Frequency tests

- Tests included are: **VF/AC Balance, WB Balance, WB Attenuation, Return Loss, Load Coils, Locator Tone, TX/RX Tone** and **RX Tone with FED**. Select an icon to run a test, which then displays pass/fail status and detailed results (except locator tone).
- **WB Balance, WB Attenuation, Return Loss Sweep, Load Coils**, and **RX Multiple Tone with FED** display results in graphical format. For **WB Balance**, you can view the graph in portrait/landscape mode. The **Select Graph** button opens a new selection of function keys which allow you to maneuver the graph.
- **Threshold Settings** can be set within each test that provide a pass/fail status.
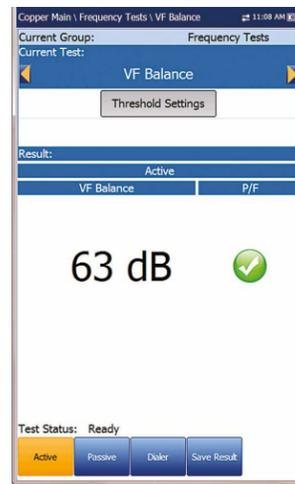
TDR

The **TDR** test locates cable faults and displays the reflections and their distances, in text and graphical measurements, so that you can find and resolve faults. Graphs can be displayed in either **Portrait** or **Landscape** mode, and a **Cursor/Marker** can be independently selected displaying the distance Δ (Delta) value between them on the top-center of the graph.
There are 3 modes of operation:

- **Auto TDR** automatically determines the length of the cable, finds the nearest significant event, and configures the parameters, updating results in real time, until you stop the test. **Variable Gain** automatically increases the amplitude gain as distance increases on the graph. Options are: **Disabled/Enabled** or **Disabled/Enabled with Auto Scale.**
- Manual TDR does not automate any function or settings and gives you full control over TDR parameters such as **Range, Gain, VOP**, and **Pulse Width;** also **Current Trace**, which is only available in this mode.
- **xTalk** (crosstalk) **TDR** test allows you to detect and isolate split pairs or electrical dissimilarities between tip (A) and ring (B) copper wires which may be causing service disruptions. The test transmits on pair one and receives on pair two to locate the split pairs. A hookup diagram pops up at the start of the test, showing you how to connect your cables.
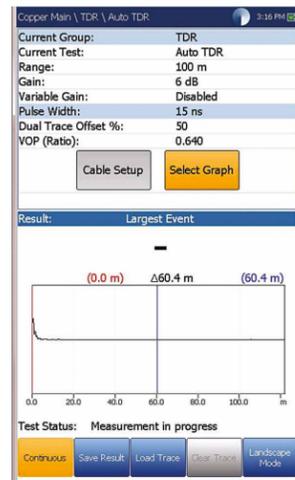
RFL

- **Single Pair** test locates resistive faults between T-G/A-E, or R-G/B-E.
- Connect the strap to the far end of the wires connected to T/A and R/B.
- Separate Good Pair test determines the distance to a short, ground, or battery cross in a faulty cable pair using a separate good cable pair.
- Connect a first strap to the far ends of the wires connected to T1/A1 and T/A, and a second strap to the far ends of the wires connected to T/A and R/B.
- **RFL-K-Test** locates faults on both conductors of one pair; specialized for detecting double faults. One of the faults must be greater in resistance than the fault on the other pair. When FED is enabled, you can turn on Repeat Mode.

Auto test

The **POTS Auto Test Summary** page displays detailed results of the loop current, power influence and voice frequency measurement values, pass/fail status, and parameters of the **POTS Auto Test**.

- **Threshold Settings** button allows you to set values for Loop DC Current, Loss, Power Influence, VF Noise and VF/AC Balance.

The **User Auto Test Summary** page displays the overall status of the tests selected.

- **Test Selection** button allows you to select the test types to include.
- Results are displayed for the following test groups: Multimeter, Noise, Frequency, TDR and DRP. Saved Results can be uploaded to an FTP site or USB.
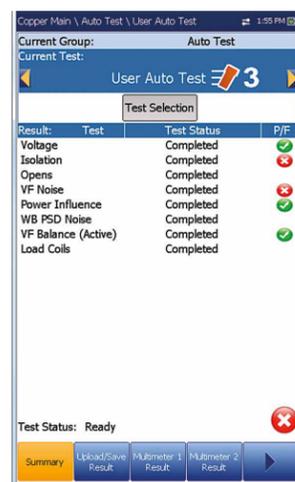
System settings

- **Display and Language** provides the setup for backlight, information on the title bar, language choice, **Touchscreen Calibration** and enabling screenshots. The **Remote Display** tab allows you to connect the 6100-Cu to your computer remotely.
- **Date and Time** sets the date, time, their formats and time zone.
- **Battery Info** displays battery status and power schemes including **Power Save Mode**.
- **Software Options** lists all the **Configured Options** present on the unit.
- **Information** shows hardware/software/product information.
- **Upload Setup** allows you to enable uploading to an FTP server using Wi-Fi or Ethernet.

Working with the keypad

To access and modify on screen parameters:
Use the arrow keys to select an on-screen item then press ✔ .
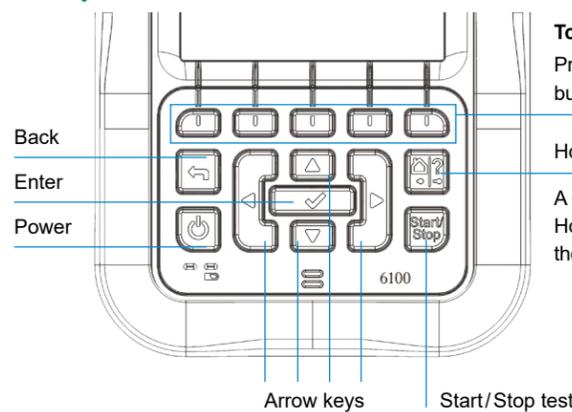
To activate function buttons:
Press the key below the desired Function button

Home and Help key

A quick press and release acts as Home. Holding for 2 or more seconds activates the onboard help or screenshot capture

Back
Enter
Power

Arrow keys   Start/Stop test

Note: Any reference to pushing buttons on the keypad can be replaced in most cases by clicking/tapping the touchscreen.

Charging the battery

Plug in the power adaptor (9 V, 1.66 A) and wait up to 6-8 hours to completely charge the battery or until the Battery Status displays 100 %.

To view the battery status:

1. From the **Home** pane, select **System Settings** and press ✔ .
2. Select the **Battery Info** icon and press ✔ . **Battery Status** indicates the current power level for the battery, as a percentage.

Visit **www.radiodetection.com**

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RADIODETECTION®   SPX

6100-Cu

Multifunction Phone Network Analyzer and Copper Tester

User guide

Radiodetection's 6100-Cu is a handheld device designed to qualify and troubleshoot copper-loop plant using pass/fail-driven automated functionalities.

Cable connections

WAN port

Primary Tip/A and Ring/B connectors   Secondary Tip/A and Ring/B connectors
Ground/Earth Terminal
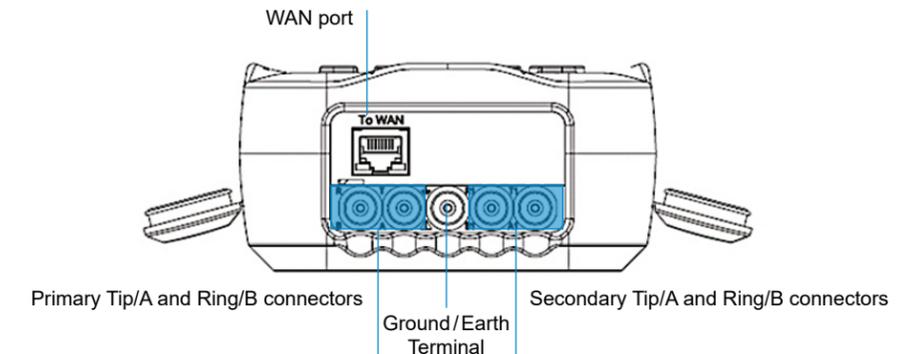
Note: To ensure optimal performance, run Test Lead Compensation on a regular basis.

Copper main menu

To access the Copper Main Menu:

1. From **Home**, select **Copper Test** and press ✔ to open the **Copper Main** menu page.
2. Navigate to each icon using the up/down left/right arrow keys on the keypad.
3. Press to run a test, bring up the sub-menu, or perform the application of the selected icon.

   - **Test Configuration** provides the utilities to setup test parameters.
   - **Setup** allows you to configure parameters common to all tests.
   - **Dialer** allows you to place POTS calls using the unit as a telephone (with the built-in speaker or external headset) and the on-screen phone keypad as a dialer. If FED option is enabled, the **Dialer** icon will appear in the Multimeter menu.
   - **FED Control** is an optional feature. If enabled, the icon appears on the **Copper Main** page. The feature tells the test set to detect and control the Teletech TS125 or Viavi UltraFEDTM IIB remote FED (far end device) during testing.
   - **Result Manager** allows you to view, **Upload**, **Export** and **Delete** any of your previously saved test results.

Note: System Settings can be found on the Home pane and allow you to set the parameters of the unit.

This guide is intended as a quick reference guide only. For detailed instructions, including the use of accessories, please refer to the 6100-Cu Operation manual, which is available to download from **www.radiodetection.com**.

Setting up tests

To setup the Dialer function:

1. From the **Copper Main** or **Multimeter** (if FED option enabled) menu, select **Dialer** and press ✓.
2. Set up the following parameters as needed.
   - From the **Enter Number** entry, press to open the on-screen keypad.
   - Enter phone numbers using the key pad and add them to the Phone Book by pressing the **Add to PhoneBook** function key.
   - Enter an **Entry Name** for the **Phone Number**, select the **Type** and **Add** it. The Phone Book can include a maximum of 50 groups.
   - You can also setup the **Phone Book** from the **Setup** icon, described below.
   - POTS dialing is also integrated into individual test screens to give you quick access to the manual dialer function, speed dial and last dialed lists, without exiting the current test application.
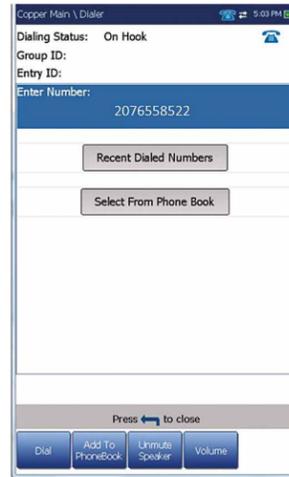
To select a test profile:

1. From the Copper Main menu, select **Test Configuration** and press ✓.
2. **Select Profile** to list and choose a profile already saved in the internal memory.
3. Select **Profile Details** to view any of the saved test threshold values and cable parameters.
4. From this function, you can also perform the following:
   - Copy a test profile to a USB from the unit's internal memory and vice versa.
   - Delete a profile from the unit (except the default profile).
   - Reset the current test setup to the factory default profile by selecting **Profile Default**.
   - Save changes made to selected profile.
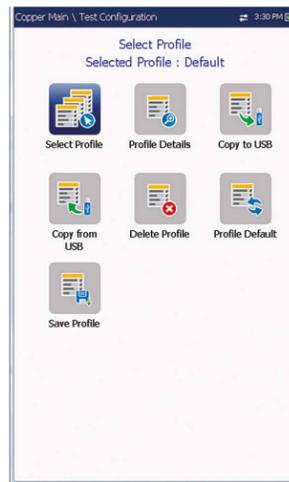
To Setup parameters common to all tests:

1. From the **Copper Main** menu, select **Setup** and press ✓.
2. Select from the following menu items to setup copper tests:
   - **Phone Book** to setup and save groups of phone numbers.
   - **Cable Book** to select, add, clone and delete a cable, as well as modify its details; and load and save a Cable Book.
   - **Application Settings** to set up and save software settings and values for the cables, using the following pages: **General, Standard, Identification, File Name,** and **Buzzer**. The General tab also allows you to configure graph-viewing modes, and Capacitance Measurement allows for 2- or 3-terminal testing.
   - **Factory Default** to revert the Phone Book and/or **Application Settings** to the factory default values.
   - **Test Lead Compensation** to overwrite the current test lead characteristics and start resistance and capacitance compensation based on the cable temperature of the test lead.
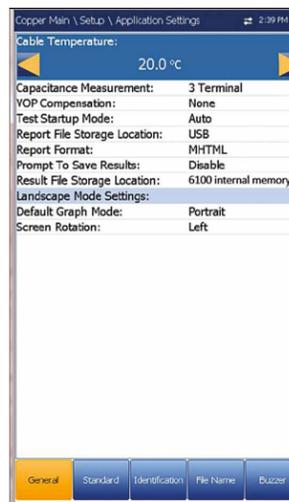
Running tests

To run a test:

From the Copper Main pane, select the desired test icon and sub-menu icon in the case of **Multimeter, Noise** and **Frequency Tests, TDR** and **Auto Test,** and press ✓. The test automatically runs if the **Setup/Application Settings – Test Startup Mode** is set to **Auto**. If not, press Start/Stop key to run the test.

Saving test results

You can save test results to an internal memory file or export results to an HTML, MHTML, or XML report using a USB key, during or after a test. Each copper test includes a **Save Result** tab opening a new screen to do so.

Note: User Auto Test includes an Upload/Save Result tab which adds an Upload & Save button, and allows you to upload saved Auto Test results to an FTP site or USB.

To set parameter values and save or export results:

1. Press the up/down arrows to select the desired parameter.
2. Press the left/right arrow keys to view and select the options

   OR

   Press ✓ to open the on-screen keyboard to enter or edit a value.
3. Press the up/down left/right arrows to navigate the on-screen keyboard.
4. Select the desired function key to complete your selection.
5. **Select Result File** to save your results to an existing **File Name** or **Upload & Save** your **User AutoTest** results to an FTP site or USB

   OR

   Select **Save** or **Export** buttons and press ✓ to confirm your selection. The file format for exporting results is **HTML, MHTML,** or **XML**.
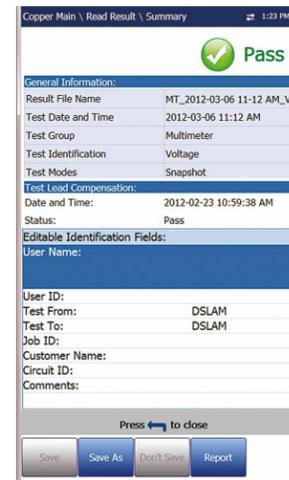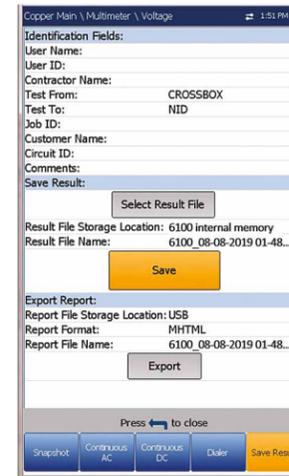
Reading saved test results

To read/upload/export/delete saved results:

From the **Copper Main** pane, select **Result Manager**.

1. **Results Summary tab** allows you to select a **File Name** and view the results from a list of files previously saved in the **6100 internal memory** or a **USB**.
2. From the selected results sub-menu, you can view the following:
   - **Summary** for test status, general and identification information.
   - **Result Details** for measured results for each lead combination and cable parameters of the test.
   - **Profile Details** to view thresholds and setup parameters of the test.
   - **Phone Book** for the phone entry dialed during the test. If the dialer was not used during the test, the Phone Book icon will not appear.
   - **FED Details** displays the **FED** (far end device) **State** value for the test.
   - Upload tab initializes a Wi-Fi or Ethernet connection and allows you to upload previously saved User Auto Test files to an **FTP** site or **USB**. The **Delete** button is for deleting selected XML files in internal memory.
   - **Export** tab allows you to select a **File Name** or **All** files previously saved and export the results in the following Report Format: **HTML, MHTML,** or **XML**.
   - **Delete tab** allows you to delete a selected **File Name** or **All** files saved in the **6100 internal memory** only.

Viewing Test Results

Once a test has run, the results obtained are displayed on the screen.

Multimeter

- Tests included are: **Voltage, Current, Resistance/Shorts, Resistive Balance, Isolation, Capacitance/Opens, Station Ground** and **Stressed Balance** (if option enabled). Select an icon to run a test, which will then display pass/fail status and detailed test results.
- The **Dialer** can be accessed from the **Copper Main** or **Multimeter** (if FED option enabled) menu, and is integrated into all tests to give you quick access to the manual dialer function, speed dial and last dialed lists, without exiting the current test application.
- **Threshold Settings** can be set within each test.
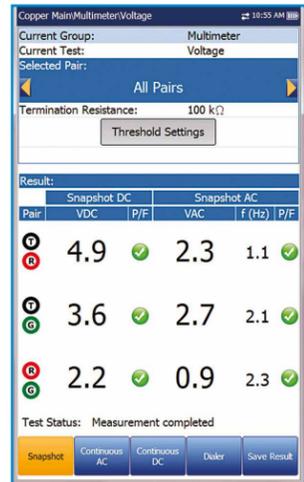
Pair Detective

The **Pair Detective** test (a SmartR feature) consists of a series of ten consecutive individual tests and applies a high voltage to the line during isolation testing.

Note: Before proceeding with this test, ensure the line is inactive.

- **Summary** displays the pass/fail status, the detected device, DC-Voltage/Current and Isolation for each selected inactive wire pair, as well as other detailed results.
- **Isolation** results display a five-level indicator of the measured isolation.
- **Isolation Soak Time, Cable Setup** and **Threshold Settings** can be set up from the **Summary** page.
- **Multimeter** tab displays **DC Voltage/Current** and **Capacitance** results, and Isolation which displays Resistance and a **Soak Counter** for each wire Pair.
- **TDR** tab integrates a live TDR test and displays the distance to the most significant reflection, in text and graphical measurements.
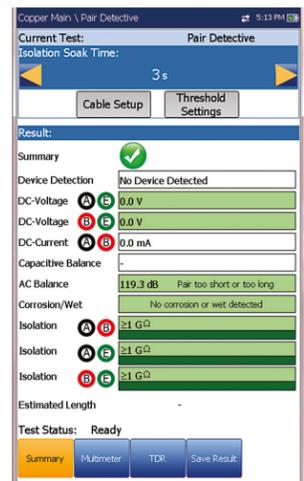
FaultMapper

The **FaultMapper** test (a SmartR feature) locates bridged taps, shorts, grounds, and opens, and displays the cable faults in text and graphical format.

The **TDR** tab provides a shortcut to the TDR test.

Noise Tests

- Tests included are: **VF Noise, Power Influence, VF Impulse Noise, WB PSD Noise, WB Impulse Noise** and **NEXT**. Select an icon to run a test, which will then display pass/fail status and detailed test results.
- **Power Influence, WB PSD Noise, WB Impulse Noise Histogram** and **NEXT Spectrum** display results in graphical format. For **WB PSD Noise**, you can view the graph in either portrait or landscape mode.
- The **Select Graph** button opens a new selection of function keys which allow you to maneuver the graph.
- The **Dialer** tab is integrated into all tests to give you quick access to the manual dialer function, speed dial and last dialed lists, without exiting the current test application.
- **Threshold Settings** can be set within each test.