



# **CERTIFIER40G, CERTIFIER10G**

**Copper Certification Testing**

User Manual

## Certifier Series (C40G, C10G)



## Notices

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### WARNING

A CAUTION notice denotes a hazard.

It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.



### CAUTION

Operating procedure, practice, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

## General Safety Information



### WARNING

Do not use the device if it is damaged. Before you use the device, inspect the casing. Look for cracks or missing plastic. Do not operate the device around explosive gas, vapor, or dust.

Always use the device with the cables provided.

Observe all markings on the device before establishing any connection.

When servicing the device, use only the specified replacement parts.

Do not operate the device with the cover removed or loosened.

Use only the power adapter provided by the manufacturer to avoid any unexpected hazards.



### CAUTION

If the device is used in a manner not specified by the manufacturer, the device protection may be impaired.

Always use dry cloth to clean the device. Do not use ethyl alcohol or any other volatile liquid to clean the device.

Do not permit any blockage of the ventilation holes of the device.

## Environmental Conditions

This instrument is designed for indoor use and in an area with low condensation. The table below shows the general environmental requirements for this instrument

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Environmental conditions	Requirements
Operating Temperature	0 °C to 40 °C
Operating humidity	20% to 85% RH non-condensing
Relative humidity	10% to 80%

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### NOTE

The CERTIFIER40G, CERTIFIER10G complies with the following Safety and Regulatory requirements.

DIN EN 55024, Edition:2003-10 (IEC/CISPR 24:1997, modified + A1:2001 + A2:2002); EN 55024:1998 + A1:2001 + A2:2003

DIN EN 55022; VDE 0878-22:2008-05 (IEC/CISPR 22:2005, modified + A1:2005); EN 55022:2006 + A1:2007

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## Regulatory Markings



The CE mark is a registered trademark of the European Community. This CE mark shows that the product complies with all the relevant European Legal Directives.

# Declaration of Conformity



Manufacturer's Name Psiber Data Pte. Ltd  
Manufacturer's Address 3 Science Park Drive #03-08,  
The Franklin Singapore Science Park 1,  
Singapore 118223

Declares under sole responsibility that the product as originally delivered

Description Cable Certification Tester Kit  
Equipment Cable Certifier

Complies with the essential requirements of the following applicable European Directives and carries the CE marking accordingly:

DIN EN 55024, Edition:2003-10 (IEC/CISPR 24:1997, modified + A1:2001 + A2:2002); EN 55024:1998 + A1:2001 + A2:2003

DIN EN 55022;

VDE 0878-22:2008-05 (IEC/CISPR 22:2005, modified + A1:2005);

EN 55022:2006 + A1:2007

Signature Arvind C Patel  
Quality Management  
Psiber Data Pte. Ltd.  
[www.psiberdata.com](http://www.psiberdata.com)

Date : December 14, 2010

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## Chapter 1: Getting Started

### Unpacking the box (NGC4500-FA + NGC4500-REM/NGC500-6A)



Soft case



Certifier40G  
or Certifier10G

Calibration Certificate  
& USB Flash Drive



Power Adapters -  
Input: 100-240VAC/0.8A  
Output: 12VDC/3.0A



Talk-set headphones



LCD Protective Cover



CAT 6A Channel  
adapters



Permanent Link  
adapters & cords



Straps



## Key differences between Certifier40G and Certifier10G

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<b>FEATURE</b>	<b>CERTIFIER40G</b>	<b>CERTIFIER10G</b>
Frequency	2,500MHz	500MHz
Accuracy Specification	Level 2G	Level IIIe
Fiber Testing option	Yes	No
Class FA / CAT 8 options	Yes	No
Patch Cord Test adapters	Yes	Yes

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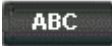





## For Users of Certifier Software 6.x and Earlier

The software on Certifier since version 7.x features notable changes on the interface. These improvements have been made emphasizing on loading time, responsiveness and stability. The main functions from the previous version remains unchanged.

The new interface is clean and simple, providing quick settings selection and distinct identification between the Local and Remote units. Booting up is faster and hardware remains compatible.

Main changes from previous version:

### Status bar

-  Units can now be identified by the background colours on boot up.
-  Device name function is removed.
- Connection between devices can now be identified by the Talk set icons.
  -  Devices are not connected.
  -  Devices are connected. Press icon to activate "Talk set Mode"
  -  Devices are connected in "Talk set Mode". Use headset provided in kit.
-  Available storage can now be found in System Settings > Settings 2 > Storage
-  Battery information can now be found System Settings > Settings 2 > Battery

### SETUP > Test Settings

- Quick Setup can now be found in the main SETUP page
- Site and Label Source can now be found in Project Settings

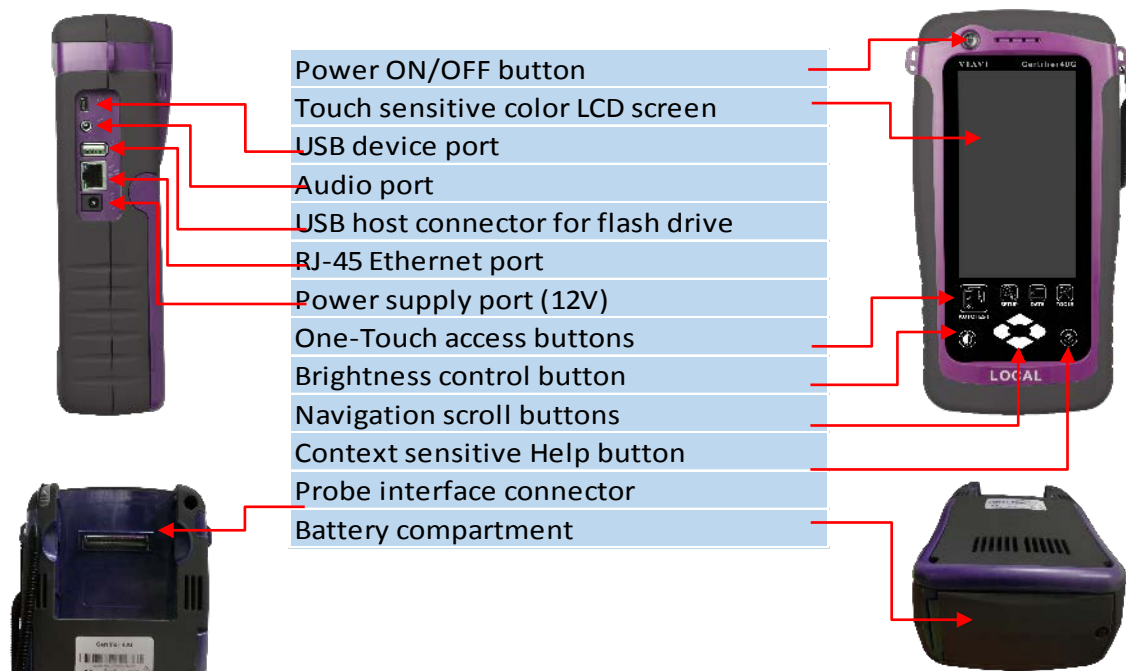
### SETUP > System Settings

- Operator and Auto Save Results can now be found in Project Settings

### SETUP > Device Info

- Device Info can now be found in System Settings > Settings 2 > Device Info

## Certifier Overview



Parameter	Specification
Power ON/OFF Button	<p>To turn on the device, press the power button for 5 seconds.</p> <p>To turn off the device, press the power button, and select OK on the power off dialog box. Alternately, press and hold the power button for 10 seconds (not recommended). The LED in the power button turns green if the unit is turned on.</p> <p>The LED on the power button turns red when the device is charging in standby-by mode, orange if it's turned on.</p>
Touch Sensitive LCD screen	Performs test executions and viewing of results.
USB device port	Enables remote connection to the PC for remote control update and exporting saved results.
Audio port	Enables vocal communication between Local and Remote units when connected to talk set headphones.
USB Host port	<p>Enables results to be exported and firmware upgrade via USB flash drive.</p> <p>Enables loading of custom limits and labels for list based testing.</p>

RJ-45 Ethernet port

Enables communication between two sets of Certifier for Alien Crosstalk testing.

Power Supply port

Performs charging of device when connected to power adapter shipped with Certifier.

One-touch access buttons

Main functional buttons AUTOTEST, SETUP, DATA and TOOLS for Certifier. Enables quick AUTOTEST and results viewing in a single click.

Brightness Control

Adjusts the brightness level of the LCD display.

Navigation scroll buttons

Performs navigation in long lists.

Context sensitive help

Performs navigation in long lists.

Probe interface connector

When connected with different probe adapters (e.g. CAT6A channel or Permanent Link), Certifier will enable specified certification test to be conducted.

Battery compartment

Battery storage compartment. Unscrew to replace battery.

---

## Dual Control System (DCS)

Certifier consists of two identical devices, Local and Remote, for dual-end testing and certification. Both devices utilise easy to use LCD touch-screen technology and graphical user interface. The DCS ensures the same graphical data on the Local units are received on the Remote unit real-time, improving efficiency and productivity significantly as test data and settings can be viewed from Remote and Local side.

In the event of a wire map failure, the DCS will enable the operator on the far-end to visually identify which pair of wires is causing the error, instead of just a LED indication on traditional testers.



*Traditional tester with single display screen, usually on Local unit only*

*Certifier with LCD screens display on both Local and Remote units*

## Certifier Adapters

All test adapters are designed to fit onto every Certifier units. The device automatically detects adapters when connected and prompts to change in the matching interface depending on the type of adapter. Via SETUP > “Quick Setup”, the matching limit can be selected automatically to the type of adapter.

### **Link and Channel Adapters**

Every standard Certifier kit includes adapters for testing copper cabling in Permanent Link and Channel configurations.

Channel adapters connect to the patch cords at the wall plates and telecommunication panels. Certifier software compensates for the adapter’s transmission characteristics to ensure test results’ accuracy.

Permanent Link adapters connect to the wall plates and telecommunication panel jacks. Certifier software compensates for the adapter’s transmission characteristics to ensure test results will not be affected.

Certifier’s Permanent Link adapters’ high precision interface reduces the degrading issue between the RJ-45 jack and link cord, providing highly accurate and repeatable measurements, and cost efficient method of replacing the link cords instead of the expensive link adapters.

### **Adapter Configuration Warnings**

Certifier will display a warning a potential conflict is detected between the adapter and the test settings. It is important to use the appropriate adapters as accuracy of measurements will be affected.

## Cabling Certification and Testing

Certification testing with Certifier is highly intuitive and simple. The AUTOTEST function performs a series of measurements between the Local and Remote devices and analyses the results to determine if the cabling run passes or fails the selected standards.

### ***Copper Cable Certification Testing***

Test at both ends of structured twisted pair cables for the worst case performance are required in accordance to the ISO/TIA standards. All certification testing requires a two-part test consisting of a main and remote unit, both bearing similar test capabilities. The test would be conducted with one end from the telecommunication closet, and the other at the outlet.

There are two primary considerations regarding the test method:

- Whether the user patch cords are included in the cabling run during the test.
  - > If so, channel test configuration is required.
  - > If not, link test configuration is required.
- Which standard – TIA or ISO should be used (Category or Class)

### ***Permanent Link Configuration Tests***

The Permanent Link configuration is generally used in facilities still under construction and does not include user patch cords. As the link configuration does not include the two additional connections of the patch cords, performance standards are more stringent. Special link adapters are used on both local and remote units for links that are under test.

### ***Channel Configuration Tests***

User patch cords are included for the Channel configuration. The pass/fail limits for this configuration allows performance degradation inherent in the two additional patch cords included in the measurements, thus are less stringent. Special channel adapters are used on both local and remote units for channels that are under test.

## Memory

1 Gigabyte internal flash memory.

External USB Flash Drive included allows for flexible data management and storage.

### ***Memory Requirements***

The amount of memory that each test result takes up depends on the options that is configured before starting the test. If plots are saved with each test, file size of test results will be generally larger than one that has plots option omitted.

Certifier allocates approximately 1 GB of internal flash memory for test result storage.

## Battery Information

Certifier units are powered by Lithium Ion rechargeable batteries. These batteries contain circuitry that reports their state of charge to Certifier. The units can be powered by external AC/DC power adapters.

A fully charged battery can operate Certifier for five to eight hours before requiring recharging. Reducing the screen brightness and enabling the sleep function allows Certifier to run longer on a charge.



### WARNING

**Do not set reference or operate Certifier while the battery is hot immediately after charging.**

**Make sure that the Certifier is always operated within the allowed temperature range from 0-40°C. If a significant increase or decrease of the temperature is discovered, repeat the set reference procedure to remain the instrument's accuracy.**



### CAUTION

Use only the supplied power supplies with the Certifier kit. Using other powers may damage the tester and void its warranty.

### ***Battery Safety***

1. To avoid the risk of fire, burns or damage to your battery pack, do not allow metal objects to touch the battery contacts.
2. The battery pack is suitable for use only with compatible Certifier devices.
3. Do not disassemble the battery pack. There are no user serviceable parts inside. Do not dispose the battery pack in fire or water.
4. Handle a damaged or leaking battery with extreme care. If you come into contact with the electrolyte, wash the exposed area with soap and water. If the electrolyte contacts the eye, flush the eye with water for 15 minutes and seek medical attention.
5. Do not expose the battery pack to high storage temperatures (above 55°C).
6. When discarding a battery pack, contact your local waste disposal provider regarding local restrictions on the disposal or recycling of Lithium Ion batteries.
7. To obtain a replacement battery, contact your local dealer.
8. Do not charge the battery pack if the ambient temperature is above 40°C

### ***Replacing Battery***

The batteries are located and secured at the bottom of the Certifier units for safety reasons. To replace the batteries;

1. Switch off Certifier and disconnect external power supplies.
2. Unscrew the battery compartment and remove the cover.
3. Remove and replace a new battery into the compartment.
4. Close, fasten and secure the screw onto the compartment cover.



## Power Supply

- Removable/rechargeable Li-Ion batteries provide more than 8 hours of continuous operation.
- AC power: 100~240V AC plugs directly into the battery. Alternatively, the batteries can be recharged using an external charging kit that can be ordered separately.

## Specifications

**Table 1** Physical specifications

Parameter	Specification
Height	220mm
Width	110mm
Depth	53mm
Weight	1.0 kg with one battery pack

**Table 2** Operating and storage environment

Parameter	Specification
Operating Temperature	0° to 40° C
Storage Temperature	20° to 60° C



Relative Humidity

10% to 80%

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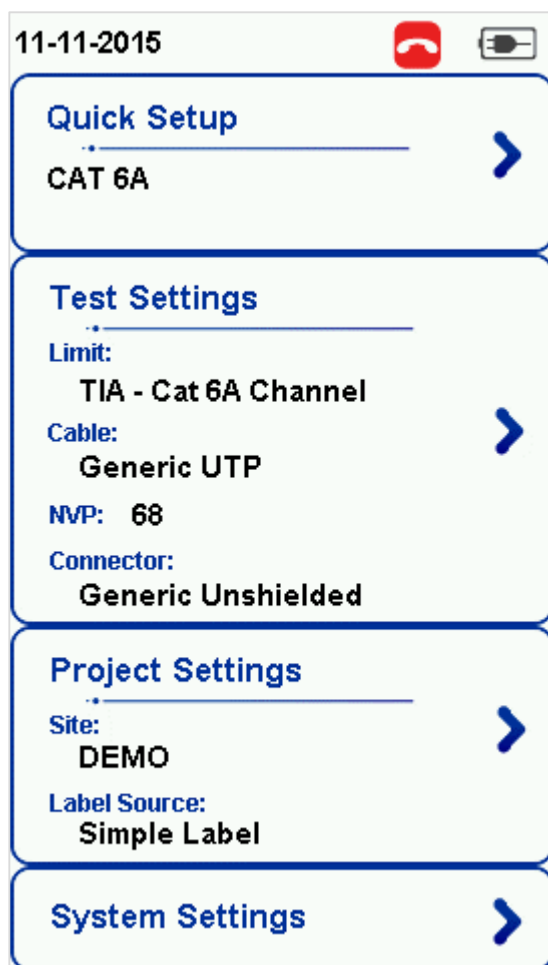
## Chapter 2: Configuring Certifier

### Certifier User Interface

#### *Touch Screen Layout*

The Graphical User Interface (GUI) in version 7.0's firmware has been updated with a more responsive system and quick-access menus.

Certifier boots up to the SETUP screen. It is categorized into 5 groups:



1. Status bar
2. Quick Setup group
3. Test Settings group
4. Project Settings group
5. System Settings group

1. The **Status bar** displays the current date and time, talk set and battery level.
2. The **Quick Setup** group provides quick selection with predefined configurations.
3. The **Test Settings** group provides results oriented configurations necessary to perform an AUTOTEST.
4. The **Project Settings** group provides non-results oriented configurations before performing an AUTOTEST.
5. The **System Settings** group settings provides device, time, localization and device related configurations.

### The One Touch Access Buttons



The fundamental philosophy behind the Certifier User Interface is simplicity in its ease of use. The main functions of the One-Touch access buttons as follows:





#### AUTOTEST



The “**AUTOTEST**” button will perform an immediate certification test on the last configured settings. If no settings were configured, default settings will be used.

Test results will be generated automatically after the test is completed.

You will receive any of the following 4 results after the “AUTOTEST”:

- 
 • Green “PASS” – Good test result in accordance to pre-defined settings
- 
 • Green “PASS\*” – “PASS” result with one or more test parameters that have margin in the range of uncertainty of the tester.
- 
 • Red “FAIL” – Unacceptable results with severe disturbance on one or more test parameters.
- 
 • Red “FAIL\*” – “FAIL” result with one or more test parameters that have negative margin in the range of uncertainty of the tester.

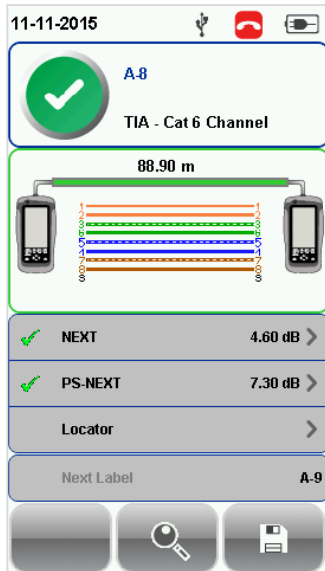
Note: Marginal Pass/Fail is enabled by default. Press the “SETUP” button >Test Settings > Test Options > Lab > Marginal Pass/Fail to change the presentation of the test result to clear “PASS” or “FAIL” results. Uncertainty of the tester is then not taken into account. Contact Viavi Solutions for more information.

You will be given the following option after performing an AUTOTEST:

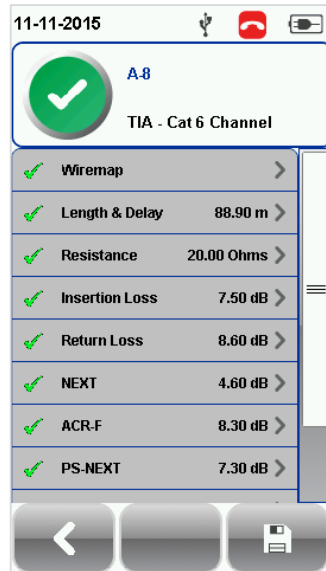
- “Retest” can be conducted on a PASS or FAIL result (if list based testing labeling scheme is selected).

- “View” details will display additional test parameters and plots.
- “Save” test results to device

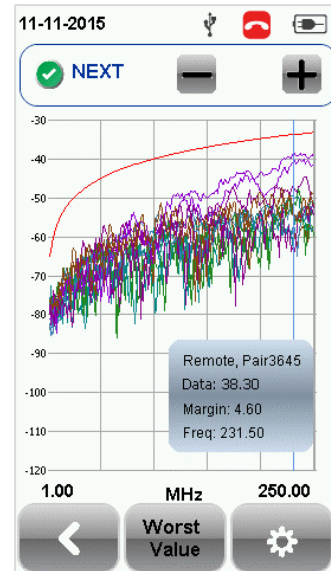
An “AUTOTEST” will fail in the event of missing connection between the Local and Remote units, wrong settings configured or if setting reference is required. Certifier will perform an initial wire map test before testing other parameters.



*AUTOTEST results*



*“View” detail results*



*Plots*

Two worst tested parameters will be displayed on the result summary screen. Press the “View” button to view detailed results.

The type of results will differ depending on the Test Limits and type of cable.

## SETUP

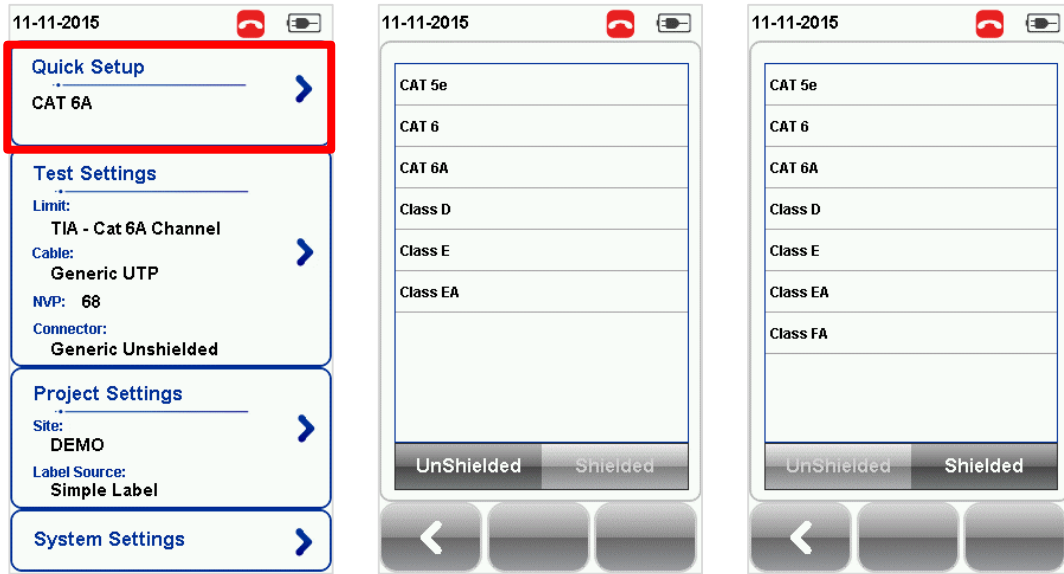


The “**SETUP**” button provides setting options necessary to conduct an AUTOTEST and configure the device.

These options include –

### Quick Settings

Quick Settings provides quick selection using predefined TIA (CAT 5e/6/6A) and ISO (Class D/E/EA/FA) configurations for UTP/FTP cables. Certifier will detect if Channel or Permanent Link adapter is used and changes its test limits automatically.



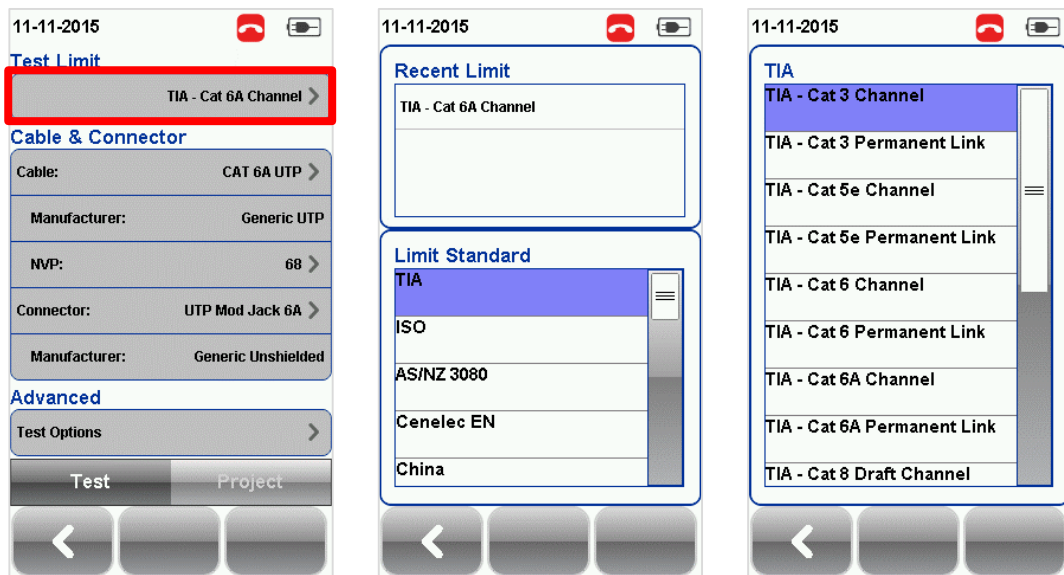
## Test Settings

Test Settings provides results oriented configurations necessary to perform an AUTOTEST.

### Test Limit

Choose from a list of standards to determine the performance criteria in a given category or class. Three of the most commonly used limits will be listed in the "Recent Limit" list.

Press the SETUP button > Test Settings > Test Limits to choose from a list of commonly used limits. Three recently used limits will be on top of the list.



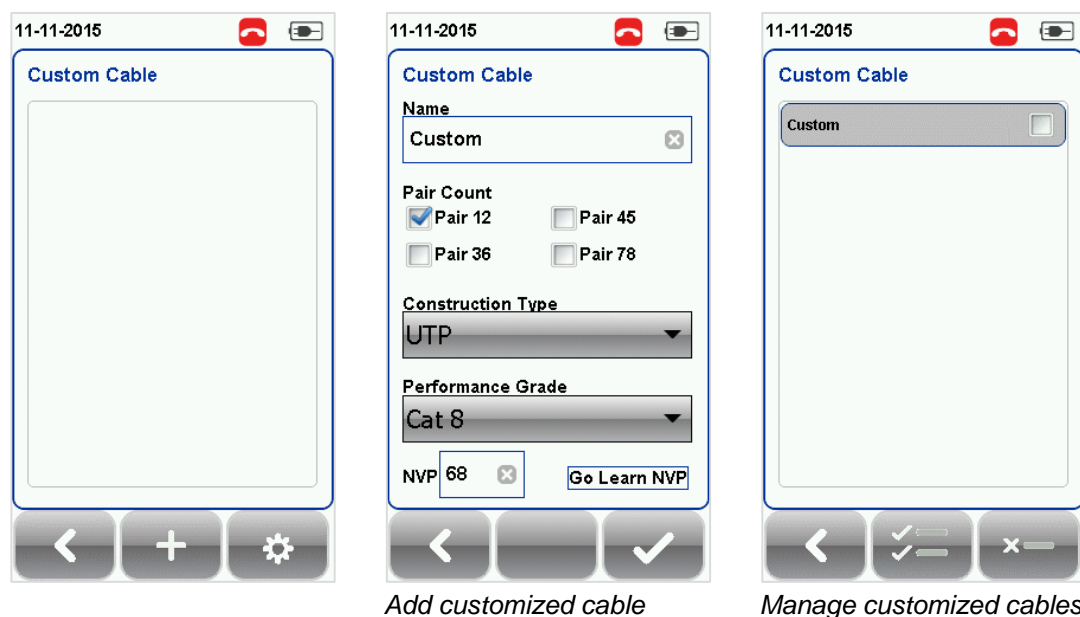
## Cable

Choose from a list of cable manufacturer for more specific test parameters. If unsure of manufacturer, choose “Generic UTP” or “Generic Shielded”, or “Customized Cable” to create custom cable.


Press the SETUP button > Test Settings > Cable Manufacturer to choose from a list of cable manufacturers. If unsure of manufacturer, choose “Generic UTP” or “Generic Shielded”, or “Customized Cable” to create custom cable.

## Customized Cable

Click “Add” to add or “Delete” to remove customized cable(s) from the customized cable list.



When creating customized cable, determining the cable name, number of pairs, construction type, performance grade(S/FTP) and cable’s NVP is required.

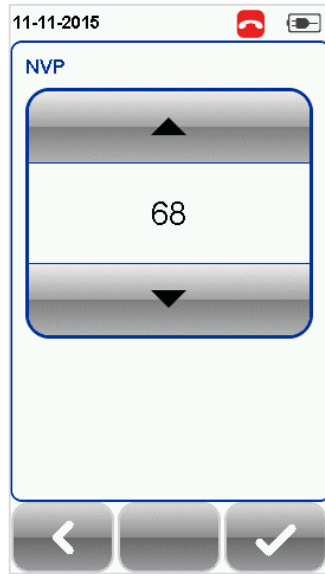


Certifier introduces the “**Manage**” button on version 7.0 firmware. “Manage” enables multiple saved items such as sites, operators, customized cables, customized connectors and results to be selected and deleted simultaneously.

## NVP

Determine the Nominal Velocity of Propagation (NVP) value of the cable. The NVP factor is required to determine the accurate length of the cable run to be measured. Based on this constant value, the Certifier performs its TDR calculations. Please see the cable’s data sheet for the specific value of the cable type in use.

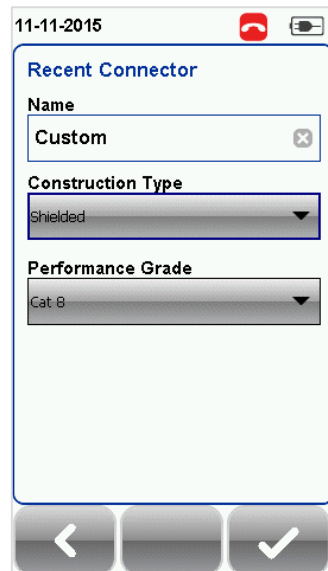
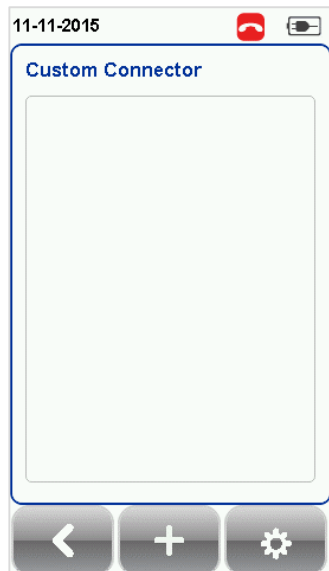
If the specific NVP value is unknown, go to TOOLS > “Learn NVP” to determine the value using the predefined cable run of at least 30 meters or 100 feet.



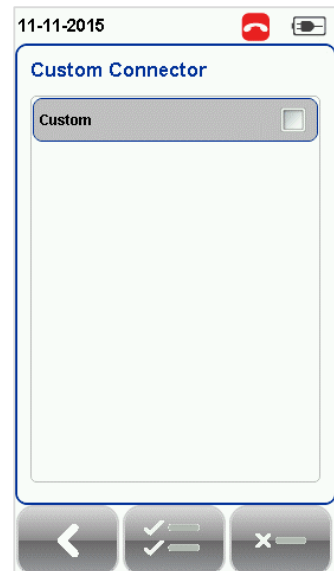
### Connector

Press the SETUP button > Test Settings > Connector Manufacturer to choose from a list of connector manufacturers. If unsure of manufacturer, choose “Generic UTP” or “Generic Shielded”, or “Customized Connector” to create custom connector.

Click “Add” to add or “Delete” to remove customized connector(s) from the customized connector list.



Add customized cable



Manage customized cables

## Advanced Test Options

**Advanced Test Options** determines how the test will be conducted and results will be displayed.

### General

- Locator – If enabled, Certifier will display NEXT and Return Loss (RL) fault information in an AUTOTEST result. Disabled by default.
- Cable Pairing Type – Choose T568A or T568B copper cable wiring standard. “B” selected by default.
- Start AUTOTEST On Connection – If enabled, Certifier will perform AUTOTEST as soon as a connection between Local and Remote is established. Disabled by default.
- Direct Attach – If enabled, Certifier will perform Direct Attach copper installation test. Attach Permanent Link adapter to the Local and Patch Cord adapter to the Remote unit to perform this test. Connect Local unit to patch panel and Remote to field terminated end. Disabled by default.
- AC Wire map – If enabled, Certifier is able to measure test runs with Power over Ethernet (PoE) midspan devices in between. The Certifier supports cable runs with IEEE 802.3 af and 802.3 at injectors. Disabled by default.

### Lab

Laboratory use only. Please contact your local Viavi Solutions for more information.

- WireMap Test – If enabled, Certifier will not ignore failed wire maps during test. Enabled by default.
- Marginal Pass/Fail – If enabled, Certifier will display marginal pass (PASS\*) and marginal fail (FAIL\*) results. Enabled by default.
- Save Phase Data – If enabled, Certifier will generate information for phase data plot generation. Export saved results to CSV format using J-Report software to obtain phase data. Impedance plot will be displayed on J-Report. Disabled by default.
- 3/4 dB Rule – If enabled, Certifier will ignore RL failures if Insertion Loss (IL) is <3dB and NEXT failures if IL is <4dB. Disabled by default.

### Project Settings

Project Settings provides non-results oriented configurations before performing an AUTOTEST.

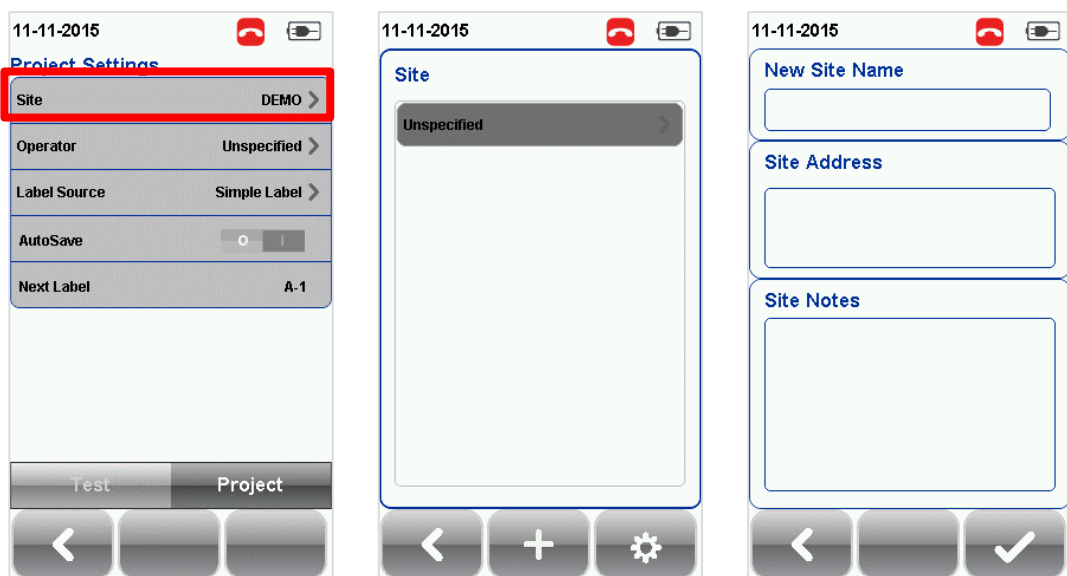


## Site

To add a site,


1. Press the SETUP button > Project Settings > Site to begin adding a new site.
2. Click the “Add” button to add a new site.
3. Enter a Site Name. Site Name is a required field. Test results and label source will be saved under the created Site.
4. Site Address and Site Notes are optional fields, but they provide additional information of the site.
5. Press “OK” to save site and proceed.

By default, Certifier creates an “UNSPECIFIED” site for default saving as long as new sites are not created.



To delete a saved site,

1. Press the “Manage” button.
2. Select site(s) and press the “Delete” to delete site(s).



Certifier introduces the “**Manage**” button on version 7.0 firmware. “Manage” enables multiple saved items such as sites, operators, customized cables, customised connectors and results to be selected and deleted simultaneously.

## Operator

To add a site,

1. Press the SETUP button > Project Settings > Operator to begin adding an operator.
2. Click the “Add” button to add a new operator.
3. Enter Operator Name.
4. Press “OK” to save site and proceed.

By default, Certifier creates an “UNSPECIFIED” operator for default saving if new operators are not created.

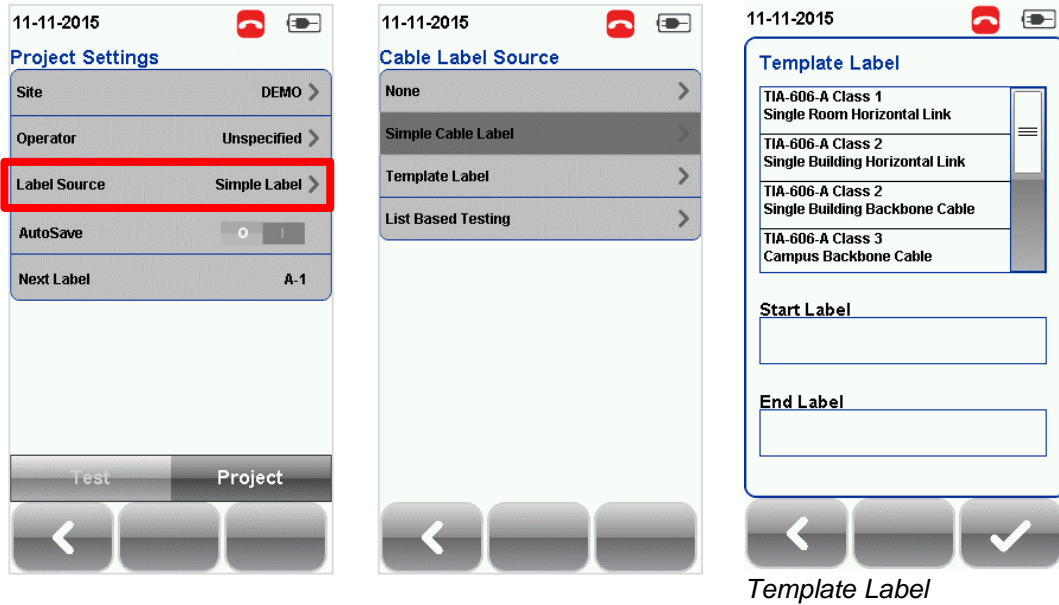


To delete a saved operator,

3. Press the “Manage” button.
4. Select operator(s) and press the “Delete” to delete operator(s).

## Label Source

Press the SETUP button > Test Settings > Label Source to choose from a list of scheme.



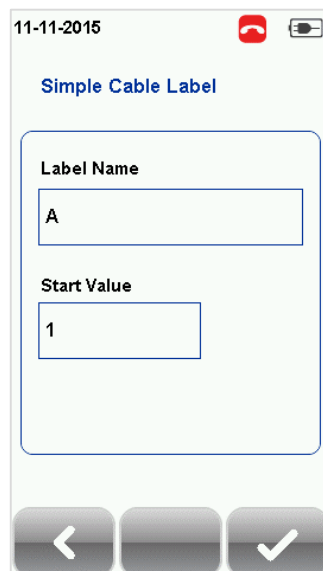
### None

Manual input of label names is required for every saving of result.

### Simple Label

Provides simple numeric increments to a prefix. To configure the simple label scheme:

1. Enter desired Prefix (e.g. Office, Company X)  
The prefix will remain unchanged by every result.
2. Set a numeric start value (e.g. 1, 33, 245)  
The counting value will raise one number with every test made.

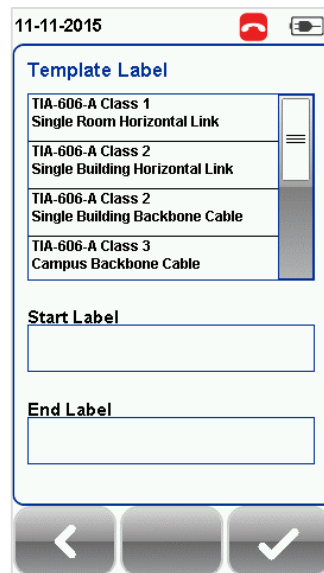


## Template Label

### *TIA-606-A Class 1 (Single Room Horizontal Link)*

TIA-606-A Class 1 standard labelling scheme mainly used to support labelling for a building or premises that is served in a single equipment room or a horizontal cross-connect.

The default “1A-A1” generally refers to “Floor + Tel Room – Panel + Port”.



The screenshot shows a mobile application interface titled "Template Label". At the top, the date "11-11-2015" and a red call icon are visible. Below the title is a list of four options:

- TIA-606-A Class 1  
Single Room Horizontal Link
- TIA-606-A Class 2  
Single Building Horizontal Link
- TIA-606-A Class 2  
Single Building Backbone Cable
- TIA-606-A Class 3  
Campus Backbone Cable

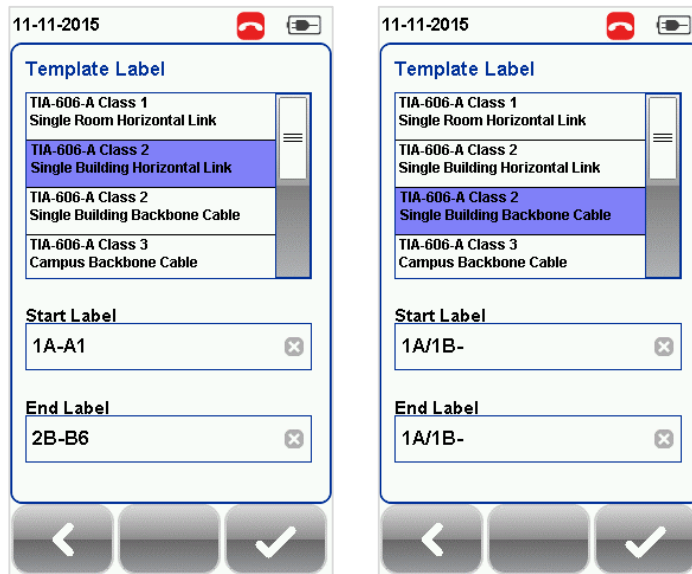
Below the list are two text input fields labeled "Start Label" and "End Label". At the bottom of the screen are three navigation buttons: a left arrow, a central button, and a checkmark.

### *TIA-606-A Class 2 (Single Building Horizontal/Single Building Backbone Cable)*

TIA-606-A Class 2 standard labelling scheme, mainly used to support labelling of infrastructure with one or more telecommunication spaces in a single building.

The default “1A-A1” for Horizontal Link generally refers to “(1) Floor + (A) Tel Room – (A) Panel + (1) Port”.

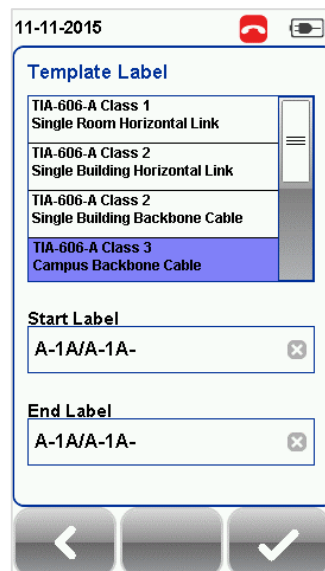
The default “1A/1B-” for Backbone Cable generally refers to “(1)Tel Room 1 Floor + (A)Tel Room 1 Name / (1)Tel Room 1 Floor + (B)Tel Room 2 Name” followed by - “Backbone Cable . Cable”



### *TIA-606-A Class 3 (Campus Backbone Cable)*

TIA-606-A Class3 standard labelling scheme, mainly used to support labelling for multiple buildings in a single site.

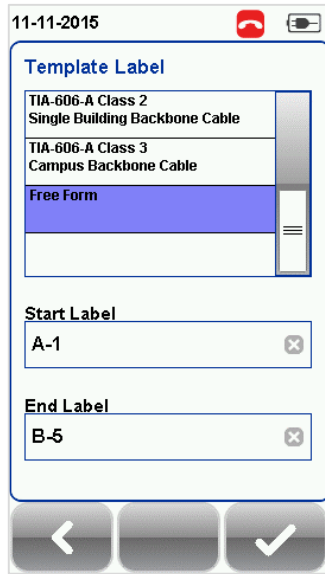
The default “A-1A/A-1A-” generally refers to “(A)Building 1 Name - (1)Tel Room 1 Floor + (A)Tel Room 1 Name / (A)Building 2 Name – (1)Tel Room 2 Floor + (A) Tel Room 2 Name” followed by - “Backbone Cable . Cable”



### **Free Form**

Free Form provides simple numeric increments to 2 or more prefix.

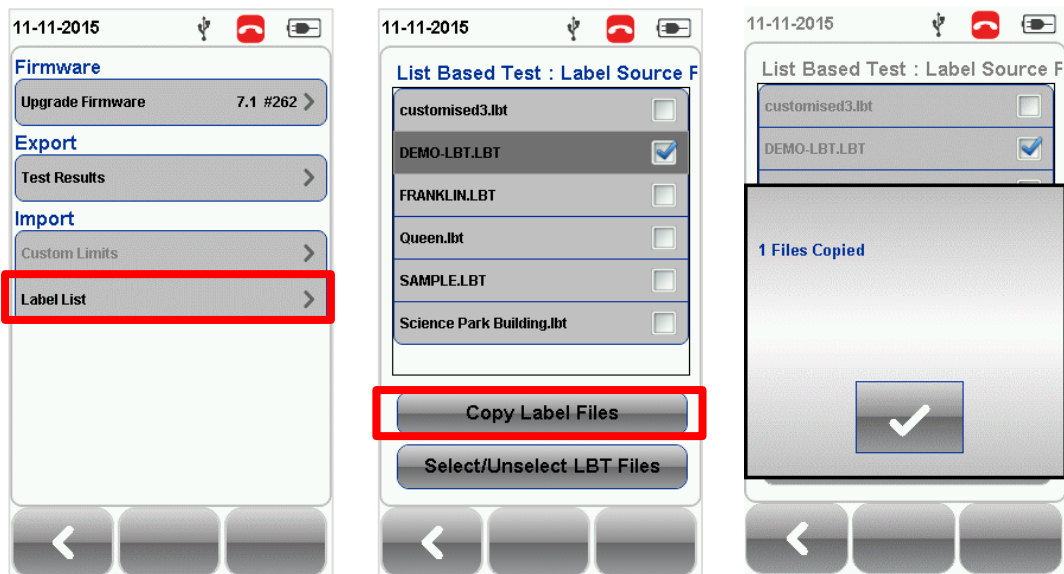
The default start “A-1” and end “B-5” labels will generate labels “A1 to A5 and B1 to B5”.



### List Based Testing

List based testing allows creation of label list in the J-Report software on PC and then bring the list to Certifier. It further allows easy selection of labels from the list to help technician select the cables to be tested quickly. This testing method is carefully optimized for typical test work-flow, and it significantly improves productivity.

1. Insert USB flash drive to USB port on Certifier.
2. Device will automatically detect USB flash drive.
3. Select "Label List".
4. Select the custom label list(s) to be copied from the USB flash drive.
5. Press "Copy label files from USB" to proceed.
6. Click "OK".



7. Press the "SETUP" button > Project Settings > Label Source > List Based Testing

8. Select label source file and click “OK” to continue.



Refer *User Manual – J-Report* for more information on generating list based labels.

9. Press the AUTOTEST button to display the loaded cable list.
10. Select label from list to begin AUTOTEST.
11. Certifier will automatically save a PASS result and return to the list, or allows you to save or conduct a re-test for a FAIL result manually.
12. Select a tested label to view the results. A green result indicates a PASS and a red result indicates a FAIL test. A re-test can be conducted by pressing “Retest”.
13. Press the AUTOTEST button to return to the list.

#### *AutoSave*



Enable option for Certifier to auto save every PASS result. Option will be enabled for List Based Testing.

#### *System Settings*

##### *Length Unit*



Press the SETUP button > System Settings > Settings 1 > Device Settings > Length Unit to select the preferred length unit to be displayed. Feet (FT) and Meters (M) are available.

##### *Plot Y-axis Direction*

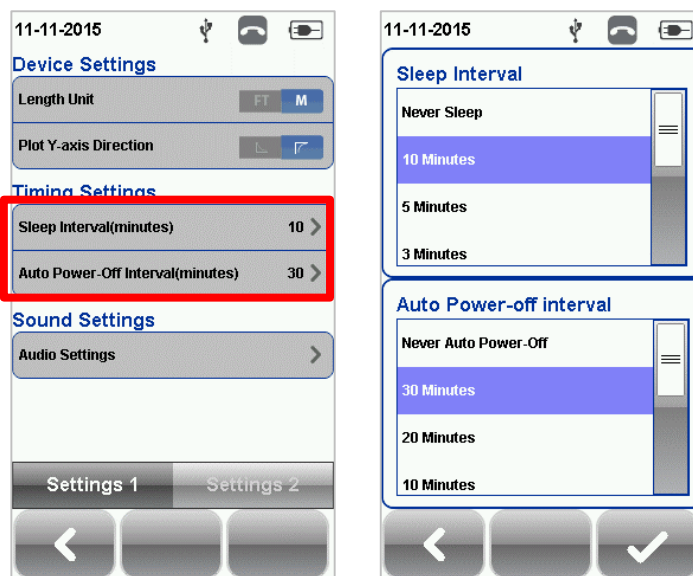


Press the SETUP button > System Settings > Settings 1 > Device Settings > Plot Y-axis Direction to select the how the plot's Y-axis will be display. Normal and Inverted Y-axis are available.

#### *Sleep and Auto Power-off Interval*

For Sleep Interval,  
Press the SETUP button > System Settings > Settings 1 > Sleep Interval to select the idle duration before Certifier enters the sleep (power saving) mode.

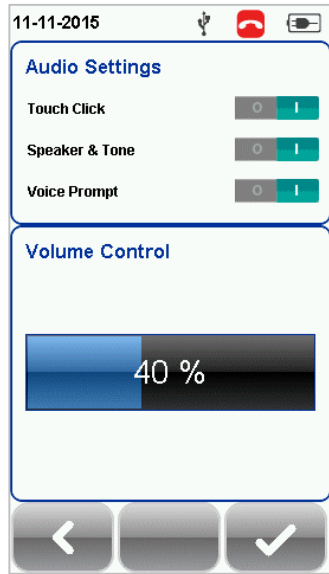
For Auto Power-off Interval,  
Press the SETUP button > System Settings > Settings 1 > Auto Power-Off Interval to select the idle duration before Certifier performs an automatic shutdown.



#### *Audio Settings*

Press the SETUP button > System Settings > Settings 1 > Audio Settings to configure various audio options for Certifier.





Touch Click – Enable option to trigger clicking sound options on screen touch.

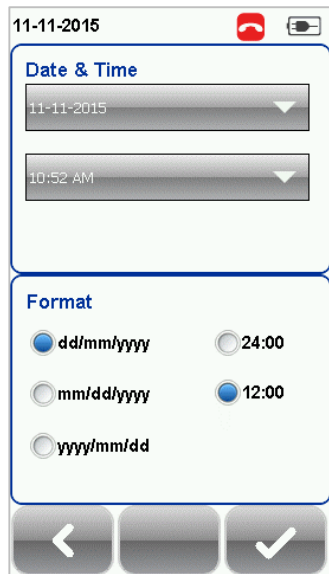
Speaker & Tone – Enable option to trigger system sound options, e.g., boot up.

Voice Prompt – Enable option to trigger system vocal notifications on action.

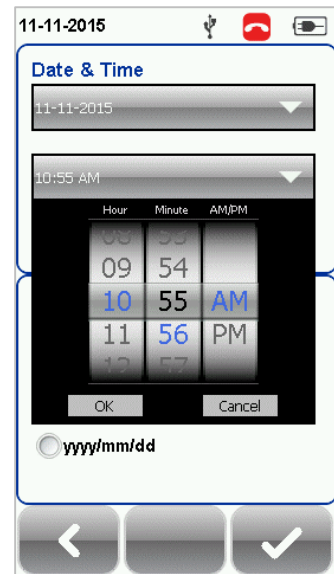
Volume Control – Adjust for audio loudness.

### *Date and Time*

Press the SETUP button > System Settings > Settings 2 > “Date & Time to configure date, time and display format.



*Date settings*



*Time settings*

### *Language*

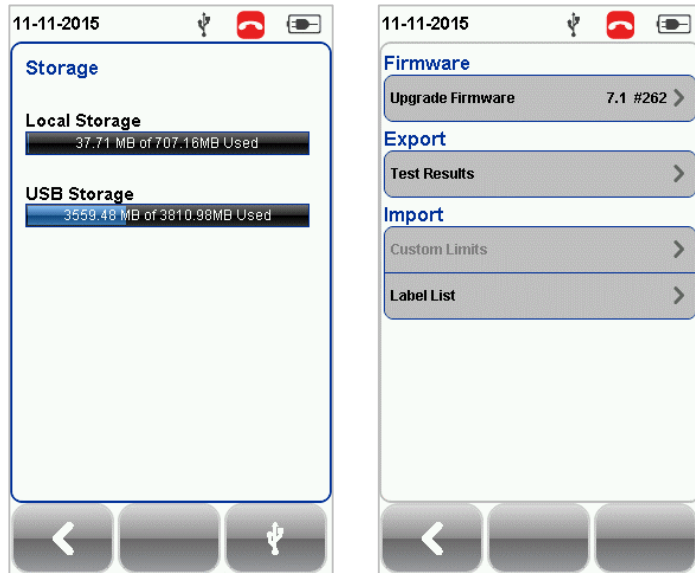
Press the SETUP button > System Settings 2 > Language to select preferred display language.



### Storage

Press the SETUP button > System Settings > Settings 2 > Storage to view available storage space on Certifier and USB flash drive if inserted.

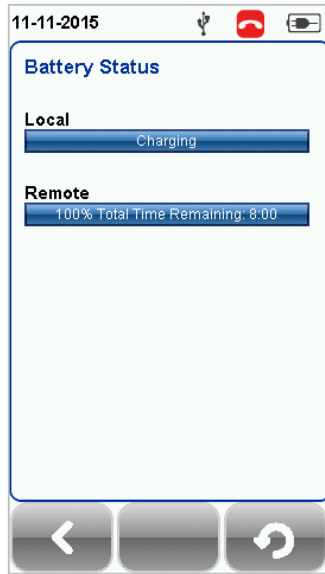
Read USB flash drive by clicking the USB icon if prompt did not appear or closed after inserting USB flash drive.



Read USB flash drive

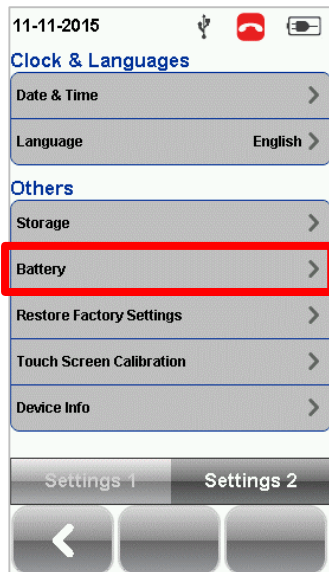
### Battery

Press the SETUP button > System Settings > Settings 2 > Battery to view battery level. Battery levels of Local and Remote will be displayed if units are connected



### *Restore Factory Settings*

Press the SETUP button > System Settings 2 > Settings 2 > Restore Default Settings to restore Certifier to factory settings. Click "OK" to begin restoration.



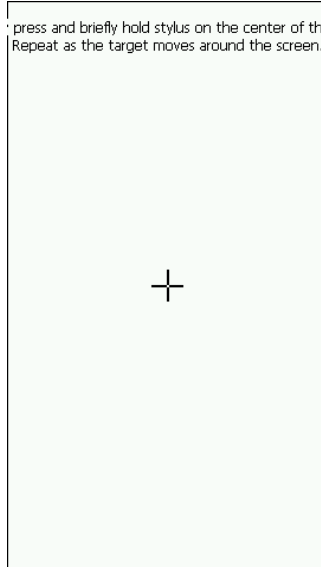
### **CAUTION**

Restoring Certifier to default settings is an irreversible action. All user defined settings and stored test results will be erased and cannot be recovered.

### *Touch Screen Calibration*

Press the SETUP button > System Settings > Settings 2 > Touch Screen Calibration to re-adjust mechanical alignments of the touch screen. Follow on-screen instructions to begin calibration.

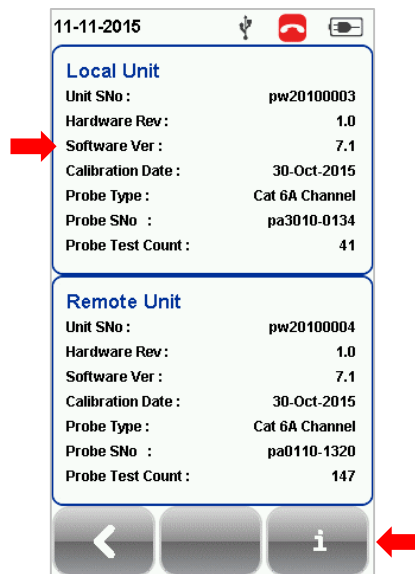
press and briefly hold stylus on the center of the  
Repeat as the target moves around the screen.



### Device Info

Press the SETUP button > System Settings > Settings 2 > Device Information to check the device and probe serial numbers, software and hardware version numbers, device last calibrated date and probe test count.

Click on the “Info” button for more information on the firmware.



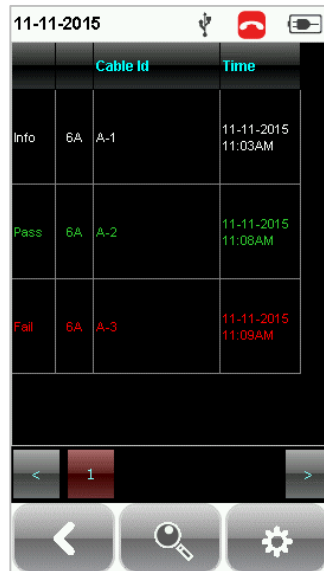
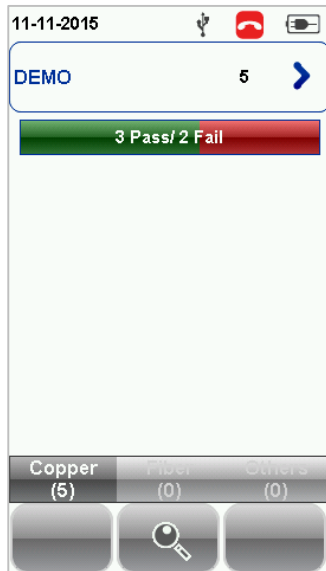
### CAUTION

To ensure accurate test results, it is recommended to have Certifier units calibrated every year. Contact vendor for more information.

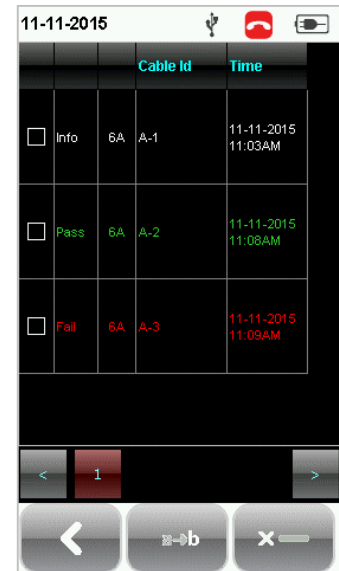
## DATA



The “**DATA**” button provides archive and data management ability to saved sites and test results. Saved test results can be renamed or deleted in this option.



View results



Manage results

*Note: Deleting a site will also delete its containing test results.*

## TOOLS



The “**TOOLS**” button provides advanced options for in-depth troubleshooting and expert Certifier users. These options include-



Requires:  
Local and Remote

**Set Reference** – Performs loss compensation through calculation from setting of referencing point.



Requires:  
Local or Remote

**Length & Delay** – Performs a test to determine the length and propagation delay of each pair using the NVP value programmed by the user.



Requires:  
Local and Remote

**Wiremap** – Verifies end-to-end wire mapping of cable.



Requires:  
Local and Remote

**Learn NVP** – Performs a test to determine the NVP of the cable using the length



Requires:  
Local or Remote

**Reset Probe** – Resets Perm. Link adapter usage



**About** – Displays worldwide contact information for Viavi Solutions.

value programmed by the user

count once a new link cord is in place

Note: 30 meters (100 feet) cable length is at least required to get a valid NVP value!

## **Certifier Firmware**

### Adapter Detection

Certifier firmware detects which adapters are connected to the Local and Remote units and configures the testing program to match these adapters. Test limits are automatically changed to the type of adapter (Channel or Permanent Link) upon a Quick Setup selection. For instance, if a Channel adapter is attached and a CAT6 profile is selected the limit is automatically configured for CAT6 Channel Testing.

### Digital Fault Finding

Certifier software automatically pinpoints cable fault locations and causes, speeding problem resolution and increasing operator productivity.

### Applications

CERTIFIER40G provides complete certification solutions to major copper cabling and fiber optic installations. Depending on requirements, separate kits, components or customized adapters can be purchased to provide more specialized tests and certifications.

CERTIFIER10G provides the best cost efficient solution for installers who wish to certify only up to Cat6A. CERTIFIER10G runs on the same hardware and firmware as CERTIFIER40G, but is calibrated to test only up to 500MHz.

For a list of available adapters, please visit [www.viavisolutions.com](http://www.viavisolutions.com).

### Data Management

Certifier data management software, *J-Report*, enables management of saved results such as finding, renaming, deleting, printing and creating custom labels. Please refer to *User Manual – J-Report* for more information.

### Adapter Configuration

Certifier uses different adapters to test and certify different cabling runs. The device automatically detects which adapters are attached and selects matching test parameters.

### Adapter Insertion Counts

Every Certifier adapter can keep track of the number of tests performed. This data ensures up to date information on the adapter's lifespan. Certifier will indicate a warning when the adapter insertion counts has expired the specified insertion counts

lifespan. This can be checked by pressing the “SETUP” button > System Settings 2 > Device Info > Probe Test Count

Upgrading the firmware

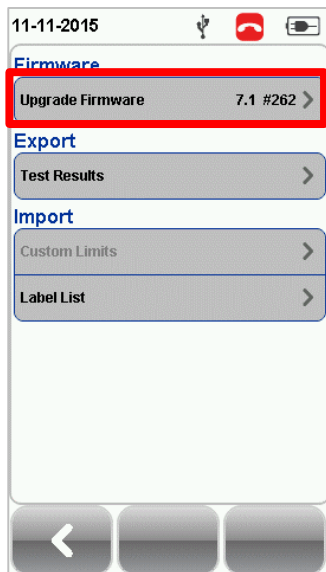
Upgrade Certifier firmware to ensure latest test standards and device features are up to date. To upgrade Certifier’s firmware,

- Download and install the latest build of J-Report software from [viavisolutions.com](http://viavisolutions.com)
- Export the firmware using an USB flash drive
- Backup the test results in the device
- Insert the flash drive to the USB port on Certifier
- Choose the upgrade firmware option and click “Yes” to begin upgrade

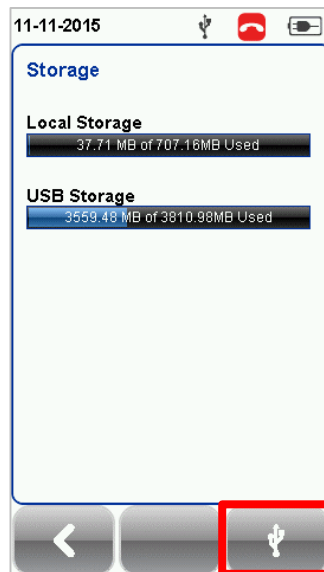
If the upgrade prompt do not appear after inserting the USB flash drive, press the SETUP button > System Settings 2 > Storage > USB and select “Upgrade Firmware”.

Upgrading from an older version (< v7.0.0)

Upgrading from older version is possible by following the same procedures. Certifier will detect the firmware from the USB flash drive and upgrade the firmware.



Upgrade prompt



*If the Upgrade prompt did not appear, press SETUP button > System Settings 2 > Storage and click the USB button to launch the prompt manually*



**CAUTION**

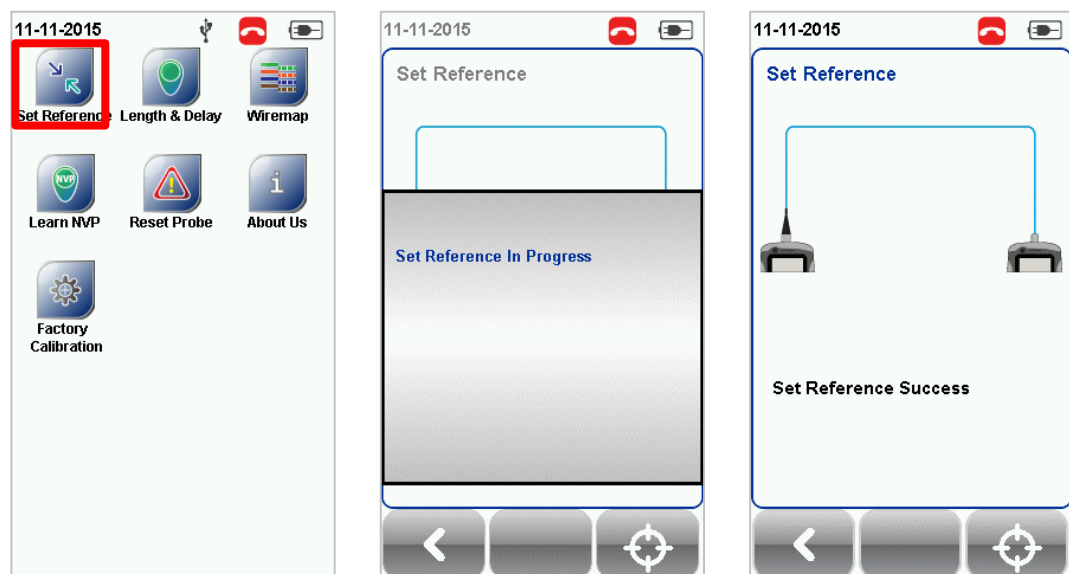
Test results and custom data in the device will be permanently removed during firmware upgrade. Please export all results and data to USB flash drive before proceeding.

## Chapter 3: Setting Reference

It is necessary to perform a set reference measurement if the Local and Remote units are being paired for the first time. If there is a mismatch in firmware versions or a set reference has not been performed, AUTOTEST will be denied, until these conditions are corrected. Please also verify before testing that calibrations are not expired.

To set reference,

1. Connect a Permanent Link adapter to the Local unit.
2. Connect a Channel adapter to the Remote unit.
3. Connect the 2 units together using the permanent link cord provided in the kit.
4. Press the TOOLS button > Set Reference



5. Set Reference will fail in the event of-
  - Adapter probe mismatch, i.e., two channel or permanent link adapters
  - Firmware version mismatch between Local and Remote units
  - No connection between Local and Remote units



## Chapter 4: Configuring an AUTOTEST

After configuring the system settings, follow these steps to set up an AUTOTEST.

1. Press the SETUP button > Project Settings
  - a. Site – Create or select a Site
  - b. Operator – Create or select an Operator
  - c. Label Source – Select cable labelling scheme. Load labels from USB flash drive if using List Based Testing (LBT).
  - d. AutoSave – Enable option for Certifier to auto save every PASS result.
2. Press the SETUP button > Quick Setup to select pre-defined test limit settings using matching generic UTP/FTP cable and FTP connector.
3. Manual Setup – Press the SETUP button > Test Settings
  - a. Test Limit – Select a test limit
  - b. Cable – Create a custom or select cable from list. Select “Generic” if unsure.
  - c. Connector - Create a custom or select connector from list. Select “Generic” if unsure.
  - d. Test Options > General
    - i. **Locator** – Enable option to display the worst NEXT and Return Loss (RL) fault information in an AUTOTEST result. Default has been set to OFF.
    - ii. **Cable Pairing Type** – Select if cable under test is paired using the T568-A or T568-B standard.
 

The diagram illustrates the wiring for two common Ethernet standards: T-568A and T-568B. Each diagram shows a vertical column of eight pins, numbered 1 through 8 from top to bottom. Below each pin is a color-coded legend: G (Green), O (Orange), B (Blue), and Br (Brown). For T-568A, the colors are: 1-G, 2-O, 3-B, 4-G, 5-Br, 6-O, 7-B, 8-Br. For T-568B, the colors are: 1-O, 2-O, 3-B, 4-G, 5-Br, 6-O, 7-B, 8-Br.
    - iii. **Auto Test on Connection** – Enable option to perform AUTOTEST on, i.e, as soon as the connection between Local and Remote units is established. Default option has been set to OFF.
    - iv. **Direct Attach** – Enable option only if performing Direct Attach installation test. Default option has been set to OFF.
    - v. **AC Wire map** – Enable option to bypass testing DC parameters. Default option has been set to OFF.

Please ensure you have the following components before conducting the test;

- Certifier, Local & Remote units (CERTIFIER40G or CERTIFIER10G)

#### Permanent Link Testing

- 2 x Permanent Link Adapter
- 2 x Permanent Link Cord

#### Channel Testing

- 2 x Channel Adapter



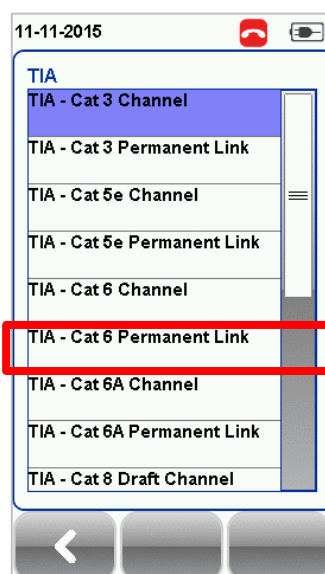
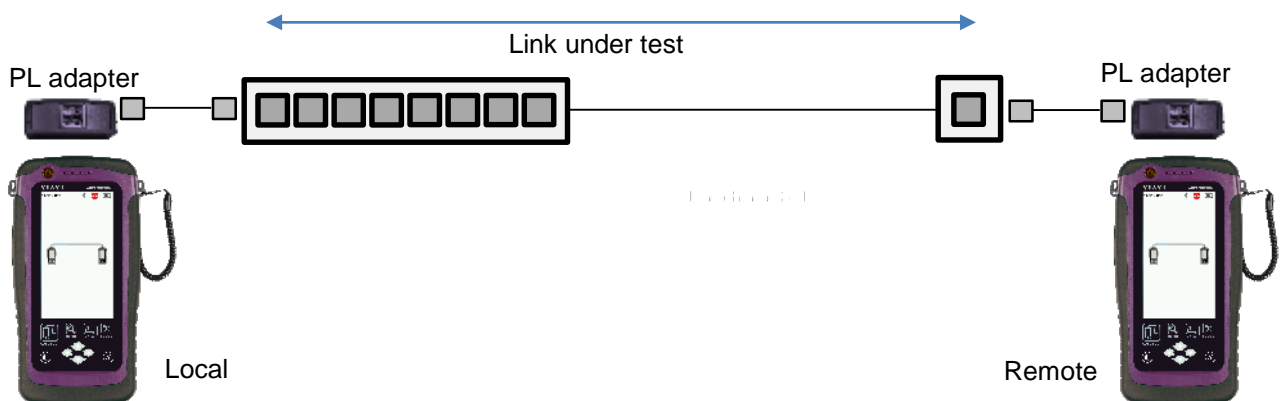
#### **CAUTION**

Do not connect Certifier to a voltage source such as an active telephone jack. Excessive voltage will damage the units and the adapter and void the warranty.

## Testing Guide for Permanent Link Testing

Permanent Link (PL) test is comprised of the connection from a patch panel to a telecommunication outlet (horizontal cabling) using Permanent Link test adapters at each end of the link under test.

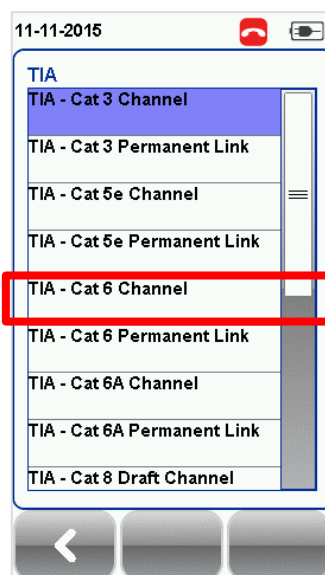
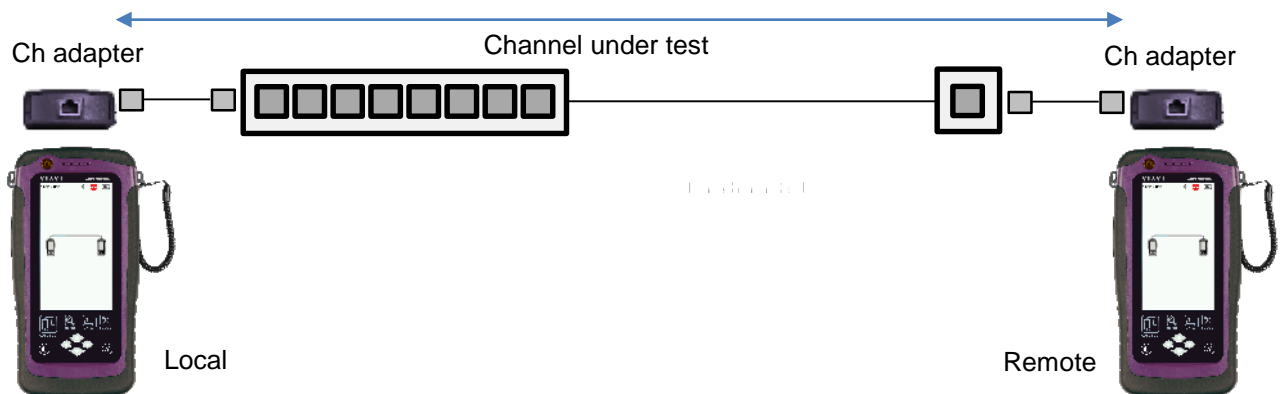
1. Insert the Permanent Link adapters into the Local and Remote units of the Certifier.
2. Power ON Certifier. Check that Certifier is in Copper testing mode.
3. Set reference is required if the units are being paired for the first time. Refer to Chapter 2 on how to set reference.
4. Choose the Permanent Link limits and configure other settings if necessary.
5. Connect the Local unit to the patch panel and Remote unit to the outlet using the patch cord provided.
6. Press the AUTOTEST button to begin AUTOTEST.



## Testing Guide for Channel Testing

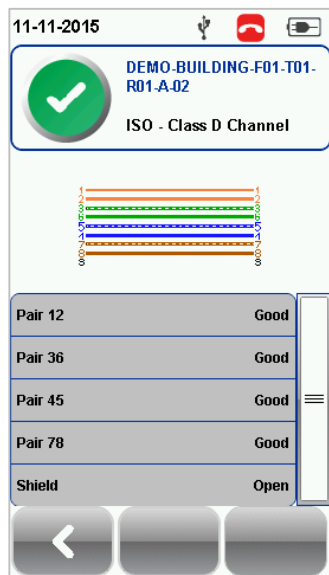
Channel (Ch) test is comprised of the connection from an active device (egg. Router) in a data rack, a telecommunication outlet (horizontal cabling) and the connecting patch cords at both ends using Channel test adapters at each end of the link under test. The recommended length for the patch cord from the patch panel and the outlet is 5m.

1. Insert the Channel adapters into the Local and Remote units of the Certifier.
2. Power ON Certifier. Check that Certifier is in Copper testing mode.
3. Set reference is required if the units are being paired for the first time. Refer to Chapter 2 on how to set reference.
4. Choose the Channel limits and configure other settings if necessary.
5. Connect the Local unit to the patch panel and Remote unit to the outlet using the patch cord connected to be used.
6. Press the AUTOTEST button to begin AUTOTEST.

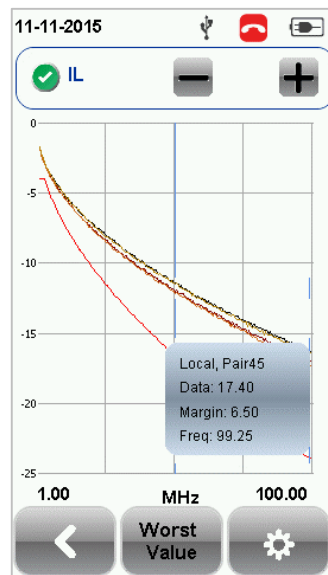


## Chapter 5: Performing an AUTOTEST

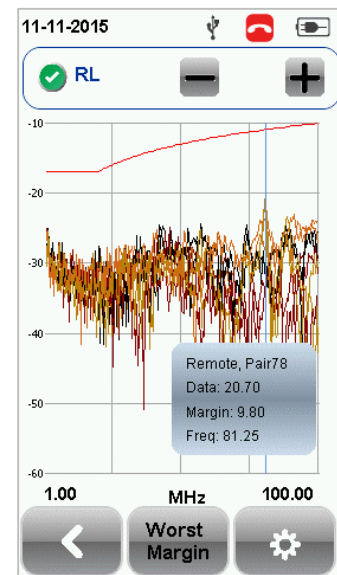
Press the AUTOTEST button once settings and limits have been selected. Certifier will use the last configuration or factory settings to perform the AUTOTEST if new settings are not configured.



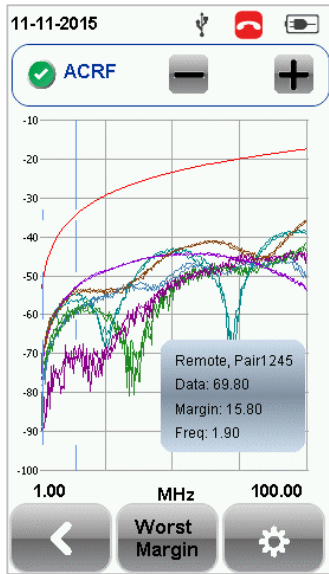
Wire map



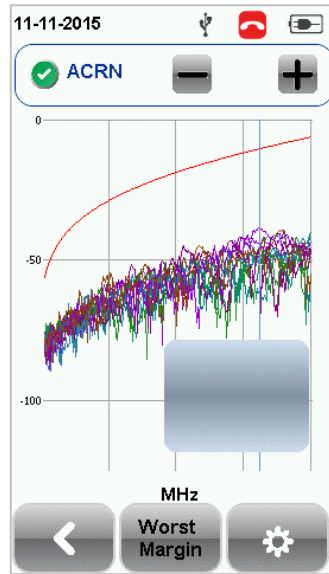
Insertion Loss



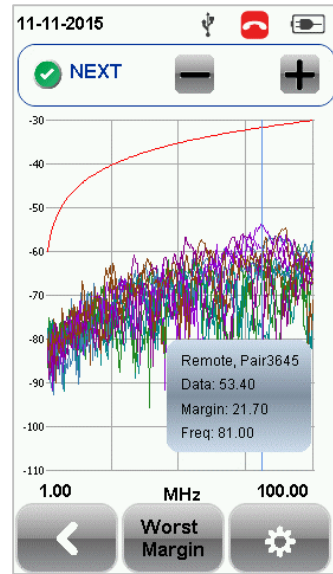
Return Loss



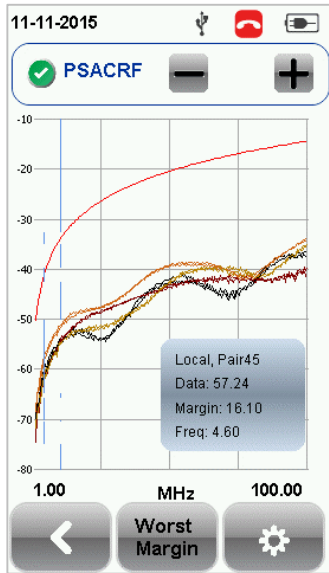
Attenuation to Crosstalk Ratio, Far-end



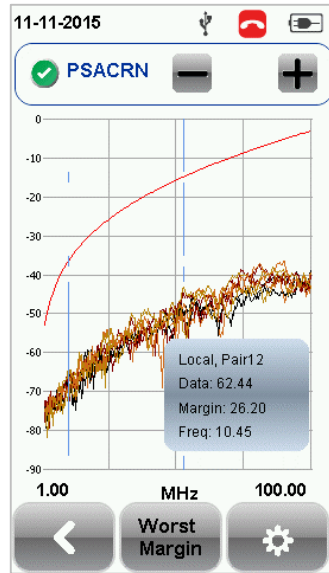
Attenuation to Crosstalk Ratio, Near-end (ISO only)



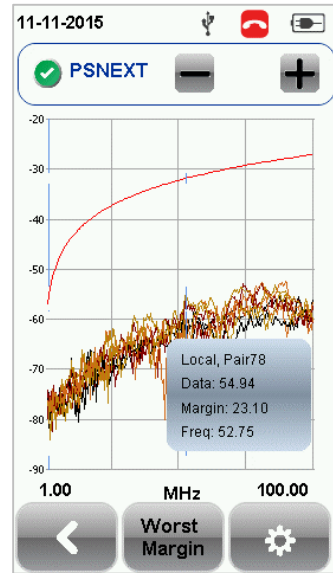
Near-end Crosstalk



Power-sum ACRF



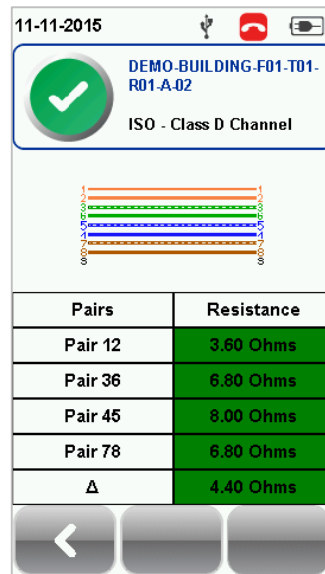
Power-sum ACRN (ISO only)



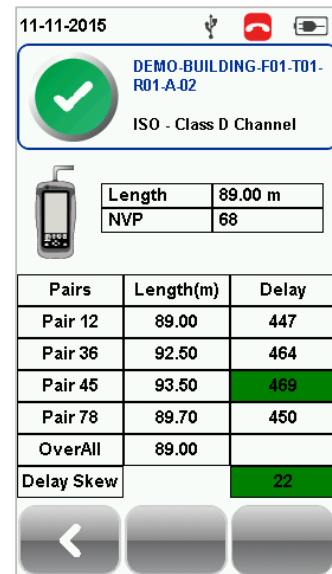
Power-sum NEXT



Manage plots



Resistance



Length & Delay

## NEXT and RL Fault Locating

If the Locator option is enabled in the Test Settings > Test Options, Certifier will display extremely critical troubleshooting information in the form of a Time Domain Reflection plot for NEXT and Return Loss.

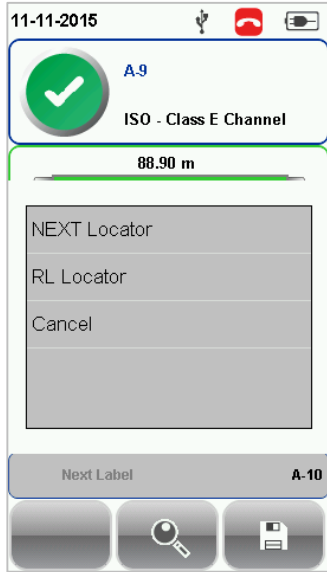
Near-End Crosstalk (NEXT) is an undesired effect of interference between two pairs in a cable measured at the same end of the cable as the interfering transmitter. In crosstalk, the signals traveling through adjacent pairs of wire in twisted-pair cabling interfere with each other. Cross talk is undesirable.

The NEXT Locator displays the locations where crosstalk is excessive in the cable and indicate the exact location in meters or feet from the Local unit of where high crosstalk issue is seen. View individual plot by selecting/deselecting cable pairs. Each two pairs of cables that have been tested for crosstalk are represented by different colour in the plot.

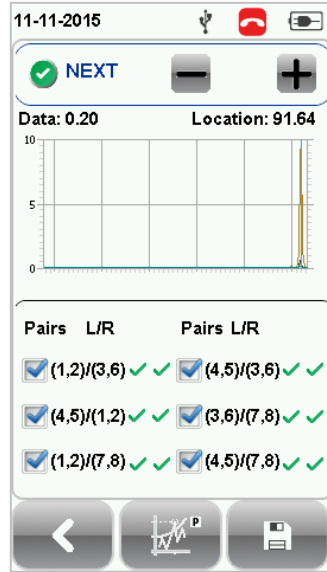
Return Loss (RL) is the measurement (in dB) of the amount of signal that is reflected back toward the transmitter. Impedance mismatches and discontinuities caused by terminations to plugs or jacks and within the plug/jack connection itself contributes to RL. Excessive bends and damaged cable will also contribute to RL. The greater the variation in impedance, the greater the return loss reading.

The RL Locator displays the locations where return loss occurred during an AUTOTEST and indicates the exact location of where the highest return loss occurs. View individual plot by selecting/deselecting cable pair. Each pair of cables that has been tested is represented by different colour in the plot.

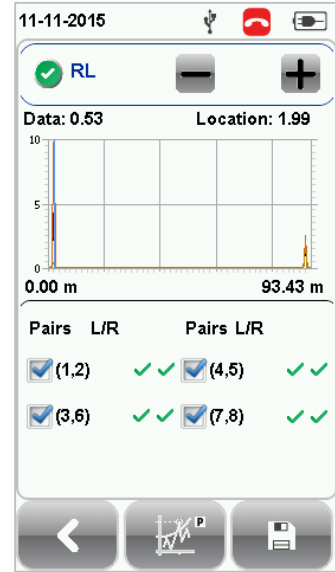
Each peak result in NEXT and RL Locator could represent a new joint connection, rarely a coupler and not necessary a bad cable that requires replacement.



Locator – To enable, press the “SETUP” button > Test Settings > Test Options > Locator



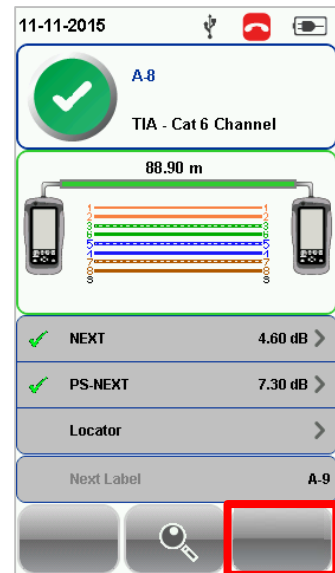
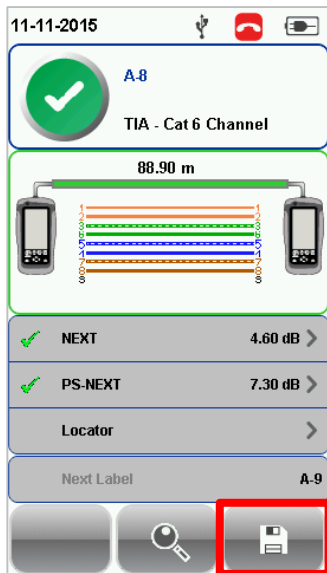
NEXT Locator



Return Loss Locator

## Managing test result(s)

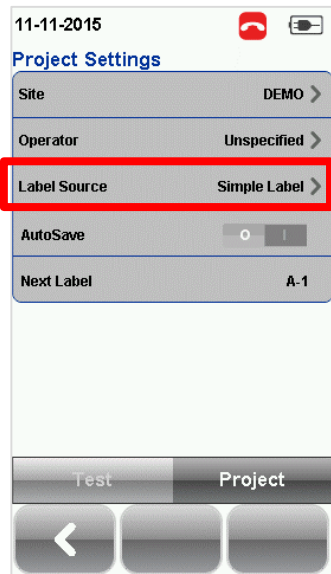
Test results can be manually saved by pressing the “Save” button after an AUTOTEST is completed. When prompted, enter label name and click “OK” to save.



The “Save” icon will disappear once saving is completed.

Pass test results will be automatically saved with reference to the selected Label Source (SETUP > Project Settings > Label Source) when AUTOTEST is completed.





To view saved results,

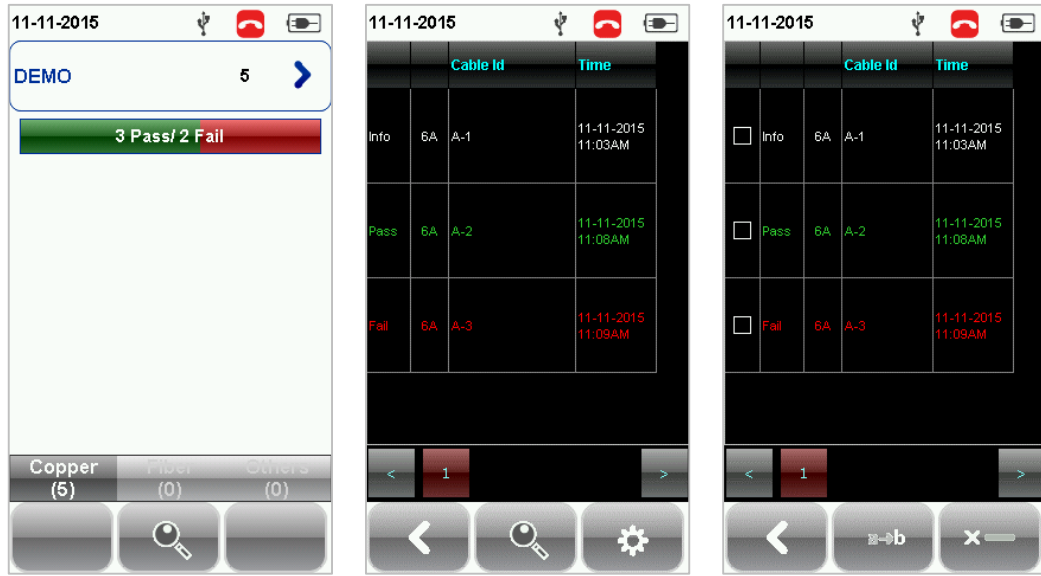
1. Press the “DATA” button.
2. Select “Copper” or “Fiber” and press the “View” button.
3. Select the test results click “View” to view results.
4. Select the next page for more results.

To delete a saved result,

1. Press the “DATA” button.
2. Select “Copper” or “Fiber” and press the “View” button.
3. Press the “Manage” button.
4. Select result(s) and press the “Delete” to delete result(s).

To rename a saved result,

1. Press the “DATA” button.
2. Select “Copper” or “Fiber” and press the “View” button.
3. Press the “Manage” button.
4. Select result and press the “Rename” to rename result.



View results

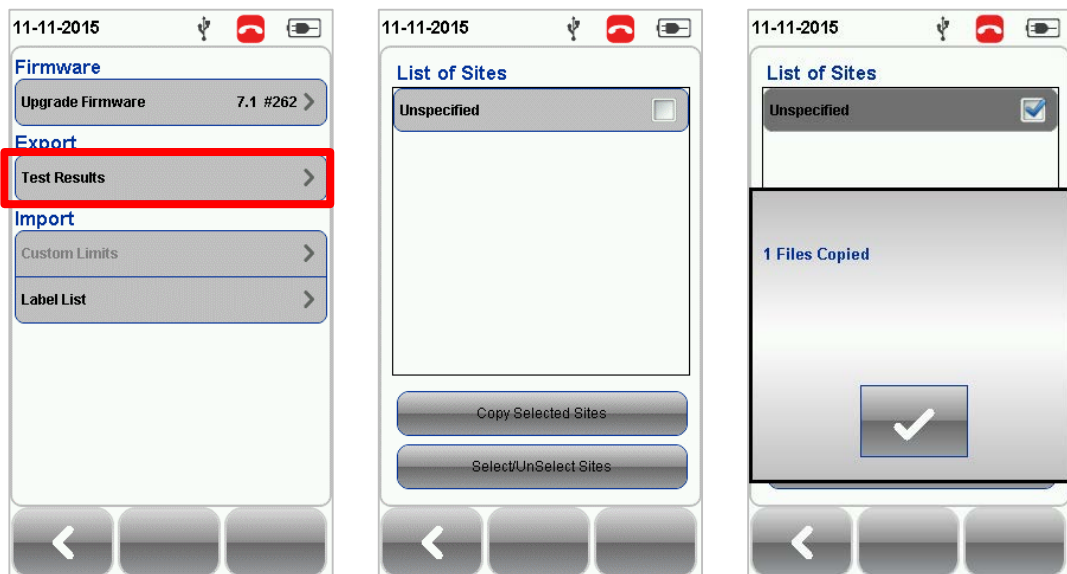
Manage results

## Exporting test results into J-Report PC Software

J-Report is a data management software designed to work seamlessly with Certifier. Saved results can be exported using the following methods;

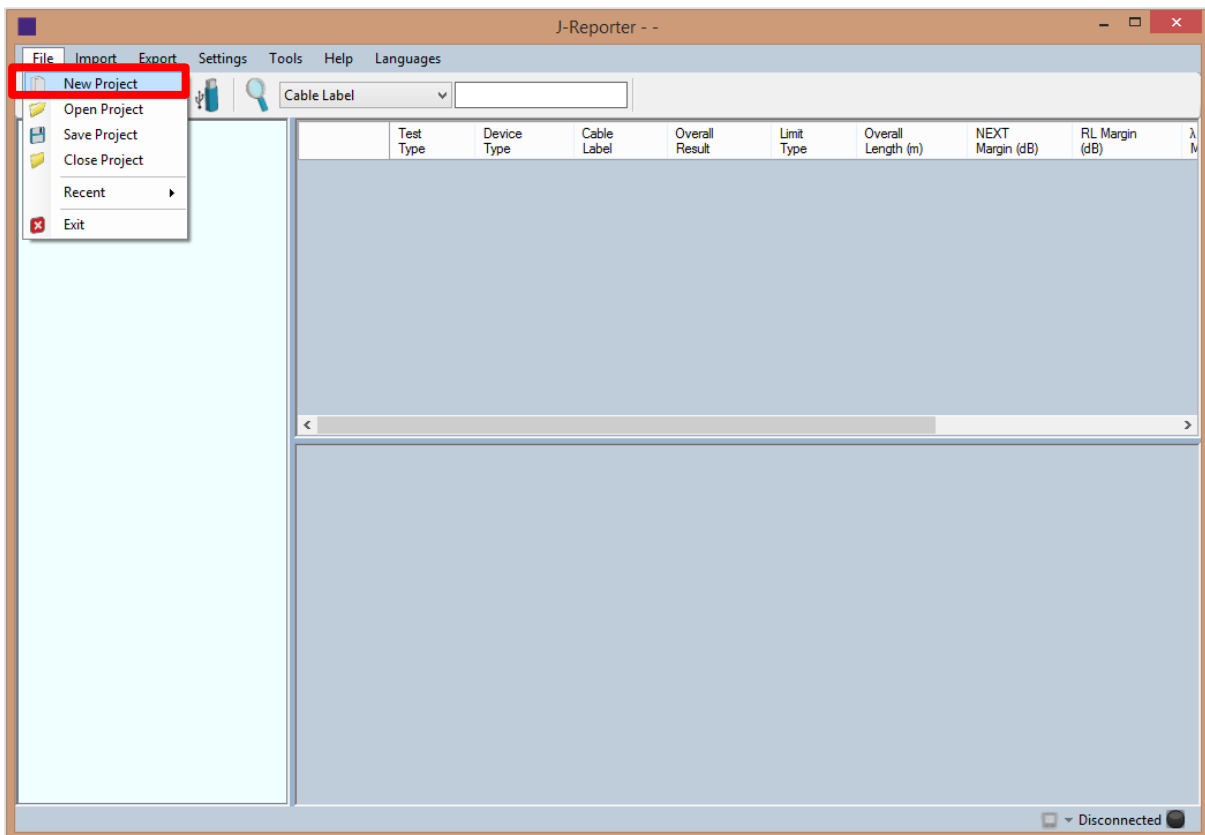
### USB Flash Drive

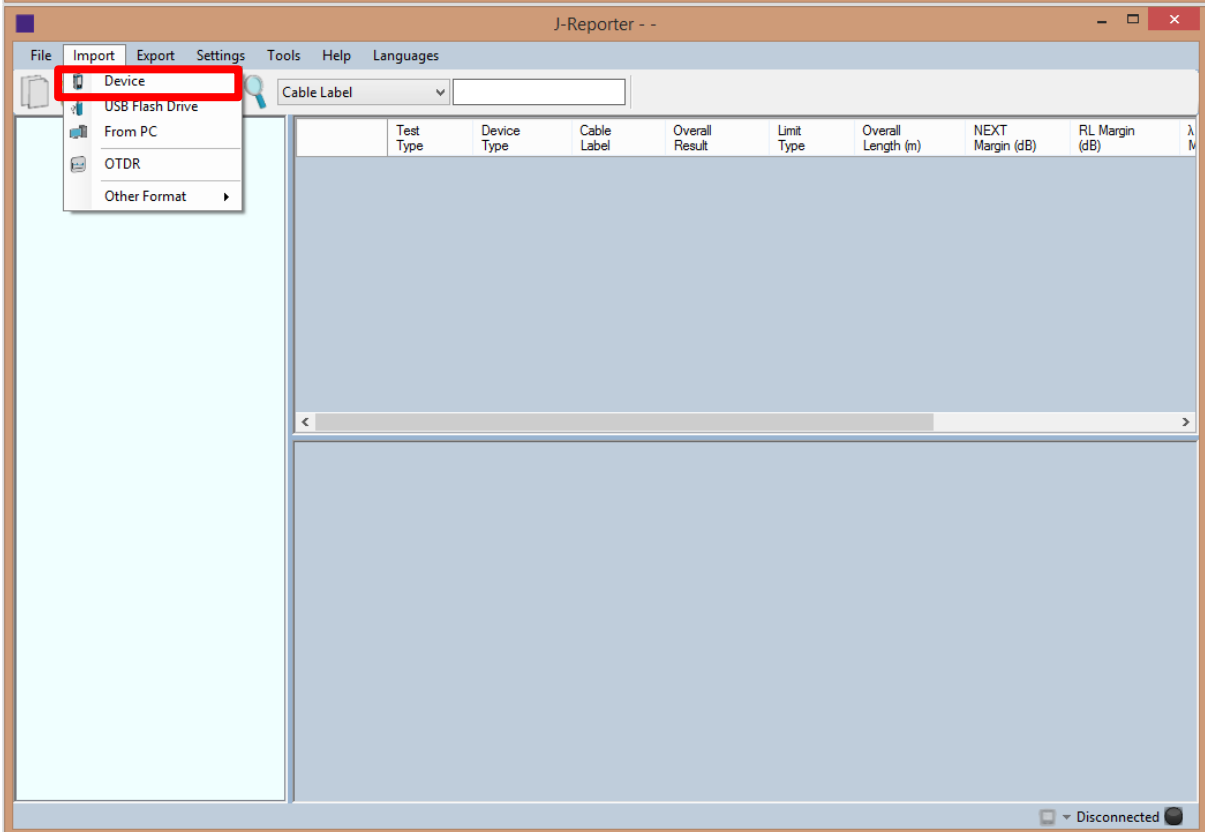
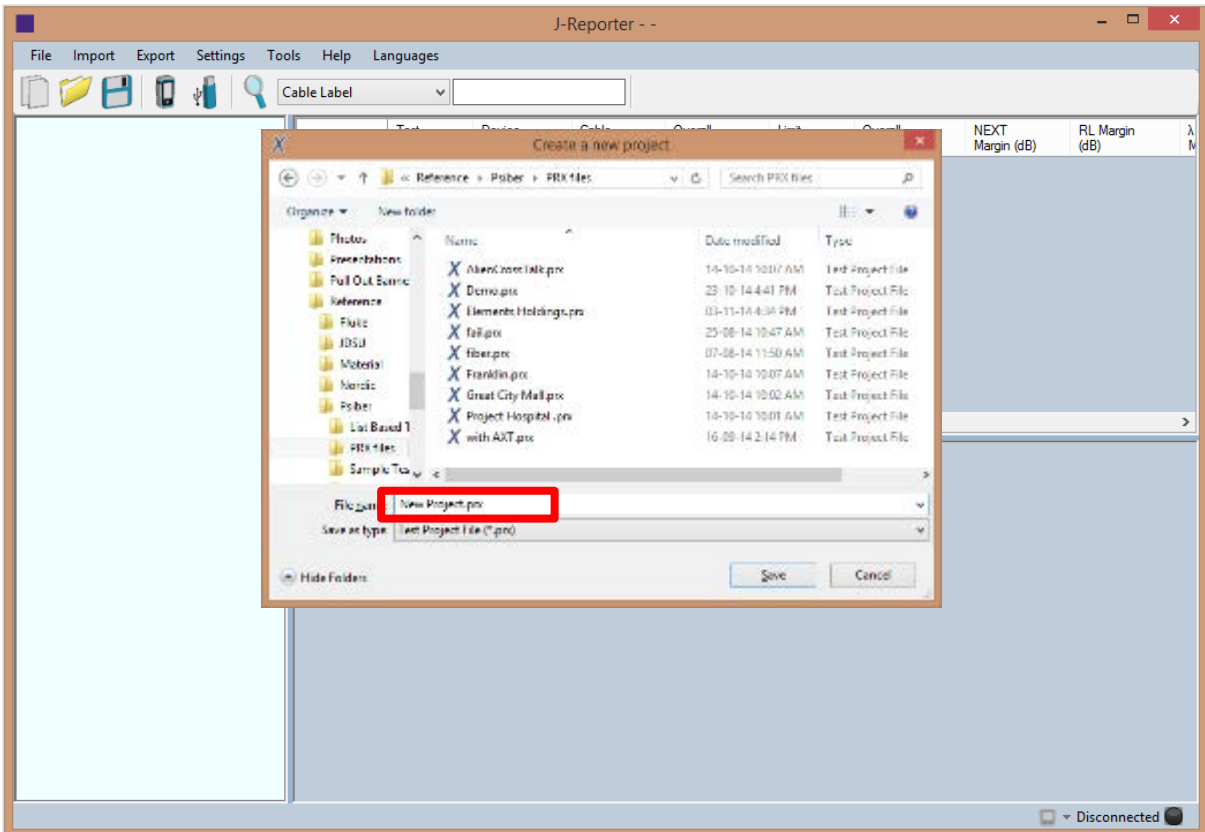
1. Insert USB flash drive to USB port on Certifier.
2. Device will automatically detect flash drive.
3. Otherwise, press the "SETUP" button > System Settings 2 > Storage > USB
4. Select "Test Results".
5. Click "OK" to proceed.

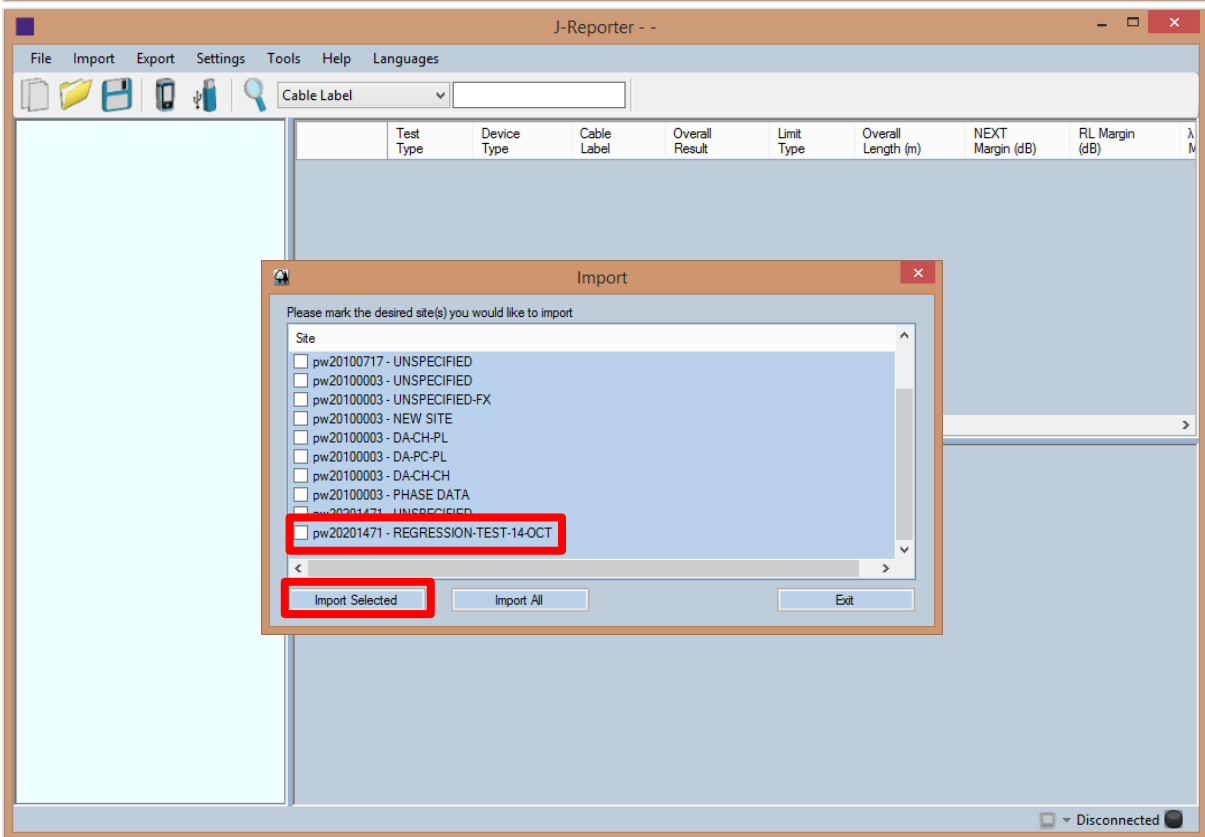
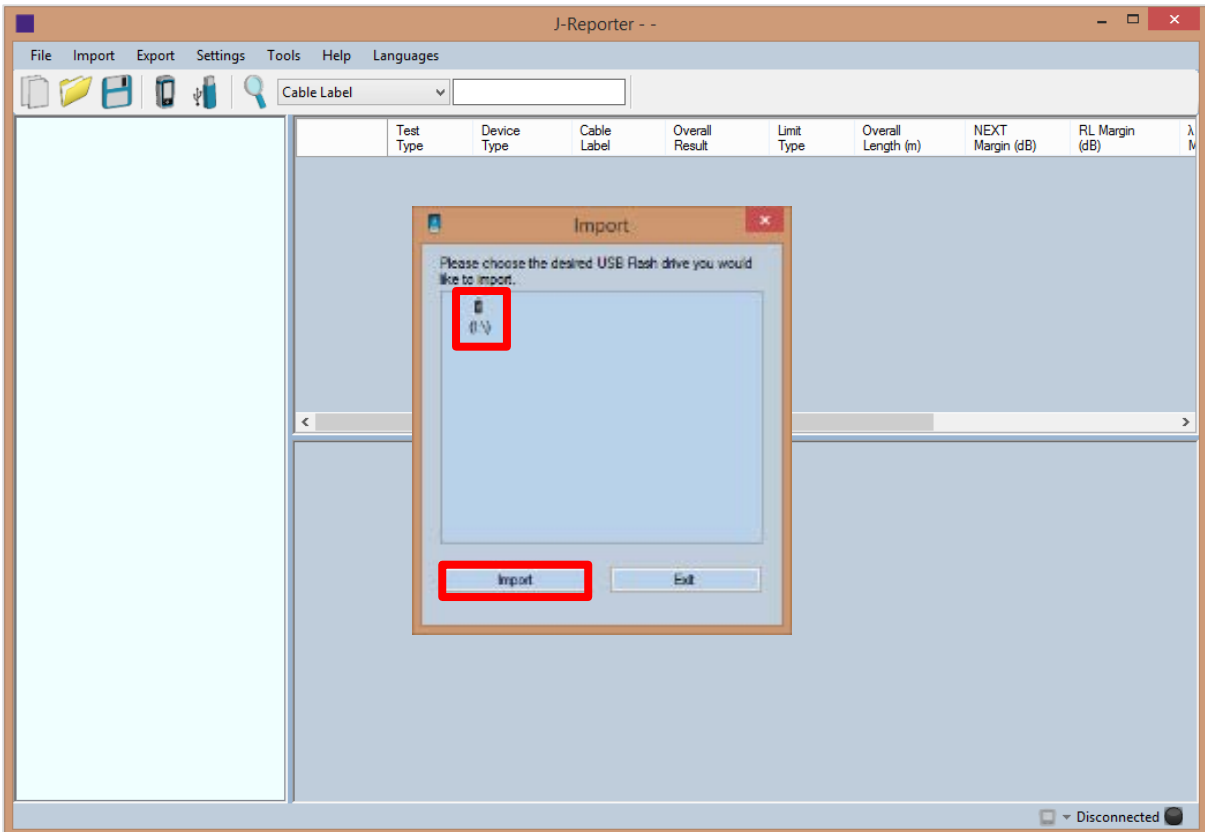


6. Launch J-Report software.
7. Go to File > Create New Project to create new project space.

8. Go to Import > USB Flash Drive and select the flash drive. Click "Import".
9. Select database and click "Import Selected" to import or click "Import All" for all databases.







The screenshot shows the J-Reporter software interface. The main window displays a table of test results for 11 records. The table columns are: Test Type, Device Type, Cable Label, Overall Result, Limit Type, Overall Length (m), NEXT Margin (dB), and RL M (dB). Record 1 is selected, and its details are shown in the Summary and Overall Result panels below the table.

	Test Type	Device Type	Cable Label	Overall Result	Limit Type	Overall Length (m)	NEXT Margin (dB)	RL M (dB)
1	Copper	Wx4500	A1	✓	TIA-PatchCord Cat6A 2m	1.9	4.2	2.7
2	Copper	Wx4500	A-2	✗	TIA-PatchCord Cat6 2m	2	-6.8	0.6
3	Copper	Wx4500	A-3	✗	COAX 2GHz 100m	84.8	12.4	-24.7
4	Copper	Wx4500	A-4	✗	COAX 2GHz 100m	84.7	13.8	-23.7
5	Copper	Wx4500	A-10	✓	TIA 2GHz Series-6 46m	0.1	99.0	29.6
6	Copper	Wx4500	A-11	✓	TIA 2GHz Series-6 46m	0.1	99.0	29.6
7	Copper	Wx4500	A-12	✓	TIA 2GHz Series-6 46m	0.1	99.0	29.6
8	Copper	Wx4500	A-5	✗	COAX 2GHz 100m	102.2	99.0	1.8
9	Copper	Wx4500	A-13	✗	TIA 2GHz Series-6 46m	199.6	99.0	23.5
10	Copper	Wx4500	A-6	✗	COAX 2GHz 200m	201.3	99.0	24.6
11	Copper	Wx4500	A-7	✗	TIA 1GHz Series-11 100m	201.3	99.0	25.2

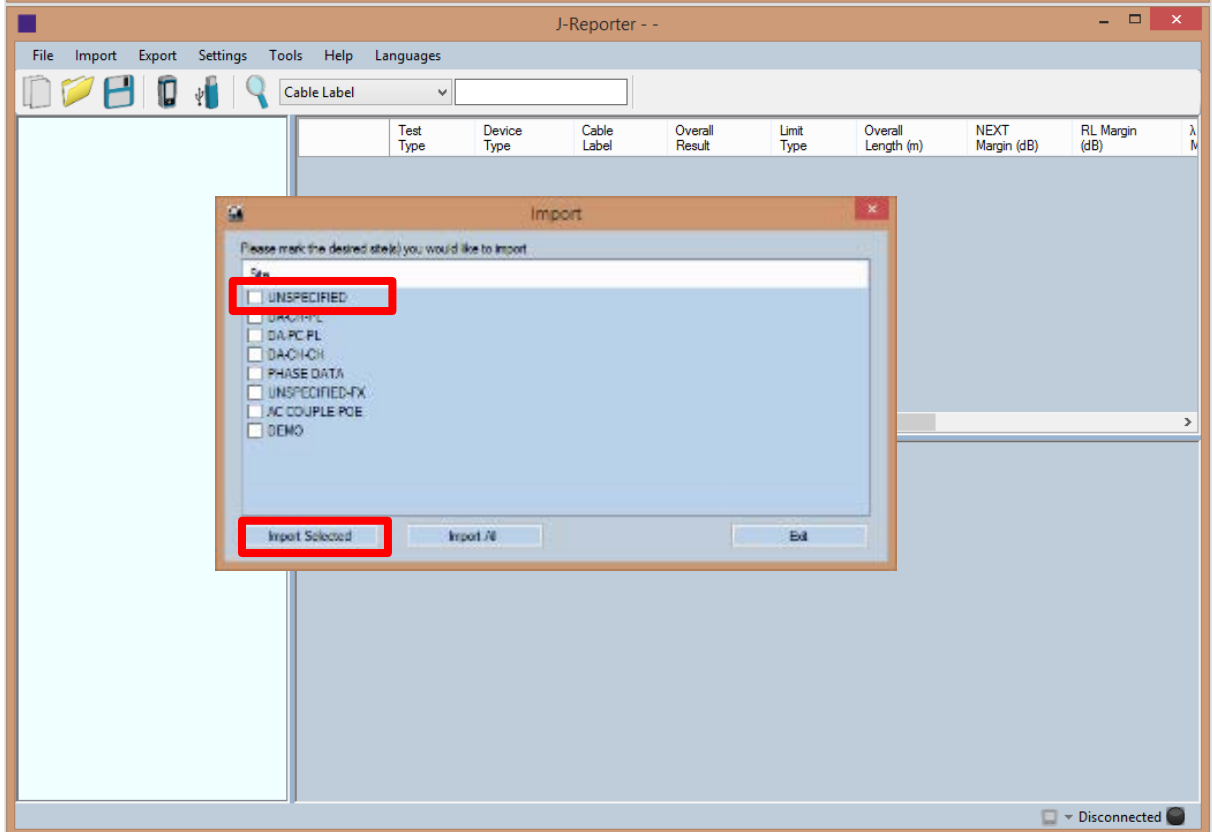
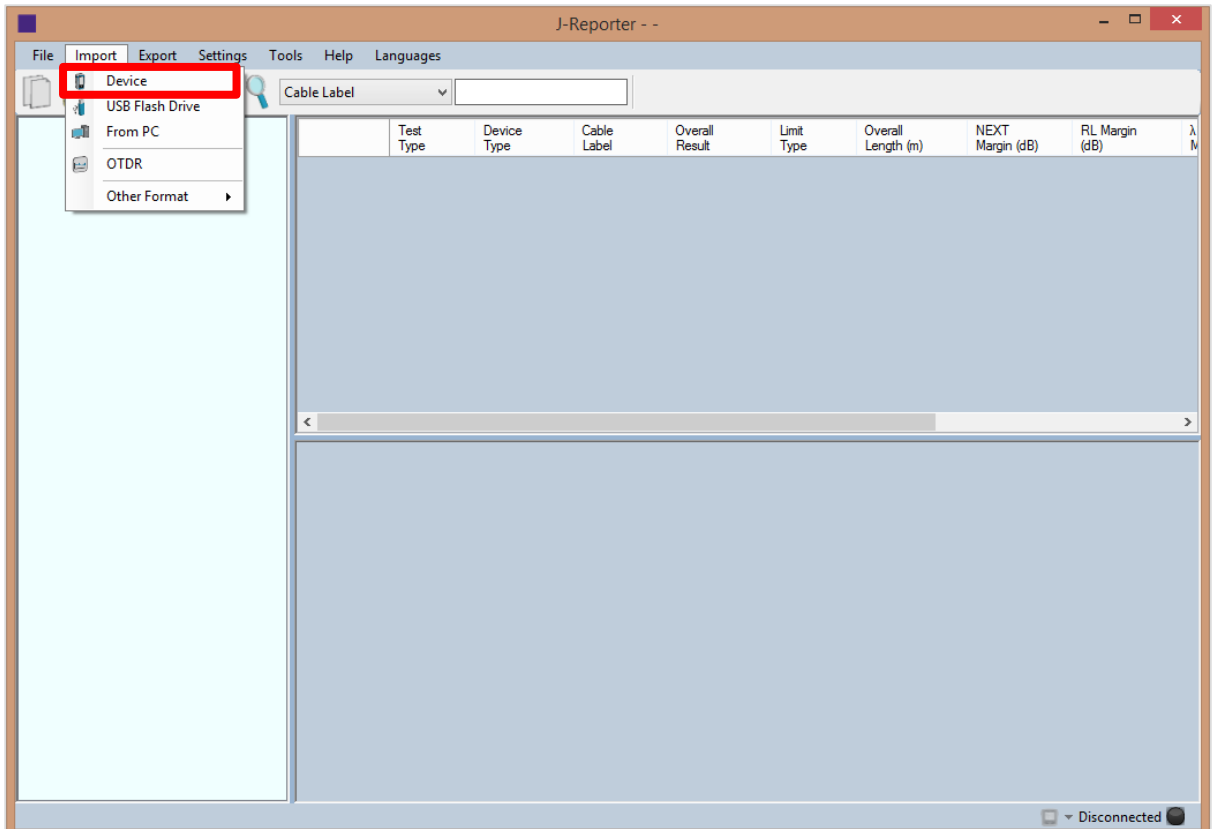
  

Summary		Overall Result	
Local Ser. No.	pw20201471	Measurement	Value/Margin
Remote Ser. No.	pw20201472	Length (m)	1.9
Cable Manufacturer	Generic UTP	Delay (ns)	11.0
Cable Name	CAT 6A UTP	Cable NVP (%)	68
Cable Type	UTP	Resistance (Ohms)	0.0
Connector Manufacturer	Un-Shielded Connector	Insertion Loss (dB)	0.3
Connector Name	UTP Mod Jack 6A	Return Loss (dB)	2.7
Connector Type	UnShielded	NEXT (dB)	4.2
Limit	TIA-PatchCord Cat6A 2m	PS-NEXT (dB)	12.5
<b>A1</b>		ACR-F (dB)	6.3
		PS-ACRF (dB)	9.5

Total Records: 18 Selected Record No.: 1

**Direct connection via USB cable**

1. Connect Certifier to your PC using a mini USB cable.
2. Launch J-Report software.
3. Go to File > Create New Project to create new project space.
4. Go to Import > Device.
5. Select database and click "Import Selected" to import or click "Import All" for all databases.



J-Reporter - New Project

File Import Export Settings Tools Help Languages

Cable Label

	Test Type	Device Type	Cable Label	Overall Result	Limit Type	Overall Length (m)	NEXT Margin (dB)
1	Copper	Wx4500	blk-flr0-tel1-rck1-pnl-0-por1	✓	TIA - Cat 6A Channel	84	3.2
2	Copper	Wx4500	blk-flr0-tel1-rck1-pnl-2-por1	✓	TIA - Cat 6A Channel	4	3.5
3	Copper	Wx4500	blk-flr0-tel1-rck2-pnl-0-por1	✗	TIA - Cat 6A Channel	4	3.5
4	Copper	Wx4500	blk-flr0-tel1-rck2-pnl-2-por1	✓	TIA - Cat 6A Channel	84	3.4
5	Copper	Wx4500	PR.BL#A.A.X.Z.A	✓	TIA - Cat 6A Channel	1.9	13.4
6	Copper	Wx4500	PRBL#A.A.Y.Z.A	✓	TIA - Cat 6A Channel	1.9	14.7
7	Copper	Wx4500	PRBL#A.A.Z.Z.A	✓	TIA - Cat 6A Channel	2	12.4
8	Copper	Wx4500	A-2	✓	TIA - Cat 6A Channel	2	15.7
9	Copper	Wx4500	A-1	✓	TIA - Cat 6A Channel	2	14.6
10	Copper	Wx4500	A-3	✓	TIA - Cat 6A Channel	2	11.8
11	Copper	Wx4500	None	✓	TIA - Cat 6A Channel	2	14.0

**Summary**

Local Ser. No. pw20100003

Remote Ser. No.

Cable Manufacturer Generic UTP

Cable Name CAT 6A UTP

Cable Type UTP

Connector Manufacturer Un-Shielded Connector

Connector Name UTP Mod Jack 6A

Connector Type UnShielded

Limit TIA - Cat 6A Channel

**blk-flr0-tel1-rck1-pnl-0-por1**

**Overall Result**

Measurement	Value/Margin
Length (m)	84
Delay (ns)	428.0
Cable NVP (%)	68
Resistance (Ohms)	15.1
Insertion Loss (dB)	37.4
Return Loss (dB)	7.9
NEXT (dB)	3.2
PS-NEXT (dB)	5.7
ACR-F (dB)	15.2
PS-ACRF (dB)	16.5













Total Records: 14 Selected Record No.: 1











Disconnected

Refer *User Manual – J-Report* for more information on how to use the software.



## Appendix A: Icons Glossary

 <p>Add – Adds a site, operator or customised cable, connector to the database.</p>	 <p>Retest – Performs an AUTOTEST on selected result on List-Based Testing.</p>	 <p>Back – Returns to previous screen. Unsaved options will be discarded.</p>
 <p>Cancel – Discards option.</p>	 <p>Delete – Deletes a site, operator or customised cable, connector from the database.</p>	 <p>Details – View selected result.</p>
 <p>Manage – Enables “Rename” and “Select all” option.</p>	 <p>Format, Reset – Performs non-reversible setting/data restoration to factory defaults.</p>	 <p>Forward – Proceed to the next screen.</p>
 <p>Device info – Displays device firmware build information.</p>	 <p>Okay – Confirms and saves current option.</p>	 <p>Rename – Renames saved test result in the DATA menu.</p>

 <p>Restart – Restarts current procedure.</p>	 <p>Save – Saves current test result. Icon will disappear after a successful save.</p>	 <p>USB – Reads USB flash drive to perform upgrade firmware, test result export or custom limit and label list import</p>
 <p>Select all – Selects all data on screen.</p>	 <p>Next pair – View next pair of plots of the current result.</p>	 <p>Fibermap – Displays mapping of fiber being tested.</p>
 <p>MPO chart, grid – Toggles between displaying of power loss in bar chart or grid format for fiber testing.</p>	 <p>Scope live, test – Toggles between 'Live' and 'Test' mode when inspecting a SM/MM fiber with the inspection scope.</p>	 <p>Set Reference – Performs result referencing between the Local and Remote units.</p>
 <p>Transmit ON/OFF – Toggles between enabling and disabling of light source on the Remote unit.</p>		



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