

Wireless Network Extender

Model # WCB5200

User Guide

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Introduction

The Actiontec WCB5200 is a wireless network extender with dual concurrent radios supporting both 802.11 a/b/g/n (2.4GHz and 5GHz) and 802.11ac (5GHz). This allows the Extender to connect to everything from legacy wireless laptops, computers, and gaming platforms, up to the most current (and future) Apple and Android tablets, laptops, media platforms, and smartphones.

The Extender works by being placed in a central location of the home, or in a location where the existing wireless signal is weak, and then being physically connected directly to your gateway/modem. This physical connection not only extends the signal, but allows the Extender to import and automatically configure itself with the same network ID/SSID and password currently in use and configured on the existing gateway/modem. This means that wherever you are in your house, your WiFi tablet, laptop, phone, or wireless device will automatically connect to the Internet without anyone having to find a new network name or entering additional security keys.

For users with newer mobile devices, tablets, and laptops, connections through the 5GHz radio can markedly increase the performance and speed of your Wi-Fi connection, while freeing up the 2.4GHz band for legacy or older devices.

Features

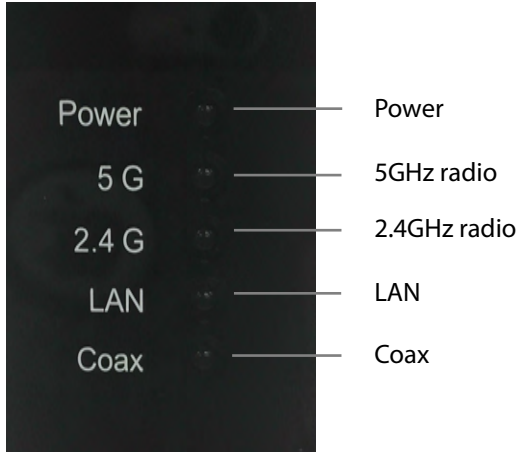
- 2.4GHz and 5GHz dual concurrent 802.11 a/b/g/n WiFi radios
- 5GHz 802.11ac WiFi radio
- Four Ethernet ports (Gigabit)
- One coaxial port (MoCA 2.0)
- Integrated wireless networking with 2x2 802.11n and 2x2 802.11ac access point
- Multiple security offerings, including, MAC address filtering, and WPA
- Other options include WMM, IP address management, carrier remote support and management, and upgradable firmware

Getting to Know the Extender

This chapter describes the location and uses of the Extender's LEDs, ports, and buttons.

Front Panel

The front panel features LEDs that illuminate green when power, available ports, and/or wireless bands are functioning and in use.



Back Panel

- **Power port:** used to connect the power adapter (external, 12V DC, 1.5A, made by Ktec, model #KSASB0241200150HU, or external, 12V DC, 2.0A, made by Actiontec, model #WA-24Q12FU) to the Extender.
- **Reset button:** restores the Extender back to the original factory default settings when held down for at least 10 seconds.
- **Coax port:** used for connecting the Extender to a coaxial network.
- **Four-port Gigabit Ethernet switch:** used for directly connecting the Extender to the gateway/modem or other Ethernet devices.
- **Labels:** indicate the factory default GUI access username and password, network SSID names, and security keys.

Installing the Extender

There are two parts to installing an Extender: **Syncing Wi-Fi** (see below), and **Connecting the Extender** (see page 8).

Syncing Wi-Fi

To sync the Extender with the gateway/modem's Wi-Fi settings:

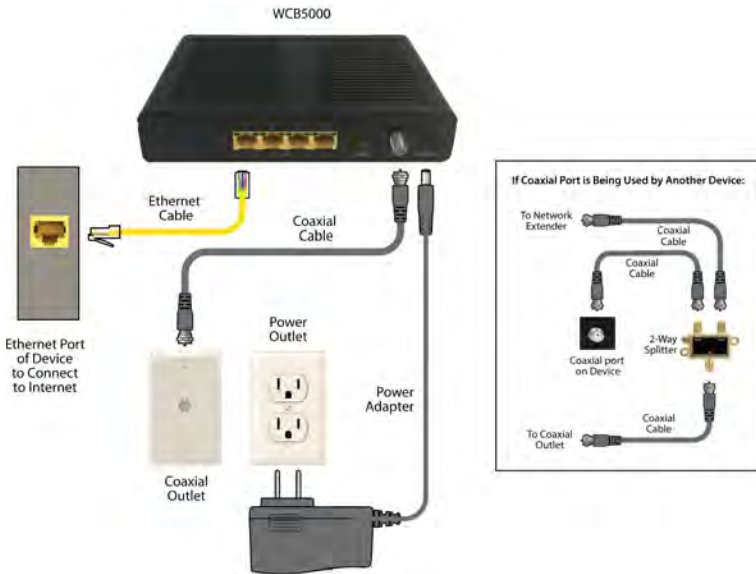
1. Place the Extender next to the gateway/modem.
2. Plug the Extender's power adapter into the *Power* port of the Extender, and the other end into an electrical wall outlet.
3. Press the WPS button on both the Extender and the gateway/modem simultaneously for ten seconds.
4. Make sure the WPS button on the Extender is glowing green. If the WPS button glows red, try syncing the Wi-Fi settings again. The Extender can also be manually configured to connect with the gateway/modem's wireless network (see "Wireless Setup" on page 14).

The Extender is now synced with the gateway/modem's Wi-Fi settings. Unplug the Extender and its power cable and continue on to the next section of this chapter, "Connecting the Extender."

Connecting the Extender

Now that the Extender is synced with the gateway/modem's wireless network, it can be connected to the gateway/modem's MoCA network and placed in another area or room of the home/office. To do this:

1. Place the Extender in an area where the Wi-Fi signal is weak or spotty. A coaxial outlet must be available nearby.
2. Connect the included coaxial cable into the *Coax* port on the rear panel of the Extender.
3. Connect the other end of the coaxial cable into the nearby coaxial outlet.
4. Plug the Extender's power adapter into the *Power* port of the Extender, and the other end into an electrical wall outlet.
5. If applicable, connect an Ethernet cable between one of the Extender's LAN ports and the Ethernet port of a non-wireless device (wireless devices will connect via the wireless network). The configuration should look similar to the figure, below:



6. Wait until the Coax and Wireless LEDs on the front panel of the Extender glow green. This may take a few minutes.

The Extender is now synced, installed, and extending the gateway/modem's wireless network in a previously weak area. Using the wireless network will be a seamless experience, as the wireless devices will switch between connecting to the Extender and the gateway/router automatically.

Using a Coaxial Splitter

If another device is using the coaxial outlet needed from step 3 in the previous procedure, perform the following steps:

1. Disconnect the coaxial cable from the coaxial outlet.
2. Connect a coaxial cable between the coaxial outlet and the single port on a two-way coaxial splitter.
3. Connect the coaxial cable disconnected in step 1 of this procedure to one of the dual ports on the splitter.
4. Connect a coaxial cable between the *Coax* port of the Extender and the other dual port on the splitter.

The final configuration should be similar to the inset in the figure on the previous page.

Accessing the Extender's Settings

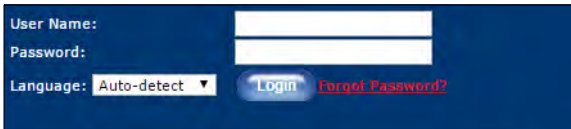
The Extender features an onboard graphical user interface (GUI) that includes user-configurable settings. Some of these settings should be accessed by experienced network technicians only.

To configure the network settings of the Extender:

1. Ensure that the Extender is connected to a gateway/modem's MoCA coaxial network, and that both devices are powered on.
2. On a computer connected to the same network as the gateway/modem and Extender, log in to the gateway/modem's GUI. The IP address for this log in will vary between different gateway/modems.
3. The gateway/modem's GUI appears. Find the Extender by its MAC ID from the list of connected devices or status screen. The MAC ID of the Extender is provided on a sticker located on the rear panel of the Extender.
4. Write down the IP address of the Extender.
5. Enter the IP address written down in step 4 in the address box of the web browser.

WCB5200 Wireless Network Extender

- The Extender's *Status* screen appears. Enter the Extender's username and password (found on the label located on the back panel of the Extender) in the *User Name* and *Password* text boxes in the upper right corner of the *Status* screen.



The screenshot shows a dark blue login form with the following elements:

- User Name:** A white text input field.
- Password:** A white text input field.
- Language:** A dropdown menu currently set to "Auto-detect".
- Login:** A blue button with white text.
- Forgot Password?:** A red text link.

The Extender's GUI's *Status* screen appears, as shown below:



The screenshot displays the main GUI of the Actiontec WCB5200. At the top, the Actiontec logo and tagline "Creative Solutions for the Digital Life" are visible. The top right corner shows "Language: Auto-detect", "HI admin", and "Logout". Below this is a navigation bar with four icons: Status, Wireless Setup, MoCA Setup, and Advanced Setup. The main content area is divided into three panels:

- Wireless Status:** Shows settings for two bands: 2.4GHz (b,g,n) and 5GHz (a,n,ac). Both have "Wireless Radio" enabled. The 2.4GHz band has SSID WIF39FB00, WPA2-Personal security, Auto,11 channel, and MAC 10:9F:A9:9F:FB:B6. The 5GHz band has SSID WIF39FB00-5G, WPA2-Personal security, Auto,44 channel, and MAC 10:9F:A9:9F:FB:B2. Both show 0 associated clients.
- Network Stations:** Lists three connected stations:
 - 70:11:96:00:69:d1: Connected 192.168.1.1 Via Ethernet
 - 00:24:a8:82:99:6c: Connected 192.168.1.2 Via Ethernet
 - 60:8b:1d:6b:38:a1: Connected 192.168.1.4 Via Ethernet
- Product Information:** Lists:
 - Model Number: WCB5200
 - Firmware Version: v2.2.100.3e
 - System Time: 0Day:0h:14m:44s
 - IP Address: 192.168.1.6
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.1.1

Status

The first GUI screen that appears is the *Status* screen, which can also be generated by clicking the *Status* icon in the menu bar. This screen contains basic information about the Extender's wireless status, network stations, and product information about the Extender. There are no configurable settings available in this screen.

The screenshot shows the Actiontec web interface. At the top, the logo reads "Actiontec Creative Solutions for the Digital Life". On the right, there is a language dropdown set to "Auto-detect", and links for "Hi admin" and "Logout". Below the header are four navigation icons: Status, Wireless Setup, MoCA Setup, and Advanced Setup. The main content area is divided into three panels:

- Wireless Status**:
 - Wireless Band:** 2.4GHz (b,g,n)
 - Wireless Radio: Enabled
 - Wireless SSID: WiFi9FFB80
 - Wireless Security: WPA2-Personal
 - Wireless Channel: Auto,11
 - Wireless MAC: 10:9F:A9:9F:FB:B6
 - Associated Clients: 0
 - Wireless Band:** 5GHz (a,n,ac)
 - Wireless Radio: Enabled
 - Wireless SSID: WiFi9FFB80-5G
 - Wireless Security: WPA2-Personal
 - Wireless Channel: Auto,44
 - Wireless MAC: 10:9F:A9:9F:FB:B2
 - Associated Clients: 0
- Network Stations**:
 - FB11963059:d1** Connected
192.168.1.1
Via Ethernet
 - 00:24:ea:62:99:6c** Connected
192.168.1.2
Via Ethernet
 - 60:0b:1d:6b:38:a1** Connected
192.168.1.4
Via Ethernet
- Product Information**:
 - Model Number: WCB5200
 - Firmware Version: v2.2.100.3e
 - System Time: Today:0h:14m:44s
 - IP Address: 192.168.1.6
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.1.1

Wireless Setup

Clicking the *Wireless Setup* icon from the menu bar of any of the Extender's GUI screens generates the *Wireless Network List* screen. Additional wireless settings can be accessed from the menu on the left side. These settings configure various aspects of the Extender's wireless network, and the majority of them should be adjusted by an experienced network technician only. The exceptions are the settings contained in the *Basic Setup* screen.

Wireless Settings

- ▶ Wireless Network List
- ▶ Basic Setup
- ▶ Wireless Security
- ▶ WPS
- ▶ Advanced Wireless Setup
- ▶ Wireless Access Control
- ▶ Logout

Wireless Network List

Private WiFi Network:

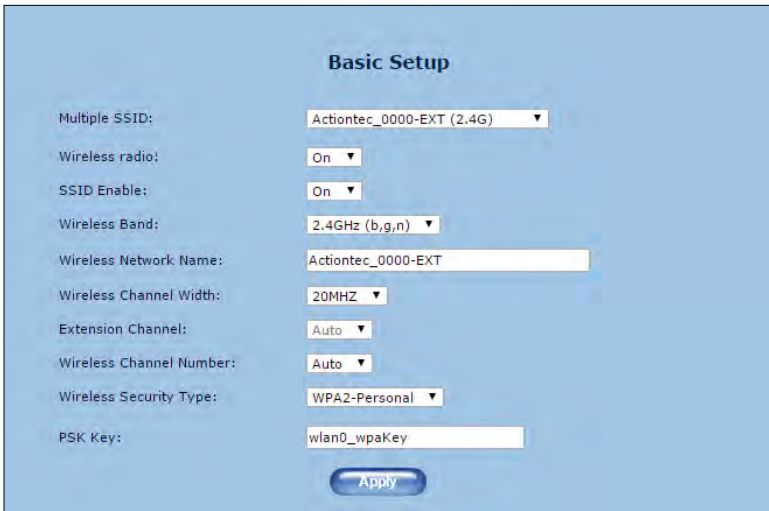
Name	Frequency	MAC Address	Security Mode	Action
Acbontec_0000-EXT	2.4 GHz	00:26:BB:DF:09:B9	WPA2-Personal	Edit
Acbontec_0000-2-EXT	2.4 GHz	00:26:BB:DF:09:BA	WPA2-Personal	Edit
Acbontec_0000-3-EXT	2.4 GHz	00:26:BB:DF:09:BB	WPA2-Personal	Edit
Acbontec_0000-4-EXT	2.4 GHz	00:26:BB:DF:09:BC	WPA2-Personal	Edit
Acbontec_0000-5G-EXT	5 GHz	00:26:BB:DF:09:B2	WPA2-Personal	Edit
Acbontec_0000-2-5G-EXT	5 GHz	00:26:BB:DF:09:B3	WPA2-Personal	Edit
Acbontec_0000-3-5G-EXT	5 GHz	00:26:BB:DF:09:B4	WPA2-Personal	Edit
Acbontec_0000-4-5G-EXT	5 GHz	00:26:BB:DF:09:B5	WPA2-Personal	Edit

Wireless Network List

Selecting *Wireless Network List* generates the *Wireless Network List* screen (above). This screen displays various parameters of the Extender's wireless networks.

Basic Setup

The *Basic Setup* wireless network screen contains various settings regarding the Extender's wireless network, which are described below. When finished adjusting the settings in this screen, click **Apply**.



The screenshot shows a web-based configuration interface titled "Basic Setup" with a light blue background. It contains several settings, each with a label on the left and a control on the right:

- Multiple SSID:** A dropdown menu showing "Actiontec_0000-EXT (2.4G)".
- Wireless radio:** A dropdown menu showing "On".
- SSID Enable:** A dropdown menu showing "On".
- Wireless Band:** A dropdown menu showing "2.4GHz (b,g,n)".
- Wireless Network Name:** A text input field containing "Actiontec_0000-EXT".
- Wireless Channel Width:** A dropdown menu showing "20MHZ".
- Extension Channel:** A dropdown menu showing "Auto".
- Wireless Channel Number:** A dropdown menu showing "Auto".
- Wireless Security Type:** A dropdown menu showing "WPA2-Personal".
- PSK Key:** A text input field containing "wlan0_wpaKey".

At the bottom center of the form is a blue button labeled "Apply".

Multiple SSID

This option allows the user to setup different SSIDs (wireless networks) with different parameters. Select the option desired from the *Multiple SSID* drop-down menu.

Wireless Radio

This option turns the Extender's wireless radio on and off.

SSID Enable

This option controls whether or not the name of the network is broadcast to other wireless devices (usually, in the device's available wireless network list). Select *Enable* or *Disable* by clicking in the appropriate radio button.

Wireless Band

This option allows the user to select the bandwidth at which the Extender's wireless radio will operate.

Wireless Network Name

If changing the name of the Extender's wireless network, enter the new name in this text box.

Wireless Channel Width

This option allows the user to select the channel width at which the Extender's wireless radio will operate. We recommend using the default setting.

Extension Channel

This option allows the user to select the extension channel for the Extender's wireless radio. We recommend using the default setting.

Wireless Channel Number

This option allows the user to select the channel number at which the Extender's wireless radio will operate. We recommend leaving the channel number as is. The Extender and the gateway/router it is connected to will automatically scan for the best channel at every boot up.

Wireless Security Type

This option allows the user to select the type of security applied to the Extender's wireless network.

Password Phrase

This option allows the user to enter a custom password phrase or value.

Wireless Security

The *Wireless Security* screen allows the user to apply wireless security to the Extender's wireless network. This screen should be accessed by experienced network technicians only.



The screenshot shows a configuration page titled "Wireless Security" with a light blue background. It contains three configuration fields and an "Apply" button:

- Multiple SSID:** A dropdown menu with the selected value "Actiontec_0000-EXT (2.4G)".
- Wireless Security Type:** A dropdown menu with the selected value "WPA2-Personal".
- PSK Key:** A text input field containing the value "wlan0_wpaKey".

At the bottom center of the form is a blue, rounded rectangular button labeled "Apply".

WPS

The *WPS* screen allows the Extender to accept wireless clients via Wi-Fi Protected Setup (WPS), an automatic wireless network connection protocol. Only experienced network technicians should configure the settings in this screen.

The screenshot shows the WPS configuration interface. It includes a title 'WPS' at the top center. Below the title, there are several settings: 'Multiple SSID' is set to 'Actiontec_0000-EXT (2.4G)'; 'WPS' is currently 'Enable' with a 'Disable' button; 'Security' is set to 'WPA2-Personal'; 'Encryption' is set to 'AES'; 'WPS Status' is 'Configured' with a 'Reset to Unconfigured' button; 'WPS Methods' is set to 'Push Button (PBC)'; and 'Push Button (PBC)' has a 'Connect' button.

Advanced Wireless Setup

The *Advanced Wireless Setup* screen allows the Extender to be configured with multiple SSIDs (network names).

The screenshot shows the Advanced Wireless Setup configuration interface. It includes a title 'Advanced Wireless Setup' at the top center. Below the title, there are several settings: 'Multiple SSID' is set to 'Actiontec_0000-EXT (2.4G)'; 'SSID Broadcast' has radio buttons for 'Enable' (selected) and 'Disable'; 'Transmit Power' is set to '100%'; and 'Beacon Interval' is set to '100' with '(20-1024 ms)' next to it. An 'Apply' button is located at the bottom center.

Wireless Access Control

The *Wireless Access Control* screen contains a number of advanced settings regarding the Extender's wireless network. Only experienced network technicians should configure these settings.

The screenshot shows the 'Wireless Access Control' configuration page. It features several settings: 'Multiple SSID' is set to 'Actiontec_0000-EXT (2.4G)', 'Wireless Access Control Mode' is set to 'Disable', and the 'MAC Address' field is empty with an 'Add' button next to it. Below these settings is a table titled 'Current Access Control List' with columns for 'Multiple SSID', 'MAC Address', and 'Remove'. An 'Apply' button is located at the bottom left of the page.

Multiple SSID	MAC Address	Remove
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MoCA Setup

Clicking the *MoCA Setup* icon from any of the Extender's GUI screens generates the *MoCA Coax Setup* screen. This screen allows the user to adjust various settings regarding the Extender's MoCA coaxial connection. These settings should be adjusted by experienced network technicians only.



Advanced Setup

Clicking the *Advanced Setup* icon from any of the Extender's GUI screens generates the *Management* screen, along with other advanced settings accessed through the menu on the left side. These settings configure various administrative aspects of the Extender and its GUI. They should be adjusted by experienced network technicians only.



Management

The *Management* screen (above) allows the Extender's IP address settings to be modified. Only experienced network technicians should change these settings.

Factory Default

The *Factory Default* advanced setup screen allows the Extender's factory default settings to be reapplied, erasing all current settings. Click **Restore Default Settings** to restore the Extender to its factory default state.



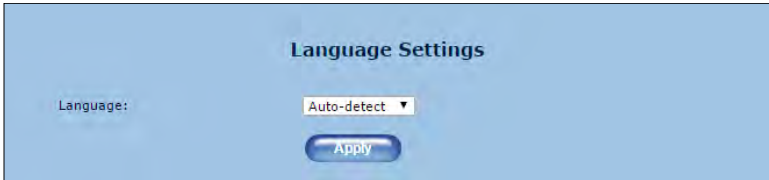
Firmware Upgrade

The *Firmware Upgrade* advanced setup screen allows the Extender's firmware to be upgraded. Once the upgrade file has been downloaded and located, click **Start to Upgrade**.



Language

The *Language* advanced setting screen allows the user to apply another language to the Extender's GUI. Select the language from the *Language* drop-down menu, then click **Apply**.



Specifications

Model Number

WCB5200

Wireless

Wi-Fi (a, b, g, n, ac)

WPA, WPA2

WMM

Wi-Fi Protected Setup

IP

Wi-Fi 802.11 a/b/g/n/ac IEEE standard 5GHz/2.4GHz

LAN Connections

Ethernet ports (4): 10/100/1000

Coaxial port (1): MoCA 2.0

LED Indicators

Power, WiFi 2.4 GHz, WiFi 5 GHz, LAN, Coax, WPS

Antennas

2x2: internal 2.4 GHz

2x2: internal, 5 GHz

Power

External, 12V DC, 1.5A, made by Ktec, model #KSASB0241200150HU

External, 12V DC, 2.0A, made by Actiontec, model #WA-24Q12FU

Regulatory

FCC part 15B and 15C, UL

Environmental

Operating temperature - 0°C to 40°C (32°F to 104°F)

Storage temperature - 0°C to 70°C (32°F to 158°F)

Operating humidity - 10% to 85% non-condensing

Storage humidity - 5% to 95% non-condensing

Altitude: -197 ft. to 7000 ft.

Note: Specifications are subject to change without notice.

Notices

Warranty

This product has a one-year Limited Hardware Warranty and 90-day free software updates from date of purchase.

Local Law

This Limited Warranty Statement gives the customer specific legal rights. The customer may also have other rights which vary from state to state in the United States

To the extent that this Limited Warranty Statement is inconsistent with local law, this Statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this Warranty Statement may not apply to the customer.

Go to

<http://www.actiontec.com/products/warranty.php>

for more information.

Important Safety Instructions

Basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and personal injury, including the following:

- Do not use this product near water – for example, near a bathtub, kitchen sink, laundry tub, or swimming pool, or in a wet basement; only clean with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus including amplifiers that produce heat.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord and batteries indicated in this manual, if applicable.

Coaxial Cable

If applicable, the coaxial cable screen shield needs to be connected to the Earth at the building entrance per ANSI/NFPA 70, the National Electrical Code (NEC), in particular Section 820.93, “Grounding of Outer Conductive Shield of a Coaxial Cable,” or in accordance with local regulation

FCC Class B Equipment

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 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 and correct the interference by implementing one or more of the following measures:

- Reorient or relocate the device;
- Increase the separation between the equipment and receiver;
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected (applicable only to powerline products);
- Consult the dealer or an experienced radio or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Actiontec Electronics, Inc, may void the user's authority to operate the equipment.

Declaration of Conformity for Products Marked With the FCC logo

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

1. This device may not cause harmful interference;
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

Important Note on WiFi

If applicable, this equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

The radio has been found to be compliant to the requirements set forth in CFR 47 Sections 2.1091, 15.247 (b) (4), 15.407 addressing RF Exposure from radio frequency devices as defined in “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.” The equipment should be installed more than 30 cm (~12 in.) from your body or nearby persons.

For product available in the U.S. market, only channels 1~11 can be operated. Selection of other channels is not possible.

The device could automatically discontinue transmission in case of absence of information to transmit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.

Notices

The maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comp with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.

The transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Contact Information

For questions regarding your product or the FCC declaration, contact:

Actiontec Electronics, Inc
760 North Mary Avenue
Sunnyvale, CA 94085
United States
Phone: (408) 752-7700
Fax: (408) 541-9003

Technical Support

Go to

www.actiontec.com/support

for product support, updates, and more information including:

- Firmware updates
- Troubleshooting
- Registration
- FAQs

Technical Support Phone Number

United States: 1-888-436-0657