LINEEYE

LAN PACKET TESTER

LE-590TX

User's Manual

Where to find English Manual
Before using the product, it is necessary to install the software.
Please refer to the User's Manual in "D:\Manual\English\" of the included CD-ROM.
("D:" means the CD-ROM Drive's name. CD-ROM Drive's name is different depending on the PC .)

Ver.2 2019.11

INTRODUCTION

Thank you for your purchase of LINEEYE analyzer. To use it correctly, you are advised to read and understand this instruction manual thoroughly. Keep this together with the warranty. If you encounter any problems, you will find helpful information in this manual.

NOTICE

a) It is prohibited to reprint or duplicate any part or the whole of this instruction manual without prior permission from LINEEYE.

b) The contents of this instruction manual and specifications of the product is subject to change without any notice.

c) This instruction manual has been designed and edited with great care to give you all necessary information. If you have any questions, feel free to direct your inquiries to LINEEYE CO., LTD.

d) LINEEYE shall not be liable for any damages resulting from the use of this product. Furthermore, LINEEYE makes no guarantee if data disappears, or the recorded data corrupts while using this product.

USE LIMITATION

This product has been developed for the purpose of using as an analyzer only, and has not been developed for the use that needs exclusively high reliability and safety; aerospace apparatus, trunk communication apparatus, nuclear control apparatus, medical apparatus related with life maintenance etc. Also, this product does not warrant the use for those purposes. If you use for those purposes, please consider the safety measures in terms of fail-safe etc.

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Safety Information

Read this first ! !

This Safety Information includes the important information in order to not only learn the right way to use the analyzer, but also prevent you from causing damage to other people and property. Before using, please read the following WARNING and CAUTION.

WARNING : Improper handling poses a risk of causing death or serious injury.

CAUTION : Improper handling poses a risk of causing injury*1 or damage to the product and property*2.

*1: “Injury” indicates injury, burn, an electric shock, or the like which does not require hospitalization or hospital visit for over a long period.

*2: “Damage to the product and property” indicates damage expansion related to a house, a building, furniture, apparatus, livestock or a pet.

WARNING

Do not disassemble or modify.
This may result in fire, an electric shock and/or unit malfunction.

Stop using the analyzer immediately when smells emanate from itself.
Continuous use may result in an electric shock, a burn and/or fire.

Keep the product away from water.
Failure to do so may result in the heat generation, an electric shock and/or unit malfunction.

Do not use deteriorated cables (damage etc.).
This may result in the heat generation and fire.

Do not use in the place which generates inflammable gas etc.
This may result fire.

CAUTION

Do not use and keep this product in the following places:
a)The places exposed to the direct rays of the sun.
b)The places with the humidity and temperature exceeding the tolerance level, and with a rapid temperature change.
c)The places with much dust and moisture.
d)The places near the objects which generate heat (the heater etc.).

Using in these places may result unit malfunction and /or injury.

Software License Agreement

LINEEYE CO., LTD (LINEEYE) grants you to use the software program and accompanying documents under terms of this license. And you are consenting to be bound by and are becoming a party to this agreement. To use the software, you need to agree to this license agreement.

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   If any provision of the agreement is held invalid, such provision shall be removed from this license agreement.
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8. Notice
   Any matter not specified in this agreement will be governed by and constructed in accordance with copy right law and related laws

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Chapter 1 Before Using the product

1-1. Composition

When you unpack the product, please make sure of the following:

Analyzer	: 1
Utility CD	: 1
Mini-USB Cable	: 1
USB 2Way Cable	: 1
LAN Cable	: 1
User's Manual	: 1 (This book)
Warranty	: 1

a) Please contact LINEEYE or its distributors or us if you find any damage to the product caused by transportation or any insufficient part.

b) Please keep the box carefully and use it when sending the product back to us for repair etc.

Utility CD

This product contains the analysis software, and the latest manuals.

1-2. Outline

LE-590TX is the LAN packet tester composed of hardware and 4 sets of software designed for various tests. It is able to capture data in full duplex at 10/100BASE-TX, and generate traffic at 10/100Mbps for testing networks.

LE590-TAP	Basic software to monitor networks and for loop-back test.
LE590-SG	Software to generate packets.
LE590-NIC	Software to use it as NIC.
LE590-2544	Software to evaluate switches and routers based on RFC2544.

Chapter 2 Install and Uninstall

2-1 Environment

PC/AT compatible (DOS/V) with USB 2.0/3.0 port
CPU : Pentium4 Processor 1.6GHx or more (recommend)
RAM : 1G byte or more (recommend)
HDD : 10G byte or more (recommend)
OS : Windows 7/8/8.1/10 (32bit/64bit)

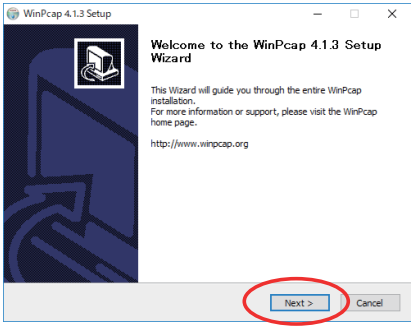
2-2. Install Software

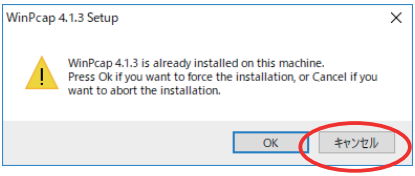
Install the software into the PC uses with LE-590TX.

Do not connect the LE-590TX to the PC while installing the software.

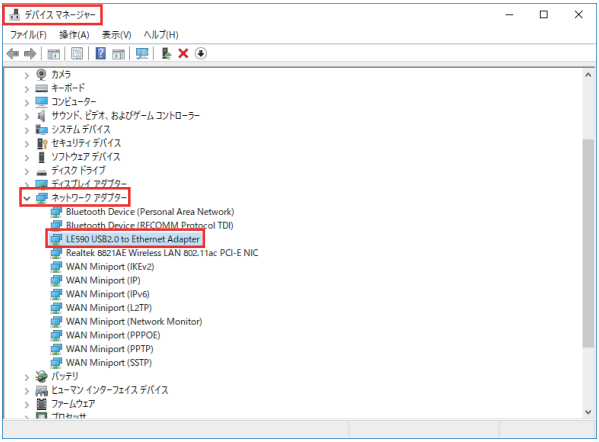
Execute "autorun.exe" stored in the attached CD.

If having the below massage, set as following.
If "WinPcap 4.1.3" is not installed in the PC, click "Next",
If "WinPcap 4.1.3" is already installed in the PC, click "Cancel",



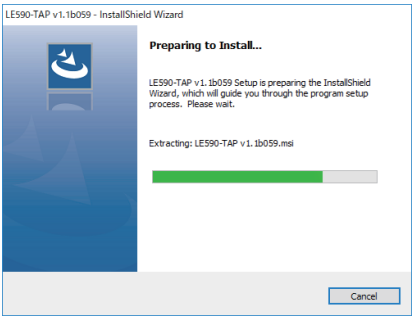


Connect the analyzer and PC after installing the software.
The USB driver for analyzer will be installed automatically.
Confirm it in the display of Device Manager.

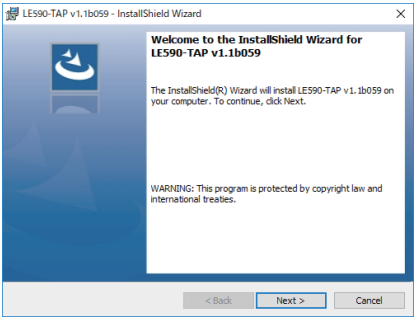


● Install LE590-TAP

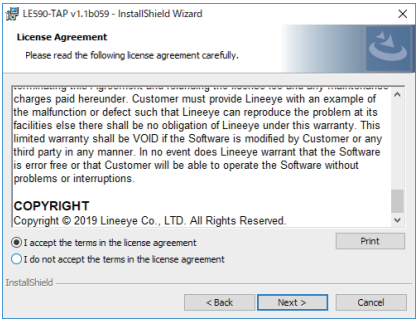
Click “LE590-TAP_Vx.xbxxxx” (“x” indicates the version number).



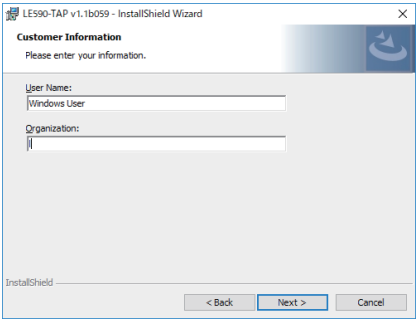
Installation will start as left picture.



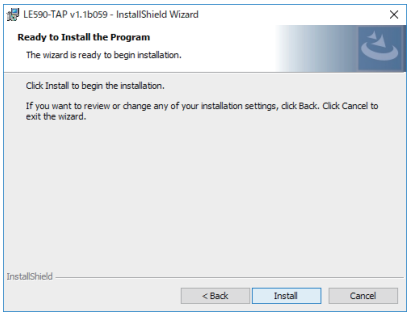
Click “Next”.



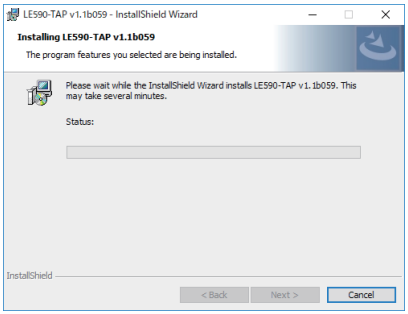
Read the “license agreement” and select “accept” (or “do not accept”). Click “Next”.



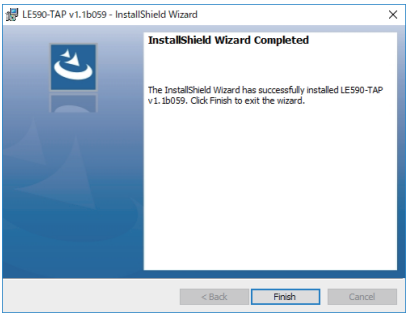
Type the user name and organization.



Click "Install" (or "cancel").



Installation will start as left picture.

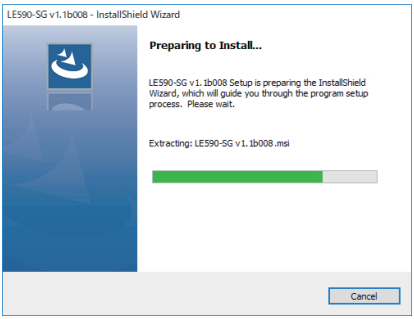


Click "Finish".

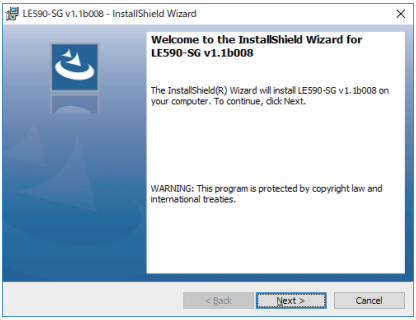
It is able to install other software with same procedure.
If installing all software at once, it may display blank while installing one to another.

● Install LE590-SG

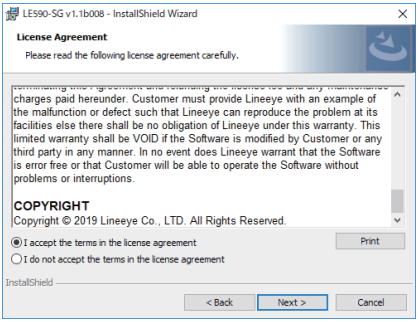
Click "LE590-SG_Vx.xbxxxx" ("x" indicates the version number).



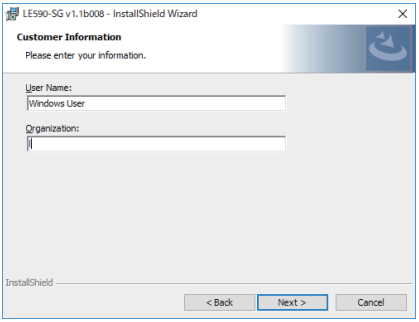
Installation will start as left picture.



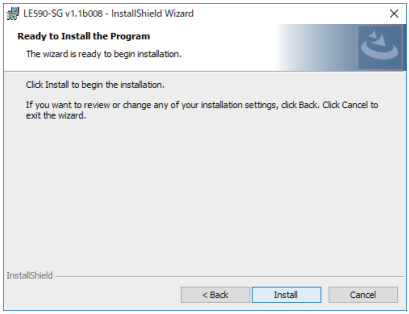
Click "Next".



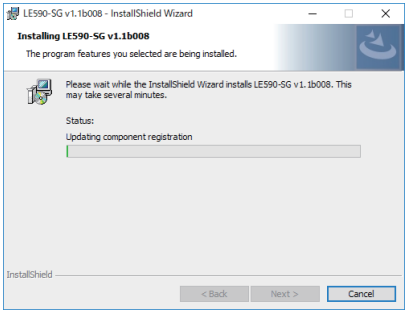
Read the "license agreement" and select "accept" (or "do not accept"). Click "Next".



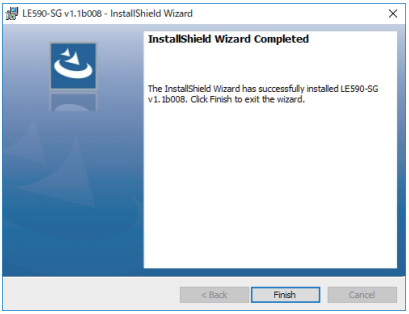
Type the user name and organization.



Click "Install" (or "cancel").



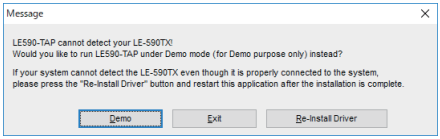
Installation will start as left picture.



Click "Finish".

It is able to install other software with same procedure.
If installing all software at once, it may display blank while installing one to another.

If finding following message, install "WinPcap4.13".



2-3. Uninstall Software

Uninstall each software from start menu or control panel.

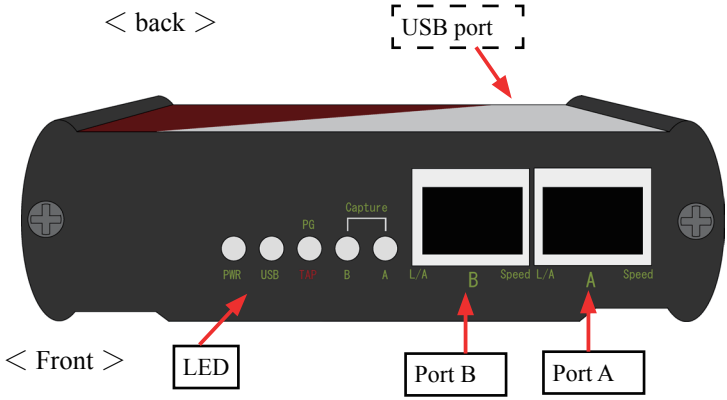
e.g. for Windows7

Start menu: all program : all program -> LINEEYE -> LE-590TX -> LE590-TAP_Vx.xbxxx -> Uninstall LE590-TAP_Vx.xbxxx

Control panel : Programs and Features -> select and uninstall "LE590-TAP_Vx.xbxxx"

3-1 Description of each part

LE-590TX is the compact analyzer with two Ethernet ports. It is able to monitor networks, output packets at 10/100Mbps and use it as a NIC.



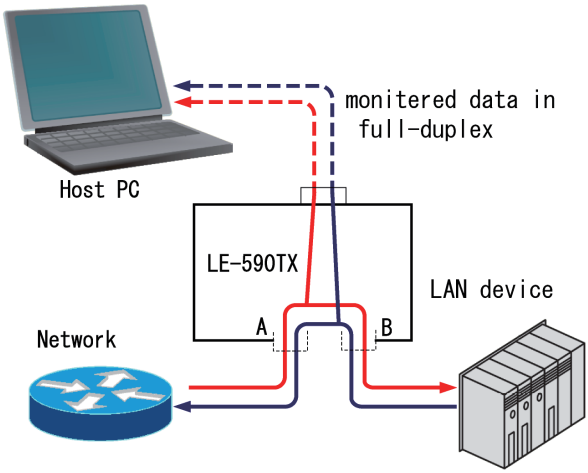
USB port : Mini-USB connector to connect to the host PC.
Port A : RJ-45 connector to connect to the target device.
Port B : RJ-45 connector to connect to the target device.

LED	Color	Description
PWR	Green (blinking)	Power on
	Orange (blinking)	System error
USB	Green (blinking)	Conect analyzer & PC
PG/TAP	Green	PG mode
	Orange	TAP mode
	OFF	NIC mode
Capture A/B	Green	Capture data
L/A (Link/ACT)	Green	Link to network
	Green (blinking)	Transmit or receive data
Speed	Green	100Mpbs
	OFF	10Mbps (L/A light on)

■ TAP(LE590-TAP)

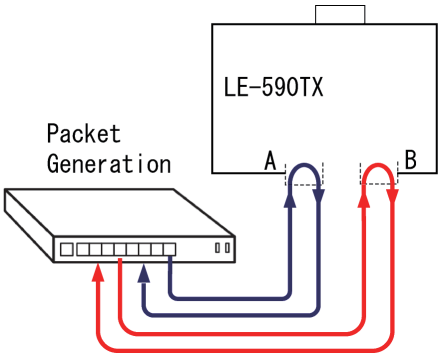
Monitor all data in the target networks without affecting the networks.

Bi-directional or one way capture function is supported with various packet counter.



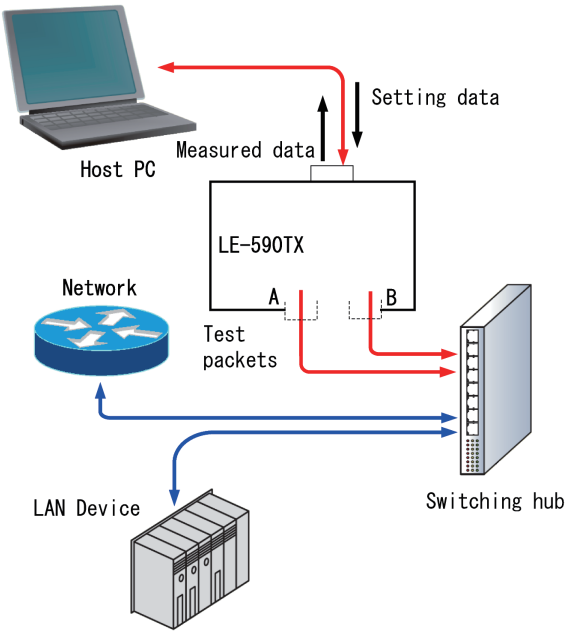
■ Loop-Back(LE590-TAP)

Send back the incoming packet stream to the same port.



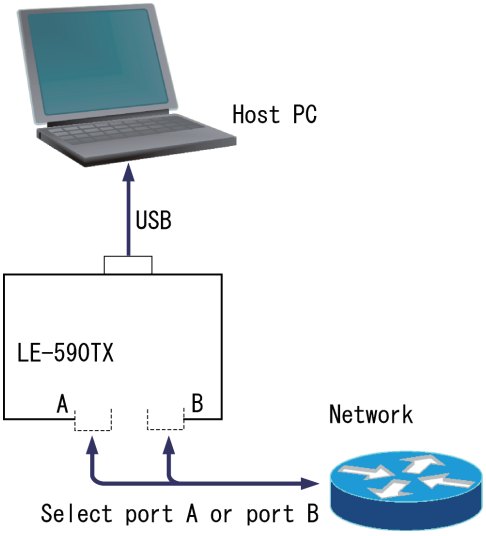
■ Packet Generation(LE590-SG)

Generate test packets individually in each port. It is possible to receive data simultaneously in both ports. It is useful to have the load test for switches and HUB.



■ Network Interface Card (NIC) Simulation(LE590-NIC)

In this mode, it simulates the Network Interface Card (NIC). It seems that connected PC gains two more LAN ports.



Chapter 4 Basic Usage

4-1. Connection with PC

Connect the analyzer with PC using the attached Mini-USB cable.

■ Usage of USB branch cable

When the analyzer does not work stably, the bus power may be unstable. Use the attached USB branch cable to power the analyzer stably.

＜ How to ＞

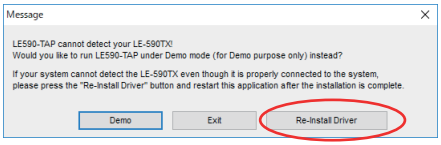
1： Connect the 2 male-sides of the cable with the USB ports of Host PC.

2： Connect the female-side of the cable with the USB port of the analyzer.

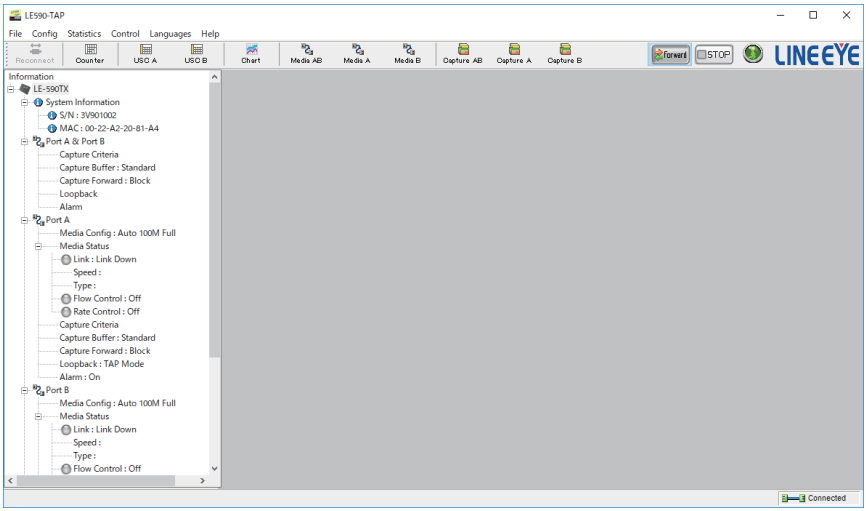
4-2. Network Monitor (TAP Mode)

Run the attached software “LE590-TAP”. When the alert for user account control appears accept it.

Following massage will be appeared. (Appear only once when opening the software)



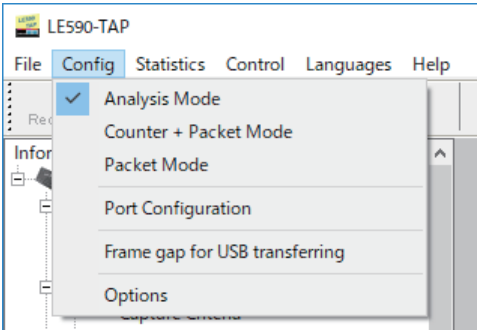
Click “Re-install Driver” (WinPcap 4.1.3) and set necessary settings.



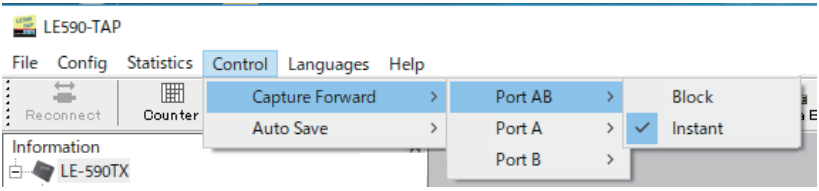
Capture packets of target line using the LE590-TAP (TAP mode).

(＜ How to ＞

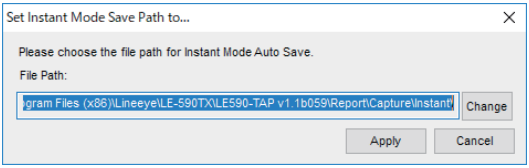
1： Select “Config”=> “Analysis Mode”.



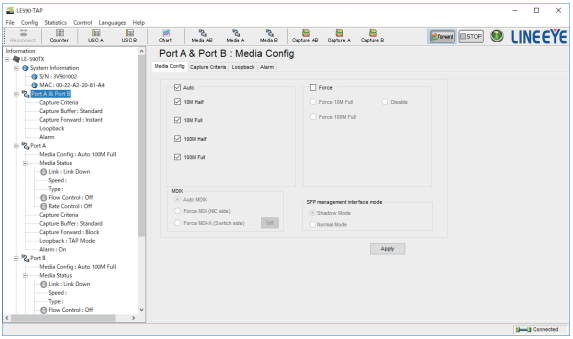
2： Select“Control”=>“Capture Forward”=> “portAB”=>“Instant”.
By selecting “Instant” it can display the captured packet data up to 20000 frames in real-time. “Block” cannot display data in real time, because it saves data in the inner memory first and transfers it to the PC. It displays packets up to 32768 (16384 packets for one port) after stopping the measurement.



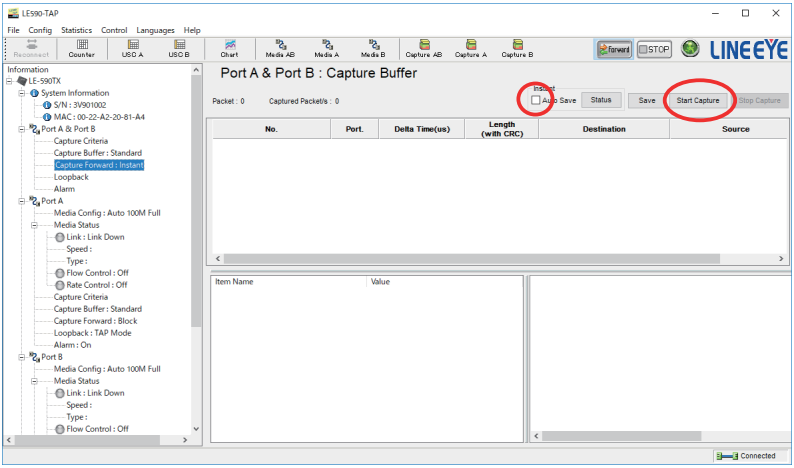
Check “File” =>“Set Instant Mode Save Path to...” of the menu and change it when needed.



3： Click “Media AB” of the toolbar and check that the TAP mode is set on the Loopback tab. Set the other tabs when needed and then click “Apply” button.

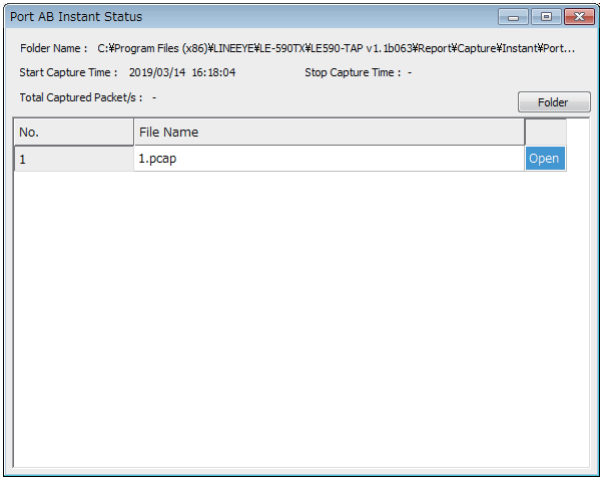


4 : Click “Capture AB” of the toolbar to show the capture buffer. Then check “Auto Save” of the capture buffer window to save files in pcap format automatically by each 20000 captured frames.



5 : Push “Start Capture” button to start capturing and then the captured packets will be shown in real-time.

6 : Push “Stop Capture” button to stop capturing.
To check the file saved automatically, click “Status” -> click “open” on the [Port AB Instant Status Window] and confirm data using the Wireshark.



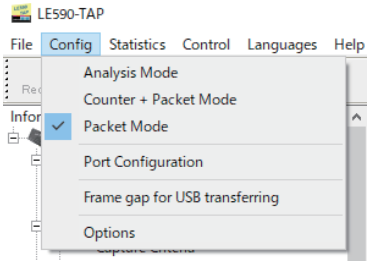
* FCS is included in the captured packet.
* Wireshark (free software) needs to be installed too. For the usage of Wireshark refer to the website of Wireshark (https://www.wireshark.org/).

4-3. Usage on Wireshark

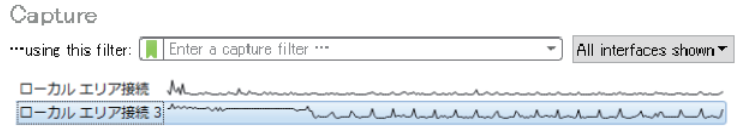
LE-590TX can be used with free networok analyzers softwares. Here is the usage example with Wireshark (one of the famous freeware).

＜ How to ＞

1： Select “Config”=> “Packet Mode” of the menu.



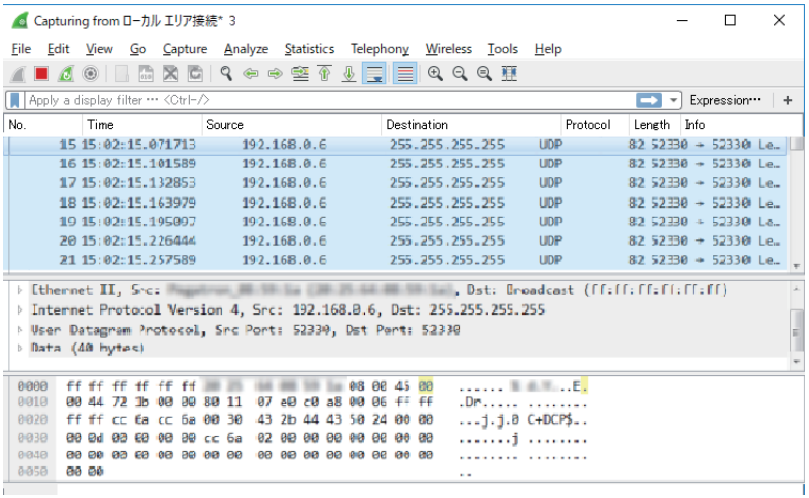
2： Run Wireshark.



Select Local Area Connection of LE-590TX and start capturing.

*FCS will not be included in the captured packets.

*The interface of LE-590TX can be checked at the network connection of the PC.



4-4. Packet Generator (PG Mode)

The Packet Generator can generate the packet stream (previously set one) to load a network or transmit error frames for testing of network devices or network opening.

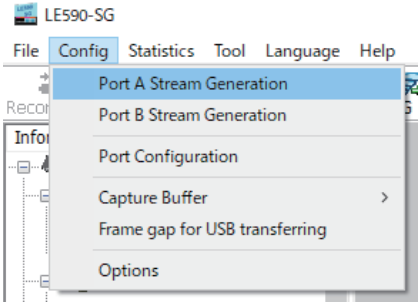
＜ Setting example ＞

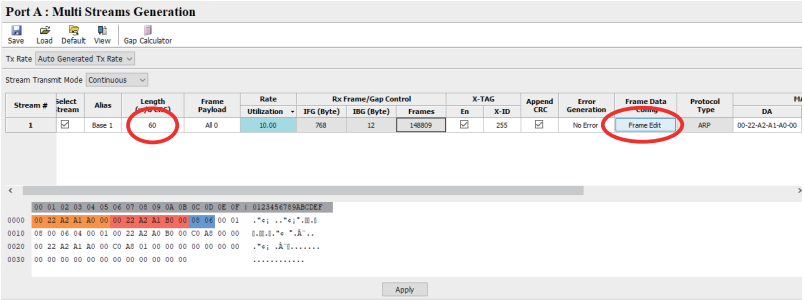
Here is the setting example of 64 byte ARP packet communication generation when the Port A is in 10% rate operation and the Port B receives the traffic.

＜ How to ＞

1 : Connect the analyzer with PC and run the attached software "LE590-SG".

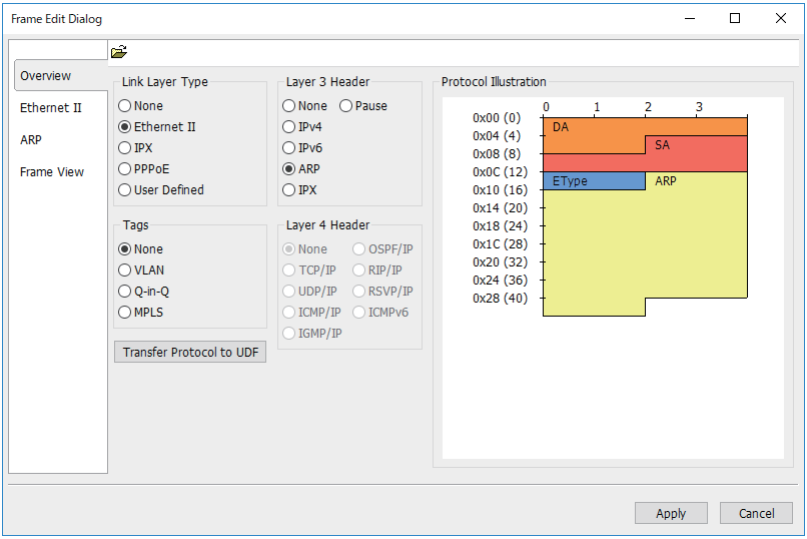
2 : Select Config => Port A Stream Generation of the menu to display the Port A multi-stream output display.
Input 60 excepting CRC (4Byte) to the Length of No.1 of Stream# number. Then click "Frame Edit" button in the Frame Data Config column to open "Frame Edit Dialog" and edit the packet information.



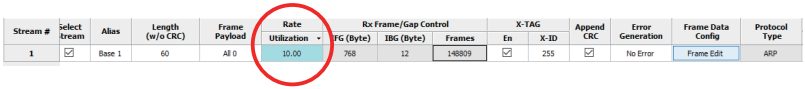


3： At the Overview of "Frame Edit Dialog" set Ethernet to Link Layer Type and ARP to Layer3 Header. Input the essential information such as the destination and source of MAC Address, and then push "Apply".

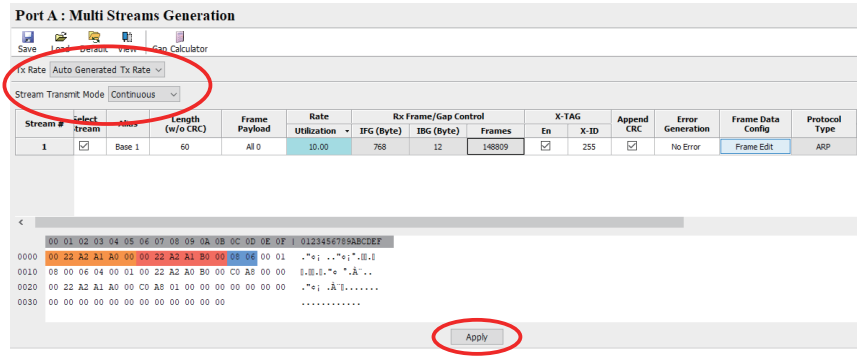
Note: For the detail of each protocol refer to the specification of the protocol.



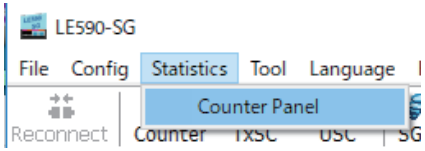
4： Set the inter frame gap (IFG) at Rate column. Select Utilization at the Rate, input 10, and set 10% to operation rate. Then the frame gap "768" byte time at 100M mode will appear on the IFG(Byte) column of CRCTxFrame/GapControl.

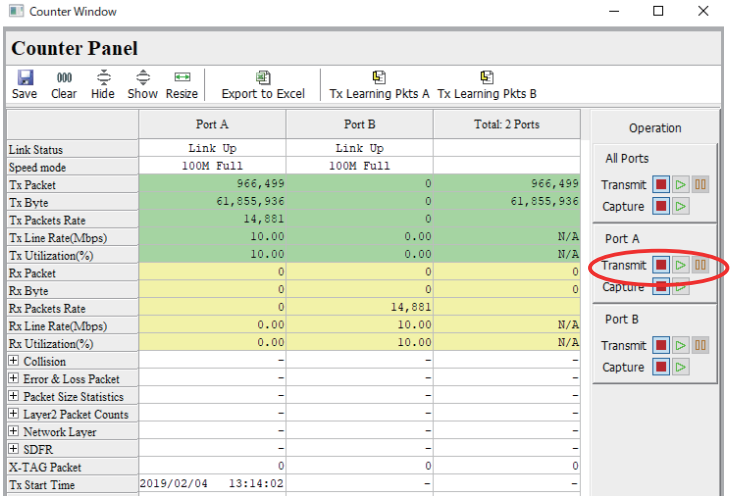


5： After configuration of the frame setting, set "Auto" to "TX rate", "Continuous" to "Stream Transmit Mode" and push "Apply" to fix the setting.



6： Counter panel from the top menu to open the counter windows and push transmission button icon of port A (green arrow) to transmit the target traffic. Then check the performance information at the Port A and B of the counter panel.





7： Push the transmission button icon of Port A (red square) to stop the transmission and hen how much the transmission is made is set at the "Packets Limit" of Stream Transmit Mode" it will stop when the transmission reaches the number.)

Note: Transmission of inadequate test traffic can disturb the network.

＜ Reference ＞

Multi-stream generation (Port A/B)：

A port of LE-590TX can generate up to 64 packet streams. The user can set the frame length, content, inter-frame gap and can add various kinds of errors.

The transmission performance can be displayed at the capture buffer and counter window.

Frame edit：

Packet contents and specific prepared packet type (IPv4, IPv6, TCP, UDP, ICMP, IGMP, IPX and ARP*) can be edited.

*It is able to add tags (VLAN and MPLS) for specific types.

Gap calculation：

Operation rate of the transmission can be calculated.

4-5. RFC2544 test

Automatic test is possible by using the DApps-2544 based on the standard of RFC2544.It generates and analyzes the test packet to evaluate throughput performance, latency, packet loss, and Back-toBack of an Ethernet switch or router.

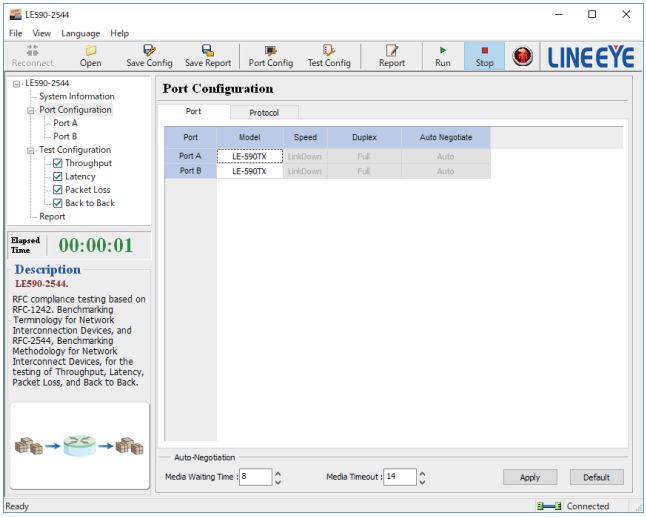
It offers the customize report and displays the effective real-time test result.

＜ Setting example ＞

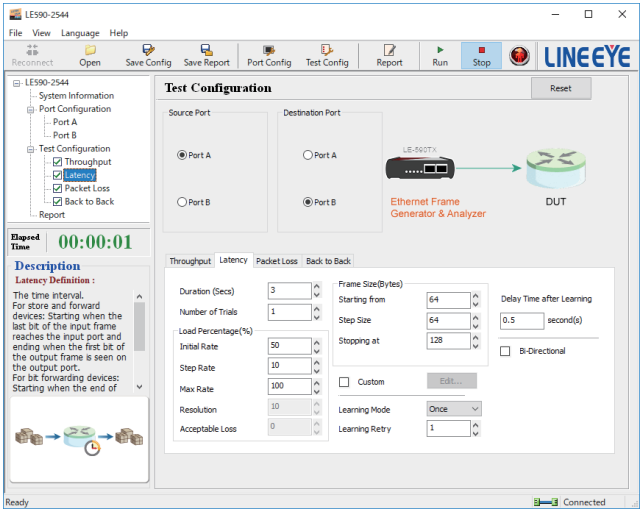
Here is the setting example to transmit the 64 byte packet and the 128 byte packet of layer 2 from the Port A of LE-590TX via DUT of the measurement target to the Port B with the wire operation rate of 50% to 100% (10% interval) for 3 seconds and the Port B receives them.

1 : Connect the analyzer with a PC and run the attached software LE590-2544.

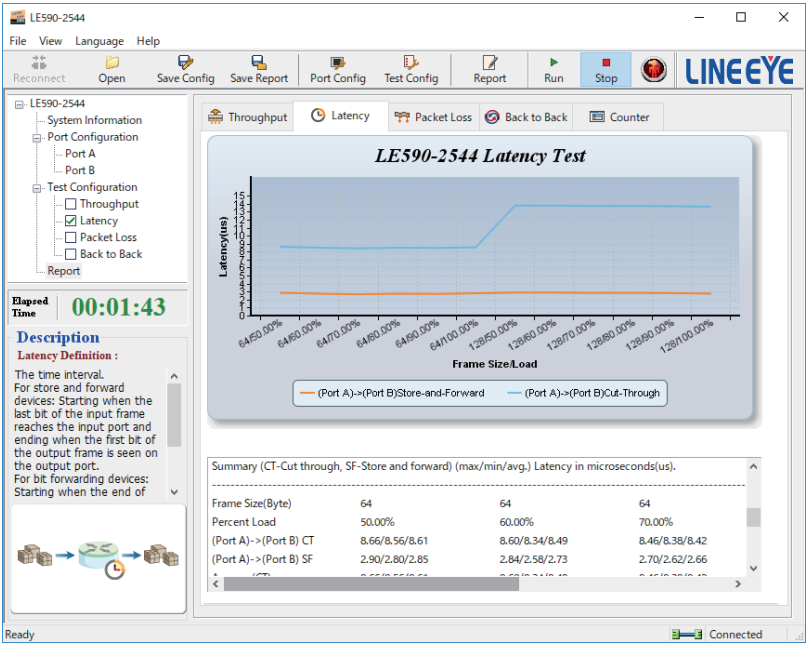
2 : Select the "Port Configuration" on the left window and select "Layer2" on the Protocol tab.



3 : Select only “Latency” at “Test Configuration” on the left window. Set transmission origin port to the Port A and the destination to the Port B and configure the detail such as transmission time and number of tests at the latency tab.



4 : Click [RUN] button on the upper right on the window. The test result can be checked on the “Report” display.



Chapter 5 Warranty and After Service

- This product includes a warranty card.
- Fill in the blanks and confirm the contents of the card and keep it.
- The warranty period is 12 months from the date of shipment.
- The warranty terms are applied for the repair within the period.
- After the period, we will accept the repair for a fee when we judge the unit will be recovered by it.

Note: When you ask the repair please let us know the model, serial number, condition (as detailed as possible), purchase date.

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