XTRAMUS

APMPT-4
User's Manual

USM Ver 2.5

Foreword

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Revision

Date	USM Version	Revision contents
2014/08/22	2.4	1. Delete Serial Port test task and its task descriptions. 2. Delete Telnet test task. 3. Add Terminal test task which combine console and telnet. 4. Add Line Emulate test task.
2015/09/28	2.5	1. Add the descriptions and operations of the PoE tasks.

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1. APMPT-4 Overview

1.1. General Description of APMPT-4

APMPT-4 is a utility-software for Microsoft Windows operating system. Specifically designed for Xtramus NuStreams chassis, APMPT-4 can perform tests in mass-production scale with pre-defined variable, and provide accurate, real-time DUT (Device under Test) status test reports.

1.2. Specifications & System Requirements

Specifications

Item	Description
Platform	NuStreams-2000(i), NuStreams-600(i) chassis
Operating System	Microsoft Windows Vista /7/8, Microsoft Windows XP
Supported Modules	Xtramus XM-RM series Rapid-Matrix modules
Built-in Tasks	➢ Performance Task in Layer 1 (Layer1) ➢ Performance Task in Layer 2 (Layer 2) ➢ Performance Task in Layer 3 (Layer 3) ➢ PoE (Power over Ethernet) Tasks ➢ AC Tasks ➢ Terminal Tasks ➢ General Tasks ➢ Customization Tasks
Multi-User	Support Client-Server architecture for different users
Report	Test report in text format or real-time display
Configuration	Graphic User Interface (GUI) windows

System Requirements

OS	Windows XP	Windows Vista /7/8
CPU	Pentium 1.3 GHz or higher	
RAM	512MB RAM	1GB RAM
HDD	10GB available space	

1.3. Function Description

Built-in tasks in APMPT-4 include Unicast, Flow Control, Broadcast, Filter, CRC Error, Ping, PoE, Power, Console port tasks and other tasks.

1.3.1. Performance Task in Layer 1 (PT1)

DUT OSC Test

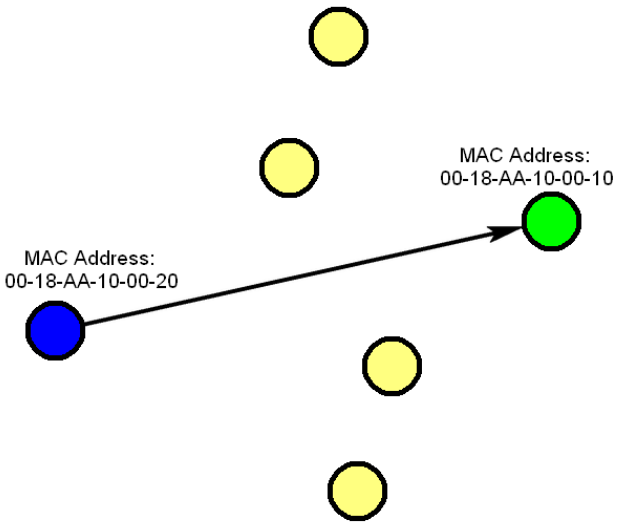
Test the speed rate of the DUT

By using this utility, operator is able to measure oscillator's speed of DUT that is either faster or slower than standard speed in ppm scale, or use it as criteria to judge the result of test.

1.3.2. Performance Task in Layer 2 (PT2)

A. Unicast Test

Unicast transmission is to send information packets to a single destination. In layer 2 test, unique MAC address is the key of single destination as illustration below.



Perform unicast test on DUT in layer2 with different speeds, modes and various configurations.

- PT2-UC-10H (10Mbps Half Duplex),
- PT2-UC-10F (10Mbps Full Duplex),
- PT2-UC-100H (100Mbps Half Duplex),
- PT2-UC-100F (10Mbps Full Duplex),
- PT2-UC-1G (1Gbps Full Duplex),
- PT2-UC-10G (10G Full Duplex),
- PT2-UC-GROUPS (Perform Layer 2 MAC address Unicast performance test by two groups settings with different media types such as 100Mbps and 1Gbps for DUT ports with different maximum speeds)

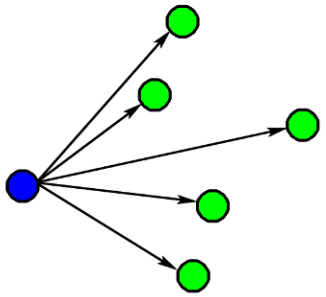
B. Flow Control Test

Perform flow control test on DUT in layer 2 with different speeds, modes and various configurations. It tests the performance when the DUT is connected to the media type with varied kinds of speeds and directions.

- PT2-FC-10H-100H (10Mbps Half ↔ 100Mbps Half),
- PT2-FC-100H-10H (100Mbps Half ↔10Mbps Half),
- PT2-FC-10F-100F (10Mbps Full ↔ 100Mbps Full),
- PT2-FC-100F-10F (100Mbps Full ↔ 10Mbps Full),
- PT2-FC-100F-1G (100Mbps Full ↔ 1Gbps Full),
- PT2-FC-1G-100F (1Gbps Full ↔ 100Mbps Full),
- PT2-FC-1G-10G (1Gbps Full ↔ 10G Full),
- PT2-FC-10G-1G (10G Full ↔ 1Gbps Full),
- PT2-FC-GROUPS (Perform Layer 2 Flow Control tests by two groups with different media types such as 100Mbps and 1Gbps for DUT ports with different maximum speeds.)

C. Broadcast Test

Broadcasting refers to transmitting packets that will be received (conceptually) by every device on the network.



Perform broadcast test on DUT in layer2 with different speeds, modes and various configurations. These following tasks transmit broadcast frames (Destination Address: FF:FF:FF:FF:FF:FF).

- PT2-BC-10H, (10Mbps, Half Duplex)
- PT2-BC-10F, (10Mbps, Full Duplex)
- PT2-BC-100H, (100Mbps, Half Duplex)
- PT2-BC-100F, (100Mbps, Full Duplex)
- PT2-BC-1G, (1Gbps, Full Duplex)
- PT2-BC-10G, (10Gbps, Full Duplex)
- PT2-BC-GROUPS (Perform Layer 2 Broadcast test by two groups with different media types such as 100Mbps and 1Gbps for DUT ports with different maximum speeds.)

D. Filter Test

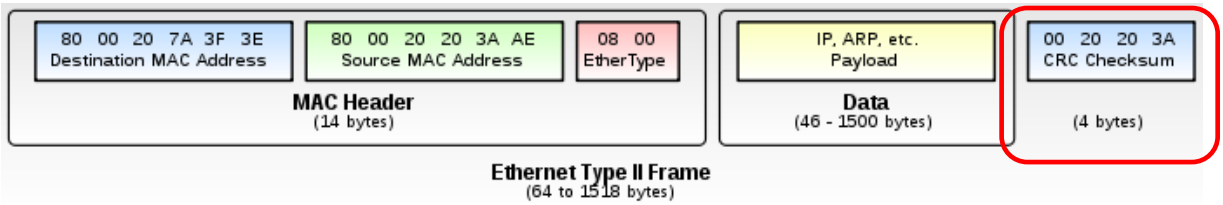
This filter test should filter all packets with the same source MAC address and destination MAC Address. For the test packets transmitted are all with the same source MAC address and destination MAC address and the DUT should filter this kind of packet.

Perform filter test on DUT in layer2 with different speeds,-modes and various configurations. The following tasks transmit frames with same DA (destination address) and SA (source address).

- PT2-FT-10H, (10Mbps, Half Duplex)
- PT2-FT-10F, (10Mbps, Full Duplex)
- PT2-FT-100H, (100Mbps, Half Duplex)
- PT2-FT-100F, (100Mbps, Full Duplex)
- PT2-FT-1G, (1Gbps, Full Duplex)
- PT2-FT-10G, (10Gbps, Full Duplex)
- PT2-FT_GROUPS (Perform Layer 2 Filter Test by two groups with different media types such as 100Mbps and 1Gbps for DUT ports with different maximum speeds.)

E. CRC Error Test

CRC Checksum is registered at the end of Ethernet frame.



Perform CRC (Cyclic Redundancy Check) error test on DUT in layer2 with different speeds, modes and various configurations for the last 4 bytes of CRC to be filtered. For normal DUT, frame with error CRC should be filtered. The following tasks transmit frames with CRC errors.

- PT2-CRC-10H, (10Mbps, Half Duplex)
- PT2-CRC-10F, (10Mbps, Full Duplex)
- PT2-CRC-100H, (100Mbps, Half Duplex)
- PT2-CRC-100F, (100Mbps, Full Duplex)
- PT2-CRC-1G, (1Gbps, Full Duplex)
- PT2-CRC-10G, (10Gbps, Full Duplex)
- PT2-CRC-GROUPS (Perform Layer 2 CRC check test by two groups with different media types such as 100Mbps and 1Gbps for DUT ports with different maximum speeds.)

1.3.3. Performance Tasks in Layer 3 (PT3)

A. Network Tool: Ping

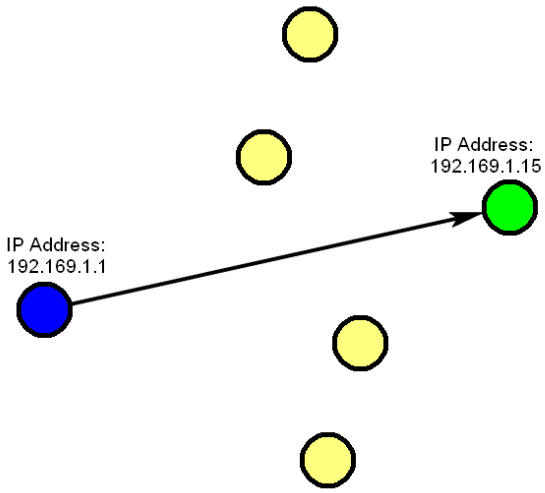
Ping is a network tool used to test whether a particular host is reachable across an IP network. It is also used to self-test the network interface card of the computer, or as a speed test.

Perform Ping test on DUT in layer3 that is based on different IP addresses, subnet mask, ping IP address and gateway.

- PT3-Ping

B. Unicast Test

Unicast transmission is to send information packets to a single destination. In layer 3 test, unique IP address is the key of single destination as illustration below.



Perform unicast test on DUT in layer 3 with different speeds, mode and various configurations.

- PT3-UC-10H, (10Mbps, Half Duplex)
- PT3-UC-10F, (10Mbps, Full Duplex)
- PT3-UC-100H, (100Mbps, Half Duplex)
- PT3-UC-100F, (100Mbps, Full Duplex)
- PT3-UC-1G, (1Gbps, Full Duplex)
- PT3-UC-10G, (10Gbps, Full Duplex)
- PT3-UC-GROUPS (Layer 3 Unicast Full Performance Test. Perform Layer 3 IP Address Unicast test by two groups with different media types such as 100Mbps and 1Gbps for DUT ports with different maximum speeds.)

1.3.4. PoE (Power over Ethernet) Test

Overview of PoE

- PoE: Power Over Ethernet
  - Based on IEEE 802.3af and ongoing 802.3at
  - Protocol for DTE power via copper-based media
  - DTE (Data Terminal Equipment)
- PSE: Power Sourcing Equipment
  Equipment provides the power to PD by network cable.
- PD: Powered Device
  Device consumes the power from PSE by network cable. NuStream-2000i, 600i with PoE module acts as PD for the test.

A. PoE-Connect

Perform connect test on DUT (i.e. PSE) based on different configurations.

B. PoE-Disconnect

Perform disconnect test on DUT (i.e. PSE) based on different configurations.

C. PoE-Overload

Perform overload test on DUT (i.e. PSE) based on different configurations.

D. PoE-ShortCircuit

Perform short circuit test on DUT (i.e. PSE) based on different configurations.

E. PoE-Loading

Perform loading and transmitting packets test on DUT (i.e. PSE) based on different configurations.

F. PoE-Loading-GROUPS

Perform loading and transmitting packets test on DUT (i.e. PSE) based on different configurations and criteria for two groups with different media types such as 100Mbps and 1Gbps

G. POE-Dynamic Loading

Perform multiple loading and transmitting packets test on DUT (i.e. PSE) in different configurations at the same time.

1.3.5. AC Test

A. PWR-Setup

Perform power control on DUT such as power ON control and cycle reboot through test module XM-2WL1. Under the control of XM-2WL1 module on chassis, the DUT that use the power from XM-2WL1 can have ON / OFF and reboot control.

B. PWR-Check

Perform power monitor and statistics measurement from power plug into test module XM-2WL1. The outlet of XM-2WL1 also supply power to DUT, thus operator gets the power statistics measurement to DUT.

1.3.6. Terminal Test

This test includes two parts: Console and Telnet test. Perform test by executing commands by manual script or script file to RS232 interface or Telnet Server of DUT.

A. Console

Console refers to the console port, COM port or RS232 interface. This test will perform a series of standard terminal command to check the response of COM port.

B. Telnet

Perform test by executing commands by manual script file to Telnet Server of DUT.

1.3.7. General Test

Tests listed in this category include: **1 to Many-UC, 1 to Many-MCV,CALL-EXT, Inserting Waiting Time, Media Pre-setting ,Toggle MDI-II/X and Line Emulate .**

A. 1 to Many-UC

1 to Many-UC is a Unicast Full Performance Test. Performing Layer 2 MAC address Unicast performance tests from one source to multiple ports with different media types (such as 100Mbps and 1Gbps Full).

B. 1 to Many-MCV

Performing Layer 2 VLAN address multicast performance tests from one source port to multiple destination ports with different media types (such as 100Mbps and 1Gbps Full).

C. CALL-EXT

This function allows you to execute your own programs/files as APMPT-4 Tasks.

D. Inserting Waiting Time

This function allows users to insert waiting time in-between tasks or to pause the whole testing process after completing a task.

E. Media Pre-Setting

Test MDIX by Media Pre-setting mode or force MDI (straight-through connection) or MDIX (crossover connection) mode of DUT.

F.Toggle MDI-II/X

Test the Auto MDIX function of different speeds/link modes of the DUT. Toggle MDI-II/X is a technology that automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.

G. Line Emulate

This function allows you to set the device 5160 or other line simulators connecting to the DUT port. Line Emulate task must be performed ahead of the task which needs it.

1.3.8. Customization Test

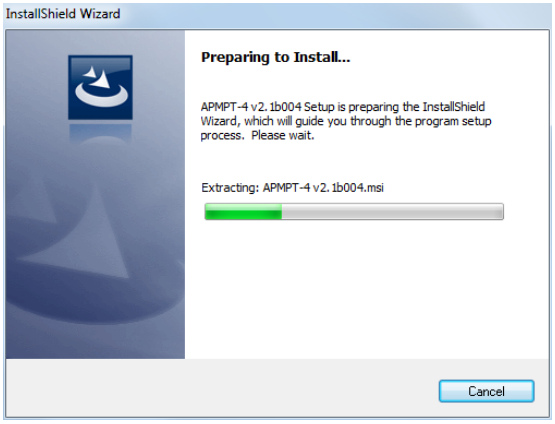
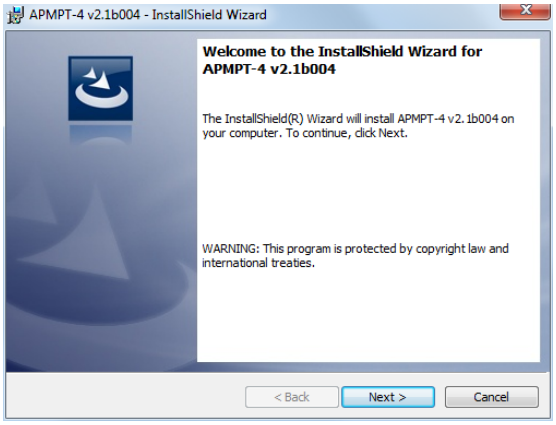
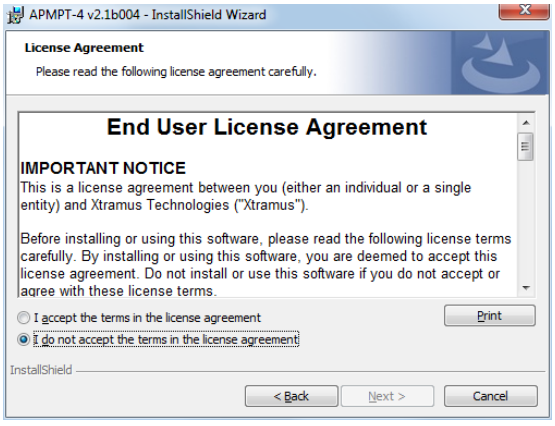
A. CTM-BSTAR-001

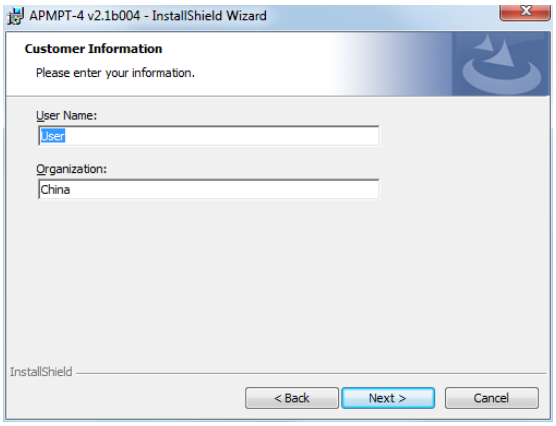
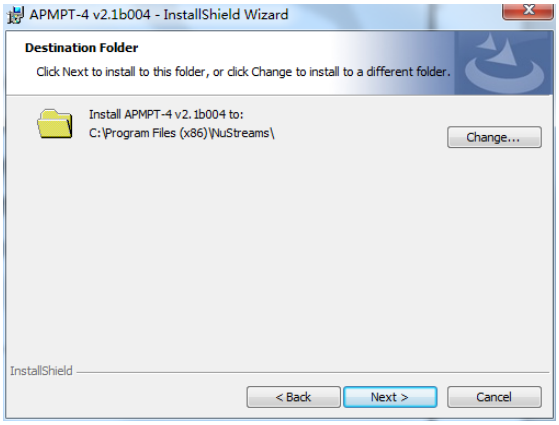
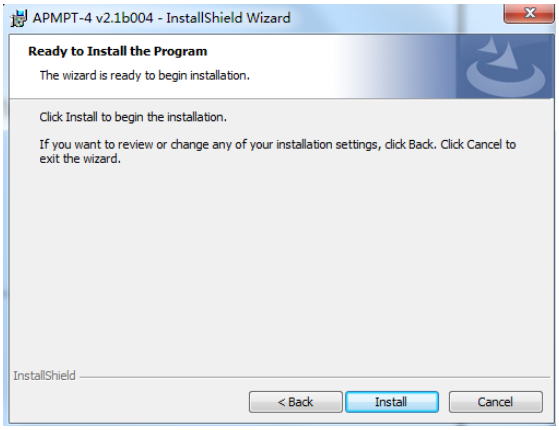
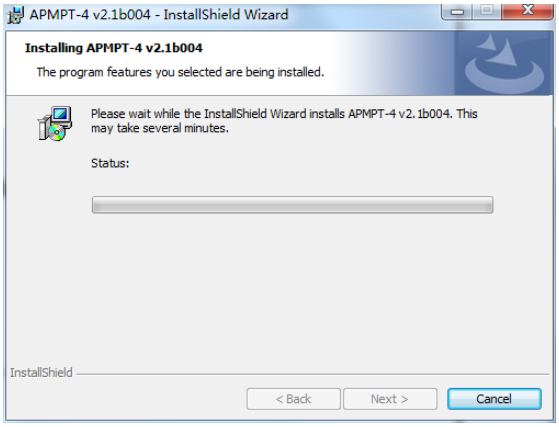
This function allows two ports to co-transmit packets in which both side can have different Tx parameters.

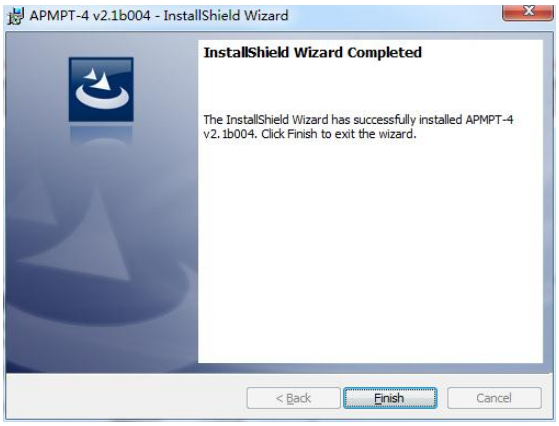
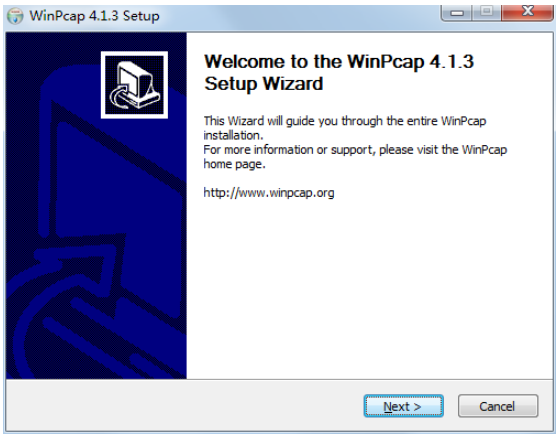
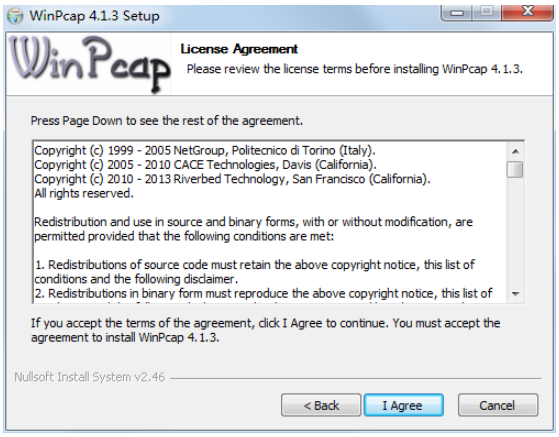
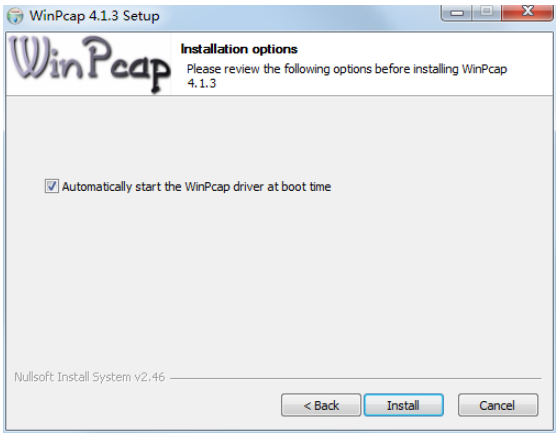
2. Software/Hardware Installation for APMPT-4

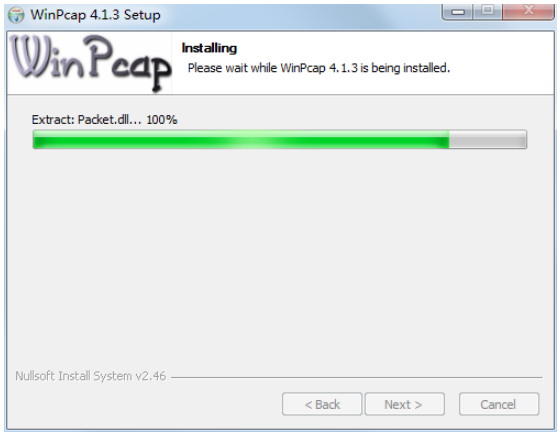
2.1. Install/Uninstall APMPT-4 on PC

Please follow the steps down below to install APMPT-4:

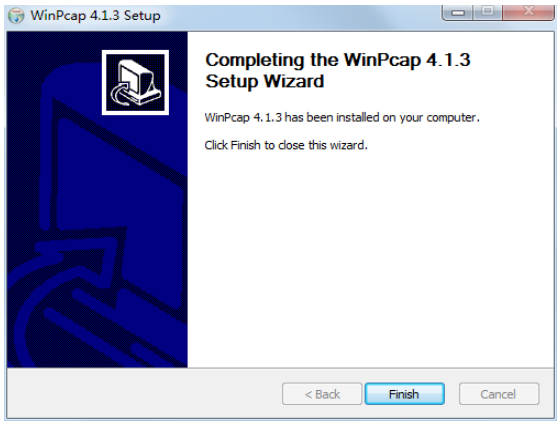
	1. Double-click APMPT-4 installation program and start the installation process.
	2. InstallShield Wizard is starting to install APMPT-4. If you would like to cancel installation, click **Cancel**.
	3. Click **Next** to continue installation.
	4. Click **I accept the terms in the license agreement**, and click **Next** to continue.

	5. Input the User Name and Organization and click **Next** to continue.
	6. Click the **Change…** button to install the program to another folder, or click **Next** button to install the program into the default destination folder, and then continue next step. Click **Back** button to go back to the previous step to modify.
	7. Click **Install** to begin the installation.
	8. InstallShield Wizard is installing APMPT-4.

	9. Click **Finish** to exit the wizard.
	10. WinPcap Installer appears. Click **Next** button to get ready to install, or click **Cancel** button to stop.
	11. Review the license agreement before installing. Click **I Agree** button to continue. It is necessary to accept the agreement to install WinPcap.
	12. It is high recommended to check the “Automatically start the Wincap driver at boot time” as default. Then click **Install**.

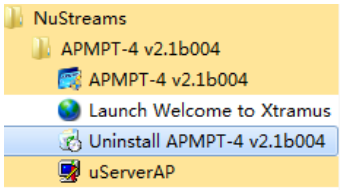


13. WinPcap is installing.

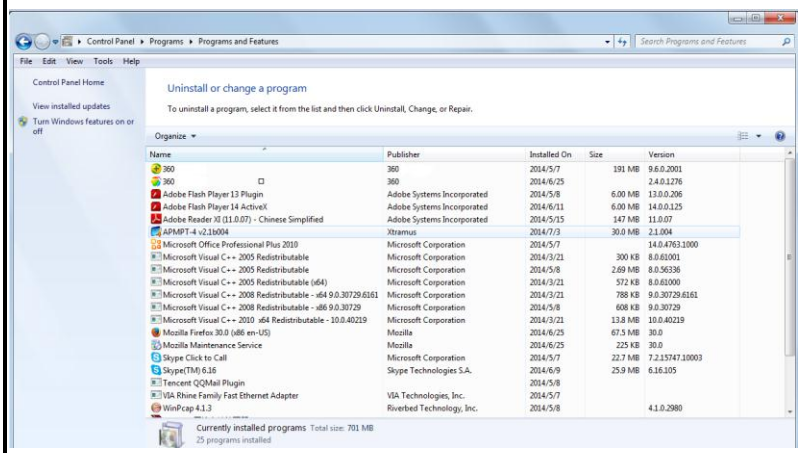


14. WinPcap installation completes. Click **Finish** button to close the wizard.

You can uninstall APMPT-4 by:



- Click Start → Programs → NuStreams → APMPT-4→ Uninstall APMPT-4

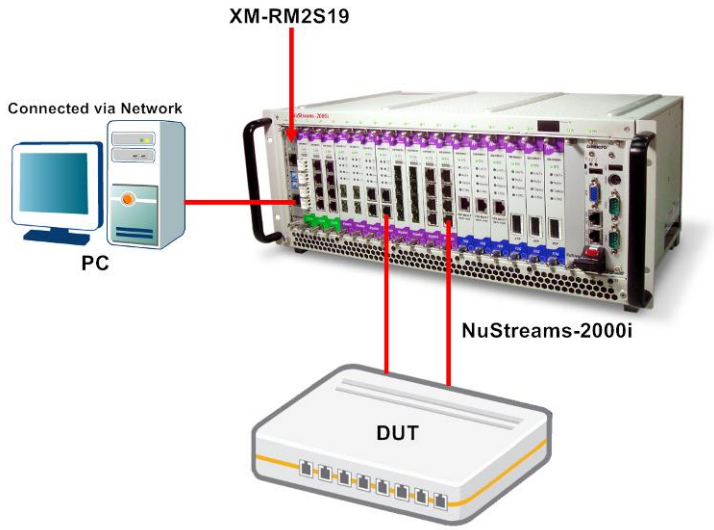


- Go to the Control Panel, choose APMPT-4 from installed program list, and click "**Uninstall**".

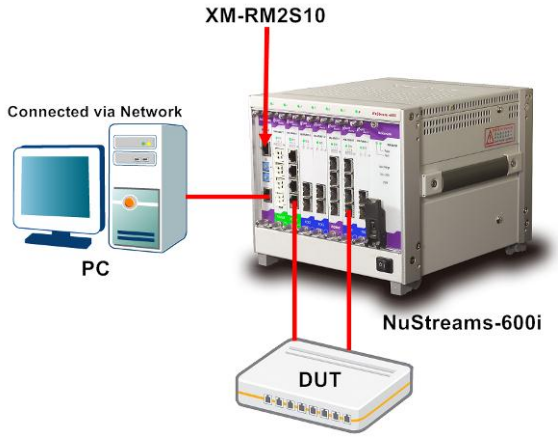
2.2. Hardware Installation

Before running APMPT-4 after installation, please be sure that you've installed both the DUT and your PC with Nustreams-2000i/600i properly as shown in the illustrations down below.

For operating APMPT-4 on NuStreams-2000i and NuStreams-600i Chassis, an external PC is required. For NuStreams-2000i, connect network port of PC LAN card to DOWN (or UP) port of XM-2S19 with network cable.



For NuStreams-600i, connect network port of PC LAN card to DOWN (or UP) port of XM-2S10 with network cable.

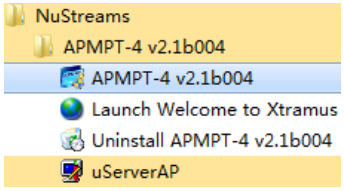


Please note that the PC's TCP/IP setting should be configured so that the PC's NIC will obtain an IP address from NuStreams-2000i/600i automatically.

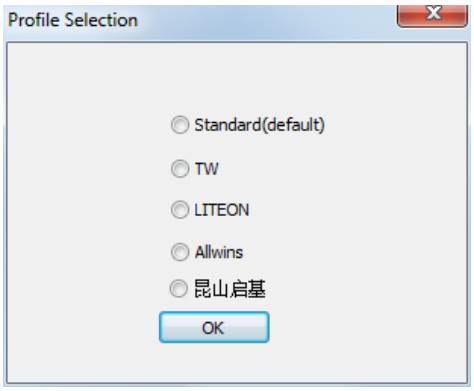
3. APMPT-4 Overview

3.1. Starting APMPT-4

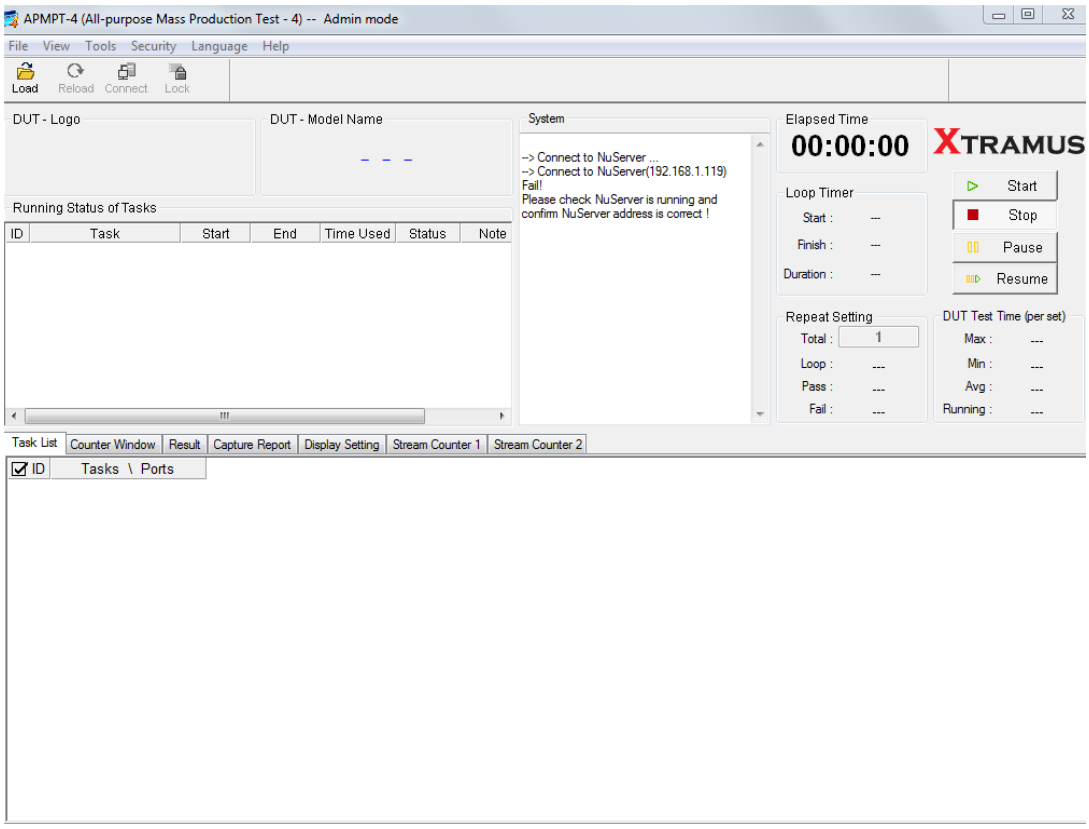
Before starting APMPT-4, the DUT, your PC, and NuStreams-2000i/600i shall be connected as shown in "**2.2. Hardware Installation**".

You can start running APMPT-4 by:	
	➢ Click **Start → Programs → NuStreams → APMPT-4**.
	➢ Double-click **APMPT-4** icon located on your PC's desktop.

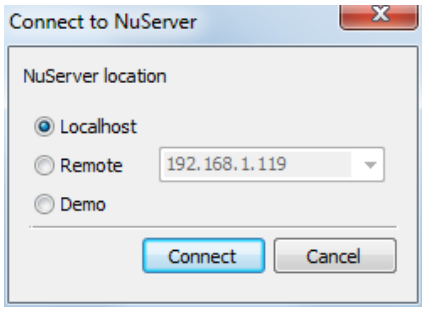
When you first start the APMPT-4, a Profile Section window as below will pop up. Select **standard (default)** option in general case. If you are a user of a certain customized company, select the corresponding option.



If your PC is not connected with NuStreams-2000i/600i, you can still run APMPT-4 under Demo Mode. Almost all APMPT-4's functions are available under Demo Mode. However, please note that **Demo Mode is for system demo purposes only**, and does not serve any test purpose at all.

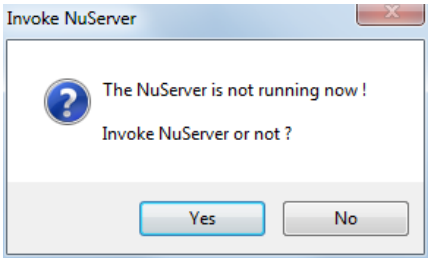

APMPT-4 (All-purpose Mass Production Test - 4) -- Admin mode
File View Tools Security Language Help
Load Reload Connect Lock
DUT - Logo
DUT - Model Name
System
--> Connect to NuServer ...
--> Connect to NuServer(192.168.1.119)
Fail!
Please check NuServer is running and confirm NuServer address is correct !
Elapsed Time
00:00:00
XTRAMUS
Loop Timer
Start :
Finish :
Duration :
Start
Stop
Pause
Resume
Repeat Setting
Total : 1
Loop :
Pass :
Fail :
DUT Test Time (per set)
Max :
Min :
Avg :
Running :
Running Status of Tasks
ID Task Start End Time Used Status Note
Task List
Counter Window
Result
Capture Report
Display Setting
Stream Counter 1
Stream Counter 2
ID
Tasks \ Ports

Please follow the steps down below to start APMPT-4:

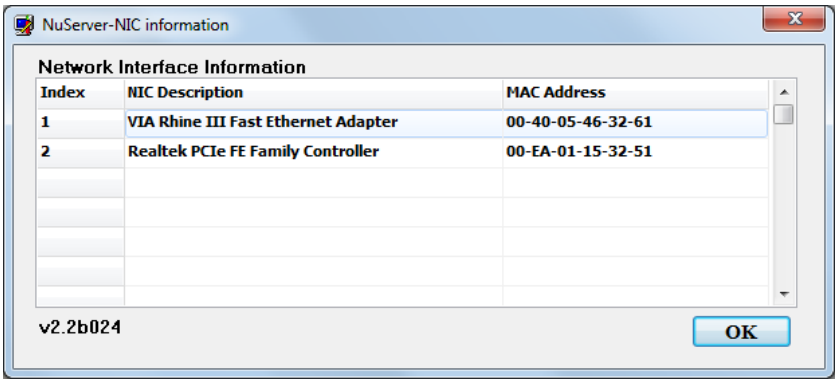


When starting APMPT-4, a "**Connect to NuServer**" window will pop up and asked how you are going to connect to NuServer.

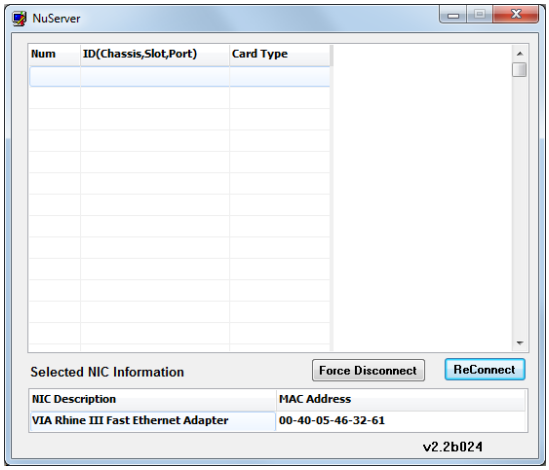
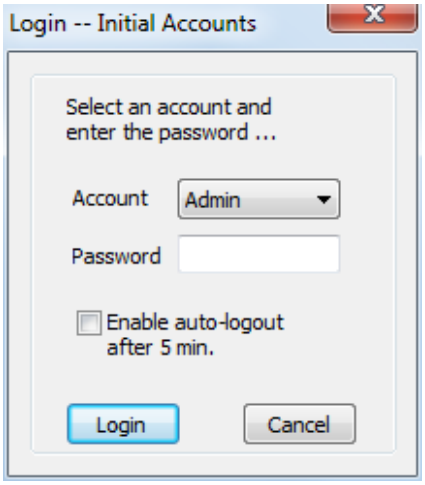
- **Local Host:** Choose this option when you're running APMPT-4 from NuStreams-2000i IPC module or a PC that's connected to NuStreams-2000i/600i via an RJ45 cable.
- **Remote:** Choose this option when you're running APMPT-4 from other PC located on the network. Choose the IP address which is assigned from NuStreams-2000i/600i from the scroll-down menu。
- **Demo:** Choose **demo** to enter APMPT-4's Demo Mode.
- **Connect/Cancel:** Click the Connect button to connect to NuStreams-2000i/600i or click the Cancel button to quit.



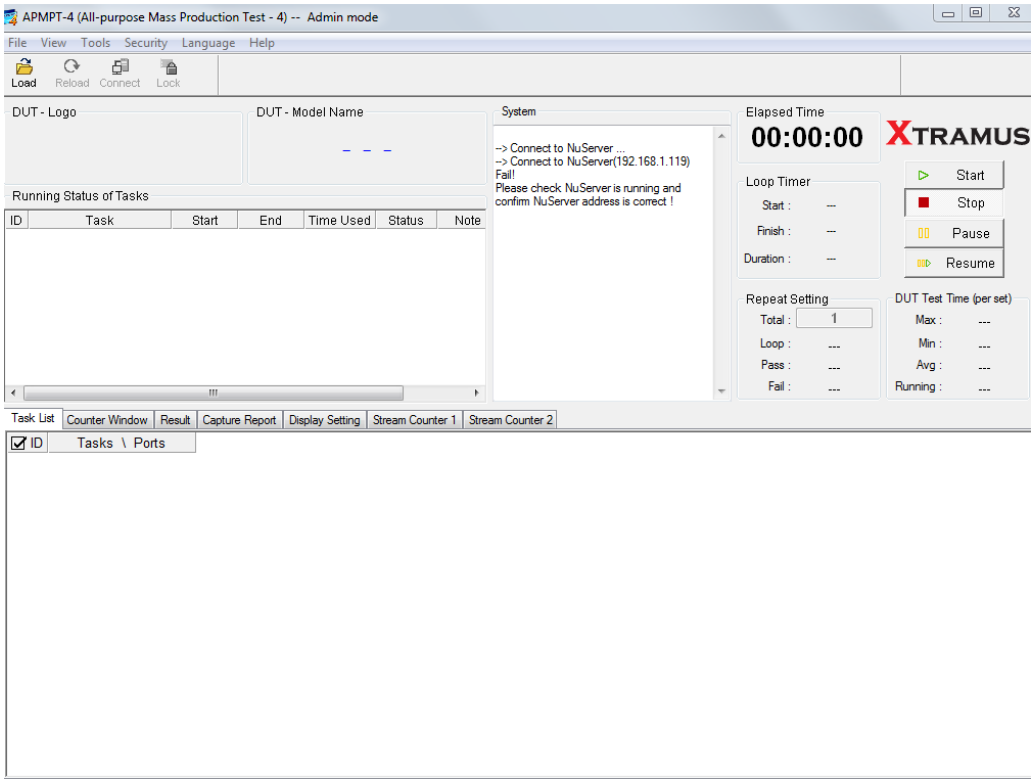
If NuServer is not running while starting APMPT-4, a window will pop up and ask if you would like to run NuServer. Please click **Yes** to continue or **No** to cancel.



A "NuServer-NIC Information" window will pop up. Please select the NIC (Network Interface Card) which is connected to NuStreams -2000i/ 600i from the Network Interface Information table, and click OK. If you're using NuStreams-2000i's IPC module, please choose "Realtek RTL8139 Family Fast Ethernet". NuServer will connect to the daughter boards, and APMPT-4 will start as well.

Please follow the steps down below to start APMPT-4:	
	When the information listed in the Nuserver window is abnormal, click **Force Disconnect**, and then click **ReConnect**. **Force Disconnect**: Disconnect with NuStreams -2000i/ 600i forcefully. **ReConnect**: Reconect with NuStreams -2000i/ 600i.
	For security reasons, APMPT-4 requires Account/Password to login. The default Account/Password is: • **Account: Admin** • **Password: xtramustech** Please note that **the password is case-sensitive**, and shall be changed as soon as you login for the first time. Please refer to "**3.3.4. Security**" for more information about how to change APMPT-4's password. • **Enable auto-logout after 5 min:** Enable this function so APMPT-4 shall automatically logout after **5** minutes. • **Login/Cancel:** Click Login/Cancel button to login or cancel.

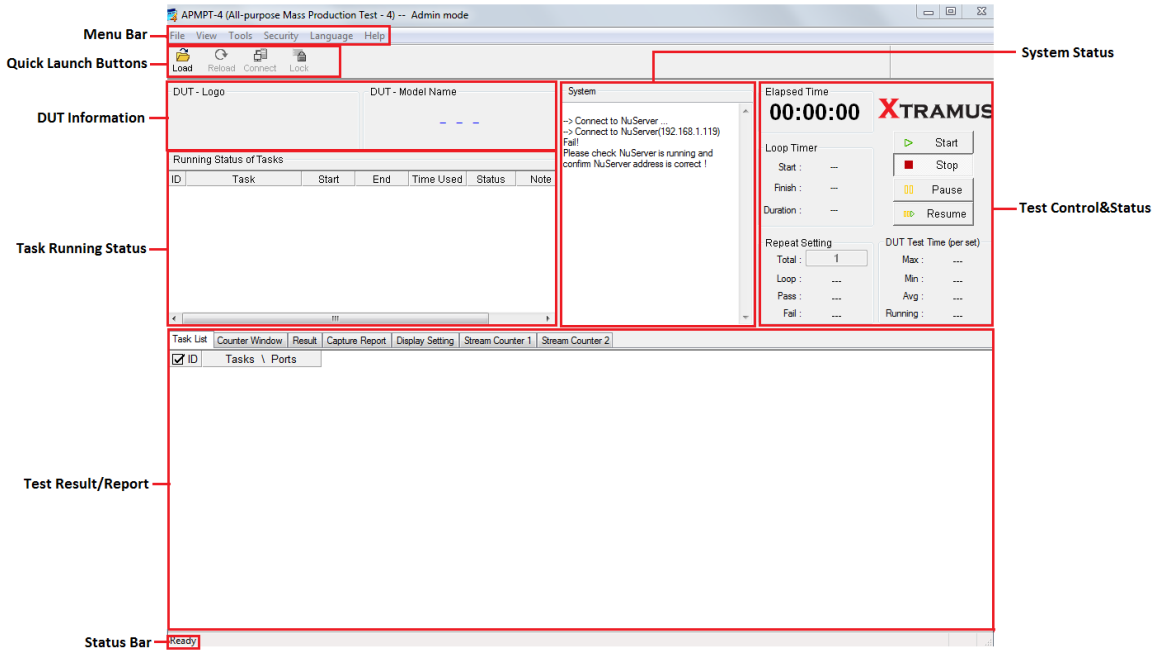
Please follow the steps down below to start APMPT-4:



You now have access to APMPT-4's main display window.

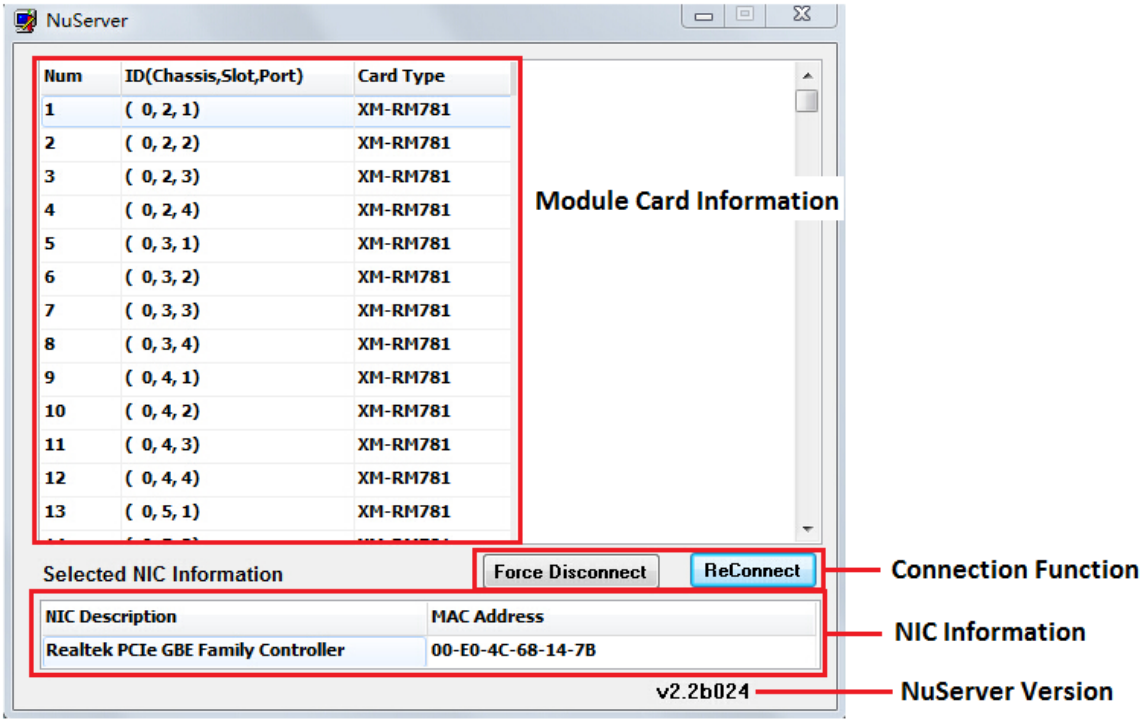
3.2. APMPT-4/NuServer Main Window Overview

APMPT-4 Main Window



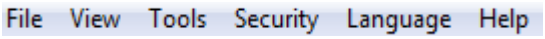
Function Descriptions	
Menu Bar	The Menu Bar allows you to manage test model settings, view test log/ model information, set/reset APMPT-4 password, and change language displayed.
Quick Launch Buttons	The Quick Launch Buttons allow you to load/reload test model settings, connect to the NuServer, and lock test model.
DUT Information	This section of the main window contains the DUT‘s logo and model name.
Task Running Status	This section of the main window contains general information/status of the tasks that are currently running.
Status Bar	The Status Bar shows the APMPT-4’s running status.
System Status	The System Status displays running processes of APMPT-4 system.
Test Control & Status	The Test Control & Status section contains test control buttons (which allow you to Start/Stop/Pause/Resume tests) and general test information.
Test Result/Report	This section allows you to view the test results.

NuServer



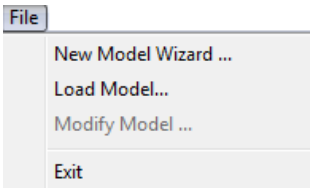
Description	
Module Card Information	This section displays the information regarding to the model cards that are installed on NuStreams-2000i/600i. Model Card IDs are showed as the format of **(X, Y, Z)** while X is the number of the chassis (which is displayed on NuStreams-2000i/600i), Y is the slot number where this model card is installed, and Z is the available port number located on the model card.
Connection Function	You can reconnect a link down status or force to disconnect your NuStreams-600i/2000i to your PC.
NIC Information	This section displays the detail information (including NIC Model name, NIC's MAC address) regarding to the selected NIC.
NuServer Version	This section displays the version of your NuServer.

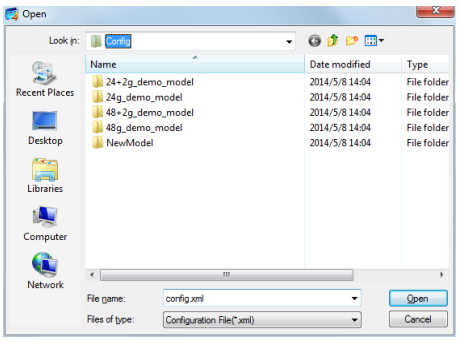
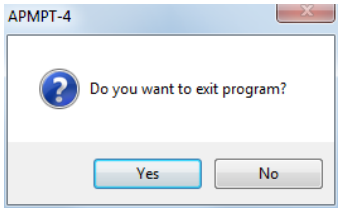
3.3. Menu Bar



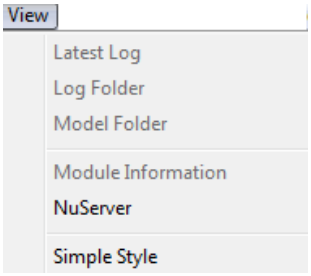
APMPT-4 Menu Bar includes configuration options such as **File**, **View**, **Tools**, **Security**, **Language**, and **Help**. Please refer to the sections down below for detail information regarding to each configuration option.

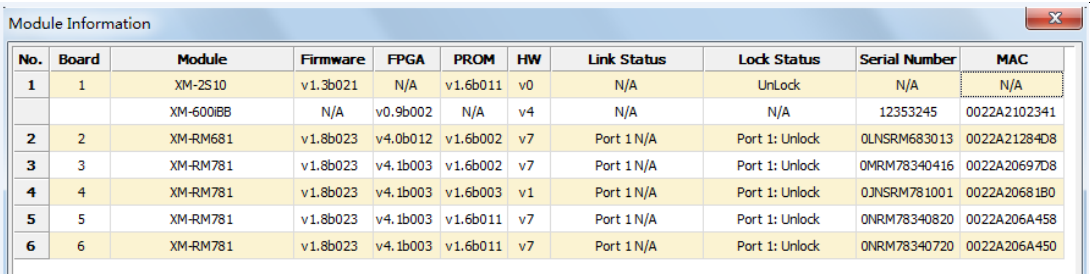
3.3.1. File



File Menu Bar Overview		
New Model Wizard	Choose this option to start the New Model Wizard. The New Model Wizard allows the users to set testing options for DUT. For detail descriptions regarding to the New Model Wizard and its settings, please refer to"**4. Creating Task via New Model Wizard**".	
Load Model		Load a previously-saved configuration file and apply these settings to APMPT-4. All the configurations you've made via New Model Wizard will be saved as a "***.xml**" file, along with several "***.cfg**" files. Please note that these "***.cfg**" files contain test settings as well. Deleting them will cause your "***.xml**" file unable to load properly.
Modify Model	Choose this option to make changes to the current test settings for DUT. For detail descriptions regarding to these settings, please refer to the section down below.	
Exit		A prompt pop-up window will ask if you are sure to exit APMPT-4. Click **Yes** to exit APMPT-4, or click **No** to cancel.

3.3.2. View

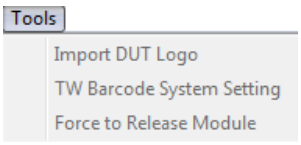


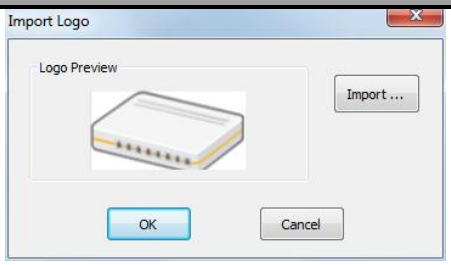
View	
Latest Log	Choose **Latest Log** allows you to view the latest test log file (in "***.txt**" format).
Log Folder	Choose **Log Folder**, and then the folder where all the saved test logs of the current test model will be opened.
Model Folder	Choose **Model Folder**, and then the folder where all the DUT model configuration files are saved will be opened. The default Log folder file path is under "**C:\Program Files\NuStreams\APMPT-4 v2.1b004\config**".
Module Information	 The Module Information window displays all the module cards that are installed on NuStreams-2000i/600i and their detail information. To close the Module Information window, click **OK** button.
NuServer	Display the NuServer window. For more information regarding to NuServer window, please refer to "**3.2. APMPT-4/NuServer Main Window Overview**".
Simple Style	Choose **Simple Style** will make you run the tests under a simple mode.

Module Information

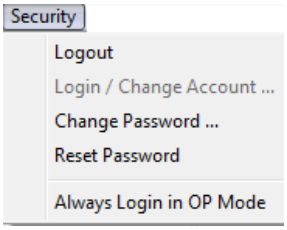
No.	Board	Module	Firmware	FPGA	PROM	HW	Link Status	Lock Status	Serial Number	MAC
1	1	XM-2S10	v1.3b021	N/A	v1.6b011	v0	N/A	UnLock	N/A	N/A
		XM-600iBB	N/A	v0.9b002	N/A	v4	N/A	N/A	12353245	0022A2102341
2	2	XM-RM681	v1.8b023	v4.0b012	v1.6b002	v7	Port 1 N/A	Port 1: Unlock	0LNSRM683013	0022A21284D8
3	3	XM-RM781	v1.8b023	v4.1b003	v1.6b002	v7	Port 1 N/A	Port 1: Unlock	0MRM78340416	0022A20697D8
4	4	XM-RM781	v1.8b023	v4.1b003	v1.6b003	v1	Port 1 N/A	Port 1: Unlock	0JNSRM781001	0022A20681B0
5	5	XM-RM781	v1.8b023	v4.1b003	v1.6b011	v7	Port 1 N/A	Port 1: Unlock	0NRM78340820	0022A206A458
6	6	XM-RM781	v1.8b023	v4.1b003	v1.6b011	v7	Port 1 N/A	Port 1: Unlock	0NRM78340720	0022A206A450

3.3.3. Tools



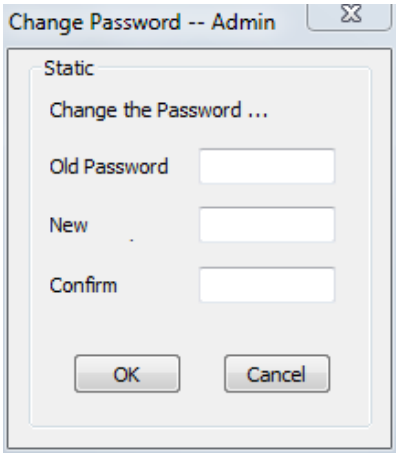
Tools	
Import DUT Logo	 You can load an image file that represents the DUT for testing via **Import DUT Logo** function. The image file you chose will be shown on **DUT Logo** field of the Main Window. • **Logo Preview:** The image you've chosen will be displayed in this field for preview. • **Import:** Click this button to choose the image file that will be displayed. • **OK:** Click this button to apply the changes you've made. • **Cancel:** Click this button to abandon all the changes you've made and exit Import Logo Window.
TW Barcode System Setting	The Setting is for TW Barcode System
Force to Release Module	When the test encounters some unexpected problems which lead the board dead, or other tests need to lock the current board, you can choose **Force to Release Module** to obtain the board again.

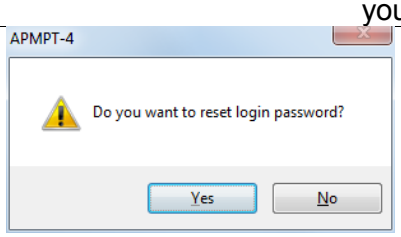
3.3.4. Security

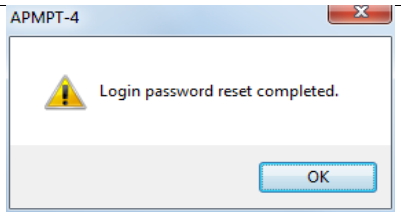


APMPT-4 can run under **Admin Mode** and **Operator Mode**:

- **Admin Mode:** Users have the maximum authorization and can access all APMPT-4's functions.
- **Operator Mode:** Users are only allowed to access APMPT-4's basic functions such as loading saved DUT model test settings and view latest test log/module card information/NuServer

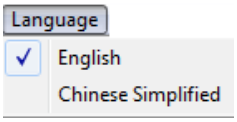
<table>
<tr><th colspan="2">Security</th></tr>
<tr><td>Logout</td><td>Logout from Admin Mode and switch APMPT-4 to Operator Mode.</td></tr>
<tr><td>Login/Change Account</td><td>Login to the Admin Mode.</td></tr>
<tr><td>Change Password</td><td> 

You can change the password for Admin Mode here.
For security reasons, it is recommended to change APMPT-4's password after you first login.
• Old Password: Enter the old password here.
• New: Enter the new password here. The new password should be 6~12 characters and mustn't contain special symbols.
• Confirm: Please type your new password again for confirming.
• OK: Apply all the changes you've made and apply.
• Cancel: Cancel and abandon all the changes you've made.</td></tr>
<tr><td>Reset Password</td><td> 



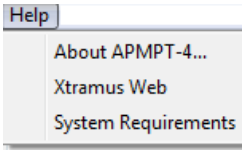
If you forget APMPT-4's Admin Mode password, you can reset the password to the default password "xtramustech".
Click Yes to start resetting the login password (or No to cancel), and click OK to complete.</td></tr>
<tr><td>Always login in OP Mode</td><td>Every time when APMPT-4 starts running, it will run under Operator Mode.</td></tr>
</table>

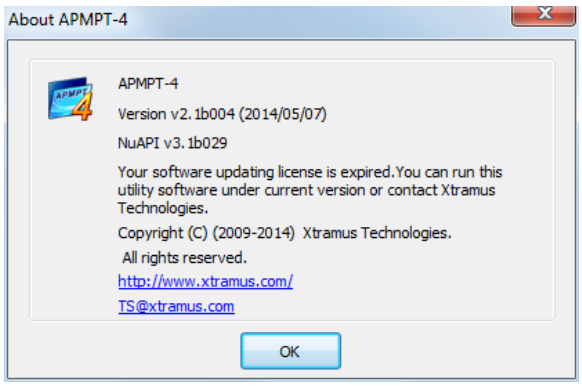
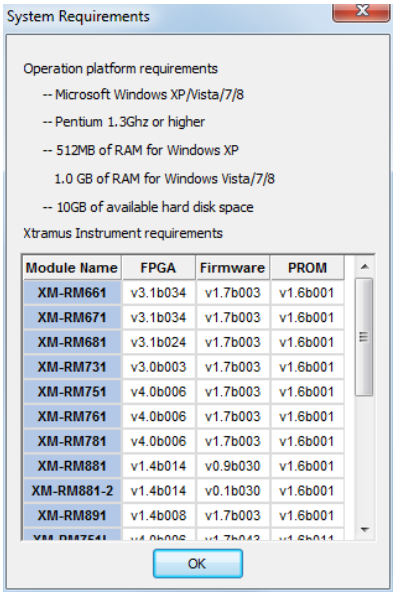
3.3.5. Language



Language	
English/ Chinese Simplified	APMPT-4 has **2** different languages for its UI available. You can set the language of UI to either **English** or **Simplified Chinese**.

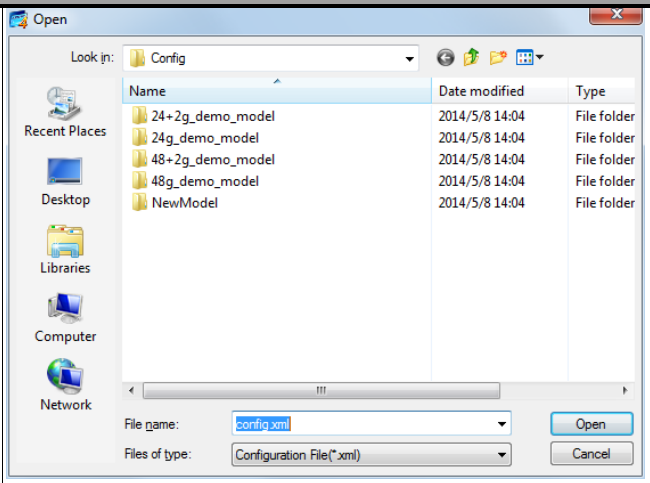
3.3.6. Help



Help		
About APMPT-4		The **About APMPT-4** window will pop up and show detailed system information.
Xtramus Web	Click this option to access to Xtramus official website.	
System Requirement		The “**System Requirements**” window will pop up and show the requirements for your PC and the FPGA/Firmware/PROM version limit of the module cards. Click the **Ok** button to exit the “**System Requirements**” pop up window.

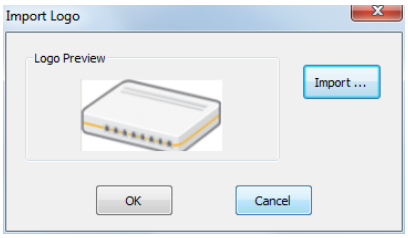
3.4. Quick Launch Buttons

The Quick Launch Buttons allow you to Load/Reload DUT Model Settings, Connect to NuServer, or Lock a Module Card on the Chassis.

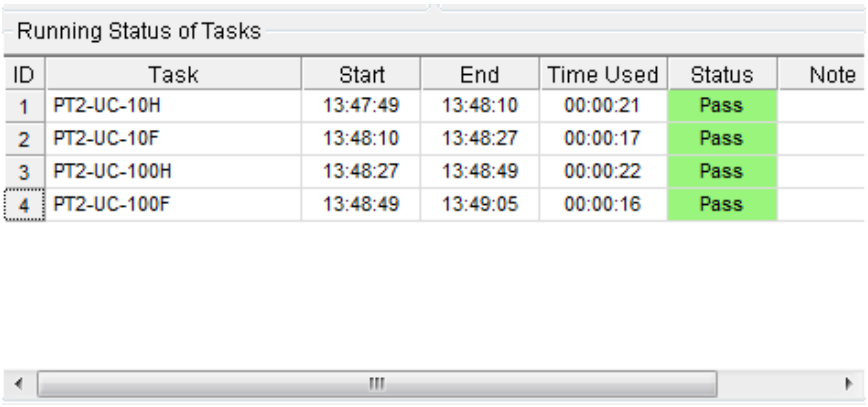
Quick Launch Buttons	
Load	 The **Load** Quick Launch Button serves the same function as **Load Model** on the Menu Bar. Clicking this button allows loading a previously-saved configuration file and applies these settings to APMPT-4. All the configurations you've made via New Model Wizard will be saved as a "***.xml**" file, along with several "***.cfg**" files. Please note that these "***.cfg**" files contain test settings as well. Deleting them will cause your "***.xml**" file unable to load properly.
Reload	APMPT-4 will reload the current opened DUT model setting and apply all these settings.
Connect	The **Connect** button allows you to re-connect to the NuServer if it is not connected while initializing APMPT-4.
Lock	Clicking the **Lock** button allows the user to lock a specific module card installed on a NuStreams-600i/2000i chassis.

3.5. DUT Information

The **DUT Information** on APMPT-4 Main Window displays the DUT's Logo and Model Name.

DUT Information	
DUT – Logo	 You can load an image file that represents the DUT from your PC, and apply it as **DUT - Logo** for reference via **Import DUT Logo** function located on the **Menu Bar**. The image file you chose will be shown here.
DUT – Model Name	When making configurations in **New Model Wizard**, you can input a model name under **Model Name** field. For detailed information, please refer to "**4.1. Selecting Active Ports from Installed Module Cards**". The model name you input will be shown here.

3.6. Task Running Status



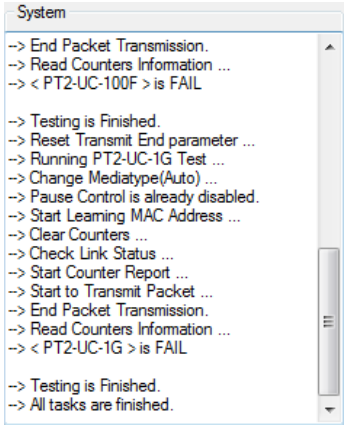
The **Task Running Status** displays general information/status of the tasks that are currently running. The **Task Running Status** is blank if no DUT Model Setting is loaded to APMPT-4.

Description	
ID	Task ID. Tests will be performed
Task	Name of the Task.
Start	The start time of the task.
End	The end time of the task.
Time Used	Display time used with the task.
Status	Task Pass/Fail/Done.
Note	Notes regarding to the task.

3.7. Status Bar

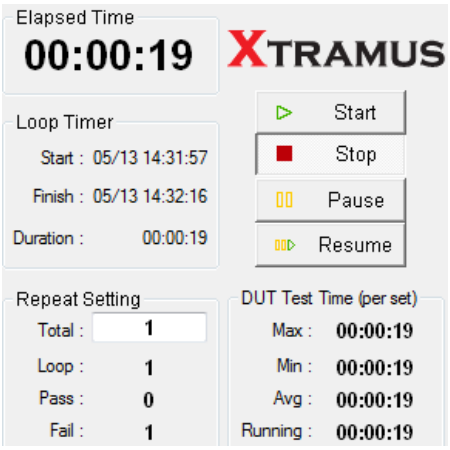
The **Status Bar** located on the bottom-left of APMPT-4 Main Window shows the task APMPT-4 is currently running and its progress.

3.8. System Status



The **System Status** shows detailed information of APMPT-4's system status and what APMPT-4 is currently processing.

3.9. Test Control & Status



The **Test Control & Status** allows user to control testing process via control buttons and view general information regarding to test time.

Loop Timer	
Start/Finish	This section displays the starting/finishing time (including date) of the test.
Duration	This section displays the maximum duration of time spent on one single loop.

Repeat Setting	
Total	You can set the how many times you would like to repeat all the tests here in this field.
Loop	This section displays the current number of test loop.
Pass/Fail	This section displays how many times the tests have been passed/failed.

Elapsed Time	
Elapsed Time	This section displays duration of time spent on the whole testing process.

Task Control Buttons	
	The Task Control Buttons allow you to control the testing process. • **Start:** Click this button to start DUT test. • **Stop:** Click this button to stop DUT test. If you click **Start** button again afterwards, DUT test will start from the beginning. • **Pause:** Click this button to pause DUT test. This DUT test can be resumed later on. • **Resume:** Click this button to resume a previously paused DUT test.

DUT Test Time (per set)	
Max/Min	Maximum/Minimum period of time used when performing one set of tasks.
Avg	The average period of time used when performing one set of tasks.
Running	The total time used to perform the tasks.

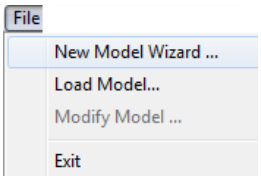
4. Creating Task via New Model Wizard

When performing tests on your DUT with APMPT-4 for the first time, you have to create a new set of test settings for the DUT.

Before starting to create a new task via New Model Wizard, please be sure that:

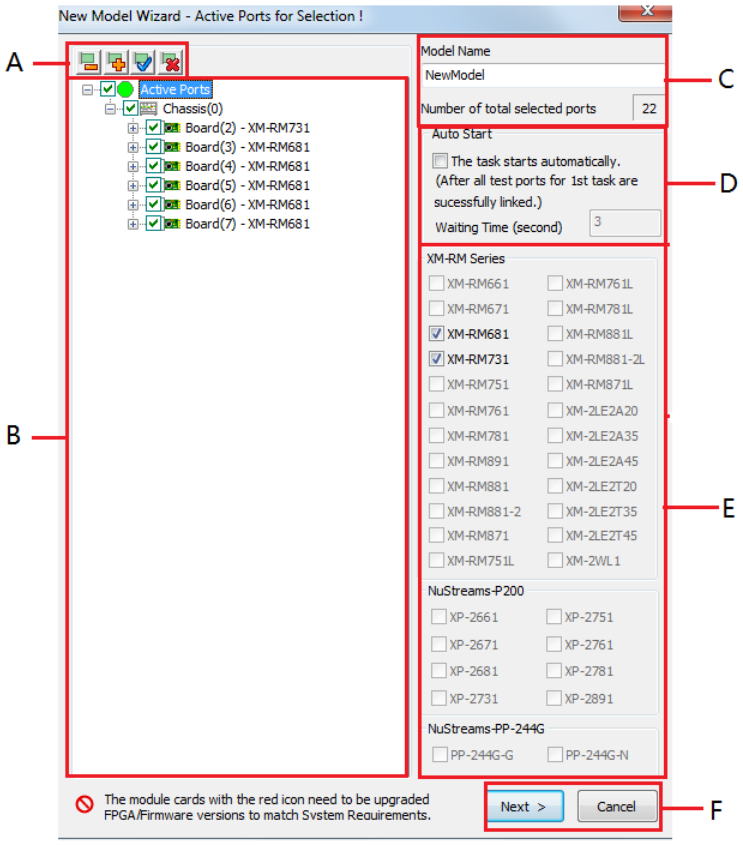
- All module cards (such as XM-RM751, XM-RM761, or XM-RM781) are installed on chassis (such as NuStreams-2000i/600i) properly.
- The chassis (such as NuStreams-2000i/600i) is powered-on and is connected to a PC according to "**2.2. Hardware Installation**".

To start using New Model Wizard, please click **File** on the Menu Bar, and choose **New Model Wizard** as shown in the figure down below.



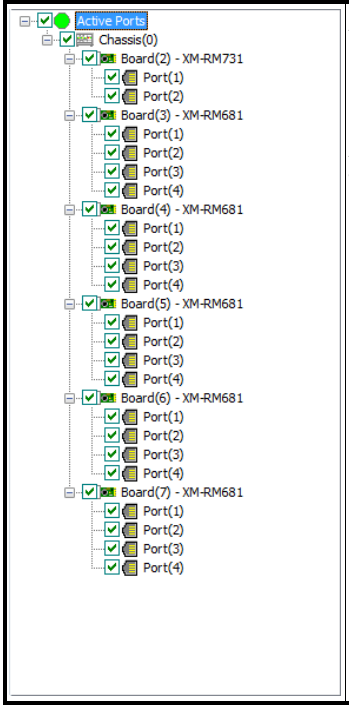
A "**New Model Wizard – Active Ports for Selection!**" window will pop up. All module cards that are installed on the chassis will be displayed here.
Please refer to the sections down below and start creating test tasks for your DUT.

4.1. Selecting Active Ports from Installed Module Cards



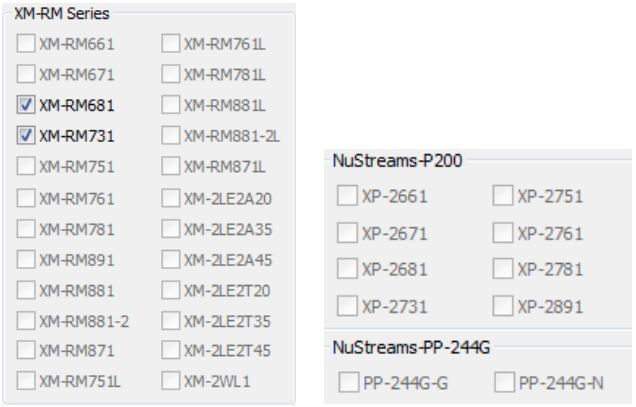
A. Tree Style Tab Buttons	
	These two buttons allow you to unfold/fold all the Active Port tree style tab displayed in B.
	These two buttons allow you to check/uncheck all the Active Port displayed in B.

B. Active Port Tree Style Tab & E. Module Card List

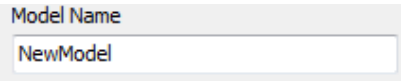


All the module cards, along with their Active Ports are listed here in this field. You can fold/unfold the tree style tab by clicking ⊟/⊞ icons. Also, you can check/uncheck the port by clicking ☑ icon.

Also, you can check which module card and its Active Ports are activated for tests in **E. Module Card List** as well. Click the check box in front the module card you would like to activate/deactivate.



C. DUT Model Name & Active Port Count

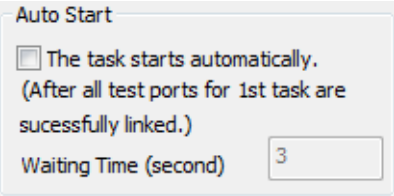


You can input DUT's model name here in this field.

Please note that a folder named after the model name you input here will be created under "**config**" folder inside APMPT-4's folder (Default path: **C:\Program Files\NuStreams\APMPT-4 v0.9b060\config**), and all the configuration files and test logs will be saved to that folder.

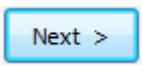
This field display how many ports you've been activated for now.

D. Auto Start



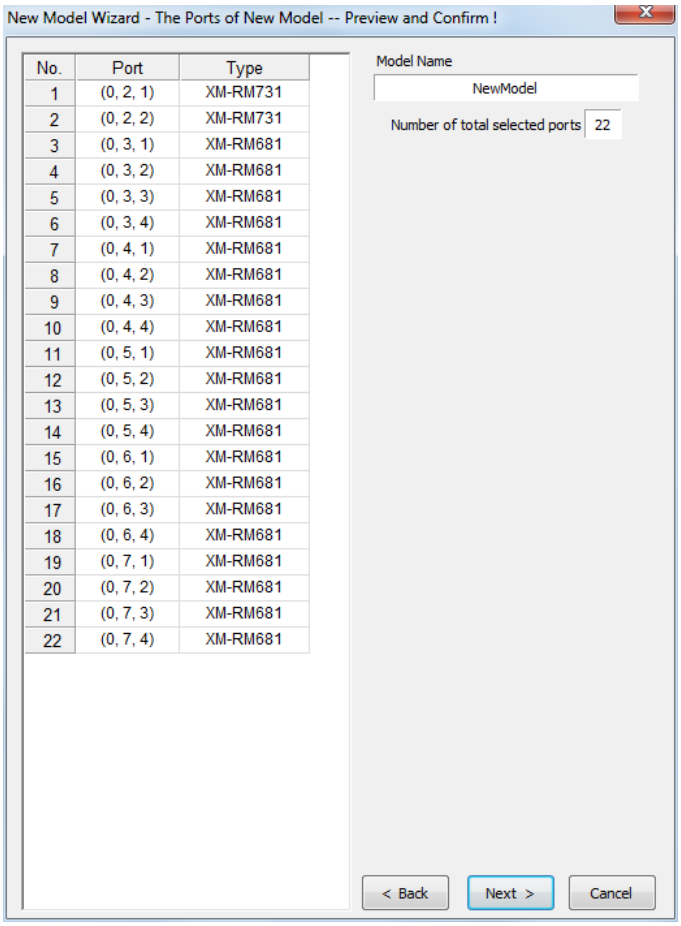
If you would like APMPT-4 to start the test automatically (with delay in a few seconds) without having to press the Start button located on the Main Window, check the check-box here and input the delay time in the field down below.

F. Next>/Cancel



Click this button to apply all the changes you've made and move on to the **New Model Wizard - The Ports of New Model -- Preview and Confirm!** window.

Click this button to abandon all the changes you've made and go back to the Main Window.



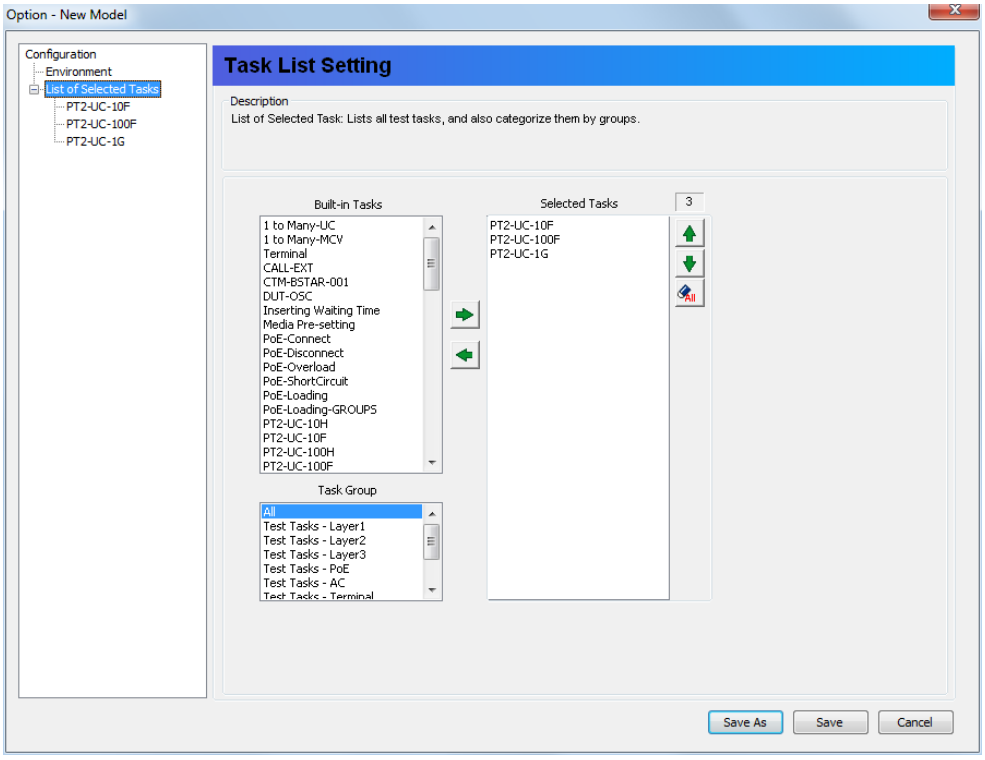
After finishing the module cards/Active Ports for the tests, you can review all the ports, module cards, and model name on **New Model Wizard - The Ports of New Model -- Preview and Confirm!** window.

Click **Next >** to start making detail task settings or click **< Back** to go back to **Select Active Ports** window.

Also, you can click **Cancel** to abandon all the changes you've made and go back to the Main Window.

4.2. Making Settings on Option – New Model Window

An **Option – New Model** window will show up after you've selected module cards and Active Ports. The **Option – New Model** window allows you to make detail test configurations.



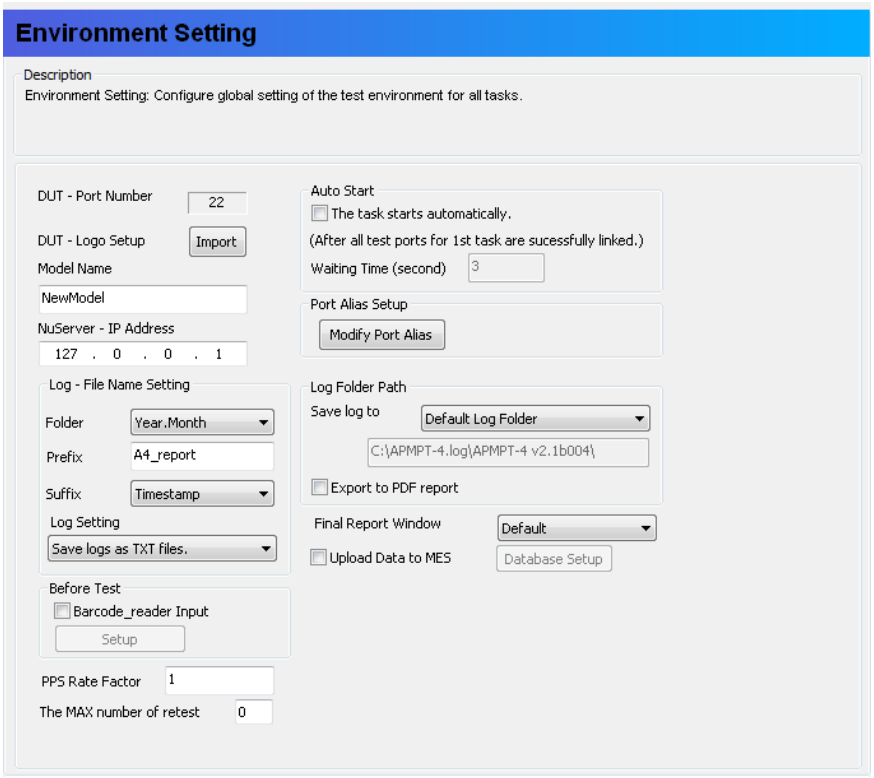
APMPT-4 has two different kinds of configurations: **Environment Setting** and **Task List Setting**.

- **Environment Setting:** Configure global settings of the test environment for all tasks.
- **Task List Setting:** All test tasks are listed and categorized by groups. All tasks added to the **Selected Tasks** field will be listed under this category and can be configured in detail.

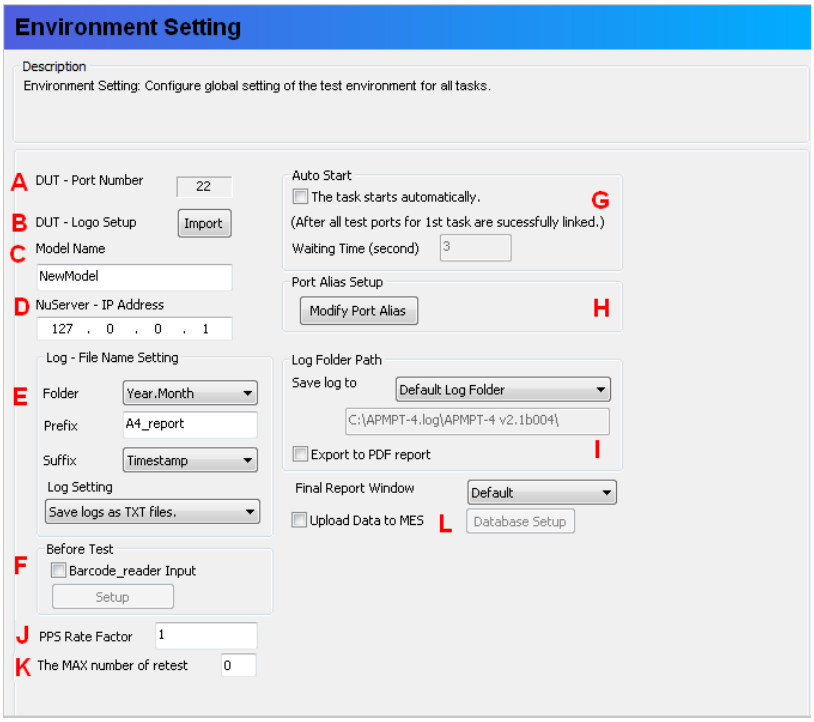
For more detail information and descriptions regarding to these settings, please refer to the sections down below.

4.2.1. Configuring Environment Setting

To access **Environment Setting** and start configuring global settings of the test environment for all tasks, please click **Environment** from the Configuration Tree Style Tab located on the left side of **Option – New Model** window as shown in the figure above.



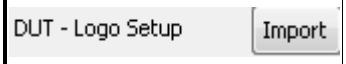
Please note that all changes you've made here will be kept temporally and won't be lost if you switch to **Task List Setting**. However, you must click **Save** or **Save as** (located on the bottom-right part of the **Option – New Model** window to apply all the changes you've made.



A. DUT – Port Number

You can view the number of active ports in this field.

B. DUT – Logo Setup



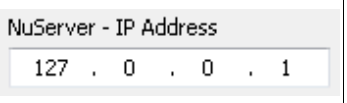
You can load an image file that represents the DUT from your PC, and apply it as **DUT - Logo** for reference by clicking the **Import** button. The image file you chose will be shown on the **DUT – Logo** field located on Main Window.

C. Model Name

You can input or change DUT's model name here in this field.

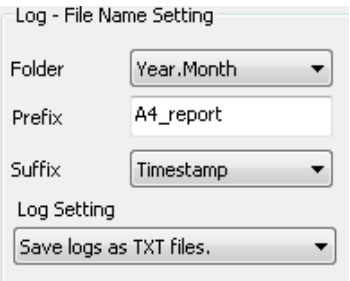
Please note that a folder named after the model name you input here will be created under "**config**" folder inside APMPT-4's folder (Default path: **C:\Program Files\NuStreams\APMPT-4 v2.1boo4\config**), and all the configuration files and test logs will be saved to that folder.

D. NuServer – IP Address

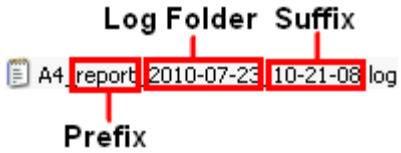


If you're running APMPT-4 from other PC located on the network, you can set the IP address which is assigned from NuStreams-2000i/600i from the scroll-down menu or input the IP address manually.

E. Log – File Name Setting



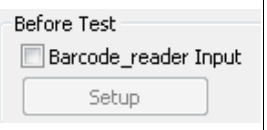
Test results will be saved as log files and named automatically after tests are completed. All log files' names are consisted in the format as shown in the figure down below:



APMPT-4 creates test result logs and stores these logs automatically to folders named after the testing date. You can set the names that will be applied to these folders and test result logs here in **Log – File Name Setting**.

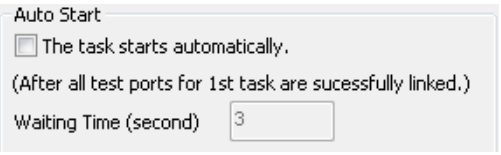
- **Folder:** You can set the name of the log folders as "**Year, Month**", or "**Year, Month, Day**".
- **Prefix:** You can input the prefix word for test result log names here.
- **Suffix:** You can set the suffix as **Timestamp** (the log file creating time), **Serial Number**, and **Bar Code** (barcode).
- **Log Setting:** In this field, you can choose the format of your test result report. The report format can be TXT, XML or both TXT and XML .

F. Barcode Reader



By connecting a barcode reader to your PC, you can scan pre-defined barcodes with the barcode reader. Information such as **DUT Task Settings**, **Operator ID** and **DUT MAC Address** can be read by barcode reader and input into APMPT-4.

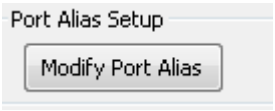
G. Auto Start

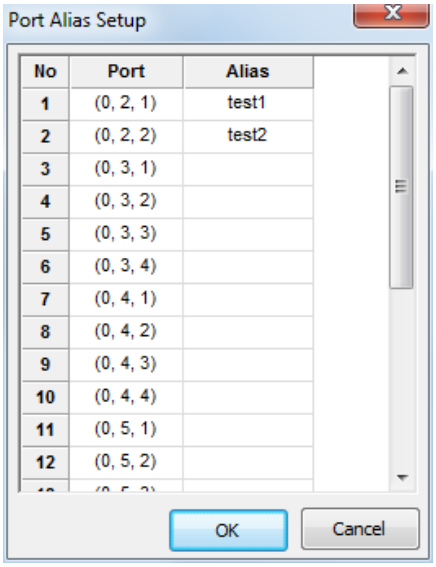


APMPT-4 will halt and wait for further instructions after the current running task is completed. You can click the check- box in this section so that APMPT-4 will start the next task automatically.

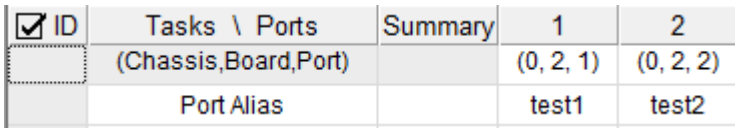
Also, you can set how many seconds shall APMPT-4 be waiting before starting the next task in the field down below (**Waiting Time**).

H. Port Alias Setup





You can set alias for all Activated Ports here in **Port Alias Setup** window. Alias you input here will be shown in the **Main Window**.



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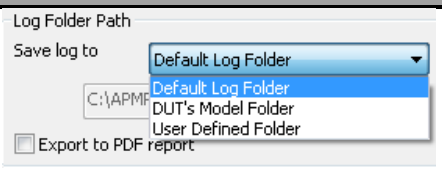
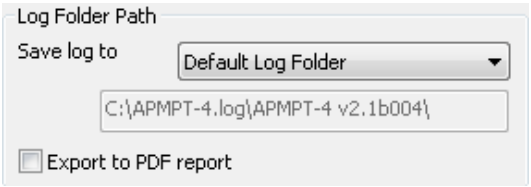
Website: www.Xtramus.com

I. Log Folder Path





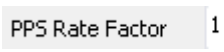
As mentioned in "**E. Log – File Name Setting**", APMPT-4 creates test result logs and stores these logs automatically to designated folders.

You can set where you want to save the test logs by the scroll-down menu.

- **Default Log Folder:** Test logs will be saved to the default log folder, which is: **C:\APMPT-4.log\APMPT-4 v2.1b004\Model Name\log**.
- **DUT's Model Folder:** Test logs will be saved to where DUT test settings are saved.
- **User Defined Folder:** Test logs will be saved to the designated file path you input in the **Path** field down below.

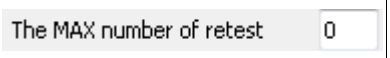
Export to PDF report: Selecting this option will allow you to export the log in PDF format.

J. PPS Rate Factor



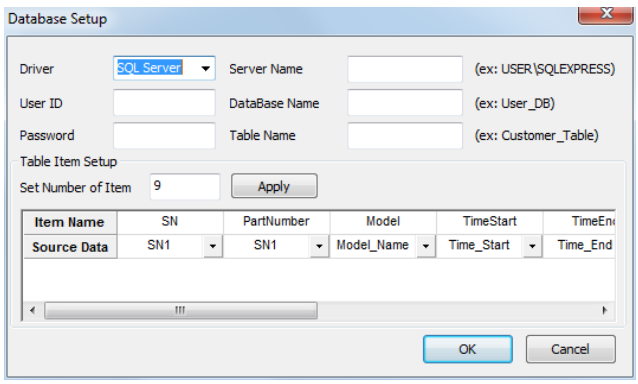
Set the rate factor of packet per seconds.

K. The MAX number of reset



Set the max number of times to repeat the test.

L. Others

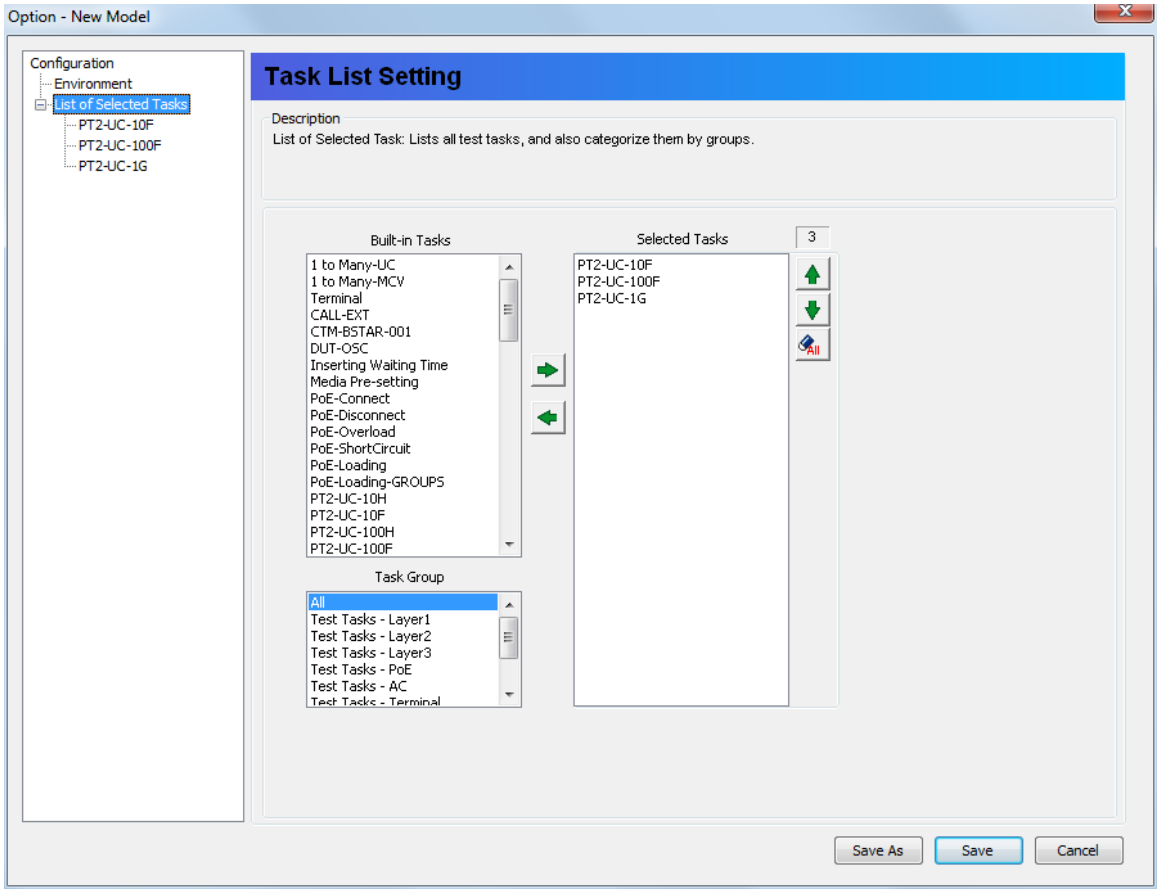


Final Report Window: It includes **Default**, **Pass only** and **Fail only** options, in which Default will show all the test result, Pass only will only show the passed test and Fail only will only show the failed test.

Upload Data to MES: If you enable the **Upload Data to MES** function, the **Database Setup** button will be available. Clicking the **Database Setup** button will pop up a **Database Setup** window for settings. The **Database Setup** window allows you to set your **Driver Type** and allows you to define your **User ID**, **Password**, **Server Name**, **Database Name** and **Table Name**.

Besides, you can also **Set Number** of Item (up to 20 items) to be displayed and click **Apply** button to confirm. You can scroll down each Source Data's field to indicate it as **Work Area**, **SN1**, **OP_ID**, **Time_Start**, **Time_End**, **Time_Used**, **Model_Name**, **DUT_MAC** or **Final_Result**.

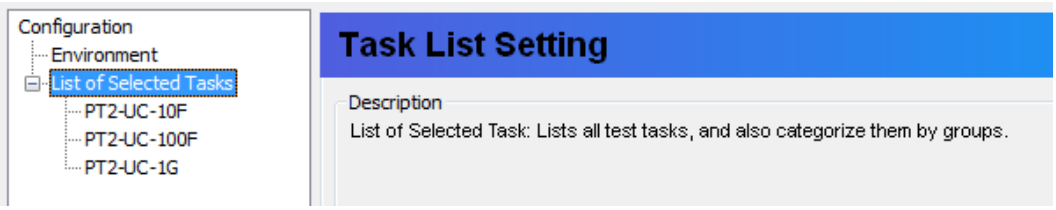
4.2.2. Adding/Removing Tasks via Task List Setting



Under **Task List Setting**, you can:

- View all APMPT-4's available tasks according to their groups.
- Add/Delete task that you would like to perform.
- Arrange order of the tasks.

To start managing tasks for your DUT, please click **List of Selected Tasks** on the left side of the **Option – New Model**.



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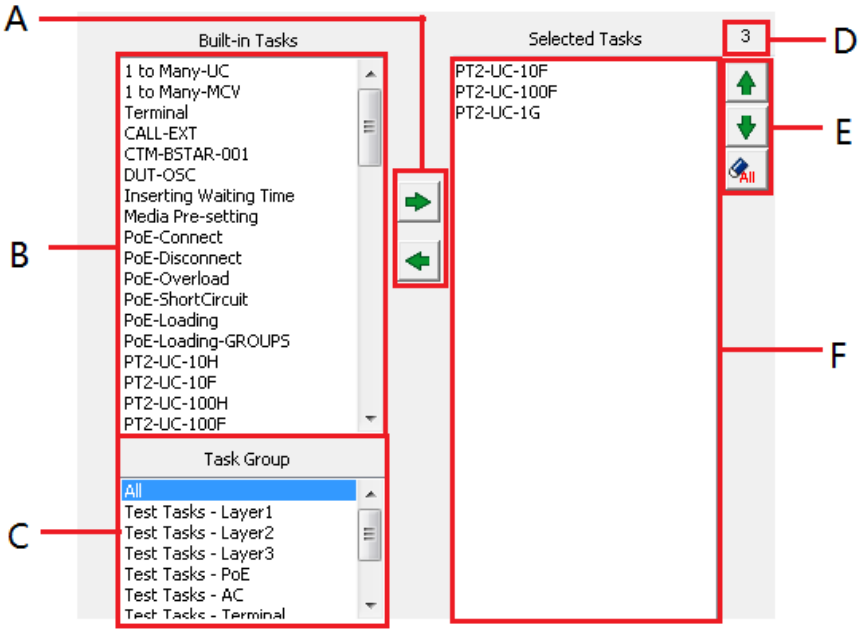

A. Task Add/Remove Buttons	
	The **Task Add/Remove Buttons** allow you to add or remove tasks to/from **Selected Tasks**. • By clicking button, you can add the task you've selected from **Built-in Tasks** field in the left-side to the **Selected Tasks** in the right-side. • By clicking button, you can remove the task you've selected from the **Selected Tasks** in the right-side.

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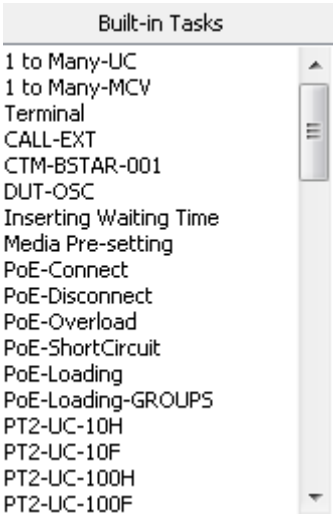
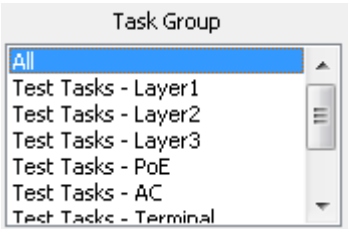
Website: www.Xtramus.com

B. Built-in Tasks & C. Task Group Selection

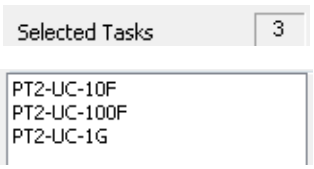


The **Built-in Tasks** display tasks available in APMPT-4. You can choose which tasks you would like the system to display on **Built-in Tasks** field with the **Task Group Selection** scroll-down menu.



- **All:** Display all tasks available.
- **Test Tasks – Layer 1:** Display all available Layer 1 tasks.
- **Test Tasks – Layer 2:** Display all available Layer 2 tasks.
- **Test Tasks – Layer 3:** Display all available Layer 3 tasks.
- **Test Tasks – PoE:** Display all available PoE (Power over Ethernet) tasks.
- **Test Tasks – AC:** Display all available AC (Power) tasks.
- **Test Tasks – Terminal:** Display all available Terminal tasks.
- **Test Tasks – General:** Display all available general tasks.
- **Test Tasks – Customization:** Display all available Customization tasks.

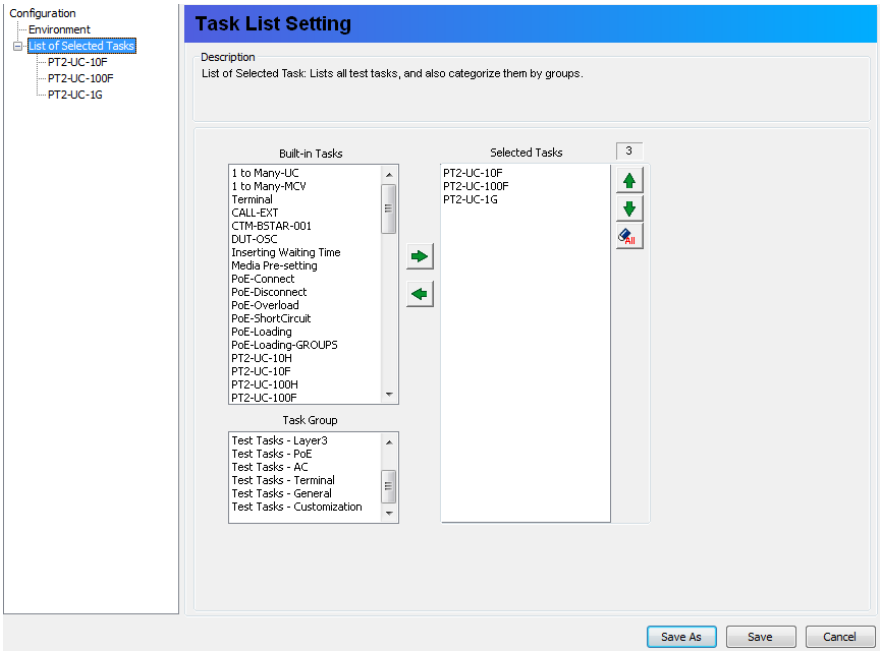
To add a task to **Selected Tasks**, please click the task you would like add in **Built-in Tasks**, and click button.

D & F. Selected Tasks	
	All tasks you've selected from **Built-in Tasks** field will be listed in the **Select Tasks**. The number of the tasks you chose will be shown here as well. To remove a task from **Selected Tasks**, please click the task you would like to remove here, and click button.

E. Selected Tasks Managing Buttons	
	You can manage the testing order of tasks listed in the **Selected Tasks**. To move the priority of a task listed in **Selected Tasks** up, click on that task, and click button; to move the priority of a task listed in **Selected Tasks** down, click on that task, and click button. If you would like to remove all the tasks listed in **Selected Tasks**, click button.

4.2.3. Configuring Tasks Listed on List of Selected Tasks

After choosing the tasks you would like to perform from **Built-in Tasks** as mentioned in "**4.2.2. Task List Setting**", you can start making detail settings with individual tasks by clicking the task you would like to configure from **List of Selected Tasks**. All the configurations for this task will be listed in the right-side section as shown in the figure down below.



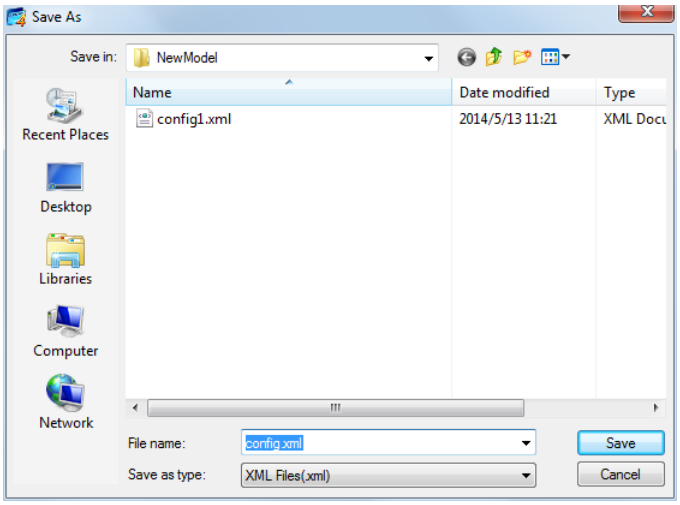
Please note that the maximum number of tasks that can be selected into the **List of Selected Tasks** is **32**.

As mentioned in "**4.2.2. Task List Setting, B. Built-in Tasks & C. Task Group Selection**", all tasks available for APMPT-4 can be divided into different groups **Layer 1**, **Layer 2**, **Layer 3**, **PoE (Power over Ethernet)**, **AC (DUT Power Test)**, **Terminal**, **General** and **Customization**.

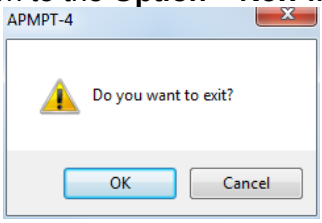
For more detailed information regarding to task settings in APMPT-4's task groups, please refer to "**5. APMPT-4 Detail Task Setting**."

You can use the three buttons to save the settings.

- **Save:** Click this button, a "Save As" window as below will pop up and prompt you to save all the configurations you made.'



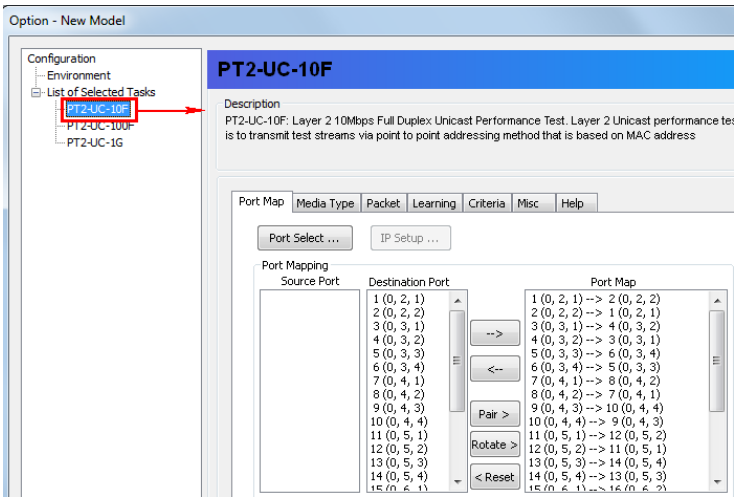
- **Save As:** Click this button, a “Save As” window will pop up and you can save your configurations into another file.
- **Cancel:** Click this button, a reminder window as below will pop up. Click **OK** to exit the **Option – New Model** window. Or click **Cancel** to return to the **Option – New Model** window.



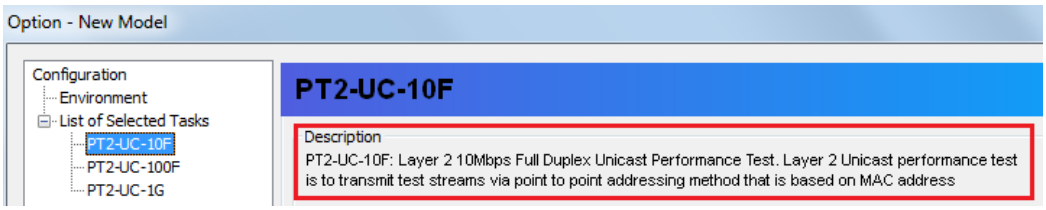
The default name for the configuration setting is “**config**” and will be saved in a folder named after the DUT’s **Model Name**. All configuration setting files are saved as **XML** format, and changing configuration setting’s file type may cause APMPT-4 unable to load your previous saved setting file. APMPT-4 will apply all the settings you’ve made after saving.

5. APMPT-4 Detail Task Setting

As mentioned in "**4.2.3. Configuring Tasks Listed on List of Selected Tasks**", you can make detail settings with individual tasks by clicking the task you would like to configure from **List of Selected Tasks**. All the configurations for this task will be listed in the right-side section as shown in the figure down below.



All tasks available for APMPT-4 can be divided into different groups **Layer 1**, **Layer 2**, **Layer 3**, **PoE (Power over Ethernet)**, **AC (DUT Power Test)**, **Terminal**, **General** and **Customization**. Please refer to "**1.3. Function Description**" for detail descriptions. Also, descriptions for each task can be viewed on APMPT-4 as well.



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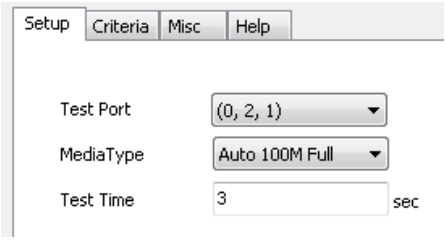
Website: www.Xtramus.com

5.1. Test Tasks - Layer 1: DUT-OSC

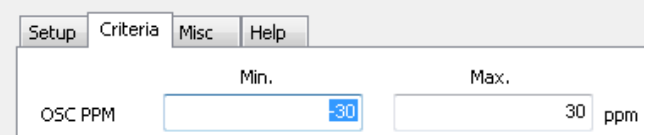
APMPT-4 will start examining Crystal Oscillator's frequency of the DUT and see if it's either faster or slower than standard speed in ppm scale.

5.1.1. Setup



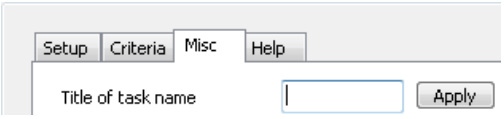
- **Test Port:** Select the module card and the port that will be used for DUT-OSC test. The Test Port available are showed as IDs in the format of **(X, Y, Z)** while **X** is the number of the chassis (which is displayed on NuStreams-2000i/600i), **Y** is the slot number where this model card is installed, and **Z** is the available port number located on the model card.
- **Media Type:** Click the Media Type scroll-down menu to choose DUT's link speed.
- **Test Time:** You can set the testing time for the Layer 1 DUT-OSC task.

5.1.2. Criteria



- **OSC PPM Min/Max:** Please input the minimum/maximum frequencies (ppm) which will serve as DUT-OSC Task's testing criteria.

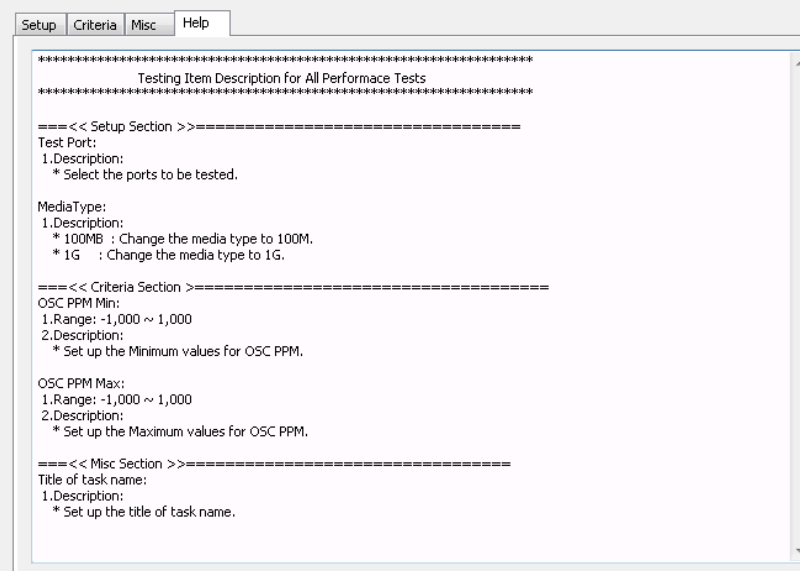
5.1.3. Misc



- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

5.1.4. Help

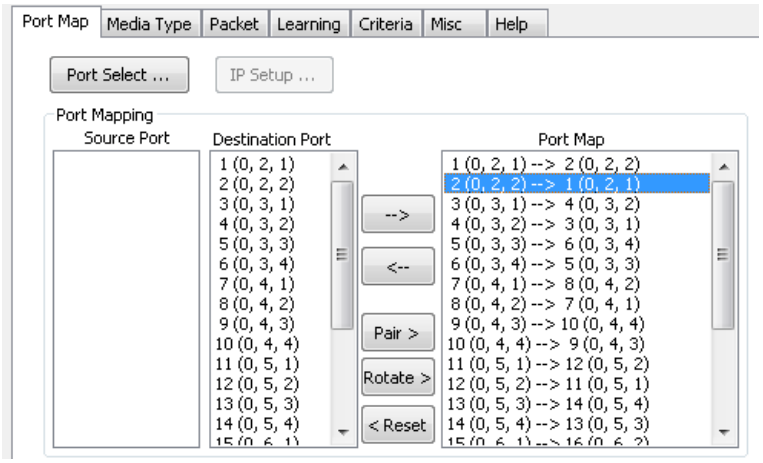
All test variables used for this task and their definitions will be listed here for reference.



5.2. Test Tasks – Layer 2

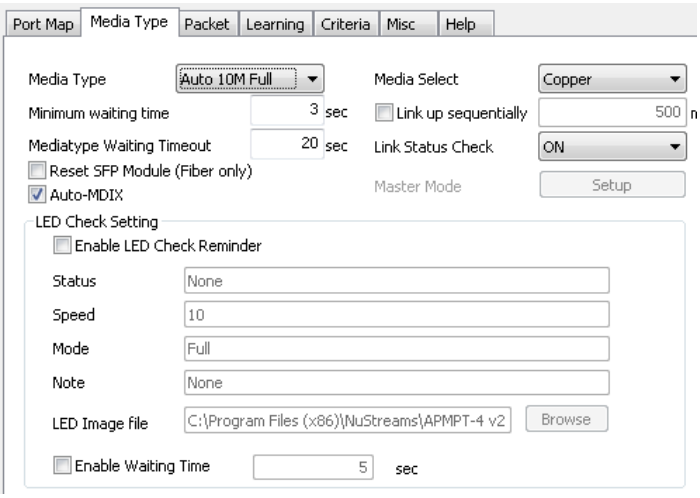
All settings regarding to Layer 2 tasks can be set here. For available Layer 2 tasks and their descriptions, please refer to "**1.3.2. Performance Task in Layer 2 (PT2)**."

5.2.1. Port Map

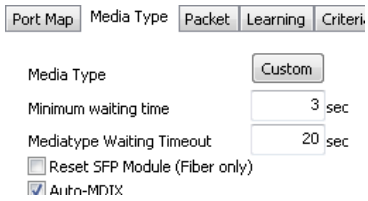


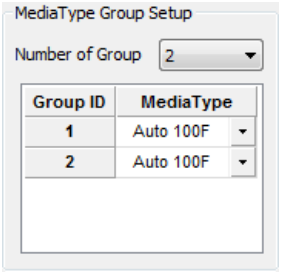
- **Port Select …:** By clicking this button, a **Select Ports for Testing** window will pop up, allowing you to select the module cards and the ports you would like to use for the task.
- **IP Setup …:** For layer2 tasks, the **IP Setup** button presents gray, which serves no function under here.
- **Source/Destination Port:** These two fields display the source/ destination port for the task. Ports are displayed in IDs in the format of **(X, Y, Z)** while **X** is the number of the chassis (which is displayed on NuStreams-2000i/600i), **Y** is the slot number where this model card is installed, and **Z** is the available port number located on the model card.
- **Port Map:** This field shows how test streams will be transmitted from port to port.
- **→:** To assign how test streams flow from source port to the destination port, click a port from **Source Port**, click a port from **Destination Port**, and then click **→** button to add them to the **Port Map**.
- **←:** To remove a port map setting from **Port Map**, click the setting you would like to remove, and then click **←** button to remove it from **Port Map**.
- **Pair >:** APMPT-4 will match ports located on the same module card in a back-and-forth manner, and add them to the **Port Map**.
- **Rotate >:** APMPT-4 will match ports so the last port will connect to the first port, thus forming a loop. If you have the same amount of ports on your chassis and DUT, **Rotate** allows you to test all DUT's ports simultaneously.
- **Reset <:** Reset all port map settings in the **Port Map**.

5.2.2. Media Type

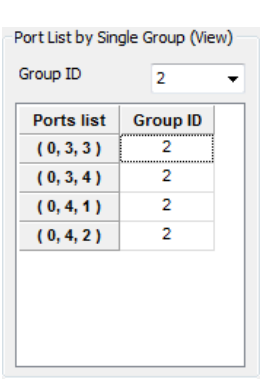


- **Media Type:** By clicking the scroll-down menu, you can set the transmitting mode to **Auto** (with auto-negotiation), **Force** (without auto-negotiation), or **Off** (all the ports in this task are link-down). If you are setting PT2 tasks such as **PT2-UC-GROUPS**, **PT2-FC-GROUPS**, **PT2-BC-GROUPS**, **PT2-FT-GROUPS**, and **PT2-CRC-GROUPS**, the **Media Type** will be replaced by a **Custom** button. As shown in the figure down below, a **Media Type Group Setup** window as below will pop up.



A. MediaType Group Setup	
	You can set the MediaType by group in this section. • **Number of Group:** You can choose the number of the group form the scroll down menu, and then you can set the media type of the group in the area down below. The number of the group is form 1 to 4. • **Group ID:** This field lists the ID numbers of the groups which are available for media type settings. • **MediaType:** You can choose the media type for a group from the scroll down menu.

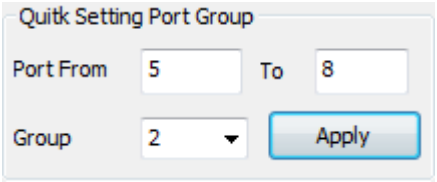
B. Port List by Single Group(View)



You can view all the ports of a single group in this section.

- **Group ID:** Choose the number of a group, and then you can see the ports information of this group listed in the area down below.
- **Ports list:** the position information of the port.
- **Group ID:** the number of the group.

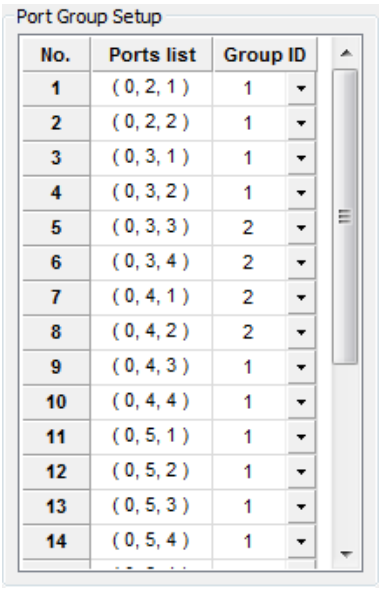
C. Quick Setting Port Group



You can set the consecutive ports into a same group in this section.

- **Port Form:** Input the ports you want to group.
- **Group:** Select the group from the scroll down menu.
- **Apply:** Click this button to make your settings effective.

D. Port Group Setup



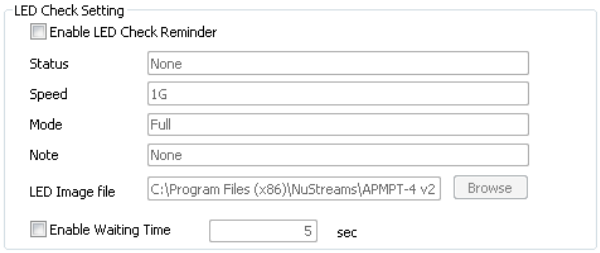
All the Active Ports available for the task will be listed in this section. You can set the group of the port individually here.

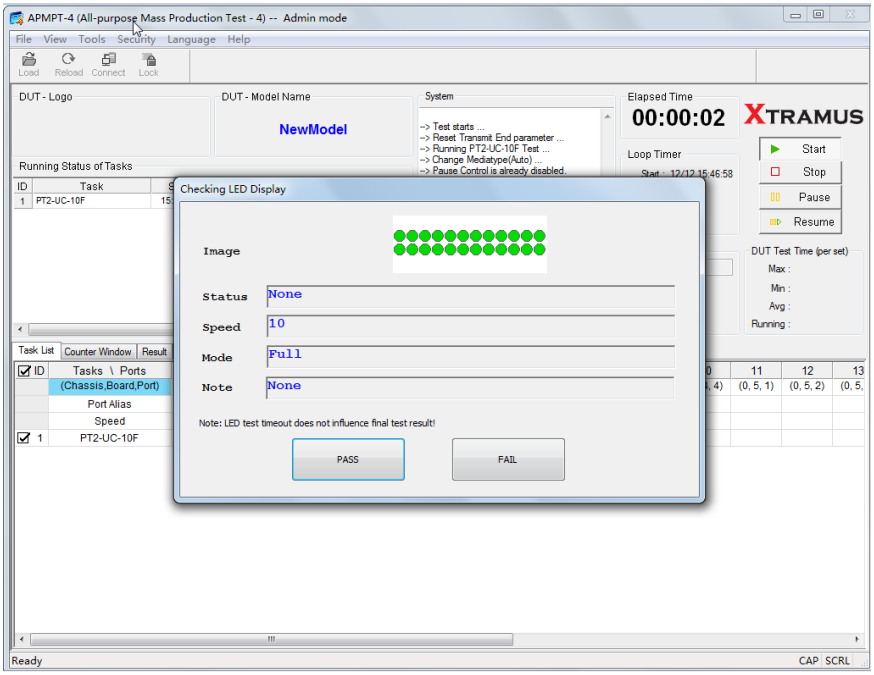
- **No.:** the number of the port.
- **Ports list:** the position information of the port.
- **Group ID:** the number of the group. You can set the **group ID** for each port individually from the scroll down menu.

E. Operation buttons

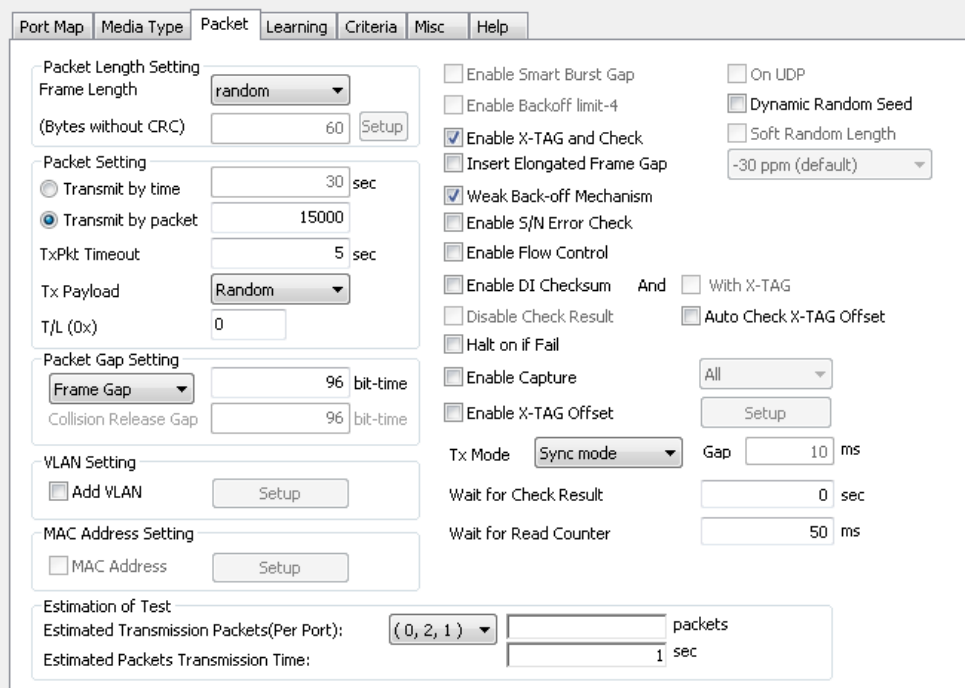
- **Reset All to Default:** click this button to reset all the settings in the **MediaType Group Setup** window to default.
- **OK:** click this button to apply all the settings you made in the **MediaType Group Setup** window.
- **Cancel:** click this button to abandon all the settings you made in the **MediaType Group Setup** window.

- **Media Select:** Click the scroll-down menu to choose if all the connecting cables are **Copper** or **Fiber**.
- **Minimum Waiting Time:** APMPT-4 will halt at least for the **Minimum Waiting Time** you input here during auto-negotiation process.
- **Media Type Waiting Timeout:** If the time spent for auto-negotiation exceeds the **Media Type Waiting Timeout** you set here, the test will stop and the test result will be fail.
- **Link up sequentially:** APMPT-4 makes connections to ports sequentially (one-by-one). Therefore, DUT's Link LEDs will be ON in a one-by-one manner as well. If any problems happen during the test, it will be suspended immediately. Users can identify which port is causing the problem by checking DUT's port LEDs.
- **Link Status Check:** APMPT-4 will check all ports in this task are connected properly before test.
- **Reset SFP Module (Fiber Only):** Selecting this function will allow system to turn Off SFP port and then turn On the SFP port.
- **LED Check Setting:** This window can remind the user how DUT LEDs' display should be during the task. The information you set here will be displayed in the **Checking LED Display** window which pops up right after you click the **Start** button on the main window, shown as the picture down below. You can also specify the standing time of the **Checking LED Display** window by checking **Enable waiting time** and inputting its value. During the standing time of **Checking LED Display** window, you can decide and manually operate whether the LED Check test is "Pass" or "Fail" by correspondingly clicking the buttons. If you don't check the **Enable waiting time**, the **Checking LED Display** window will stand permanently until you manually make an operation.

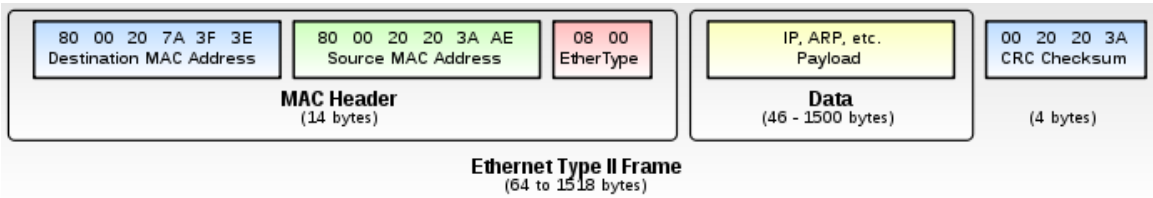




5.2.3. Packet



- **Frame Length Setting:** As shown in the figure down below, in a standard Ethernet II frame, the Frame Length can be from 64~1518 bytes.



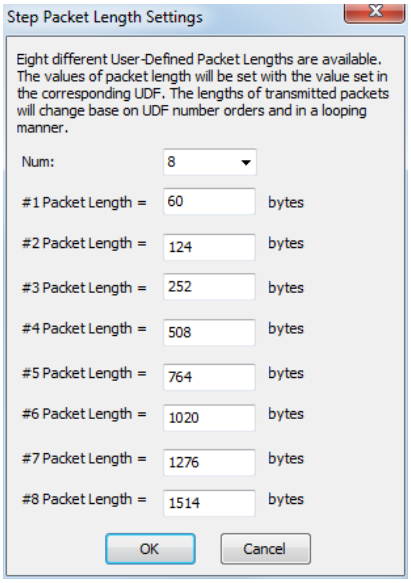
Clicking the **Frame Length** scroll-down menu, you can see four options: **random**, **fixed**, **IMIX**, **Step- Mode**.

Random: the frame length will be randomly assigned from 64 bytes to 1518bytes.

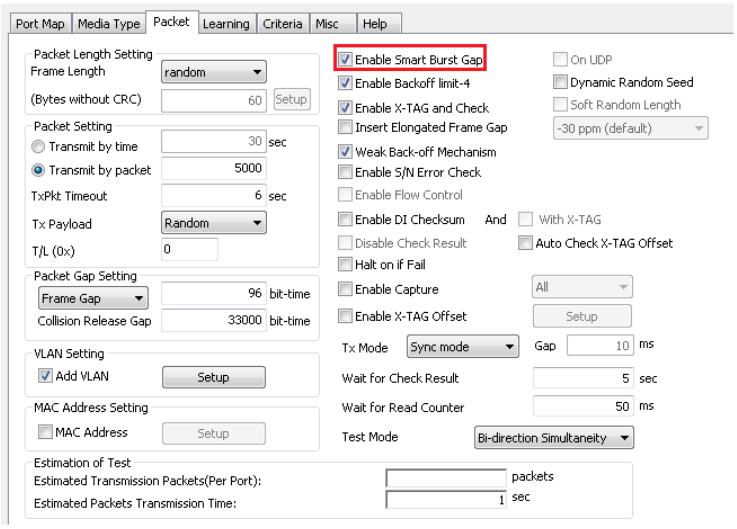
Fixed: the frame length is fixed. The specific value can be set in the field down below.

IMIX: a specific frame length mode, which is “7*64+4*570+1518 bytes”. The packets will be transmitted by this mode cyclically.

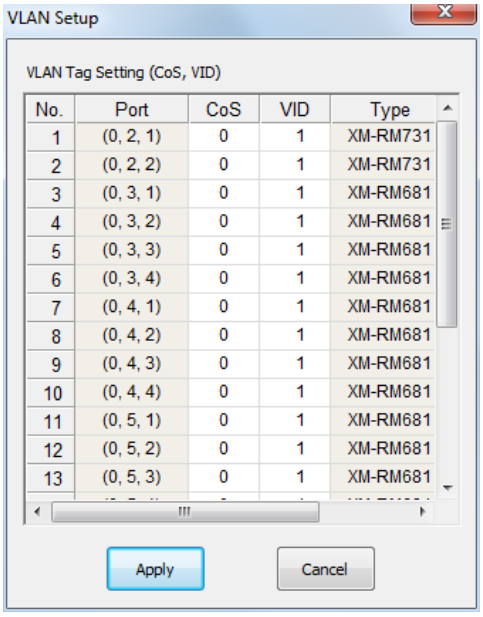
Step-Mode: After choose this mode, please click setup. The “**Step Packet Length Settings**” widow will pop up. You can set at most 8 frame lengths, as shown in the picture down below. The **Num** filed is to be input the number of the frame length. The exact frame length is respectively set from **#1Packet Length** to **#8Packet Length**. The packets will be transmitted by the set frame lengths cyclically.



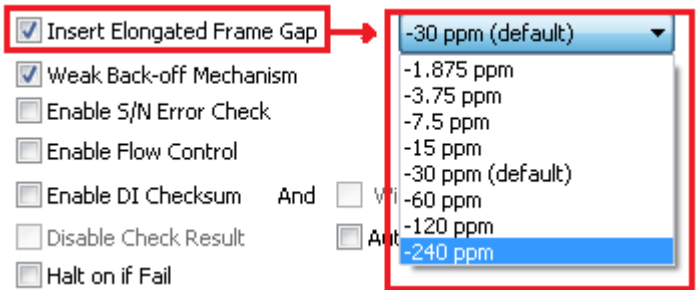
- **Packet Setting:** You can set how packets will be transmitted in this field.
  - **Transmit by time:** The system will transmit packet during the set amount of time.
  - **Transmit by packet:** The system will transmit the set number of packets. If the system fails to send the test packet within the time you set in **TxPKT Timeout** field, the packet will be drop. Also, you can set the content of the transmitting packets with the **Tx Payload** scroll-down menu.
  - **T/L (0X):** You can set the T/L (0X) after MAC address in this field.
- **Packet Gap Setting:** You can set the gaps between packets in this field.
  - **Frame Gap**
    - Frame Gap：duration time between frames. Increasing Frame Gap reduces the fail rate, while 96 bit-time is wirespeed.
    - Utilization: Click the scroll down menu and select **Utilization**. Then you can set the value of utilization. The Frame Gap and the utilization are tightly related. So once you set one of them, the other is settled as well.
  - **Collision Release Gap:** this function is only available in half duplexing mode. It is used for releasing the collision between the two ends of the communication. You must check the box before the **Enable smart Burst Gap** to make this function effective.



- **VLAN Setting:** Add VLAN tag for test. VLAN (Virtual LAN) is a group of hosts with common requirements that communicate within the same Broadcast domain regardless of the physical location. By clicking the **Setup** button, you can configure **CoS** (class of service) and **VID** (VLAN ID) on the pop-up **VLAN Setup** window. Click **Apply** and apply all the changes you've made here.



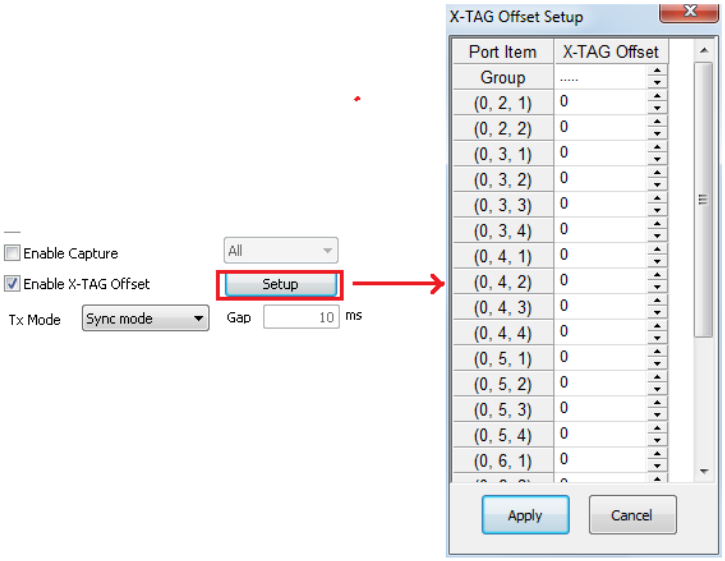
- **MAC Address Setting:** Selecting this funtion will allow you to access the **Setup** option. Clicking the **Setup** option will pop up a window to modify each module card's port **MAC Address**.
- **Enable Smart Burst Gap:** The **Smart Burst Gap** function is for half-duplex mode only. Enabling this function will increase test performance and decrease test fail rate.
- **Enable Backoff limit-4:** The **Backoff limit-4** function is for half-duplex mode only, and its purpose is for collision control. Enabling this function will increase test performance and decrease test fail rate.
- **Enable X-TAG and Check:** X-TAG is a 12-byte tag which is developed by Xtramus and embedded at 45th~56th bytes of each testing frames generated by Rapid-Matrix for multi-stream tests. X-TAG will be added to all the testing frames generated by APMPT-4.
- **Insert Elongated Frame Gap:** When enabling this function, 1 bit-time of frame gap will be inserted after a certain amount of packets a**re transmitted**, and therefore, decrease packet loss.
  For XM-RM-8XX modules, you can set the value of the **Insert Elongated Frame Gap** from the scroll down menu.



- **Weak Back-off Mechanism:** When packet collision occurs, the system will wait for at least 1 slot-time before starting to transmit packets again if this function is enabled.
- **Enable S/N Error Check:** APMPT-4 will check DUT's serial number during test if this function is enabled.
- **Enable Flow Control:** When enabling this function, the transmitting rate will drop if traffic overflow occurs. This function must be enabled under full-duplex.
- **Enable DI Checksum:** This function is used to track the integrity of a frame. After enable this function, you can choose whether to enable **With X-TAG** and **Auto Check X-TAG offset**.
  - **With X-TAG:** Enable this sub-function only to check the frames with X-TAG.

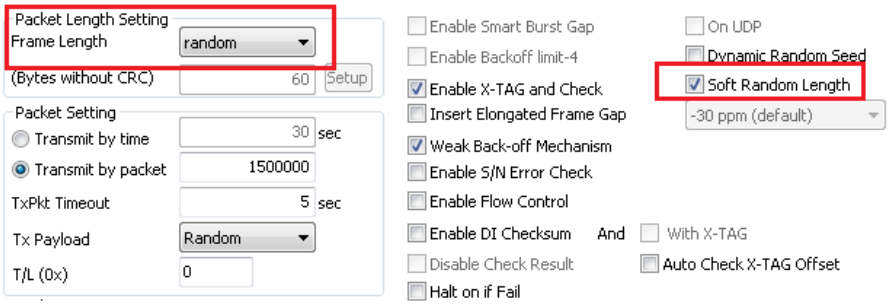
- ➢ **Auto Check X-TAG offset**: Enable this sub-function to automatically check the offset of the X-TAG.

- **Disable Check Result:** When this mode is enabled, all test procedures will be carried out no matter the result is Pass or Fail. This mode can only be access if you choose **Transmit by time** in the **Packet Setting** field.
- **Halt on if Fail:** When this function is enabled, the test process will halt if Fail occurs.
- **Enable Capture:** System will capture all the packets that meet the criteria (**All**, **Error**, **CRC Error**, **Undersize** or **Oversize**) you set on the scroll-down menu on the right side.
- **Enable X-TAG Offset:** If this function is enabled, the position of the X-TAG in the packet will be shifted according to your settings. You can click the **setup** button to pop up the window on the right and you can set the offset of every available port respectively.

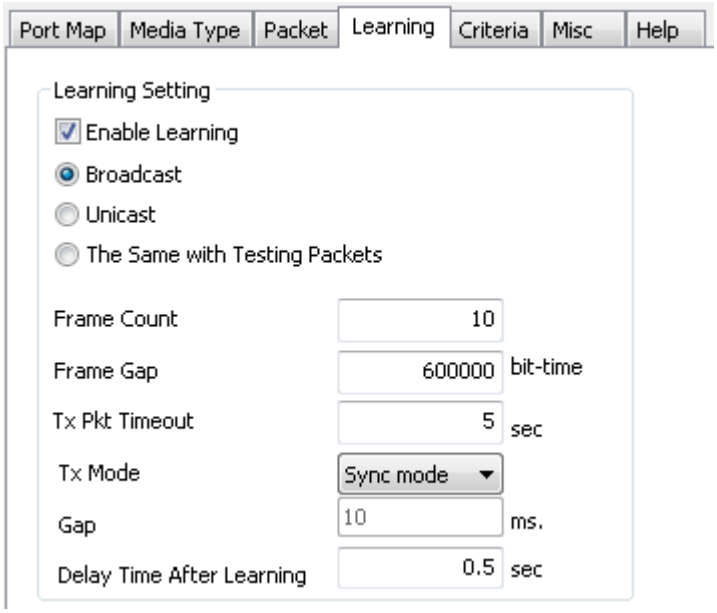


- **Tx Mode:** You can change how packet streams will be transmitted. By clicking the **Tx** scroll-down menu, you can choose **Sync Mode**, **Group Mode** (transmitting gap can be set in the **Gap** field located in the right side), and **Sequence Mode**.
- **Wait for check result:** The system will halt for the time you set here before checking test result.
- **Wait for read counter:** The system will halt for the set microseconds before read the counters. This function is useful for counters since they are stored in memory buffer and the final counter value might take some time to read.
- **Test Mode:** The **Test Mode** setting is for half-duplex only. You can set the test mode to **Bi-direction Simultaneity** or **Bi-direction Sequentially**.
- **Estimation of Test:** System will calculate the amount of packets and the time it will take to transmit these packets, and display these statistics in **Estimated Transmission Packets (Per Port)** and **Estimated Packets Transmission Time**.
- **Estimation of Test:** Set the **Estimated Transmission Packets (Per Port)** to evaluate with test result, you can also set the **Estimated Packet Transmission Time** to evaluate with the test result.

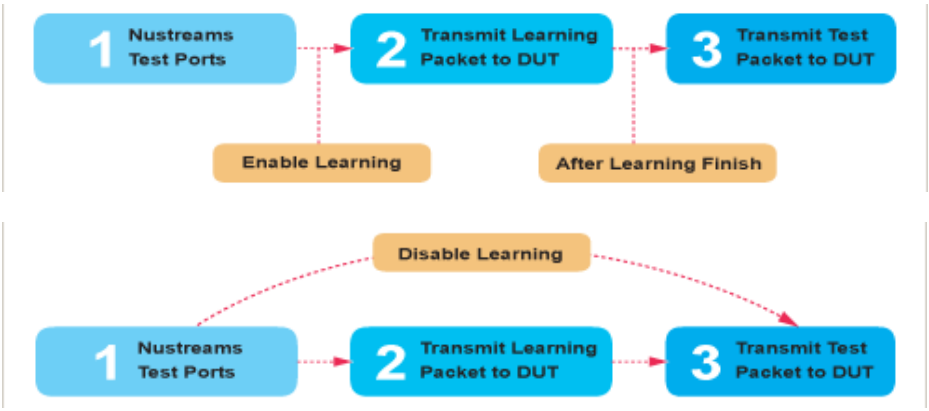
- **On UDP:** This function is only available for layer 3 performance task. And before enable this function, you must assign IP addresses to the ports. This function is used to activate the UDP mode in layer 3.
- **Dynamic Random Seed:** If this function is enabled, the first packet transmitted by every port will be random, different from each other. Otherwise, the first packet transmitted by every port will be the same. And this function is only available when the **Frame Length** is set to **random**.
- **Soft Random Length:** This function is only available for XM-RM-881 or XM-RM-891 modules and only can be performed on 10G layer 2 tasks, like PT2-UC-10G. By activating this function, the packet length is limited to fluctuate in a small range when it is set to **random** mode.



5.2.4. Learning

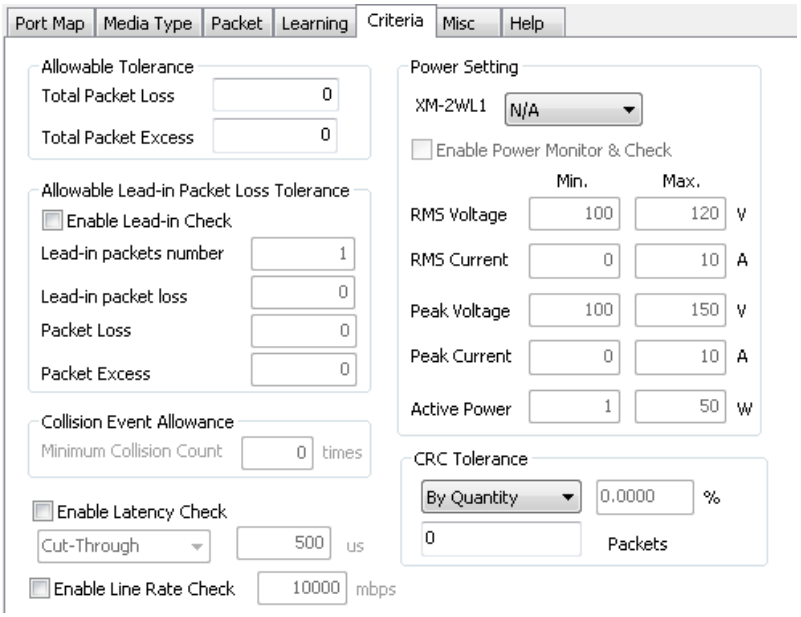


- **Enable Learning:** As shown in the figures down below, enabling this function allows learning packets transmitted to the DUT before test packets are transmitted. If you disable this function, no learning packets will be transmitted.

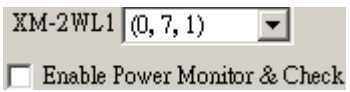


- **Broadcast:** Select the learning packet mode for Broadcast.
- **Unicast:** Select the learning packet mode for Unicast.
- **The Same with Testing Packets:** the learning packet mode is the same with that of the Testing Packets.
- **Frame Count:** Repeat frame count per learning packets burst.
- **Frame Gap:** Duration time between learning frames.
- **Tx Pkt Timeout:** If the system fails to send the learning packet within the time you set in **TxPKT Timeout** field, the packet will be drop.
- **Tx Mode:** You can change how learning packet will be transmitted. By clicking the **Tx** scroll-down menu, you can choose **Sync Mode**, **Group Mode** (transmitting gap can be set in the **Gap** field located down below), and **Sequence Mode**.
- **Delay Time After Learning:** The time gap between after learning and the next process.

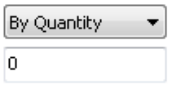
5.2.5. Criteria



- **Allowable Tolerance:** You can set the allowable amount packet loss/excess here.
  - **Total Packet Loss:** If packet loss (including error packets) is higher then the value you set here, the test result of the DUT will be fail.
  - **Total Packet Excess:** If packets excess (including error packets) is higher then the value you set here, the test result of the DUT will be fail. Packet excess happens when packet transmission is bad and packets are resend multiple times, causing the amount of received packets is more than sent packets.
- **Allowable Lead-in Packet Loss Tolerance:** When enabling this function, APMPT-4 will check the first set amount of transmitted packets (lead-in packets) with the criteria down below. If you enable this function, the **Allowable Tolerance** field will turn gray and unable to access.
  - **Lead-in Packets Number:** Set the amount of lead-in packets.
  - **Lead-in Packet Loss:** Set the allowable amount of lead-in packet loss.
  - **Packet Loss:** Allowable packet loss for the packets sent after lead-in packets.
  - **Packet Excess:** Allowable packet excess for the packets sent after lead-in packets.
- **Collision Event Allowance:** You can set the allowable amount of collisions here.
- **Power Setting:** This function allows you to check DUT's power status during the test. Please note that if there is no power testing module card installed on the chassis, the **Power Setting** section will be gray and thus unable to access.



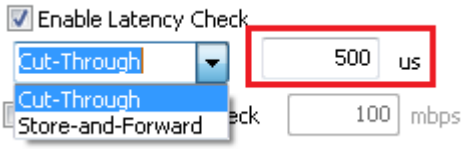
  - **Enable Power Monitor & Check:** Click this check-box to enable **Power Setting** function. You can set which port on the power testing module card to use by clicking the scroll-down menu.
  - **RMS Voltage/Current, Peak Voltage/Current, and Active Power:** You can set the criteria for power testing in these fields.
- **CRC Tolerance:** the allowable amount of packets with CRC error. If the amount of the received

packets with CRC error is higher than the amount you set here, the test fails. You can set the amount by two ways: **By Quantity** 

and By Percentage

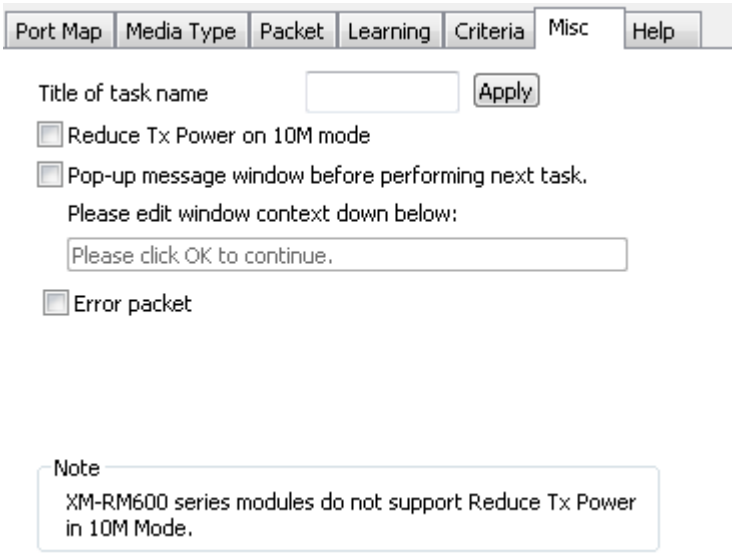
.

- **Enable Latency Check:** enable the latency check function. There are two optional latency calculation modes, namely **Cut-Thought** and **Store-and-Forward**. You can set the acceptable latency in the red rectangle field, shown as the picture down below. If the latency exceeds the value you set here, the test will fail. And this function is unavailable when the **Frame Length** is set to be **random**.



- **Enable line Rate Check:** enable the line rate check function. You can set the lowest line rate in the red rectangle field, shown as the picture down below. If the line rate is lower than the value you set here, the test will fail.

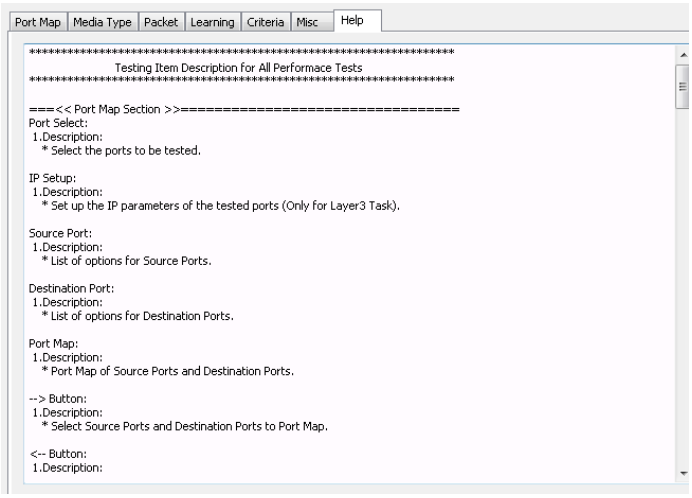
5.2.6. Misc



- **Title of Task Name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.
- **Reduce Tx Power on 10M Mode:** This option only appears if the transmitting speed of the task is 10M. If this function is enabled, the transmitting speed will be set on 10M. Please note that XM-RM6XX series module cards do not support this function.
- **Pop-up message window before performing next task:** If you enable this function, a message window will pop up after this task is completed. Test will halt until you press the **OK** button on the pop-up window. You can edit the text displayed window to display in the field down below.
- **Error Packet:** This function can only be accessed under APMPT-4's **Demo Mode** and is for demo purposes only. APMPT-4 will generate error packets if this function is enabled.

5.2.7. Help

All test variables used for this task and their definitions will be listed here for reference.



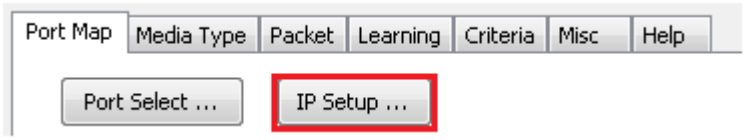
5.3. Test Tasks – Layer 3

For available Layer 3 tasks and their descriptions, please refer to "**1.3.3. Performance Task in Layer 3 (PT3)**."

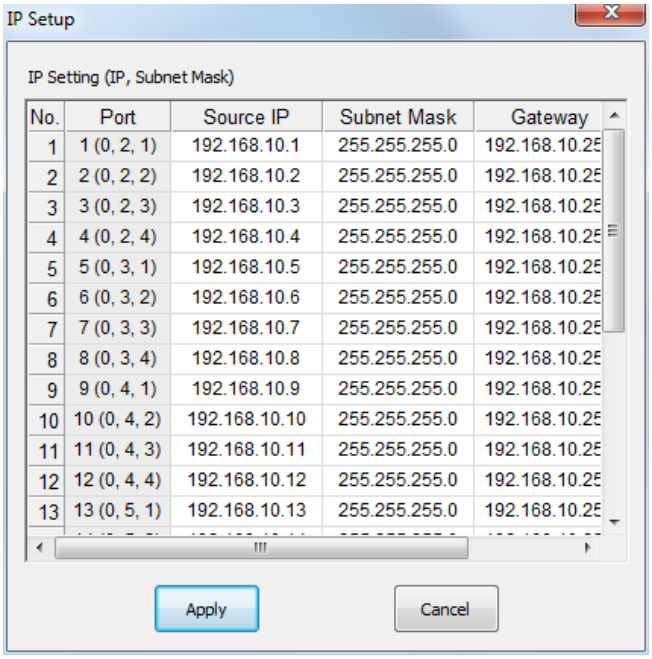
The general task setting options available for Layer 3 Performance Task are almost identical to those available for Layer 2 Performance Task and can be related. However, some features and settings in Layer 2 Performance Task are different from those in Layer 3 Performance Task, which will be listed and explained in the following chapters.

5.3.1. Port Map → IP Setting

As mentioned in "**5.3.1. Port Map**", the **IP Setup…** button and its function cannot be accessed under Layer 2 Performance Task settings. However, as shown in the figure down below, the **IP Setup** button will be available.



For configure IP addresses under Layer 3 tasks, please click the **IP Setup** button located on **Port Map**. An **IP Setup** window will pop up.

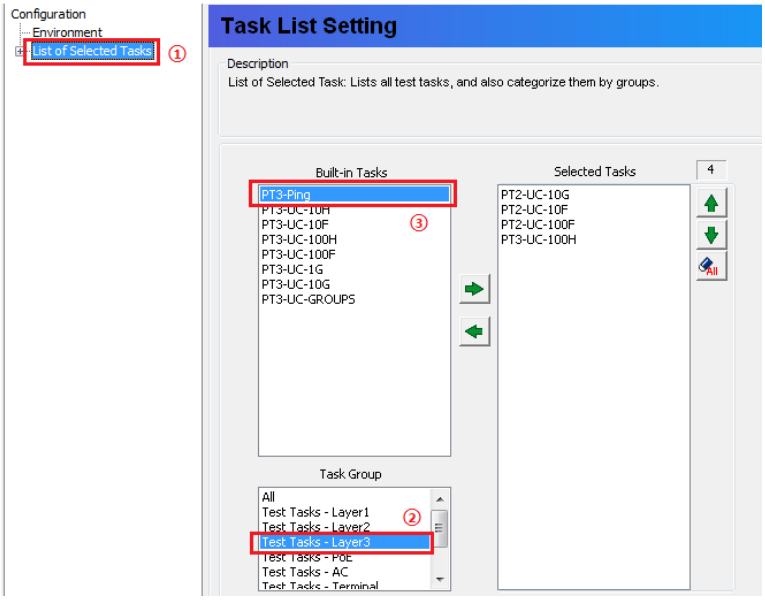


To configure the Source IP, Subnet Mask, and Gateway for each Active Port by double clicking the corresponding column, and input the IP addresses manually.

You can click **Apply** to confirm all the changes you've made and close **IP Setup** window, or click **Cancel** to abandon all the changes you've made.

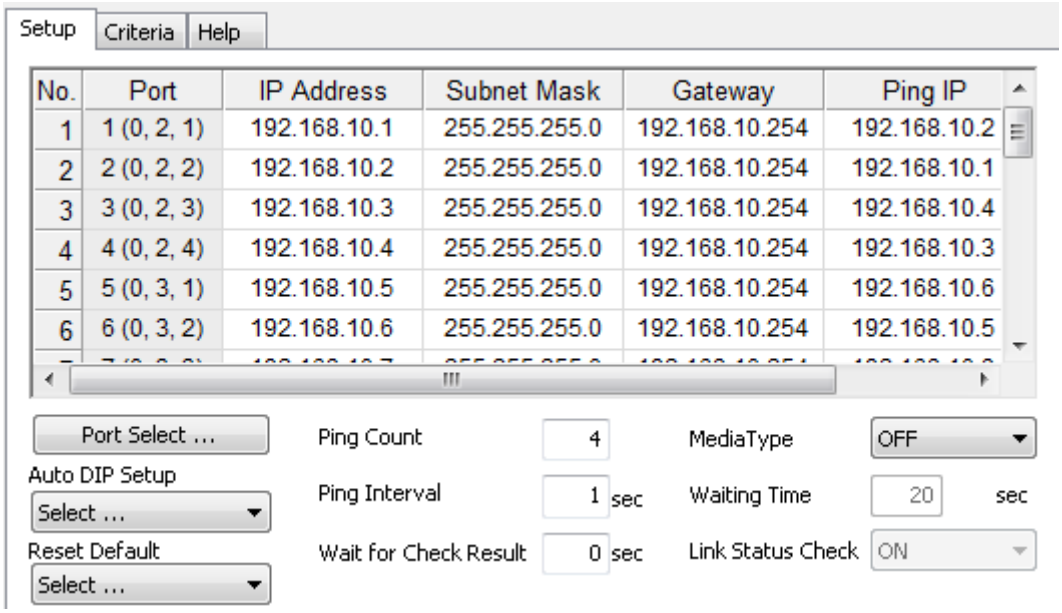
5.3.2. Performance Task Layer 3 – PT3-Ping

To access this function, click **List of Selected Tasks→Test Tasks-layer3→PT3-ping**.



As a network utility, **Ping** is widely used for testing if one specific host is reachable through its IP address. Also, **Ping** can be used to measure the time it takes to transmit packets from a local host to the designated computer located on a network and back.

Setup

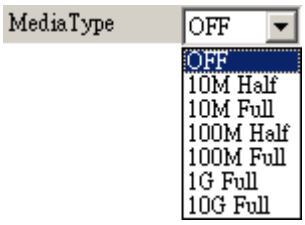


- **IP Address Table:** Since **Ping** is a network utility based on TCP/IP protocol, you must assign IP addresses to all the Active Ports first on the **IP Address Table**.

Take the figure above as an example: the Active Port (0, 2, 1) will be assigned an IP Address (192.168.10.1), a Subnet Mask (255.255.255.0), and a Gateway (192.168.1.254). This Active Port will **ping** the IP address of 192.168.10.2 during the test. All the IP addresses, Subnet Mask, Gateway,

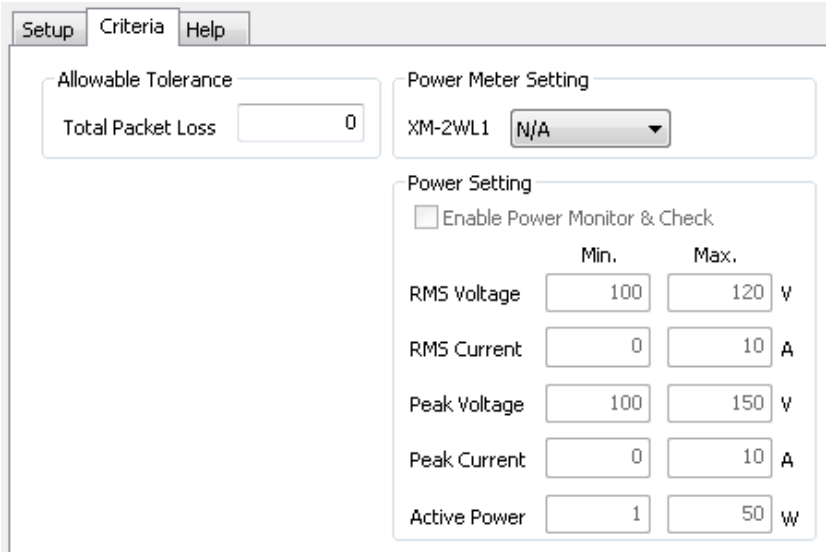
and Ping IP can be set by double clicking on the column and input manually.

- **Port Select:** By clicking this button, a **Select Ports for Testing** window will pop up, allowing you to select the module cards and the ports you would like to use for the task.
- **Auto DIP (Destination IP) Setup:** You can select whether to import **Pair Port IP** or **Rotate Port IP** and apply it for **Ping** test.
  - **Pair Port IP → Ping IP:** Ports located on the same module card are paired together.
  - **Rotate Port IP → Ping IP:** All ports located on different module cards are paired in a loop manner.
- **Reset Default:** Set the current setting to **Pair Port IP → Ping IP** or **Rotate Port IP → Ping IP** with default setting values.
- **Ping Count:** You can set how many times the **Ping** will be run in this field.
- **Ping Interval:** You can set the interval between each **Ping** in this field.
- **Wait for Check Result:** The system will halt for the set amount of time before checking the result.
- **Media Type:** Click this scroll-down menu to select the media type for Ping test. If you do not want to make any changes, please select **OFF**.
- **Waiting Time:** You can set the amount of waiting time after the media type is changed in this field. This function will turn gray and can't be accessed if you select **OFF** under **Media Type**.



- **Link Status Check:** Check link status before test. If you select **ON&Alarm**, an alarm window will pop-up if link fails. And if the Media Type is set to be OFF, this function is unable to use.

Criteria



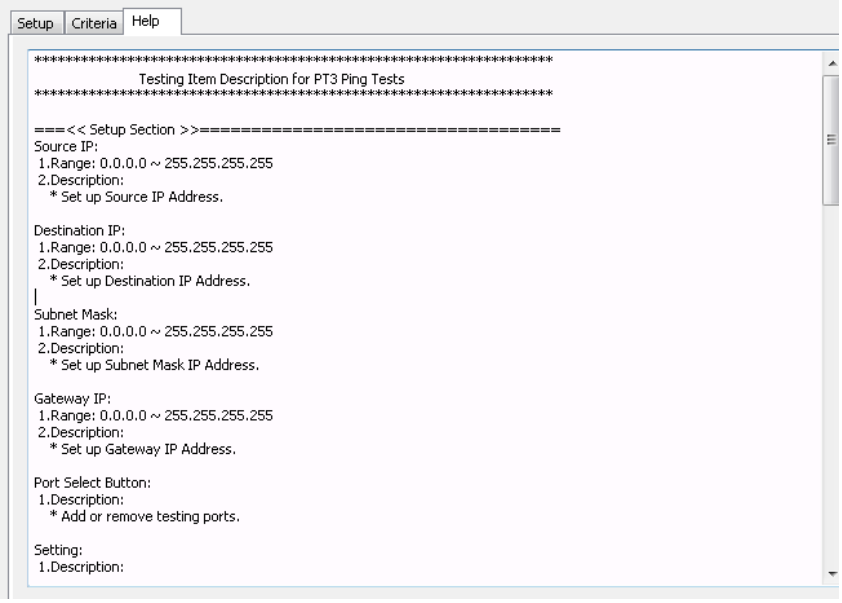
- **Allowable Tolerance:** You can set the allowable amount packet loss/excess here.
  - **Total Packet Loss:** If packet loss (including error packets) is higher then the value you set here, the test result of the DUT will be fail.
- **Power Setting:** This function allows you to check DUT's power status during the test. Please note that if there is no power testing module card installed on the chassis, the **Power Setting** section will

be gray and thus unable to access.

- **Enable Power Monitor & Check:** Click this check-box to enable **Power Setting** function. You can set which port on the power testing module card to use by clicking the scroll-down menu.
- **RMS Voltage/Current, Peak Voltage/Current, and Active Power:** You can set the criteria for power testing in these fields.

Help

All test variables used for this task and their definitions will be listed here for reference.



5.4. Test Task – PoE

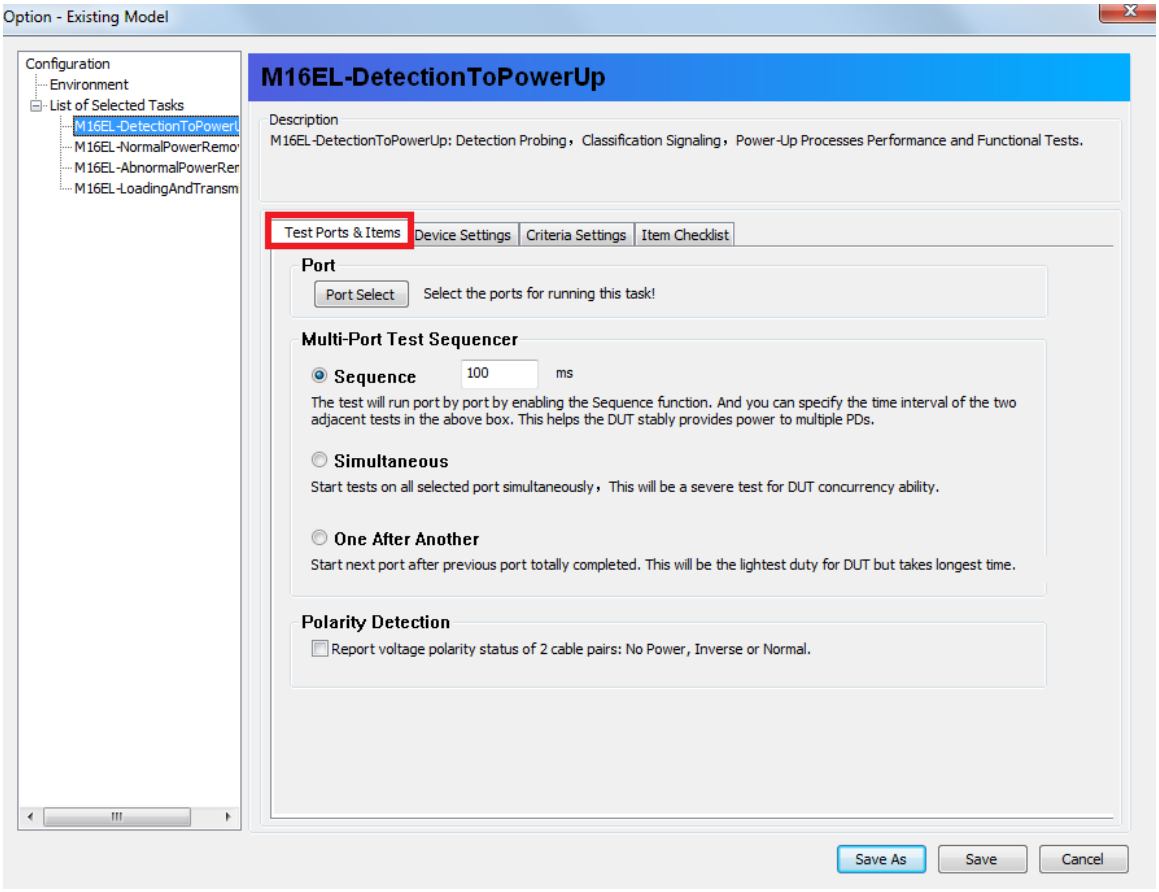
PoE refers to **Power over Ethernet**. APMPT-4 allows you to perform PoE tests such as:

Types of PoE's Task	
M16EL-DetectionToPowerUp	Test the PSE's performance during the process from detection to power up, including detection, classification and power up, etc.,.
M16EL-NormalPowerRemoval	Test the PSE's power removal ability when the powered device (PD) is disconnected.
M16EL-AbnormalPowerRemoval	Test the PSE's power removal ability when Overload, Short circuit, Underload happens to the PD.
M16EL-LoadingAndTransmmision	Test the PSE's PoE and data transmission ability concurrently.

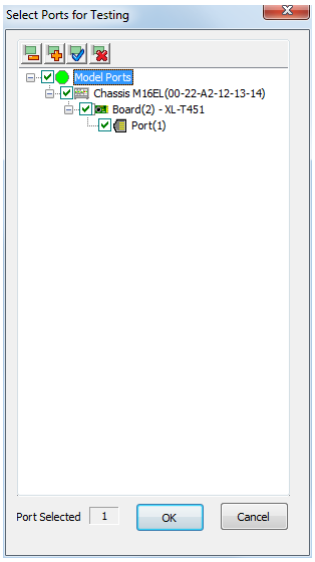
To execute the PoE tasks listed above, you must have a NuPOE-16EL chassis platform installed on your worksite. For more information about NuPOE-16EL and its modules, please see "USM_NuPOE-16EL".

5.4.1. M16EL-DetectionToPowerUp

A. Test Ports & Items



- **Port Select:** Select the ports for running this task. Click this button, the following window pops up. Click **OK** to make the settings be applied.



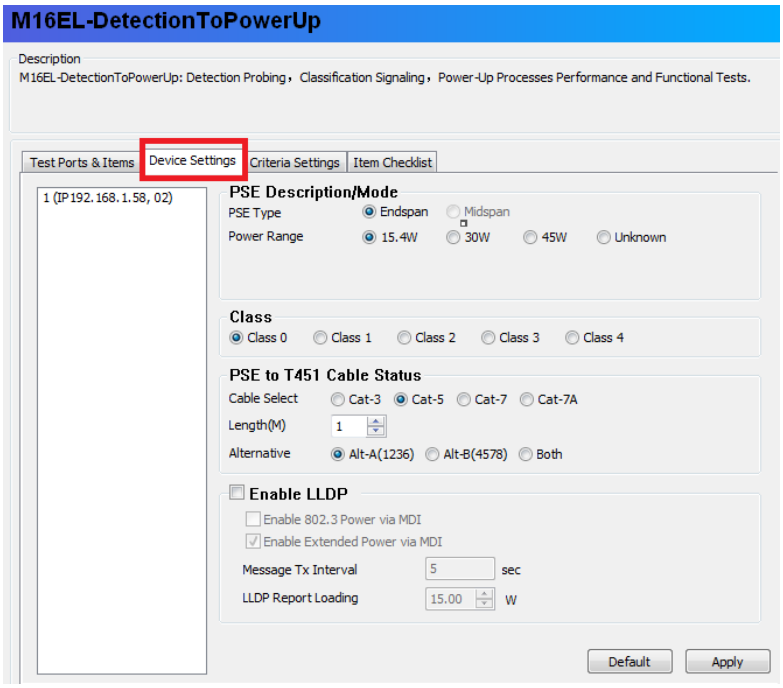
- **Multi-Port Test Sequencer:** sequence control when multi ports are assigned to perform this test.
  - **Sequence:** the test will run port by port by enabling this function. You can specify the time

interval for the test executing on the adjacent ports in the above box. This helps the DUT to power the PDs stably.

- **Simultaneously:** The selected ports will execute this task simultaneously.
- **One After Another:** The selected ports will execute this task one after another. Namely, the task is executed on the next port until it is fully executed on the previous one. This generates less pressure for the DUT.

- **Polarity Detection:** Report voltage polarity of 2 cable pairs: No power, Inverse or Normal.

B. Device Settings



- **PSE Description/Mode:**
  - **PSE Description/Mode:** Select the PSE mode according to the PSE's real situation.
  - **Power Range:** Select the maximum power the PSE can supply according to the PSE's real situation.
- **Class**

  Select the PD classification. In the NuPOE-M16EL test platform, the PD is simulated by the XL-T451 module. XL-T451 supports both 802.3af and 802.3at. The maximum power input for XL-T451 is 45W.

Class	Power range (Watt)
0	0.44 to 12.95
1	0.44 to 3.84
2	3.84 to 6.49
3	6.49 to 12.95
4	802.3af: Reserved
	802.3at：≥12.95

- **PSE To T451 Cable Status**
  - **Cable Select:** Select the cable category you are using.
  - **Cable Length:** Select the length of the cable.

- **Alternative**

  Select the power supply wire pairs of the PSE.

  - **Alt-A(12，36):**The PSE uses wire pairs 12, 36 as the power pairs.
  - **Alt-A(45，78):** The PSE uses wire pairs 45, 78 as the power pairs.
  - **Both:** The PSE can use either wire pairs 12, 36 or 45, 78 as the power pairs.

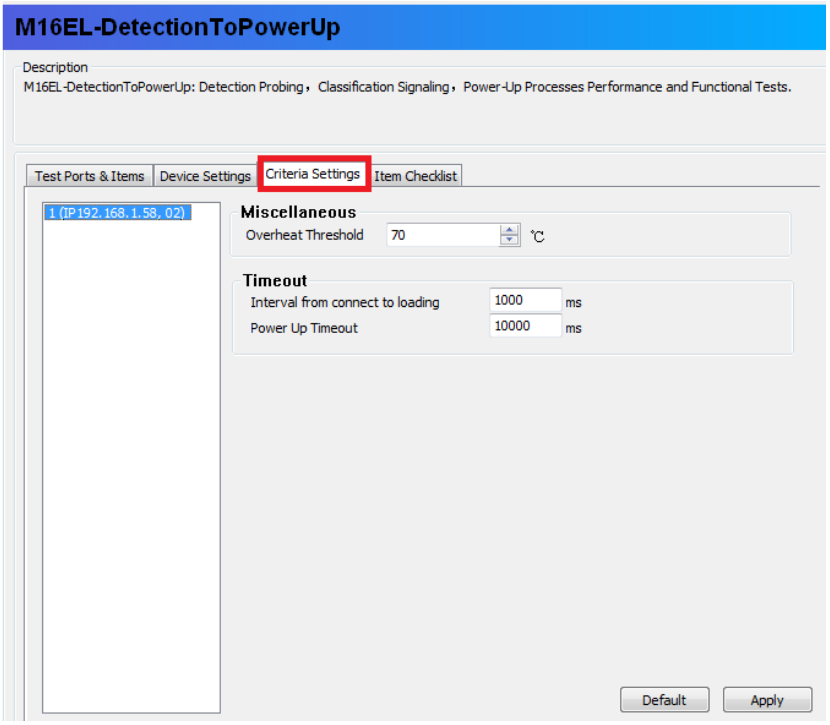
RJ45 Pin #	Wire Color (T568A)	Wire Diagram (T568A)	10Base-T Signal 100Base-TX Signal	PoE
1	White/Green		Transmit+	Mode A +
2	Green		Transmit-	Mode A +
3	White/Orange		Receive+	Mode A -
4	Blue		Unused	Mode B +
5	White/Blue		Unused	Mode B +
6	Orange		Receive-	Mode A -
7	White/Brown		Unused	Mode B -
8	Brown		Unused	Mode B -

- **Enable LLDP**

  By enabling LLDP, the PD can negotiate power with the PSE through the LLDP protocols.

  - **Enable 802.3 Power via MDI:** Support LLDP.
  - **Enable Extended Power via MDI:** Support LLDP-MED.
  - **Message Tx Interval:** Transmitting time interval between two LLDP packets.
  - **LLDP Report Loading:** The reported power of PD to PSE carried by the LLDP packets.

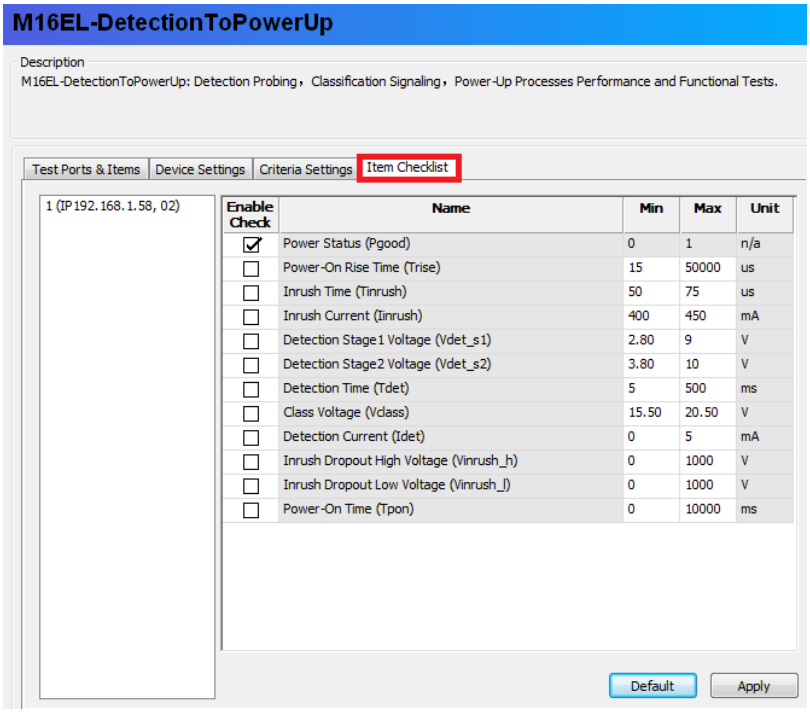
C. Criteria Settings:



- **Overheat Threshold:** This is for safety. If the system temperature exceeds the value you specified here, the system will send out alarms.
- **Timeout**

  Timeout parameters for this task. You can set any of the timeout parameters as required.If any of these timeouts occurs, the test will be terminated and fail.

D. Item Checklist

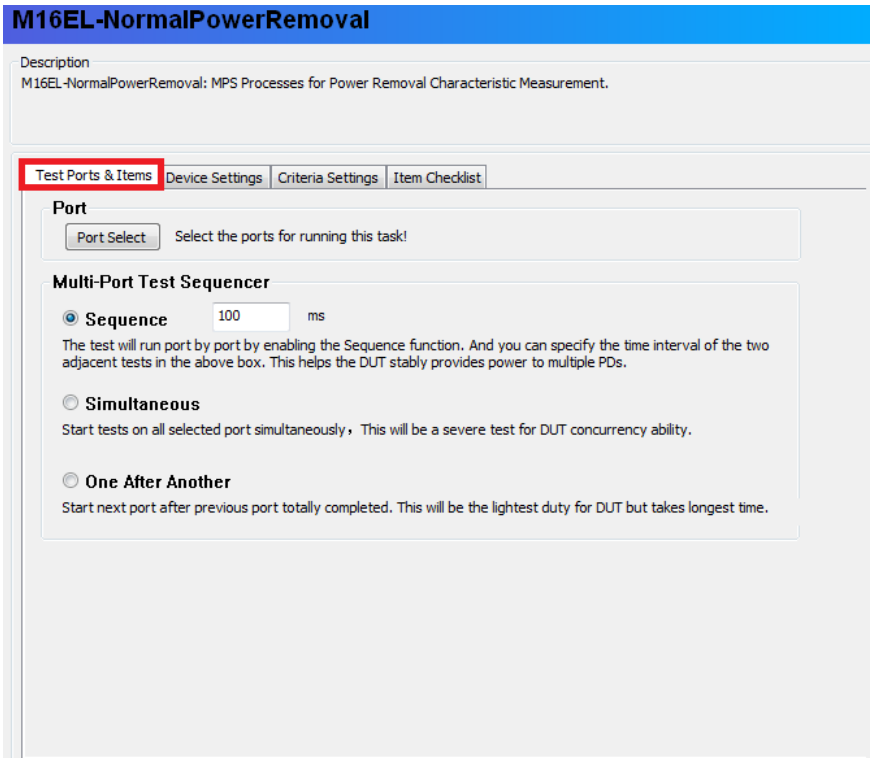


You can set the parameters you want to check for this task. If the test result exceeds any of the range of the checked parameters, the test result will be fail. You can modify the acceptable range of a parameter by re-specifying the values of **Min** and **Max**.

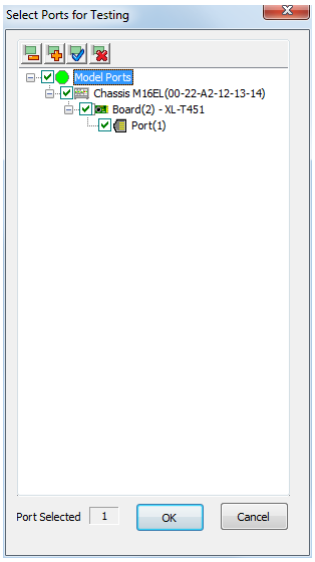
Test Parameters	Descriptions
Power Status(Pgood)	“0”meas good power status. “1” means not-good power status.
Power-On Rise Time(Trise)	Rise time from 10% to 90% of voltage in power-up process.
Inrush Time(Tinrush)	Duration of current limiting until PSE removes power
Inrush Current (Iinrush)	Current limiting of power-up
Detection Stage1 Voltage(Vdet_s1)	Voltage range during stage 1 in detection process
Detection Stage2 Voltage(Vdet_s2)	Voltage range during stage2 in detection process
Detection Time(Tdet)	802.3af detection pulse duration
Class Voltage(Vclass)	Class pulse average voltage
Detection Current (Idet)	Short circuit current limit during detection
Inrush Dropout High Voltage (Vinrush_h)	Maximum port voltage on the condition of Inrush
Inrush Dropout low Voltage (Vinrush_l)	Minimum port voltage on the condition of Inrush
Power-On Time (Tpon)	Power-On timing from end of detection to power-up

5.4.2. M16EL-NormalPowerRemoval

A. Test Ports & Items



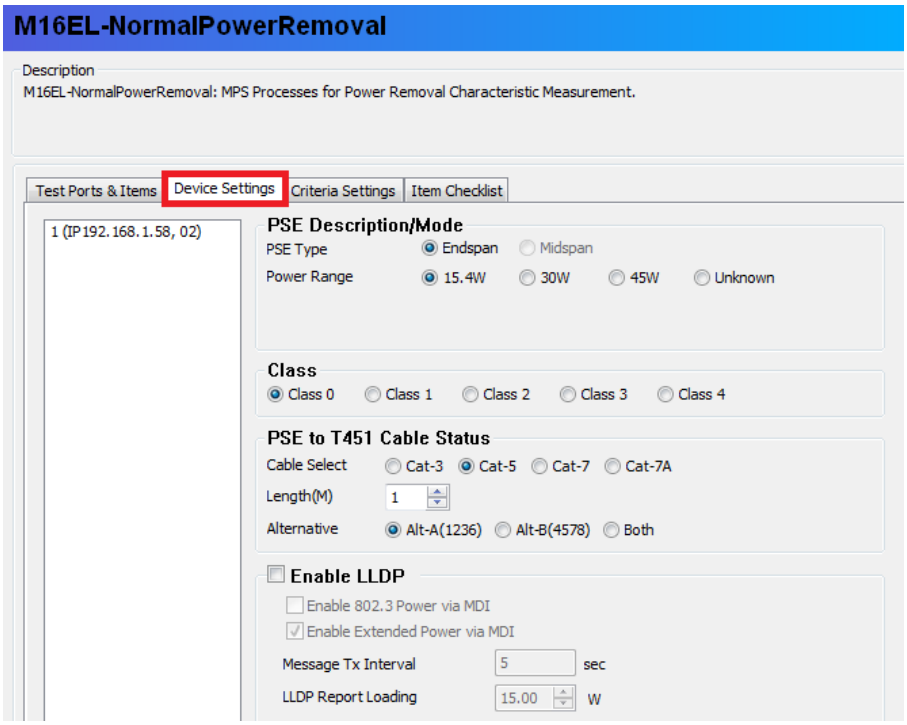
- **Port Select:** Select the ports for running this task. Click this button, the following window pops up. Click **OK** to make the settings be applied.



- **Multi-Port Test Sequencer:** sequence control when multi ports are assigned to perform this test.
  - **Sequence:** the test will run port by port by enabling this function. You can specify the time interval for the test executing on the adjacent ports in the above box. This helps the DUT to power the PDs stably.
  - **Simultaneously:** The selected ports will execute this task simultaneously.

- **One After Another:** The selected ports will execute this task one after another. Namely, the task is executed on the next port until it is fully executed on the previous one. This generates less pressure for the DUT.

B. Device Settings



- **PSE Description/Mode:**
  - **PSE Description/Mode:** Select the PSE mode according to the PSE's real situation.
  - **Power Range:** Select the maximum power the PSE can supply according to the PSE's real situation.
- **Class**

  Select the PD classification. In the NuPOE-M16EL test platform, the PD is simulated by the XL-T451 module. XL-T451 supports both 802.3af and 802.3at. The maximum power input for XL-T451 is 45W.

Class	Power range (Watt)
0	0.44 to 12.95
1	0.44 to 3.84
2	3.84 to 6.49
3	6.49 to 12.95
4	802.3af: Reserved
	802.3at：≥12.95

- **PSE To T451 Cable Status**
  - **Cable Select:** Select the cable category you are using.
  - **Cable Length:** Select the length of the cable.

- **Alternative**

  Select the power supply wire pairs of the PSE.

  - **Alt-A(12，36):**The PSE uses wire pairs 12, 36 as the power pairs.
  - **Alt-A(45，78):** The PSE uses wire pairs 45, 78 as the power pairs.
  - **Both:** The PSE can use either wire pairs 12, 36 or 45, 78 as the power pairs.

RJ45 Pin #	Wire Color (T568A)	Wire Diagram (T568A)	10Base-T Signal 100Base-TX Signal	PoE
1	White/Green		Transmit+	Mode A +
2	Green		Transmit-	Mode A +
3	White/Orange		Receive+	Mode A -
4	Blue		Unused	Mode B +
5	White/Blue		Unused	Mode B +
6	Orange		Receive-	Mode A -
7	White/Brown		Unused	Mode B -
8	Brown		Unused	Mode B -

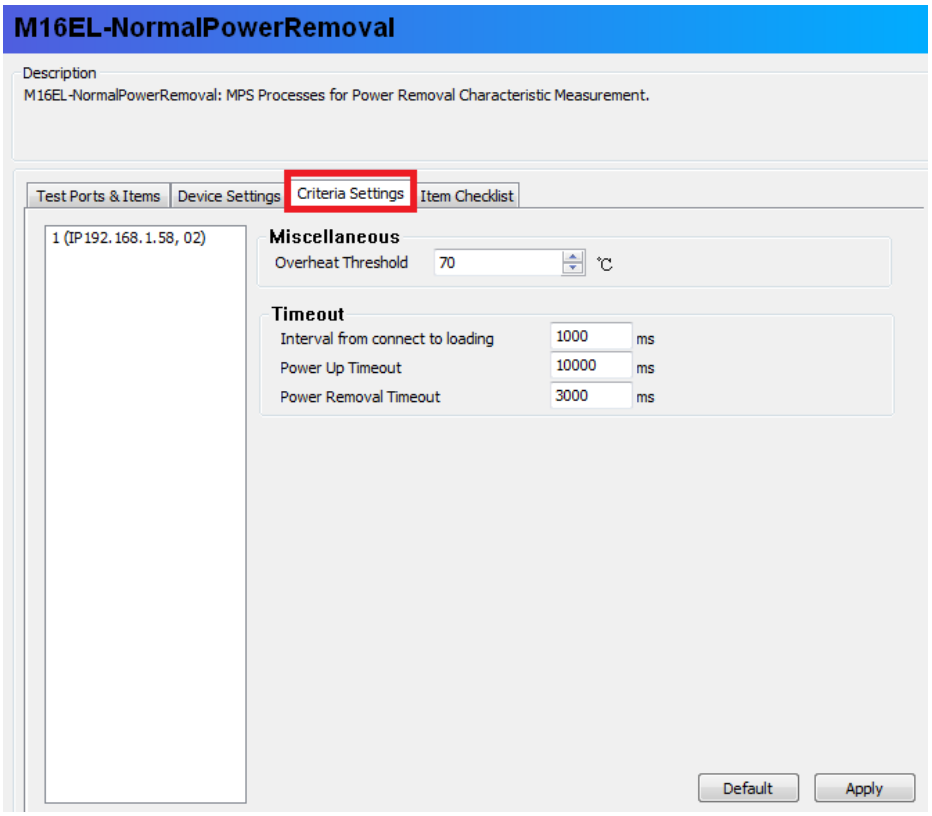
- **Enable LLDP**

  By enabling LLDP, the PD can negotiate power with the PSE through the LLDP protocols.

  - **Enable 802.3 Power via MDI:** Support LLDP.
  - **Enable Extended Power via MDI:** Support LLDP-MED.
  - **Message Tx Interval:** Transmitting time interval between two LLDP packets.

LLDP Report Loading: The reported power of PD to PSE carried by the LLDP packets.

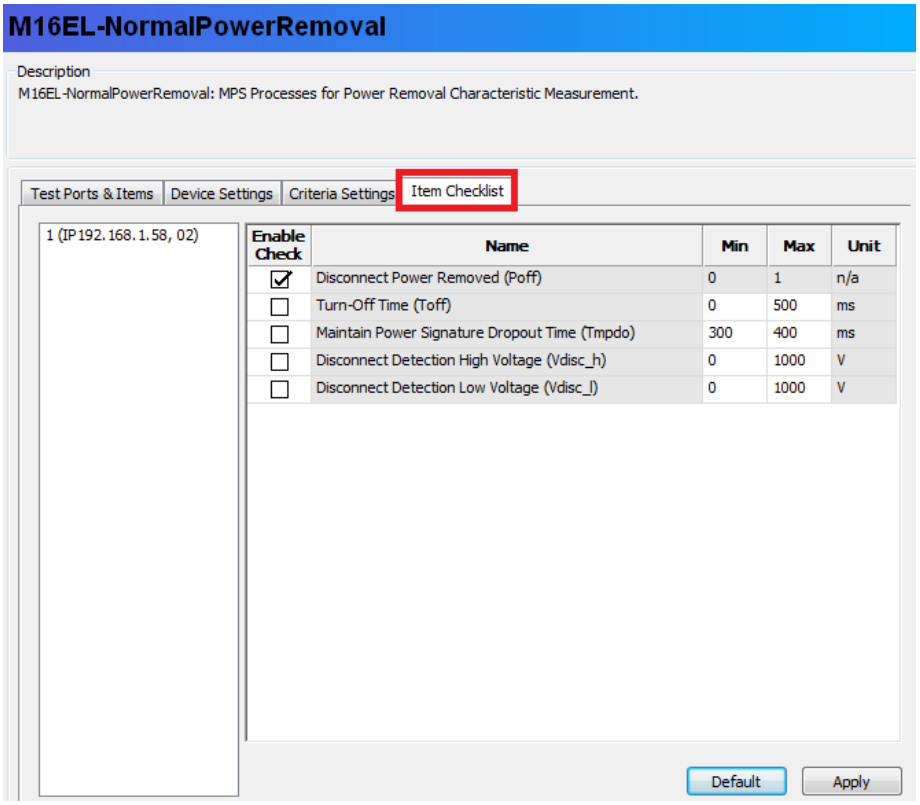
C. Criteria Settings:



- **Overheat Threshold:** This is for safety. If the system temperature exceeds the value you specified here, the system will send out alarms.
- **Timeout**

  Timeout parameters for this task. You can set any of the timeout parameters as required. If any of these timeouts occurs, the test will be terminated and fail.

D. Item Checklist

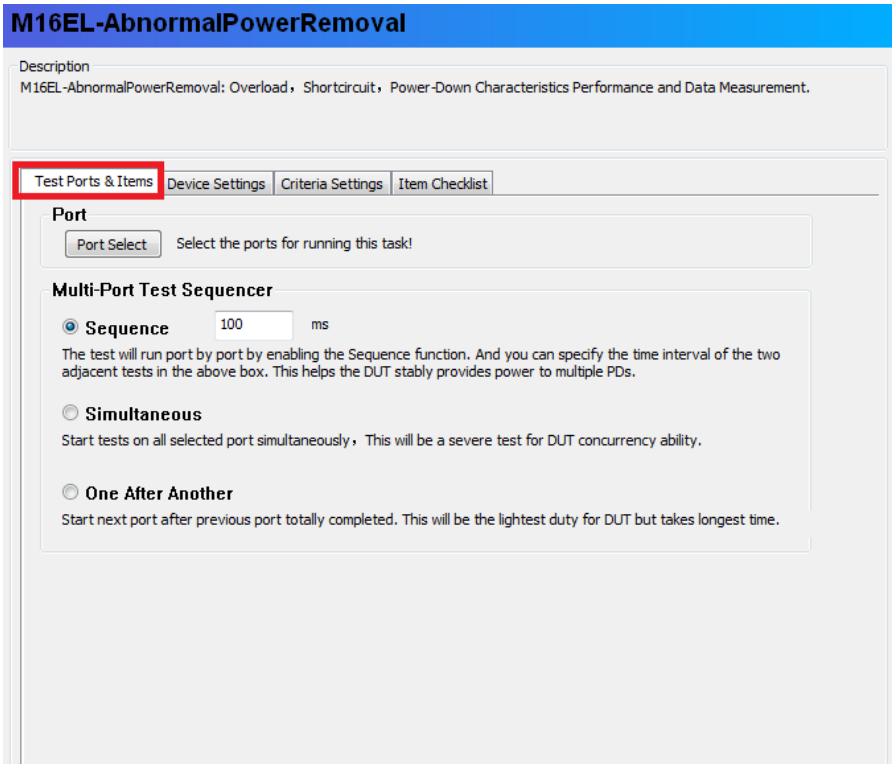


You can set the parameters you want to check for this task. If the test result exceeds any of the range of the checked parameters, the test result will be fail. You can modify the acceptable range of a parameter by re-specifying the values of **Min** and **Max**.

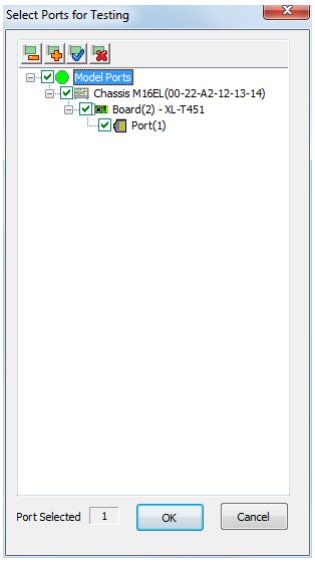
Test Parameters	Descriptions
Disconnect Power Removed(Poff)	Assessment of the power removal ability for the PSE on PD disconnection
Turn-Off Time(Toff)	Time for power removal on PD disconnect event.
Maintain Power Signature Dropout Time(Tmpdo)	Disconnect power-off timing
Disconnect Detection High Voltage(Vdisc_h)	The maximum voltage during condition of inrush
Disconnect Detection Low Voltage(Vdisc_l)	The minimum voltage during condition of inrush

5.4.3. M16EL-AbnormalPowerRemoval

A. Test Ports & Items



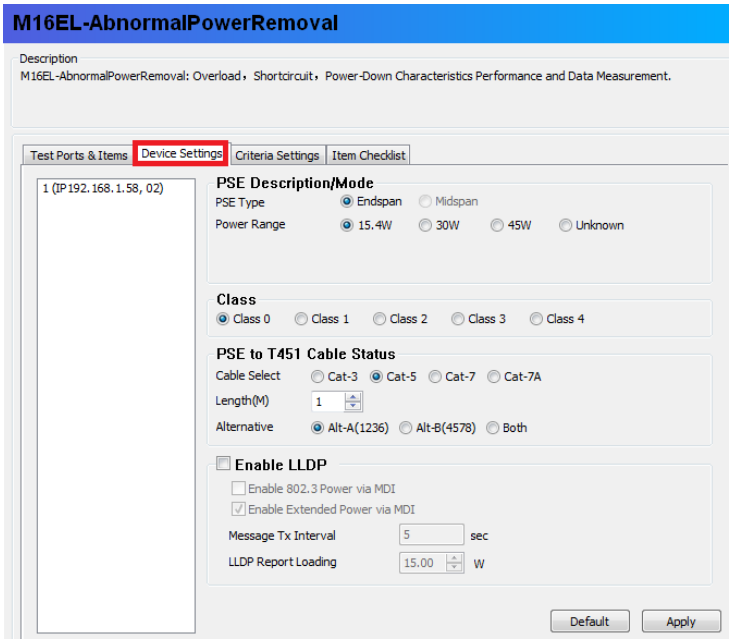
- **Port Select:** Select the ports for running this task. Click this button, the following window pops up. Click **OK** to make the settings be applied.



- **Multi-Port Test Sequencer:** sequence control when multi ports are assigned to perform this test.
  - **Sequence:** the test will run port by port by enabling this function. You can specify the time interval for the test executing on the adjacent ports in the above box. This helps the DUT to power the PDs stably.
  - **Simultaneously:** The selected ports will execute this task simultaneously.

- **One After Another:** The selected ports will execute this task one after another. Namely, the task is executed on the next port until it is fully executed on the previous one. This generates less pressure for the DUT.

B. Device Settings



- **PSE Description/Mode:**
  - **PSE Description/Mode:** Select the PSE mode according to the PSE's real situation.
  - **Power Range:** Select the maximum power the PSE can supply according to the PSE's real situation.
- **Class**

  Select the PD classification. In the NuPOE-M16EL test platform, the PD is simulated by the XL-T451 module. XL-T451 supports both 802.3af and 802.3at. The maximum power input for XL-T451 is 45W.

Class	Power range (Watt)
0	0.44 to 12.95
1	0.44 to 3.84
2	3.84 to 6.49
3	6.49 to 12.95
4	802.3af: Reserved
	802.3at：⩾12.95

- **PSE To T451 Cable Status**
  - **Cable Select:** Select the cable category you are using.
  - **Cable Length:** Select the length of the cable.
- **Alternative**

Select the power supply wire pairs of the PSE.

- **Alt-A(12，36):**The PSE uses wire pairs 12, 36 as the power pairs.
- **Alt-A(45，78):** The PSE uses wire pairs 45, 78 as the power pairs.
- **Both:** The PSE can use either wire pairs 12, 36 or 45, 78 as the power pairs.

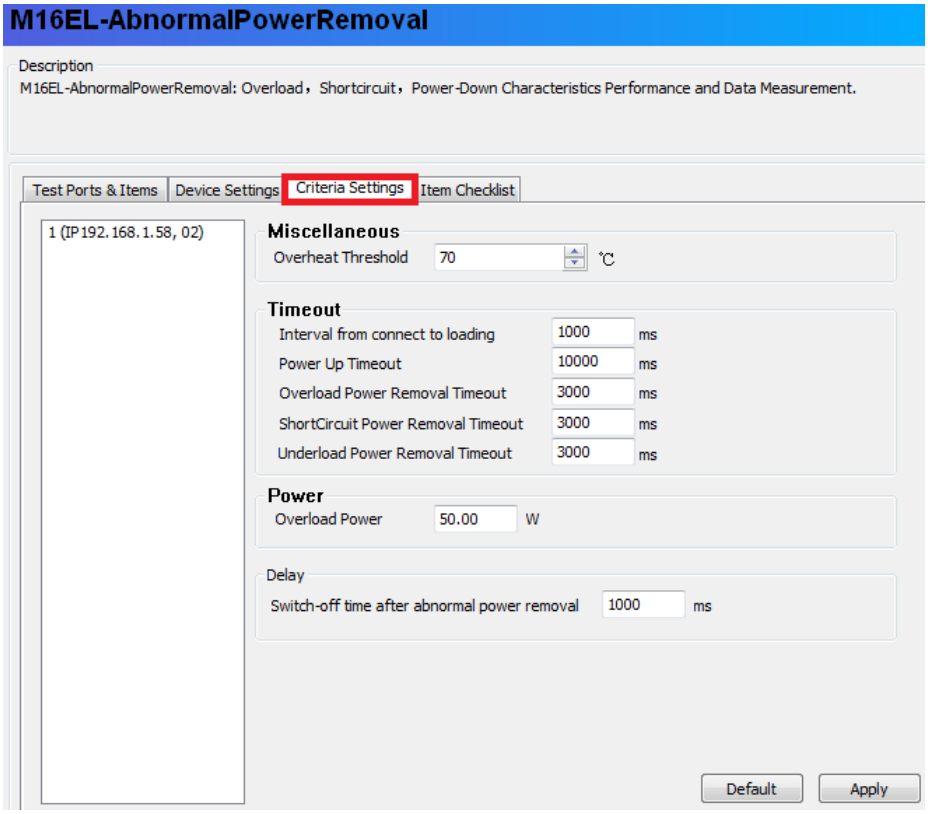
RJ45 Pin #	Wire Color (T568A)	Wire Diagram (T568A)	10Base-T Signal 100Base-TX Signal	PoE
1	White/Green		Transmit+	Mode A +
2	Green		Transmit-	Mode A +
3	White/Orange		Receive+	Mode A -
4	Blue		Unused	Mode B +
5	White/Blue		Unused	Mode B +
6	Orange		Receive-	Mode A -
7	White/Brown		Unused	Mode B -
8	Brown		Unused	Mode B -

- **Enable LLDP**

By enabling LLDP, the PD can negotiate power with the PSE through the LLDP protocols.

- **Enable 802.3 Power via MDI:** Support LLDP.
- **Enable Extended Power via MDI:** Support LLDP-MED.
- **Message Tx Interval:** Transmitting time interval between two LLDP packets.
- **LLDP Report Loading:** The reported power of PD to PSE carried by the LLDP packets.

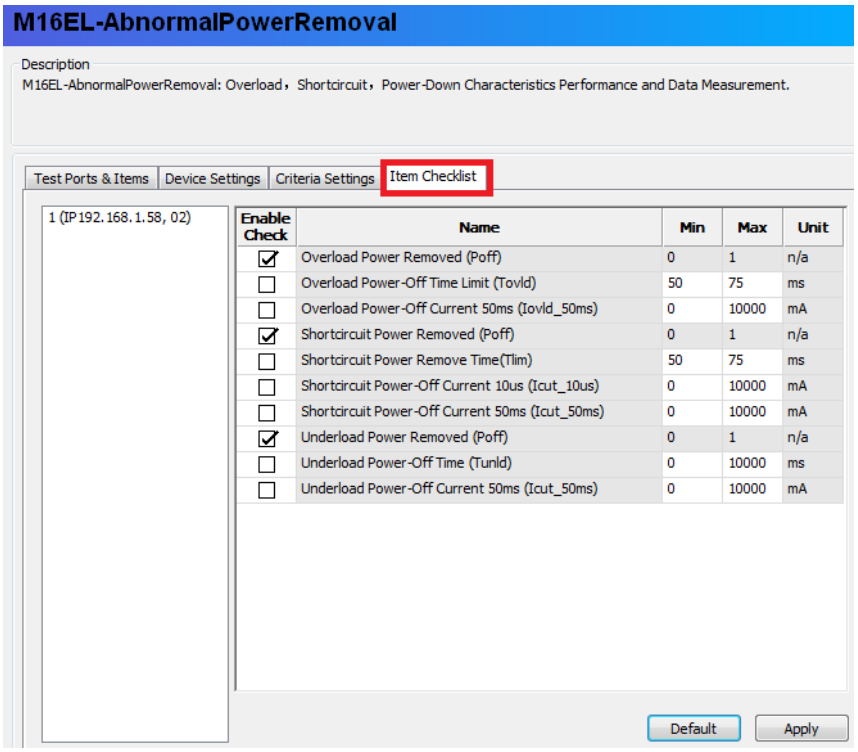
C. Criteria Settings:



- **Overheat Threshold:** This is for safety. If the system temperature exceeds the value you specified here, the system will send out alarms.
- **Timeout**

  Timeout parameters for this task. You can set any of the timeout parameters as required.If any of these timeouts occurs, the test will be terminated and fail.

D. Item Checklist

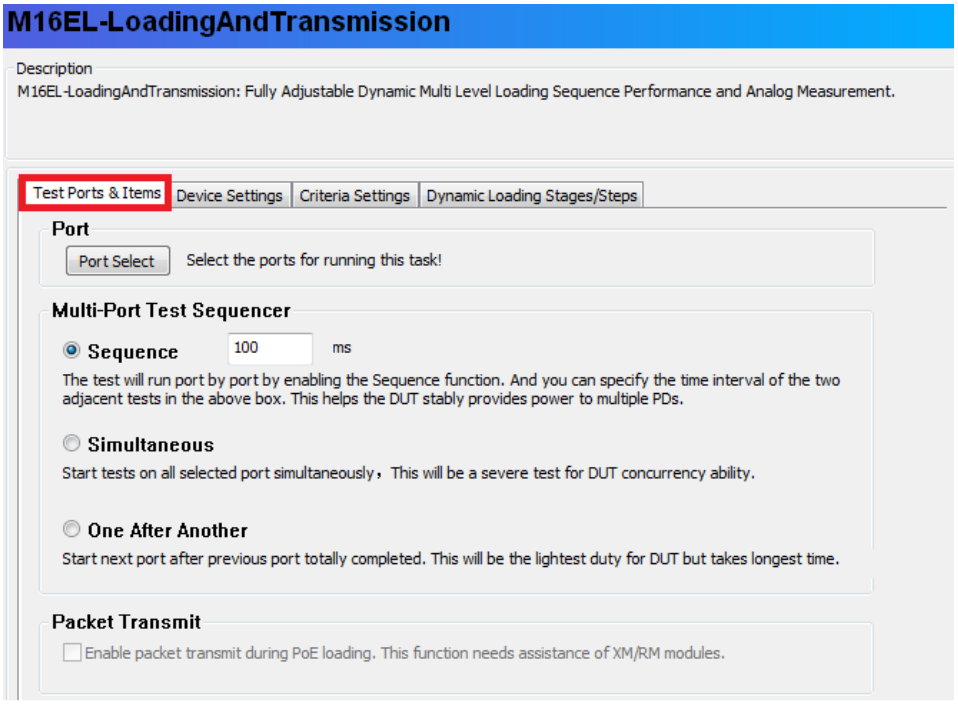


You can set the parameters you want to check for this task. If the test result exceeds any of the range of the checked parameters, the test result will be fail. You can modify the acceptable range of a parameter by re-specifying the values of **Min** and **Max**.

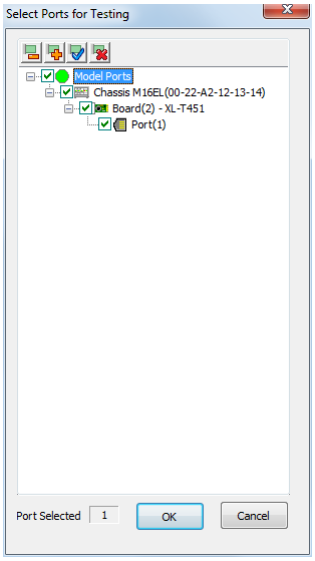
Test Parameters	Descriptions
Overload Power Removed (Poff)	Assessment of the power removal ability for the PSE on overload event
Overload Power-Off Time Limit(Tovld)	Time for power removal on overload event
Overload Power-Off Current 50ms(Iovld_50ms)	Current at 50ms after overload event occurs
Shortcircuit Power Removed(Tlim)	Assessment of the power removal ability for the PSE on short circuit
Shortcircuit Power Removed Time(Poff)	Time for power removal on short-circuit event
Shortcircuit Power-Off Current 10us(Icut_10us)	Current at 10us after short-circuit event occurs
Shortcircuit Power-Off Current 50ms(Icut_50ms)	Current at 50ms after short-circuit event occurs
Underload Power Removed(Poff)	Assessment of the power removal ability for the PSE on underload event
Underload Power-Off Time(Tunld)	Time for power removal on underload event
Underload Power-Off Current 50ms(Icut_50ms)	Current at 50ms after underload event occurs

5.4.4. M16EL-LoadingAndTransmission

A. Test Ports & Items



- **Port Select:** Select the ports for running this task. Click this button, the following window pops up. Click **OK** to make the settings be applied.

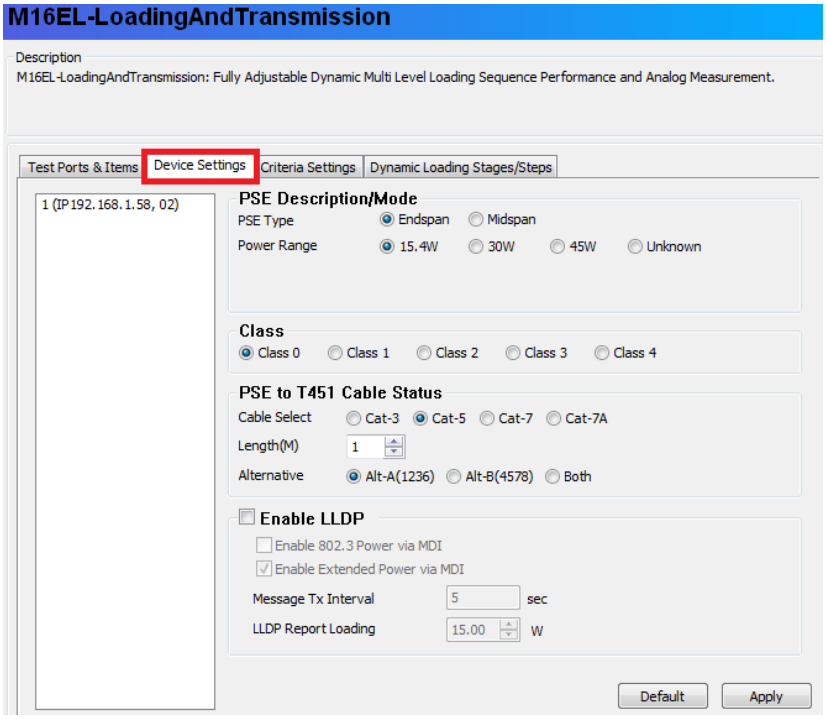


- **Multi-Port Test Sequencer:** sequence control when multi ports are assigned to perform this test.
  - **Sequence:** the test will run port by port by enabling this function. You can specify the time interval for the test executing on the adjacent ports in the above box. This helps the DUT to power the PDs stably.
  - **Simultaneously:** The selected ports will execute this task simultaneously.
  - **One After Another:** The selected ports will execute this task one after another. Namely, the

task is executed on the next port until it is fully executed on the previous one. This generates less pressure for the DUT.

- **Packet Transmit:** If this function is enabled, you can do the PoE tests and traffic testing concurrently. But you need to have the NuPOE-16EL platform and the Nustreams Platform installed at the same time.

B. Device Settings



- **PSE Description/Mode:**
  - **PSE Description/Mode:** Select the PSE mode according to the PSE's real situation.
  - **Power Range:** Select the maximum power the PSE can supply according to the PSE's real situation.
- **Class**

  Select the PD classification. In the NuPOE-M16EL test platform, the PD is simulated by the XL-T451 module. XL-T451 supports both 802.3af and 802.3at. The maximum power input for XL-T451 is 45W.

Class	Power range (Watt)
0	0.44 to 12.95
1	0.44 to 3.84
2	3.84 to 6.49
3	6.49 to 12.95
4	802.3af: Reserved
	802.3at：≥12.95

- **PSE To T451 Cable Status**
  - **Cable Select:** Select the cable category you are using.
  - **Cable Length:** Select the length of the cable.

- **Alternative**

  Select the power supply wire pairs of the PSE.

  - **Alt-A(12，36):**The PSE uses wire pairs 12, 36 as the power pairs.
  - **Alt-A(45，78):** The PSE uses wire pairs 45, 78 as the power pairs.
  - **Both:** The PSE can use either wire pairs 12, 36 or 45, 78 as the power pairs.

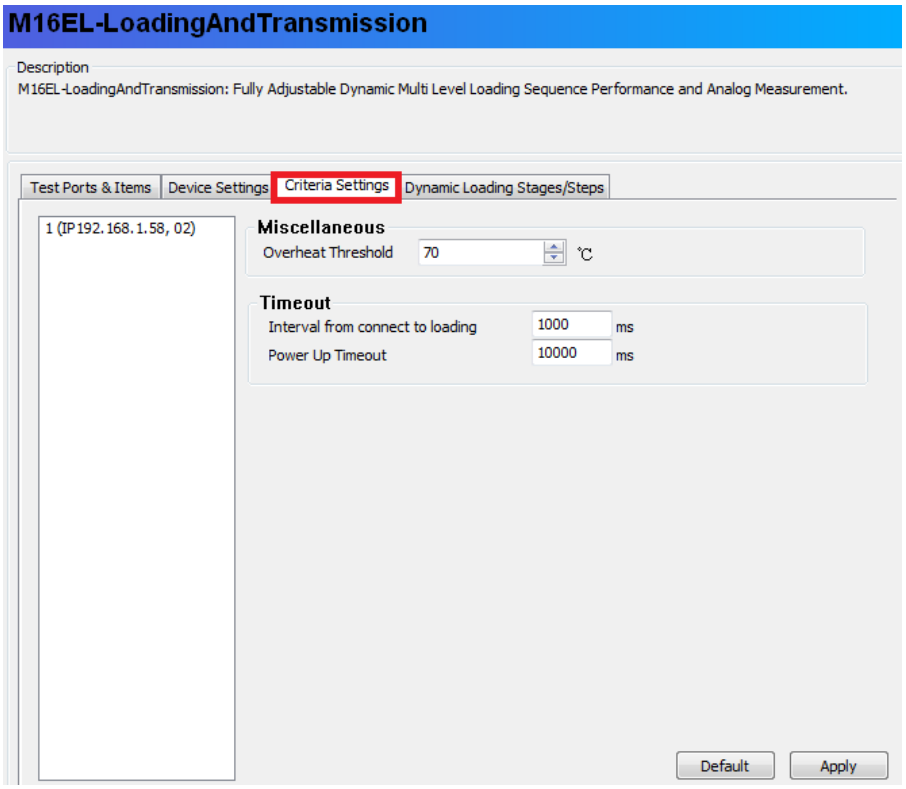
RJ45 Pin #	Wire Color (T568A)	Wire Diagram (T568A)	10Base-T Signal 100Base-TX Signal	PoE
1	White/Green		Transmit+	Mode A +
2	Green		Transmit-	Mode A +
3	White/Orange		Receive+	Mode A -
4	Blue		Unused	Mode B +
5	White/Blue		Unused	Mode B +
6	Orange		Receive-	Mode A -
7	White/Brown		Unused	Mode B -
8	Brown		Unused	Mode B -

- **Enable LLDP**

  By enabling LLDP, the PD can negotiate power with the PSE through the LLDP protocols.

  - **Enable 802.3 Power via MDI:** Support LLDP.
  - **Enable Extended Power via MDI:** Support LLDP-MED.
  - **Message Tx Interval:** Transmitting time interval between two LLDP packets.
  - **LLDP Report Loading:** The reported power of PD to PSE carried by the LLDP packets.

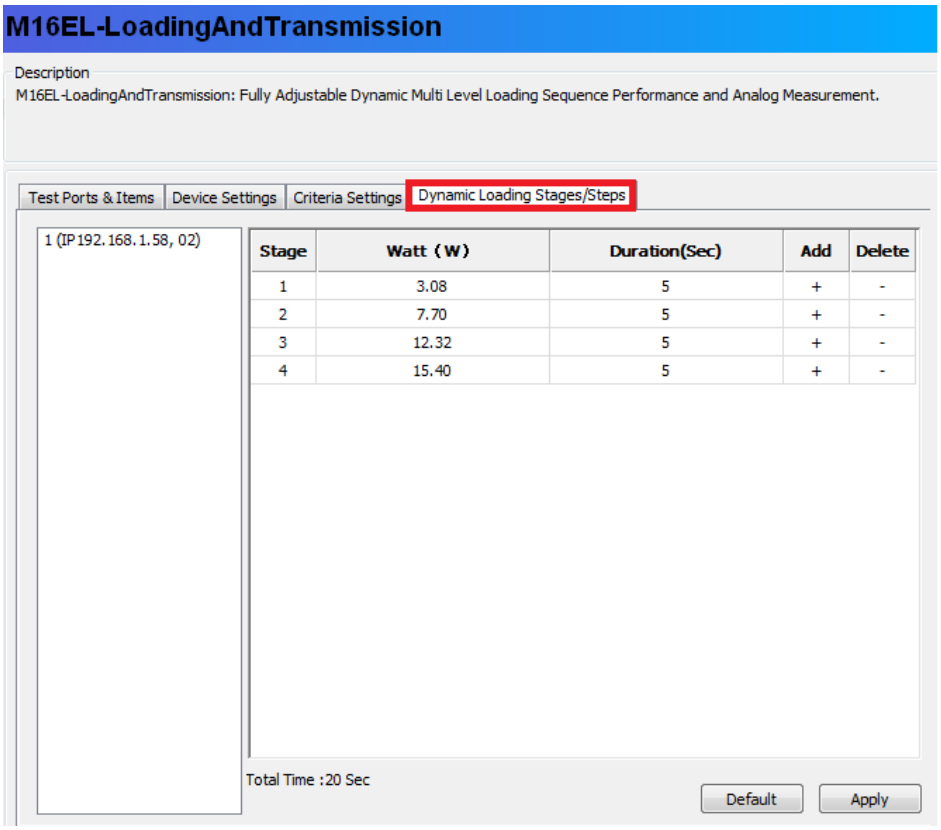
C. Criteria Settings:



- **Overheat Threshold:** This is for safety. If the system temperature exceeds the value you specified here, the system will send out alarms.
- **Timeout**

  Timeout parameters for this task. You can set any of the timeout parameters as required. If any of these timeouts occurs, the test will be terminated and fail.

D. Dynamic Loading Stages/Steps



This task allows the user to test the DUT's PoE and transmission performances concurrently. And you can set the loading power in stages to adequately assess the performance of DUT.

Stage	Watt (W)	Duration(Sec)	Add	Delete
1	3.08	5	+	-
2	7.70	5	+	-
3	12.32	5	+	-
4	15.40	5	+	-

Items	Descriptions
Stage	The sequence of the loading stages
Watt(w)	The loading power of a certain stage. Double click to modify.
Duration(Sec)	The lasting time of this stage
Add	Click to add a duplicate stage right after this stage
Delete	Delete this stage

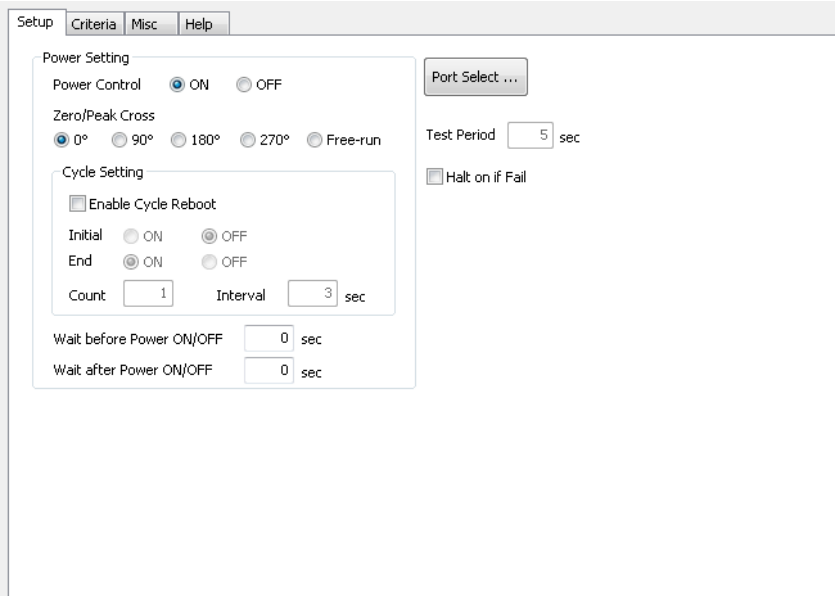
5.5. Test Task – AC

Test Task – AC allows you to test DUT's power supply. For more detail description regarding to Test Task – AC, please refer to "**1.3.5. AC Test**". Please note that if you don't have XM-2WL1 module card installed on your chassis, you can't run tasks mentioned here.

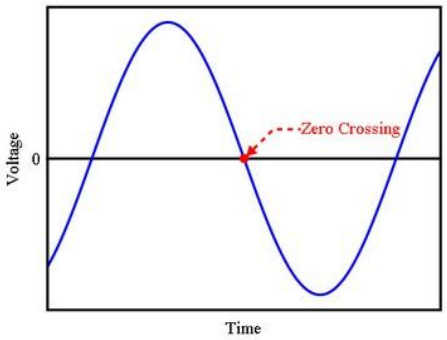
5.5.1. PWR-Setup (Power Setup Test)

With module card XM-2WL1 providing power to the DUT, you can perform power ON/OFF and cycling tests with PWR-Setup.

Setup



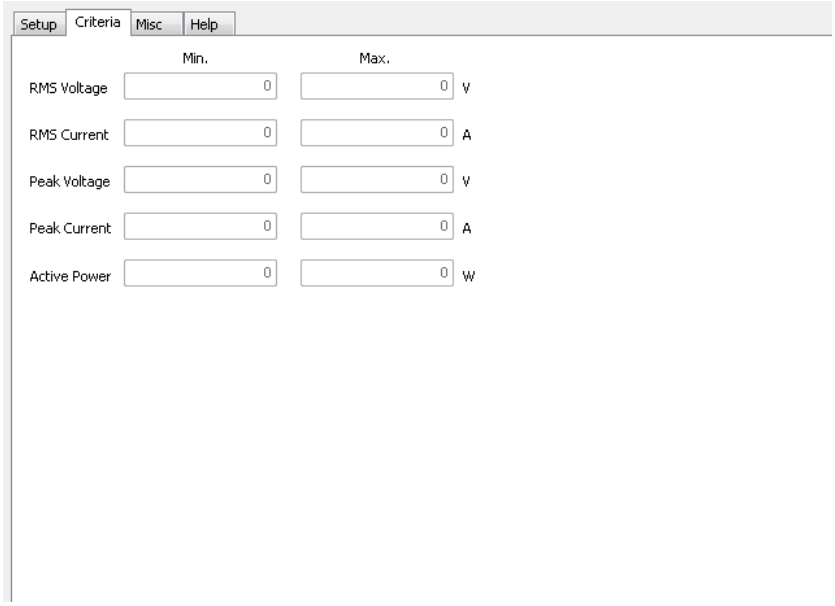
- **Power Control:** To turn the power of DUT **ON** or **OFF**.
- **Zero/Peak Cross:** In a Voltage vs. Time diagram shown on the right, a Zero Cross happens every time when the value of voltage reaches zero. Zero-crossing is the key to determining the proper switching time (phase angle) in both leading edge and trailing edge dimmers. You can set the crossing mode to **0** to **270** degrees here, or you can set the crossing mode to **Free-run** mode.



- **Cycle Setting:** By click the **Enable Cycle Reboot** check-box, you can perform power on/off cycling tests.
  - **Initial/End:** You can set the starting/ending power status to **ON/OFF** here in these fields.
  - **Count:** You can set how many times you would like to run the power on/off cycling test.
  - **Interval:** You can set the amount of seconds system shall wait between each cycling test.
- **Wait before Power ON/OFF:** System will halt for the set amount of seconds before power on/off.
- **Wait after Power ON/OFF:** System will halt for the set amount of seconds after power on/off.

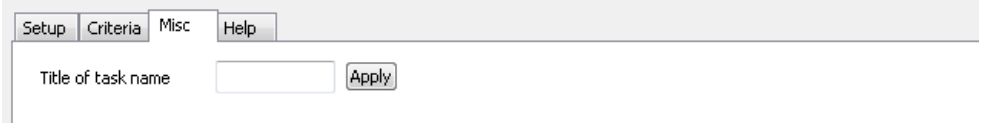
- **Port Select:** By clicking this button, a **Select Ports for Testing** window will pop up, allowing you to select the module cards and the ports you would like to use for the task.
- **Test Period:** The period of time for the power on/off cycling you set will be displayed in this column.
- **Halt on if Fail:** If you enable this function, system will stop if the test fails.

Criteria



The **Criteria** serves no functions under **PWR-Setup** task, and therefore cannot be accessed.

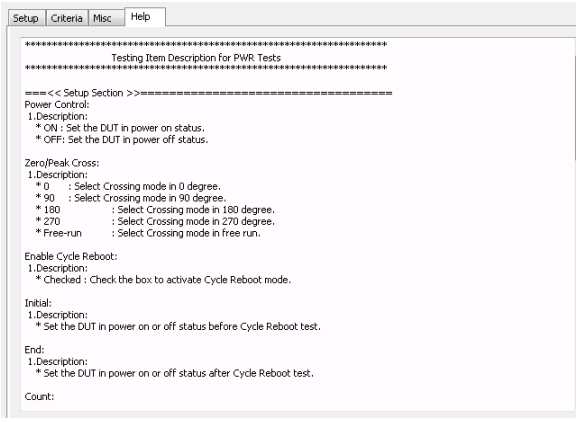
Misc



- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

Help

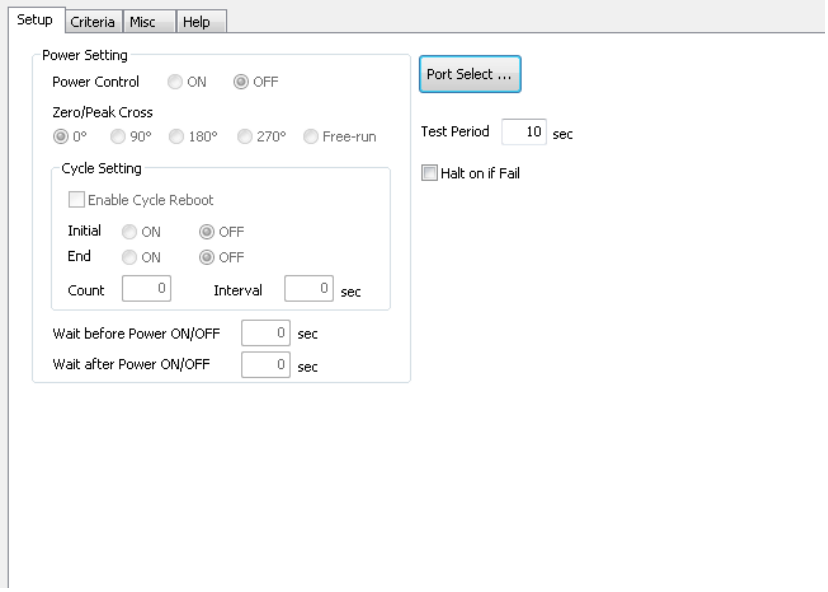
All test variables used for this task and their definitions will be listed here for reference.



5.5.2. PWR – Check (Power Check Test)

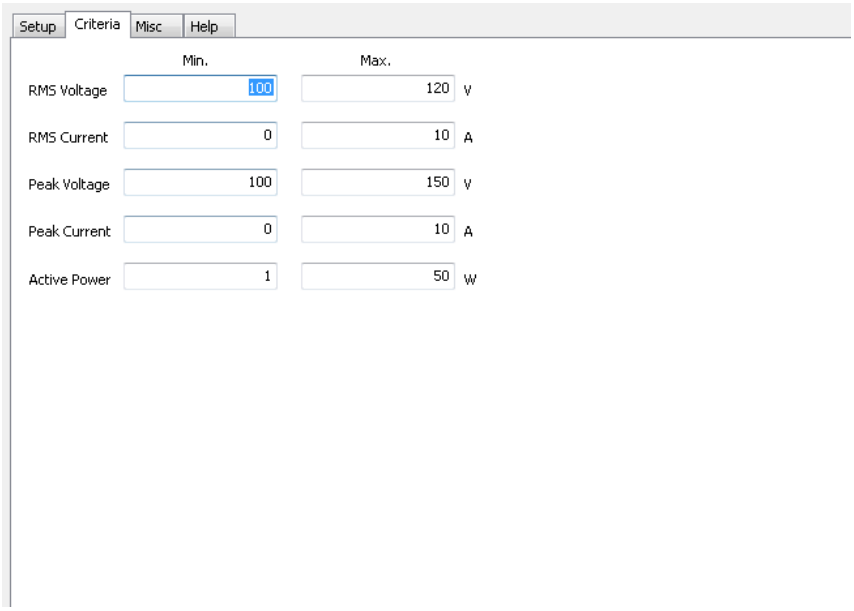
With module card XM-2WL1 providing power to the DUT, you can set criteria and monitor DUT power status with PWR – Check.

Setup



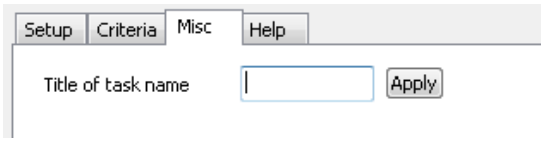
The **Setup** serves no functions under **PWR-Check** task, and therefore cannot be accessed.

Criteria



- **RMS Voltage/Current, Peak Voltage/Current, and Active Power:** You can set the criteria for power testing in these fields.

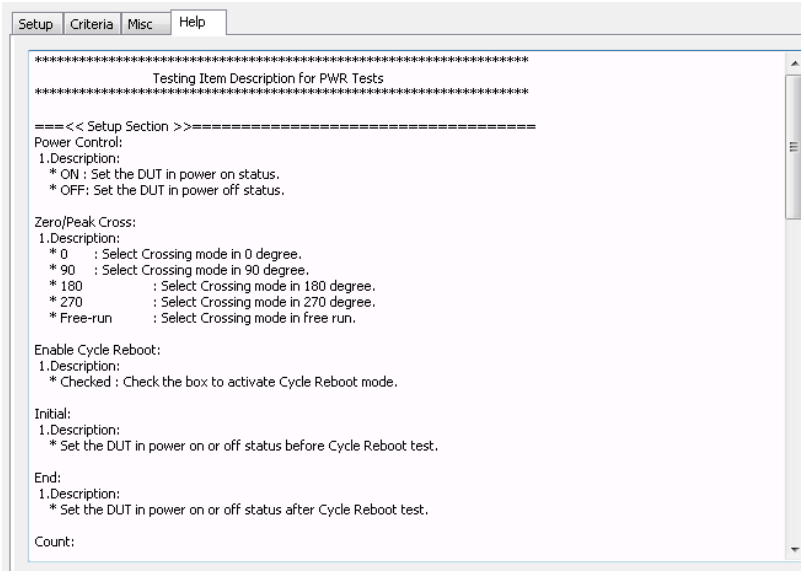
Misc



- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

Help

All test variables used for this task and their definitions will be listed here for reference.

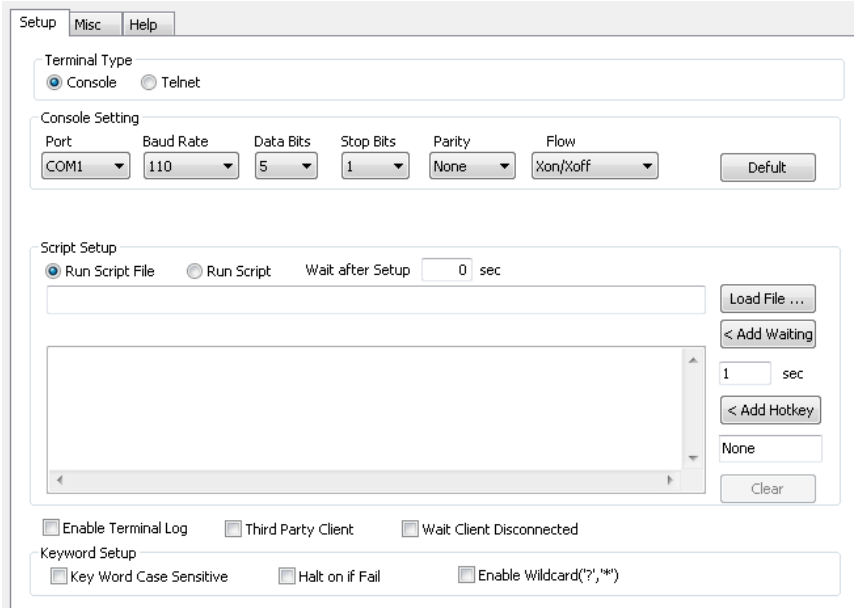


5.6. Test Task – Terminal

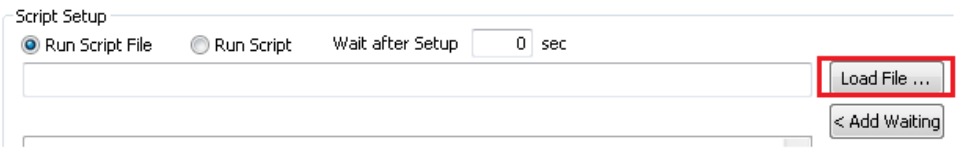
This task contains two subtasks: **Console** and **Telnet**. For more detail description regarding to this task , please refer to "**1.3.6. Terminal Test**".

5.6.1. Console

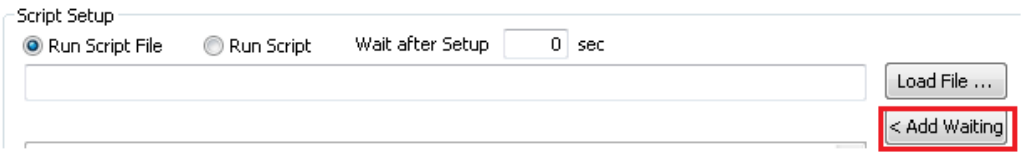
Setup



- **Console Setting:** This table shows information regarding to the testing serial port.
  - **Port:** COM port of the IPC or the PC that control the chassis
  - **Baud Rate:** Transmission speed.
  - **Data Bits:** Data length of a segment.
  - **Stop Bits:** Stop bits of a segment
  - **Parity:** The method to check the correctness
  - **Flow:** Set the type of flow control based on **Xon/Xoff, Hardware** or **None**.
  - **Default:** Click **Default** to set all values to default.
- **Script Setup:** To execute scripts for serial port tests, you can choose to **Run Script File**, or **Run Script**.
  - **Run Script File:** Click **Load File** to load a text file (*.txt) on your PC.



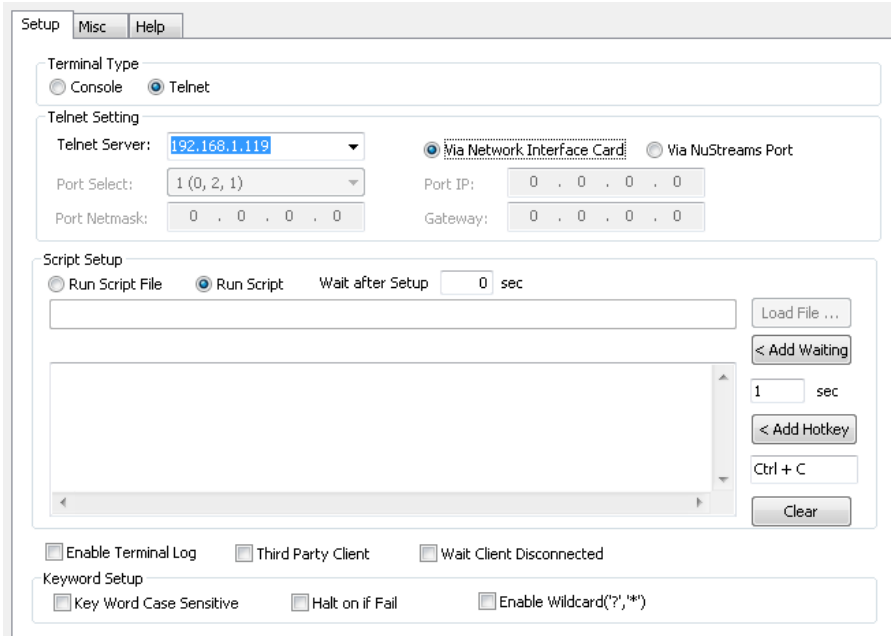
  - **Run Script:** You can edit/input a script with console commands in the field down below. Click **< Add Waiting** to add a waiting command to the edit area. You can set the amount of seconds for the waiting command in the field down below. To clear all texts in the edit area, click **Clear**.



- **Wait after Setup:** You can set the waiting time for the system to halt after finishing configuring.
- **Add a Hotkey:** You can indicate a command as hotkey for script between Ctrl+A to Ctrl+Z.
- **Enable Terminal Log:** You can choose whether to print the contents transmitted by the COM or Telnet into the executing log by tests.
- **Third party Client:** You can check this function to make the third party software as the visual interaction window. APMPT4 will function as an transfer station (virtual Telnet server), which will feedback the communication details between COM or Telnet and DUT to the third party software interfaces via Telnet protocols , receive the manual input commands by the third party users via Telnet and forward the commands to the DUT via Telnet or COM.
- **Wait Client Disconnected:** When checking this function, the user can interact with the DUT after executing the scripts by manually inputting commands before closing the window and exiting the task. Or the task will be exited directly after executing the scripts.
- Keyword setup: This table shows information regarding to the scripts.
  - **Key Word Case Sensitive:** Decide whether the script is case sensitive.
  - **Halt on if Fail**: Decide whether to ignore other tasks and exit the task when error happens.
  - **Enable Wildcard (‘?’,’*’)**: Decide whether to support wildcard.

5.6.2. Telnet

Setup

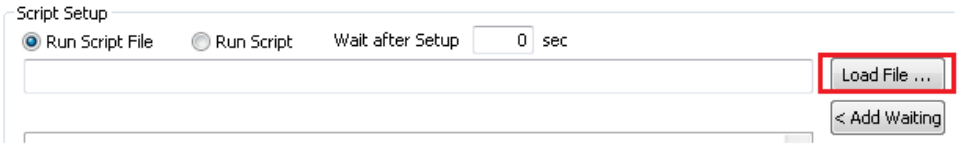


- **Telnet Setting:** This function provides IP settings for the DUT to normally communicate with the DUT. There are two modes: **Via Network Interface Card** and **Via NuStream Port**.
  - **Via Network Interface Card:** Under this mode, the NIC of the host running APMPT4 will connect

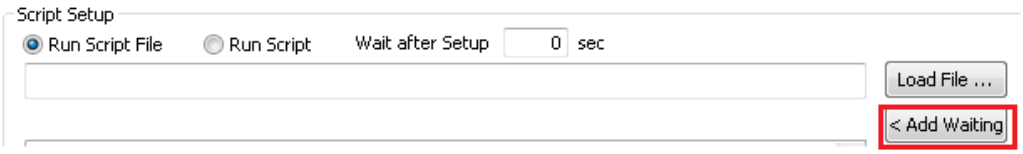
with the DUT via network. The IP and route settings of the NIC should be correctly configured to ensure the normal network communications with the Telnet Server.

- **Via NuStream Port:** Under this mode, the module installed in NuStreams-600i chassis will connect with the DUT via network. The IP and route settings of the port should be correctly configured to ensure the normal network communications with the Telnet Server. You can choose the port that will be connected with the DUT through **Port Select**. And you can set the **Port IP**, **Port Netmask**, **Gateway** to communicate with the DUT.

- **Script Setup:** To execute scripts for serial port tests, you can choose to **Run Script File**, or **Run Script**.
  - **Run Script File:** Click **Load File** to load a text file (*.txt) on your PC.

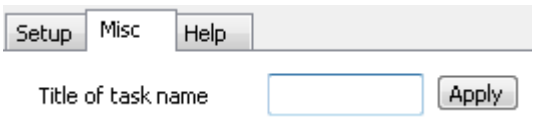


  - **Run Script:** You can edit/input a script with console commands in the field down below. Click **< Add Waiting** to add a waiting command to the edit area. You can set the amount of seconds for the waiting command in the field down below. To clear all texts in the edit area, click **Clear**.



- **Wait after Setup:** You can set the waiting time for the system to halt after finishing configuring.
- **Add Hotkey:** You can indicate a command as hotkey for script between Ctrl+A to Ctrl+Z.
- **Clear:** clear the contents you input in the text box.
- **Enable Terminal Log:** You can choose whether to print the contents transmitted by the COM or Telnet into the executing log by tests.
- **Third party Client:** You can check this function to make the third party software as the visual interaction window. APMPT4 will function as an transfer station (virtual Telnet server), which will feedback the communication details between COM or Telnet and DUT to the third party software interfaces via Telnet protocols , receive the manual input commands by the third party users via Telnet and forward the commands to the DUT via Telnet or COM.
- **Wait Client Disconnected:** When checking this function, the user can interact with the DUT after executing the scripts by manually inputting commands before closing the window and exiting the task. Or the task will be exited directly after executing the scripts.
- **Keyword setup**: This table shows information regarding to the scripts.
  - **Key Word Case Sensitive:** Decide whether the script is case sensitive.
  - **Halt on if Fail**: Decide whether to ignore other tasks and exit the task when error happens.
  - **Enable Wildcard (‘?’,’*’)**: Decide whether to support wildcard.

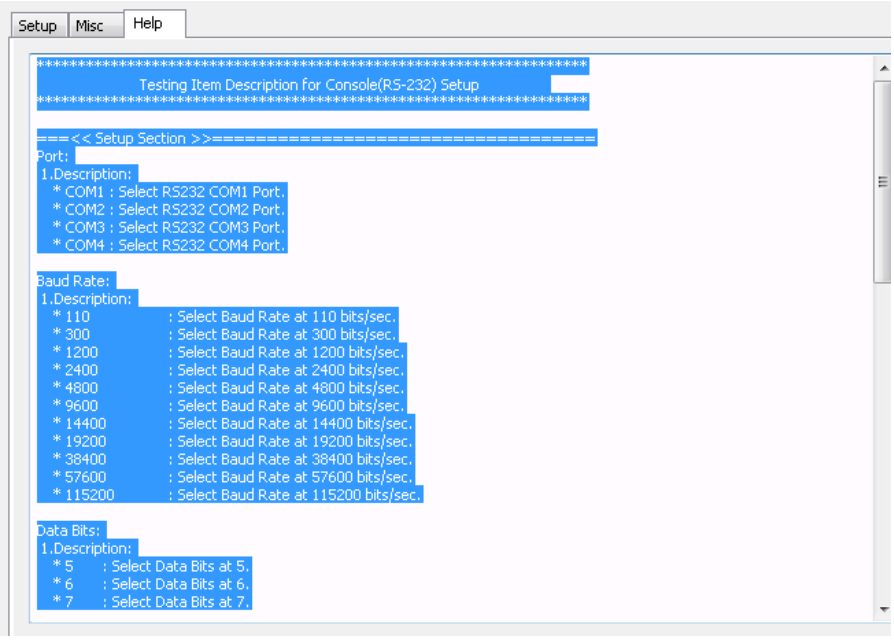
Misc



- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

Help

All test variables used for this task and their definitions will be listed here for reference.



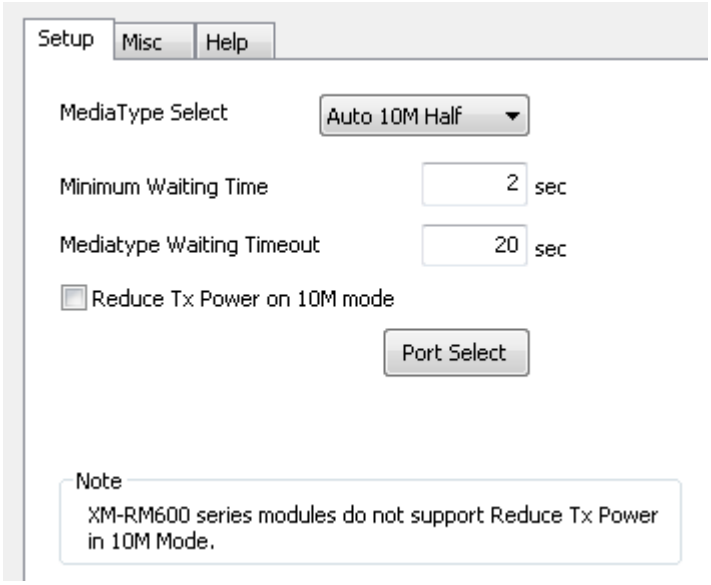
5.7. Test Tasks – General

Tasks available here include **Toggle MDI-II/X**, **Media Pre-Setting**, **1 to Many-UC**, **1 to Many-MCV**, **Inserting Waiting Time**, **CALL-EXT and LineEmulate**.

5.7.1. Toggle MDI-II/X

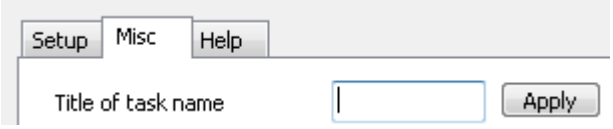
Test the Auto MDIX function of different speed/link modes of the DUT. Toggle MDI-II/X is a technology that automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.

Setup



- **Media Type Select:** Click the scroll-down menu to select the media type.
- **Minimum Waiting Time:** APMPT-4 will halt at least for the **Minimum Waiting Time** you input here during auto-negotiation process.
- **Media Type Waiting Timeout:** If the time spent for auto-negotiation exceeds the **Media Type Waiting Timeout** you set here, the test will stop and the test result will be fail.
- **Reduce Tx Power on 10M Mode:** If this function is enabled, the transmitting speed will be set on 10M. Please note that XM-RM600 series module cards do not support this function.
- **Port Select:** By clicking this button, a **Select Ports for Testing** window will pop up, allowing you to select the module cards and the ports you would like to use for the task.

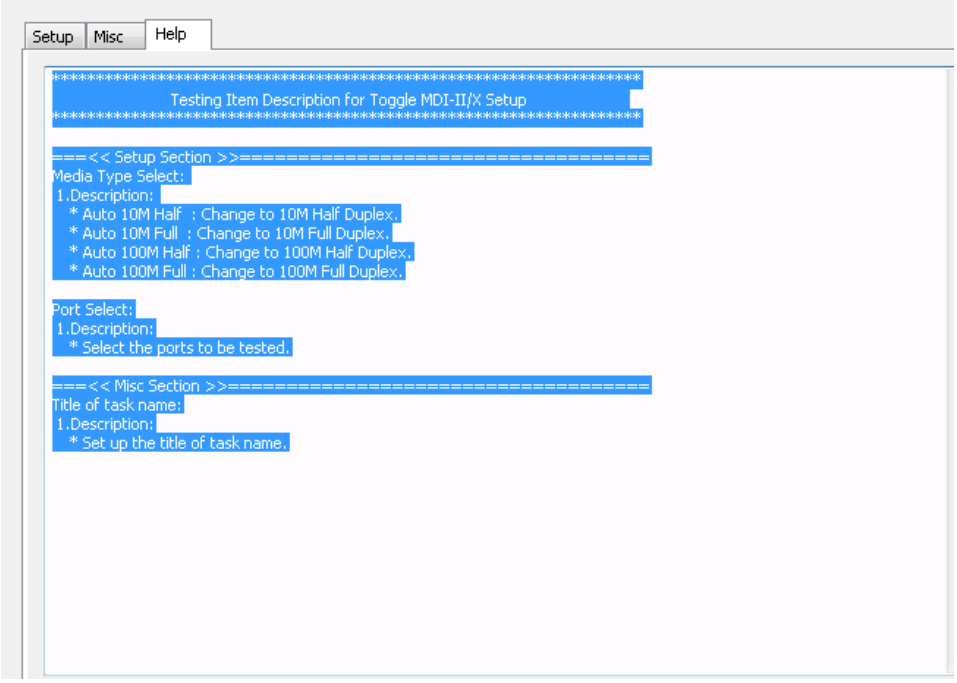
Misc



- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

Help

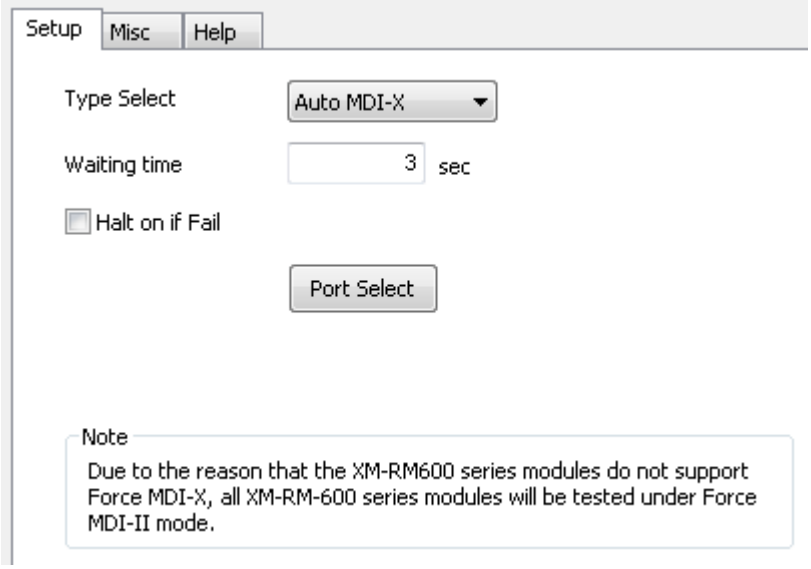
All test variables used for this task and their definitions will be listed here for reference.



5.7.2. Media Pre-Setting

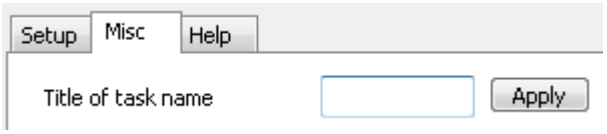
Test MDIX by Media Pre-setting mode or force MDI (straight-through connection) or MDIX (crossover connection) mode of DUT.

Setup



- **Type Select:** Click the scroll-down menu to choose the link mode for Media Pre-Setting test. Three modes are available: **Auto MDI-X**, **Force MDI**, and **Force MDIX**. Please note that since XM-RM600 series module cards do not support Force MDI-X, all XM-RM6XX modules will be tested under Force MDI-II mode instead.
- **Waiting Time:** APMPT-4 will halt at least for the **Waiting Time** you input here during test process.
- **Halt on if Fail:** If you enable this function, system will stop if the test fails.
- **Port Select:** By clicking this button, a **Select Ports for Testing** window will pop up, allowing you to select the module cards and the ports you would like to use for the task.

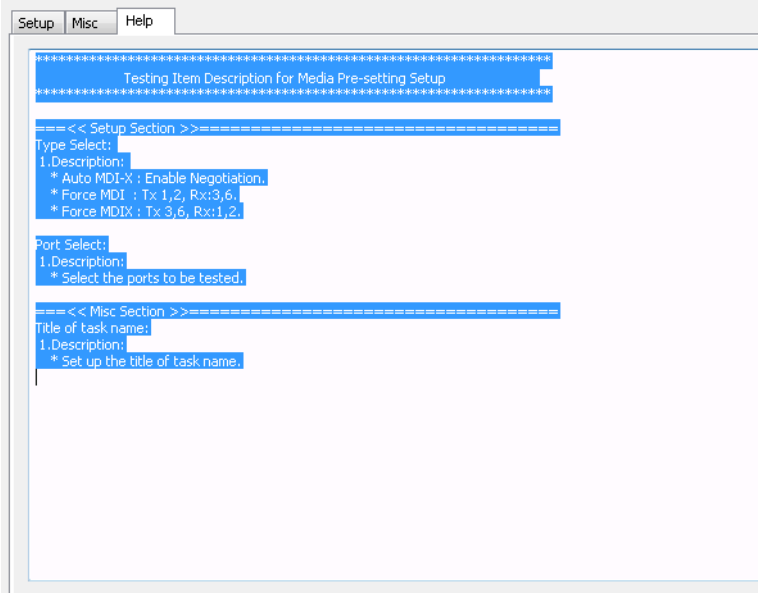
Misc



- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

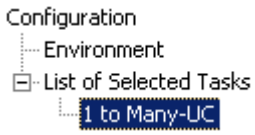
Help

All test variables used for this task and their definitions will be listed here for reference.



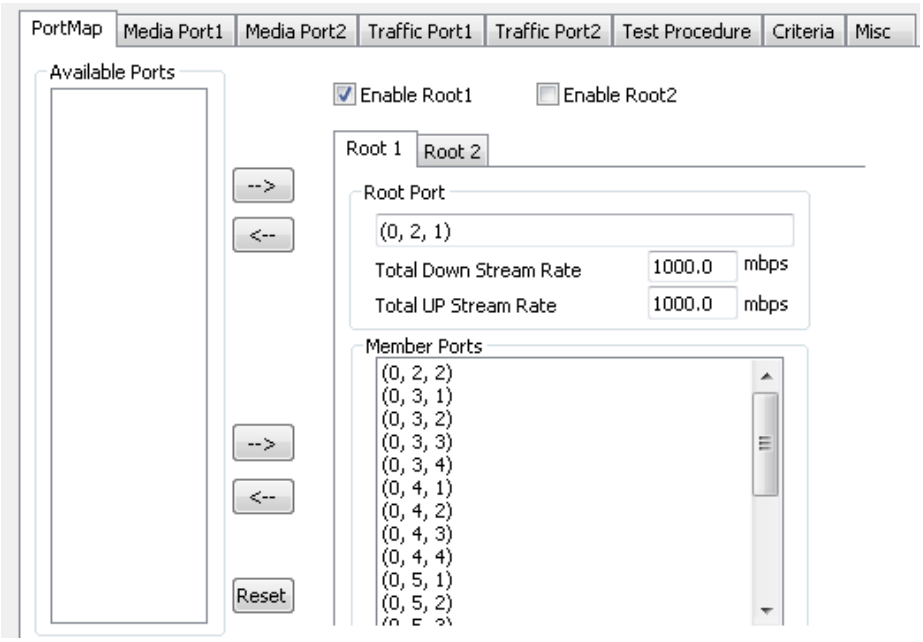
5.7.3. 1 to Many-UC

1 to Many-UC is a Unicast Full Performance Test. Performing Layer 2 MAC address Unicast performance tests from one source to multiple ports with different media types (such as 100Mbps and 1Gbps Full).



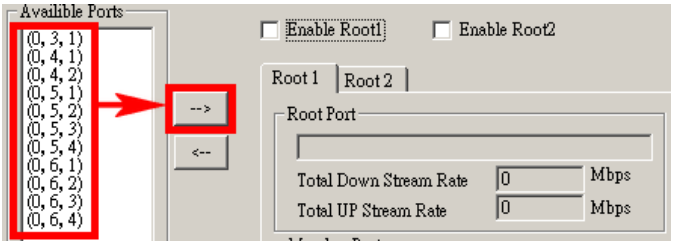
Please note that **1 to Many-UC** can only be run alone without other tasks in the **Selected Task List**.

Port Map

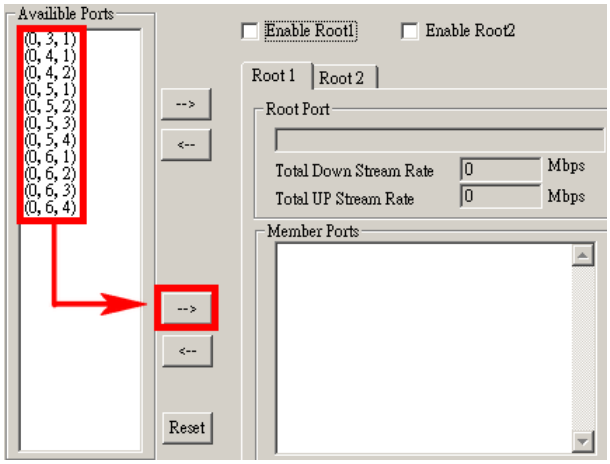


Before making any other configurations for **1 to Many-UC** test, you have to assign a **Root Port** and its **Member Ports** for **Root 1** or **Root 2** first. Please note that only Active Ports from module cards **XM-RM731** and **XM-RM891** can serve as **Root Ports**.

To assign an Active Port as the Root Port for Root 1 or Root 2, please click the Active Port you would like to use as a Root Port, and then click the → button to add it to the Root Port field located on the right side. To remove the Root Port you've assigned, click the ← button.

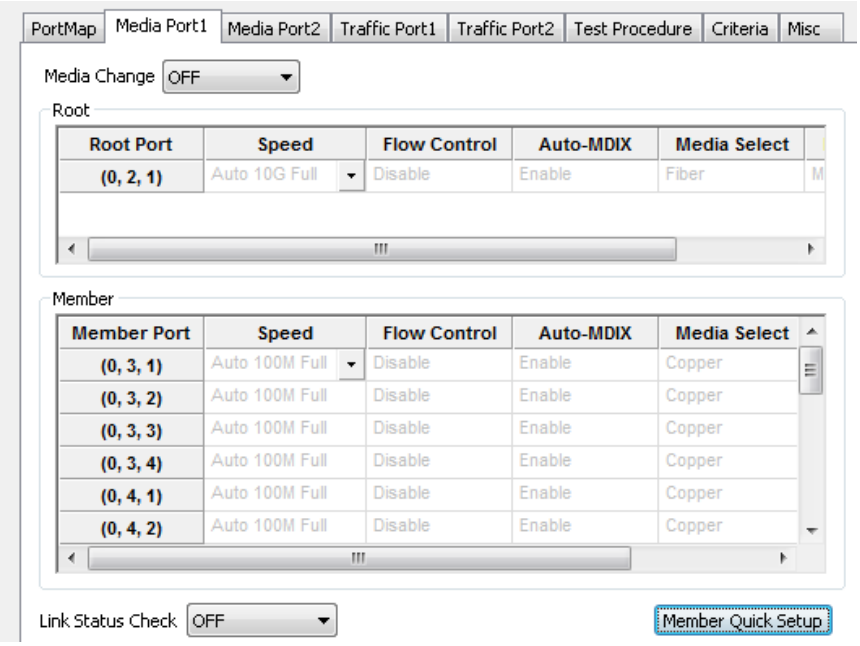


To assign Active Ports as the Member Ports for Root 1 or Root 2, please click the Active Ports you would like to use as Member Ports, and then click the → button to add it to the member Ports field located on the right side. To remove a Member Port you've assigned, click the Member Port you would like to remove, and then click the ← button.



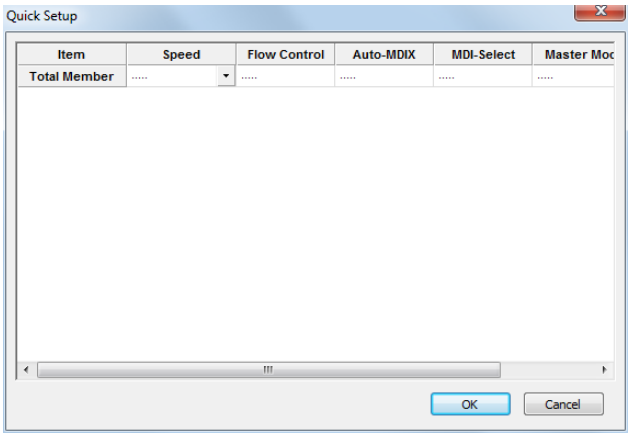
- **Available Ports:** All available Active Ports will be shown in this field. If you assign an Active Port as the Root Port or one of the Member Ports, it will be removed from this field.
- **→/←:** You can add an selected Active Port as the Root Port or one of the Member Ports by clicking the → button, or remove the Root Port or Member Ports by clicking the ← button.
- **Reset:** Click this button to remove all Active Ports that has been assigned as Root Port or Member Ports.
- **Enable Root 1/2:** Click these check boxes to select which Root you would like to use for 1 to Many-UC test.
- **Root 1/Root2:** Click these tabs to choose which Root you would like to view/configure.

Media Port 1/2



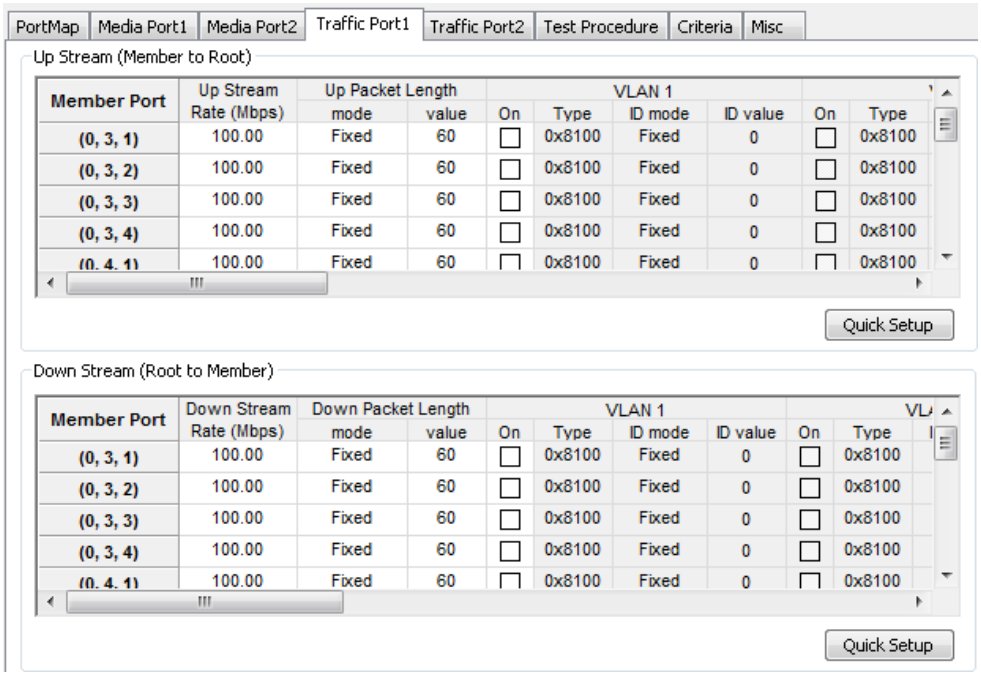
You can set the media type for all the Active Ports that's used for **1 to Many-UC** test here. The configuration for **Media Port 1** and **Media Port 2** are identical, and can be related.

- **Media Change:** Turning On or OFF this option will respectively lock or unlock the availability for setting the **Root** and **Member** functions.
- **Root:** You can set the media type (**Speed**, **Flow Control**, **Auto-MDIX**, **Media Select** and **Master Mode**) for the **Root Active Port** of **Root 1/2** in this field. To configure Root Active Port, please click the scroll-down menu located on the column.
- **Member:** You can set the media type (**Speed**, **Flow Control**, **Auto-MDIX**, **Media Select** and **Master Mode**) for the **Member Active Port** of **Root 1/2** in this field. To configure Member Active Port, please click the scroll-down menu located on the column. You could also click the **Member Quick Setup** button. A **Quick Setup** window will pop up. The settings you made here will apply to all the Member Ports listed in the **Member** field.



- **Link Status Check:** Select between On to able or OFF to disable the link status check. You can also select the ON & Alarm to activate the link status check with alarm.

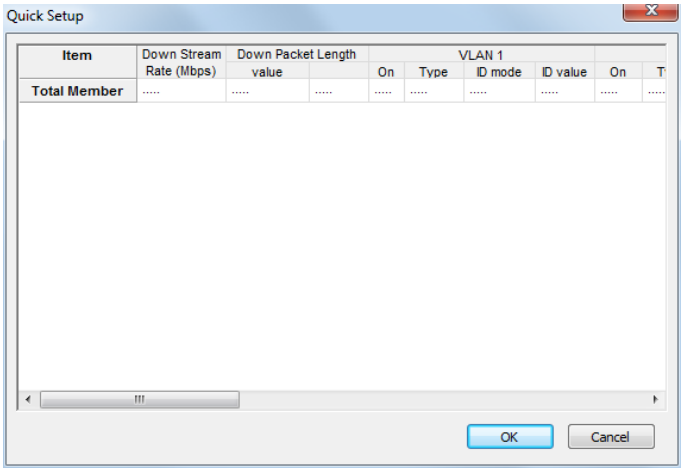
Traffic Port 1/2



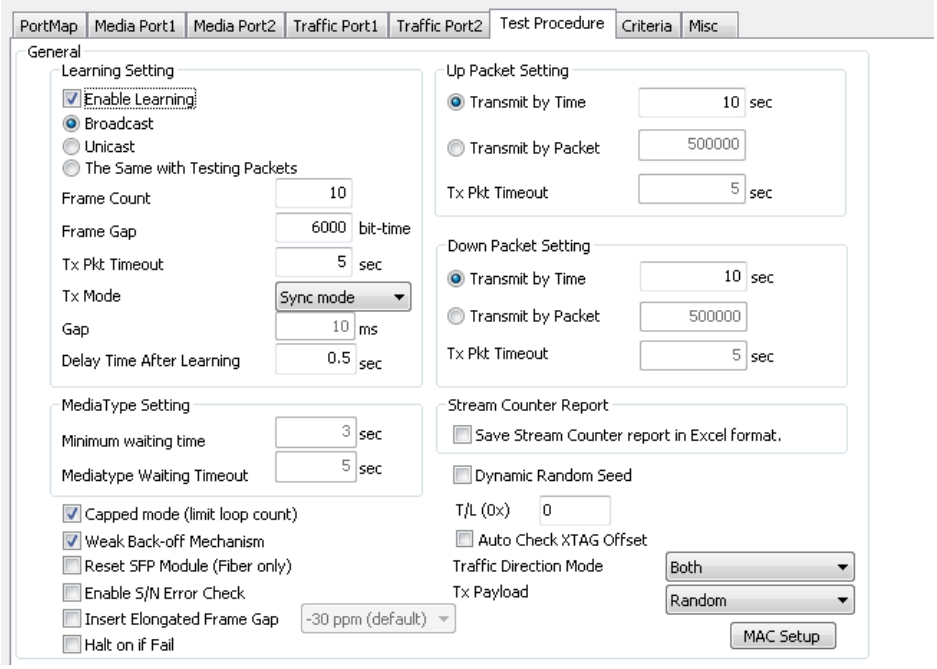
You can make **Up Stream** and **Down Stream** packet transmitting settings for all the Active Ports that's used for **1 to Many-UC** test here. The configuration for **Traffic Port 1** and **Traffic Port 2** are identical, and can be related.

You can configure all the settings for each Active Port listed in **Up Stream** or **Down Stream** field in a one-by-one manner by double-clicking the column you would like to configure.

You can also click the **Quick Setup** button. A **Quick Setup** window will pop up. The settings you made here will apply to all the Active Ports listed in the **Up Stream** or **Down Stream** field.



Test Procedure

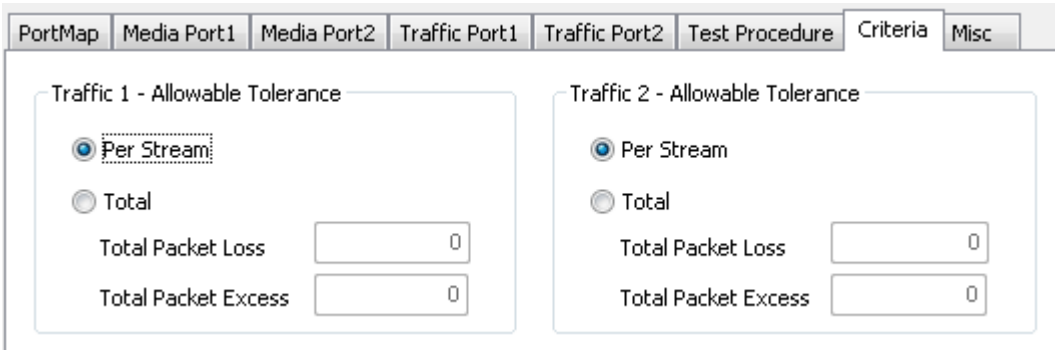


- **Learning Setting:**
  - **Enable Learning:** Enabling this function allows learning packets transmitted to the DUT before test packets are transmitted. If you disable this function, no learning packets will be transmitted.
  - **Broadcast:** Select the learning packet mode for Broadcast mode.
  - **Unicast:** Select the learning packet mode for Unicast mode.
  - **The Same with Testing Packets:** The learning packet mode will be the same as the **Testing Packets** settings.
  - **Frame Count:** Repeat frame count per learning packets burst.
  - **Frame Gap:** Duration time between learning frames.
  - **Tx Pkt Timeout:** If the system fails to send the learning packet within the time you set in **TxPKT Timeout** field, the packet will be drop.
  - **Tx Mode:** You can change how learning packet will be transmitted. By clicking the **Tx** scroll-down menu, you can choose **Sync Mode**, **Group Mode** (transmitting gap can be set in the **Gap** field located down below), and **Sequence Mode**.
  - **Delay Time After Learning:** The time gap between after learning and the next process.
- **MediaType Setting:**
  - **Minimum Waiting Time:** APMPT-4 will halt at least for the **Minimum Waiting Time** you input here during auto-negotiation process.
  - **Media Type Waiting Timeout:** If the time spent for auto-negotiation exceeds the **Media Type Waiting Timeout** you set here, the test will stop and the test result will be fail.
- **Capped Mode (limit loop count):** Selecting this function will allow packets to be transmitted by sequence.
- **Weak Back-off Mechanism:** When packet collision occurs, the system will wait for at least 1

slot-time before starting to transmit packets again if this function is enabled.

- **Reset SFP Module (Fiber Only):** Selecting this function will allow system to turn Off SFP port and then turn On the SFP port.
- **Enable S/N Error Check:** Selecting this option will enable the capturing of S/N Error.
- **Insert Elongated Frame Gap:** This function is only for XM-RM-8XX modules. When enabling this function, 1 bit-time of frame gap will be inserted after a certain amount of packets are sent and decrease packet loss.
- **Halt on if fail:** If you enable this function, system will stop if the test fails.
- **Up Packet Setting:**
  - **Transmit by Time:** The 1 to Many-UC test will be performed for the set amount of time here.
  - **Transmit by Packet:** The 1 to Many-UC test will be performed for the set amount of packet here.
  - **Tx Pkt Timeout:** This field will be available for setting when you select the **Transmit by Packet** function. If the time spent for transmitting packet exceeds the **Tx Pkt Timeout** you set here, the test will stop and the result will be fail.
- **Down Packet Setting:**
  - **Transmit by Time:** The 1 to Many-UC test will be performed for the set amount of time here.
  - **Transmit by Packet:** The 1 to Many-UC test will be performed for the set amount of packet here.
  - **Tx Pkt Timeout:** This field will be available for setting when you select the **Transmit by Packet** function. If the time spent for transmitting packet exceeds the **Tx Pkt Timeout** you set here, the test will stop and the result will be fail.
- **Stream Counter Report:** Click the check box so the APMPT-4 will save the 1 to Many-UC test result in Microsoft Excel format.
- **Dynamic Random Seed:** For random packets, selecting this option will generate variable packets, disabling this function will not generate variable packets.
- **T/L (0x):** You can set the T/L (0X) after MAC address in this field.
- **Auto Check X- TAG Offset:** X-TAG is a 12-byte tag which is developed by Xtramus and embedded at 45th~56th bytes of each testing frames generated by Rapid-Matrix for multi-stream tests. X-TAG will be added to all the testing frames generated by NuApps-MultiUnits-RM.
- **Traffic Direction Mode:** You can scroll down and choose the direction of the traffic on this field.
- **Tx Payload:** You can set the content of the transmitting packets with the **Payload** scroll-down menu.
- **MAC Setup:** Clicking the **MAC Setup** option will pop up a window to modify each module card's port **MAC Address**.

Criteria



- **Traffic 1/2 – Allowable Tolerance:**
  - **Per Stream:** Selecting this function will set the allowable tolerance per stream.
  - **Total:** Selecting this option will allow you to set the Total Packet Loss and Total Packet Excess to be tolerated for the test task.

Note: Traffic 1 and Traffic 2 settings will only be available once you set the Root 1 and Root 2 respectively from Port Map.

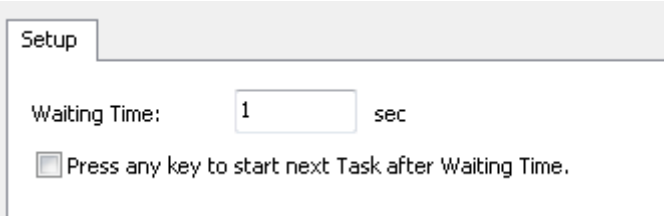
Misc

- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

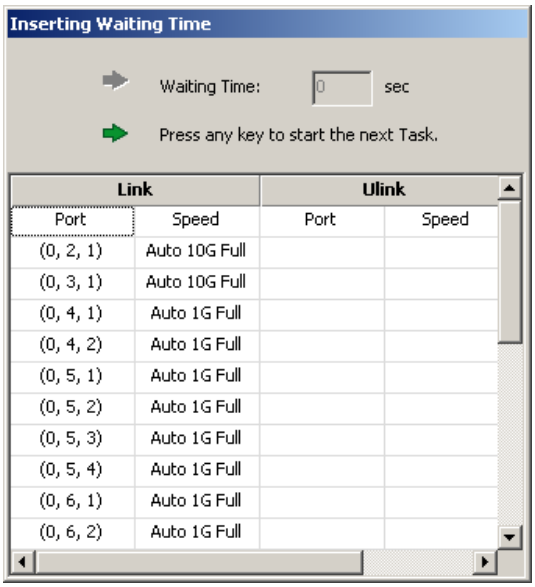
5.7.4. Inserting Waiting Time

This function allows users to insert waiting time in-between tasks or pause the whole testing process after completing a task.

Setup



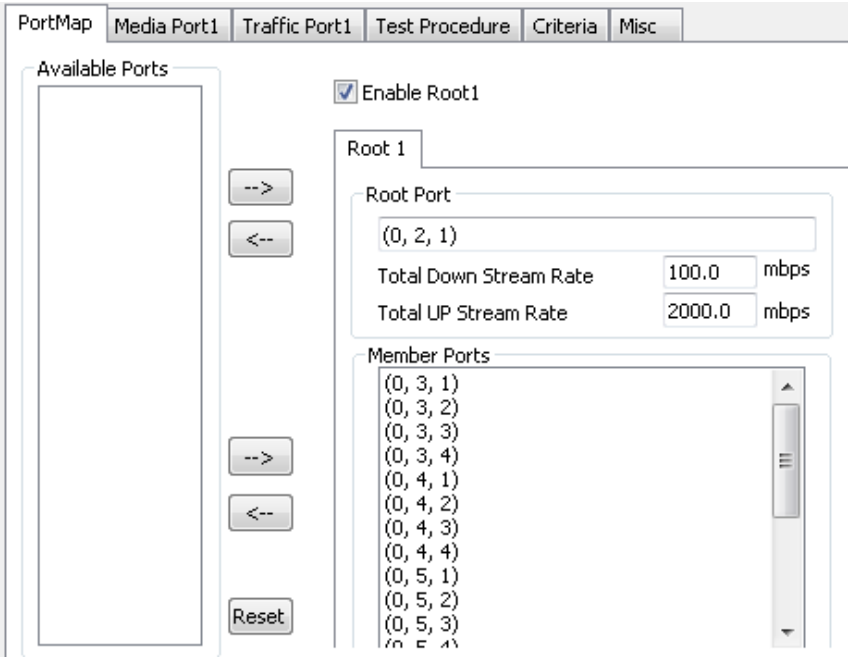
- **Waiting Time:** Input the waiting time in-between each task. An **Inserting Waiting Time** window will pop up when the previous task is completed. The **Inserting Waiting Time** window will display for the amount of time you set here, and then go to the next task automatically.
- **Press any key to start next Task after Waiting Time:** If this function is enabled, an **Inserting Waiting Time** window will pop up when the previous task is completed. The **Inserting Waiting Time** window will display for the amount of time you set here, and then go to the next task automatically after you click any key on the keyboard.



5.7.5. 1 to Many-MCV

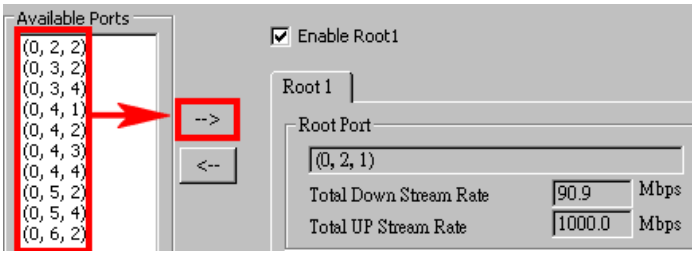
1 to Many-MCV performs Layer 2 VLAN address multicast performance tests from one source port to multiple destination ports with different media types (such as 100Mbps and 1Gbps Full).

Port Map

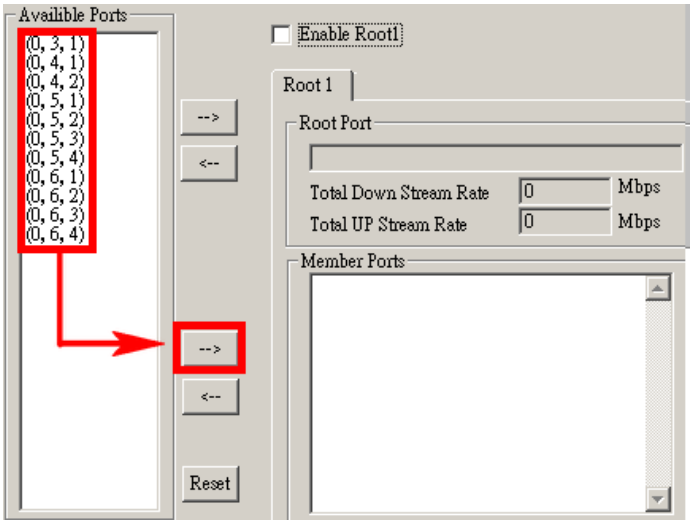


Before making any other configurations for **1 to Many-MCV** test, you have to assign a **Root Port** and its **Member Ports** for **Root 1** first. Please note that only Active Ports from module cards **XM-RM731** and **XM-RM891** can serve as **Root Ports**.

To assign an Active Port as the Root Port for Root 1, please click the Active Port you would like to use as a Root Port, and then click the → button to add it to the Root Port field located on the right side. To remove the Root Port you've assigned, click the ← button.

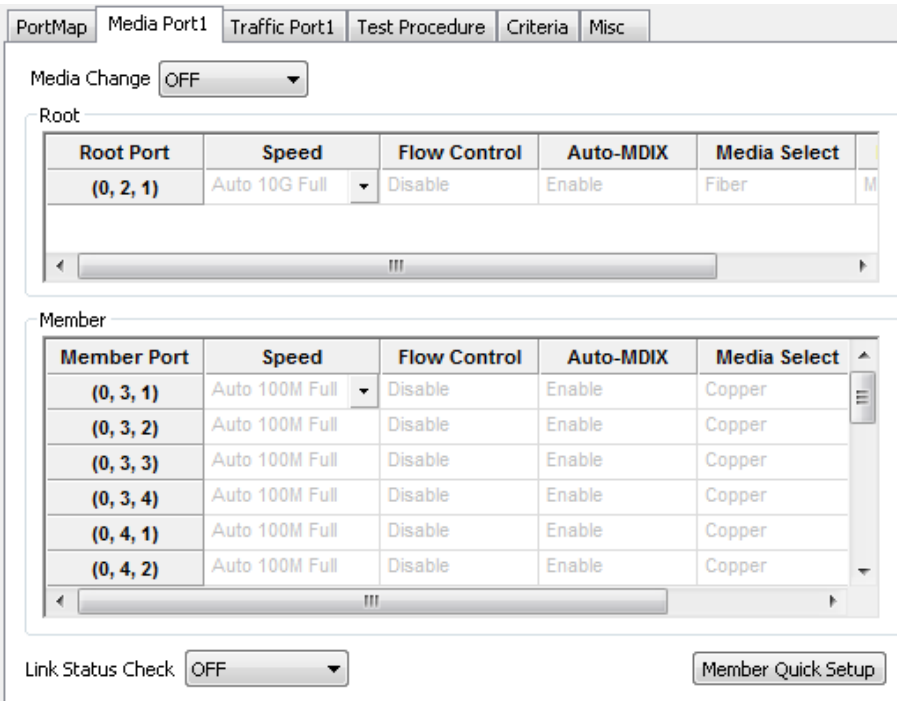


To assign Active Ports as the Member Ports for Root 1, please click the Active Ports you would like to use as Member Ports, and then click the → button to add it to the member Ports field located on the right side. To remove a Member Port you've assigned, click the Member Port you would like to remove, and then click the ← button.



- **Available Ports:** All available Active Ports will be shown in this field. If you assign an Active Port as the Root Port or one of the Member Ports, it will be removed from this field.
- **→/←:** You can add an selected Active Port as the Root Port or one of the Member Ports by clicking the → button, or remove the Root Port or Member Ports by clicking the ← button.
- **Reset:** Click this button to remove all Active Ports that has been assigned as Root Port or Member Ports.
- **Enable Root 1/2:** Click these check boxes to select which Root you would like to use for 1 to Many-UC test.
- **Root 1/Root2:** Click these tabs to choose which Root you would like to view/configure.

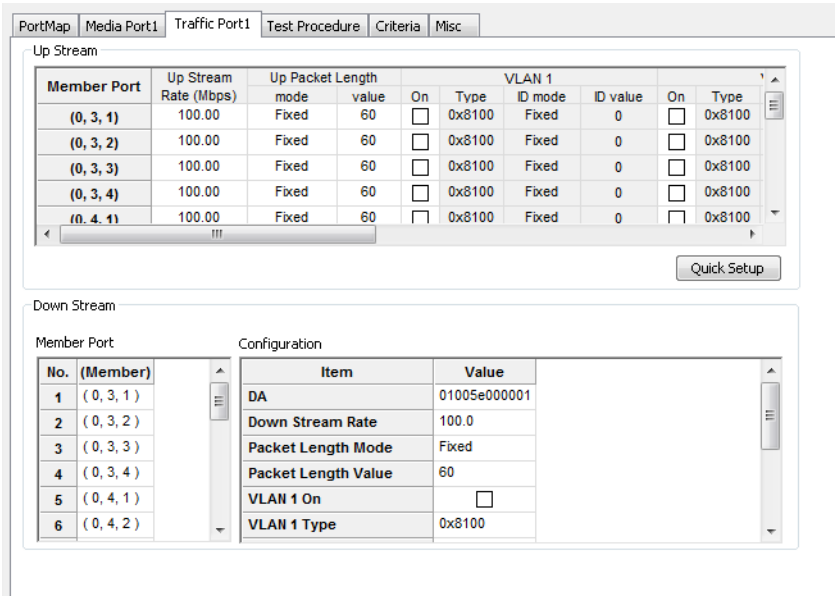
Media Port



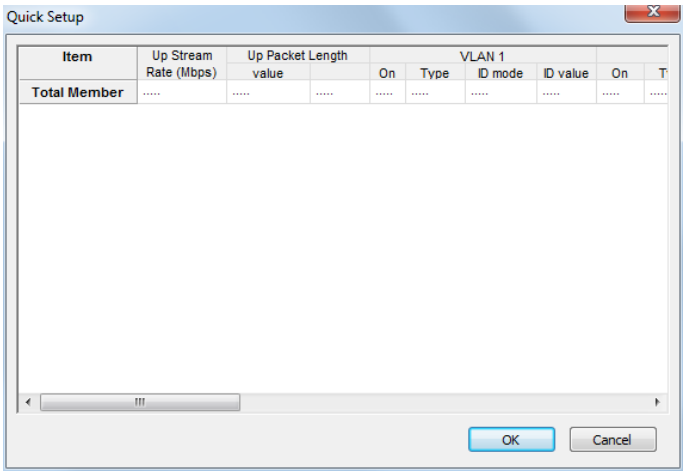
You can set the media type for all the Active Ports that's used for **1 to Many-UC** test here.

- **Media Change:** Turning On or OFF this option will respectively lock or unlock the availability for setting the **Root** and **Member** functions.
- **Root:** You can set the media type (**Speed**, **Flow Control**, **Auto-MDIX**, **Media Select** and **Master Mode**) for the **Root Active Port** of **Root 1** in this field. To configure Root Active Port, please click the scroll-down menu located on the column.
- **Member:** You can set the media type (**Speed**, **Flow Control**, **Auto-MDIX**, **Media Select** and **Master Mode**) for the **Member Active Port** of **Root 1** in this field. To configure Member Active Port, please click the scroll-down menu located on the column. You could also click the **Member Quick Setup** button. A **Quick Setup** window will pop up. The settings you made here will apply to all the Member Ports listed in the **Member** field.
- **Link Status Check:** Select between On to able or OFF to disable the link status check. You can also select the ON & Alarm to activate the link status check with alarm.

Traffic Port1



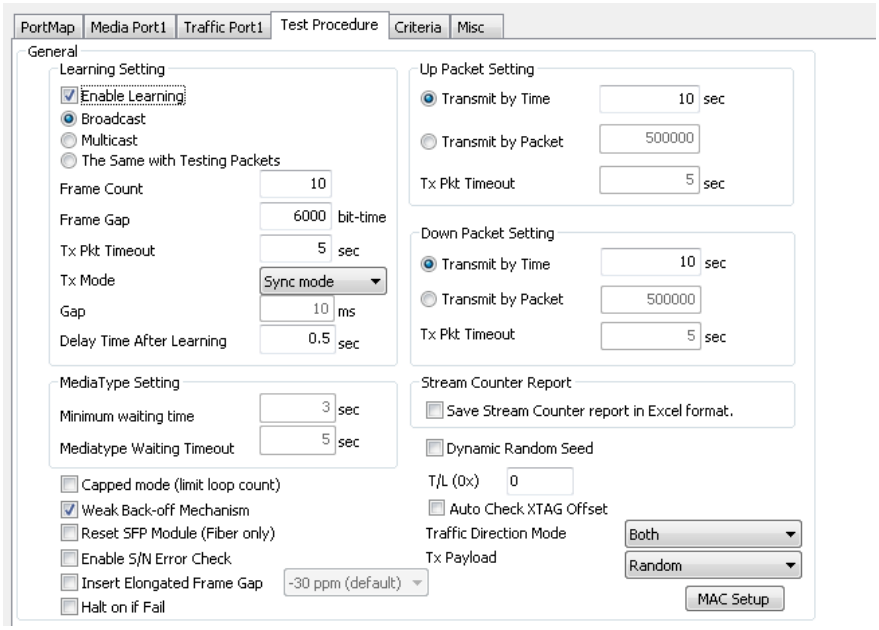
You can make **Up Stream** and **Down Stream** packet transmitting settings for all the Active Ports that's used for **1 to Many-UC** test here.



You can configure all the settings for each Active Port listed in **Up Stream** or **Down Stream** field in a one-by-one manner by double-clicking the column you would like to configure.

You can also click the **Quick Setup** button. A **Quick Setup** window will pop up. The settings you made here will apply to all the Active Ports listed in the **Up Stream** or **Down Stream** field.

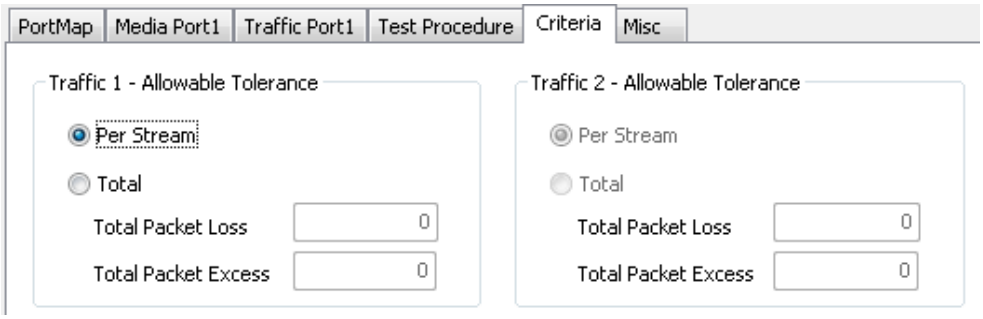
Test Procedure



- **Learning Setting:**
  - **Enable Learning:** Enabling this function allows learning packets transmitted to the DUT before test packets are transmitted. If you disable this function, no learning packets will be transmitted.
  - **Broadcast:** Select the learning packet mode for Broadcast.
  - **Unicast:** Select the learning packet mode for Unicast.
  - **The Same with Testing Packets:** The learning packet mode will be the same as the **Testing Packets** settings.
  - **Frame Count:** Repeat frame count per learning packets burst.
  - **Frame Gap:** Duration time between learning frames.
  - **Tx Pkt Timeout:** If the system fails to send the learning packet within the time you set in **TxPKT Timeout** field, the packet will be drop.
  - **Tx Mode:** You can change how learning packet will be transmitted. By clicking the **Tx** scroll-down menu, you can choose **Sync Mode**, **Group Mode** (transmitting gap can be set in the **Gap** field located down below), and **Sequence Mode**.
  - **Delay Time After Learning:** The time gap between after learning and the next process.
- **MediaType Setting:**
  - **Minimum Waiting Time:** APMPT-4 will halt at least for the **Minimum Waiting Time** you input here during auto-negotiation process.
  - **Media Type Waiting Timeout:** If the time spent for auto-negotiation exceeds the **Media Type Waiting Timeout** you set here, the test will stop and the test result will be fail.
- **Capped Mode (limit loop count):** Selecting this function will allow packets to be transmitted by sequence.
- **Weak Back-off Mechanism:** When packet collision occurs, the system will wait for at least 1 slot-time before starting to transmit packets again if this function is enabled.

- **Reset SFP Module (Fiber Only):** Selecting this function will allow system to turn Off SFP port and than turn On the SFP port.
- **Enable S/N Error Check:** Selecting this option will enable the capturing of S/N Error.
- **Insert Elongated Frame Gap:** When enabling this function, 1 bit-time of frame gap will be inserted after a certain amount of packets are sent and decrease packet loss.
- **Halt on if fail:** If you enable this function, system will stop if the test fails.
- **Up Packet Setting:**
  - **Transmit by Time:** The 1 to Many-UC test will be performed for the set amount of time here.
  - **Transmit by Packet:** The 1 to Many-UC test will be performed for the set amount of packet here.
  - **Tx Pkt Timeout:** This field will be available for setting when you select the **Transmit by Packet** function. If the time spent for transmitting packet exceeds the **Tx Pkt Timeout** you set here, the test will stop and the result will be fail.
- **Down Packet Setting:**
  - **Transmit by Time:** The 1 to Many-UC test will be performed for the set amount of time here.
  - **Transmit by Packet:** The 1 to Many-UC test will be performed for the set amount of packet here.
  - **Tx Pkt Timeout:** This field will be available for setting when you select the **Transmit by Packet** function. If the time spent for transmitting packet exceeds the **Tx Pkt Timeout** you set here, the test will stop and the result will be fail.
- **Stream Counter Report:** Click the check box so the APMPT-4 will save the 1 to Many-UC test result in Microsoft Excel format.
- **Dynamic Random Seed:** For random packets, selecting this option will generate variable packets, disabling this function will not generate variable packets.
- **T/L (0x):** You can set the T/L (0X) after MAC address in this field.
- **Auto Check X-TAG Offset:** X-TAG is a 12-byte tag which is developed by Xtramus and embedded at 45th~56th bytes of each testing frames generated by Rapid-Matrix for multi-stream tests. X-TAG will be added to all the testing frames generated by NuApps-MultiUnits-RM.
- **Traffic Direction Mode:** You can scroll down and choose the direction of the traffic on this field.
- **Tx Payload:** You can set the content of the transmitting packets with the **Payload** scroll-down menu.
- **MAC Setup:** Clicking the **MAC Setup** option will pop up a window to modify each module card's port **MAC Address**.

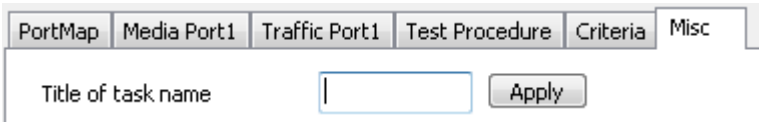
Criteria



- **Traffic 1– Allowable Tolerance:**
  - **Per Stream:** Selecting this function will set the allowable tolerance per stream.
  - **Total:** Selecting this option will allow you to set the Total Packet Loss and Total Packet Excess to be tolerated for the test task.

Note: Traffic 1 settings will only be available once you set the Root 1 respectively from Port Map.

Misc

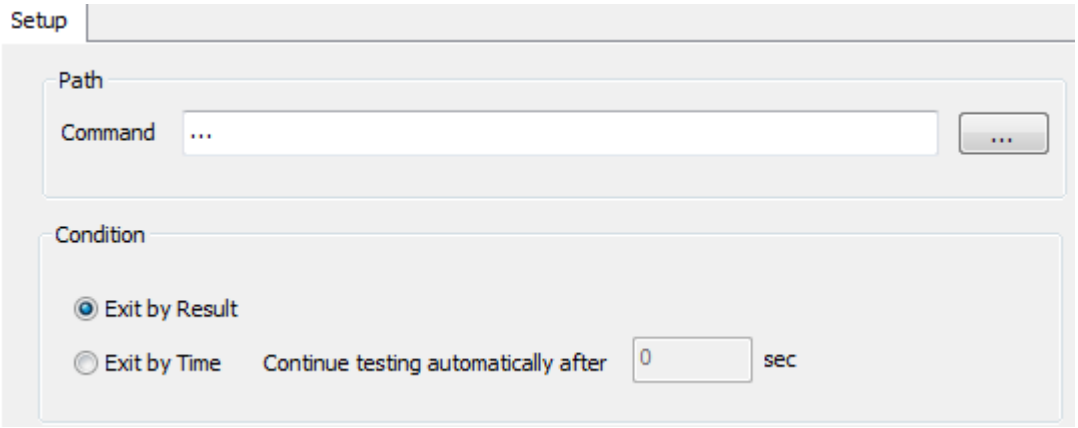


- **Title of task name:** You can assign a name to this task for identification.
- **Apply:** Apply the changes you made.

E-mail: sales@xtramus.com
Website: www.Xtramus.com

5.7.6. CALL-EXT

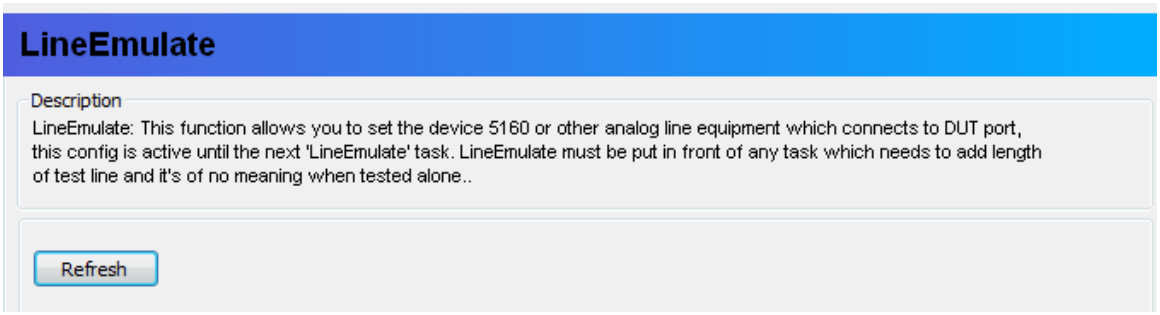
From this task, you can open exe. files from your PC.



- **Command:** Write the path of your exe. File on this field.
- **Condition:**
  - **Exit by Result:** Select this option will activate the **Result Option** field.
  - **Exit by Time:** Select this option to set the time for auto exit.
  - **Continue testing automatically after:** set the exit time of the .exe file under the **Exit by Time** mode.

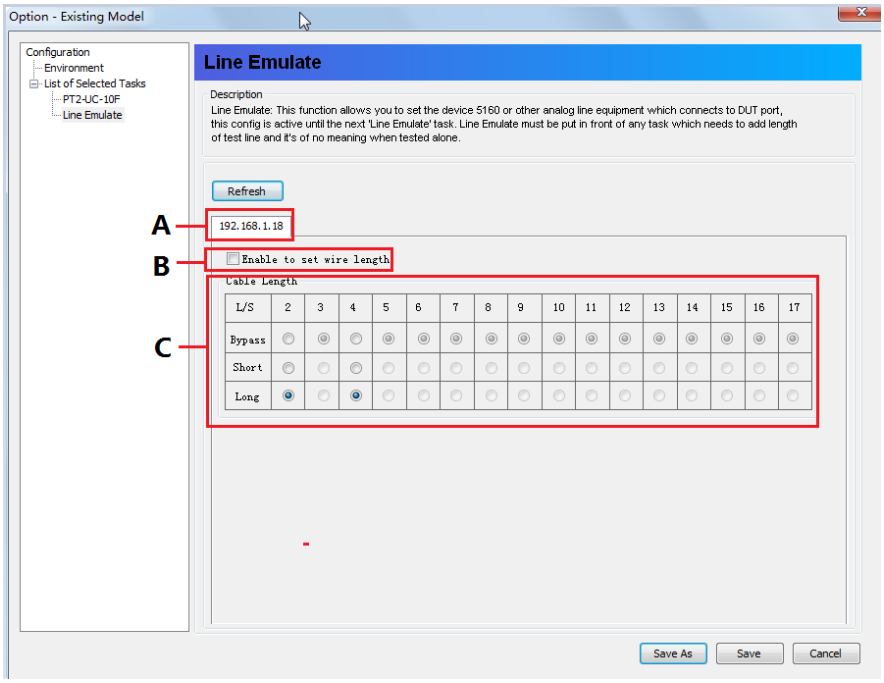
5.7.7. LineEmulate

This task allows you to set the LES-5160 device or other line emulation equipment which connects to DUT ports. The function is active until the next 'LineEmulate' task. LineEmulate must be executed prior to the task which needs the line emulation function and it's of no meaning when tested alone.



Refresh: click this button and the APMPT-4 begins to detect the LES-5160 devices on the network.

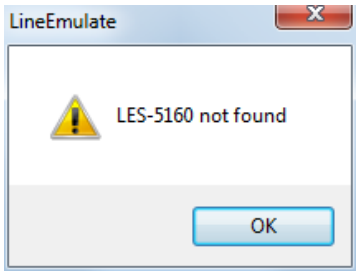
The list of the detected LES-5160 devices will be added on the margin below.



Description	
A.	This filed shows the IP address of the LES-5160 device.
B.	**Enable to set wire length**: check this function, then you can set the wire length emulated by each XLE-C5E module installed in the LES-5160 chassis.
C.	You can set the wire length emulated by each XLE-C5E module installed in the LES-5160 chassis, respectively. There are three optional wire lengths:

	• **Bypass**: 1m approx. • **Short**: 10m approx. • **Long**: 100m approx.

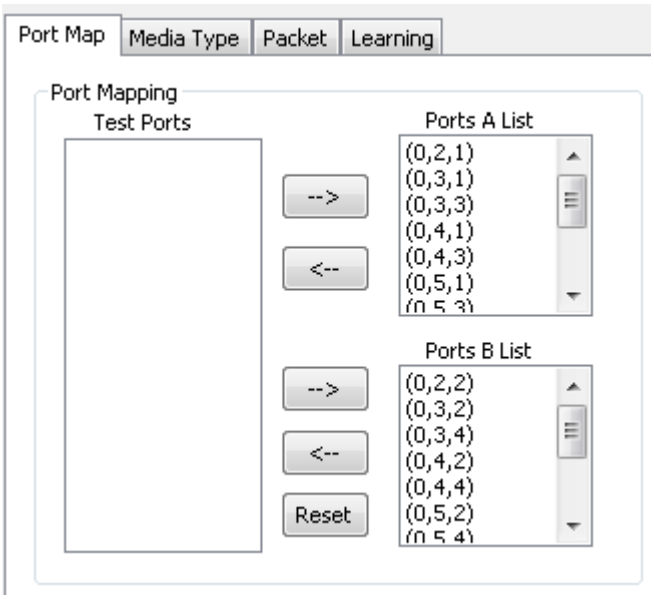
If there is no any LES-5160 device detected on the network. The following window will pop up as a reminder.



5.8. Test Tasks – Customization

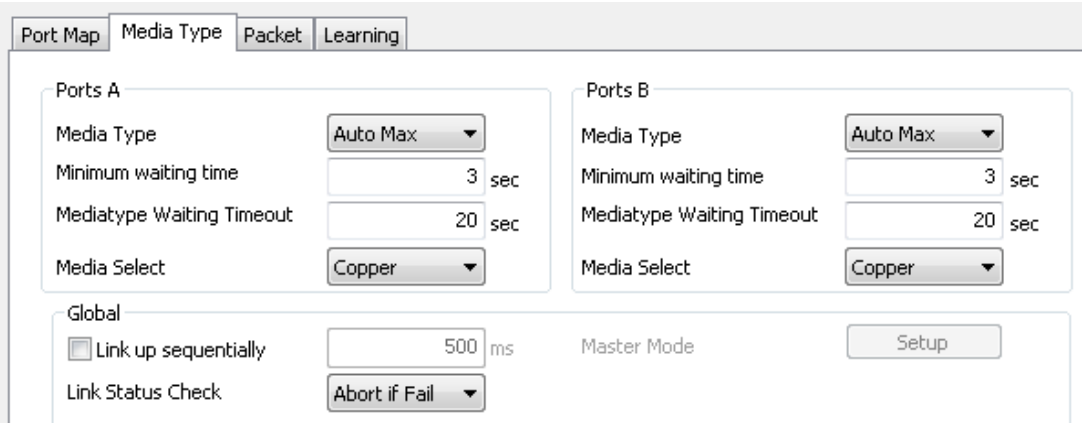
In this task, it includes the CTM-BSTAR-001 test.

Port Map



- **Test Ports:** The selected ports will be displayed on the **Test Ports** field. Ports are displayed in IDs in the format of **(X, Y, Z)** while **X** is the number of the chassis (which is displayed on NuStreams-2000i/600i), **Y** is the slot number where this model card is installed, and **Z** is the available port number located on the model card.
- **←:** To assign a port from **Ports A List** or **Ports B List**, click a port from **Ports A List** or **Ports B List**, and then click ← button to add it to the **Port Mapping**.
- **→:** To remove a port from **Port Mapping**, click the port you would like to remove on **Port Mapping** field, and then click → button to remove it from **Port Mapping**.
- **Reset:** Remove all port from **Tests Ports** to **Ports A List** or **Ports B List**.

Media Type



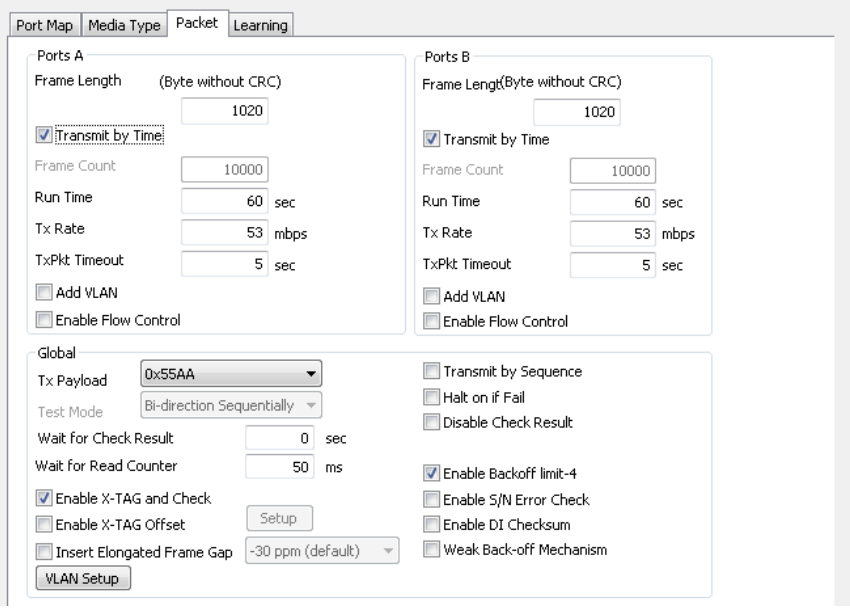
- **Ports A/B:**
  - **Media Type**: By clicking the scroll-down menu, you can set the transmitting mode to **Auto** (with auto-negotiation), **Force** (without auto-negotiation), or **Off** (all the ports in this task are link-down).

For **Auto** and **Force** mode, they include **10M/100M Half/Full**, **1G Full** and **10G**. For **Auto Max**, the system will auto-negotiate depending on the maximum capability of each module cards and DUT (Device Under Test).

- **Minimum Waiting Time:** APMPT-4 will halt at least for the **Minimum Waiting Time** you input here during auto-negotiation process.
- **Media Type Waiting Timeout:** If the time spent for auto-negotiation exceeds the **Media Type Waiting Timeout** you set here, the test will stop and the test result will be fail.
- **Media Select:** Choose between the Copper or Fiber cable that you are using for the test task.

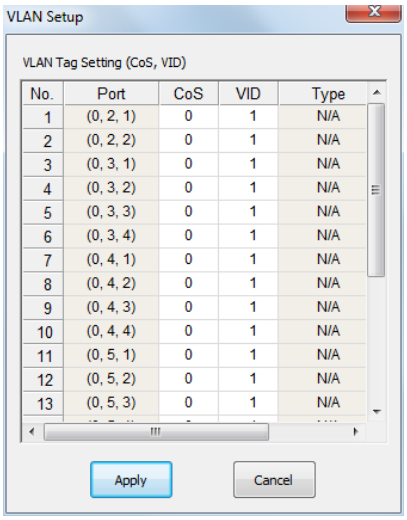
- **Global:**
  - **Link up sequentially:** Enabling this function will allow you to set the time interval for the next auto link.
  - **Link Status Check:** Scrolling down this field to choose between **Abort if Fail** (the system will abort the **Link up sequentially** function if the test fail), **Bypass if Fail** (the system will continue with the **Link up sequentially** function even if the test fail) and **Off** to close this function.
- Master Mode: This function is only available when the **Media Type** is set to be **Force-1G**.

Packet



- **Ports A/B:**
  - **Frame Length:** You can set the frame length from 60~16300 bytes (Byte without CRC).
  - **Transmit by time:** Selecting this option will enable **Run Time** option, and the system will transmit packet during amount of time set on **Run Time** field.
  - **Frame Count:** If you disable **Transmit by time** option, than **Frame Count** option will be available, you can set here the frame count when processing the Learning function.
  - **Tx Rate:** Set the Tx Rate in Mbps in this field.
  - **TxPkt Timeout:** If the Tx packets spent for auto-negotiation exceeds the **Tx Pkt Timeout** you set here, the test will stop and the result will be fail.

- **Add VLAN:** Selecting this function will enable the **VLAN Setup** option on **Common Settings**. VLAN (Virtual LAN) is a group of hosts with common requirements that communicate within the same Broadcast domain regardless of the physical location. By clicking the **Setup** button, you can configure **CoS** (class of service) and **VID** (VLAN ID) on the pop-up **VLAN Setup** window. Click **Apply** and apply all the changes you've made here.

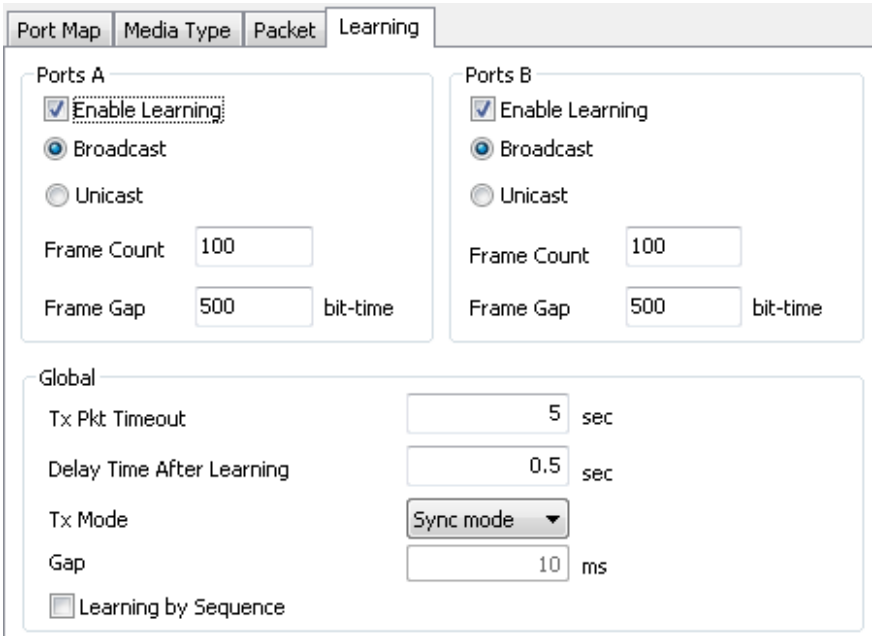


- **Enable Flow Control:** When enabling this function, the transmitting rate will drop if traffic overflow occurs. This function must be enabled under full-duplex.

- **Global:**
  - **Tx Payload:** You can set the content of the transmitting packets with the **Payload** scroll-down menu.
  - **Wait for Check Result:** The system will halt for the time you set here before checking test result.
  - **Wait for Read Counter:** The system will halt for the set microseconds before read the counters. This function is useful for counters since they are stored in memory buffer and the final counter value might take some time to read. Duration time between frames. Increasing Frame Gap reduces the fail rate, while 96 bit-time is wirespeed.
  - **Enable X-TAG and Check:** X-TAG is a 12-byte tag which is developed by Xtramus and embedded at 45th~56th bytes of each testing frames generated by Rapid-Matrix for multi-stream tests. X-TAG will be added to all the testing frames generated by APMPT-4.
  - **Enable X-TAG offset:** X-TAG is a 12-byte tag which is developed by Xtramus and embedded at 45th~56th bytes of each testing frames generated by Rapid-Matrix for multi-stream tests. X-TAG will be added to all the testing frames generated by NuApps-MultiUnits-RM.
  - **Insert Elongated Frame Gap:** When enabling this function, 1 bit-time of frame gap will be inserted after a certain amount of packets are transmitted, and therefore, decrease packet loss.
  - **Transmit by Sequence:** Transmit packet by port sequence.
  - **Halt on if Fail:** When this function is enabled, the test process will halt if Fail occurs.
  - **Enable Backoff limit-4:** The **Backoff limit-4** function is for half-duplex mode only, and its purpose is for collision control. Enabling this function will increase test performance and decrease test fail rate.

- **Disable Check Result:** When this mode is enabled, all test procedures will be carried out no matter the result is Pass or Fail.
- **Enable S/N Error Check:** Selecting this option will enable the capturing of S/N Error.
- **Enable DI Checksum:** Enable this function to add a tag to the frame for tracking frame integrity.
- **Weak Back-off Mechanism:** When packet collision occurs, the system will wait for at least 1 slot-time before starting to transmit packets again if this function is enabled.

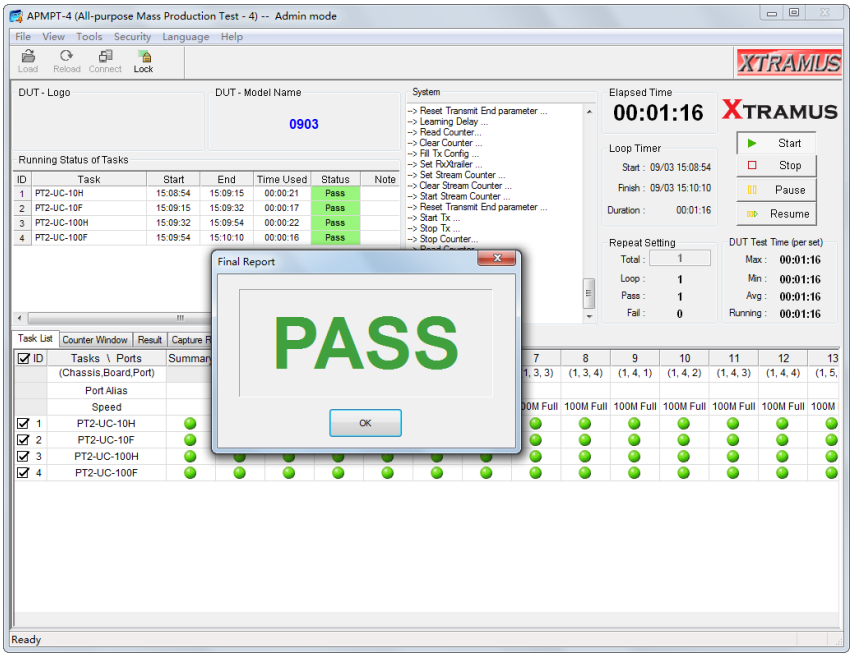
Learning



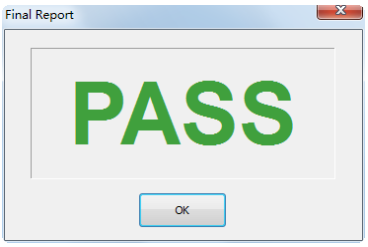
- **Ports A/B:**
  - **Enable Learning:** Enabling this function allows learning packets transmitted to the DUT before test packets are transmitted. If you disable this function, no learning packets will be transmitted.
  - **Broadcast:** Select the learning packet mode for Broadcast.
  - **Unicast:** Select the learning packet mode for Unicast.
  - **Frame Count:** Repeat frame count per learning packets burst.
  - **Frame Gap:** Duration time between learning frames.
- **Global:**
  - **Tx Pkt Timeout:** If the Tx packets spent for auto-negotiation exceeds the **Tx Pkt Timeout** you set here, the test will stop and the result will be fail.
  - **Delay Time After Learning:** The time gap between after learning and the next process.
  - **Tx Mode:** You can change how packet streams will be transmitted. By clicking the **Tx** scroll-down menu, you can choose **Sync Mode**, **Group Mode** (transmitting gap can be set in the **Gap** field located in the right side), and **Sequence Mode**.
  - **Gap:** Set the transmitting gap for **Group mode.**
  - **Learning by Sequence:** Learning by port sequence.

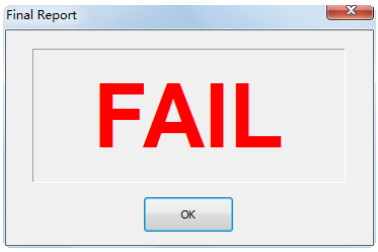
6. Test Result & Report

When the test is complete, a **Final Report** window will pop up and tell you the overview test result as show in the figure down below.

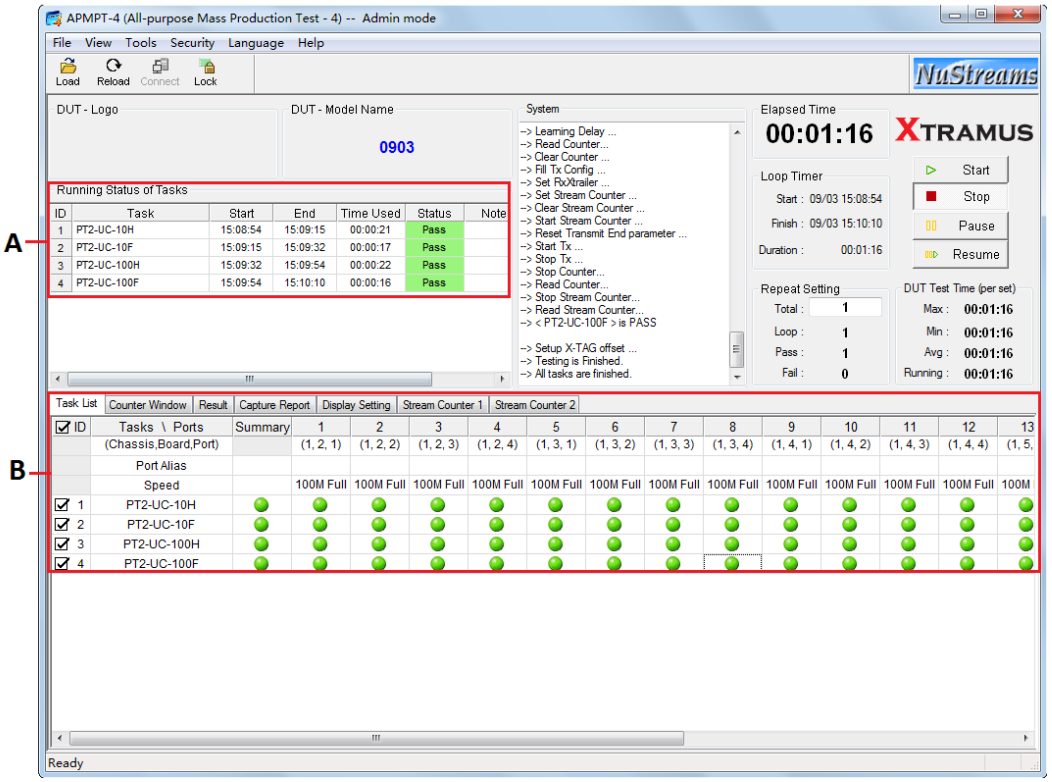


A final report of **Pass** will be displayed on the **Final Report** window if all tasks passed. If any one of the task fails, a **Fail** message will be displayed instead.



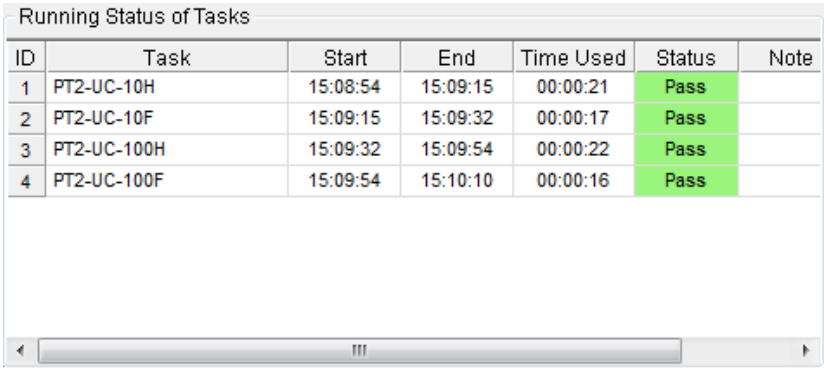


Press **OK** button on the **Final Report** window to finish the test so you can start another test or start reviewing test results in detail.



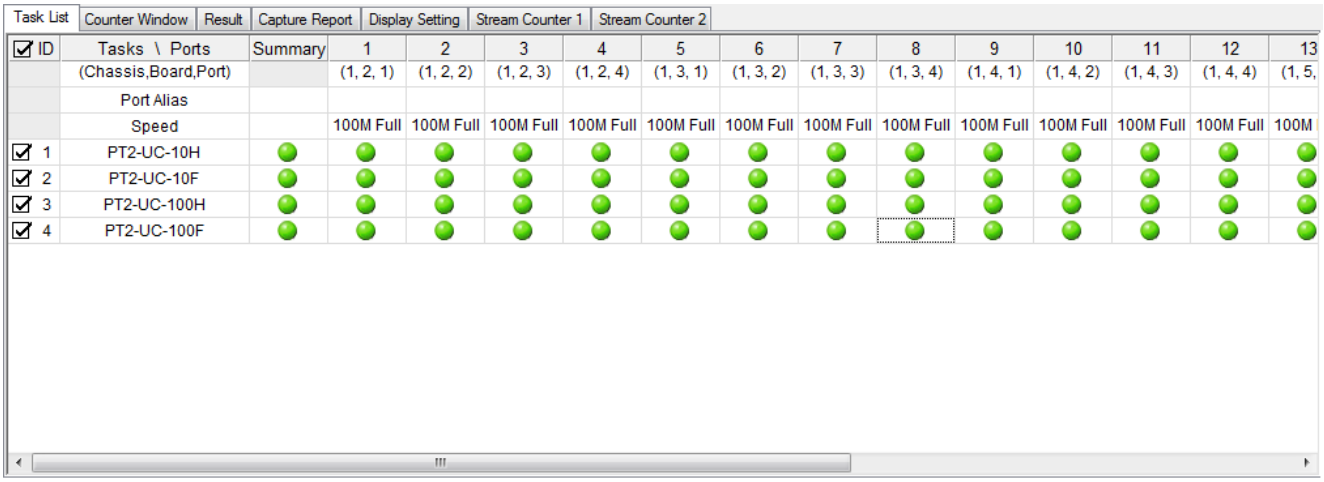
For more details regarding to the test result, you can review it on **A. Task Running Status**, or **B. Test Result/Report**. Also, test results are saved as test logs files that can be reviewed as well.

6.1. Task Running Status



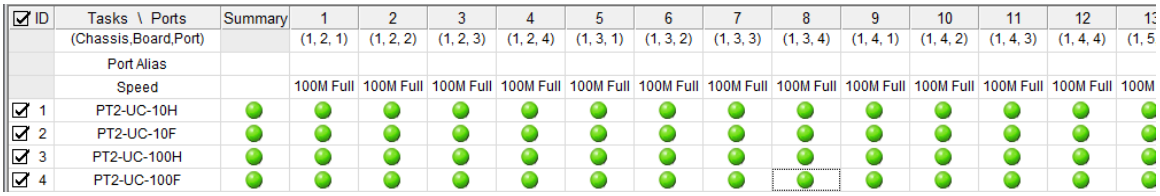
You can check the result of each task (Pass or Fail) in the **Task Running Status** field located on APMPT-4's main window.

6.2. Test Result/Report



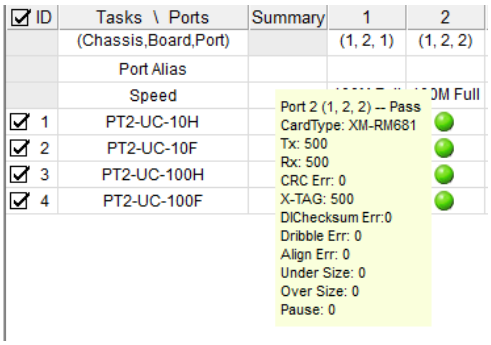
You can also view test results in the **Test Result/Report** section from APMPT-4's main window as well.

6.2.1. Task List



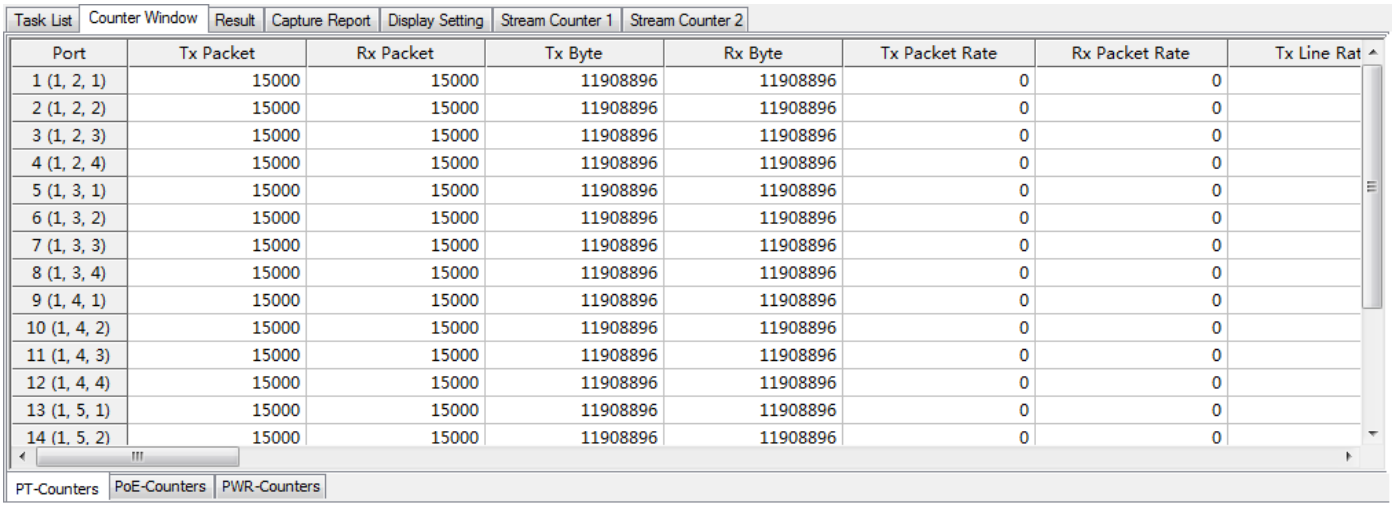
You can view all the tasks included in the test, along with the Active Ports that are used in these tasks. The result of these tasks (Pass/Fail) is displayed with green lights or broken red lights.

	Task of the Active Port passes.
	Task of the Active Port fails.



If you move the cursor to the Green/Red lights, a little window contains detail information will pop up. Information listed in this window includes Task Pass/Fail, Module Card model, transmitting/receiving rate, CRC Error, X-TAG, Dribble Error, Align Error, Under/Over Size Packets, and how many times have you paused the test.

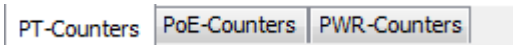
6.2.2. Counter Window



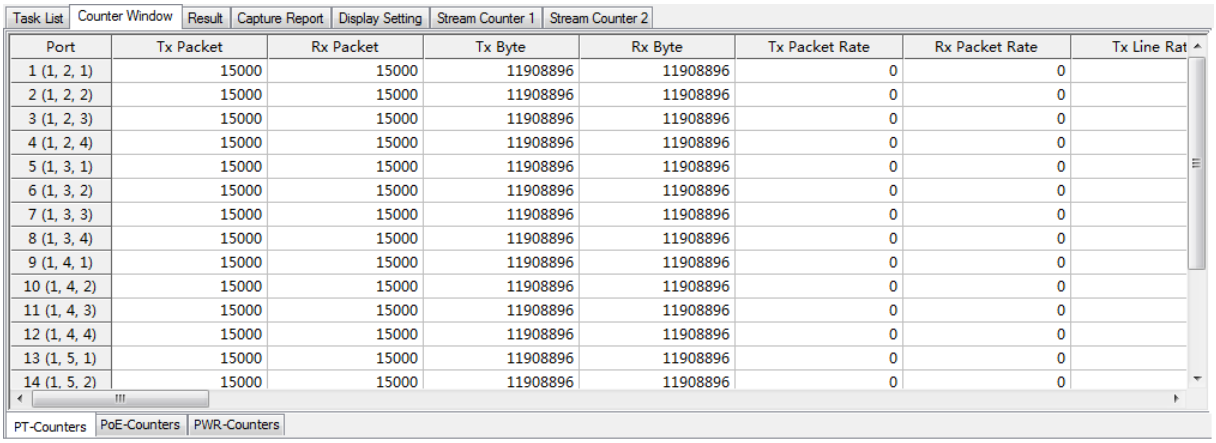
Port	Tx Packet	Rx Packet	Tx Byte	Rx Byte	Tx Packet Rate	Rx Packet Rate	Tx Line Rat
1 (1, 2, 1)	15000	15000	11908896	11908896	0	0	
2 (1, 2, 2)	15000	15000	11908896	11908896	0	0	
3 (1, 2, 3)	15000	15000	11908896	11908896	0	0	
4 (1, 2, 4)	15000	15000	11908896	11908896	0	0	
5 (1, 3, 1)	15000	15000	11908896	11908896	0	0	
6 (1, 3, 2)	15000	15000	11908896	11908896	0	0	
7 (1, 3, 3)	15000	15000	11908896	11908896	0	0	
8 (1, 3, 4)	15000	15000	11908896	11908896	0	0	
9 (1, 4, 1)	15000	15000	11908896	11908896	0	0	
10 (1, 4, 2)	15000	15000	11908896	11908896	0	0	
11 (1, 4, 3)	15000	15000	11908896	11908896	0	0	
12 (1, 4, 4)	15000	15000	11908896	11908896	0	0	
13 (1, 5, 1)	15000	15000	11908896	11908896	0	0	
14 (1, 5, 2)	15000	15000	11908896	11908896	0	0	

You can view all test counters in the **Counter Window**. The **Counter Window** contains three different counter tables: **PT-Counters**, **PoE-Counters**, and **PWR-Counters**.

You can access these different counter tables via clicking the menu-tab located on the bottom of **Counter Window** as shown in the figure down below.



PT-Counters



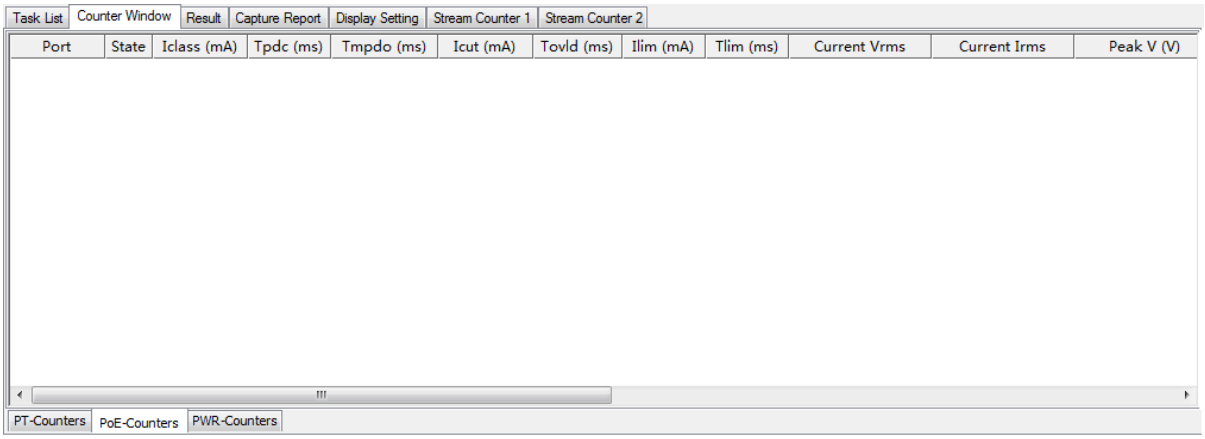
Port	Tx Packet	Rx Packet	Tx Byte	Rx Byte	Tx Packet Rate	Rx Packet Rate	Tx Line Rat
1 (1, 2, 1)	15000	15000	11908896	11908896	0	0	
2 (1, 2, 2)	15000	15000	11908896	11908896	0	0	
3 (1, 2, 3)	15000	15000	11908896	11908896	0	0	
4 (1, 2, 4)	15000	15000	11908896	11908896	0	0	
5 (1, 3, 1)	15000	15000	11908896	11908896	0	0	
6 (1, 3, 2)	15000	15000	11908896	11908896	0	0	
7 (1, 3, 3)	15000	15000	11908896	11908896	0	0	
8 (1, 3, 4)	15000	15000	11908896	11908896	0	0	
9 (1, 4, 1)	15000	15000	11908896	11908896	0	0	
10 (1, 4, 2)	15000	15000	11908896	11908896	0	0	
11 (1, 4, 3)	15000	15000	11908896	11908896	0	0	
12 (1, 4, 4)	15000	15000	11908896	11908896	0	0	
13 (1, 5, 1)	15000	15000	11908896	11908896	0	0	
14 (1, 5, 2)	15000	15000	11908896	11908896	0	0	

Table down below is a brief description for all the counters and their meanings:

Tx Packet	Rx IPChksum Error	Rx VLAN	Tx ARP Reply
Transmitted packet	Received IP Checksum Error counts	Received VLAN packet counts	Transmit ARP Reply counts
Rx Packet	**Rx Dribble**	**Rx X-TAG**	**Tx ICMP Request**
Received packet	Received Dribble Error counts	Received X-TAG tagged packet counts	Transmit ICMP Request counts
Tx Byte	**Rx Alignment**	**Rx Undersize**	**Tx ICMP Reply**
Transmitted byte	Received Alignment Error counts	Received undersize packet counts	Transmit ICMP Reply counts
Rx Byte	**Rx S/N Error**	**Rx Oversize**	**Rx ARP Request**
Received byte	Received Serial Number Error counts. (Sequence Error counts)	Received oversize packet counts	Received ARP Request counts
Tx Packet Rate	**Rx Latency**	**Rx 64 bytes**	**Rx ARP Reply**
Transmitted packets per second	Latency time of Received packets	Received 64 bytes length packet counts	Received ARP Reply counts
Rx Packet Rate	**Collision**	**Rx 65-127 bytes**	**Rx ICMP Request**
Received packets per second	Happen times courts of Collision	Received 65-127 bytes length packet counts	Received ICMP Request counts
Tx Line Rate	**Rx Pause**	**Rx 128-255 bytes**	**Rx ICMP Reply**
Transmitted byte per second	Received Pause packet counts	Received 128-255 bytes length packet counts	Received ICMP Reply counts
Rx Line Rate	**Rx Unicast**	**Rx 256-511 bytes**	**Rx LLDP**
Received byte per second	Received Unicast packet counts	Received 256-511 bytes length packet counts	Received LLDP counts.
Rx CRC Error	**Rx Multicast**	**Rx 512-1023 bytes**	
Received CRC Error counts	Received Multicast packet counts	Received 512-1023bytes length packet counts	
Rx Fragment Error	**Rx Broadcast**	**Rx 1024-1522 bytes**	
Received Fragment Error counts.	Received Broadcast packet counts	Received 1024-1522 bytes length packet counts	
Rx DIChksum Error	**Rx IPv4**	**Tx ARP Request**	

Received Data Integrity (2nd level CRC Check) Error counts.	Received IPv4 packet counts	Transmit ARP Request counts

PoE-Counters



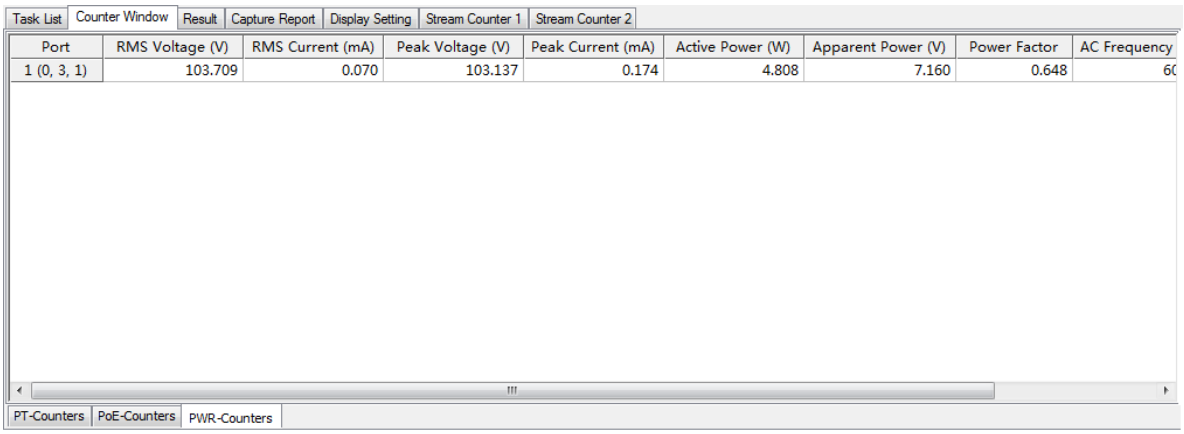
- **Iclass (mA):** Classes of power level for PoE connection as listed in the table down below.

Class	Usage	Maximum Power Levels at Input of Powered Device (Watt)
0	Default	0.44 to 12.95
1	Optional	0.44 to 3.84
2	Optional	3.84 to 6.49
3	Optional	6.49 to 12.95
4	Reserved	(PSEs classify as Class 0)

Table down below is a brief description for all the counters and their meanings:

Tpdc (ms)	Ilim (mA)	Peak V (V)	Line Consume Power
Values in milliseconds to classify power level of the PD (Powered Device) for PoE connect	Values of output mA current in short circuit condition For PoE ShortCircuit.	The peak voltage value.	The power that consumed by network cable
Tmpdo (ms)	**Tlim (ms)**	**Peak I (mA)**	**Watt (W)**
Values in milliseconds to turn off power For PoE Disconnect	Time limit in milliseconds in short circuit condition for PoE ShortCircuit.	The peak current value.	Power consumption.
Icut (mA)	**Current Vrms**	**Temperature (℃)**	**Eq. PD Power (W)**
Value of overload current for PoE Overload	Root mean square voltage. A method to calculate average voltage in positive value.	The temperature of the DUT	The equivalent power of power device (PD).
Tovld (ms)	**Current Irms**	**Power**	**Eq. Line Power (W)**
Value of the overload time limit in milliseconds for PoE Overload	Root mean square electrical current. A method to calculate average current in positive value.	DUT On/Off	The equivalent line power.
PSE Type			
The type of PSE protocol supported			

PWR-Counters



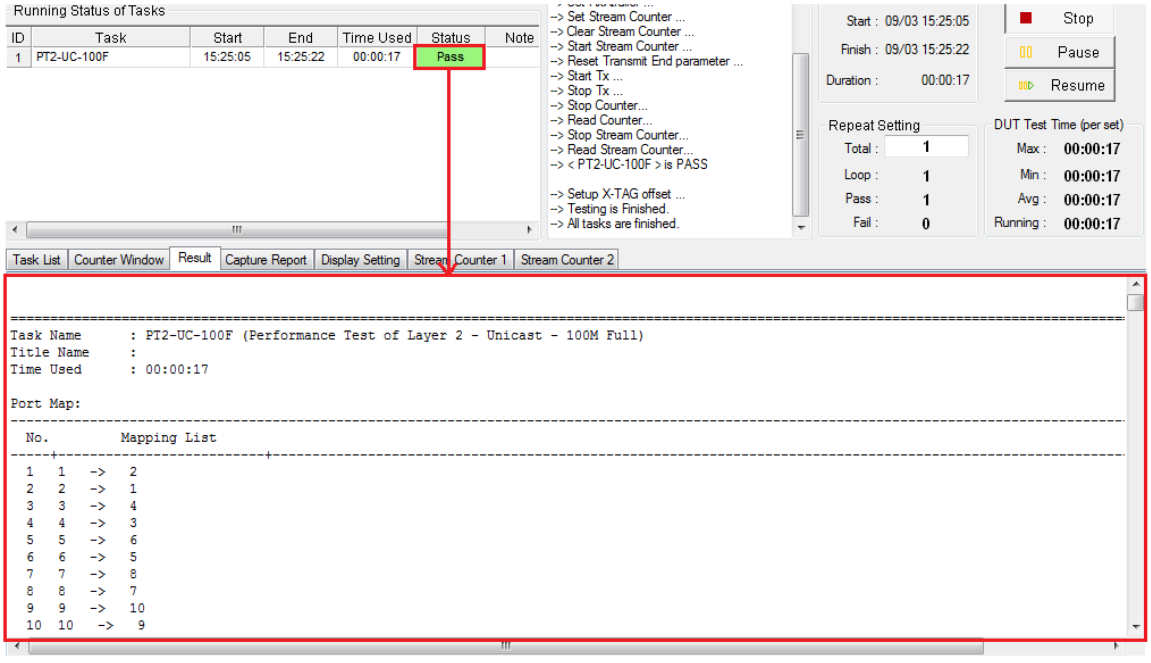
Detail results of the DUT power tests will be displayed here in this field.

The counter listed here includes: **RMS Voltage** (the Root Mean Square Voltage), **RMS Current** (the Root Mean Square Current in mA), **Peak Voltage (V)**, **Peak Current (mA)**, **Active Power (W)**, **Apparent Power (V)**, **Power Factor**, **AC Frequency (Hz)**, and **Temperature (°C)**.

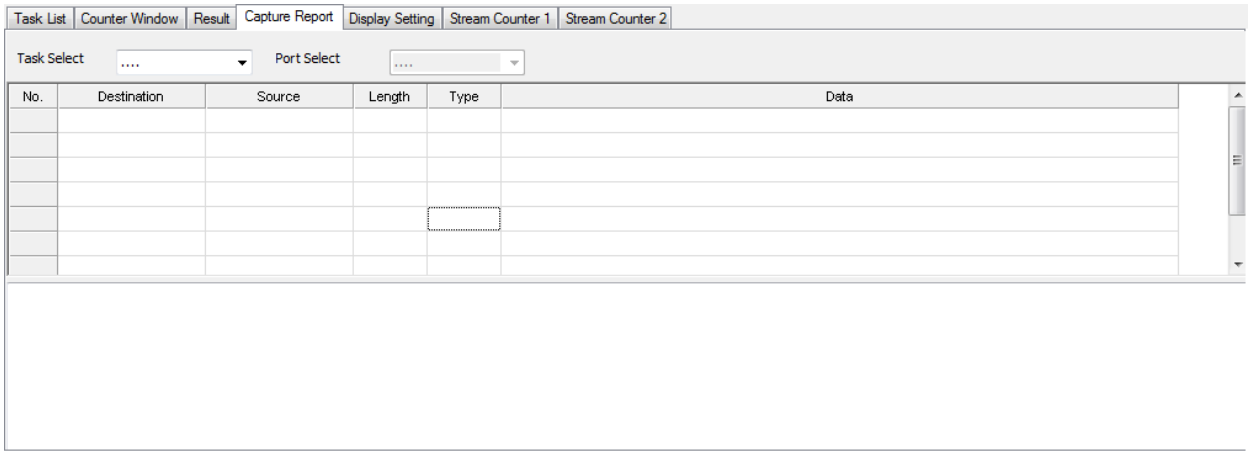
6.2.3. Result

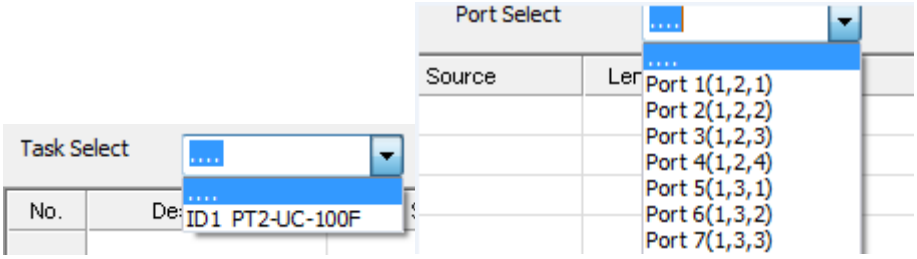
You can view detail text result of any Task by double clicking the **Status** column of that Task, and it will be showed on the **Result** tab menu located on the bottom part of APMPT-4's main window.

You can copy these texts and paste them for reports.



6.2.4. Capture Report

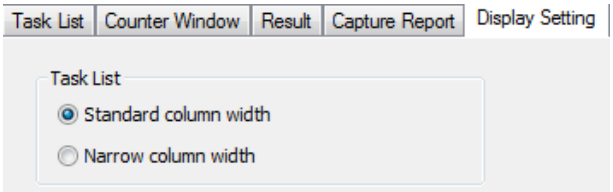




You can view captured packets in the **Capture Report**. To show the packets captured, please choose the Task first as shown in the figure on the right side, and choose the Active Port.

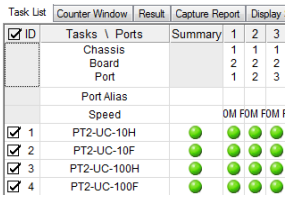
Captured packets will be shown in the field down below after you've chosen the **Task** and the **Active Port**.

6.2.5. Display Setting

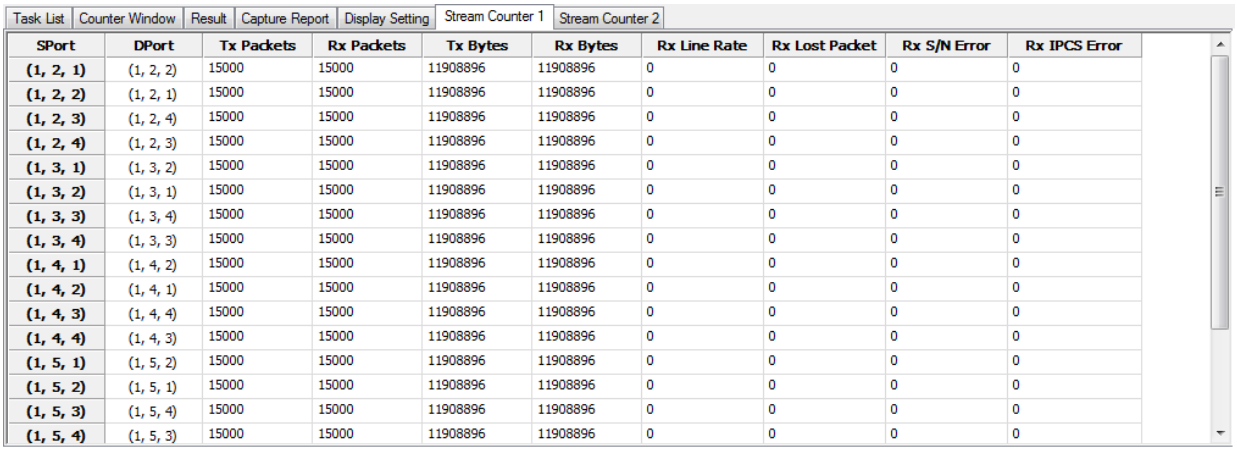


You can set how the **Task List** will be displayed with **Display Setting**.

- **Standard Column Width:** Display Task List with wide columns.
- **Narrow Column Width:** Display Task List with narrow columns.



6.2.6. Stream Counter Root 1/2



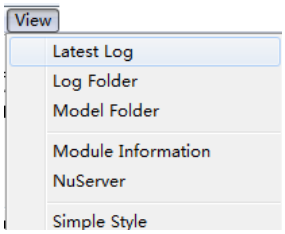
Task List | Counter Window | Result | Capture Report | Display Setting | Stream Counter 1 | Stream Counter 2

SPort	DPort	Tx Packets	Rx Packets	Tx Bytes	Rx Bytes	Rx Line Rate	Rx Lost Packet	Rx S/N Error	Rx IPCS Error
(1, 2, 1)	(1, 2, 2)	15000	15000	11908896	11908896	0	0	0	0
(1, 2, 2)	(1, 2, 1)	15000	15000	11908896	11908896	0	0	0	0
(1, 2, 3)	(1, 2, 4)	15000	15000	11908896	11908896	0	0	0	0
(1, 2, 4)	(1, 2, 3)	15000	15000	11908896	11908896	0	0	0	0
(1, 3, 1)	(1, 3, 2)	15000	15000	11908896	11908896	0	0	0	0
(1, 3, 2)	(1, 3, 1)	15000	15000	11908896	11908896	0	0	0	0
(1, 3, 3)	(1, 3, 4)	15000	15000	11908896	11908896	0	0	0	0
(1, 3, 4)	(1, 3, 3)	15000	15000	11908896	11908896	0	0	0	0
(1, 4, 1)	(1, 4, 2)	15000	15000	11908896	11908896	0	0	0	0
(1, 4, 2)	(1, 4, 1)	15000	15000	11908896	11908896	0	0	0	0
(1, 4, 3)	(1, 4, 4)	15000	15000	11908896	11908896	0	0	0	0
(1, 4, 4)	(1, 4, 3)	15000	15000	11908896	11908896	0	0	0	0
(1, 5, 1)	(1, 5, 2)	15000	15000	11908896	11908896	0	0	0	0
(1, 5, 2)	(1, 5, 1)	15000	15000	11908896	11908896	0	0	0	0
(1, 5, 3)	(1, 5, 4)	15000	15000	11908896	11908896	0	0	0	0
(1, 5, 4)	(1, 5, 3)	15000	15000	11908896	11908896	0	0	0	0

Detail results of **1 to Many-US** will be displayed here in this field.

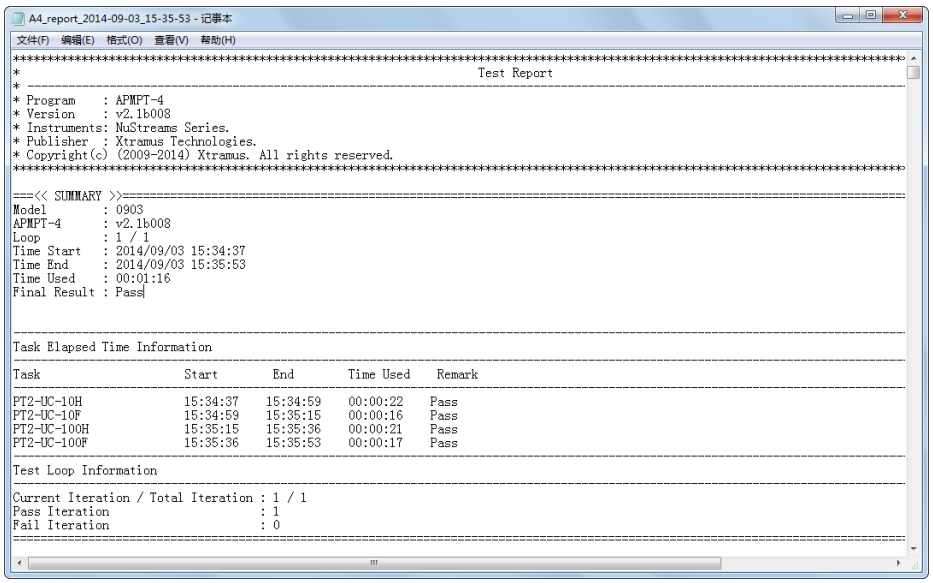
The counter listed here includes: **DPort** (Destination Port), **Tx Packets** (Transmitted Packets), **Rx Packets** (Received Packets), **Tx Bytes** (Transmitted Bytes), **Rx Bytes** (Received Bytes), **Rx Line Rate** (Received Line Rate), **Rx Lost Packet** (Packets lost while receiving), **Rx S/N Error** (S/N Error while receiving), and **Rx IPCS Error** (IPCS Error while receiving).

6.3. Test Report



APMPT-4 regenerates test results automatically after tests have been finished. To view the test result for the current test, choose **View** on the **Menu Bar**, and then choose **Latest Log**.

The test log will be displayed with Microsoft ® Notepad.



You can choose to open the **Log Folder** and view all the saved log files as well by clicking **View** on the **Menu Bar**, and then choose **Log Folder**.