



AVCW-G BRIDGE

(AVCW209-G, AWCW215-G, AWCW200-G)

802.11g Outdoor Wireless Ethernet Bridge

Technical Manual



www.otcwireless.com



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Chapter 1 Introduction

AVCW-G BRIDGE is an IEEE 802.11g compliant outdoor wireless Ethernet bridge station with a 10/100 Base-T Ethernet interface for connecting computer networks between buildings.

AVCW-G can connect a single computer or device to an 802.11g or 802.11b AP (access point) in a pure 802.11g station role. It also supports the bridging mode, where multiple computers can share the wireless access to an 802.11b/g AP through a single AVCW-G Station radio.

One can use the AVCW-Gs in conjunction with the AVCW-G-AP outdoor access point, made by OTC Wireless, or any other 802.11b/g AP to form a point-to-multiple point inter-building wireless network as shown in Figure 1.1. One can also use the AVCW-G to form a multiple point-to-multiple point inter-building network with the AVCW-Gs operating in the ad-hoc mode.

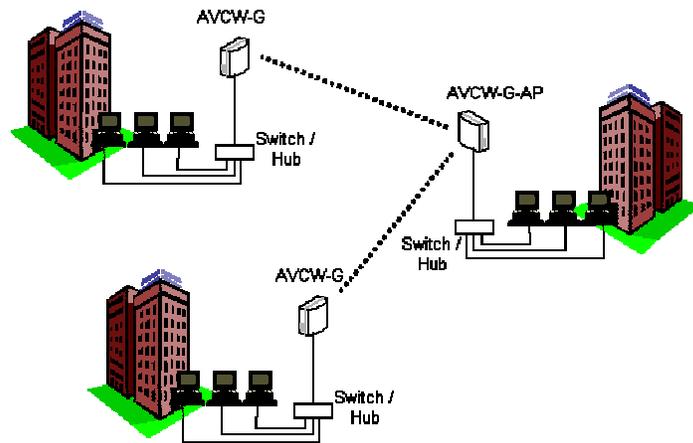
AVCW-G comes with a weatherproof enclosure and uses a DC injector to provide power over the Ethernet cable. Two choices are available for the length of the Ethernet cable: 30 feet or 80 feet.

AVCW-G offers three different models for different choice of antennae. The AVCW209-G has a built-in 9dBi patch antenna, the AVCW215-G has an integrated 15dBi patch antenna and the AVCW200-G has an integrated female type-N RF connector to allow for a wide variety of external antenna options.

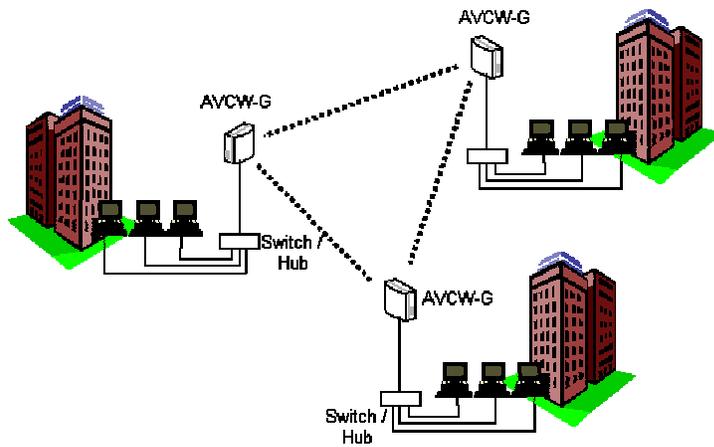
AVCW-G supports WPA (Wi-Fi Protected Access)-TKIP (Temporal Key Integrity Protocol) and WPA-PSK (Pre-shared Key) security as well as the standard 64 and 128-bit WEP Encryption.

The built-in Web-based Utility program allows the users to configure AVCW-G BRIDGE without installing any software to the host PCs. This Utility program can also be used to monitor the communication condition when the radio is in operation.

An network installation example on AVCW-G units is given in the next page.



A point-to-multiple point wireless network using AVCW-G Bridge and AVCW-G-AP



A multiple point-to-multiple point network using AVCW-G Bridge in ad-hoc mode

AVCW-G BRIDGE Radio

Key Features

- Plug & Play —
 - No driver on the host device is required for radio operation
 - Radio operation is independent of the operating system on computer or any connecting device (Windows 98/2000/ME/XP, MAC, Linux, Unix, embedded, etc.), as long as the device has a properly supported Ethernet port.
- Industry standard IEEE 802.11g-compliant wireless interface; Interoperable with AP and Client radios from other vendors
- The Bridging Mode, when enabled, allows the sharing of the Station Radio by multiple computers
- Ethernet (802.3 compliant) host interface to enable true Plug & Play
- Maximum 54 Mbps data rate and automatic selection of lower data rates in degraded RF environment
- Remote network management achievable through Web browser-based configuration tool run from any OS platforms
- Remote firmware/software upgrade can be achievable from any OS platforms

Specifications

Model	AVCW-G BRIDGE
Standard	IEEE 802.11, 802.11g
Host Interface	Ethernet, 802.3, RJ-45 receptacle
Frequency	2.4 – 2.4835 GHz (US and Europe) 2.4 – 2.497 GHz (Japan)
RF Channels	11 channels (US, Canada, Brazil, Australia, New Zealand) 13 channels (Europe, except France) 4 channels (France, Mexico)
Transmission power	14 dBm at antenna input typical for 802.11g 16.2 dBm at antenna input typical for 802.11b
Receiver sensitivity	-65dBm @ 54Mbps, -80dBm @ 11Mbps at 1e-5 BER typical
Antenna	9dBi patch (AVCW209-G), 15dBi patch (AVCW215-G)
RF Connector	Type N Female (AVCW200-G)
Data Rate	1/ 2/ 5.5/ 6/ 9/ 11/ 12/ 18/ 24/ 36/ 48/ 54 Mbps
Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) DBPSK, DQPSK, CCK (11b)
Link Distance	Up to 30Km, depending on the line-of-sight condition and antenna used
Network Types	Support both the ad hoc mode and the infrastructure mode
Data Encryption	Support WPA-TKIP, WPA-PSK and 128/64-bit WEP
DC Supply	9V DC at DC-injector input, 5V DC at radio input
Current consumption	<650mA (max. reached in transmit-mode)
LED Indicators	4: Power, Transmission, Receiving, Link/Ethernet-connection
Operating Temperature	-10°C – +65°C
Regulatory	FCC, CE
Physical Dimension	AVCW100/109-G: 5.375 inches x 4.75 inches x 2 inches AVCW115-G: 12 inches x 12 inches x 2.75 inches

Chapter 2 Installation

Safety Statements

Use only the power adapter provided with this product or the manufacturer's authorized replacement power supply. Refer service or repairs, other than those described in the user documentation, to a professional service person.

Installing the Hardware

NOTE: AVCW requires Wireless Internet Service Providers or system integrators to provide a professional installation at the customer site; Such installations generally include: 1) antenna installation and alignment, and 2) computer networking.

Power

This radio uses OTC's Power-Over-Ethernet system to bring power and data to the radio over OTC's specialized Ariel Category-5 Ethernet cable (supplied with the standard purchase). This is accomplished by using a DC Injector that sits between the Network and the Radio and uses a standard wall outlet for DC power.

To setup the AVCW-G Bridge, follow the instructions below:

1. Connect the bundled 9V DC Adapter to the DC input on the bottom of the DC Injector unit.
2. Connect the Ariel Category-5 cable that extends from the radio to the port on the DC Injector labeled, "Radio".
3. Connect a crossover Category-5 Ethernet cable from a hub or switch to the port on the DC Injector labeled "Network". If connecting to a PC or a router, use a straight-through Category-5 Ethernet cable.

Important: After the radio units are properly installed and positioned, use the provided coax-seal tapes to wind around and seal the connection between the radio and Ethernet cable and, for AVCW200-G, the connection between the radio and the antenna. This prevents moisture from entering and damaging the radio.

Ethernet connection

Observe the yellow LED to check the status of the Ethernet connection. Once the hardware is checked out to work properly with the intended host device or network equipment, the radio can be secured to a desired location using the bundled mounting kit.

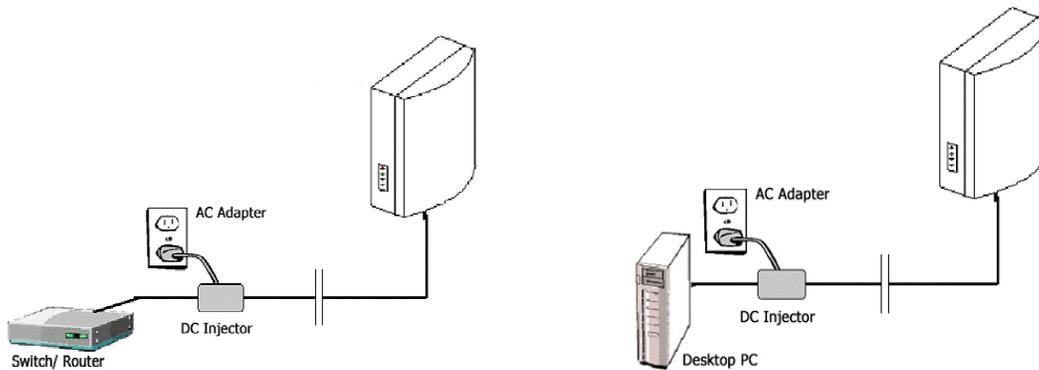
The AVCW-G Bridge can be connected to a computer's Ethernet port, or a router's WAN port via the included Straight-through UTP cable. The AVCW-G Bridge can also be connected to a hub or switch with blue cross-over cable.

Status LEDs

Power on the AVCW-G BRIDGE, the LED's on the front panel should exhibit the following patterns:

<i>LED</i>	<i>Color</i>	<i>Light Pattern</i>
ON	Red	Steady ON
RX	Green	Steady ON
TX	Red	Blinking ON, when transmitting 802.11 signal
LINK	Yellow	Blinking ON, when communicating over the Ethernet port Steady OFF, when Ethernet connection is not present.

If the yellow LED stays OFF, then the Ethernet connection to the Ethernet port is not made. Check your UTP cable and make sure that the straight cable is used for connecting it to a host computer and that a crossover cable is used for connecting it to a hub or switch. If one cannot communicate and the yellow LED is ON, you may want to re-position the AVCW-G BRIDGE to a different location for better RF reception. You may also want to check if the unit is configured with the proper SSID, RF channel and security settings by using the Web-based Utility software. Refer to Chapter 3 for instructions on how to change the SSID, RF channel and security settings.



Example of Typical Installation for AVCW-G BRIDGE

System Requirements for Web-based Utility program

For using the AVCW-G BRIDGE Web-based Configuration Utility, your computer must meet the following requirements:

(1) A Web browser must be installed on the computer. The supported Web browsers include Internet Explorer 5.0 and above, Netscape 6.0 and above, and Mozilla 1.0 and above. *JavaScript for the browser must be enabled.*

(2) Ethernet capable computer with RJ-45 port (either built-in or add-on NIC).

No installation of any program is required. See Chapter 3 for detailed information of configuring the Wireless Adapter. In order to configure the adapter, you need to know the factory default settings for the AVCW-G bridge radio.

The factory default settings are:

IP Address:	169.254.98.200
Subnet mask:	255.255.0.0
(Optional) Gateway:	169.254.1.1

User name:	admin
Password:	public

Chapter 3 Web-Based Utility Software

Use the Web-Based Utility Program

Once the AVCW-G BRIDGE is properly powered up and connected to a computer running a Web browser on the same IP subnet, the Web-based Utility is ready for use. To access the web utility, open a Web browser and enter http:// followed by the current IP address of the AVCW-G BRIDGE, for instance http://169.254.98.200.

Note: to access the web-based utility, the IP subnet of the computer must match that of the AVCW-G BRIDGE adapter. For example, the IP address of the computer could be 169.254.1.100.

Overview of the Web Pages

There are six web pages accessible through six tab links. These web pages are hosted by a built-in web server in the AVCW-G BRIDGE radio. Details of each Web page will be discussed in the following sections. Depending on the combination of operating systems and the web browser being used, the web pages may exhibit slight variation in appearance.

To access the hosted page, you will be prompted to enter a user name and a password. When accessing a hosted page for the first time, use the factory default settings listed in the end of Chapter 2.

The “Save” and “Cancel” buttons are common on “Admin”, “Wireless”, “Security”, and “Advanced” pages. Clicking the “Save” will apply the settings according to the displayed value in that particular web page. You will be prompted to restart the AVCW-G BRIDGE unit. Please note that you may have to manually click “Refresh” or “Reload” button of the web browser in order to see the updated web page due to the caching mechanism of the web browser. Alternatively, the user can change the setting of the internet browser such that the browser would retrieve new web pages instead of displaying the cached web pages.

Admin

The “Admin” page is the default home page for the built-in web server. On this page, users can change settings for administration purposes. The page is divided into four sections: Device Name, IP settings, Security, Commands and Upgrade Firmware.

1. Device Name:

Device Name

This is the name that the bridge will use to identify itself to external configuration and IP-address-finding programs. This is not the same as the SSID. It is okay to leave this blank if you are not using these programs.

2. IP Settings:

[IP Address Mode](#)

Select 'DHCP' to get the IP settings from a DHCP server on your network. Select 'Static' to use the IP settings specified on this page.

[IP address](#)

The IP address of this AVCW-G BRIDGE wireless adapter. This allows the user to set a static IP address to the Wireless Adapter. This IP address is only used for accessing the built-in Web server. In order to access the Web server, the computer must use an IP address on the same subnet of the Wireless Adapter. *It is not necessary to change this IP address to an address used by the Wireless Network, but it is okay to do so, if desired. However, if you do so, please consult with your system or network administrator to obtain an IP address.*

WARNING: Any changes to the IP settings should be contemplated carefully, documented well, and made only after consulting your system or network administrator. Failure to do so may result in being unable to access the built-in Web server and/or may affect network operation.

[Subnet mask](#)

The subnet mask specifies the network number portion of an IP address. The factory default is 255.255.0.0. This allows the user to set the subnet mask. *If you change the IP address to one that is usable in your network, you may need to change this setting also.* Please ask your system or network administrator for the correct subnet mask.

[Gateway](#)

This is the IP address of the gateway that connects you to the Internet. Allows the user to set the default gateway. *If you change the IP address to one that is usable in your network, you may need to change this setting also.* Please ask your system or network administrator for the correct gateway.

3. Security

[User Name](#)

This is the user name that you must type when logging in to these web pages.

[Password](#)

This is the password that you must type when logging in to these web pages. You must enter the same password into both boxes, for confirmation. The built-in Web server will verify the login name and password before giving access to the hosted pages. Each time the user name or password is changed, the Web server will prompt the user for the new user name and password.

4. Commands

[Reboot bridge](#)

Press this button to reboot the Wireless Adapter. You will need to reboot the unit after the changes you make.

[Reset to factory defaults](#)

Press this button to reset to factory default. This button allows the user to reset **all** the settings to the factory defaults (not just the fields on this Admin page!).

Note: Please be careful: once reset is completed, the current settings are all over-written. It is always a good idea to keep a copy of the current settings before you make the change.

5. Upgrade Firmware

This allows the user to upgrade the firmware for ACR 201-G. Click on browse to select the correct firmware then click on upload to complete the upgrade.

Info

The Info Page shows all the current settings of the radio. There are three subsections in this web page: Access Point Information, Bridge Information, and Available Access Points.

1. Access Point Information:

This section displays the information of the wireless connectivity status of AVCW-G BRIDGE. Each field is described below.

[State](#)

The connection/ association status of the wireless port

[Wireless Network Name \(SSID\)](#)

Shows the SSID of the associated AP. To change, see “Wireless Configuration” Tab → “Wireless Network Name (SSID)”.

[Channel](#)

Shows the current RF channel that this wireless adapter is operating on. To change channel, see “Wireless Configuration” Tab → “Channel”.

[Transmission Rate](#)

The transmission rate established with the access point if in infrastructure mode or with a station if in ad-hoc mode.

[Communication Strength](#)

The indicator of RF communication signal strength

[BSSID](#)

Network Identifier for basic service set

[WEP](#)

Shows if WEP (Wired Equivalent Privacy) security is enabled. To enable/disable/change WEP settings, see “security” tab → WEP.

[WPA](#)

Shows if WPA (Wi-Fi Protected Access) security is enabled. To enable/disable/change WPA settings, see “security” tab → WPA.

2. Bridge Information:

This section displays basic information of the AVCW-G BRIDGE unit

[Bridge Name](#)

Name of the AVCW-G BRIDGE unit which is the same as the device name.

[IP Address](#)

IP Address of this AVCW-G BRIDGE unit. To manually change the IP Address or let the Access Point obtain an IP Address from a DHCP Server automatically, see “Admin” tab.

[MAC Address](#)

This is the MAC Address of this AVCW-G BRIDGE unit. It is a unique physical address assigned to the unit by the manufacturer. MAC Address cannot be modified.

[Radio Firmware Version](#)

Shows the version information of the radio firmware.

[AVCW-G Firmware Version](#)

Shows the version information of the AVCW-G BRIDGE firmware.

3. Available Access Points

This field displays the available access points detected by the AVCW-G BRIDGE.

Template

On this page the users can create and launch a template for all the current settings that are under Wireless, Security, Advanced and Admin. This template is helpful for programming multiple devices with identical settings. It also allows the user to obtain the current setting if the user accidentally clicks on the reset button. After a template is created, only the IP address, subnet mask and gateway are un-dimmed and can be modified. This feature is used to assign a new IP address to the next device that is being programmed. There are two sections on this page: create template and launch template.

1. Create template

[Create Template](#)

Click the “Create adapter settings template” button to save your current setting to the directory.

2. Launch Template

[Choose Template](#)

Click the “Select template” button to select the template previously saved that you prefer using to program the device.

[Launch Template](#)

Click the “Launch adapter settings template” button to finish uploading the template.

Wireless

On “Wireless” page, you can configure the basic 802.11g access point settings. Any new settings will not take effect until the access point is rebooted.

[Wireless Mode](#)

Select 'Infrastructure' to connect to a wireless access point, select 'Ad-hoc' to connect to another bridge or wireless station.

[Wireless Network ID \(SSID\)](#)

Acronym for Service Set Identity. This is the name used to identify which wireless network (Access Points) the AVCW-G BRIDGE is going to connect with. When being left blank, the Bridge unit will connect with any AP with open access.

[Desired BSSID](#)

The user can select desired AP to connect. However, the SSID still has to match with that of the AP.

[Channel](#)

The channel option is only available when the AVCW-G BRIDGE is in ad-hoc mode. In infrastructure mode, the AVCW-G BRIDGE would use the channel of the connected access point. If you experience interference (e.g. lost connections or slow data transfers) you may need to try different channels to see which is the best. Channels 1-11 are in the 2.4 GHz band.

[Transmission rate \(Mbps\)](#)

This is the speed at which the radio will transmit data. Normally you should select 'best' here. If your wireless network is unusually noisy or quiet, you may use a fixed low or high rate. The RF environment sometimes can be hostile to the highest data rate available. That gives rise to the need for trading off between data rate and link robustness.

[Operational Profiles](#)

These profiles control a number of settings for overall wireless network usage. Their meanings are self-explanatory. Four options are provided:

- “802.11 g only”: The radio unit operates at only 802.11g mode
- “802.11 b/g Mixed Mode”: This allows the radio units to connect to either 802.11b or 802.11g network
- “802.11 b/g Mixed Mode Long”: A long preamble provides universal compatibility for devices connecting to the Access Point
- “802.11 b only”: The radio unit operates at only 802.11b mode

Security

On this page, you can set the 802.11g security and encryption options including WPA and WEP.

1. WPA Configuration

[WPA Enabled](#)

Enable the WPA for high-grade encryption and authentication

[PSK](#)

Using the radial button, select the format type for your pass-phase. The pass-phase can be entered in either ASCII or HEX format.

- ASCII format must be a minimum of 8 characters to a maximum of 63 characters.
- HEX format must be 64 characters long using standard HEX notation.

IMPORTANT: Your pass-phase must match that of the AP's for proper communication and authentication.

[WPA Multicast Cipher Type](#)

Type of WPA multicast cipher being supported and used.

[WPA Pairwise Cipher Type](#)

Type of WPA pairwise cipher being supported and used.

2. WEP Configuration

[Enabled WEP:](#)

This check box allows users to enable or disable WEP feature.

[Default WEP Key to Use](#)

Select the key to be used as the default key. Data transmissions are always encrypted using the default key. The other keys can only be used to decrypt received data.

[Deny unencrypted data:](#)

Check this field when the WEP is enabled to deny unencrypted data. This feature enables the adapter to drop all unencrypted packets received.

Authentication

Three options are available: 'Open', 'Shared Key', and 'Both'. The radio station must use the same authentication option as the Access Point in order to establish active link. 'Open' allows the radio station to connect an access point with open authentication process. 'Shared key' allows only stations that know the key(s) to get authenticated by Access Point with the same key(s). 'Both' allows a station to use either mode.

WEP key length:

Specifies the WEP encryption key length. The 64-bit encryption is currently the 802.11 standard. The 128-bit encryption is supported by equipment from a limited number of vendors. AVCW-G BRIDGE supports both. Note that the "user-controlled" portion of the 64-bit encryption is just 40 bits (10 Hex digits) and that for the 128-bit encryption is just 104 bits (26 Hex digits)—3-bytes of the encryption key are internal to the encryption algorithm.

WEP key:

The keys allows hex number inputs with varying length depending on the type of WEP being enabled i.e. 64 or 128bit WEP

Advanced

On this page, you can configure the advanced 802.11g settings such as Bridging, Advance Wireless Settings, and Firmware Upgrade option.

1. Bridging

To activate the Bridging mode, the user needs to select WLAN Bridge option to allow multiple clients connecting to an AVCW-G BRIDGE unit. If WLAN Client option is selected, the AVCW-G BRIDGE unit can connect to only a single client.

2. Advance Wireless

Fragmentation threshold

Transmitted wireless packets larger than this size will be fragmented to maintain performance in noisy wireless networks. In the presence of hostile RF environment, frames longer than this threshold number, in bytes, are divided prior to transmission into one or more fragments less than or equal in length to the fragmentation threshold. The default value is set at 2346 bytes. This is the maximum 802.11 data frame size, such that no frames are ever fragmented. The valid range of fragmentation threshold is 256 to 2346, and only even numbers are allowed.

RTS threshold

Transmitted wireless packets larger than this size will use the RTS/CTS protocol to (a) maintain performance in noisy wireless networks and (b) prevent hidden nodes from degrading performance. To minimize the potential packet collision associated with hidden nodes in a wireless network, IEEE 802.11 standard has the option to complete a “Request to Send (RTS)” and “Clear to Send (CTS)” two-frame exchange prior to sending the real data. This reduces the throughput of the real data. Since the probability of packet collision increases with the size of the packets transmitted, an optimum trade-off between data-throughput and data-integrity may be reached by turning on the two-frame exchange only for data packets exceeding a certain size. The number entered in this field is that threshold packet size in Bytes. For example, if “500” is entered, data packets with sizes less than 500 bytes are transmitted without being preceded by the RTS-CTS exchange and thereby taking a small risk of getting corrupted by packet collisions. If “2432” (the maximum 802.11 data frame size) or a larger number is entered, then every data packet is transmitted without being preceded by the RTS-CTS exchange and thereby maximizing the data throughput. The valid range of RTS threshold is 0 to 3000.

Maximum burst time

This is also known as PRISM Nitro (tm) technology. The technology uses fully standards-compliant methods that eliminate collisions in mixed-mode networks, while greatly increases the performance of both pure 802.11g and mixed 802.11b/g networks. The setting is for the amount of time the radio will be reserved to send data without requiring an ACK. This number is in units of microseconds. A typical value would be 1000 microseconds. When this number is zero, bursting is disabled.

Chapter 4 Troubleshooting

No Page Displayed When Accessing the Web-based Utility

This occurs because the radio is extremely busy on the RF side or because the Ethernet connection is problematic. Try hitting the “Refresh” or “Reload” button of the web browser a few times. If the same message persists, it is unlikely that the problem is caused by a busy radio. Check your Ethernet connection. Make sure you use at least a legitimate CAT-3 cable, but preferably a CAT-5. Make sure that it is a straight-through cable between the radio and the computer, or a crossover cable between the radio and the switch or hub, if a switch or hub is involved. Check to make sure that the Ethernet card of the computer running the Web-based Utility program is functional and has a correct IP address and subnet mask setting.

No Radio Link

If the “Communication Strength” indicator on the “Link Info” tab shows 0%, check the following possible causes:

- Make sure that a target radio, an AP or another Station, is turned on and operating properly.
- Make sure that the “Signal Strength” indicator on the “Link Info” tab is not zero. A minimum of 20% is recommended. If the “Signal Strength” is less than 20%, the distance between the AVCW-G BRIDGE and the targeted radio (an AP or another Station) may be too far. Decrease the distance to see if the radio link can be established.
- Make sure that the SSID is blank or the same as that for the Access Point if operating in the infrastructure mode, or the same as that of the other Stations if operating in the Ad Hoc mode.
- Make sure that the encryption keys are entered correctly if WEP is enabled.
- Make sure that there is no RF interference present in the radio network.

No Network Connection While the Radio Link is Good

If the “Communication Strength” indicator shows good link quality on the “Link Info” tab but the host computer/device cannot be connected to the network, the cause might be one of the followings:

- Make sure that the Yellow LED on the radio is NOT constantly ON. If it is, Ethernet connection is questionable.
- Make sure the Ethernet Adapter of the host computer/device is properly installed.

- Make sure that the UTP cable connecting the radio and the host device meets at least the CAT-3 standard and has a straight-through connection if the host device is a PC or a crossover if the host device is a hub or switch.
- Make sure that the IP address of the host computer/device is properly set up for the network.
- Make sure that the host computer/device has initiated some packet traffic since the radio was turned on. (That is the failure of the network connection is not just determined by trying to access the host from a remote point in the network.) Reset or re-power the host with the AVCW-G BRIDGE turned on may be necessary in order for the AVCW-G BRIDGE to “learn” the MAC address of the host computer.

Poor Link Quality

If the “Communication Strength” stays in the Poor range, check for the following conditions:

- Make sure that **radio interference** is not present in the radio network.
- Make sure that the radio is not surrounded by many strongly reflecting (metallic) surfaces. With multiple reflecting surfaces between the radio in question and the target radio, a severe “**multi-path**” problem may introduce high bit error rate despite a strong “Signal Strength”.
- Make sure that there is not a condition of severe **packet collision** caused by a “hidden node” problem. A “hidden node” problem is the situation where the RF signal from two or more Station radios cannot reach each other (but can reach the AP). In such situation, multiple Stations may attempt to transmit data packet to the AP at the same time and therefore cause packet collision. To solve this problem, either re-arrange the Stations in question such that the RF signals are mutually sensible by all Stations, or turn-on the RTS/CTS protocol by setting the “[RTS threshold](#)” on the “Config” tab to a reasonably small value (500, for example). There is no guarantee that the packet collision can be entirely eliminated by invoking RTS/CTS protocol, but the severity can be reduced enough to see visible improvement of the link quality.

Radio Interference

You may be able to eliminate RF interference by trying the following:

- Find the “channel” used by the source of the interference and coordinate your network and the interference source to be on channels that are at least 20MHz, but preferably 30MHz, apart.

- Reseat the AVCW-G BRIDGE radio to a location where the interference is minimized; in general, increase the distance between the wireless devices and the device causing the radio interference.
- Avoid using 2.4GHz cordless phone in the vicinity of the radio
- Keep the computer with the AVCW-G BRIDGE radio away from the microwave oven and large metal objects.
- Consult the dealer or an experienced radio technician for help.

Settings Appear not to be Modified

Check the version of the software to be upgraded and the software currently running in the Wireless Adapter. If they are the same, you must click “Reset to factory defaults” button on index.html page to make software upgrading take effect. This upgrade effectively overwrites the current software with a different set of factory defaults.

Technical Support

Please contact OTC Wireless for Technical Support.

E-mail: support@otcwireless.com

Telephone: 1-800-770-6689 (Inside USA), 011-510-490-8288 (Outside USA)

Appendix A: Limited Warranty

The seller warrants to the end user (“Customer”) that this product will be free from defects in workmanship and materials, under normal use and service, for one (1) year from the date of purchase from the seller or its authorized reseller. The seller’s sole obligation under this express warranty shall be, at the seller’s option and expense, to repair the defective product or part, or deliver to Customer an equivalent product or part to replace the defective item.

All products that are replaced will become the property of the seller. Replacement products may be new or reconditioned.

Appendix B: Regulatory Compliance

Federal Communications Commission (FCC) Compliance Information Statement

FCC Part 15 Declaration of Conformity (DoC)

The following equipment:

Product Name: Wireless Ethernet Adapter

Model Number: AVCW-G BRIDGE WLAN is herewith confirmed to comply with the requirements of FCC Part 15 rules. The 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.

FCC ID:MKZAVCW11G682E

AVCW-100-G Outdoor AP

AVCW-115-G Outdoor AP

AVCW-200-G Outdoor Bridge

AVCW-215-G Outdoor Bridge

FCC ID:MKZAVCW11G628

AVCW-109-G Outdoor AP

AVCW-209-G Outdoor Bridge

A declaration of conformity with the requirements of the directives is available from OTC Wireless, Inc. 48507 Milmont Drive, Fremont, California 94538, USA 1-800-770-6698 (USA); 011-510-490-8288 (International)

FCC Rules and Regulations - Part 15

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. 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.

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 unplugging the equipment and then plugging it back in, the user is encouraged to try to correct the interference by one or more 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/TV technician for help.

Caution: Changes or modifications not expressly approved by OTC Wireless could void the user's authority to operate the equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Exposure to Radio Frequency Radiation

Caution: The radiated output power of this device is far below the FCC radio frequency exposure limits. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, a minimum separation of 20 cm (8 inches) is recommended between the antenna and any persons.

European Community (EC) Directives Conformity and Restrictions

This product is in conformity with the protection requirements of EC Council directives 89/336/EEC, 73/23/EEC, and 1999/5/EC on the approximation and harmonization of the laws of the Member States relating to electromagnetic compatibility, safety of electrical equipment designed for use within certain voltage limits and on radio equipment and telecommunications terminal equipment.

Compliance is indicated by the CE marking 

Hereby, OTC Wireless, Inc. declares that this AVCW-G BRIDGE is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

OTC Wireless, Inc. vakuuttaa täten että AVCW-G BRIDGE tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Hierbij verklaart OTC Wireless, Inc. dat het toestel AVCW-G BRIDGE in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG

Bij deze verklaart OTC Wireless, Inc. dat deze AVCW-G BRIDGE voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.

Par la présente OTC Wireless, Inc. déclare que l'appareil AVCW-G BRIDGE est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE

Par la présente, OTC Wireless, Inc. déclare que ce AVCW-G BRIDGE est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables

Härmed intygar OTC Wireless, Inc. att denna AVCW-G BRIDGE står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Undertegnede OTC Wireless, Inc. erklærer herved, at følgende udstyr AVCW-G BRIDGE overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF

Hiermit erklärt OTC Wireless, Inc., dass sich dieser AVCW-G BRIDGE in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMW)

Hiermit erklärt OTC Wireless, Inc. die Übereinstimmung des Gerätes AVCW-G BRIDGE mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)

ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ OTC Wireless, Inc. ΔΗΛΩΝΕΙ ΟΤΙ AVCW-G BRIDGE ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ

Con la presente OTC Wireless, Inc. dichiara che questo AVCW-G BRIDGE è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Por medio de la presente OTC Wireless, Inc. declara que el AVCW-G BRIDGE cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE

OTC Wireless, Inc. declara que este AVCW-G BRIDGE está conforme com os requisitos essenciais e outras provisões da Directiva 1999/5/CE.

This product satisfies the radio spectrum requirements of EN 300 328-1, the EMC requirements of EN 301 489-17 and the safety requirements of EN 60950.

Notice:

In some countries of operation, using this product may be subject to specific restrictions as listed below. This product is intended only for indoor use. Outdoor usage may require licensing.

France

Restricted frequency band: only channels 10 through 13 (2446.5 MHz through 2483.5 MHz) may be used in France.

Not allowed for outdoor use in public areas.

Bande de fréquences restreinte : seuls les canaux 10 à 13 (2446,5 MHz à 2483.5 MHz) peuvent être utilisés en France.

Utilisation extérieure interdite dans les zones public