

AirCheck™ G2 Wireless Tester

User Manual

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AirCheck™ G2 Wireless Tester

1. INTRODUCTION

The AirCheck™ G2 Wireless Tester is a portable tool for verifying network availability and performance and troubleshooting connection issues. Networking and IT professionals can, for example, use the AirCheck G2 Tester to ensure that 802.11 wireless LANs are available to mobile users or examine channel usage to identify the source of problems.

The AirCheck G2 Tester operates on 802.11b/g/n/ax networks in the 2.4-GHz band and 802.11a/n/ac/ax networks in the 5-GHz band. It offers the following test types:

- The high-level discovery screens for **Networks, Access Points, Clients, and Interferers** show an overview of the devices that AirCheck G2 has detected on your network.
- From the discovery screens, you can touch any network or device's name to view its detailed connections and measurements.
- The **Channels** utilization screen allows you to examine in-depth the usage for all channels in your network.
- **AutoTest** provides a comprehensive summary of your Wi-Fi **Air Quality** and **Network Quality** at the current time and location.

- The wired **Ethernet Test** measures PoE voltage and link speed and indicates whether the Tester can connect to network and user-defined targets.
- The **Locate** function helps you physically find access points, clients, and interferers.
- Network **Roaming** and AP **Range** tests define the boundaries of your network.

In addition to the AirCheck G2 Tester hand-held tool, the Link-Live Cloud Service and AirCheck G2 Manager PC application provide managing, organizing, and documenting capabilities for your Tester and test data.

Link-Live Cloud Service

The Link-Live Cloud Service is a free, online system for viewing, tracking, and organizing your AirCheck G2 test results, which are automatically uploaded to Link-Live once configured. To start, create a user account at [Link-Live.com](https://link-live.com).

See “Introduction to Link-Live Cloud Service,” page 47.

AirCheck G2 Manager

The AirCheck™ G2 Manager PC application allows you to configure Tester Profiles; transfer, store, organize, and report test results; and update your AirCheck G2 Tester software. For example, you can use AirCheck G2 Manager to compare information from different test sessions to see changes in a wireless LAN and generate reports based on test data.

Download the AirCheck G2 Manager software from Link-Live at <https://Link-Live.com/downloads>.

See “Getting Started with the AirCheck G2 Manager PC Application,” page 48.

About this Manual

This User Manual covers all AirCheck G2 Tester functionality, with additional details not covered in the embedded Help on the Tester.

It is designed to be easy to navigate on a screen, with Adobe PDF Bookmarks to the left, and [blue hyperlinks](#) that point to content in other parts of the manual. [Blue underlined links](#) go to external resources on the internet.

Register Your Product

Registering your product with NetAlly gives you access to valuable information on product updates, troubleshooting procedures, and other services. To register, fill out the online form on the NetAlly website at NetAlly.com/Registration.

The NetAlly Website

Our website at [NetAlly.com/products/AirCheck](https://www.netally.com/products/AirCheck) provides additional documentation, release notes, software updates, and other resources.

For technical assistance, you can also visit [NetAlly.com/Support](https://www.netally.com/Support).




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Safety Information

Table 1 gives descriptions of the safety symbols used on the Tester and in this manual.

Table 1. Safety Symbols

	Warning or Caution: Risk of damage to or destruction of equipment or software.
	Warning: Risk of electrical shock.
	<p>This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.</p> <p>Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 “Monitoring and Control Instrumentation” product. Do not dispose of this product as unsorted municipal waste.</p>

 **Warning** 

Read all safety information before using this Product.

Carefully read all instructions.

Use the Product only as specified, or the protection supplied by the Product can be compromised.

Use only manufacturer approved power adapters to charge the battery.

Do not use the Product around explosive gas, vapor, or in damp or wet environments.

Examine the case before you use the Product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.

Do not operate the Product with covers removed or the case open. Hazardous voltage exposure is possible if connected to a PoE source.

Batteries contain hazardous chemicals that can cause burns or explode. If exposure to chemicals occurs, clean with water and get medical aid.

Do not short the battery terminals together.

Do not disassemble or crush battery cells and battery packs. Do not put battery cells and battery packs near heat or fire. Do not put in sunlight.

 **Caution** 

If you use an external antenna, use only the antenna made for the AirCheck G2 Tester. The Tester may not operate correctly with other antennas and may violate local regulations.

Any adjustment to the device's controls or operation must not violate your local regulations on low-power-radio-wave emitting devices.

Any adjustments to the Product should be performed by a technician with expertise on radio frequency devices maintenance.

Do not attempt to open the unit or replace any internal device components (ICs, transistors, etc.), which may lead to violation of local regulations as well as void the Product warranty.

U-NII devices operating in the 5.25-5.35 GHz and 5.47-5.725 GHz band, without radar detection are restricted to use indoors.

Package Contents

The AirCheck G2 Wireless Tester comes with the accessories in the list below. If something is damaged or missing, tell the dealer where you purchased the product.

- AirCheck G2 with internal rechargeable battery
- AC adapter
- USB cable for connecting the Tester to a PC
- Carrying case
- Quick Start Guide
- Compliance Document

Internal Battery Charging and Life

Charge the battery for 3 hours before you use it for the first time. When the Tester is off, the battery charges in approximately 7 hours. However, you can use the Tester while you charge the battery.

To charge the battery, connect the AC adapter to the **Charging Port**, shown in [Figure 1](#) on page 6.

The battery life is approximately 4.5 hours during typical operation.

The battery icon in the upper-right corner of the screen visually displays the amount of charge remaining before the internal battery is completely drained:



The battery is fully or almost fully charged.



The battery life is low. Connect the ac adapter to the charging port to charge the battery and ensure the Tester continues to operate.



The ac adapter is connected to the charging port.

NOTE: The battery will not charge if the internal temperature of the Tester is above 122°F (50°C).

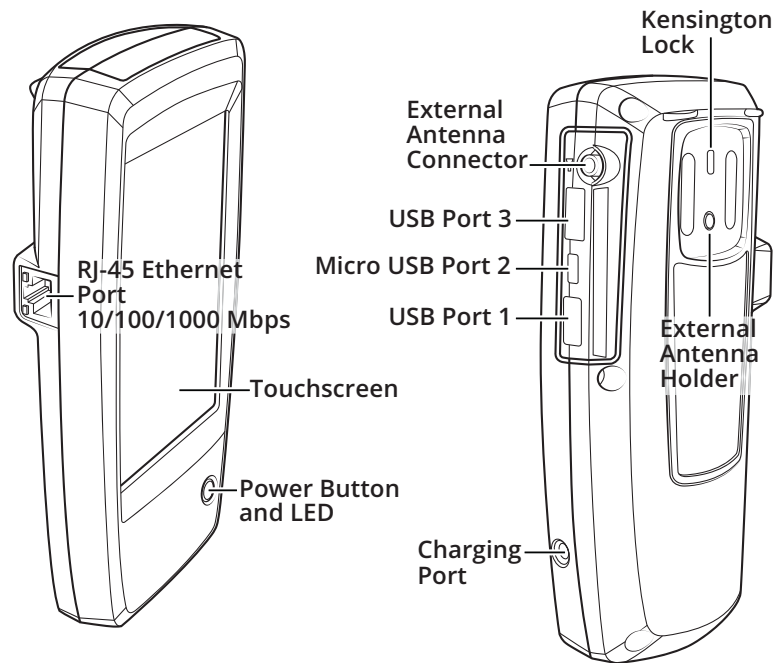
2. AIRCHECK G2 TESTER PHYSICAL FEATURES

Power Button: Turns the Tester unit on or off.

- ❑ When the Tester is off, press this button to power on.
- ❑ When the Tester is on, press for one second to shut it down.
- ❑ For “hard” power off, without software shutdown, press for four seconds.

The **Power LED** glows **green** when the unit is on and glows **red** when the battery is charging but the unit is off.

Once the battery is fully charged, the LED turns off.



Charging Port: Connects with the AC adapter to charge the unit's internal battery.

External Antenna: Sold separately.

USB Port 1: For 500mA of current (any supported USB peripheral)

Micro USB Port 2: For communication with AirCheck G2 Manager over a USB Micro-to-Type-B cable

USB Port 3: For 200mA of current, e.g., thumb drives, etc.

Figure 1. AirCheck G2 Physical Features

3. THE AIRCHECK G2 HOME SCREEN

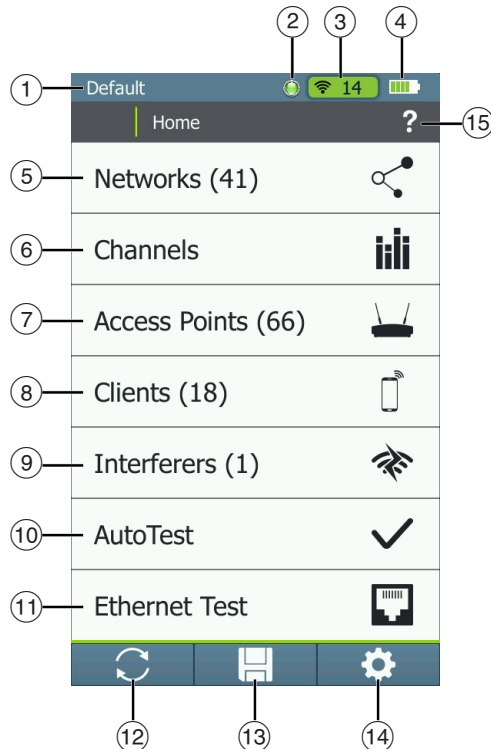



















Figure 2. AirCheck G2 Home Screen

The AirCheck G2 Wireless Tester features a full color touchscreen. Touch functions are noted in the following descriptions of the Home Screen components:

- ① **Profile Name:** This field displays the name of the Profile the Tester is currently using. The Profile is **Default** if you have not created a custom Profile. The name shows an asterisk (*) if you have changed a Profile-related setting on the Tester since you loaded or saved the Profile. **NOTE:** Touch the profile name to open the Profiles screen, where you can save, manage, load, and upload your profiles to Link-Live. [See "Using Profiles to Manage Settings and Security Credentials," page 50.](#)
- ②  This **Transmitting Indicator** appears when the Tester is actively transmitting packet data.
- ③  The **Channel Indicator** Shows the Wi-Fi channel that AirCheck G2 is scanning in real time.
- ④  The **Battery Life Indicator** visually displays the amount of charge remaining.
- ⑤ **Networks (#)** : This function discovers wireless LANs and displays the number of networks discovered in parentheses. Touch this row to view the discovered Networks list screen. [See "Discovering Networks and Access Points," page 9.](#)


- ⑥ **Channels** : This function illustrates usage of WLAN channels. Touch to view the **Channel Utilization** screen. See [“Viewing Channel Usage,” page 21.](#)
- ⑦ **Access Points (#)** : This function discovers access points and displays the number discovered. Touch to view the discovered **Access Points** list. See [“Discovering Networks and Access Points,” page 9.](#)
- ⑧ **Clients (#)** : This function discovers associated and un-associated (e.g., probing) clients and displays the number discovered. Touch to view the discovered **Clients** list. See [“Discovering Clients,” page 27.](#)
- ⑨ **Interferers (#)** : This function discovers potential interfering devices. Touch to view the **Interferer Events** list screen. See [“Detecting Interferers,” page 32.](#)
- ⑩ **AutoTest** : This function automatically checks the health of your network by measuring air quality (channel usage and interference) and configured networks. Touch to begin AutoTest and open the **AutoTest** screen. See [“Using AutoTest to Diagnose Your Network Health,” page 36.](#)
- ⑪ **Ethernet Test** : This function runs a wired network test across 10/100/1000 Mbps links and verifies Power over Ethernet (PoE). Touch this row to begin an Ethernet test and open the **Ethernet Test** screen. See [“Testing Ethernet for Access Point Backhaul,” page 45.](#)
- ⑫  **Refresh:** Touch this icon to clear the current results and restart the discovery process.
- Caution**
- Touching the  **Refresh** button will erase all unsaved results.
- ⑬  **Save:** Touch this icon to save your current discovery and test results to a session file. See [“Saving Session Files and Packet Captures,” page 86.](#)
- ⑭  **Settings:** Touch this icon to manage your Tester’s settings and files. See [“All AirCheck G2 Settings,” page 98.](#)
- ⑮  **Help:** Touch this icon to open the relevant Help topic for the screen.
- To save a screen capture, hold your finger on the icon for one second to save an image of the current screen to internal storage on the Tester. The Tester beeps once when a screenshot is saved. See [“Saving Screenshot Image Files,” page 91.](#)
-  Touch the **Home** button to return to the Home Screen from any other screen on the AirCheck G2 Tester.
-  Touch the **Back** button to return to the previous screen from any screen except the Home Screen.



4. DISCOVERING NETWORKS AND ACCESS POINTS

The **Networks** list and the **Access Points** list are populated with SSIDs and access points that have been discovered by the AirCheck G2 Tester in your location.

- 1 From the Home Screen, select **Networks** or **Access Points**. The Tester shows the **Networks** list (Figure 3) or **Access Points** list (Figure 7).
- 2 To see details about a network or access point, touch its row in the list to open the **Network** or **AP Details** screen.

NOTES:

- By default, the Tester hears wireless signals on both the 2.4-GHz (b/g/n/ax) and 5-GHz (a/n/ac/ax) frequency bands. To change this setting, from the Home Screen, go to  **Settings** > **802.11 Settings** > **Bands**.
- The **Networks** and **Access Points** screens automatically update with each scanning cycle.
- An SSID is in **black** text if the network (or access point) is in range.

- By default, a device row's background turns gray to indicate that a network or device has not been detected for the last four scans, or is now out of range. To change this setting, from the Home Screen, go to  **Settings** > **802.11 Settings** > **Inaudible Devices**.
- If a network name is shown as **[Hidden]**, the network does not broadcast its SSID.
- If an SSID shows in square brackets, the Tester found the hidden SSID in packets from other wireless clients.
- Colored bars that indicate the status or rating of **Signal Strength** and **Level**, **Noise**, and **SNR** are controlled by **Thresholds**, which can be configured in  **Settings**. See ["Adjusting the Test Thresholds," page 56](#).



The Networks List Screen

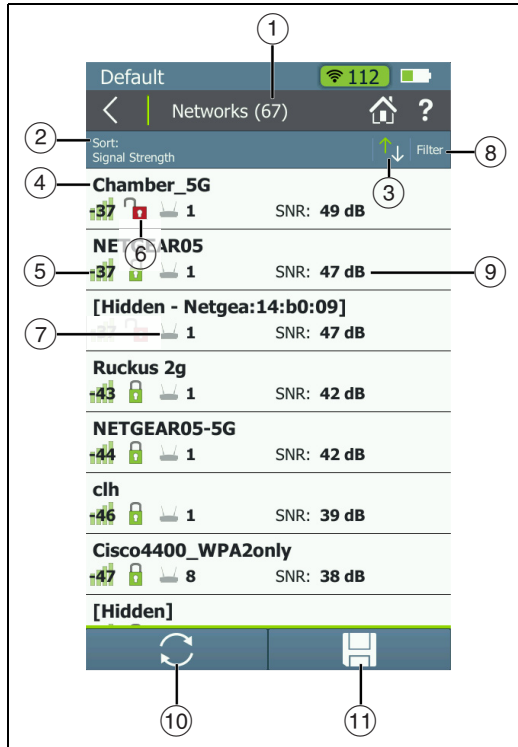



Figure 3. Networks List Screen


The **Networks** list screen provides an overview of the Wi-Fi networks that the AirCheck G2 has discovered in your environment. The networks are identified by SSID.


- ① **Networks (#):** The screen title displays the number of networks discovered by the Tester.
- ② **Sort (Option Field):** This field shows the sort option that is currently applied. In [Figure 3](#), the sort option applied is **Signal Strength**. This is the default.


Touch the **Sort:** field to change the order in which networks are listed. The value by which the list is sorted shows prominently for each network. For example, if you change to **Sort by Client Count**, the **Networks** list screen displays the number of connected **Clients** on each network (See [Figure 5](#)), instead of the **SNR**, as shown in [Figure 3](#).

- ③ **Sort Order Button:** These arrows switch the list order from ascending to descending, and vice versa.
- ④ **SSID:** Service Set Identifier; The name of the wireless network.
- ⑤ **Signal Strength Bar Graph:** The signal strength in dBm of the AP with the strongest signal strength connected to the network.
- ⑥ **Security** status of the network:
 - Red open lock: The network does not have security enabled.

 Yellow closed lock: One or more access points use WEP or Cisco LEAP security protocol. These are less secure than other protocols.


 Green closed lock: All access points use security protocols that are more secure than WEP, for example, WPA or WPA2.


 Gray closed lock: Access points on this network are using multiple security protocols.

⑦  **Access Points #:** The number displayed next to the icon is the number of access points near your location.

⑧ **Filter Button:** Touch this field to add a filter for specific network characteristics, such as SSID string, minimum signal strength, or 802.11 media type.

NOTE: You can set only one filter at a time. Once a filter is set, the **Networks** list screen re-opens. The title of the screen changes to “**Networks (X of Y)**”, such that X = the number of networks filtered, and Y = the total number of networks discovered.


 This icon appears to the right of the active filter. Touch the icon to remove the filter.

Touch the Help button  on the **Filter Networks By:** screen for more detail about each option.

⑨ **SNR:** Signal-to-Noise Ratio, a measure of signal strength relative to noise. The ratio is measured in decibels (dB). **NOTE:** For networks, the SNR of the strongest AP in the network is displayed.


This is also a variable field, which changes based on the **Sort** option currently applied. For example, if the list is sorted by **Client Count**, the number of clients connected to the network will appear in this space on the screen (as shown in [Figure 5](#)).

For **Networks**, this space can also show the **802.11 Type**, **Band**, or time since the network was **Last Seen**.

⑩  **Refresh:** Touch this icon to clear the current results and restart the current discovery process.

Caution

Touching the  **Refresh** button will erase all unsaved test results.

⑪  **Save:** Touch this button to save a session file containing the discovery and test results that have been collected since the AirCheck G2 last refreshed. See “[Saving Session Files and Packet Captures](#),” page 86.

How to: Search for Ad-Hoc networks

On the **Networks** list screen, look for networks with 0 APs and 1 or more clients. These could be Ad-Hoc Networks.

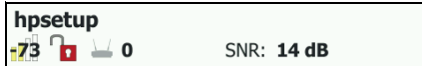


Figure 4. Possible Ad-Hoc Network

For help searching, **Sort** the **Networks** list by **Client Count** to be able to see the number of connected clients for each discovered network on the list screen. **Figure 5** shows the **Networks** list sorted by **Client Count**:

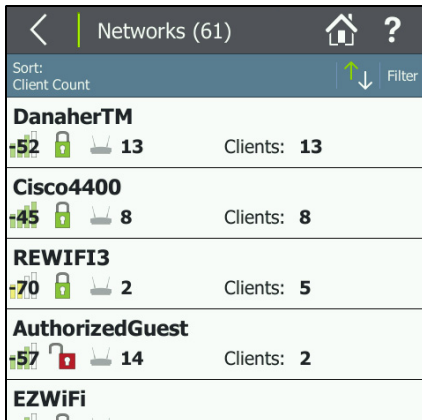


Figure 5. Networks Sorted by Client Count

The Network Details Screen

Touch any network's row on the **Networks** list screen (**Figure 3**) to open the **Network Details** screen.

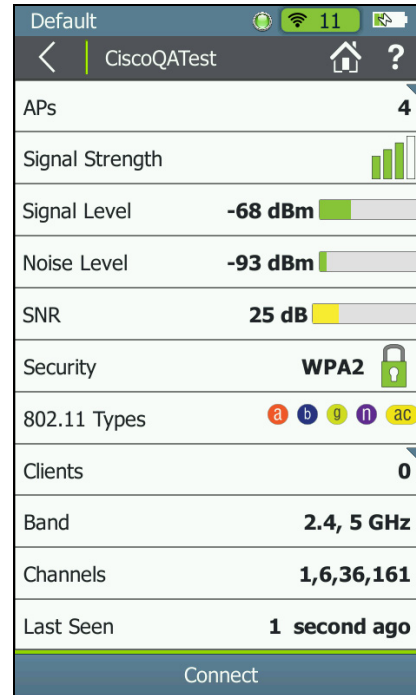




Figure 6. Network Details Screen

This triangle symbol  in the top right corner of a field indicates that you can touch the field to go to a new screen. Touch functions are explained in the following descriptions:

Screen Title: The SSID of the network shown.

APs: The number of access points detected on this network at your location.  Touch this row to open the **Access Points** list screen with the APs filtered for the selected network.


Signal Strength: The signal strength of the strongest AP on the network.


Signal Level: The signal level in dBm from the strongest AP.


Noise Level: The noise level in dBm from the environment.


SNR: Signal-to-Noise Ratio is a measure of signal strength relative to noise; an indication of signal quality for a reliable client's connection. The ratio is measured in decibels (dB).

Security status of the network:







 Red open lock: The network does not have security enabled.


 Yellow closed lock: One or more access points use WEP or Cisco LEAP security protocol. These are less secure than other protocols.

 Green closed lock: All access points use security protocols that are more secure than WEP, for example, WPA or WPA2.

 Gray closed lock: Access points on this network are using multiple security protocols.

802.11 Types: The 802.11 standards that the access points in the network use:

-  802.11a: Uses the 5-GHz band.
-  802.11b: Uses the 2.4-GHz band.
-  802.11g: Uses the 2.4-GHz band.
-  802.11n: Can be used in the 2.4 GHz or 5 GHz bands.
-  802.11ac: Uses the 5-GHz band.
-  802.11ax: Can be used in the 2.4 GHz or 5 GHz bands.

Clients: The number of Wi-Fi clients discovered on the network.  Touch this row to open the **Clients** screen, which shows all clients filtered for the selected network.

Band: The radio band used by the network: 2.4 GHz, 5 GHz, or both.

Channels: The Wi-Fi channels used by the network.

NOTES:

- For 20-MHz channels, the Tester displays the channel number.
- For 40-, 80-, and 160-MHz channels, it displays the primary channel number.


- For multiple channels, it displays all channel numbers if space permits; otherwise, it truncates to what fits, followed by "...".

Last Seen: The time since the last packet was detected from the selected network.

Connect: Touch this button to connect to the Wi-Fi network and run a **Connection** test. [See “Running a Connect to Network or Connect to AP Test,” page 60.](#)

The Access Points List Screen

Touch **Access Points** on the Home Screen to open the list of discovered APs.

NOTE: If **Group Virtual APs** is enabled in the Tester's  **Settings**, virtual APs are grouped by BSSID, and the **Access Points** list shows individual physical APs.

If the AP grouping setting is **Off**, each virtual access point is shown as a single access point.

The Tester displays an access point that supports both bands as two separate access points, regardless of AP grouping settings.

[See “802.11 Settings,” page 102.](#)

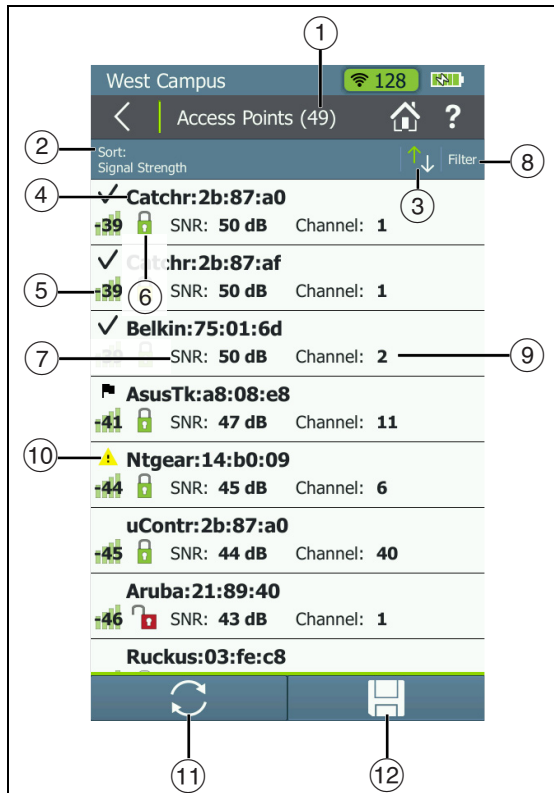


Figure 7. Access Points List

The **Access Points** list screen displays all the access points that AirCheck G2 has discovered.

① **Access Points (#):** The number of APs discovered by the Tester.

② **Sort (Option Field):** This field shows the sort option that is currently applied. In [Figure 7](#), the sort option applied is **Signal Strength**. This is the default.

Touch the **Sort** field to change the order in which access points are listed. The value by which the list is sorted shows prominently for each access point. For example, if you change to **Sort by Client Count**, the **Access Points** list screen displays the number of connected clients for each AP, instead of the **Channel**, as shown in [Figure 7](#).

③ **Sort Order Button:** These arrows switch the list order from ascending to descending, and vice versa.


④ **BSSID:** Basic Service Set Identifier; The MAC address of the access point.


⑤ **Signal Strength:** The AP's signal strength in dBm.

⑥ **Security status of the AP:**

Red open lock: The network does not have security enabled.

Yellow closed lock: One or more access points use WEP or Cisco LEAP security protocol. These are less secure than other protocols.


 Green closed lock: All access points use security protocols that are more secure than WEP, for example, WPA or WPA2.


 Gray closed lock: Access points on this network are using multiple security protocols.

⑦ **SNR:** The AP's Signal-to-Noise Ratio, a measure of signal strength relative to noise. The ratio is measured in decibels (dB).

⑧ **Filter Button:** Touch here to filter for specific AP characteristics, such as minimum signal strength, 802.11 type, or channel.

NOTE: You can set only one filter at a time. Once a filter is set, the **Access Points** screen re-opens. The title of the screen changes to "**Access Points (X of Y)**", such that X = the number of access points filtered, and Y = the total number of access points discovered.

 This icon appears to the right of the active filter. Touch the icon to remove the filter.


Touch the Help button  on the **Filter Access Points By:** screen for more detail about each option.


⑨ **Channel:** The channel used by the AP.

This is also a variable field, which changes based on the **Sort** option currently applied. For example, if the list is sorted by **Client Count**, the number of clients connected


to the access point will appear in this space on the screen.


For **Access Points**, this space can also show the **SSID**, **BSSID**, **Band**, or time since the network was **Last Seen**.

⑩ **Authorization Class Icon:** If the AP has a user-assigned authorization class saved to the current profile, an authorization indicator appears to the left of the AP name. Authorization Class can be assigned to individual APs from the AP Details screen, and the default Authorization can be set in  **Settings > 802.11 Settings**.

⑪  **Refresh:** Touch this icon to clear the current results and restart the discovery process.

Caution

Touching the  **Refresh** button will erase all unsaved test results.

⑫  **Save:** Touch this button to save a session file containing the discovery and test results that have been collected since the AirCheck G2 last refreshed. See "**Saving Session Files and Packet Captures**," page 86.

The Access Point Details Screen

Touch an Access Point's row on the **Access Points** list screen to open the **Details** screen for that AP.

When **Group Virtual APs** is turned **On**, multiple SSIDs from the same AP radio are shown and counted as one AP. If you touch one of these access points to open its **Details**, the Tester displays a list of BSSIDs for you to choose from.

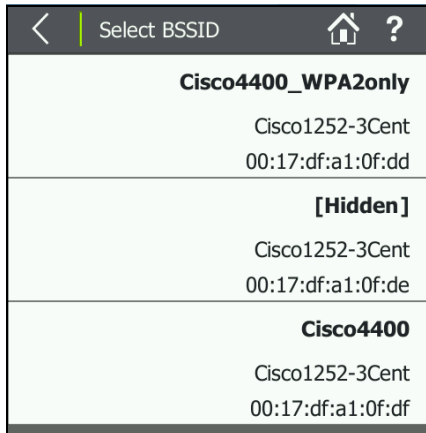


Figure 8. Select BSSID to View AP Details

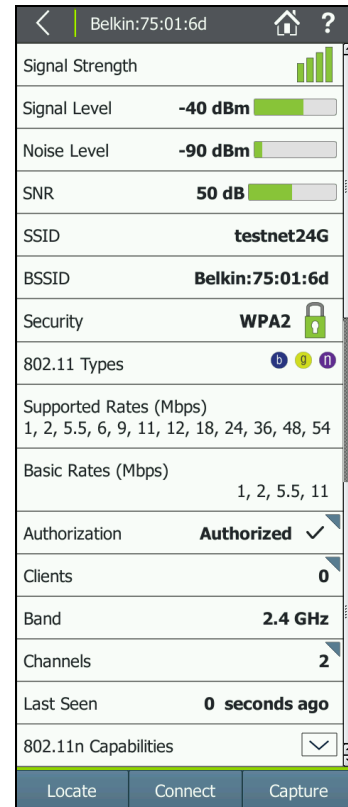



Figure 9. Access Point Details Screen

Screen Title: The AP's name (BSSID, Cisco AP name, or user-created alias) is displayed at the top of the AP Details screen.

Signal Strength: The signal strength rating for the AP.

Signal Level: The AP's signal level in dBm.

NOTE: If **Custom Signal Adjustments** are applied to a client, an asterisk (*) appears next to the Signal Level value on this screen. To access this setting, go to

 **Settings > 802.11 Settings > Custom Signal Adjustments.**


Noise Level: The noise level in dBm of the channel used.


SNR: Signal-to-Noise Ratio is a measure of signal strength relative to noise; an indication of signal quality for a reliable client's connection. The ratio is measured in decibels (dB).


SSID: Service Set Identifier; The name of the wireless network to which the AP is connected.


BSSID: The MAC address of the SSID. The address starts with a vendor abbreviation prefix, if the prefix is available.

Security status of the AP:







 Red open lock: The network does not have security enabled.

 Yellow closed lock: One or more access points use WEP or Cisco LEAP security protocol. These are less secure than other protocols.

 Green closed lock: All access points use security protocols that are more secure than WEP, for example, WPA or WPA2.

 Gray closed lock: Access points on this network are using multiple security protocols.

802.11 Types: The 802.11 types that the access point supports:

-  802.11a: Uses the 5-GHz band.
-  802.11b: Uses the 2.4-GHz band.
-  802.11g: Uses the 2.4-GHz band.
-  802.11n: Can be used in the 2.4 GHz or 5 GHz bands.
-  802.11ac: Uses the 5-GHz band.
-  802.11ax: Can be used in the 2.4 GHz or 5 GHz bands.

Supported Rates (Mbps): The extended physical (PHY) rates that the AP is configured to support.

Basic Rates (Mbps): The basic physical (PHY) rates that the AP is configured to support.

Authorization: Either the AP's manually selected Authorization Class or the default Authorization Class. The default authorization can be **None**, **Authorized**, or **Unknown**. Touch this field to configure the Alias Name and Authorization Class for the selected AP.

User-assignable Authorization Classes include the following:

- **Default** - Selecting Default will set the Authorization Class to the default configuration. If you have not set a default authorization, the default for unassigned is **None**. The default AP Authorization Class can be changed on the AirCheck G2 in **Settings > 802.11 Settings > Default AP Authorization** or using AirCheck G2 Manager's Profile Setup.
- **Authorized** ✓ - For APs that are approved for use on your network.
- **Flagged** 🚩 - To give visibility to a specific AP, such as a temporary or guest AP.
- **Neighbor** 👤 - For APs that are owned and controlled by neighboring organizations.
- **Unauthorized** ⚠️ - For APs that are not supposed to be on the network and may present a security risk.
- **Unknown** ? - For APs that have not yet been identified or otherwise classified.

NOTE: If the AP supports more than one BSSID, the majority of the BSSIDs must be marked with the same user-assigned Authorization status before the symbol will appear on the Access Points screen.

Clients: The number of clients connected to the AP.

▼ Touch this row to open the **Clients** list screen with the clients filtered for the selected AP.

Band: The radio band the AP supports.

Channels: The channels that the access point is using.

▼ Touch this row to open the **Channels Utilization** screen for the primary channel.


Last Seen: The amount of time that has passed since the Tester last detected the AP.

802.11n Capabilities: Select the down arrow to expand for the AP's 802.11n capabilities.

NOTE: The "802.11n Capabilities" are taken from HT Capabilities in the beacon and included for 802.11n and 802.11ac APs. This field is available only for 802.11n and 802.11ac APs.

802.11ac Capabilities: Select the down arrow to expand for the AP's 802.11ac capabilities.

NOTE: The "802.11ac Capabilities" are taken from VHT Capabilities in the beacon and included for 802.11ac APs. This field is available only for 802.11ac APs. Because an 802.11ac-only AP reports in its beacon both the HT Capability and VHT Capability elements, an 802.11ac-only AP will include both the 802.11ac and the 802.11n Capabilities fields.

802.11ax Capabilities: Select the down arrow  to expand for the AP's 802.11ax capabilities.

NOTE: The “802.11ax Capabilities” are taken from HE Capabilities in the beacon and included for 11ax APs. This field is available only for 802.11ax APs.



Locate: Touch this button to open the **Locate** screen and physically locate an access point. See “[Locating an Access Point, Client, or Interferer](#),” page 66.

Connect: Touch this button to connect to the access point and run a **Connection** test. See “[Running a Connect to Network or Connect to AP Test](#),” page 60.

Capture: Touch this button to open the **Capture** screen and start a packet capture on the selected AP. See “[Creating a Standalone Packet Capture](#),” page 88.

Troubleshoot: If the Tester Does Not Discover an Access Point or Network

If the Tester cannot hear an access point, consider the following possible causes:

- The Tester cannot hear the access point because you are too far away.
- The access point does not beacon when the Tester is listening to the channel that the access point uses.
- The Tester cannot hear the access point because the signal cannot go through a wall or some other barrier.
- There is too much interference on the channel that the access point uses. Select **Channels** from the Home Screen to view the interference from non-802.11 sources on the channel.
- A filter is active on the current screen that is filtering out one or more APs. Touch  to clear the filter.
- Other configuration settings do not match the AP characteristics (band, channel, etc.).
- The Interferers Only Scan setting is enabled in  **Settings > Interferer Settings**.

5. VIEWING CHANNEL USAGE

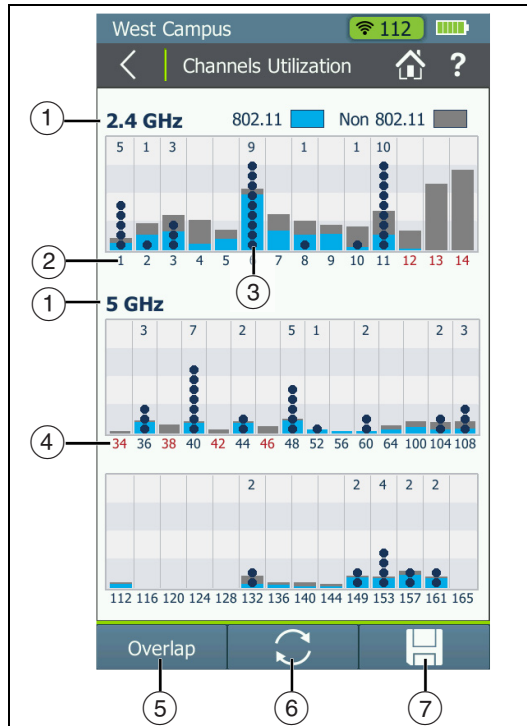



Figure 10. Channels Utilization Screen




The Channels Utilization Screen

From the Home Screen, touch **Channels** to open the **Channels Utilization** screen, which provides an overview of all channels and their APs.


AirCheck G2 calculates and records the average **802.11** and **Non 802.11** channel utilization for each channel per each scan. Discrete channel utilization measurements begin when you power on and update with each scan.


- ① **Bands:** By default, the Tester scans channels on the **2.4 GHz** and **5 GHz** bands. To change the bands for this function, go to  **Settings > 802.11 Settings > Bands**.
- ② **Channel Number:** The channel corresponding with the bar graph above it.
- ③ **Bar Graphs and Dots:** The bar graphs show how much of the channel capacity is used by **802.11** devices (**blue**) and by **non-802.11** interference (**gray**). The taller the bar, the noisier the channel. The **dark blue** dots in the bar graphs show how many access points are using the channel as the primary channel. The numeric value above the dots also indicates the number of APs discovered on that channel. In the example to the left, Channel 11 has six APs.

NOTES:

- If the **Combine Utilization** setting is enabled in  **Settings > 802.11 Settings**, this screen does not separate 802.11 and non-802.11 Utilization and shows only a combined total Utilization.
 - Channels that do not have access points can still show 802.11 usage because of overlap from access points on adjacent channels.
 - If there are too many APs to show individual dark blue dots, the dots will be truncated to leave space for the correct number of APs to display above.
- ④ **Illegal Channel Number:** Invalid channels are highlighted in **red**, according to the country selected in  **Settings > Location Settings**.
- ⑤ **Overlap:** Touch this button to open the **Channels Overlap** screen, which displays a graphical representation of channel width and overlap. See [“The Channels Overlap Screen,” page 25](#).
- ⑥  **Refresh:** Touch this icon to clear the current results and restart channel scanning.

Caution

Touching the  Refresh button will erase all unsaved test results.

- ⑦  **Save:** Touch this button to save a session file containing the discovery and test results that have been collected since the AirCheck G2 last refreshed. See [“Saving Session Files and Packet Captures,” page 86](#).

When you save a session, AirCheck G2 records the average and the last channel utilizations (i.e., the total utilization, 802.11 utilization, and non-802.11 utilization) for each channel in the session. These results are sent to AirCheck G2 Manager or Link-Live when you upload the session file.

Touch a channel's column to zoom in on that channel in the **Select Channel** screen.

The Select Channel Screen

The **Select Channel** screen offers a close-up view of the selected channel.

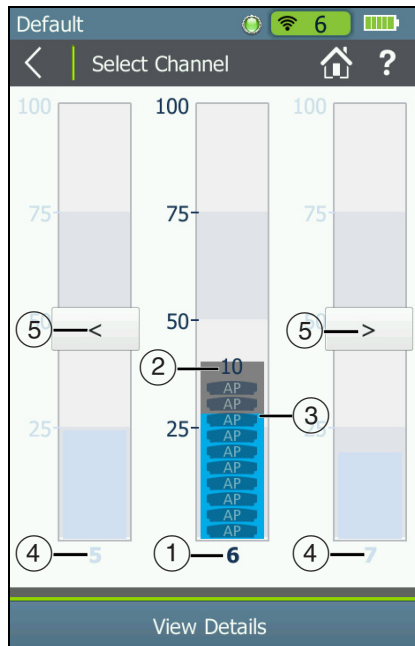



Figure 11. Select Channel Screen

- ① The channel being selected.
 - ② The number of APs on the channel.
 - ③ The bar graphs show how much of the channel capacity is used by 802.11 devices (**blue**) and by non-802.11 interference (**gray**). The graphs update dynamically.
- NOTE:** If the **Combine Utilization** setting is enabled in  **Settings > 802.11 Settings**, this screen does not separate 802.11 and non-802.11 Utilization and shows only a combined total Utilization.
- ④ The next lower and upper adjacent channels (faded).
 - ⑤ The left and right arrows for scrolling the lower or higher channels.

NOTE: When you are on the **Select Channel** screen, AirCheck G2 stops scanning channels and remains only on the channel that is selected.

Touch the middle channel bar or **View Details** to open the **Channel Details** screen for the selected channel.

The Channel Details Screen

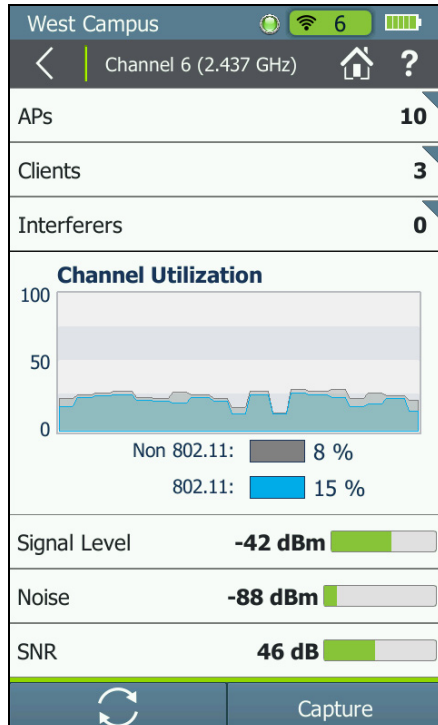


Figure 12. Channel Details Screen

The **Channel Details** screen shows the following detailed information about the selected channel:

Screen Title: The channel number and frequency of the channel being monitored.


APs: The number of access points discovered on the channel. Touch this row to open the **Access Points** list screen with the APs filtered for the selected Channel.

NOTE: This field shows the number of physical access points if **Group virtual access points** is selected. Otherwise, individual BSSIDs are shown. See [“802.11 Settings,” page 102](#).

Clients: The number of Wi-Fi clients discovered on the channel. Touch this row to open the **Clients** list screen with the clients filtered for the selected Channel.

Interferers: The number of potential Interfering devices discovered on the channel. Touch this row to open the **Interferers** list screen with the interferers filtered for the selected Channel.

Channel Utilization (line graph): Shows 802.11 (blue) vs. non-802.11 (gray) utilization of the channel over time. The two horizontal bars below the line graph show in real time the percentage of 802.11 utilization vs. non-802.11 utilization of the channel. Very busy channels can make the network slow or affect connectivity.

NOTE: If the **Combine Utilization** setting is enabled in  **Settings > 802.11 Settings**, this screen does not

separate 802.11 and non-802.11 Utilization and shows only a combined total Utilization.

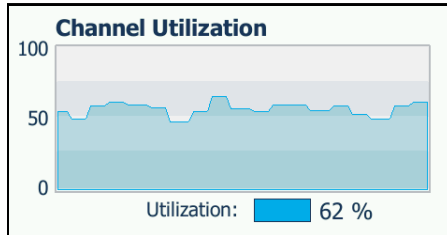


Figure 13. Combined Channel Utilization

Signal Level: The real-time signal level (in dBm) of the strongest AP signal on the channel.

Noise: The measured real-time noise level.

SNR: The measured real-time signal-to-noise ratio.



Refresh: Touch this icon to clear the current results and restart channel scanning.

Capture: Touch this button to open the **Capture** screen and start a packet capture on the selected channel. See [“Creating a Standalone Packet Capture,” page 88.](#)

The Channels Overlap Screen

The Channels Overlap screen displays a graphical representation of the discovered APs' utilization of each channel. This screen displays in landscape view. Channel numbers are on the x-axis, and the signal level in dBm is displayed on the y-axis of the graph.

Touch the tab buttons across the top of the graph to display the different bands and corresponding channels:

- **2.4 GHz** — Channels 1-14
- **5 GHz UNII-1/2** — Channels 36-64 (not including 34, 38, 42, or 46)
- **5 GHz UNII-2 Ext** — Channels 100-144
- **5 GHz UNII-3** — Channels 149-165

A colored parabola is shown on the graph for each active Access Point the AirCheck G2 detects.

Touch an AP's parabola, and then its popped-up name, to open the corresponding **AP Details** screen.

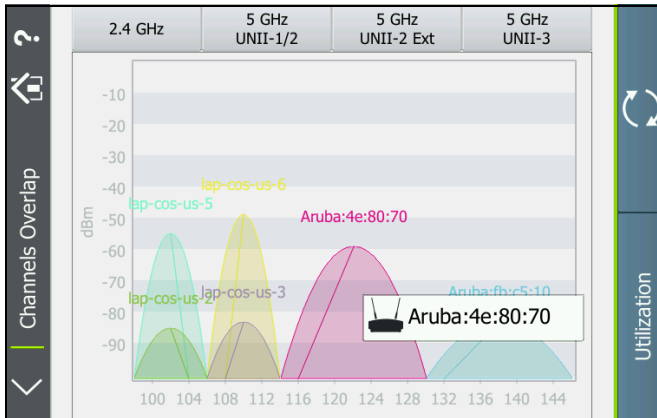


Figure 14. Channels Overlap Screen

The parabolas are displayed using the following characteristics:


- The width of the parabola represents the width of the channel: 20, 40, 80, or 160 MHz.
- The vertical height of the parabola represents the current signal level (in dBm) of the AP, correlating with the y-axis.
- The parabola is centered on the center channel (x-axis) being used by the AP.

- A line extends from the top of the parabola to the AP's primary channel on the x-axis.
- Only APs with a detected signal level of -85 dBm or above are shown on the graph.

Touch **Utilization** to return to the Channels Utilization screen.

6. DISCOVERING CLIENTS

While the Tester is on, it monitors each channel for client traffic to discover client devices. To see these clients, touch the **Clients** row on the Home Screen.

NOTES: The Tester is only able to update the client's information when the client transmits data at the same time that the Tester is monitoring the channel that the client uses. To collect client information more quickly, go to  **Settings** > **802.11 Settings**, and enable only one band, which decreases the number of monitored channels.

The Client List Screen

The **Clients** list screen provides an overview of the Wi-Fi clients discovered in your environment. It shows the following information for each of the clients:

- ① **Clients (#):** The numeric value in parentheses indicates the number of active clients discovered.
- ② **Sort (Option Field):** This field shows the sort option that is currently applied. In [Figure 15](#), the sort option applied is **MAC Address**.

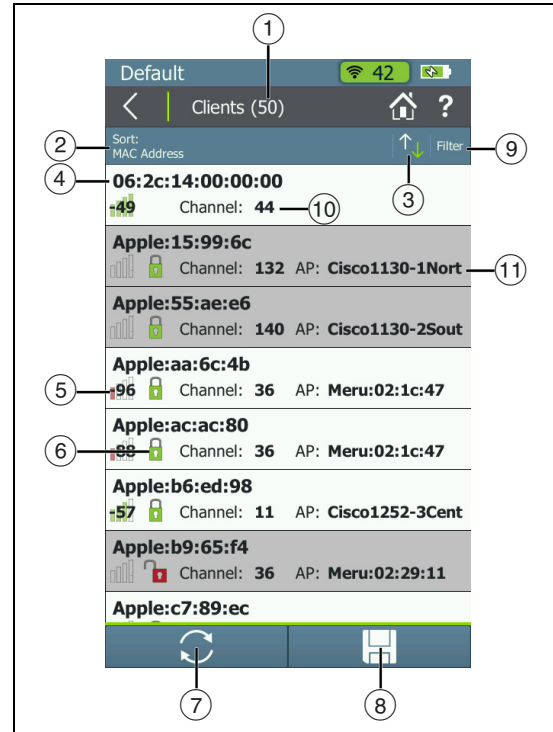









Figure 15. Clients List Screen


Touch the **Sort** field to change the order in which clients are listed. The value by which the list is sorted shows prominently for each client. For example, if you change to **Sort by 802.11 Type**, the **Clients** list screen displays the 802.11 type icons next to each client, instead of the **AP** it is connected to, as shown in [Figure 15](#).


- ③  **Sort Order Button:** These arrows switch the list order from ascending to descending, and vice versa.
- ④ **MAC:** The MAC address of the client. The address starts with a vendor abbreviation prefix, if the prefix is available.
NOTE: The client name can be either (1) MAC colon format, e.g., 00:11:22:33:44:55 or (2) OUI compact colon format, i.e., Vendor:33:44:55. You can set or change the client display format from  **Settings > 802.11 Settings > MAC Address Format**.
- ⑤  **(Signal Strength):** The client's signal strength. The color of the bars and the numeric value change with the actual fluctuation of signal strength.
- ⑥ **Security** status of the AP:
 -  Red open lock: The network does not have security enabled.
 -  Yellow closed lock: One or more access points use WEP or Cisco LEAP security protocol. These are less secure than other protocols.

 Green closed lock: All access points use security protocols that are more secure than WEP, for example, WPA or WPA2.

- ⑦  **Refresh:** Touch this icon to clear the current results and restart the scan.


Caution

Touching the  Refresh button will erase all unsaved test results.

- ⑧  **Save:** Touch this button to save a session file containing the discovery and test results that have been collected since the AirCheck G2 last refreshed. See ["Saving Session Files and Packet Captures," page 86](#).

- ⑨ **Filter Button:** Touch here to filter for specific client characteristics, such as AP name, security type, or time since the client was last seen.

NOTE: You can set only one filter at a time. Once a filter is set, the **Clients** screen re-opens. The title of the screen changes to "**Clients (X of Y)**", such that X = the number of clients filtered, and Y = the total number of clients discovered.

 This icon appears to the right of the active filter. Touch the icon to remove the filter.

Touch the Help button  on the **Filter Clients By:** screen for more detail about each option.

⑩ **Channel:** The channel a client is using. This field is blank for probing clients.

⑪ **AP:** Shows the name of the AP the client is associated with. This field is blank for probing clients.

This is also a variable field, which changes based on the **Sort** option currently applied. For example, if the list is sorted by **802.11 Type**, the 802.11 type icons will appear in this space on the screen, instead of the AP name.

For **Clients**, this space can also show the **SSID**, **AP BSSID**, **Band**, or time since the network was **Last Seen**.

To open the **Details** screen for a client, touch its row.

The Client Details Screen

The **Client Details** screen shows the following detailed information about the client you have selected:

Screen Title: The client's full MAC address (e.g., 00:11:22:33:44:55) or OUI compact colon format (e.g., Vendor:05:3f:76). See ["802.11 Settings," page 102](#).

Signal Strength: The client's signal strength in four bars. The color of the bars changes in real time to reflect the actual fluctuation in the client's signal strength.

Signal Level: The client's actual signal level in dBm and a horizontal bar indicating the rating.

SSID: The SSID with which the client is associated. The field will be blank when no client-AP association is detected.

AP Name: The name of the AP with which the client is associated. The field will be blank when no client-AP association is detected.

AP BSSID: The BSSID of the AP with which the client is associated. The field will be blank when no client-AP association is detected.

Connection Rate: The speed in Mbps of the last frame seen from the client.

West Campus	
LGElec:bd:c6:ff	
Signal Strength	
Signal Level	-86 dBm
SSID	NSVisitor
AP Name	lap-cos-us-3
AP BSSID	Cisco:8f:0b:3e
Connection Rate	12 Mbps
Security	WPA2
802.11 Type	
Band	5 GHz
Channel	40
Last Seen	8 seconds ago
Probes For	AttackLab2
Locate Capture	

Figure 16. Client Details Screen

Security: Shows the security type for the client-AP connection. The field will be blank if the client is not associated with an AP, is using an ad-hoc connection, or its security standard is unknown.

802.11 Type: The 802.11 type that the client is using:

- 802.11a: Uses the 5-GHz band.
- 802.11b: Uses the 2.4-GHz band.
- 802.11g: Uses the 2.4-GHz band.
- 802.11n: Can be used in the 2.4 GHz or 5 GHz bands.
- 802.11ac: Uses the 5-GHz band.
- 802.11ax: Can be used in the 2.4 GHz or 5 GHz bands.

Band: Shows the Wi-Fi band of the client connection.

Channel: The primary channel the client is using. Select this field to open the **Channel Details** screen for more information about this primary channel.

Last Seen: Shows the time when the last packet from the client was detected.




Probes For: Shows the SSID from the last probe request. The field is populated only for non-associated clients; it is blank for associated clients.

Locate: Touch this button to open the **Locate** screen and begin locating the client. See “[Locating an Access Point, Client, or Interferer](#),” page 66.

Capture: Touch this button to open the **Capture** screen and start a packet capture on the selected client. See “[Creating a Standalone Packet Capture](#),” page 88.

Troubleshoot: If the Tester Does Not Discover a Client

In some situations, the Tester will not discover a client because of the following:


- The wireless card in the client is disabled.
- The Tester cannot hear the client because you are too far away from the client.
- The Tester cannot hear the client because the signal cannot go through a wall or some other barrier.
- There is too much interference on the channel that the client uses. Select **Channels** to see the interference from non-802.11 sources on the channel.
- The Tester does not scan the band that the client uses. See the setting in  **Settings > 802.11 Settings**.
- The client does not transmit when the Tester is listening to the channel that the client uses.
- A **Filter** is active on the current screen that is filtering out one or more clients. Touch  to clear the filter.
- The Interferers Only Scan setting is enabled in  **Settings > Interferer Settings**.

7. DETECTING INTERFERERS

As the AirCheck G2 scans through your local wireless channels, it also observes and records devices that might be causing interference, such as a microwave oven, wireless mouse, or Bluetooth device. Interference from non-802.11 devices can negatively impact your network performance.


When a potential interfering device is detected, AirCheck G2 populates the **Interferer Events** screen with data about the interferer. To see these interferer events, touch the **Interferers** row on the Home Screen.

NOTES:

- To collect interferer information more quickly, go to  **Settings > Interferer Settings**, and enable only one band, which decreases the number of monitored channels.
- You can also turn **On the Interferers Only Scan** option to cause the AirCheck G2 to look ONLY for interfering devices. AirCheck G2 will not discover or display Networks, APs, Clients, or Channel utilization while the Interferers Only Scan is On.
- To view a list of all the interferer types AirCheck G2 can display if detected, touch the **Filter** button ([Figure 17](#)) and then the **Type** field.

The Interferer Events List Screen

The Interferer Events screen lists the interference events that have been detected in your environment. It shows the following information for each of the interferers:

- ① **Interferer Events (#):** The numeric value in parentheses indicates the number of interference sources that have been observed as active during the last 30 seconds.
- ② **Sort (Option Field):** This field shows the sort option that is currently applied. The default sort option is **Event ID**.
Touch the **Sort** field to change the order in which interferers are listed. The value by which the list is sorted shows prominently for each interferer. For example, if you change to **Sort by Channels Impacted**, the **Events** list screen displays the impacted channel number range next to each interferer, instead of the **Band** it is operating on, as shown in [Figure 17](#).
- ③  **Sort Order Button:** These arrows switch the list order from ascending to descending, and vice versa.
- ④ **Event (#):** Numbers the interferer events in order of occurrence. **NOTE:** Events may or may not be listed in sequential order, based on the selected Sort option and Inaudible Interferers settings (in **Settings > Interferer Settings**).

- ⑤ **Device Type:** Shows the type of interfering device detected by AirCheck G2.

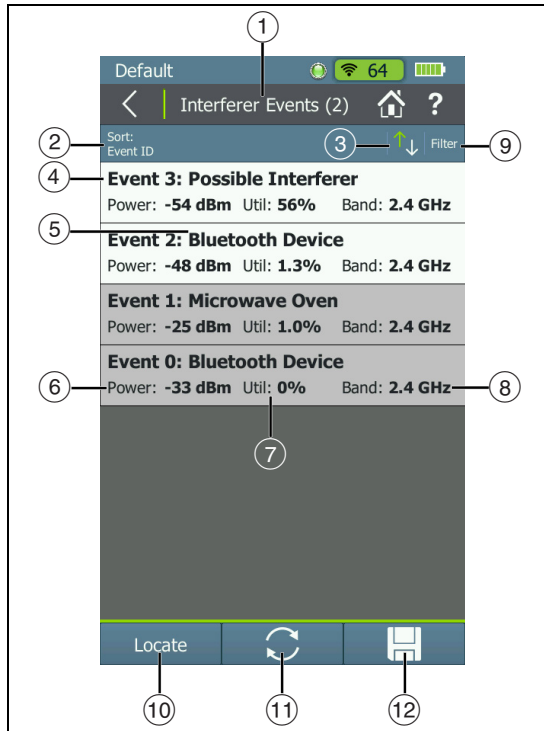


Figure 17. Interferer Events List Screen

- ⑥ **Power:** The most recently observed power output in dBm of the interfering device.
- ⑦ **Util:** The percentage of time, during the most recent sample, for which the interferer was detected.
- ⑧ **Band:** The band on which the AirCheck G2 detects the interfering device.

This is also a variable field, which changes based on the **Sort** option currently applied. For example, if the list is sorted by **Channels Impacted**, the range of channels affected by the interferer appears in this space on the screen, instead of the Band.


For **Interferer Events**, this space can also show the **Peak (Power)**, **Channels Impacted**, **Number of Channels Impacted**, or time since the interferer was **Last Seen**.

- ⑨ **Filter Button:** Touch here to filter for specific interferer characteristics, such as device type, channels impacted, or minimum average power.


NOTE: You can set only one filter at a time. Once a filter is set, the **Interferer Events** screen re-opens. The title of the screen changes to “**Interferer Events (X of Y)**”, such that


X = the number of interferers filtered, and
Y = the total number of interferers discovered.

✗ This icon appears to the right of the active filter. Touch the icon to remove the filter.

- ⑩ **Locate:** Touch this button to open the **Select Interferer** screen and then begin locating an interferer type. See [“Locating an Access Point, Client, or Interferer,” page 66.](#)
- ⑪  **Refresh:** Touch this icon to clear the current results and restart the scan.

Caution

Touching the  Refresh button will erase all unsaved test results.

- ⑫  **Save:** Touch this button to save a session file containing the discovery and test results that have been collected since the AirCheck G2 last refreshed. See [“Saving Session Files and Packet Captures,” page 86.](#)

To open the **Details** screen for an interferer event, touch its row.

The Interferer Event Details Screen

The **Interferer Event Details** screen shows the following detailed information about the interferer you have selected:

Event Number: The number of the event as assigned by the AirCheck G2.

Type: The type of interfering device detected by AirCheck G2.

Average Power: The average observed power output in dBm of the interfering device.

Peak Power: The highest observed power output in dBm of the interfering device.

Duty Cycle: The percentage of time, during the most recent sample, for which the interferer was detected.

Channels Impacted: The channel numbers for the channels affected by the interferer.

Number Channels Impacted: How many channels are impacted by the detected interferer.

Default*	
Event 22	
Event Number	22
Type	Bluetooth Device
Average Power	-61 dBm
Peak Power	-60 dBm
Duty Cycle	0.53%
Channels Impacted	1-13
Number Impacted Channels	13
First Seen	7 minutes ago
Last Seen	2 seconds ago
Event Count	95
Locate	

Figure 18. Interferer Event Details Screen

First Seen: The amount of time that has passed since the interferer was initially detected.

Last Seen: The amount of time that has passed since the interferer was most recently detected.


Event Count: The number of separate instances of AirCheck G2 detecting transmission from the interferer.

Locate: Touch this button to open the **Locate Interferer** screen and begin locating the selected interferer. [See “Locating an Access Point, Client, or Interferer,” page 66.](#)

8. USING AUTO TEST TO DIAGNOSE YOUR NETWORK HEALTH



AutoTest automatically checks the health of your network by examining **Air Quality** for utilization and interference and **Network Quality** for the SSIDs that have been configured for AutoTest. See “AutoTest Settings,” page 109.


When AutoTest runs, the test result fields turn **green**, **red**, or **yellow** to indicate the status or rating of the result. For example, in [Figure 19](#), the **802.11 Utilization** test has passed, the **Non 802.11 Utilization** and **Co-Channel Interference** has received a warning, and **Adjacent Channel Interference** has failed.

These ratings are controlled by the Thresholds configured in the AirCheck G2’s  **Settings > Thresholds**.

See “Adjusting the Test Thresholds,” page 56.

To run an AutoTest, touch the **AutoTest** field on the Home Screen. The AutoTest results screen opens and results are displayed as each test finishes.

- Touch the down arrows  next to each row to view specific measurements.
- Touch the **Restart** button to clear results and start a new test.
- Touch the **Save** icon  to save the results as a session file.

- Touch the pencil icon  to open the **Comments** screen and edit the **Test Comment** or **Job Comment** to be uploaded to Link-Live and associated with your test result.

Adding Comments

The **Comments** screen allows you to add or edit comments that will be associated with your most recent test result in Link-Live Cloud Service. These comments are helpful for organizing and analyzing test results.

- Select **Test Comment** to attach a new comment to your most recent test result in Link-Live. The Test Comment does not persist after you begin a new test.
- Select **Job Comment** to add or edit the Job Comment, which is attached to all test results and files uploaded to Link-Live. The Job Comment persists until you delete or edit it. You can also set the Job Comment from **Settings > Link-Live**.

AutoTest Air Quality

The **Air Quality** measurements include 802.11 Channel Utilization, Non-802.11 Channel Utilization, Co-Channel Interference, and Adjacent Channel Interference.

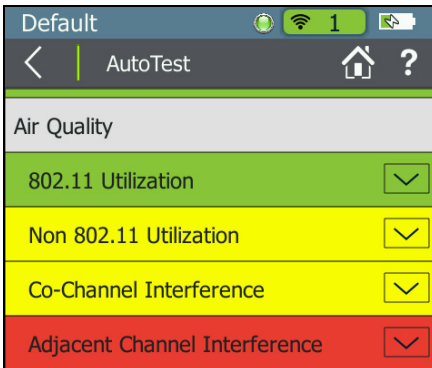


Figure 19. AutoTest Air Quality Results Screen

802.11 Utilization

The 802.11 Channel Utilization results include the top three channels in each band (2.4 GHz and 5 GHz) with the highest 802.11 utilization. The channels are displayed with their measured utilization percentage and rating of **✓** Pass, **⚠** Warning, or **✗** Fail, based on the **Channel 802.11 Utilization** threshold.



Figure 20. 802.11 Channel Utilization Results

Non-802.11 Utilization

The Non-802.11 Channel Utilization results include the top three channels in each band (2.4 GHz and 5 GHz) with the most non-802.11 interference, e.g., noise.

The channel utilization percentage is displayed along with a rating symbol: **✓** Pass, **⚠** Warning, or **✗** Fail, based on the **Channel non-802.11 Utilization** threshold.

NOTE: If the **Combine Utilization** setting is enabled in **Settings > 802.11 Settings**, this screen does not separate 802.11 and non-802.11 Utilization and shows only a combined total Utilization.


Air Quality		
Utilization 		
Channel 6	65.0 %	⚠
Channel 11	41.0 %	⚠
Channel 7	28.0 %	✓
Channel 112	10.0 %	✓
Channel 140	9.0 %	✓
Channel 149	9.0 %	✓

Figure 21. Air Quality Combined Utilization

The channel usage will vary depending on the time of day, based on the number of clients connected to the network, the amount of interference from devices, such as microwaves or video cameras, etc.








Default Wi-Fi 1* 		
AutoTest  		
Co-Channel Interference 		
Channel 6	9 APs	✗
Channel 11	8 APs	⚠
Channel 1	4 APs	⚠
Channel 161	4 APs	⚠
Channel 48	4 APs	⚠
Channel 149	3 APs	✓
Adjacent Channel Interference 		
Channel 2	13 APs	✗
Channel 11	9 APs	✗
Channel 6	2 APs	✓
Restart  		

Figure 22. Air Quality Co-Channel and Adjacent Channel Interference Results

Co-Channel Interference

The **Co-Channel Interference** results display the top three channels in each band (2.4 GHz and 5 GHz) with the highest number of APs that exceed the minimum AP signal level threshold on the same channel.


This measurement is independent of SSIDs and solely looks at the number of APs using the same channel and their signal quality. It accounts for 40-MHz and 80-MHz channels in the 5-GHz band by counting an AP on its primary and each secondary channel.

A  Pass,  Warning, or  Fail icon is also displayed for each channel.

Adjacent Channel Interference

The **Adjacent Channel Interference** results display the top three channels in the 2.4-GHz band in which APs may experience Adjacent Channel Interference. For each channel on which at least one AP is found, the Tester counts how many APs are operating on other channels that overlap with that channel. It accounts for 20-MHz and 40-MHz channels in the 2.4-GHz band. The Adjacent Channel Interference measurement does not apply to the 5-GHz band.

A  Pass,  Warning, or  Fail icon is also displayed for each channel.

Once the Air Quality test completes, select the blue triangle icon  next to a channel under Co-Channel Interference or Adjacent Channel Interference to open a list of the APs interfering on that channel. Then, you can select the down arrow next to each interfering AP to view its BSSID, SSID, and Signal strength.

Rogue Access Points Test

This feature classifies Rogue Access Points based on the user-selected Authorization status of the detected APs. Rogue Access Point tests as a whole can be included or excluded from AutoTest by accessing the **AutoTest Settings** screen.

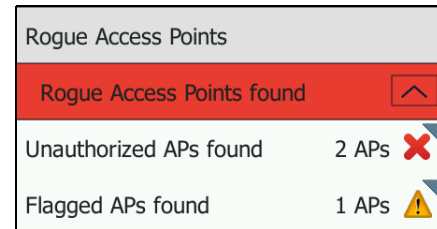



Figure 23. Rogue Access Points Test

- If no rogue access points are detected, the field turns green.
- If AirCheck G2 detects APs that have a **Flagged** status, the field turns yellow.


- If AirCheck G2 detects APs that have the **Unauthorized** status, the field turns red.

If any Rogue Access Points are detected, you can touch the down arrow to see the number and type of Rogue APs, touch the blue triangle icon  to view the AP names, and then, touch another down arrow next to each AP to view its BSSID, SSID, Signal strength, and channel.

AutoTest Network Tests

The **Network Test** measurements check for network availability; the existence of interference from access points using the same channel, which may cause network slowness; AP use of consistent security methods for a network; and the ability to connect and use the network (access to services, other devices).

How to: Run Network Tests as part of AutoTest

- 1 To see these tests, you must enter and save the security credentials for the network you wish to test. [See “Entering Network Security Credentials,” page 54.](#)
- 2 You must also select the networks you want tested during **AutoTest** from the **AutoTest Settings** screen ( **Settings > AutoTest Settings**).

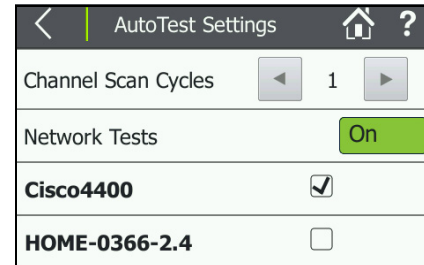


Figure 24. AutoTest Settings Screen

- 3 Touch **AutoTest** from the Home Screen.

Once the SSID and security credentials have been entered, AutoTest runs **Network Tests** for each network selected.

In the example shown in [Figure 24](#), security for the SSID, “Cisco4400,” has been configured and added to the Profile, and the network is selected in AutoTest Settings.

Network Test results are reported on the **AutoTest** results screen below the **Air Quality** test results. In [Figure 25](#), the Network test for “Cisco4400” has run and passed.

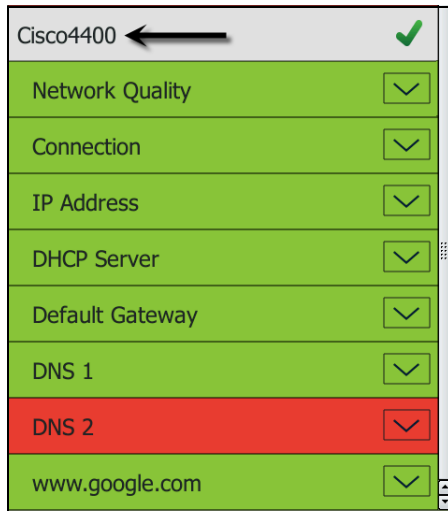


Figure 25. AutoTest Network Tests

NOTE: When you connect to a network, the Tester usually connects through the access point that has the highest Signal-to-Noise Ratio. If the network includes secure and unsecured access points and security credentials are available, the Tester tries to connect to the secure access point that has the highest Signal-to-Noise Ratio. Some networks use a controller that connects you to the access point that has the least amount of traffic.

Network Quality Results

Network Quality	
Network Coverage	9 APs ✓
Co-channel Interference	0 APs
Security	✓

Figure 26. AutoTest Network Quality





Network Coverage: Indicates the number of access points the Tester detected that are supporting the network. This field also displays a rating symbol based on the Network Coverage threshold.

Co-channel Interference: Displays the number of APs that exceed the minimum signal strength threshold with primary or secondary channels on the same channel on which the Tester connects to the network.

Security: Indicates whether all access points use security protocols that are more secure than WEP, for example, WPA or WPA2.

Connection Test Results

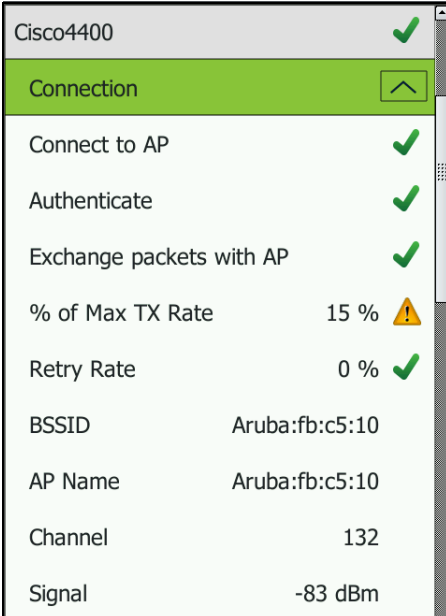
The **Connection** test results indicate whether or not you can connect to an AP for the configured network at your current location. The **Connection** field turns **green** if the connection was successful and **red** if the connect was unsuccessful.

Touch the down arrow  to the right of **Connection** to view high level connection diagnostics. These results also receive a rating based on whether the individual test was successful, or based on how measurements compare to the configured thresholds:  Pass or Success (**green**),  Warning (**yellow**), or  Fail (**red**)

Connect to AP: Indicates whether the Tester was able to connect to the AP.

Authenticate: Indicates whether the Tester was able to authenticate with the AP.

Exchange packets with AP: Indicates whether the Tester received packets back from the AP.










Cisco4400		
Connection		
Connect to AP		
Authenticate		
Exchange packets with AP		
% of Max TX Rate	15 %	
Retry Rate	0 %	
BSSID	Aruba:fb:c5:10	
AP Name	Aruba:fb:c5:10	
Channel	132	
Signal	-83 dBm	

Figure 27. AutoTest Network Connection Test Results

% of Max TX Rate: The physical transmission rate as a percentage of the maximum rate possible.

Retry Rate: The percentage of transmitted frames that are retry frames.

BSSID: The MAC address of the access point.

AP Name: The name of the AP to which the Tester is connected. The address starts with a vendor abbreviation prefix, if the prefix is available.

Channel: The channel the AP uses.

Other Connection Results: The rest of the results under Connection provide exact values for the average, minimum, and maximum **Signal, Noise, SNR, and PHY Rate.**

IP Address Result

IP Address: Indicates whether or not an IP was successfully obtained via DHCP or if a static IP is configured.

Captive Portal Result

When the **Captive Portal** setting is enabled, this portion of the test opens a web browser window that allows you to enter the required credentials for the network.

See [“Captive Portal” on page 62.](#)

Target Test Results

The optional test targets show whether or not AirCheck G2 can ping the targets selected in **Settings > Test Targets**, which can include the DHCP Server, Default Gateway, DNS servers, and/or the user-configurable target (www.google.com is the default).

Touch the arrows to the right of each field to expand or collapse test details:




Figure 28. AutoTest Network Test IP and Test Targets

DHCP Server: Indicates whether or not the DHCP service could be successfully pinged.

Default Gateway: Indicates whether or not the configured gateway could be successfully pinged.

DNS 1 and DNS 2: Indicate whether the DNS servers could be successfully pinged.

Targets: Indicates whether or not these user-configured test targets could be successfully reached via Ping or TCP Port Open Test. The default target is www.google.com, but you can add and edit tests targets from the  **Settings > Test Targets**. See [“Defining Ping and TCP Port Open Test Targets,”](#) page 58.


Link-Live Upload: Indicates whether the AirCheck G2 Tester was able to upload the AutoTest results to a Link-Live account. See [“Getting Started in Link-Live Cloud Service,”](#) page 47.

9. TESTING ETHERNET FOR ACCESS POINT BACKHAUL

The Ethernet Test verifies key connectivity parameters for the wired link to an access point.

To configure the Ethernet test, see [“Ethernet Settings” on page 112](#).

The Ethernet Test Results Screen

The results fields report high-level **Pass (green)** or **Fail (red)** results of the test components. Select the down arrows  to the right of each field to view detailed information.

PoE: Indicates whether or not PoE capabilities are detected on the current link, including the measured voltage in parentheses if present. **NOTE:** You can disable the PoE test in **Ethernet Settings**.

Link: Indicates whether or not a Layer-2 Ethernet link is established. The field turns **green** if a link was successfully established or **red** if no link could be established.

Port: Displays the switch name, model, MAC address, IP address, port number, and VLAN IDs. The information is gathered from switch port info packets (CDP, EDP, and LLDP).

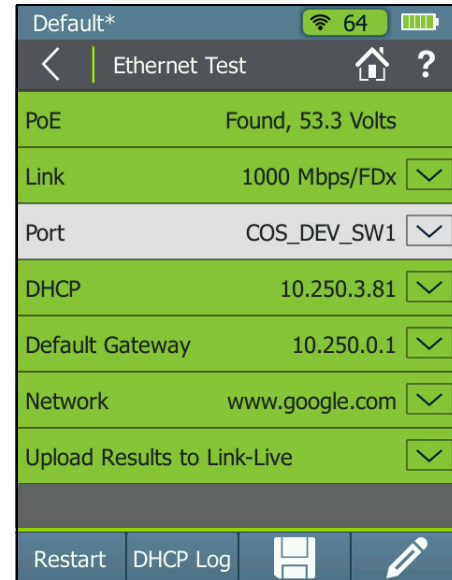


Figure 29. Ethernet Test Screen

NOTE: The AirCheck G2 listens for the first switch info packet (LLDP, CDP, or EDP) on the wire after it establishes link and uses this to populate the **Port** information. If it is capable of hearing these packets from more than one

source, it will display the first one it receives, which may not always be from its link partner.

Furthermore, when AirCheck G2 is not linked directly to a managed switch that emits these types of packets, but is instead linked with another switch in between, it will not reliably receive this switch port information. Most of these managed switches send these packets as soon as they detect link establishment, which they cannot do in this case. However, they may retransmit this information periodically, which AirCheck G2 will receive and display if it can.

NOTE: The switch name may be truncated if it exceeds the length of the field.

DHCP: Indicates whether or not a DHCP address was obtained.

Default Gateway: Indicates whether or not AirCheck G2 can ping the default gateway.

Network: Indicates whether or not AirCheck G2 can successfully reach a user-defined network target via Ping or TCP Port Open test. This function can verify connectivity to a wireless controller, for example. [See “AutoTest Settings,” page 109.](#)

Link-Live: Indicates whether or not test results were successfully sent to the Link-Live Cloud Service.

Stop: While the test is running, select this button to stop the test.

Restart: After the test has completed (or you've stopped the test), select the **Restart** button to start a new test.

DHCP Log: Select this button to view the test log.



Save: Touch this button to save a session file containing the discovery and test results that have been collected since the AirCheck G2 last refreshed. [See “Saving Session Files and Packet Captures,” page 86.](#)



Comment: Touch this button to edit the **Test Comment** or **Job Comment** to be uploaded to Link-Live and associated with your test result. [See “Adding Comments,” page 36.](#)

10. COMPANION SERVICES

These two free services enhance your testing, analysis, and documentation capabilities with the AirCheck G2 Tester.

Introduction to Link-Live Cloud Service

This online service, once set up, automatically uploads and saves AutoTest, Connection, and Ethernet Test results from the AirCheck G2 any time it is connected to the internet. You can comment on test results, label and organize your switch and cable set up, monitor data from multiple testing devices, and document completed jobs.



Starting with release v3.0, AirCheck G2 can also upload profile, session, screenshot, and packet capture files to Link-Live and download software updates from Link-Live for installation directly on the unit.

Getting Started in Link-Live Cloud Service

To start, create a user account at [Link-Live.com](https://link-live.com).

Next, you must Claim the Tester to the cloud service.

How to: Claim the AirCheck G2 to Link-Live

- 1 After creating a user account, sign in to Link-Live Cloud Service. The first time you sign in to Link-Live, a pop-up dialog box appears prompting you to claim a device.
- 2 If you already have a user account and other devices claimed to Link-Live, navigate to the **Units** page from the left side navigation drawer by clicking the navigation menu icon .
- 3 Click the **Claim Unit** button  at the lower right corner of the screen.
- 4 In the **Claim Unit** dialog, select the AirCheck G2 image.
- 5 Follow the on-screen instructions to finish claiming.
- 6 Click **“Listen”** in Link-Live before you touch **“Claim Unit”** on the AirCheck G2 tester.
 See **“Link-Live Settings,”** page 100.
NOTE: If you perform a factory restore on your AirCheck G2 unit, you must un-claim it on Link-Live and re-claim it to continue uploading and viewing new test results.

Once your AirCheck G2 Tester is claimed in Link-Live, test results will upload automatically after you have run a test and successfully connected to the internet. The **Link-Live Upload** field on the test results screens indicates whether the test results were successfully sent to Link-Live.

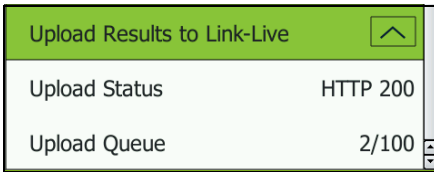


Figure 30. Successful Link-Live Upload Field

If no connection is available, the Tester will queue up to 100 entries before overwriting previous results.

You can also configure uploading and notification settings on the Link-Live Cloud Service web site. For more information about Link-Live, click **Support > Questions** from the left-side navigation drawer on the Link-Live web page.

For instructions on uploading Profiles to Link-Live, see [“How to: Upload a Profile to Link-Live” on page 53](#).

For instructions on uploading Session, Screenshot, and Capture files to Link-Live, see [“How to: Upload Files to Link-Live” on page 94](#).

For instructions on updating your AirCheck G2 software using Link-Live, see [“How to: Update Firmware over Link-Live” on page 118](#).

Getting Started with the AirCheck G2 Manager PC Application

You can use the AirCheck G2 Manager computer application for the following activities:

- Upgrade the AirCheck G2 Tester’s firmware.
- Update the AirCheck G2 Tester’s Vendor MAC Prefix file.
- View measurement results saved as session files.
- Generate reports from session files.
- Set up the AirCheck G2 Tester configuration by creating Profiles.
- Configure security credentials for the network(s) containing any key devices that you are pinging.
- Transfer Profiles with saved settings to the Tester.
- Transfer screen capture images from the AirCheck G2 Tester to a PC.

Download the AirCheck G2 Manager software from Link-Live at <https://app.link-live.com/downloads>.

After downloading and installing the application, connect your AirCheck G2 Wireless Tester to the PC using the supplied Micro Type B to USB cord.

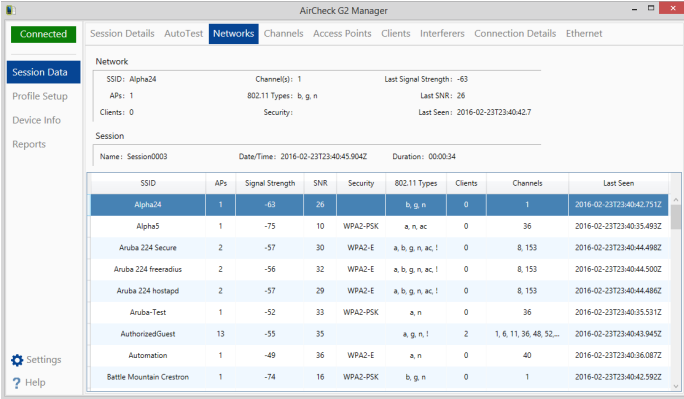


Figure 31. Session Data > Networks in AirCheck G2 Manager

NOTE: Only Micro Type B cables can be used to connect the AirCheck G2 to a PC. USB on-the-go (OTG) cables will not work properly.



The AirCheck G2 Manager online Help contains more instructions for using the application.

See “Managing Profiles and Sessions on a PC using AirCheck G2 Manager,” page 96.

11. CUSTOMIZING THE TESTER FOR YOUR NETWORK

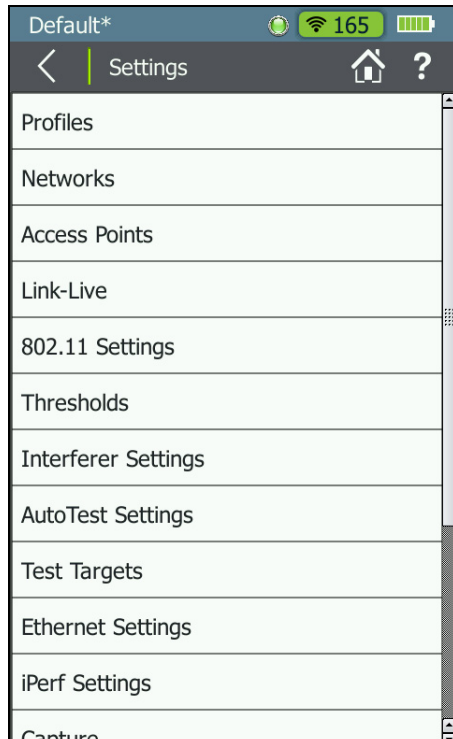





Figure 32. Settings Menu Screen

This chapter describes how to adjust the  **Settings** that are essential for setting up the Tester for your network and running in-depth performance tests. For a description of all other settings, see [“All AirCheck G2 Settings” on page 98](#).

To change the settings on the Tester, touch the  **Settings** button from the Home Screen.

 **Help:** Touch this icon to open the embedded Help topic with a description of the current screen.

Using Profiles to Manage Settings and Security Credentials

Profiles are files that save configuration settings for the Tester and security credentials for networks and APs, which let the Tester connect and perform roaming tests and connectivity tests to DNS servers, DHCP servers, the default router, and network targets. Profiles also include the following information:

- All 802.11 settings
- AutoTest settings
- Ethernet Test settings
- Interferer Settings
- IP addresses used for ping or TCP Port Connect tests

- iPerf Settings
- Location and Language
- Thresholds for the colored bar graphs and Pass, Warning, and Fail ratings
- Imported Certificates

Profiles can be password protected so that unauthorized users cannot use the Tester to connect to secure networks or access network security credentials on the AirCheck G2 Manager PC application.


The AirCheck G2 Tester's Home Screen shows the name of the Profile the Tester is using at the top left. The name shows an asterisk (*) if you have changed a setting on the Tester since you last saved the Profile.

You can create and edit Profiles on both the AirCheck G2 Tester and in AirCheck G2 Manager on a personal computer (PC).

You can also upload saved Profiles to Link-Live, and then download them to other AirCheck G2 testers.

How to: Save the current settings as a Profile on the AirCheck G2 Tester

Multiple Profiles can be saved on the Tester, but only one Profile at a time can be active.

- 1 To access the profiles screen, touch the Profile name at the top left corner of the AirCheck G2 screen, or from the Home Screen, touch the  **Settings** button and select **Profiles**.

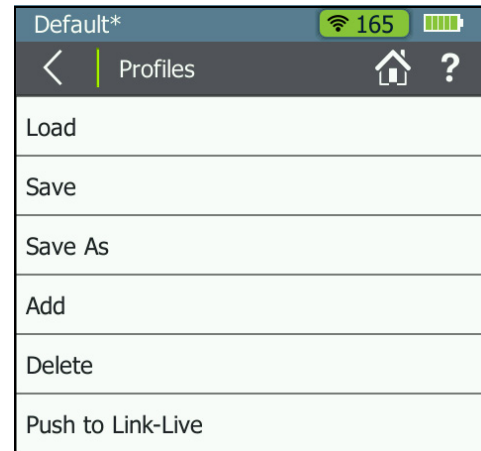


Figure 33. Settings > Profiles Menu

- 2 Touch **Save** or **Save as**.

- To save the Profile with the current name (shown at the top left of the screen), press **Save**. The Tester will ask if you want to overwrite the existing Profile name before saving.
- To save the Profile with a new name:
 - a. Select **Save As**.

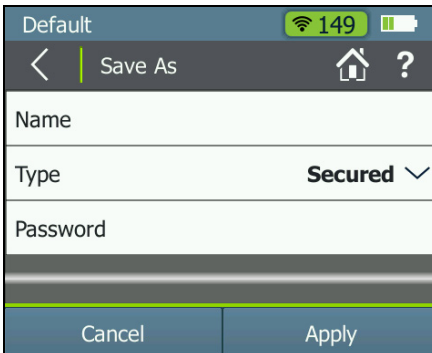


Figure 34. Profiles > Save As

- b. Touch **Name** and use the on-screen keyboard to type in a new name.
 - c. Touch **DONE** when finished.
- To save a **Secured** Profile:
 - a. Touch the down arrow to change the default **Type** from Open to **Secured**.


- b. Touch **Password** to enter a password on the on-screen keyboard.


Caution

Ensure that you enter the password as you intend it. Touch the open lock icon to double-check that it is correct. If you enter the password incorrectly here, or forget the password, you may not be able to access your Secured Profile again.


- c. Touch **DONE** when you finish entering the password.
- Touch **Apply** when you finish configuring the Profile.

How to: Load a Profile that is saved in the AirCheck G2 Tester

- 1 From the Home Screen, touch the  **Settings** button.
- 2 Touch **Profiles**.
- 3 Touch **Load**, and select a Profile name from the list.
- 4 Touch **Apply**.
- 5 Enter the password if the Profile is secured.

NOTE: This icon  next to a profile's name on the **Load Profile** screen indicates that the profile was downloaded from Link-Live.


How to: Transfer a Profile from a PC to the Tester

NOTE: See the AirCheck G2 Manager Help  for additional instructions.


- 1 Use the **Profile Setup** in AirCheck G2 Manager to make a Profile.
- 2 Connect the Tester to the PC using the USB cable supplied.
- 3 Wait for AirCheck G2 Manager to show a **green** "Connected" indicator at the top left.
- 4 In AirCheck G2 Manager, drag and drop the Profile name from the right panel, "**Local Profiles**," to the left panel, "**AirCheck G2 Profiles**" to transfer the Profile to the Tester.

NOTE: You must **Load** the Profile on the Tester before you can use it.

How to: Delete a Profile on the Tester



- 1 Select  **Settings > Profiles**.
- 2 Touch **Delete**.
- 3 Select the checkboxes for the Profiles you want to delete.
NOTE: You cannot delete the currently active Profile.
- 4 Touch **Apply**.
- 5 Confirm that you want to delete by touching **Yes**.

How to: Upload a Profile to Link-Live

- 1 From the Home Screen, touch the  **Settings** button.
- 2 Touch **Profiles**.
- 3 Touch **Push to Link-Live**, and select the checkbox for one or more Profile names from the list.
- 4 Touch **Apply**.
- 5 Confirm that you want to push the profiles to Link-Live by touching **Yes**.


The selected profiles are uploaded to Link-Live whenever an active wired or Wi-Fi connection is available.

NOTE: Existing profiles with the same name are overwritten if pushed to Link-Live or downloaded to an AirCheck G2 unit.

Access your uploaded Profiles on Link-Live.com from the left-side navigation drawer by clicking the navigation menu icon , and then selecting  **Settings > AirCheck G2 Profiles**.

Entering Network Security Credentials

There are three methods for entering and saving network and AP security credentials:

- From the Tester's **Network** or **Access Point Details** screen
- In the Tester's  **Settings** menu
- In AirCheck G2 Manager's **Profile Setup** menu

How to: Enter credentials from the Networks or Access Points list

If you select a discovered network or AP from the **Networks** or **Access Points** list, you will not need to enter the SSID or Authentication type.

- 1 From the Home Screen, touch **Networks** or **Access Points**.
- 2 Touch the row of the relevant network or AP to open the details screen.
- 3 From the network or AP details screen, touch the **Connect** button at the bottom of the screen. See [Figure 35](#).

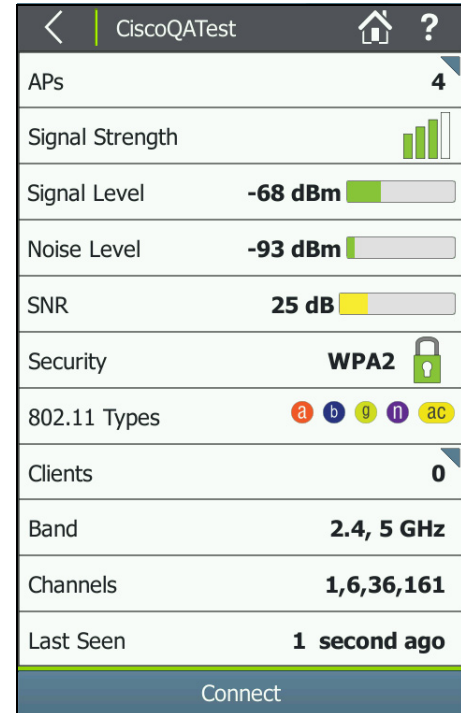


Figure 35. Network Details Screen

- If the network has not yet been configured on the current profile, the **Configure** screen opens; enter the appropriate credentials on the configuration screen.


See “[Networks](#),” [page 98](#) for more on configuring network settings.

- Click the **Apply** button at the bottom of the screen.

The Tester will run a **Connection** test. Afterwards, the credentials for the Network or AP are retained in the unsaved Profile, which is denoted with an asterisk (*) (shown in [Figure 36](#)).

NOTE: Notice that the Profile name at the top left of the screen has an asterisk because the Profile has not been saved with the new credentials. Once you enter security credentials for an SSID (or multiple SSIDs), save them to a Profile to avoid losing these settings if another Profile is loaded or if the Tester firmware is updated.

How to: Enter credentials in the Settings menu

- From the Home Screen, touch the  **Settings** button.
- Select **Networks**.
- On the **Networks** settings screen, touch **Add Network**. See [Figure 36](#).
- Enter the necessary **SSID**.

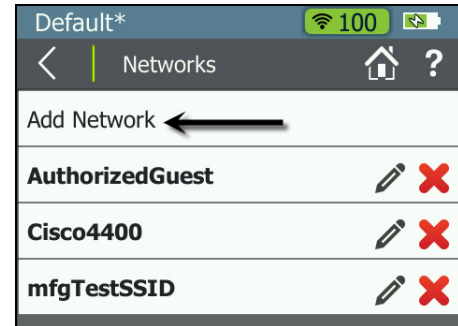






Figure 36. Configured Networks in Settings


- Configure Network settings as needed. See “[Networks](#),” [page 98](#) for more on configuring network settings.
- Touch **Apply** to add the credentials to the Profile. You should see your new network’s name listed in  **Settings > Networks**, as shown in [Figure 36](#).

How to: Enter credentials in AirCheck G2 Manager

NOTE: See the AirCheck G2 Manager Help  **Help** for additional instructions.





- Connect the Tester to a PC with AirCheck G2 Manager installed.
- Open the AirCheck G2 Manager application.

- 3 Select **Profile Setup** from the left side navigation menu.
- 4 Edit a Profile:
 - If necessary, transfer the “Default” Profile (or a profile created on AirCheck G2) from **AirCheck Profiles**, in the left pane, to **Local Profiles** in the right pane by dragging and dropping the Profile name.
 - Then, double-click the Profile name, or click the pencil icon  to edit the Profile's configuration.
 - You can also click the icon  to “Create a new Profile.”
- 5 In the **Create Profile** or **Edit Profile** dialog box, select **Networks** from the left-side headings.
- 6 Click the **Add** button.
- 7 Enter the required network configuration information, and click **Save**.
- 8 Transfer the new or updated Profile from the **Local Profiles** pane to the **AirCheck G2 Profiles** pane by dragging and dropping the Profile name.

Once added, the network or AP name will appear in the AirCheck G2 unit's  **Settings** menu on the **Networks** screen as shown in [Figure 36](#).

Adjusting the Test Thresholds

The AirCheck G2 Tester illustrates the status of your network using **red**, **green**, and **yellow** colors in the following ways:

- Colored bar graphs: 
-  Pass/  Warning/  Fail ratings
- Other test result fields that turn **red**, **green**, or **yellow**, for example, in AutoTest results:

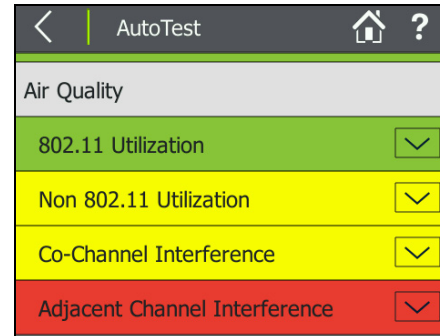



Figure 37. AutoTest Air Quality Results Screen

The colored ratings for test results on the AirCheck G2 are based on **Thresholds**. The Tester compares measured data with the configured thresholds to determine whether a result receives a Pass, Warning, or Fail rating. These ratings are set by default on the AirCheck G2 Tester, but you can adjust them for your own network testing needs.

How to: Change the Thresholds on the Tester

- 1 Touch  **Settings** on the Home Screen.
- 2 Select **Thresholds**.

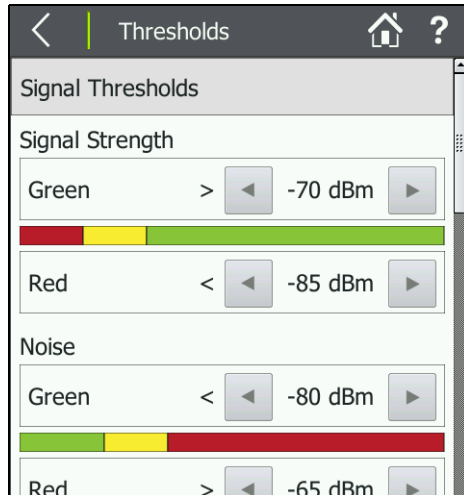




Figure 38. Thresholds Screen


- 3 Touch the  and  buttons to increase or decrease the measurements that will receive a rating of Pass (**green**) or Fail (**red**). The range in between will receive the Warning (**yellow**) rating.

For a list of all Thresholds, see [“AutoTest Settings” on page 109](#).


Changing the Location Settings and Language

The **Location Settings** configure the Tester to show illegal channels for the selected country in **red** text. See [“The Channels Utilization Screen,” page 21](#).

How to: Change the Location Settings

- 1 In the  **Settings** menu, touch **Location Settings**.
- 2 Select your country from the drop-down menu.
- 3 Touch **Apply**.

How to: Change the Language on the Tester

- 1 In the  **Settings** menu, touch **Device Settings**.
- 2 Touch **Language**.
- 3 Select your language from the list of those available.
- 4 Touch **Apply**.

The Tester will reboot and then show the selected language.

12. VERIFYING CONNECTIVITY AND COVERAGE

The **Connect to Network** and **Connect to AP** tests let you verify connectivity at specific locations in your network. Use these tests to verify the operation of the following wireless network functions:

- Clients can connect to the network.
- Clients have access to network services (for example, DHCP, DNS, and routers).
- Clients can communicate with other devices in a reasonable amount of time.
- The range for client connections is satisfactory.

The tests also measure performance parameters that can show you if the network has a problem.

NOTES:

- The **Connect to Network** and **Connect to AP** tests accessed from the **Networks** and **Access Points Details** screens are similar to the **Connection** tests that run during **AutoTest** for configured SSIDs. Both tests verify connectivity. However, the **Connect to Network** or **AP** tests connect to one SSID at a time, allow you to enter network security credentials if they are not pre-configured, and act as precursors to conducting roaming, range, and iPerf tests.

- When you connect to a network, the Tester usually connects through the access point that has the highest Signal-to-Noise Ratio. If the network includes secure and unsecured access points and security credentials are available, the Tester tries to connect to the secure access point that has the highest Signal-to-Noise Ratio. Some networks use a controller that connects you to the access point that has the least amount of traffic.
- You may not be able to connect to a hidden SSID or network until it can be resolved with a probe request or client connection.

Defining Ping and TCP Port Open Test Targets

To test connectivity to specific devices or application servers, you can configure them as Test Targets for ICMP Ping or TCP Port Open tests. The Tester will run these configured tests during all network or AP **Connection** tests, including **AutoTest**.

NOTE: Up to 10 test targets can be configured and saved as part of a Profile on the AirCheck G2 Tester.

How to: Add a new network Test Target

- 1 Touch  **Settings** on the Home Screen.

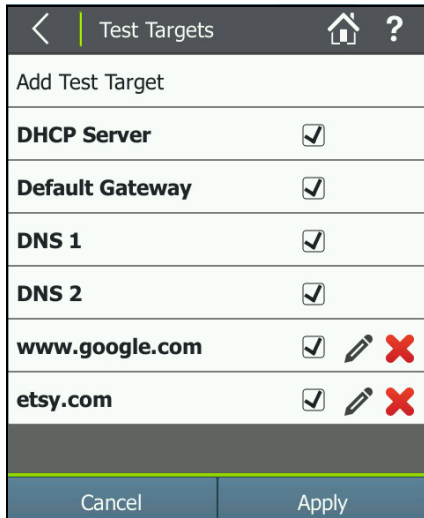


Figure 39. Settings > Test Targets Screen

- 2 Select **Test Targets**, and then touch **Add Test Target**.
- 3 Touch **Target** to enter an IP address or host name. Select either the **URL Keyboard** or **IPv4 Address Keyboard**, and type in the address. (In [Figure 40](#), the user has added etsy.com.)

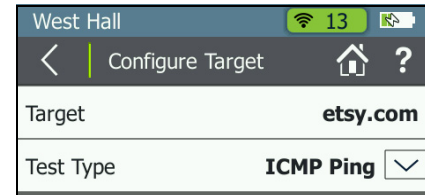




Figure 40. Configure Target Screen

- 4 Touch **DONE**.
- 5 Choose a **Test Type**: **ICMP Ping** or **TCP Port Open**. Touch the down arrow  to switch between them.

NOTES: If you specify a Ping test to a web server target that does not respond to Ping requests, the test may fail even if the target is reachable.

The default test type is ICMP Ping. If you select TCP Port Open, then you may change the default Port by touching **Port** to open the TCP Port screen, and entering the TCP port number.

- 6 Touch **Apply** to add the test target.
- 7 Touch **Apply** again on the Test Targets screen.

NOTE: When you add a test target in  **Settings > Test Targets**, the target is automatically added to **AutoTest** and **Connect to Network/AP** tests. See [Figure 45](#).

Running a Connect to Network or Connect to AP Test

- 1 From the Home Screen, touch **Networks** or **Access Points**.
- 2 Touch the row of the relevant network or AP to open its Details screen.
- 3 From the **Network** or **AP details** screen, touch the **Connect** button at the bottom of the screen to open the **Connect to Network** or **Connect to AP** screen, see [Figure 41](#).

When you press **Connect**,

- If an AP supports more than one network, a screen appears with a list of SSIDs, allowing you to select the SSID to which you want to connect.
- If you have *not* configured the network in the current Profile, the configuration screen will open. Configure the appropriate security settings, and touch **Apply** to connect.
- If the network or AP's credentials are already saved in the Profile, the connection test starts.

The results are displayed as they become available.

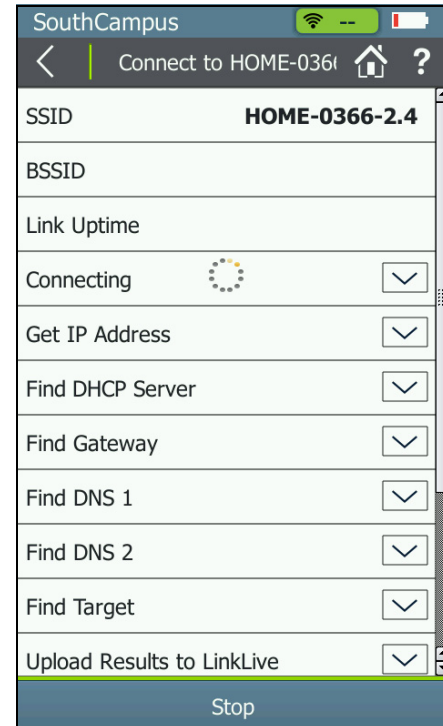


Figure 41. The Connect to Network Test (In Progress)

When a connection test finishes, the Tester stays connected to the AP until you touch the **Back** or **Home** button.

Reviewing Connect to Network or AP Results

The results fields on this screen change color to indicate the success or failure of each portion of the **Connect to Network** or **AP** test.

SSID: The network's SSID.

BSSID: The MAC address of the access point that the Tester uses for the connection.

Link Uptime: The length of time during which the link has been established.

Connection Established

To expand or collapse the details for a test step, press the arrow button.

Connect to AP: Indicates whether the Tester was able to connect to the AP.

Authenticate: Indicates whether the authentication steps passed.

Exchange packets with AP: Indicates whether the Tester received packets back from the AP.

IP Address

IP Address: The IP addresses of the currently established connections.

Connect to Cisco3702	
SSID	CiscoQATest
BSSID	Cisco:84:aa:ff
Link Uptime	0:00:29
Connection Established <input type="checkbox"/>	
Connect to AP	✓
Authenticate	✓
Exchange packets with AP	✓
IP Address	10.250.2.217 <input type="checkbox"/>
Captive Portal Complete	<input type="checkbox"/>
DHCP Server Found	10.250.0.2 <input type="checkbox"/>
Gateway Found	10.250.0.1 <input type="checkbox"/>
DNS 1 Found	10.250.3.221 <input type="checkbox"/>
Tests	Log

Figure 42. Connect to AP Test Results

Captive Portal

When the Captive Portal setting is enabled, this portion of the test opens a web browser window that allows you to enter the required credentials for the network. Use the zoom icons in the top navigation bar to zoom in or out in the browser window. Once you are finished in the browser window, touch OK to return to the connect test in progress.

NOTE: You must set up the Network (not the AP) with the **Captive Portal** setting turned **On** for this function to appear in the connect test. The Captive Portal setting appears on the **Configure Network** screen. See [“How to: Add a network and configure network settings,” page 98.](#)

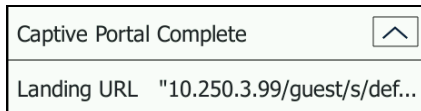


Figure 43. Captive Portal

The Captive Portal test does not show a Pass/Fail status, but you can touch the down arrow next to “Captive Portal Complete” to view the Landing URL for the captive portal.

Target Tests

DHCP Server: Indicates whether or not the DHCP server could be successfully pinged.

Default Gateway: Indicates whether or not the configured gateway could be successfully pinged.

DNS 1 and DNS 2: Indicate whether the primary (DNS 1) and secondary (DNS 2) DNS servers could be successfully pinged.

(User-Definable) Targets: Indicates whether or not the user-configured test targets could be successfully pinged or reached with a TCP Port Open test.

NOTE: The default target is www.google.com, but you can add and edit test targets. See [“Defining Ping and TCP Port Open Test Targets,” page 58.](#)

Link-Live Upload: Indicates whether the Tester was able to upload the current test results to a Link-Live account. See [“Getting Started in Link-Live Cloud Service,” page 47.](#)

PHY Data Rate: The highest measured physical transmit data rate.

NOTE: If the Tester roams to a new AP after a connection test has completed, a data rate of - will be displayed. The - indicates that AirCheck G2 is not currently transmitting Wi-Fi data and a data rate cannot be obtained.

Default*	
Connect to Cisco3702	
DHCP Server Found	10.250.0.2
Gateway Found	10.250.0.1
DNS 1 Found	10.250.3.221
DNS 2 Found	10.200.72.11
Target Found	www.google.com
Link-Live Upload Successful	
PHY Data Rate	20 Mbps
Max PHY Data Rate	195 Mbps
Signal Level	-66 dBm
Noise Level	-96 dBm
SNR	30 dB
Retry Rate	2 %

Figure 44. Connect to AP Test Results Continued

Max PHY Data Rate: The maximum rate at which AirCheck G2 has transmitted during the connection.

Signal Level: The measured real-time signal level.

Noise Level: The measured real-time noise level.

SNR: The measured real-time signal-to-noise ratio.

Retry Rate: The percentage of transmitted frames that are retry frames.

Reviewing User-Defined Test Target Results

While the Connection test is still running, the Target Test fields displays:



Once the test finishes, the field turns **green** if successful.

 A screenshot of a table displaying connection test results. The table has a light green header and a white body. The first two rows are header rows with a green background. The first row shows 'Target Found' and 'www.google.com' with a dropdown arrow. The second row shows 'Target Found' and 'etsy.com' with an upward-pointing arrow. The subsequent rows list various metrics and their values.

Target Found	www.google.com
Target Found	etsy.com
DNS Name	etsy.com
IP Address	151.101.193.224
Pings Sent	3
Pings Returned	2
Pings Lost	1
Avg Ping Rsp Time	33.5 ms
Min Ping Rsp Time	31.6 ms
Max Ping Rsp Time	35.4 ms

Figure 45. Connection Test Target Results

DNS Name: Network name and access point name for the ping target.

IP Address: IP address for the ping or the TCP Port Connect target.

Pings Sent: The number of pings the AirCheck G2 Tester sent to the target.

Pings Returned: The number of pings the Tester received back from the test target.

Pings Lost: The number of pings that were not answered.

Avg, Min, and Max Ping Rsp Time: The average, minimum, and maximum time in milliseconds for the test target to return a ping.

Press the **Log** button to see details about the connection procedure.

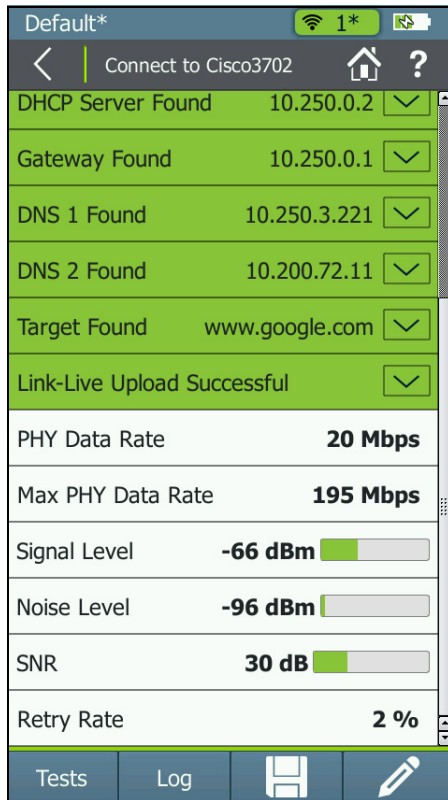


Figure 46. Completed Connect to AP Screen

Next Steps


After running **Connection** tests, select a button at the bottom of the screen to perform additional actions:

- On the completed **Connect to AP** or **Connect to Network** test screen (Figure 46), touch **Tests** to open the **Test Type** screen.
 - If you are connected to an AP, press **Range Test** to begin a range test for the AP. See [“The Access Point Range Test,”](#) page 78.
 - If you are connected to a Network, press **Roaming Test** to begin a roaming test for the network. See [“Performing a Network Roaming Test and AP Range Test,”](#) page 75.
 - For either a Network or AP connection, press **iPerf Test** to initiate iPerf performance testing. See [“Conducting iPerf Performance Testing,”](#) page 81.
- Press the **Log** button to see details about the connection procedure.
- Press the **Save** button to save the connection test results and current discovery data to a session file. See [“Saving Session Files and Packet Captures,”](#) page 86.
- Touch the **Comment** button to edit the **Test Comment** or **Job Comment** to be uploaded to Link-Live and associated with your test result. See [“Adding Comments,”](#) page 36.

13. LOCATING AN ACCESS POINT, CLIENT, OR INTERFERER

The AirCheck G2 can use either the three internal antennas or the optional external antenna (sold separately) to locate devices. In areas that have many rooms, for example in schools and hospitals, use the internal antennas to locate.

In large, open areas, the optional external antenna can help you locate devices more quickly. See “Using the External Directional Antenna,” page 72.

The AirCheck G2 Tester can use either the external antenna or the internal antennas, but not both at the same time. The **Locate** function defaults to the internal antenna. When you are on the **Locate** screen, if AirCheck G2 has sensed the external antenna being connected, the switch is set to the external antenna. (Otherwise, touch the antenna button ) When the external antenna port is turned off, AirCheck G2 automatically switches to the internal antenna.

How to: Locate an AP, Client, or Interferer

- 1 To locate an access point: Go to the **Access Points** list screen, and select the access point you want to locate to open the **Access Point Details** screen (Figure 9).

To locate a client: From the Home Screen, touch **Clients**, and select the client you want to locate to open the **Client Details** screen (Figure 16).

To locate an interferer: From the Home Screen, touch **Interferers**. You can begin locating from either the **Interferer Events** screen or the **Interferer Event Details** screen (Figure 18).

- 2 Press **Locate**.
Figure 48 shows the **Locate Access Point** screen.
Figure 49 shows the **Locate Client** screen.
Figure 51 shows the **Locate Interferer** screen.
- 3 Divide the area you want to search into four sections, as shown in Figure 47. Go to one corner of the area.
- 4 Make a note of the signal strength.
- 5 Go to the other three corners of the area, and make a note of the signal strength at each corner.
- 6 Go to the section that has the strongest signal.
- 7 Repeat steps 3, 4, 5, and 6 again until you find the device.

NOTES:

- If you do not find the device, look on the floor above or below you.
- If you cannot find a client, and the device shows a connection to the network, first find the access point that the device used, then look for the device.

The Locate AP Screen

The following information shows on the **Locate Access Point** screen:

Screen Title: Shows the AP's SSID. The address starts with a vendor abbreviation prefix, if the prefix is available. See [“How to: Load the latest list of vendor prefixes into the Tester,” page 97.](#)

BSSID: The AP's BSSID.

Last Seen: The time elapsed since the AP was last detected.

Signal Strength Meter: Visually displays the AP's real-time signal level reading.

Signal Strength Line Graph: Visually displays AP's signal level over time and the highest signal strength recorded (high watermark).

NOTE: If the AP's signal is lost, a **red** vertical line appears on the Signal Strength line graph at the time of connection loss, but the graph continues scrolling. Once AirCheck G2 comes back within the range of the AP's signal, a **green** vertical line appears on the line graph. See [Figure 50.](#)

Signal Strength: The strength of the signal from the access point. The display shows “---” if the Tester cannot hear the access point.

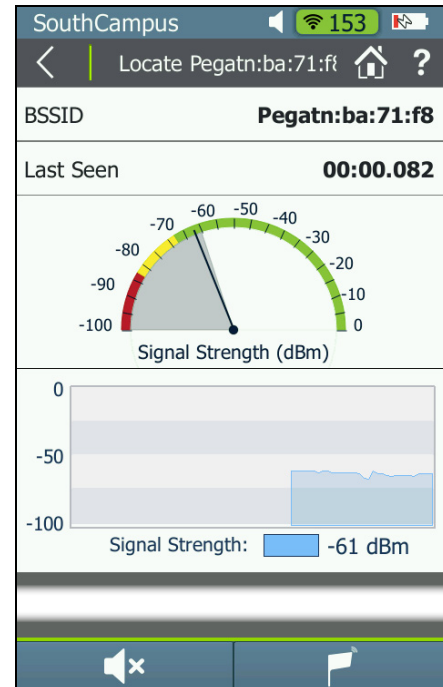


Figure 48. Locate Access Point Screen

Sound/Mute: Press this button to turn off the sound. When sound is on, AirCheck G2 emits an audible single-tone clicking sound that increases in frequency as the signal level

increases (i.e., as you are moving closer to the AP). The sound icon displays in the screen header when sound is On.

External Antenna Icon: Press this button to turn the External Antenna on or off. The external antenna is On when the icon displays in the screen header, as shown in [Figure 49](#).

The Locate Client Screen

The following information shows on the **Locate Client** screen:

Screen Title: Shows the Client's MAC address. The address starts with a vendor abbreviation prefix, if the prefix is available. See ["How to: Load the latest list of vendor prefixes into the Tester,"](#) page 97.

MAC Address: The client's MAC address.

Last Seen: The time elapsed since the client was last detected.

Signal Strength Meter: Visually displays the client's real-time signal level reading.

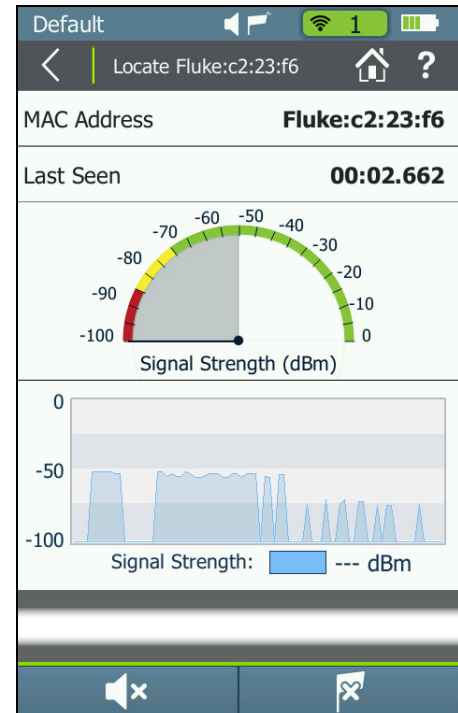


Figure 49. Locate Client Screen

Signal Strength Line Graph: Visually displays the client's signal level over time and the highest signal strength recorded (high watermark).

NOTE: If the client's signal is lost, a **red** vertical line appears on the Signal Strength line graph at the time of connection loss, but the graph continues scrolling. Once AirCheck G2 comes back within the range of the client's signal, a **green** vertical line appears on the line graph.

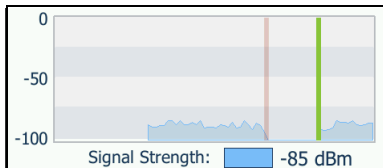


Figure 50. Locate Screen Connection Lost/Recovered

Signal Strength: The strength of the signal from the client in dBm. The display shows “---” if the Tester cannot hear the client.

Sound/Mute Icon: Press this button to turn off the sound. When sound is on, the icon displays in the screen header, and AirCheck G2 emits an audible single-tone clicking sound that increases in frequency as the signal level increases (i.e., as you are moving closer to the device).

External Antenna Icon: Press this button to turn the External Antenna on or off. The external antenna is On when the icon displays in the screen header, as shown in [Figure 49](#).

The Locate Interferer Screen

If you touch **Locate** from the main Interferer Events list screen, the **Select Interferer** screen opens. Select the interfering device type you would like to locate, and then touch **Apply**.

If you touch **Locate** from a specific interfering device's **Interferer Event Details** screen, the AirCheck G2 begins attempting to locate the selected device.

The following information shows on the **Locate Interferer** screen:

Interferer Type: The type of interfering device you are trying to locate.

Last Seen: The time elapsed since the device was last detected.

Signal Strength Meter: Visually displays the interferer's real-time signal level reading.

Signal Strength Line Graph: Visually displays the interferer's signal level over time and the highest signal strength recorded (high watermark).

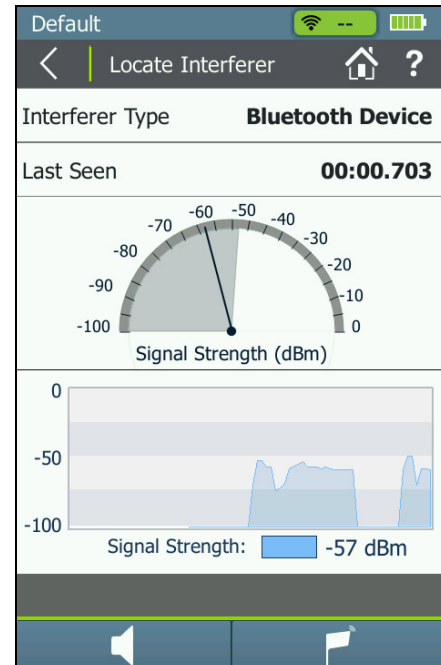


Figure 51. Locate Interferer Screen

Sound/Mute Icon: Press this button to turn off the sound. When sound is on, the icon displays in the screen header, and AirCheck G2 emits an audible single-tone clicking

sound that increases in frequency as the signal level increases (i.e., as you are moving closer to the device).



External Antenna Icon: Press this button to turn the External Antenna on or off. The external antenna is On when the icon displays in the screen header, as shown in [Figure 49](#).

Using the External Directional Antenna


In large, open areas, the external directional antenna can show you the direction of a signal source more precisely than the omni-directional antennas inside the Tester.

NOTES:

- When the external antenna is connected, it is only functional in the **Locate** screens.
- While on one of the **Locate** screens, the AirCheck G2 Tester does not transmit.

How to: Use the external antenna to locate

- 1 Connect the antenna to the SMA connector on the Tester (See ["AirCheck G2 Physical Features," page 6](#)).

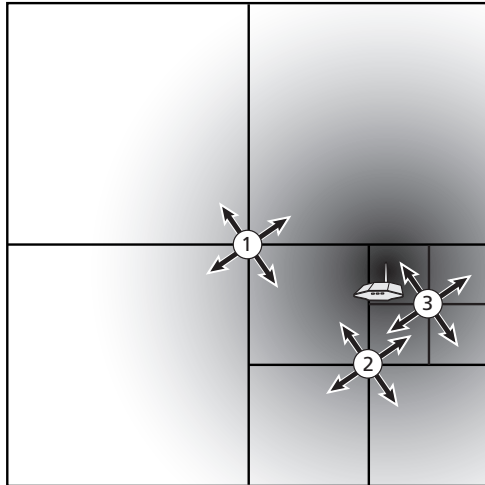
The screen shows the antenna icon () when you connect the antenna. The Tester uses the external antenna if the antenna is connected. To switch between the external and internal antennas, touch the antenna icon at the bottom right of the screen.

- 2 Divide the area into four sections, as shown in [Figure 52](#). Go to the center of the area.
- 3 Press **Locate**.
- 4 Point the antenna to each corner of the area. [Figure 53](#) shows how to point the antenna.
- 5 Go to the middle of the section that has the strongest signal.
- 6 Repeat steps 2, 5, and 6 until you find the device.

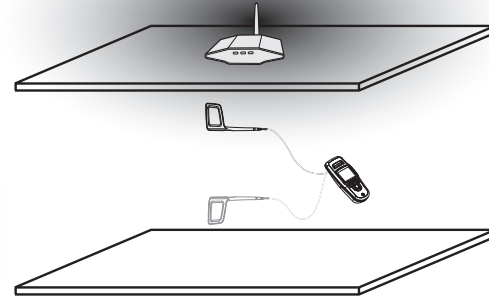
NOTE: If you do not find the device, look on the floor above or below you.

Use these guidelines when you use the external antenna (See [Figure 53](#)):

- Hold the antenna at a constant height. You can get more stable measurements if you hold the antenna above cubicle walls.
- When you point the antenna in different directions, do not move your arm. Hold the Tester and antenna in one position while you turn your body.



Go to the middle of the section that has the strongest signal until you find the access point.



The signal can be stronger above or below you.

Figure 52. Search Pattern for the External Antenna

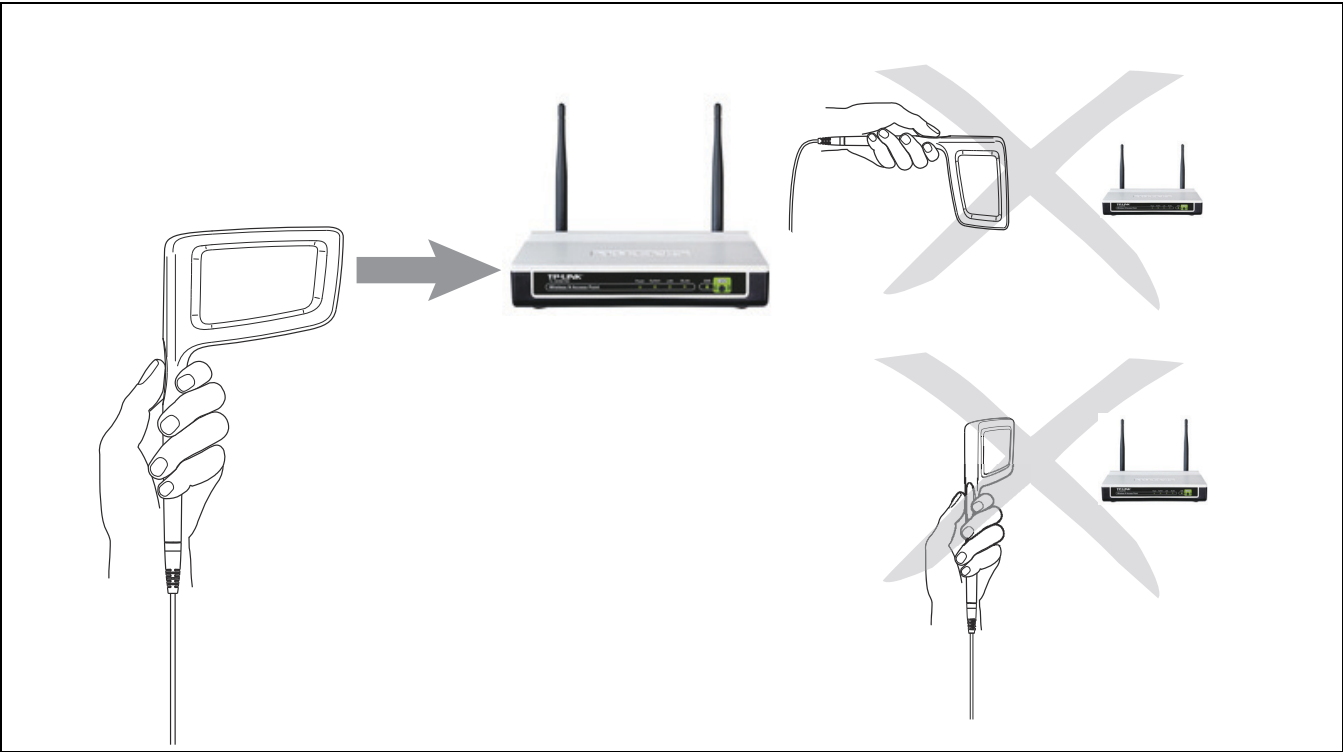


Figure 53. How to Point the External Antenna

14. PERFORMING A NETWORK ROAMING TEST AND AP RANGE TEST

The Network Roaming Test

The Roaming Test indicates how well the network supports client roaming. When you move from location to location with AirCheck G2 during a roaming test, it will display when a roaming event has occurred and to which BSSID it has roamed.

NOTE: For a roaming test to work properly, you must choose a target that responds to ICMP Pings. If no such target is available, you can still view roaming results, but ping loss rate will be 100% and the roaming test's **Connection Range** (line graph) will report "< 1%".

How to: Start a Roaming test

Once AirCheck G2 has connected to a network, the **Roaming Test** button appears at the bottom of the **Connect to Network** screen ([Figure 46](#)).

- 1 Touch the **Roaming Test** button to open the **Select Target** screen, which presents you with a number of roaming test targets to choose from.
- 2 Select a target.
- 3 Touch **Apply**.

The **Roaming Test** screen opens, and live data starts to populate the screen.

How to: Select a custom test target

- 1 Select **Enter New Target**.
- 2 Select **Apply**. The **New Target** screen opens, showing a on-screen keyboard.
- 3 Select an input option.
- 4 Use the keyboard to enter the IP address or host name of the target.
- 5 Select **DONE**.

The Roaming Test Screen

The **Roaming Test** screen displays the following information:

AP Name: Shows the name of the AP to which AirCheck G2 is currently connected.

NOTE: When the Tester roams, the new AP is shown here. If AirCheck G2 disconnects from the network (no APs available), and then comes within range of the AP, it will reconnect to the selected network's AP and continue the ping tests.

Target: The selected test target, which can be the default gateway, DHCP server, primary DNS server, secondary DNS server, hostname, or a user-defined target.

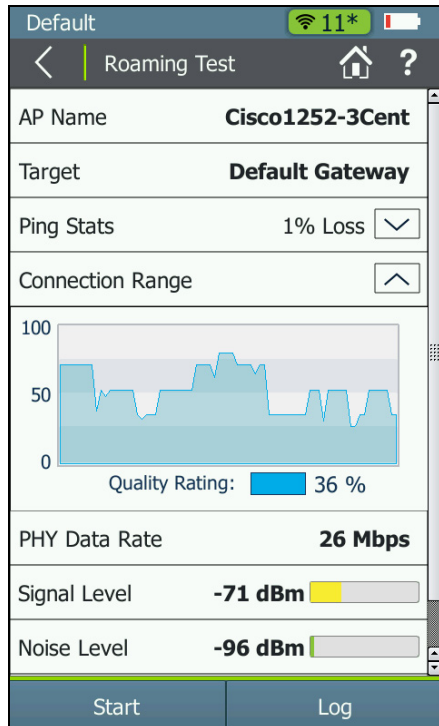


Figure 54. Network Roaming Test Screen

Ping Stats: The percentage of ping packets lost. Select the arrow [Dropdown Arrow] to expand for the following detailed Ping information:

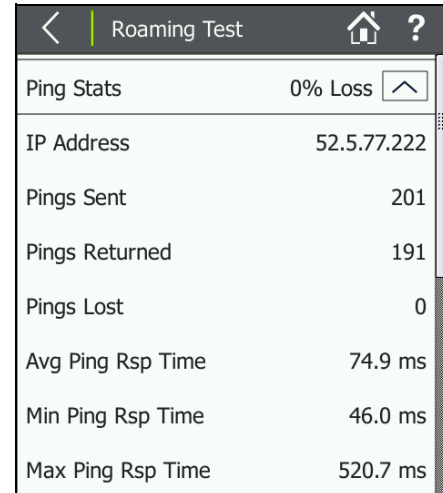


Figure 55. Roaming Test Ping Stats

IP Address: The IP address of the target to which AirCheck G2 is sending ping packets.

Pings Sent: The number of ping packets sent.

Pings Returned: The number of ping packets returned.

Pings Lost: The number of ping packets lost.


NOTE: When the roaming test is stopped, there may still be a few ping packets in transit that have not yet been received and have not timed out to count as lost pings. Therefore, the reported number of pings received and the number of pings lost may not add up to the total number of pings sent. The difference is just the number of pings in transit when the test was stopped. This is shown in [Figure 55](#).

Avg, Min, and Max Ping Rsp Time: The average, minimum, and maximum ping response times.

NOTE: If the target of a roaming test is a hostname which cannot be DNS-resolved to an IP address for that target, the results of the test will be displayed as follows:

The Ping Stats Field: Turns **red**, without showing any data.

The Ping Stats Pull-down menu: Displays "IP Address + DNS Failed."

Connection Range (line graph): The connection range over time. The connection range is calculated using this formula: (Average Ping Response Rate) * (Actual TX Data Rate/ Maximum Possible TX Data Rate). This pane is expanded by default. Select the up arrow  to collapse it.

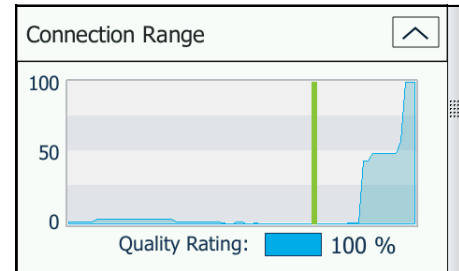


Figure 56. Roaming Test Connection Range

NOTE: When the Tester roams to a new AP, the **Connection Range** line graph shows a **green** vertical line at the time the tool connected to the new AP.

PHY Date Rate: The connection's transmit physical data rate in Mbps.

NOTE: If the Tester roams to a new AP after a connection test has completed, a data rate of -- displays. The dashes indicate that AirCheck G2 is not currently transmitting Wi-Fi data and a data rate cannot be obtained.

Signal Level: The connection's signal level in dBm.

Noise Level: The noise level in dBm on the channel used.

SNR: The connection's signal-to-noise ratio in dB.

Retry Rate: The percentage of transmitted frames that are Wi-Fi retry frames.

Press the **Stop** button to stop the test.

Press the **Log** button to see detailed connection activities.

The Access Point Range Test

A range test is used to determine the effective connectivity range of a specific AP. The connection range shows the probability of the best possible connection to the access point from your location.

The best possible connection gives a ping response rate of 100% and the maximum possible data rate. The connection range value decreases as you move farther away from the access point. First, the data rate decreases. As you continue to move away from the access point, the ping response rate decreases and the connection becomes unreliable.

How to: Start a Range Test

Once AirCheck G2 has connected to an AP, the **Range Test** button appears at the bottom of the **Connect to AP** screen (Figure 46).

- 1 Touch the **Range Test** button to open the **Select Target** screen, which presents you with a number of range test targets to choose from.
- 2 Select a target.
- 3 Touch **Apply**.

The **Range Test** screen opens and live data starts to populate the screen.

At the bottom of the target list is an **Enter New Target** option, which allows you to specify a test target other than those listed on the **Select Target** screen.

How to: Select a custom test target

- 1 Select **Enter New Target**.
- 2 Select **Apply**. The **New Target** screen opens, showing a on-screen keyboard.
- 3 Select an input option.
- 4 Use the keyboard to enter the IP address or host name of the target.
- 5 Select **DONE**.

The AP Range Test Screen

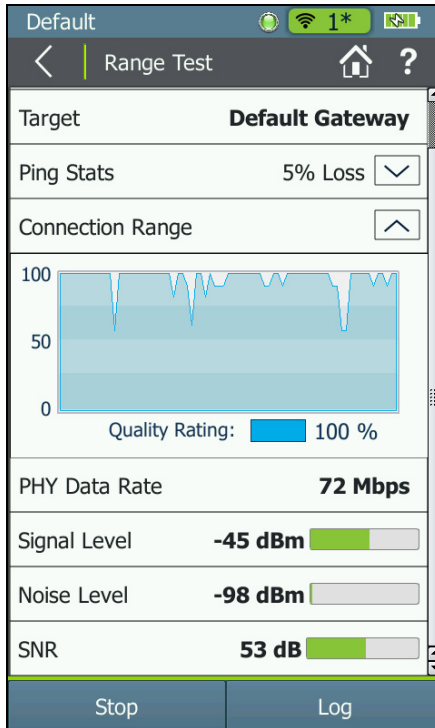


Figure 57. AP Range Test Screen

The **Range Test** screen shows the following information:

AP Name: The name of the AP to which AirCheck G2 is currently connected.

Target: The selected test target.

Ping Stats: The percentage of ping packets lost. Select the down arrows to expand for the following detailed information:

IP Address: The IP address of the target to which AirCheck G2 is sending ping packets.

Pings Sent: The number of ping packets sent.

Pings Returned: The number of ping packets returned.

Pings Lost: The number of ping packets lost.

Avg Ping Rsp Time: The average ping response time.

Min Ping Rsp Time: The minimum ping response time.

Max Ping Rsp Time: The maximum ping response time.

NOTE: When a range test is stopped, there may still be a few ping packets in transit that have not yet been received and have not timed out as to count as lost pings. Therefore, the reported number of pings received and the number of pings lost may not add up to the total number of pings sent. The difference is just the number of pings in transit when the test was stopped.

NOTE: If the target of a range test is a hostname that cannot be DNS-resolved to an IP address for that target, the results of the test will be displayed as follows:

The Ping Stats Field: Turns **red**, without showing any data.

The Ping Stats Pull-down menu: Displays "IP Address + DNS Failed".

Connection Range Line Graph: The connection range over time. The connection range is calculated using this formula: $(\text{Average Ping Response Rate}) * (\text{Actual TX Data Rate} / \text{Maximum Possible TX Data Rate})$. The pane is expanded by default. Select the up arrow to collapse it.

NOTE: AirCheck G2 does not roam during a range test. It disconnects when it goes beyond the AP's signal coverage area. At the time of connection loss, a **red** vertical line appears on the Connection Range line graph (see [Figure 58](#)), but the graph continues scrolling. Once AirCheck G2 comes back within the range of the AP, it reconnects with the AP, and a **green** vertical line appears on the Connection Range line graph.

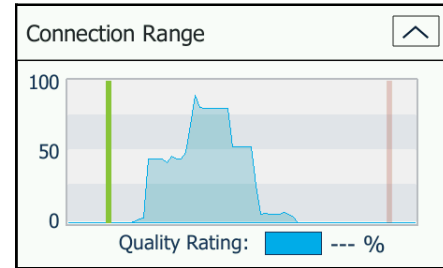


Figure 58. AP Range Test Connection Range Graph

PHY Data Rate: The connection's Transmit PHY data rate in Mbps.

NOTE: If the Tester roams to a new AP after a connection test has completed, a data rate of -- will be displayed. The -- indicates that AirCheck G2 is not currently transmitting Wi-Fi data and a data rate cannot be obtained.

Signal Level: The connection's signal level in dBm.

Noise Level: The noise level in dBm on the channel used.

SNR: The connection's signal-to-noise ratio in dB.

Retry Rate: The percentage of transmitted frames that are Wi-Fi retry frames.

15. CONDUCTING IPERF PERFORMANCE TESTING



The iPerf Test is a standardized network performance tool used to measure UDP or TCP capacity and throughput. The AirCheck G2 can perform iPerf testing with either a NetAlly Test Accessory or iPerf server software installed on a PC as the test endpoint.

NOTE: If you are using an iPerf server installed on a PC as the endpoint, iPerf Version 3.1 or newer is required. You can download it at this URL: <https://iperf.fr>

How to: Run an iPerf test

Once AirCheck G2 has finished [Running a Connect to Network or Connect to AP Test](#), the **Tests** button appears at the bottom of the **Connect to Network** and **AP** screens ([Figure 46](#)).

- 1 Touch **Tests** and then **iPerf Test** to open the **Select iPerf Server** screen.
- 2 Either manually enter your iPerf server's IP address or select a discovered Test Accessory from the Available iPerf Remotes list to populate the **iPerf Server** field.
- 3 Once your **iPerf Server** is selected and its IP address displayed in the top field, touch the **Start** button at the bottom of the screen to begin the iPerf test. The scan does not need to be complete.

The Select iPerf Server Screen

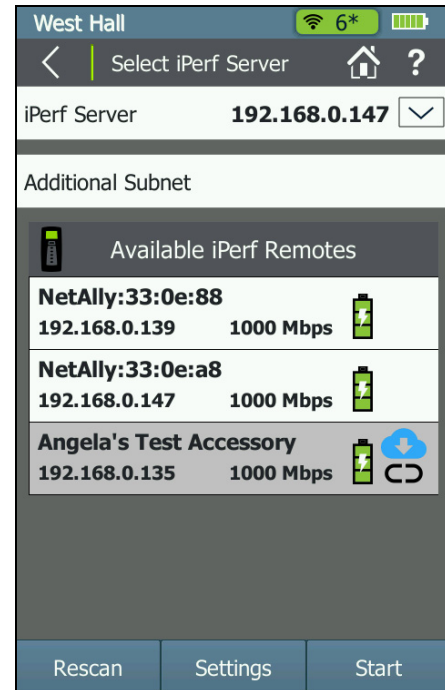


Figure 59. Select iPerf Server Screen

When you open the **Select iPerf Server** screen, the AirCheck G2 begins automatically scanning for NetAlly Test Accessories that are available for iPerf testing. Search for and select the appropriate iPerf test endpoint using the following methods:

- The currently selected **iPerf Server** IP address displays in the top field on this screen. Touch any of the discovered Test Accessories in the **Available iPerf Remotes** list during or after scanning to populate the iPerf Server field with the selected IP address.

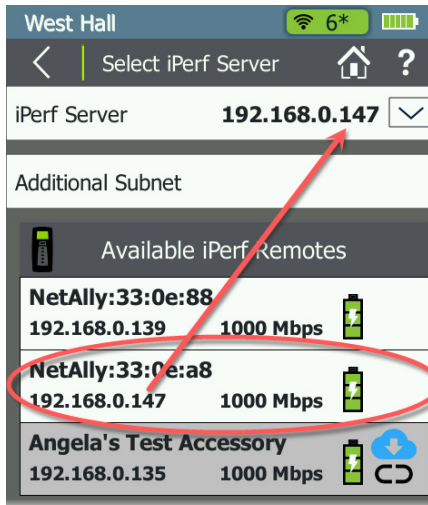


Figure 60. Touch to Select an iPerf Server

- If you know the IP address of your iPerf server software or Test Accessory, you can manually enter it by touching the **iPerf Server** IP Address field. Touch **DONE** to save the new address.

NOTE: To use iPerf server software installed on a PC, you must type in the IP address manually by touching the **iPerf Server** field at the top of this screen.





- If you have recently run an iPerf test on the AirCheck G2, the **iPerf Server** field autopopulates with the last known iPerf server's IP address. Touch the drop-down arrow to select another, recently used iPerf server address. The AirCheck G2 shows the last five addresses used in the drop-down list.
- The AirCheck G2 scans its current local subnet and the subnet of the last Ethernet test ("[Testing Ethernet for Access Point Backhaul](#)" on page 45) run while using the currently loaded profile for available iPerf servers. See "[How to: Discover a Test Accessory using the Ethernet Test](#)," page 83.
- You can also manually enter an IP Subnet to be scanned by touching the **Additional Subnet** field. Touch **Rescan** after entering a subnet to scan the subnet.
- If you have a Link-Live Cloud Service account that is currently configured to receive your test results, AirCheck G2 queries Link-Live for any claimed Test Accessories and displays them in the list of **Available iPerf Remotes**.

NOTES:

- If the **Link-Live Connection** setting is **Off** in **Device Settings > Link-Live Settings**, the AirCheck G2 does not query Link-Live for Test Accessories. See [“Link-Live Settings,” page 100](#).
- If you restore a Test Accessory to factory default configuration, you must un-claim the Test Accessory in Link-Live and re-claim it before AirCheck G2 will be able to discover it from Link-Live again.

Available iPerf Remotes List

This list displays the iPerf servers that AirCheck G2 has discovered using the above methods. Each server is listed with its MAC address or name from Link-Live, IP address, link speed, and battery level or PoE status.

- The Battery icon indicates the battery level  or PoE status  of the Test Accessory.
- The Cloud icon  marks claimed Test Accessories that were discovered from Link-Live Cloud Service.
- iPerf Remotes shown with a gray background and the unlinked symbol  are Test Accessories that were previously discovered by the AirCheck G2 from Link-Live, but were not detected during the most recent scan.

Touch **Rescan** to restart the scan for Test Accessories.

Touch the **Settings** button at the bottom of the **Select iPerf Server** screen to access the **iPerf Settings**. These are the same iPerf Settings that appear in the main AirCheck G2 Settings screen. See [“iPerf Settings,” page 113](#).

How to: Discover a Test Accessory using the Ethernet Test

You can aid discovery of your Test Accessory by the AirCheck G2 by running an Ethernet Test on the same subnet where you plan to connect your Test Accessory.

- 1 Connect your AirCheck G2 to your subnet using the same Ethernet switch port you will use to connect your Test Accessory.
- 2 From the AirCheck G2 home screen, touch **Ethernet Test** to start an Ethernet test.
- 3 Once the Ethernet Test completes, disconnect the AirCheck G2 and reconnect your Test Accessory using the same switch port.
- 4 On AirCheck G2, **Connect** to the appropriate Network or AP, and then select **iPerf Test** at the bottom of the **Connect to Network/AP** screen.
- 5 Your connected Test Accessory should appear in the list of **Available iPerf Remotes** sorted by IP address. Tap the Test Accessory's row in the list to populate the top iPerf Server field with its IP address, and touch the **Start** button to begin the iPerf test.

Reviewing iPerf Test Results

The iPerf screen shows the following measurements, some with Pass (green), Fail (red), or Warning (yellow) results:

NOTE: To adjust the Pass/Fail thresholds, TCP/UDP, and other settings for the iPerf Test, go to **Settings > iPerf Settings** on your AirCheck G2. See ["iPerf Settings," page 113](#).

Touch **Start** to run another iPerf test to the same iPerf Server.

Results Always Included

BSSID: The network's BSSID.

SSID: The network's SSID.

iPerf Server Address: The iPerf endpoint's IP address.

Upload Results to Link-Live: Indicates whether the Tester was able to upload the current test results to a Link-Live account. See ["Getting Started in Link-Live Cloud Service," page 47](#).

PHY Data Rate: The Wi-Fi physical data rate in Mbps.

Signal Level: The network's signal level in dBm.

Noise Level: The network's noise level in dBm.

SNR: The network's signal-to-noise ratio in dB.

Retry Rate: The percentage of transmitted frames that are Wi-Fi retry frames.

iPerf	
BSSID	18:64:72:fb:c5:10
SSID	ARUBA_QA
iPerf Server Address	10.250.3.171
Avg. Up Speed	32.4 Mbps
Max Up Speed	43.3 Mbps
Avg. Down Speed	37.9 Mbps
Max Down Speed	59.0 Mbps
Upload Results to Link-Live	<input type="checkbox"/>
PHY Data Rate	175 Mbps
Signal Level	-33 dBm <input type="range"/>
Noise Level	-92 dBm <input type="range"/>
SNR	59 dB <input type="range"/>
Retry Rate	1 %
Start	

Figure 61. iPerf Test TCP Results

TCP only Results

Avg. Up Speed: The network's average upload rate.

Max Up Speed: The network's maximum upload rate.

Avg. Down Speed: The network's average download rate.

Max Down Speed: The network's maximum download rate.

NOTE: ⓘ This icon indicates that the hardware may be limiting the maximum speed measurement.

UDP only Results

Upload Speed: The network's average upload rate.

Upload Jitter: The network's measured upload jitter.

Upload Loss: The percentage of packets being lost during upload.


Download Speed: The network's measured download rate.

Download Jitter: The network's measured download jitter.

Download Loss: The percentage of packets being lost during download.



16. SAVING TEST SESSIONS, PACKET CAPTURES, AND SCREENSHOTS

Saving Session Files and Packet Captures


When you touch the  **Save** button on any screen, the **Save Session** screen appears and provides options for saving a session file.

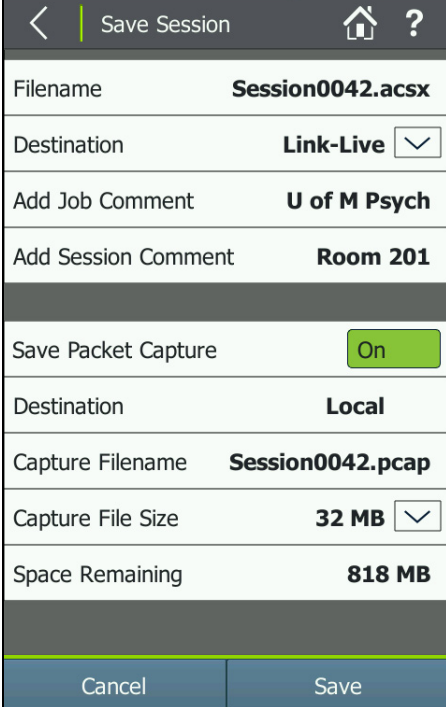
A session file includes this information:

- AutoTest results (if saved when exiting AutoTest)
- Discovery information for networks, access points, associated clients, interferers, and channels (does not include graphs)
- Network and AP connection test results including iPerf tests and connection logs
- Ethernet test results including DHCP logs

AirCheck G2 accumulates session data until it is cleared with one of the following actions: turning off the unit, rebooting the unit, touching the  **Refresh** button, or entering or exiting the  **AutoTest** screen. The AirCheck G2 Tester saves up to 100 test results.

How to: Save a Test Session

- 1 Press  **Save**. The Tester opens the **Save Session** screen with a default, sequential filename, "Session0000.acsx".



Save Session	
Filename	Session0042.acsx
Destination	Link-Live <input type="checkbox"/>
Add Job Comment	U of M Psych
Add Session Comment	Room 201
Save Packet Capture	<input checked="" type="checkbox"/> On
Destination	Local
Capture Filename	Session0042.pcap
Capture File Size	32 MB <input type="checkbox"/>
Space Remaining	818 MB
<input type="button" value="Cancel"/> <input type="button" value="Save"/>	

Figure 62. Save Session Screen

- 2 To edit the default filename, press **Filename**, and use the on-screen keyboard to enter a custom name. When finished, press **DONE**.

NOTE: Session filenames can have a maximum of 32 characters, not including the file extension.


- 3 Tap the drop-down menu button next to **Destination** to switch the location where the session file is saved between **Link-Live** or **Local**. If Link-Live is the Destination, the file will upload to Link-Live the next time the AirCheck G2 unit is connected to an active wired or wireless network. If the Destination is local, the file is saved on the unit, and can be downloaded to a PC over a USB connection using AirCheck G2 Manager.
- 4 Optionally, touch **Add Job Comment** to open the **Job Comment** screen and enter or edit the Job Comment that is uploaded to Link-Live with all uploaded test results and files. The Job Comment persists until you delete or edit it. You can also set the Job Comment from **Settings > Link-Live**.
- 5 Optionally, touch **Add Session Comment** to enter a new comment and attach it to your session file in Link-Live. The Session Comment does not persist after you begin a new test or save a new file.
- 6 If you would like to save a **Packet Capture** file (.pcap), touch the toggle button to switch it On. See [“How to: Save a Packet Capture with a Session File,” page 87](#).

- 7 When finished, touch **Save** to save the session file.

To view the saved session file, you can transfer it to a PC and open it in AirCheck G2 Manager (See [“Managing Profiles and Sessions on a PC using AirCheck G2 Manager,” page 96](#)), or you can upload it to Link-Live (See [“How to: Upload Files to Link-Live,” page 94](#)).


How to: Save a Packet Capture with a Session File

This section describes the options for saving a full Packet Capture with a Session File simultaneously.

NOTE: You can also start a packet capture without saving a session file from the Channel, AP, or Client Details screens or from  **Settings > Capture**. See [“Creating a Standalone Packet Capture,” page 88](#).

The wireless packets AirCheck G2 receives during discovery are captured and stored in the capture buffer. When the buffer is full, the next packet captured replaces the first packet in the buffer and so on. Touching the **Refresh** button clears the capture buffer and restarts packet capturing.

The packet capture is saved as a separate file, in addition to the session file. The **Capture Filename** is always the session **Filename** with the .pcap file extension.

- 1 Press  **Save**. The Tester opens the **Save Session** screen ([Figure 62](#)).
- 2 Touch the toggle next to **Save Packet Capture** to change it to **On**. Additional Capture-related fields display.

Because they can be very large and require a wired connection to upload to Link-Live, Packet Capture files are always saved locally on the unit, regardless of whether the Session File **Destination** is set to Link-Live or Local. To upload capture files to Link-Live, go to **Settings > Manage Files**.

- 3 Optionally, touch the drop-down arrow next to **Capture File Size** to select a different capture file size. The default is 32 MB.

The **Space Remaining** field shows the amount of data storage space the AirCheck G2 has available that is allocated to capture files.

- 4 When finished, touch **Save** to save the session file and capture file.

NOTE: Screen navigation is disabled while saving session and capture files. Larger files will take longer to save.

To view packet captures, first, export them onto a USB drive or upload them to Link-Live, and then open them on a PC or tablet with a packet capture viewing application.


[See “How to: Export files to a USB drive,” page 94.](#)


[See “How to: Upload Files to Link-Live,” page 94.](#)

Creating a Standalone Packet Capture

This section describes the options for creating an individual Packet Capture on a selected channel.

NOTE: You can also save a packet capture containing discovery data along with a session file. [See “How to: Save a Packet Capture with a Session File,” page 87.](#)

You can access the **Capture** screen from the **Channel**, **AP**, or **Client Details** screens, or from  **Settings > Capture**. If you access the Capture screen from a Channel, AP, or Client details screen, the corresponding Channel and/or BSSID/MAC fields are auto-populated with the channel or address of the device selected on the details screen.

- 1 Select  **Settings > Capture**, or go to a details screen for a Channel, Client, or Access Point, and touch the **Capture** button at the bottom of the screen. The **Capture** screen displays.

Capture	
Filename	cap_20180913_172543
File Size	10 MB <input type="button" value="v"/>
Channel	1 <input type="button" value="v"/>
BSSID/MAC	None
Control Frames	<input type="button" value="On"/>
Data Frames	<input type="button" value="On"/>
Management Frames	<input type="button" value="On"/>
<input type="button" value="Cancel"/> <input type="button" value="Start"/>	

Figure 63. Capture Screen (Setup)

- To edit the default filename, press **Filename**, and use the on-screen keyboard to enter a custom name. When finished, press **DONE**.
- Tap the drop-down menu buttons next to **File Size**, **Slice Size**, and **Channel** to adjust those values as needed:

- The **File Size** is the maximum size of the complete capture file. Capturing stops automatically when the file reaches this size. The default is 100 MB.
- Channel** is the channel from which packets are captured. Packets are captured on 20-MHz-wide channels. If you accessed this Capture screen from a Channel, AP, or Client details screen, the corresponding Channel is auto-selected. The default is channel 1.

NOTE: The captured slice size is always 4096 B.

- Optionally, select the **BSSID/MAC** field to open the Device BSSID/MAC screen and enter an address. If you accessed this **Capture** screen from an AP or Client details screen, the corresponding BSSID/MAC is already entered. If you leave this field as **None**, the Tester will capture all packets on the selected channel.
- Touch the **On/Off** toggle button to the right of the **Control**, **Data**, and **Management Frames** fields to include or omit each frame type from the capture as needed.
- Select **Start** to begin capturing.

Once a capture has been started, the Capture screen displays the following information about the running or completed capture:

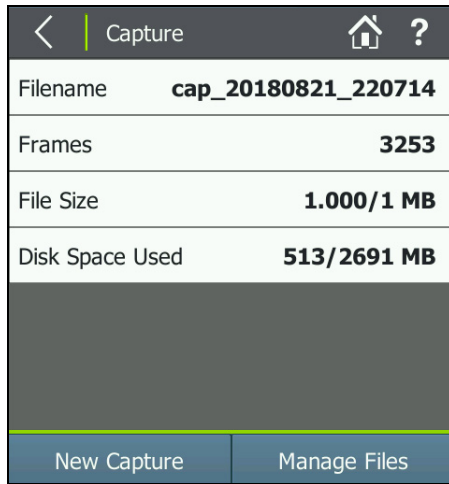


Figure 64. Capture Screen (Finished/Stopped)

Filename: The filename of the capture currently being recorded

Frames: The number of frames captured

File Size: The running size of the capture files in MB

Disk Space Used: The amount of data storage space the AirCheck G2 has used for capture files and the total space still available

The capture will run until the file size has reached the size selected on the previous capture settings screen. Select **Stop** to stop capturing before the file has reached that size.

After capturing is complete, touch the buttons at the bottom of the screen to start a **New Capture**, or touch **Manage Files** to upload capture files to Link-Live or save them to a USB drive.

You can also go to **Settings > Manage Files** later to rename, delete, or upload saved capture files.

See ["Managing Files on the AirCheck G2 Tester," page 93.](#)

Saving Screenshot Image Files

Screenshot image files can be downloaded to a PC using AirCheck G2 Manager or uploaded to Link-Live Cloud Service and associated with specific test results or other files.

To save a screen image of the currently displayed screen, hold your finger on the Help icon **?** for one second. The Tester beeps once when a screenshot is saved, and the **Save Screen** displays to provide options for saving and uploading the image file.

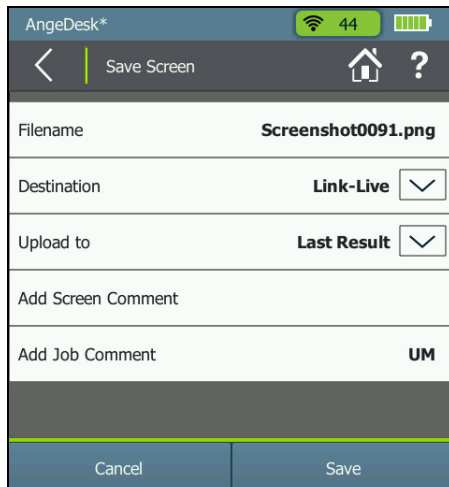


Figure 65. Save Screen

The **Save Screen** offers the following options:

Filename: Select the field to open the **Screen Filename** screen, override the default file name with a unique file name, and select **DONE**.

Destination: Select the drop-down menu button to switch the location where the screen file is saved between **Link-Live** or **Local**.

- If Link-Live is the Destination, the file will upload to Link-Live the next time the AirCheck G2 unit is connected to an active wired or wireless network.
- If the Destination is Local, the file is saved on the unit. You can transfer screenshots saved on the unit to a USB flash drive from the **Settings > Manage Files** screen or download them to a PC using AirCheck G2 Manager.

Link-Live Upload Options

Upload to: Select the drop-down menu button to switch the location in Link-Live where the screen file is uploaded.

- The **Last Result** option attaches the screenshot image to your most recent test result. You must have run an AutoTest, Connection Test, or Ethernet Test during the current session to attach the screen image to a test result.

- The **Uploaded Files** option uploads the image to the Uploaded Files page in Link-Live without attaching it to a specific test result. However, you can still group files and/or results together in Link-Live using one of the comment features.


Add Screen Comment: Touch this field to enter a new comment and attach it to your screenshot file in Link-Live. The Screen Comment does not persist after you begin a new test or save a new file.

Add Job Comment: Touch this field to open the Job Comment screen and enter or edit the Job Comment that is uploaded to Link-Live with all uploaded test results and files. The Job Comment persists until you delete or edit it. You can also set the Job Comment from **Settings > Link-Live** and on various screens.





Select **Save** to save the screenshot file or **Cancel** to go back to the previous screen without making any further selections.

17. MANAGING FILES ON THE AIRCHECK G2 TESTER

The **Settings > Manage Files** screen lists all the Session (.acsx), Screenshot (.png), and Packet Capture (.pcap) files that have been saved on AirCheck G2. It also allows you to rename, delete, save, and upload files to Link-Live.

By default, the body of the Manage Files screen displays Session (.acsx) files. You can choose to display Screenshot (.png) files or Capture (.pcap) files using the drop-down  menu at the top of the screen.

How to: Rename or Delete a File

- 1 Select  **Settings > Manage files**.
The screen displays the list of saved files.
- 2 Use the arrow  next to file **Type** to switch between the three file types.
 - To rename a file, touch the pencil icon  next to the filename you want to change, use the on-screen keyboard to type in the new name, and touch **DONE**.
 - To delete a file, touch the  icon next to the filename you want to delete, and then touch **Yes** in the confirmation box.

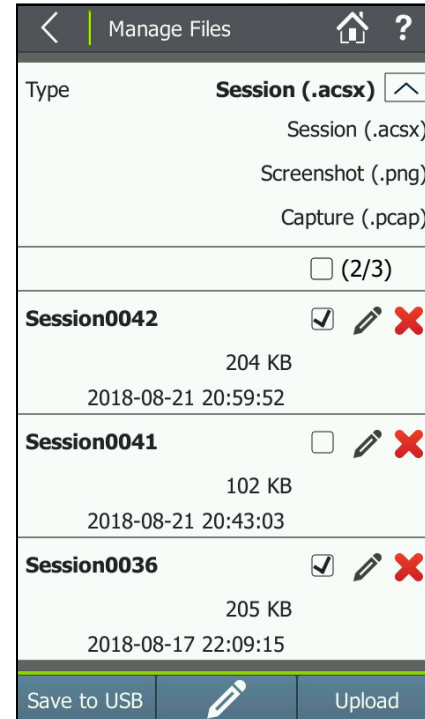




Figure 66. Manage Files Screen

How to: Export files to a USB drive

- 1 Insert a USB flash drive into one of the AirCheck G2's USB ports.
- 2 Select  **Settings > Manage files**.
The screen displays the list of saved files.
- 3 On the **Manage Files** screen, touch the down arrow  to select **Session**, **Screenshot**, or **Capture** files (See [Figure 66](#)).
- 4 Select the checkboxes to the right of the files you want to save to the USB drive.
- 5 Touch **Save to USB** at the bottom of the Manage Files screen to transfer the files to the USB drive.




NOTES:

- Files are not deleted from the AirCheck G2 when they are saved to the USB drive.
- Only thumb drives with FAT32 format are supported. On-the-Go drives are not.
- Screen navigation is disabled while saving to USB.

How to: Upload Files to Link-Live

For Session and Screenshot files, this feature queues your saved files for upload to Link-Live Cloud Service once a network connection is available (either a wired Ethernet connection or a Wi-Fi Connect to Network or AP test).

For Capture files, this feature uploads to Link-Live immediately via active Ethernet connection only.


- 1 Select  **Settings > Manage files**.
The screen displays the list of saved files.
- 2 On the **Manage Files** screen, touch the down arrow  to select **Session**, **Screenshot**, or **Capture** files (See [Figure 66](#)).
- 3 Select the checkboxes to the right of the files you want to upload to Link-Live.
- 4 Optionally, touch the  **Comment** icon to edit the **Test Comment** or **Job Comment** to be uploaded to Link-Live and attached to the next file(s) you upload. See ["Adding Comments," page 36](#).
- 5 Touch **Upload**.

NOTES:

- Capture files (.pcap) require an active Ethernet connection to upload to Link-Live.
- Files are not deleted from the AirCheck G2 when they are uploaded to Link-Live.

- For large files, an Ethernet connection is the fastest method for uploading to Link-Live.
- To download screenshot files directly to a computer, open the AirCheck G2 Manager application on the computer, and use the application's interface to transfer the files via USB cable. In AirCheck Manager, go to **Device Info > Transfer AirCheck G2 Screen Captures...**


How to: View available memory on the Tester

Select  **Settings > About**. The last two fields show the **Total Flash Memory** and **Free Flash Memory**.

Using the Remote Interface

NOTE: The Remote Interface is for demo purposes only and not fully functional.

The Remote User Interface allows you to display and access the AirCheck G2's user interface from your laptop over a LAN using VNC. You will need a VNC viewer installed on your PC.

- 1 Connect the AirCheck G2 via an Ethernet cable to the same LAN on which your PC is connected.
- 2 From the  **Settings**, select **Device Settings**, then **Remote User Interface**.
- 3 Follow the on-screen instructions, and then, select **Apply**.
- 4 Launch a VNC viewer on your PC.
- 5 Enter the IP address shown in the AirCheck G2 Tester.

When you are done with the remote session, you must turn your AirCheck G2 Tester off and back on to reset it to normal operation mode.

Managing Profiles and Sessions on a PC using AirCheck G2 Manager



The AirCheck G2 Manager online Help contains more instructions for using the application.

How to: Transfer and view test sessions with AirCheck G2 Manager

- 1 Ensure the latest version of AirCheck G2 Manager software is installed on your PC. (Download from <https://app.link-live.com/downloads>.)
- 2 Start the software.
- 3 Turn on the Tester, and connect it to the PC.
- 4 In AirCheck G2 Manager, click **Session Data** on the left side menu.
- 5 From the **Session Details** screen, click the **Transfer** button to open the **Transfer Sessions** dialog box.

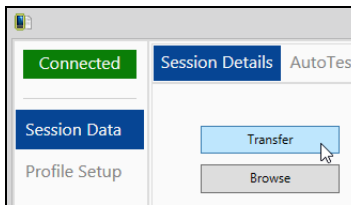


Figure 67. Transfer Sessions Button

- 6 To change the default destination folder, click **Browse** and choose a different location to save session files.

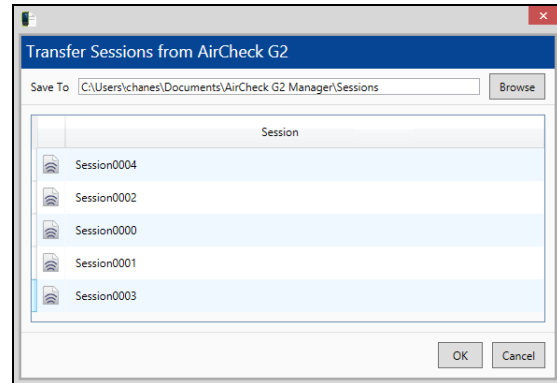


Figure 68. Transfer Sessions Dialog Box

- 7 Click **OK** in the **Transfer Sessions** dialog box to transfer the session files to your PC and view one chosen session.
- 8 To view additional sessions, click **Browse** from the **Session Details** screen.
- 9 Select a session filename to load another session in the list under **Session Details**.
- 10 Click the loaded session files to view each one's details.

How to: Transfer and view Profiles with AirCheck G2 Manager

- 1 Turn on the Tester, and connect to the PC.
- 2 In AirCheck G2 Manager, click **Profile Setup**.
The left “AirCheck G2 Profiles” pane shows **Profiles** that are saved on the AirCheck G2 Tester.
- 3 To transfer a Profile from the Tester to AirCheck G2 Manager’s **Local Profiles**, drag and drop the Profile name from the left pane into the right pane.

You can also create Profiles in AirCheck G2 Manager and transfer them to the AirCheck G2 Wireless Tester: [“How to: Transfer a Profile from a PC to the Tester” on page 53.](#)

How to: Load the latest list of vendor prefixes into the Tester

- 1 Start AirCheck G2 Manager on your PC.
- 2 Connect your Tester to the PC and turn it on.
- 3 In AirCheck G2 Manager, select **Device Info**, then click the **Update AirCheck G2 Vendor MAC Prefix File...** button.
- 4 Click **Update from file**.
- 5 Select the prefix file (oui_abbr.txt) from your file directory.

6 Click Open.

If you wish to manually add vendor prefixes into the oui_abbr.txt file, use Microsoft WordPad, and preserve the tab delimited fields.

```

00000A      Omlron OMRON  TATEISI ELECTRONICS
00000B      Matrix          ↑ MATRIX CORPORATION
00000C      ← [Tab delimited fields] EMS, INC.
00000D      [Tab delimited fields] ↓ RONICS LTD.
00000E      Fujitsu          ↓ FUJITSU LIMITED
    
```

Figure 69. oui_abbr.txt File

18. ALL AIRCHECK G2 SETTINGS

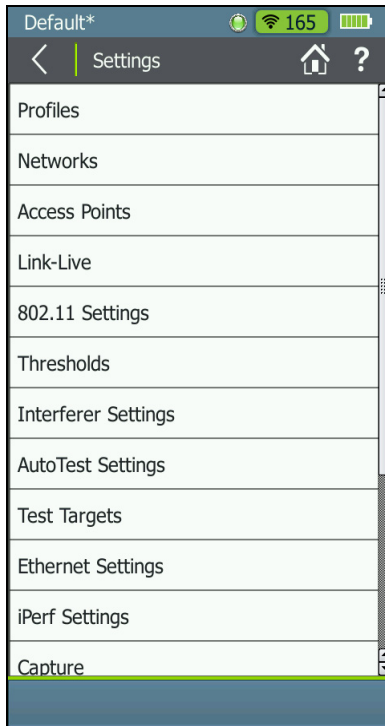




Figure 70. Settings Menu Screen

Touch the  **Settings** button to adjust settings.

For additional information, touch the  **(Help)** button on the Tester to open the Help topic for the current screen.

Profiles

The Profiles screen provides tools for managing Profiles.

See [“Using Profiles to Manage Settings and Security Credentials,” page 50.](#)


Networks

The Networks settings screen allows you to add, edit, and delete networks and their credentials.


See also [“Entering Network Security Credentials” on page 54.](#)

How to: Add a network and configure network settings


- 1 Select **Add Network** to open the **Configure Network** screen.
- 2 Select **SSID** to bring up a text entry screen, where you can use the keyboard to enter the network's SSID, and then touch **DONE**.

- 3 If the network is behind a Captive Portal, switch the toggle to On to enable the **Captive Portal** setting.
- 4 Touch the down arrow  in the **Authentication** field, and select and configure an authentication type from the drop-down menu.
- 5 Enter all necessary Authentication credentials for the security type used on the network, such as Encryption type, Keys, EAP Type, Username, and/or Password.
- 6 If you want to use **DHCP** as the IP address mode, leave DHCP enabled. To use a Static address, you must specify the following:
 - Static IP Address
 - Subnet Mask
 - Default Gateway
 - Primary DNS
 - Secondary DNS
- 7 Select **Apply** to confirm your network configuration.

How to: Edit a network

- 1 Select the  (**Edit**) icon.
- 2 Make the desired changes.
- 3 Select **Apply**.


How to: Delete a network

- 1 Select the  (**Delete**) icon.
- 2 Select **Yes** in the pop-up confirmation message window.

Access Points

These settings allow you to add, edit, and delete APs and their saved configuration.

How to: Add an AP and configure AP settings

- 1 Select **Add AP** to open the **Configure AP** screen.
- 2 Select **BSSID** to bring up a text entry screen, where you can use the keyboard to specify the AP's BSSID, and select **DONE**.
- 3 Select **Alias Name** to bring up a text entry screen, where you can use the keyboard to specify the AP's name, and select **DONE**.
- 4 Touch the down arrow  in the **Authorization Class** field, and select an Authorization for the AP.
- 5 Select **Apply** to save your configuration.
- 6 Repeat Steps 1 through 4 to add more APs if needed.

How to: Edit an AP

- 1 Select  (**Edit**).

- 2 Make the desired changes.
- 3 Select **Apply**.

How to: Delete an AP

- 1 Select **X** (Delete).
- 2 Select **Yes** in the pop-up confirmation message window.

Link-Live Settings

The Link-Live Settings screen allows you to enable or disable the Link-Live connection and test result field, Claim or Unclaim your AirCheck G2 tester to Link-Live Cloud Service, and update your tester with the latest software.

To use Link-Live, the **Link-Live Connection** setting on your AirCheck G2 must be On, and your unit must be "Claimed." See ["Getting Started in Link-Live Cloud Service," page 47.](#)

NOTE: Visit Link-Live.com/questions to view articles describing how to use Link-Live Cloud Service.

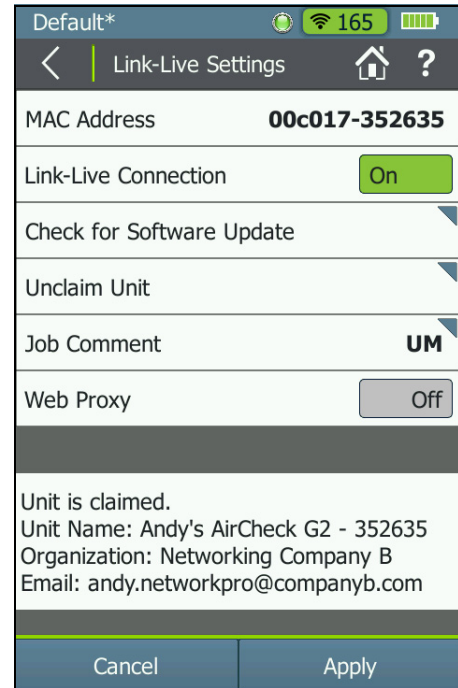


Figure 71. Link-Live Settings Screen

MAC Address: This field shows the MAC address of the AirCheck G2 Tester unit.

Link-Live Connection: Toggle this field **On** or **Off** to enable or disable automatic uploading of test results from the Tester to Link-Live Cloud Service.

NOTE: If this setting is **Off**, the AirCheck G2 will not scan for or display Test Accessories from Link-Live on the Select iPerf Server screen for iPerf testing. See [“The Select iPerf Server Screen,” page 81.](#)

Check for Software Update: If your unit is claimed, touch this field to find out if a software update is available to download and install from Link-Live. If an update is available, a pop-up dialog displays the version number and prompts you to confirm if you want to install.

Claim Unit: You must touch this button during the process to claim the Tester in Link-Live Cloud Service. See [“Getting Started in Link-Live Cloud Service,” page 47.](#)

Once your AirCheck G2 unit is successfully claimed, the Claim Unit button changes to **Unclaim Unit**, which you can tap to unclaim your unit from Link-Live. The lower part of this screen displays the unit's name, the Link-Live organization where it is claimed, and the first associated email to which test results are sent. Visit the Units page on Link-Live.com to change the Unit Name and Email.

Job Comment: Touch this field to add or edit the **Job Comment**. The Job Comment set here is uploaded to Link-Live and associated with all future uploaded test results and files. You can use the Job Comment and other types of comments (**Test**, **Session**, or **Screen Comments**) to

automatically organize your test results and files into folders on Link-Live and make them easily searchable. The Job Comment persists until you delete or edit it from the Link-Live Settings screen or from another screen (like **Save Session** or **Comments**) on your AirCheck G2 tester. Only one Job Comment is active at any time.

Web Proxy: This option enables uploading of test results to your Link-Live account through a web proxy. By default, Web Proxy support is **Off**. Touch the toggle switch to turn the Web Proxy setting **On** or **Off**.


How to: Configure Link-Live Settings for Web Proxy


- 1 Touch **IP Address** to enter the IP of the proxy server. Touch **DONE** when you finish.
- 2 If necessary, touch **Port** to change the default Port number.
- 3 Select **Username** to enter the proxy username and **Password** to enter the password.
- 4 Touch **Apply** to save your changes or **Cancel** to leave this screen without saving your changes.

802.11 Settings

These settings control how the Tester scans, displays, and transmits network data.

NOTE: Be sure to touch **Apply** to save your changes for each option on this screen.

802.11 Setting	Description	Associated Tester Functions
Channels and Bands	<p>Allows you to select which band(s) and/or which channel(s) AirCheck G2 scans, the frequency at which they are scanned, and the time duration for which each channel(s) in the selected band(s) is scanned.</p> <p>NOTE: Turning Off band and/or channel scanning affects Air Quality and Network Tests.</p>	Networks, Channels, Access Points, and Clients; AutoTest
Combine Utilization	<p>Combines 802.11 and non-802.11 channel utilization into one total utilization measurement. In environments with 802.11ax traffic, turn this setting On to accurately measure channel utilization.</p>	Channels; AutoTest Air Quality
MAC Address Format	<p>Allows you to decide the format of MAC addresses shown in the MAC and BSSID fields. Touch the down arrow  to select either of the following:</p> <ul style="list-style-type: none"> • OUI compact colon format, e.g., Vendor:33:44:55. This is the default. • MAC colon format, e.g., 00:11:22:33:44:55. 	Access Points and Clients

SSID Filtering	<p>Allows you to enable or disable SSID filtering and to select which SSIDs to filter.</p> <ul style="list-style-type: none"> • When this feature is On, and the Show Listed SSIDs radio button is selected, only listed SSIDs and access points for those SSIDs will be captured and displayed. • When this feature is On, and the Exclude Listed SSIDs radio button is selected, all but the listed SSIDs and access points for those SSIDs will be captured and displayed. 	Networks and Access Points
Signal Level Filtering	<p>Allows you to turn the Signal Level Filter On or Off and set the minimum signal level of devices that the Tester will find and display.</p>	Networks and Access Points
Group Virtual APs	<p>Allows you to enable or disable virtual AP grouping. BSSIDs that are broadcast from the same access point radio are considered virtual APs and are grouped to count as one AP. The feature is turned On by default. Toggle the On/Off switch to Off to turn it off.</p> <p>The AirCheck G2 attempts to group virtual APs by BSSID patterns. It will not group APs from different bands.</p>	Networks, Access Points, and Channels
Inaudible Devices	<p>Allows you to decide how AirCheck G2 handles previously detected devices that the Tester no longer hears. Select the down arrow , and choose either of the following:</p> <ul style="list-style-type: none"> • Gray — Grays out inaudible devices. This is the default setting. • Hide — Hides inaudible devices. 	Discovery

Custom Signal Adjustments	<p>Allows you to adjust the displayed signal strength for entire bands or individual channels. The values you set on this screen are used to adjust all applicable Signal Strength measurements displayed on the unit and saved to session files. The values you adjust here do NOT affect SNR or Noise measurements, and are not used in the Locate AP or Locate Client screens. An asterisk (*) appears next to the Signal Level value if it is adjusted based on this setting.</p>	<p>Discovery; Networks, Channels, Access Points, and Clients; AutoTest</p>
Transmit Probes	<p>Allows you to enable or disable the Transmit Probes feature. Transmit Probes is On by default. Toggle the On/Off switch to Off to turn it off.</p> <p>With the Transmit Probes feature enabled, AirCheck G2 will transmit generic probe requests for any networks to find hidden networks and detect APs more quickly than just listening for beacons, under these conditions:</p> <ul style="list-style-type: none"> • AirCheck G2 will not transmit when it is on the Locate Access Point or Locate Client screens. • AirCheck G2 will only transmit probe requests for the legal channels in the country for which it is currently configured. • AirCheck G2 will only transmit probe requests on channels on which it has discovered one or more APs. • AirCheck G2 will transmit probe requests at power levels that are legal for the country for which it is currently configured. 	<p>Discovery</p>

Default AP Authorization	<p>Allows you to change the default AP Authorization Class that is assigned to all APs without an individual, manually user-assigned Authorization Class.</p> <p>Touch the drop-down arrow to switch from the None designation to either Authorized ✓, if you want all APs to have the Authorized class by default, or to Unknown ?, if you want all APs to show as Unknown unless they have an individual assigned class.</p>	Access Points
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Thresholds

The Thresholds screen allows you to set the threshold values the Tester uses to rate the quality of performance or service. The quality categories are pass/warning/fail or **green/yellow/red**. You can adjust the range of values represented by **green**, **yellow**, and **red** to your preference. For instance, you can eliminate the range of **yellow** altogether by increasing the ranges or values of **green** and **red**.

Threshold Setting	Description	Associated Tester Screens
Signal Thresholds		
Signal Strength	Determines green/yellow/red indications for received signal strength measurements from APs. This threshold is also used for Signal Level color ratings.	Networks List and Network Details, AP List and AP Details, Channel Details, Clients List and Client Details, Connect to Network and Connect to AP
Noise	Determines green/yellow/red indications for measured noise levels on the channel of an AP.	Network Details, AP Details, Connect to Network and Connect to AP
SNR	Determines green/yellow/red indications for the Signal-to-Noise Ratio based on measured signal and noise levels.	Networks List and Network Details, AP List and AP Details, Connect to Network and Connect to AP
Air Quality Thresholds		
Channel 802.11 Utilization	Percentage of airtime utilization of all 802.11 WLAN traffic on a channel.	AutoTest Air Quality
Channel non-802.11 Utilization	Percentage of airtime utilization of all non-802.11 interference on a channel. These may be non-WLAN interference sources.	AutoTest Air Quality
Channel Utilization	Percentage of total utilization on a channel. If the Combine Utilization setting is enabled in Settings > 802.11 Settings , this screen does not separate 802.11 and non-802.11 Utilization thresholds and shows only a combined total Utilization threshold.	AutoTest Air Quality

Co-Channel Interference	Number of APs on a same channel. These same thresholds are used for Adjacent Channel Interference in the 2.4-GHz band.	AutoTest Air Quality
AP Signal Level	The minimum signal level at which an AP must be measured to be counted in Co-Channel and Adjacent Channel Interference measurements.	AutoTest Air Quality
Threshold Heading	Description	Associated Test Screens
Network Quality Thresholds		
Network Coverage and AP Signal Level	The number of APs, and the minimum signal level at which they must be measured to be counted. It is recommended to have at least 2 APs above -67dBm on different channels for a network at each location.	AutoTest Network Tests
Co-Channel Interference and AP Signal Level	Number of APs, and the minimum signal level at which they must be measured to be counted, on the same channel as the network.	AutoTest Network Tests
Network Connection Thresholds		
Retry Rate	The number of retry frames as a percentage of total transmitted frames during the network connection.	AutoTest Network Tests
Connected PHY Rate	The PHY data rate of the network connection as a percentage of the maximum PHY data rate that the AP supports.	AutoTest Network Tests
iPerf Thresholds		
TCP Bandwidth	The rate of traffic from the AirCheck G2 to the iPerf server/Test Accessory. Grades the measured Avg. Up Speed and Avg. Down Speed for an iPerf test using the TCP protocol. (Pass/Green and Fail/Red only)	iPerf Test
UDP Loss Percentage	The percentage of frames that can be lost. This threshold only applies when iPerf testing with the UDP protocol.	iPerf Test

UDP Jitter	The average frame delay variation. This threshold only applies when iPerf testing with the UDP protocol.	iPerf Test
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Interferer Settings

These settings control how and when interfering devices are detected:

Scan 2.4 GHz Band: Press the toggle button to turn interferer scanning On or Off for all channels in the 2.4 GHz Band.

Scan 5 GHz Band: Press the toggle button to turn interferer scanning On or Off for all channels in the 5 GHz Band.

Interferers Only Scan: Switch the toggle button to On to cause the AirCheck G2 to look ONLY for interfering devices.

NOTE: AirCheck G2 will not discover or display Networks, APs, Clients, or Channel utilization while the Interferer Only scan is On.

Inaudible Interferers: Select the down arrow to choose whether AirCheck G2 displays in gray, or does not display, interfering device types it can no longer detect after 30 seconds. The default setting is to Gray Out inaudible interferers.

AutoTest Settings

The AutoTest Settings screen allows you to configure the following settings:

Channel Scan Cycles: Allows you to specify the number of times that the channels are scanned during an AutoTest. The default value is 1, but you can set it to any value between 1 and 10, using the left or right arrow buttons.

Rogue AP Test: Allows you to specify whether AutoTest identifies and lists APs which have been user configured with an **Authorization Class** of **Flagged** or **Unauthorized**. You can view and change an AP's Authorization Class from its Details screen.

Network Tests: Allows you to include or exclude configured network tests as part of AutoTest, by selecting the corresponding boxes for the networks you want to test.

NOTE: In order to see a list of networks on the **AutoTest Settings** screen, you must have the networks configured already. You can add networks and APs in the **Settings** menu or by selecting **Connect** from a **Network** or **AP Details** screen.

[See "Entering Network Security Credentials," page 54.](#)

How to: Configure AutoTest settings

- 1 Set the **Channel Scan Cycles**.

- 2 Decide to include or exclude **Network Tests**. If you decide to include Network Tests, then select the boxes for the individual networks to be tested.
- 3 Touch **Apply** to save your changes.

Test Targets

Test targets are part of **Connect to Network**, **Connect to AP**, and **AutoTest Network Tests**. The **Test Targets** screen provides tools for you to select, add, change, and delete test targets.

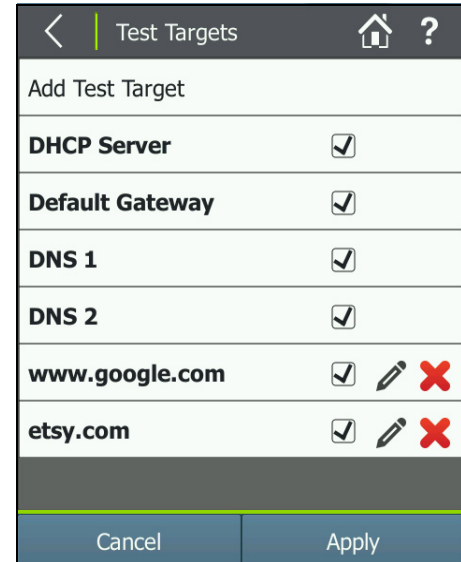


Figure 72. Test Targets Screen

See also, [“Defining Ping and TCP Port Open Test Targets” on page 58.](#)

Network-defined test targets are already set up on the AirCheck G2. Below are the network-defined test targets that are shown on the **Test Targets** screen:

- Default Gateway
- DHCP Server
- DNS 1
- DNS 2



AirCheck G2 uses these test targets to perform ICMP Ping tests. Each test target, whether network-defined or user-defined, is shown with a check-box that allows you to select it to use during connection tests. By default, all network-defined test targets are selected when the **Test Targets** screen opens. You can deselect any of them by un-checking the corresponding box.

How to: Add a User-Defined Test Target

In [Figure 72](#), the user-definable test targets are [www.google.com](#) and [etsy.com](#). The Google ping test is included by default, and a ping test to Etsy has been added. You can add up to 10 user-defined test targets with the following procedures:

- 1 Select **Add Test Target** to open the **Configure Target** screen.
- 2 On the **Configure Target** screen, select **Target** to open the **Test Target** screen.

- 3 Enter the IP address or host name of the test target, and select **DONE**.
- 4 Next, touch the down arrow to select a desired **Test Type**.
NOTE: The default test type is **ICMP Ping**. If you select **TCP Port Open**, then you must select **Port** to open the TCP Port screen, specify the TCP port number, and then touch **DONE**. This will take you back to the **Configure Target** screen.
- 5 Select **Apply** to implement the addition of the test target.
- 6 Repeat steps 1 through 5 to add up to 10 test targets.
- 7 When you have finished adding test targets, select **Apply** at the bottom of the **Test Targets** screen.

You can also edit and delete test targets using the  (**Edit**) and  (**Delete**) icons.


Ethernet Settings

These settings control the **Ethernet Test** function:


PoE Test: Allows you to include or exclude a PoE test in an Ethernet test. By default, PoE Test is **On** (included). Touch the field to toggle the switch to Off if you wish to exclude the PoE Test from the Ethernet test.

DHCP IPv4: Allows you to configure a Static IP Address. By default, DHCP IPv4 is On. Touch the toggle button to switch to Off if you wish use a Static IP for the Ethernet connection. With DHCP IPv4 set to Off, the **Static IP Address**, **Subnet Mask**, **Default Gateway**, **DNS 1**, and **DNS 2** fields appear. Touch each field to enter the correct address.


(Network Test Target) — The IP address or host name of one user-definable test target. The test target `www.google.com` is added and selected by default.

- Uncheck the target if you do not want to perform the target test as part of each Ethernet test.
- Touch the  (**Edit**) button to specify a target of your choice.

How to: Configure a Test Target for Ethernet Tests

- 1 Touch the  (**Edit**) button to open the **Configure Target** screen.
- 2 Touch **Target** to enter either the IP address or host name of your desired Ethernet test target.

NOTE: You can have only one test target for Ethernet tests, so you will automatically replace the default or any existing test target when creating a new one.

- 3 Touch **DONE** when you finish typing the address to return to the **Configure Target** screen.
- 4 The default **Test Type** is **ICMP Ping**. Touch the down arrow  to switch to a **TCP Port Open** test, if needed.
- 5 If you have selected **TCP Port Open** for the **Test Type**, you can change the default **Port** number (for example, Port 80 for `www.google.com`) by touching the field to open a numeric keyboard. Enter the port number, and touch **DONE** when finished.
- 6 Select **Apply** to confirm your test target configuration and return to the Ethernet Test settings screen.
- 7 Touch **Apply** again to confirm your Ethernet Test configuration.

iPerf Settings

The iPerf Settings screen controls aspects of the iPerf Test feature.

Protocol: Touch the drop-down button to switch between the TCP and UDP protocols for iPerf testing. The default is TCP.

Port: Touch the Port field to enter a different port number. Touch DONE to save the new port number. To restore the default port number, on the Port screen, press the backspace key on the virtual keyboard to clear the entry field, and then press DONE.

Test Duration (sec.): Shows the selected duration for the entire iPerf test run, with half of the time for the upload portion and half for the download portion of the test. Touch the drop-down button to select a different test duration. The default iPerf duration is 20 seconds.

Bandwidth (UDP only): Specifies the desired target bandwidth for the iPerf Test using the UDP protocol. Touch the left or right arrow buttons to adjust the requested bandwidth in Mbps.

Accessory Battery Type: Touch the drop-down button to change the battery type to match the batteries in the Test Accessory you use to conduct iPerf Tests. This setting allows the AirCheck G2 to display the battery level on the **Select**

iPerf Server screen. If you have multiple Test Accessories, select the most common battery type. This setting is not relevant for Test Accessories running on PoE.

Thresholds: This button is a shortcut to the **Settings > Thresholds** screen section for iPerf Thresholds. Touch to open the **Thresholds** settings.

Touch **Apply** to save your changes to the settings.

Capture

See [“Creating a Standalone Packet Capture,” page 88.](#)

Manage Files

See [“Managing Files on the AirCheck G2 Tester,” page 93.](#)

Manage Certificates

The Manage Certificates screen allows you to import digital certificates from a USB flash drive. Imported certificates are saved in the active profile.

AirCheck G2 supports the following types of certificate files:

- .pem
- .p12
- .pfx
- .cer
- .crt

Touch the **Add Certificate** button to import a certificate from a USB drive inserted into one of the USB ports on the AirCheck G2.

NOTES:

- AirCheck G2 requires that a certificate and a key are both saved in a single file.
- Most certificate formats require a password to unencrypt the key.

To delete an imported certificate, tap the **X** (Delete) icon to the right of the certificate's name.


Device Settings

The **Device Settings** screen provides tools for configuring the device settings, as listed below.

NOTE: Touch an option to configure it. While some options (i.e., Number Format, Audio, Brightness, Restore Factory Defaults, and Export Log) can be managed directly on the **Device Settings** screen, many will open separate screens with tools for configuring those settings.

Date and Time: Configures the date and time on AirCheck G2.

Language: Sets the AirCheck G2's language. [See "How to: Change the Language on the Tester," page 57.](#)

Number Format: Toggles between 0.0 and 0,0 number formats. By default, AirCheck G2 uses the decimal (0.0) number format. You can change to comma (0,0) number format (or vice versa) by touching the down arrow , selecting the new format, and touching **Apply**.

Audio: Turns audio **On** or **Off**. Audio is used when locating APs or clients.

USB Headset Volume: Increases or decreases the headset audio volume when a USB headset is connected to AirCheck G2. **NOTE:** When a USB headset is plugged into the AirCheck G2, audio automatically switches to the headset.

Brightness: Increases or decreases the brightness of the screen. *NOTE:* You can help extend the battery life by decreasing screen brightness.

Auto-Shutoff: Enables or Disables Auto-Shutoff on AirCheck G2 based on the specified period of inactivity.

NOTE: Auto-Shutoff is disabled when the Tester unit is plugged into AC power.

Remote User Interface: Allows access to AirCheck G2 Tester's UI from a remote machine loaded with a VNC client. See ["Using the Remote Interface," page 95.](#)

Restore Factory Defaults: Restores AirCheck G2 to its factory default settings and erases all data. See ["Restoring Factory Defaults," page 119.](#)

Caution

Restoring factory defaults erases all saved test data, screen captures, log files, and Profiles from the AirCheck G2 device.

Export Troubleshooting Log: Exports log files to a USB drive to provide to Technical Support for assistance with your AirCheck G2.

Clear Browser Cookies: Deletes any web browser cookies from a Captive Portal that were saved on the unit while connecting to a network or AP.

Location Settings

The Location Settings screen allows you to choose or change AirCheck G2's location settings, which determine the legality of Wi-Fi channels in the selected country or region of the world. Channels that are illegal in the selected country will display in **red** text on AirCheck G2. AirCheck G2 will not transmit Wi-Fi probe packets on channels that are illegal for the currently selected country.

See ["How to: Change the Location Settings," page 57.](#)

About

The **About** screen shows the following information about your AirCheck G2 Wireless Tester:

- Serial Number
- WLAN MAC Address
- Ethernet MAC
- Hardware Version
- Software Version
- Total Flash Memory
- Free Flash Memory

19. MAINTENANCE

Warning

To prevent possible fire, electrical shock, personal injury, or damage to the Tester:

- Do not open the case. You cannot repair or replace parts in the case.
- Use only replacement parts that are approved by the manufacturer.
- If you replace parts that are not specified as replacement parts, the warranty will not apply to the product and you can make the product dangerous to use.
- Use only service centers that are approved by the manufacturer.

Cleaning the Tester

To clean the display, use lens cleaner and a soft, lint-free cloth. To clean the case, use a soft cloth that is moist with water or water and a weak soap.

Caution

To prevent damage to the display or the case, do not use solvents or abrasive materials.

Updating the AirCheck G2 Firmware

Starting with AirCheck G2 release version 3.0, you have two options for updating your firmware: Update by downloading the installation file from Link-Live Cloud Service or update using AirCheck G2 Manager.

How to: Update Firmware over Link-Live

Once your AirCheck G2 Tester is claimed to Link-Live, touch the **Check for Software Update** button on the **Link-Live Settings** screen to find out if a software update is available to download and install from Link-Live. If an update is available, a pop-up dialog displays the version number and prompts you to confirm if you want to install.

See [“Introduction to Link-Live Cloud Service,” page 47.](#)

See [“Link-Live Settings,” page 100.](#)

How to: Update Firmware using AirCheck G2 Manager

- 1 Download the AirCheck G2 update file from the NetAlly web site ([NetAlly.com/AirCheck](https://www.netally.com/AirCheck)), or contact NetAlly to get the update.
- 2 Save the file to your PC.
- 3 Ensure the latest version of AirCheck G2 Manager software is installed on your PC. (Download from your Link-Live account at <https://app.link-live.com/downloads>.)

- 4 Start AirCheck G2 Manager on your PC.
- 5 Turn on the Tester.
- 6 Use the USB cable supplied with the Tester to connect the Tester to the PC.
- 7 In AirCheck G2 Manager, select **Device Info**, and click the button to **“Update AirCheck G2 Firmware...”**


NOTES:

- The update will not begin if the battery in the AirCheck G2 Tester is too low. You must plug into AC power to charge the battery before updating.
 - The power key is disabled during a software update.
- 8 Browse for the update file (.acfx) on your PC, and open it.

After receiving the files, the Tester disconnects from the PC, installs the updates, and restarts. The Tester displays status messages as it updates. Once the Tester reboots and the Home Screen appears, it is ready for use.

Exporting a Troubleshooting Log

NOTE: The USB drive must be formatted to use the FAT32 file system. NTFS and exFAT file systems will not work properly.


- 1 Plug a USB “flash” drive into USB Port 3 of the AirCheck G2 Tester (see [Figure 1](#)).
- 2 Go to  **Settings > Device Settings.**

3 Touch Export Troubleshooting Log.

Restoring Factory Defaults

Caution

Restoring factory defaults erases all saved test data and settings, session files, screen captures, log files, and profiles from the AirCheck G2 device and returns settings to their default.

- 1 From the Home Screen, select  **Settings**.
- 2 Select **Device Settings**.
- 3 Touch **Restore Factory Defaults**.
- 4 To continue, touch **Yes** in the **Reboot Required** pop-up box.

After the Tester restarts, factory default settings will be restored.

NOTE: After performing a factory restore on your AirCheck G2 unit, you must un-claim it on Link-Live and re-claim it to continue uploading and viewing new test results.

Viewing Device Information

From the Home Screen, select  **Settings**, and then **About**.

- **Serial Number:** The serial number is also shown under the battery pack.
- **WLAN MAC:** Media Access Control address. The unique address of the Tester on the WLAN.
- **Ethernet MAC:** The unique address of the Tester on the wired connection.
- **Hardware Version:** The version number of the Tester's hardware.
- **Software Version:** The version number of the software in the Tester.
- **Total Flash Memory:** The total memory on the device.
- **Free Flash Memory:** The amount of memory still available for saving data on the device.

Troubleshoot: If the Tester Will Not Turn Off

If the Tester will not turn off, hold down the power button for approximately four seconds to perform a hard shutdown.

Caution

Do not press or hold the power button during a software update. Doing so may corrupt the file system.

20. SPECIFICATIONS AND COMPLIANCE

Environmental Specifications

Operating temperature	32°F to 113°F (0°C to +45°C) NOTE: The battery will not charge if the internal temperature of the Tester is above 122°F (50°C).
Operating relative humidity (% RH without condensation)	90% (50°F to 95°F; 10°C to 35°C) 75% (95°F to 113°F; 35°C to 45°C)
Storage temperature	-4°F to 140°F (-20°C to +60°C)
Shock and vibration	1 m drop test, Random, 3.8 grms, 5 Hz-500 Hz (Class 2)
Safety	IEC 61010-1:2010: Pollution degree 2
Altitude	Operating: 4,000 m; Storage: 12,000 m
EMC	IEC 61326-1:2013: Basic Electromagnetic Environment; CISPR 11: Group 1, Class A Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself. Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.

General Specifications

Dimensions	3.8 in x 7.7 in x 1.6 in (9.7 cm x 19.6 cm x 4.1 cm)
Weight	18 oz (0.51 kg)
Battery	Rechargeable lithium-ion battery pack (3.6 V, 6 Ah, 21 Wh)
Battery life	Typical operating life is 4.5 hours. Typical charge time is 7 hours.
External AC adapter/charger	AC input 85-264 Vac 47-63 Hz input power DC output 15 Vdc at 2 amps
Display	5.0 in color LCD with capacitive touch screen (480 x 800 pixels)
Keypad	1-key elastomeric (power only)
Host interface	1x micro USB Type B port
Adjunct Interface	2x USB 2.0 Type A port
Wireless antenna	3x Internal
External antenna port	Input only. Reverse-polarity SMA connector.

Wireless Specifications

Specification compliance	IEEE 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac
Wi-Fi Connectivity	802.11a, 802.11b, 802.11g, 802.11n, 802.11ac
<p>Operating frequencies</p> <p><i>NOTE:</i> These are the center frequencies of the channels that the AirCheck G2 Tester supports.</p>	<p>Frequencies of channels received</p> <p><i>NOTE:</i> The Tester receives on all of the frequencies in every country.</p> <p>2.4 GHz band: 2.412 – 2.484 GHz (channel 1 to channel 14)</p> <p>5 GHz band: 5.170 – 5.320 GHz, 5.500 – 5.700 GHz, 5.745 – 5.825 GHz (channels 34, 36, 38, 40, 42, 44, 46, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, 149, 153, 157, 161, 165)</p> <p>Frequencies of channels transmitted:</p> <p><i>NOTE:</i> The Tester transmits only on the frequencies allowed in the country for which it is currently configured.</p> <p>2.4 GHz band</p> <p>802.11b: 2.412 – 2.484 GHz (channel 1 to channel 14)</p> <p>802.11g/n 20 MHz BW (HT20): 2.412 – 2.472 GHz (channel 1 to channel 13)</p> <p>802.11n 40 MHz BW (HT40): 2.422 – 2.462 GHz (includes all combinations of legal, bonded pairs of channels)</p>

	<p>Frequencies of channels transmitted (continued)</p> <p>5 GHz band</p> <p>802.11a/n 20 MHz BW (HT20): 5.180 – 5.320 GHz, 5.500 – 5.700 GHz, 5.745 – 5.825 GHz (channels 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 1, 36, 140, 144, 149, 153, 157, 161, 165)</p> <p>802.11n 40 MHz BW (HT40/VHT40): 5.190 – 5.310 GHz, 5.510 – 5.670 GHz, 5.755 – 5.795 GHz (includes all combinations of legal, bonded pairs of channels)</p> <p>802.11ac 80 MHz BW (VHT80): 5.210 – 5.290 GHz, 5.530 – 5.690 GHz, 5.775 GHz (includes all combinations of legal, bonded pairs of channels)</p>
Regulatory Domain	World Mode
External Directional Antenna	Frequency range 2.4 to 2.5 GHz and 4.9 to 5.9 GHz
Frequencies	Minimum gain 5.0 dBi in the 2.4-GHz band and 7.0 dBi in the 5-GHz band
Connector	Reverse-polarity SMA plug

Wi-Fi Antennas

Internal Wi-Fi antennas	Three internal 2.4 GHz, 1.1 dBi peak; 5 GHz, 3.2 dBi peak antennas.
External directional antenna	Antenna, frequency range 2.4 - 2.5 and 4.9 - 5.9 GHz. Minimum gain 5.0 dBi peak in the 2.4 GHz band, and 7.0 dBi peak in the 5 GHz band.
External antenna connector¹	Reverse SMA
1. External antenna port is receive-only (no transmit).	







Wi-Fi Adapter

Applicant's name	NetAlly
Equipment name	Wi-Fi testing device
Model number	WA7-43460AC
Manufacturing Year/Month	2015/06
Manufacturer	Universal Global Scientific Industrial Co. (USI)
Country of origin	Taiwan
Data Rate	802.11a: 6/9/12/24/36/48/54 Mbps 802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/24/36/48/54 Mbps 802.11n (20 MHz): MCS0-23, up to 216 Mbps 802.11n (40 MHz): MCS0-23, up to 450 Mbps 802.11ac (80 MHz): MCS0NSS1-MCS9NSS3 (20, 40, and 80 MHz bandwidth), up to 1300 Mbps
Operating Frequency	2.400 ~ 2.484 GHz (Industrial Scientific Medical Band) 5.170 ~ 5.825 GHz
Security	64/128-Bit WEP Key, WPA, WPA2, 802.1X

Transmit output power¹ (tolerance: ±2.0 dBm)	802.11a: 12 dBm ± 2 dBm @ 54 Mbps 802.11b: 17 dBm ± 2 dBm @ 11 Mbps 802.11g: 16 dBm ± 2 dBm @ 54 Mbps 802.11gn HT20: 16 dBm ± 2 dBm @ MCS0 802.11gn HT20: 15 dBm ± 2 dBm @ MCS7 802.11gn HT40: 15 dBm ± 2 dBm @ MCS0 802.11gn HT40: 14 dBm ± 2 dBm @ MCS7 802.11an HT20: 15 dBm ± 2 dBm @ MCS0 802.11an HT20: 12 dBm ± 2 dBm @ MCS7 802.11an HT40: 14 dBm ± 2 dBm @ MCS0 802.11an HT40: 11 dBm ± 2 dBm @ MCS7 802.11ac VHT20: 13 dBm ± 2 dBm @ MCS8NSS3 802.11ac VHT40: 13 dBm ± 2 dBm @ MCS9NSS3 802.11ac VHT80: 11 dBm ± 2 dBm @ MCS9NSS3
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Receive sensitivity (tolerance: ± 2 dBm)	802.11a: -81 dBm ± 2 dBm @ 54 Mbps 802.11b: -92 dBm ± 2 dBm @ 11 Mbps 802.11g: -82 dBm ± 2 dBm @ 54 Mbps 802.11gn HT20: -79 dBm ± 2 dBm @ MCS7 802.11gn HT40: -76 dBm ± 2 dBm @ MCS7 802.11an HT20: -78 dBm ± 2 dBm @ MCS7 802.11an HT40: -74 dBm ± 2 dBm @ MCS7 802.11ac VHT20: -64 dBm ± 2 dBm @ MCS8NSS3 802.11ac VHT40: -63 dBm ± 2 dBm @ MCS9NSS3 802.11ac VHT80: -60 dBm ± 2 dBm @ MCS9NSS3
1. The maximum power setting will vary by channel and according to individual country regulations.	

Certifications and Compliance

	Conforms to relevant European Union directives.
	Conforms to relevant Australian Safety and EMC standards.
	Certified by CSA Group to North American safety standards.
	Complies with 47 CFR Part 15 requirements of the U.S. Federal Communications Commission.
	Certified by the National Agency of Telecommunications (Anatel).
	Conforms to relevant South Korean EMC Standards.

Additional South Korean EMC Standards Information

Electromagnetic Compatibility. Applies to use in Korea only. Class A Equipment (Industrial Broadcasting & Communications Equipment) [1]

[1] This product meets requirements for industrial (Class A) electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and is not to be used in homes.

Federal Communication Commission and Industry Canada Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC and IC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC and IC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.

Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Important Note: FCC and IC Radiation Exposure Statement

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15 – 5.25 GHz band are restricted to indoor usage only.

The availability of some specific channels and/or operational frequency bands are country dependent and not accessible by the end user.

Exposure to RF Energy

THIS MODEL DEVICE MEETS U.S. AND INTERNATIONAL REQUIREMENTS FOR EXPOSURE TO RADIO FREQUENCY RADIATION.

The AirCheck G2 Tester is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government and by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The device also meets the RED directive, for protecting the health and safety of the user and other persons.

These limits are part of comprehensive guidelines that establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

Before a device model is available for sale to the public, it must be tested and certified to operate within the limits for safe exposure established by the FCC and international organizations. The tests are performed in positions and

locations (e.g., next to the body) as required by the FCC for each model. The FCC has granted an Equipment Authorization for this model device with all reported SAR levels (see below) evaluated as in compliance with the FCC RF emission guidelines.

This device meets RF exposure guidelines when the antennas are positioned at a minimum distance from the body. In order to transmit data or messages, this device requires a quality connection to the network. In some cases, transmission of data or messages may be delayed until such a connection becomes available. Be sure that the recommended distance is observed until the transmission is complete.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. Tests for SAR are conducted using standard operating positions specified by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. The SAR limit set by the FCC is 1.6 W/kg. The international guidelines state that the SAR limit for mobile devices used by the public is 2.0 W/kg averaged over 10 grams of body tissue. SAR values may vary depending on national reporting requirements and the network band. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value because the device operates at multiple power levels and uses only the power required to reach the network.

SAR information on this model device is on file with the FCC and can be found under the Display Grant section <http://www.fcc.gov/oet/fccid> after searching on

FCC ID: WA7-43460AC.

This device is a 2.4-GHz wide-band transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.




This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 MHz to 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.





Regulatory Statements

<p>Brazil</p> <p>Regulatory Statement</p>	<p>Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.</p>
<p>Korea</p> <p>Electromagnetic Compatibility. Applies to use in Korea only. Class A Equipment (Industrial Broadcasting & Communications Equipment)</p>	<p>This product meets requirements for industrial (Class A) electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and is not to be used in homes.</p>
<p>Mexico</p> <p>Cofetel Notice</p>	<p>La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.</p>
<p>Taiwan</p> <p>Regulatory Compliance Warning for Access Points according to rule of LP0002</p>	<p>低功率電波輻射性電機管理辦法</p> <p>經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。</p> <p>低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。</p> <p>前項合法通信，指依電信法規定作業之無線電通信。</p> <p>低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。</p> <p>在 5.25~5.35-GHz 及 5.47~5.725-GHz 頻帶內操作之無線資訊傳輸設備限於室內使用。</p>

Appendix A: Quick Reference: Examining your Network Health

How is my Network Quality?

What is my Wi-Fi Air Quality?	From the Home Screen, touch AutoTest . The tester opens the AutoTest screen to show the results of Air Quality , including 802.11 Channel Utilization, Non-802.11 Channel Utilization, Co-Channel Interference, and Adjacent Channel Interference.
Are my channels overloaded with access points and Wi-Fi traffic?	The test results ratings of  Pass,  Warning, or  Fail are based on a comparison of the actual measured value to user settable thresholds. See "Adjusting the Test Thresholds," page 56 . The 802.11 Channel Utilization results include the top three channels in each band with the most Wi-Fi traffic. The channel utilization value, along with the rating is displayed.
Are any of my channels too noisy?	The Non-802.11 Channel Utilization results include the top three channels in each band with the most non-802.11 interference and noise. The channel utilization value along with the Pass/Warning/Fail rating is displayed. The Co-Channel Interference results include the top three channels in each band with the most APs with a minimum signal strength. The AP count and rating icon are displayed. The Adjacent Channel Interference results include the top three channels in the 2.4-GHz band that are experiencing interference from APs with a minimum signal strength on adjacent overlapping channels. The AP count and a Pass, Warning, or Fail icon are also displayed for each channel. The Adjacent Channel Interference measurement does not apply to the 5-GHz band. See "Using AutoTest to Diagnose Your Network Health," page 36.

<p>What is my Wi-Fi Network Quality?</p> <p>Can I hear access points that support my networks?</p> <p>Can I connect?</p> <p>Are there coverage holes in this area?</p> <p>Are there too many close APs using the same channel making my network slow?</p>	<p>To test your Network Quality, you must configure your AirCheck G2 with the proper credentials to connect to the network and/or access points. See “Using Profiles to Manage Settings and Security Credentials,” page 50.</p> <p>Next, go to the AutoTest Settings screen ( (Settings) > AutoTest Settings), and select the networks you want tested during AutoTest.</p> <p>From the Home Screen, touch AutoTest. The tester opens the AutoTest screen, with the Network (SSID) Test results below the Air Quality results. The test results ratings— Pass,  Warning, or  Fail—are based on a comparison of the actual measured value to user settable thresholds. See “Adjusting the Test Thresholds,” page 56.</p> <p>The Connection test checks the status of Wi-Fi authentication and association to the target AP, by attempting to link to the selected network. Test results indicate whether or not you can connect at your current location and provide other measurements of the health of your connection, such as transfer (TX) rate, packet retries, and average, minimum, and maximum readings for signal strength, noise, and SNR. The results are presented along with a rating of Pass, Warning, or Fail based on the thresholds.</p> <p>Part of the Connection test results, Network Coverage results indicate the number of APs with a minimum signal level that are supporting the network (SSID). Network Coverage also receives a test rating of Pass, Warning, or Fail, based on a comparison of the measured values to user settable thresholds. For good network quality, at least two APs (on different channels) above -67 dBm are typically recommended.</p> <p>Also under Connection results, the Co-Channel Interference results show the number of overlapping APs on the same channel as the network (SSID), along with the rating of Pass, Warning, or Fail, based on a single network (SSID) comparison to thresholds.</p> <p>Next, AutoTest indicates whether an IP address could be obtained via DHCP, and finally, AutoTest checks if devices essential to the connection are reachable (Default Gateway, DHCP Server, DNS servers), along with any user-configured Targets, via Ping or TCP Port Open test.</p> <p>See “Using AutoTest to Diagnose Your Network Health,” page 36.</p>
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What is in the Wireless Environment?

<p>What wireless LANs are available?</p>	<p>From the Home Screen, select Networks to see a list of wireless LANs and the number of access points for each one.</p> <p>To see all access points that are available at your location, select Access Points on the Home Screen.</p> <p>See "Discovering Networks and Access Points," page 9.</p>
<p>What access points are available?</p> <p>Are the signal strengths sufficient?</p> <p>Is the access point configured correctly?</p>	<p>Select Access Points to see a list of access points available at your location.</p> <p>From the Access Points screen, touch an access point to see details and bar graphs of the signal strength and noise. Details include security type, 802.11 types supported, and channel. 802.11n and 802.11ac specific capabilities, such as wide channels and MCS indices supported, are also displayed.</p> <p>See "The Access Point Details Screen," page 17.</p>
<p>What wireless clients use the network?</p>	<p>From the Home Screen, select Networks, and touch the network for which you want to see the connected clients. Tap the Clients row to see individual clients.</p> <p>Likewise, you can select a specific Access Point from the Access Points screen to see the clients associated with it.</p> <p>To see all clients, including those connected and probing on all networks within tester range, select Clients from the Home Screen. See "Discovering Clients," page 27.</p>

Can Devices Connect to My Network?

Use the tester to verify connectivity. See ["Verifying Connectivity and Coverage," page 58.](#)

NOTE: To connect to a secure network, the tester must have a profile that includes security credentials. If credentials are not available, touch **Connect** to open the Configuration screen, so that you can enter the appropriate credentials.



Can a device connect as a client to my network (SSID)?	Select Networks , touch a network to open its details screen, then press Connect .
Can a device connect to an access point (BSSID)?	Select Access Points , touch an access point to open the details screen, and then touch Connect .
If a device cannot connect to a network or access point, where does the connection procedure fail?	If the Connection test fails, first expand the Connection test status (by tapping the arrow  button) to see which step failed. For example, if it failed to authenticate, check the security type and credentials match between the AP and AirCheck G2. Look at the connection test log by tapping Log at the bottom of the Connect test results screen.
Can a device ping a network device?	Perform a Connect to Network or Connect to AP test. The results show if the default gateway, DHCP server, primary DNS server, secondary DNS server, and up to ten selected network target addresses can be reached via Ping or TCP Port Open Test. Network targets are configured and selected in  (Settings) > Test Targets . By default, www.google.com is included.

<p>Is a client's network interface card operating correctly?</p>	<p>From the Home Screen, select Clients, and touch on the client you want to examine. The tester will discover the client if the client transmits probe request frames and display basic settings, such as the channel and SSIDs the client uses in probes. See "Discovering Clients," page 27.</p>
<p>Can a client roam on a network, and where does roaming occur?</p>	<p>When a Connect to Network test successfully connects, touch the Roaming Test button. The Connection Range graph will show you the quality of the connection to the current AP. When the AirCheck G2 roams to another AP, a green vertical line appears when the association to the new AP occurs. Also the new AP name will appear in the top line. See "Performing a Network Roaming Test and AP Range Test," page 75.</p>
<p>What is the range of an AP for a client to stay connected?</p>	<p>When a Connect to Access Point test successfully connects, touch the Range Test button. The Connection Range graph will show you the quality of the connection to the AP. As the AirCheck G2 moves further away, the connection quality will decrease. A red vertical line will appear when the AirCheck G2 disassociates from the AP. A green vertical line will appear when it re-associates to the AP. See "The Access Point Range Test," page 78.</p>

What is Causing Slow Network Performance or Dropped Connections?

Is the signal strength sufficient?	Select Access Points . The Access Points screen shows the signal strength for each access point. Select an access point to see more details about the signal strength and congestion. See "The Access Point Details Screen," page 17.
Is the network too busy?	Select Channels to see an overview of channel usage and the number of access points and connected clients that use each channel. To see a graph, touch on an individual channel. See "The Channels Utilization Screen," page 21.
Is there non-802.11 interference on a channel?	Select Channels . Non-802.11 interference is the gray portion of the graph bar. This noise can interfere with WLAN connections or performance. Non-802.11 noise can come from microwave ovens, wireless telephones, Bluetooth® devices, motion detectors, wireless cameras and other wireless devices. See "The Channels Utilization Screen," page 21.

Are There Security Risks in My Network?

Do networks have the expected level of security?	Select Networks . Networks that have unsecured access points show a red open lock  . Networks with APs using different security types show a gray lock  . See "The Networks List Screen," page 10.
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Where is an Access Point?

Select **Access Points**, select one access point, then press **Locate** on the **Access Point Details** screen.

See [“Locating an Access Point, Client, or Interferer,”](#) page 66.

You may also use the optional external directional antenna to help you find access points faster.


See [“Using the External Directional Antenna,”](#) page 72.

What Networks or Access Points Come into Range as I Move?

On the **Networks** screen, touch **Sort:** and under the **Sort Networks/Access Points By:** list, select **Last Seen**. Then, move through an area. Networks or access points that come into range are added to the top of the list.

See [“Discovering Networks and Access Points,”](#) page 9.

How Can I Document My Network and My Test Session?

Touch the  (**Save**) button to save the session.

Use AirCheck G2 Manager software to transfer the session file to a PC and make a report. See [“Managing Profiles and Sessions on a PC using AirCheck G2 Manager,”](#) page 96.

Or use Link-Live Cloud Service (Link-Live.com) to view wireless and Ethernet test results and generate a report. See [“Getting Started in Link-Live Cloud Service,”](#) page 47.