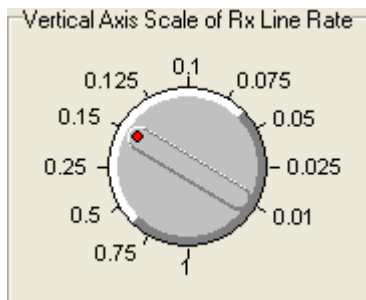
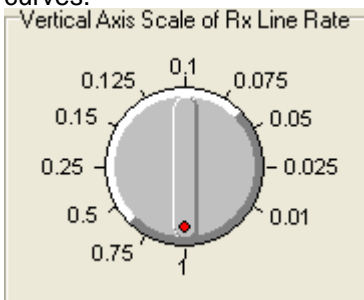
With higher priority, the faster the stream transmits and the shorter it takes, which makes Latency relatively smaller.

The unit of Latency is millisecond. ( $10^{-3}$  second)

Stream #	Latency (ms)
1	8,296.000
2	8,358.000
3	803.000
4	896.000
5	88.510
6	80.700
7	6.950
8	6.310
<b>Average</b>	2,316.934

**Vertical Axis Scale of Rx Line Rate**

Turn the switch mode to the relevant scale to adjust an appropriate interval of Vertical Axis for more distinct curves.



Horizontal Axis Unit of Rx Line Rate

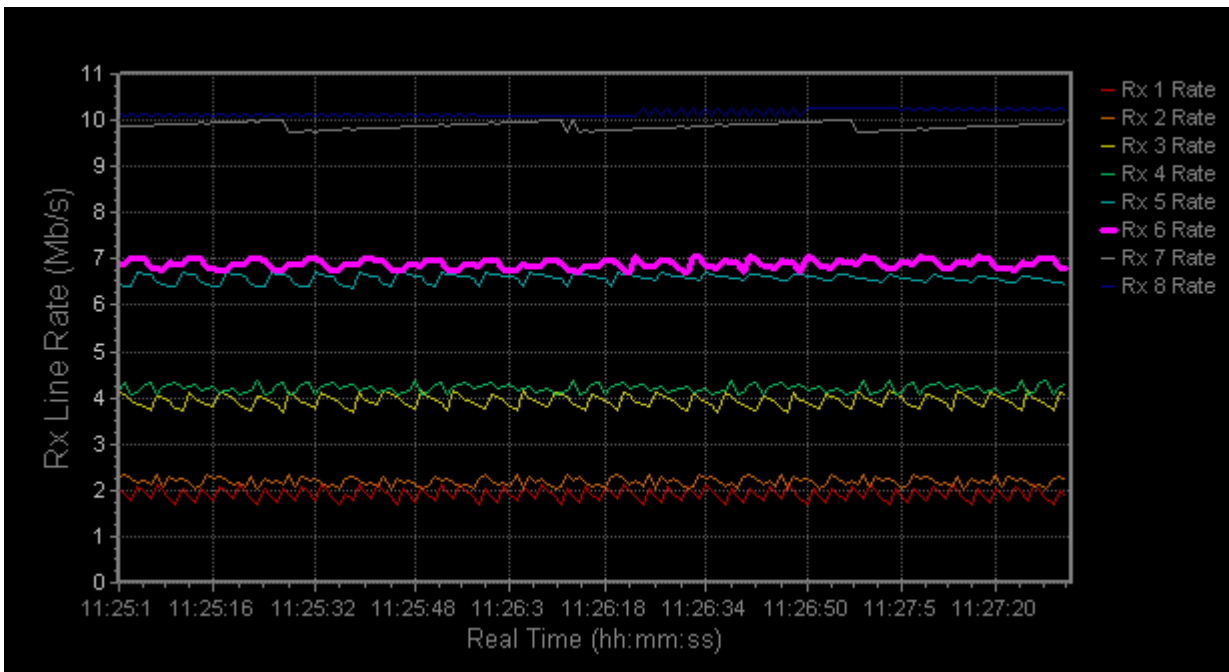


Choose between “Real Time” and “Elapsed Time” to determine Horizontal Axis Unit of Rx Line Rate.

Horizontal Axis Range

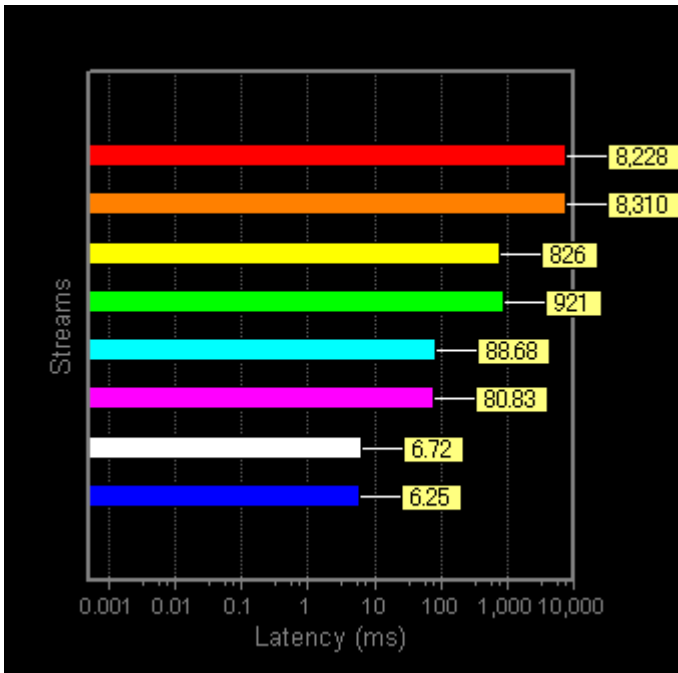


The curve chart shows only the latest 60 seconds of the running test as Horizontal Axis Range while test proceeds. Whenever test is suspended, click “Full Range” to emerge the whole elapsed time.



In this chart, the total test time is from 11:25:1 to 11:27:31, which lasts 2 minutes and 30 seconds.

Latency Chart



The length and the numbers on the bar change simultaneously as the test proceeds.

Click "Start to test " button to begin the test. The result of the test will be shown on the "Test Panel" or "Counter Panel" at the real time.

Click "Stop test" button to stop the test. Or it automatically stop as you have set in the "Test Time" of the "Set Test Configuration".

Result data is being saved automatically as .csv file to the following directly :

C:\Program Files\LINEEYE\LE-580FX\ LE-580FX QoS v1.2b002\Log.

In the end, type desired title for the chart and click "save to .csv file" button to save the file as csv format.

To save only the curved graph as bit map format, click "open log file" and load the saved csv file. Type desired tile in the right bottom on the graph and click "Set Title" button.

Click "Refresh" to reset the default value for Vertical Axis Scale of Tx Line Rate.

Save the curved chart by clicking "Save Chart" button.



### 5.2 Detailed Counter

This window shows detailed statistics of Port A and B.

Click “show detailed counter” button, and open the “Counter Panel” window.

Port #	Port A	Port B	Total: 2 ports
Link Status	100 HALF	100 HALF	N/A
Receive Packet Rate	0	49,017	N/A
Receive Byte Rate	0	11,520,214	N/A
Receive Utilization	0.00	100.00	N/A
Transmit Packet Rate	49,024	0	N/A
Transmit Byte Rate	11,520,640	0	N/A
Transmit Utilization	100.00	0.00	N/A
Receive Packet	0	48,332,666	48,332,666
Receive Byte	0	11,358,177,512	11,358,177,512
Transmit Packet	48,308,160	0	48,308,160
Transmit Byte	11,352,417,600	0	11,352,417,600
Receive Stream1 Packet	0	6,041,584	6,041,584
Receive Stream1 Byte	0	8,482,383,936	8,482,383,936
Receive Stream2 Packet	0	6,041,584	6,041,584
Receive Stream2 Byte	0	410,827,712	410,827,712
Receive Stream3 Packet	0	6,041,584	6,041,584
Receive Stream3 Byte	0	410,827,712	410,827,712
Receive Stream4 Packet	0	6,041,583	6,041,583
Receive Stream4 Byte	0	410,827,644	410,827,644
Receive Stream5 Packet	0	6,041,583	6,041,583
Receive Stream5 Byte	0	410,827,644	410,827,644
Receive Stream6 Packet	0	6,041,583	6,041,583
Receive Stream6 Byte	0	410,827,644	410,827,644
Receive Stream7 Packet	0	6,041,583	6,041,583
Receive Stream7 Byte	0	410,827,644	410,827,644
Receive Stream8 Packet	0	6,041,583	6,041,583
Receive Stream8 Byte	0	410,827,644	410,827,644
Transmit Stream1 Packet	6,038,520	0	6,038,520

Counter Panel

	Description
Link Status	status of the port (speed, full/half duplex)
Receive Packet Rate / Byte rate / Utilization	number of received packets per second / number of byte / %of packet use
Transmit Packet Rate / Byte rate / Utilization	number of received packets per second / number of byte / %of packet use
Receive Packet / Byte	receive packets / byte (total)
Transmit Packet / Byte	transmit packets / byte (total)
Receive Stream 1-8 Packet / Byte	packets of receive stream 1-8 / byte (total)
Transmit Stream 1-8 Packet / Byte	packets of transmit stream 1-8 / byte (total)
Pause	pause packets (total)
Vlan	VLAN packets (total)
IP Checksum Error	IP Checksum error (total)
TCP Checksum Error	TCP Checksum error (total)
CRC Error	CRC error (total)
Alignment Error	Alignment error (total)
Dribble Error	Dribble error (total)
Broadcast	packets of broadcast (total)
Multicast	packets of multicast (total)
Unicast	packets of unicast (total)
Broadcast(byte)	byte of broadcast (total)
Multicast(byte)	byte of multicast (total)
Unicast(byte)	byte of unicast (total)

## 6. Demo Mode

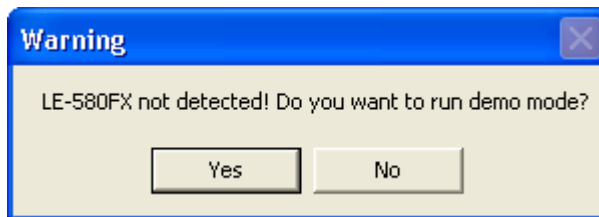
LE580-FX QoS has a Demo Mode.

You are able to have the demonstration of LE-580FX QoS.

How to use: Open the LE-580FX QoS while not connecting LE-580FX into PC.

Click "Yes" when the following window appears.

You are able to start the QoS and see the "Test Panel", "Counter Panel" etc.



## 7. How to use LE-580FX QoS

Step1: Configuration=> Set Test Configuration and open the "Set Test Configuration" window.  
set the conditions of transmission and click "Apply" button.

Step2: Test => Test Panel and open the "Test Panel" window.

If necessary, Test => Detailed Counter and open the "Conter Panel" window.

Step3: Start test by clicking the "start to test " button (green arrow) in the left side of "Test Panel" window.  
If you have "Counter Panel", the values will be reset.

Step4: The test result will be displayed in the "Test Panel" and the "Counter Panel" window.

Step5: It stops the test when it pasts the test time which you have set in the "Set Test Configuration".  
(click "stop test" button (red square) in the "Test Panel" to stop the test in the middle of test time.)

Step6: Save the test result by clicking the "save to .csv file" button in the "Test Panel".

Note: TAP mode is set as default if LE-580FX is not working as PG mode or QoS.

Please make sure that LE-580FX is not in loop connection (It will block the network).

# LINEEYE®

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