



# Gigacheck Instruction Manual

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## DESCRIPTION

The Tempo Communications AirScout® GigaCheck® is a test device that validates internet speeds of up to 1 Gbps and Wi-Fi® speeds of up to 1.3 Gbps. It consists of a single unit that is controlled remotely via an Android application.

## SAFETY

Safety is essential in the use and maintenance of Tempo tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.



**Do not discard this product or throw away!**

For recycling information, go to [www.TempoCom.com](http://www.TempoCom.com).

All specifications are nominal and may change as design improvements occur. Tempo Communications Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

AirScout® is a registered trademark of Tempo Communications Inc.

Wi-Fi® is a registered trademark of Wi-Fi® Alliance.

Ookla is a registered trademark of Ookla®, LLC.

Speedtest is a registered trademark of Ookla®, LLC.

## IMPORTANT SAFETY INFORMATION

### WARNING

Read carefully all the safety information below before using AirScout®.

Failure to follow these safety instructions could result in fire, electric shock, injury, or damage to the AirScout® equipment or other property.

### Operation

1. Charge all units for at least two hours before using.
2. Use the enclosed power supply adapter and connect it to the carry case.
3. While charging, the power LED on the unit will turn blue. When charging is complete, the LED will turn off.
4. Unit should be charged after each day of use.

### Specifications

Power input: 11 to 15 VDC, 1 A.

Operating temperature: 0 to +60 °C (+32 to +140 °F).

Charging temperature: -10 to +55 °C (+14 to +131 °F).

Operating humidity: 90% max, non-condensing.

Storage temperature: -20 to +70 °C (-4 to +158 °F).

All parts are intended for indoor use only in dry conditions.

If soiled, clean the case only with a damp cloth and soap or mild detergent; ensure the product is fully dry before use.

## Battery

AirScout® GigaCheck® contains a lithium polymer cell that is permanently installed.

**CAUTION:** Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions. This battery is not serviceable by the customer. The lithium polymer cell was tested in accordance with UL2054 and IEC 62133, and it has a capacity below 15.7 Wh. If service is required, contact Tempo for your nearest authorized repair center.

- The battery must be recycled or disposed of separately from household waste.
- For more information go to [www.TempoCom.com](http://www.TempoCom.com).

## Compliance

This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65 and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20 cm (8 in) or more away from person's body (excluding extremities: hands, wrists, feet and ankles).

### Canadian Department of Communications Industry Canada Notice (Canada only)

This Class B digital apparatus complies with Canadian ICES-003.

### FCC Rules, Part 15

This device complies with Part 15 of FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference, including interference that may cause undesired operation.

### EU Compliance

Tempo Communications Inc. hereby declares that the AirScout® kit is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC and the R&TTE Directive. A copy of the full Declaration of Conformity may be downloaded from [www.TempoCom.com/support/compliance](http://www.TempoCom.com/support/compliance).

## Limited Warranty Summary

Tempo Communications Inc. warrants the included product and accessories against defects in materials and workmanship for one year from the date of original purchase. Tempo does not warrant against normal wear and tear, nor damage caused by accident or abuse.

All items are produced in accordance with Tempo's production instructions and tested to perform as specified. Tempo Communications Inc. is an ISO 9001 approved company.

Full warranty text and details can be viewed at [www.TempoCom.com](http://www.TempoCom.com).

# INTRODUCTION

As network infrastructure continues to develop, faster internet speeds are becoming increasingly available, with some Service Level Agreements offering 500 Mbps or even 1 Gbps. However, many technicians lack the tools necessary to test both wired and wireless throughput for these ultra-high-speed service levels.

The GigaCheck® is portable, low-cost test device that can validate wired internet speeds of up to 1 Gigabit. With an onboard 3x3 802.11ac radio, the GigaCheck® can test Wi-Fi® throughput throughout the home at speeds on par with top-of-the-line consumer devices.

## AIRSCOUT COMPONENTS

### GigaCheck Tester

The GigaCheck® Tester is a compact test device that combines a Gigabit Ethernet interface with a 3x3 802.11ac radio.

#### Master Front View



- 1 Device Status LED
- 2 Power Status LED
- 3 Identification Button
- 4 Power Button
- 5 Pairing Button
- 6 USB Port
- 7 10/100/1000 Ethernet
- 8 12 VDC Power Input

#### Master Rear View



# OPERATION

## Turning Power On

Press the power button, located in the center. The power status LED will illuminate green and the device status LED will illuminate white. Within a minute, the device status LED will turn off, indicating that the unit is ready for use.

NOTE: If the unit is plugged into a power source when it is powered on, the power status LED may illuminate teal instead of green. This is normal, and indicates that the unit is charging while in operation.

## Turning Power Off

Press and hold the power button for approximately five seconds to power off.

## Power Status LED

The power status LED is located on the right side of the device:

1. Green (solid) – indicates the device is operating normally.
2. Teal (solid) – indicates the device is operating normally and plugged into a power source.
3. Blue (solid) – indicates the device is charging and powered off.  
NOTE: When the unit is fully charged, the power status LED will turn off.
4. Orange (solid) – indicates the device is operating at a low battery level. The device should be plugged into a power source immediately.

## Device Status LED

The device status LED is located on the left side of the device.

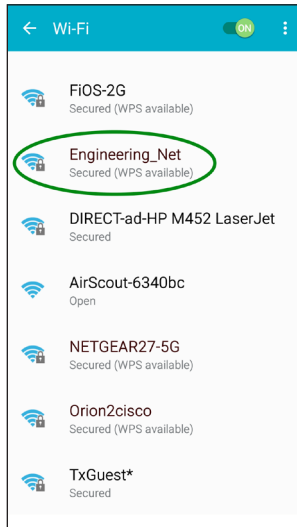
1. White (solid) – indicates the device is initializing.
2. Off – indicates the device isn't connected to the Android application.
3. Green (solid) – indicates the device isn't connected to the Android application.
4. Green (blinking) – indicates the device is running a speed test.

# TESTING

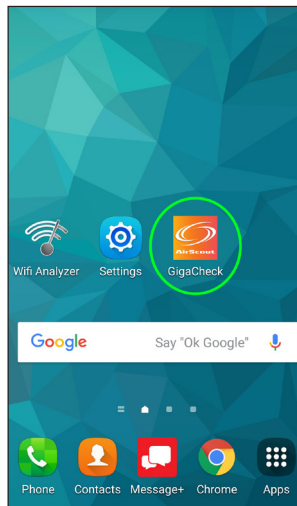
## Connecting an Android Device

The GigaCheck® is controlled through an Android app. Before running tests, a link must be established between the Android app and the GigaCheck®. Do the following:

1. Power on the GigaCheck®. When the white status LED has turned off, the device is ready to connect.
2. On the Android device, connect to the residential gateway (RG).

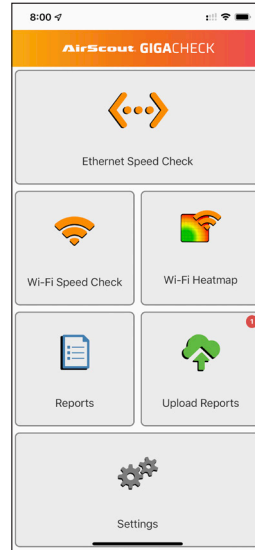


3. Start the GigaCheck® app.





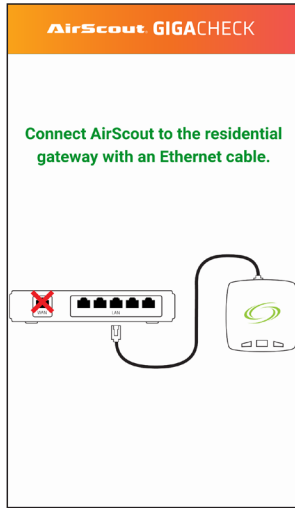
## The Home Screen



The home screen provides navigation to wired and wireless speed tests. If the GigaCheck® is connected on Ethernet and/or Wi-Fi®, the corresponding icon will be green. Otherwise, the icon will be orange (see above). If the speed test icon is tapped for a disconnected interface, the app will provide instructions to connect to that interface.

1. If the GigaCheck® is connected on Ethernet and/or Wi-Fi®, the corresponding icon will be green. Otherwise, the icon will be orange (see above). If the speed test icon is tapped for a disconnected interface, the app will provide instructions to connect to that interface.
2. All test results for the current report can be accessed by tapping **Certificate Results**.
3. Cloud login, speed test server configuration, and firmware updates can be accessed in **Settings**.

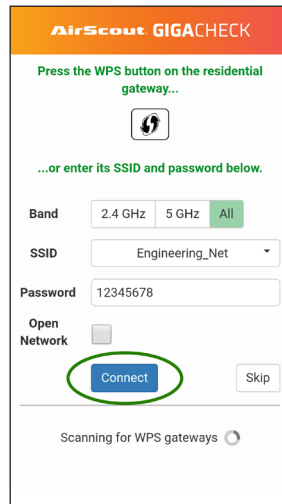
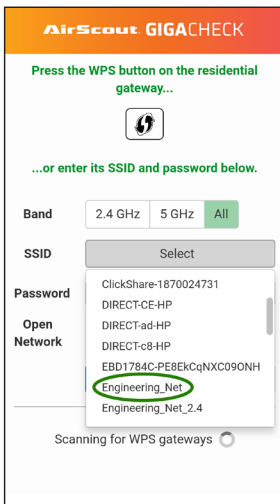
4. Connect the GigaCheck® to one of the LAN ports on the customer's RG, as indicated in the app.



5. Once a connection is established between the GigaCheck® and the app, a green check mark will appear in the app, and the device status LED on the GigaCheck® will turn green.
6. At this point, the GigaCheck® can be connected to the RG over Wi-Fi®, allowing for Wi-Fi® throughput tests. This can be done two ways:
- By pressing the WPS button on the RG. The GigaCheck® will automatically connect to the RG within about 30 seconds.

Note: Whether the GigaCheck® connects to 2.4 GHz or 5 GHz will depend on the configuration of the RG. Some RGs have WPS disabled.

- By selecting the SSID of the RG and entering its WPA key, as shown below.

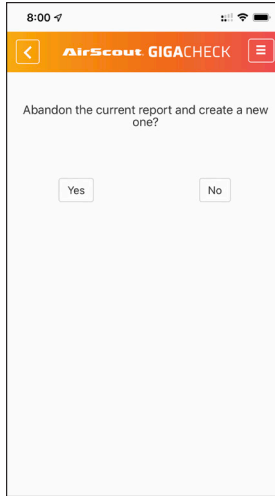


Note: If the RG has the same SSID for both 2.4 GHz and 5 GHz, the band filter function can be used to select the desired network. When a band filter is enabled, only networks on the selected band will be shown in the SSID dropdown.

Note: This step can be skipped if no Wi-Fi® throughput test is desired.

## Work Order Information

Speed test results are stored in a report, which can be uploaded to the Tempo Cloud once testing is complete. A report must be created before any tests are performed.

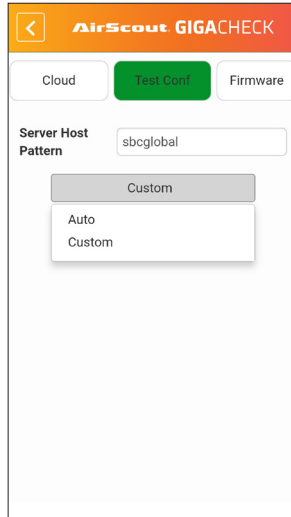


Note: If the app is inadvertently closed before a report has been uploaded to the cloud, the certificate can be optionally recovered when the app is restarted.

## Speed Test Server Configuration (Optional)

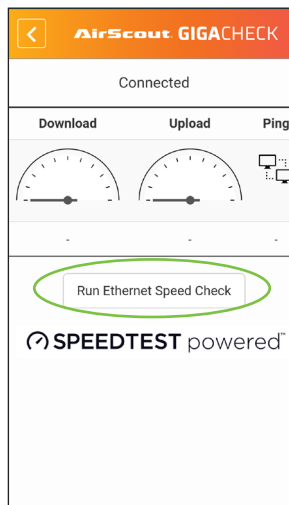
By default, the GigaCheck® locates an optimal Ookla® server for testing. This behavior can be changed in **Settings > Speed Test**. A custom server can be selected as shown below.

Note: The **Auto settings** is suitable for most applications.



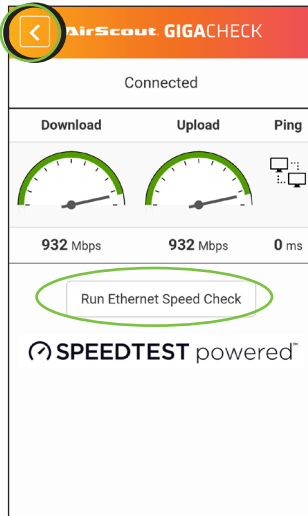
## Ethernet Speed Testing

1. Make sure the GigaCheck® is connected to the RG via Ethernet.
2. From the home page, tap **Ethernet Speed Check**.
3. Tap **Run Ethernet Speed Check**.



The test will run for about 30 seconds, after which the results will be displayed as shown below. The results are automatically stored in the report.

Use the back button in the top left corner to navigate back to the home screen.

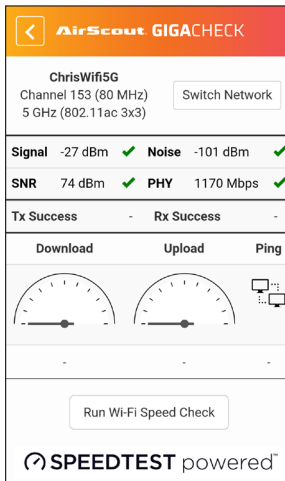


### Wi-Fi® Speed Testing

1. From the home screen, tap Wi-Fi® Speed Check.

Note: If the GigaCheck® isn't connected to the RG over Wi-Fi®, the Wi-Fi® connection menu will appear

2. Once the GigaCheck® is connected the RG over Wi-Fi®, the Ethernet may be disconnected and unit may be placed in any location in the customer's home.
3. Tap **Run Wi-Fi® Speed Check**



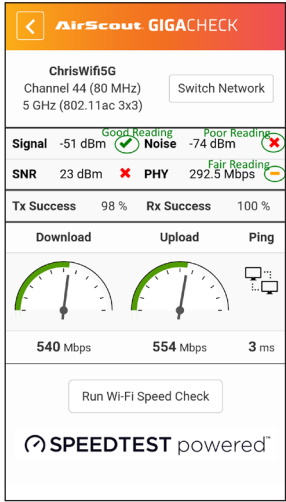
4. The test will run for about 30 seconds, after which the results will be automatically stored in the report.

## Wi-Fi® Measurements

The Wi-Fi® Speed Check screen contains metrics that can help diagnose problems with Wi-Fi® throughput. The metrics are updated every few seconds. The metrics are as follows:

- **Signal** – The signal strength of the RG, as measured by the GigaCheck®. Low signal strength in a certain part of the customer's home might indicate the need for a range extender or a relocation of the RG.
- **Noise** – The level of background interference. Consistently elevated noise can negatively affect Wi-Fi® throughput, but occasional spikes in noise don't necessarily indicate a problem with the Wi-Fi® environment.
- **SNR** – The difference between signal and noise. Consistently low SNR can negatively affect Wi-Fi® throughput.
- **PHY Rate** – The current data rate that has been negotiated between the GigaCheck® and the RG. PHY rate reflects theoretical maximum throughput. Due to the half-duplex nature of wireless, throughput is generally no more than half of the negotiated PHY rate. Additionally, the customer's service level will limit speed test throughput. If a customer has a 100 Mbps/100 Mbps plan, the GigaCheck® won't be able to achieve a download result of more than 100 Mbps, even if the negotiated PHY rate is much higher. PHY rate changes constantly, and is affected by several factors:
  - **Network Conditions:** If network conditions aren't ideal, or signal strength is low, the RG and the GigaCheck® may negotiate a lower PHY rate.
  - **802.11 Protocol:** An RG that only supports 802.11n (or 802.11g) can't achieve the same PHY rates as one that supports 802.11ac.
    - **Note:** 802.11ac is not used on the 2.4 GHz band, so customers can expect lower speeds if they connect to the RG's 2.4 GHz network instead of its 5 GHz network.
  - **Spatial Streams:** a 3x3 RG supports higher speeds than a 2x2 or a 1x1 RG.
    - **Note:** Older mobile devices with 1 or 2 spatial streams won't be able to fully take advantage of a 3x3 RG.
  - **Channel Width:** an RG operating on an 80 MHz channel will support higher PHY rates than one operating on a 40 MHz or a 20 MHz channel.
    - **Note:** Older mobile devices may not support 80 MHz channel bonding.
- The 4 Wi-Fi® metrics above are accompanied by symbols that indicate if the reading indicates a

good, marginal or poor Wi-Fi® environment.



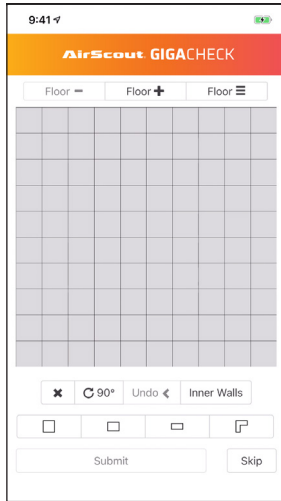
Note: These metric quality ratings update on their own and not as a result of running a speed test.

## Creating A Floor Plan and Heat-Map

The AirScout® GigaCheck® presents its results using multi-dimensional heat maps, providing an intuitive, easy-to-understand method for visualizing results.

### Floor Plan Setup

#### 1. Screen Icons

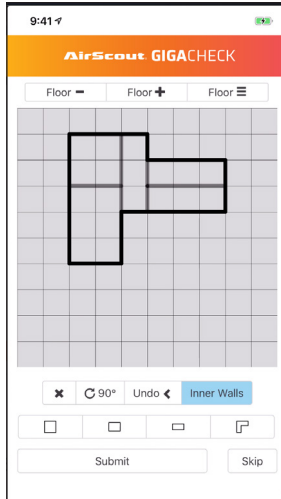


- a. Floor – Remove a floor layout
- b. Floor + Add a floor layout
- c. Floor = Stacked floor icon to toggle between floor plans
- d. X
- e. Rotate 90 Degrees
- f. Undo
- g. Inner Walls
- h. Floor Types:
  - i. Square
  - ii. Rectangle
  - iii. Wider Rectangle
  - iv. Custom



## 2. Creating a Floor Plan

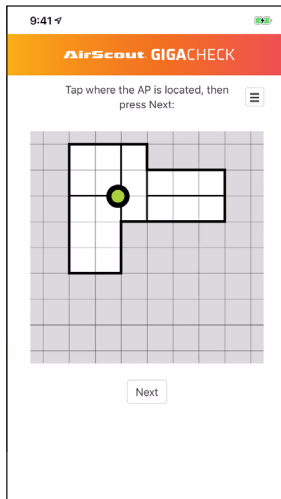
a. **TAP** to select a floor type. Inner walls can be added as necessary.



b. Once you have created the desired floor plan click **SUBMIT**

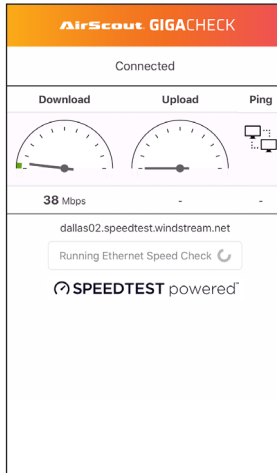
## 3. Place the Access Point (AP)

a. After the floor plan is created, **TAP** where the **ACCESS POINT (AP)** [aka router] is located and press **NEXT**

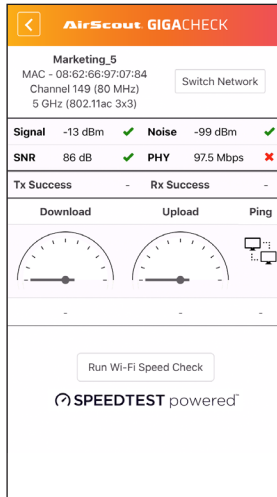


# Perform an Ethernet Speed Test

## 1. Perform an ETHERNET SPEED CHECK



a. Initial results are displayed giving you an understanding of your current network speeds

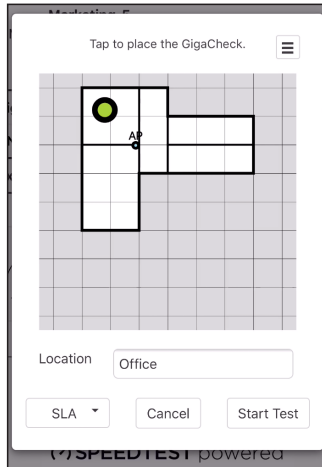


# Perform a Wi-Fi® Speed Test

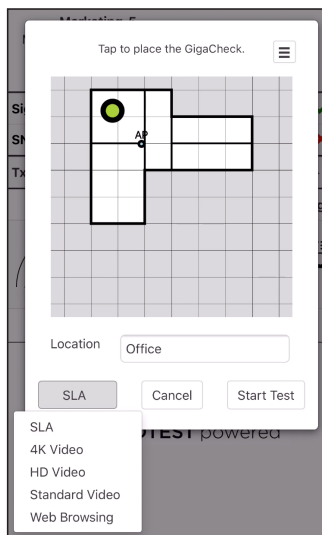
1. Now that you have successfully created a floor plan and placed the AP, you can perform a Wi-Fi® Speed Test.

2. Disconnect the AirScout® GigaCheck® and bring the GigaCheck® with you to the desired location on the floor plan.

3. Name the location i.e. Office, Kitchen, Living Room, Bathroom, Bedroom, etc. and
4. **TAP** to place the GigaCheck® on the floor plan / where you are located
  - a. Do this for every part of the floor plan you want to test

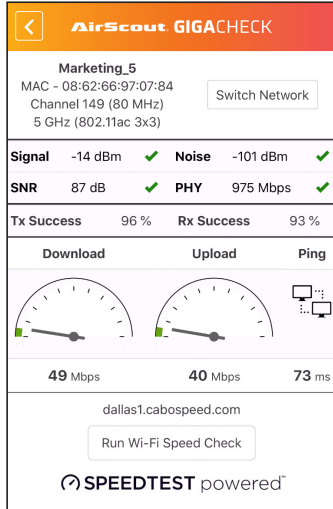


5. Select an Application you wish to test
  - i. SLA: Test your Wi-Fi speed to ensure if you're receiving the speeds you pay for
  - ii. 4K Video: Gaming, Streaming, Netflix, etc.
  - iii. HD Video: Movies
  - iv. Standard Video: YouTube
  - v. Web Browsing

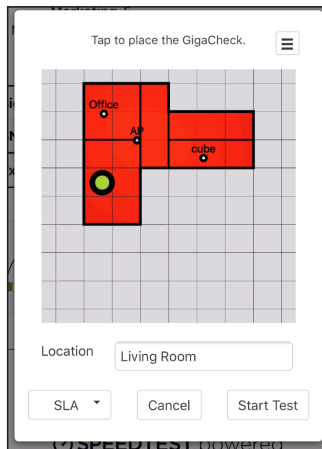


6. After the Application has been selected the Location has been named, **TAP START TEST**

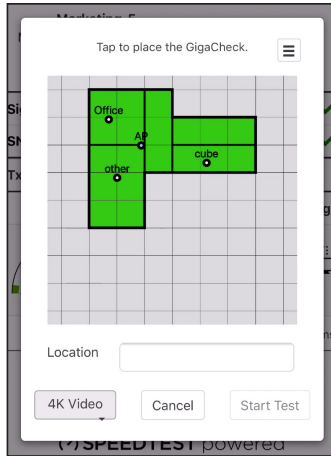
a. The results will be displayed



b. In the example below are comparing the SLA to the actual speeds measured. RED signals that the Speeds are not meeting the selected SLA in any areas of the home.



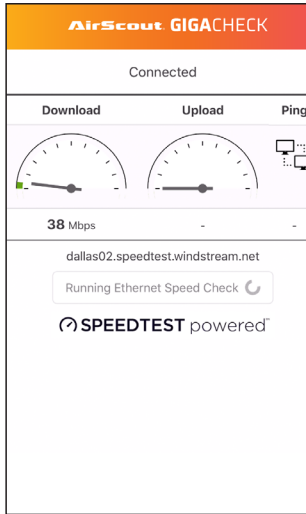
c. In the next example we test '4K Video' application. All results show GREEN meaning the Wi-Fi® speeds meet the requirements to use 4K Video.



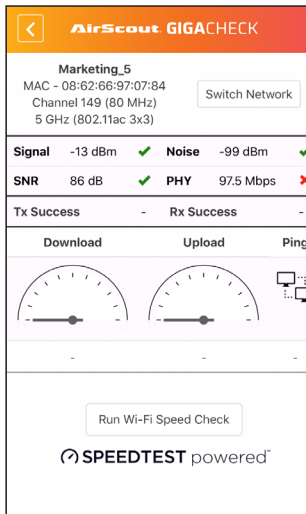
d. After you have ran all the tests on the floor plan you can view the results.

AirScout GIGACHECK		
SPEEDTEST powered		
April 10, 2019, 9:01 AM (eng2)	16 Mbps ↓	11 Mbps ↑ 73 ms ↔
April 10, 2019, 8:59 AM (engineering)	27 Mbps ↓	22 Mbps ↑ 74 ms ↔
April 10, 2019, 8:54 AM (corner)	46 Mbps ↓	40 Mbps ↑ 67 ms ↔
April 10, 2019, 8:51 AM (other)	46 Mbps ↓	41 Mbps ↑ 67 ms ↔
April 10, 2019, 8:50 AM ()	40 Mbps ↓	41 Mbps ↑ 66 ms ↔
April 10, 2019, 8:47 AM (cube)	49 Mbps ↓	40 Mbps ↑ 73 ms ↔
April 10, 2019, 8:45 AM (Office)	31 Mbps ↓	40 Mbps ↑ 72 ms ↔
April 10, 2019, 8:34 AM	39 Mbps ↓	41 Mbps ↑ 65 ms ↔
View Heatmap		

## 7. Perform an **ETHERNET SPEED CHECK**



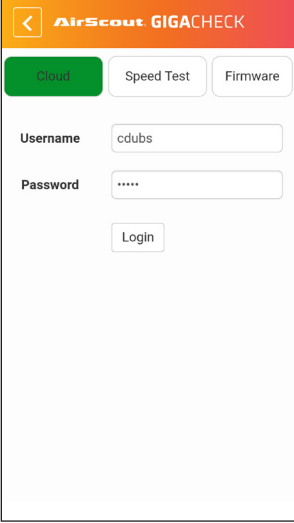
a. Initial results are displayed giving you an understanding of your current network speeds



## Logging into a Technician Account

To upload reports and update the firmware on the GigaCheck®, it is necessary to log into the Tempo cloud. Contact Tempo with any questions about login credentials.

- From the home page, navigate to **Settings > Cloud**.
- Enter the appropriate username and password and tap **Login**.



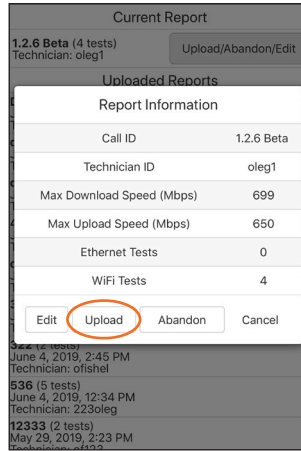
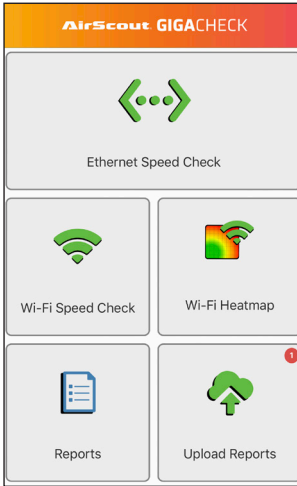
The screenshot shows the login interface of the AirScout GIGACHECK app. At the top, there is a red header bar with a back arrow on the left and the text "AirScout GIGACHECK" on the right. Below the header, there are three buttons: "Cloud" (highlighted in green), "Speed Test", and "Firmware". Underneath these buttons, there are two input fields: "Username" with the text "cdubs" and "Password" with masked characters "\*\*\*\*\*". A "Login" button is positioned below the password field.

Note: This step only needs to be performed once. On subsequent runs, the app will log in automatically.

## Uploading Reports to the Cloud

Once logged into the Tempo cloud, the current report can be uploaded to the cloud. To upload the current certificate, do the following:

- From the home page, **tap the cloud icon**.
  - Note: The number next to the cloud icon indicates the number of tests that have been performed on the current report.



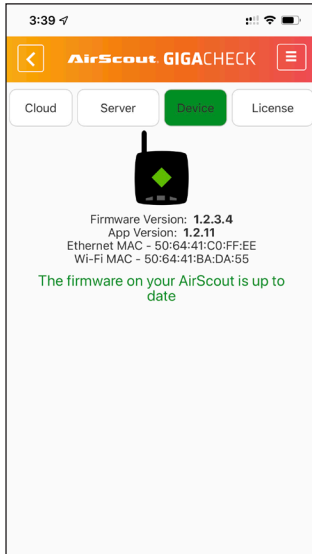
- At this point, the certificate's identifying information can be changed by **tapping Edit Information**
- **Tap Upload**
- The certificate should upload within a few seconds. If the upload fails, make sure the RG is connected to the internet.



# FIRMWARE UPDATES

The GigaCheck® app automatically checks for firmware updates for the unit. This requires being logged into the Tempo cloud (see instructions above). When new firmware is available, it can be installed as follows:

- Connect the GigaCheck® to the RG via Ethernet
- From the home page, navigate to **Settings > Firmware**.
- Tap to **Update** to version **x.x.x.x**.



- The firmware will update automatically and the unit will reboot. Don't power off the unit or close the app until the update is complete.

Note: It is important to keep both the app and the firmware up to date. The GigaCheck® app can be updated through the Google Play Store.



**1390 Aspen Way Vista, CA • 92081**

Latin America Phone : 1.760.510.0558 | EMEA Phone: +44 (0) 1633 627710

@2019 Tempo Communications Inc. • An ISO 9001 Company

EMEA Address: Tempo Communications Limited • Brecon House,  
William Brown Close, Cwmbran • NP44 3AB, UK

