



AVCW-G

Wireless Ethernet Adapter

Technical Manual

www.otcwireless.com



**Wireless Ethernet Adapter
Technical Manual
Copyright**

Information in this document is subject to change without notice. Complying with all applicable copyright laws is the responsibility of the user. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of the seller. If, however, your only means of access is electronic, permission to print one copy is hereby granted.

The seller provides this documentation without warranty, term, or condition of any kind. The seller may make improvements or changes in the product(s) and/or the program(s) described in this documentation at any time.

Other product and company names herein may be trademarks of their respective owners.

Copyright 2001-2003 OTC Wireless, Inc. All rights reserved.

Rev 1.00 August 12, 2003

Table of Contents
AVCW-G Technical Manual

Table of Contents	iii
Chapter 1 Introduction.....	1
AVCW-G Radio	2
Specifications	2
Chapter 2: Hardware Installation.....	3
Safety Statements	3
Power	3
Ethernet connection.....	4
Status LEDs.....	4
System Requirements for Web-based Utility program.....	5
Chapter 3 Web-Based Utility Software	6
Use the Web-Based Utility Program.....	6
Overview of the Web Pages.....	6
Basic Information.....	7
Wireless.....	9
Security	10
Advance	12
Admin.....	14
Help	17
Chapter 4 Troubleshooting	18
No Page Displayed When Accessing the Web-based Utility	18
No Radio Link	18
No Network Connection While the Radio Link is Good	18
Poor Link Quality.....	19
Radio Interference.....	19
TFTP Timeouts	20
Settings Appear not to be Modified	20
Technical Support.....	20
Appendix A: Limited Warranty	21
Appendix B: Regulatory Compliance	22

Chapter 1 Introduction

AVCW-G is an IEEE-802.11g compliant wireless Access Point (AP) that offers a no-frill, seamless way of fitting a wireless network into an existing wired LAN infrastructure. It does not even require the assignment of an extra IP address. Existing wired-network resources such as DHCP, VPN, firewall, etc., reach across the AVCW-G to the client workstations with total transparency. Unlike many other 802.11g compliant APs on the market, which offer network functions that are duplicative to the existing network, AVCW-G simply wirelessly collects a group of workstations or other kinds of computing devices into the existing network—just like a hub or a switch.

The portable, compact form-factor of AVCW-G, in conjunction with its no-frill AP functionality, makes it ideal for quick deployment of wireless network at events that involves non-permanent setup: temporary offices, trade-shows, meetings, temporary POS, etc. There is no need to request an IP address for the AP ahead of the time. There is no worry about functionality conflicts with the incumbent network setup when traveling to a temporary event.

Its functions do not stop there however. With link distances of up to several miles, the AVCW-G can also be used to interconnect networks and provide access to the Internet.

A built-in Web-based Utility program is provided for the users to pre-configure AVCW-G prior to putting the radio in operation. And the Utility program can be used to monitor the communication condition once the radio is in operation. Once configured, the radio runs self-sufficiently without the aid of any driver program in the device connected to the radio. This Web-based Utility program therefore is intended to be, in most cases, just a tool for the network operators. The network operator can perform remote network management of a fixed AP installation using this Utility if a valid IP address is assigned to AVCW-G. In most cases, a pre-configured AVCW-G AP can be plugged into a RJ-45 receptacle on the wall of any network environment without running the Utility program. The Web-based Utility is described in more details in Chapter 3.

AVCW-G 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 IP 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
- Integrated omni-directional-antenna to provide best tradeoff between link-quality and mobility
- 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
- Integrated 9 or 15 dBi antennas, or external antenna connectors for last mile wireless LAN

Specifications

Model	AVCW-G
Standard	IEEE 802.11g
Host Interface	Ethernet, 802.3, RJ-45 receptacle
Frequency	US: 2.4GHz – 2.462GHz EU: 2.4GHz – 2.472GHz
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
Receiver sensitivity	-80dBm @ 1e-5 BER typical
Antenna	Patch antenna with ~9dBi
Data Rate	1/ 2/ 5.5/ 11/ 12/ 18/ 24/ 36/ 48/ 54 Mbps
Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) DBPSK, DQPSK, CCK (11b)
Link Distance	~1200 ft in open space
Network Types	Support both the ad hoc mode and the infrastructure mode
Data Encryption	Support the standard 64-bit WEP and the optional 128-bit WEP
DC Supply	Output: 9V, 2.6A; Input: 100-120V, 50-60Hz, ~1.0A max
Current consumption	<480mA (max. reached in transmit-mode)
LED Indicators	4: Power, Transmission, Receiving, Link/Ethernet-connection
Operating Temperature	0°C – 50°C
Regulatory Compliance	<u>Pending</u>

Chapter 2: Hardware Installation

Safety Statements

Use only the power supply adaptor provided with this product or the manufacturer's authorized replacement power supply. Connect the power cord to a properly grounded electrical outlet that is near the product and easily accessible.

Refer service or repairs, other than those described in the user documentation, to a professional service person.

DANGER: Do not set up this product or make electrical connections during a lightning storm

NOTE: AVCW-G 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, 2) system installation using OTC wireless's proprietary utility program, and 3) knowledge of 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, follow the instructions below:

1. Connect the bundled 9V AC 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, switch or router to the port on the DC Injector labeled "Network". If you are connecting an access point directly to a PC, use a straight-through Category-5 Ethernet cable.

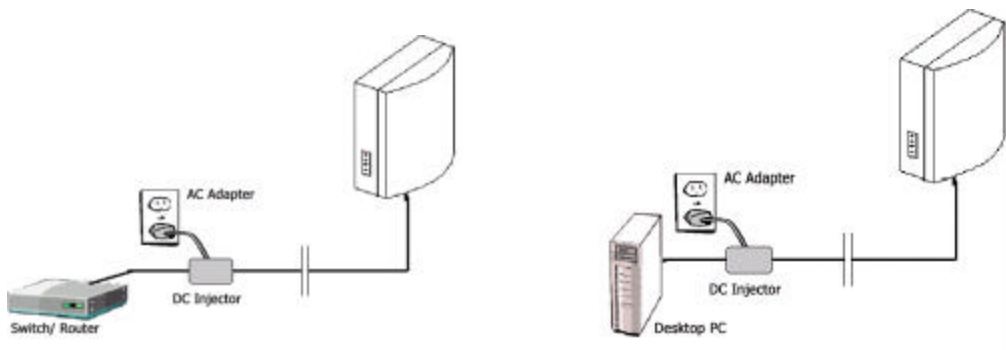
Important: After the radio units are properly installed and positioned, use the provided coax-seal tapes to wind around and seal the connection between the radio and Ethernet cable and, for AVCW-G, the connection between the radio and the antenna. This prevents moisture from entering and damaging the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

Ethernet connection

Observe the yellow LED to check the status of the Ethernet connection:

If the yellow LED stays on continuously, then the Ethernet connection to the host computer or device is not made. Check your UTP cable and cable type, and replace if necessary. If the yellow LED is flickering, and power is on to the device, then the Ethernet connection between the host computer and the Wireless Ethernet Adapter is correct. If one cannot communicate, and the yellow LED is off, you may want to re-position the AVCW-G to a different location for better RF reception. You may also want to check if the unit is configured with the proper RF channel and security settings by using the Utility software.

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.



Above: (left) schematic of AVCW-G connected to a network. (right) AVCW-G connected to a terminal PC.

Status LEDs

Use the LED status indicators to make sure that the AVCW-G station is communicating properly:

<u>LED</u>	<u>Color</u>	<u>Light Blinking Pattern</u>
ON	Green	Steady on
RX	GREEN	Steady on
TX	GREEN	On, when transmitting RF signal
LINK	GREEN	Flickering when communicating over the Ethernet port; steady-on when Ethernet connection is absent

System Requirements for Web-based Utility program

A Web-based Configuration Utility is a built-in program of the Wireless Adapter for changing the configuration settings of the Adapter. For using the AVCW-G 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).

(3) A TFTP (Trivial File Transfer Protocol) client must be installed on the computer. This requirement is only for the purpose of upgrading the software or firmware.

No installation of any program is needed. See Chapter 3 for detailed information of configuring the Wireless Adapter. In order to configure it, you need to know the factory default settings.

The factory default settings are:

IP address:	192.168.1.241
Subnet mask:	255.255.255.0
(Optional) Gateway:	192.168.1.1

User name: No User Name
Password: No password

Chapter 3 Web-Based Utility Software

Use the Web-Based Utility Program

Once the AVCW-G 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 in the location field, for instance http://192.168.1.241.

For configuring your computer to match the IP subnet of your PC to that of the AVCW-G radio, different steps must be taken on different operating systems. Typically, a static IP address must be manually assigned to a computer and the user must have administrative privilege to perform such operation. Here are sample configuration steps involved on Windows and Macintosh.

On Windows, select “Start->Settings->Control Panel” and double click “Network and Dial-up Connections” icon. In the popped up window, right-click “Local Area Connection” icon and select “Properties” command. In the “Local Area Connection Properties” dialog, choose “Internet Protocol (TCP/IP)” component in the “Components checked are used by this connection” section and then click “Properties” button. In the subsequently popped up “Internet Protocol (TCP/IP) Properties” dialog, turn on “Use the following IP address” radio button, and enter the IP address, subnet mask as well other information in the related fields for your computer.

On Macintosh, select “Apple->System Preferences...” and double click the “Network” icon. In the popped up “Network” dialog, choose “Built-in Ethernet” option for “Shows” dropdown menu and select the “TCP/IP” tab. Choose “Manually” for the “Configure” dropdown menu, and then enter your IP address, subnet mask as well as other information in the related fields for your computer.

Overview of the Web Pages

With most browsers, 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 radio. Details of each Web page will be discussed in the following sections. The web pages may look different; however, functions are the same depending on the combination of operating systems and the web browser being used.

To access any hosted page, you are prompted for a user name and a password. When accessing a hosted page for the first time, use the factory default settings listed on the previous page.

The “Save” and “Cancel” buttons are common on “Wireless”, “Advanced”, “Security”, and “Admin” 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 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.

Basic Information

The “Info” page (Figure 1) is the default home page for the built-in web server. You can click on the “Info” tab to access this page. There are three subsections in this web page: Access Point Information, Bridge Information, and Available Access Points.

802.11g Bridge (Beta Release)		Wireless Enabling Desktops PCs, Printers & Game Consoles (Use an Ethernet Hub or Switch to Support Multiple Devices)															
		Info	Wireless	Security	Advanced	Admin	Help										
Information		Basic information about this bridge. NOTE: You may have to reload this page to see the current settings.															
Access Point Information																	
State:	Disconnected																
Wireless network name (SSID):																	
Channel:	8																
Transmission rate:	Best (automatic)																
Communications strength:	0%																
BSSID:	000000000000																
WEP:	disabled																
Bridge Information																	
Bridge Name:	802.11g Bridge																
Number of bridged clients:	45																
IP address:	192.168.1.241																
MAC address:	00095B40DB9D																
Intersil Firmware version:	1.0.1.0																
Ubicom Firmware version:	1.1.beta_8																
		Available access points															
		<table border="1"> <thead> <tr> <th>SSID</th> <th>BSSID</th> <th>Channel</th> <th>Strength</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						SSID	BSSID	Channel	Strength	Mode					
SSID	BSSID	Channel	Strength	Mode													

Figure 1 “Info” Web Page (the starting page)

1. Access Point Information:

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

[State](#)

The connection status of the wireless port

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

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

[Channel](#)

Shows the channel the AP 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 (the wireless encryption standard) is enabled or not. To enable/disable/change WEP settings, see “security” tab → WEP.

2. Bridge Information:

This section displays basic information of the AVCW-G unit

[Bridge Name](#)

Name of the AVCW-G device

[Number of Bridged Clients](#)

Number of clients connected to the AVCW-G bridge.

[MAC Address](#)

This is the MAC Address of the Access Point. It is a unique physical address assigned to the unit by the manufacturer. MAC Address cannot be changed.

[IP Address](#)

IP Address of the Access Point. To manually change the IP Address or let the Access Point obtain an IP Address from a DHCP Server automatically, see “IP Addr” tab.

[Intersil Firmware Version](#)

Shows the version info of the Intersil firmware.

[Ubicom Firmware Version](#)

Shows the version info of the Ubicom firmware.

3. Available Access Points

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

Wireless

On this page (Figure 3) you can configure the basic 802.11g access point settings. Any new settings will not take effect until the access point is rebooted.

802.11g Bridge
(Beta Release)

Wireless Enabling Desktops PCs, Printers & Game Consoles
(Use an Ethernet Hub or Switch to Support Multiple Devices)

Info Wireless Security Advanced Admin Help

Basic Wireless

On this page you can configure the basic 802.11g wireless settings. Any new settings will not take effect until the bridge is rebooted.

Wireless Mode: Infrastructure Ad-hoc

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

Wireless Network Name (SSID):

This is the name of the wireless access point that this bridge will associate to. Leave this field blank to associate to any access point.

Channel: 2.4 GHz channel 1

This is the radio channel that is used in ad-hoc mode. This setting has no effect in infrastructure mode. 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 1-14 are in the 2.4 GHz band and channels 36-64 are in the 5 GHz band.

Transmission rate (Mbits/s): Best (automatic)

This is the speed at which the bridge will transmit data. Normally you should select 'best' here, although if your wireless network is unusually noisy or quiet you may wish to use a fixed low or high rate.

PHY Profiles: 802.11b/g Mixed Mode

These profiles control a number of settings for overall wireless network usage. Their meanings are self-explanatory. For more details, please see Intersil documentation.

Save Cancel

Figure 3. Wireless Configuration

[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 is going to connect with.

[Channel](#)

The channel option is only available when the AVCW-G is in ad-hoc mode. In infrastructure mode, the AVCW-G 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 1-14 are in the 2.4 GHz band.

[Transmission rate \(Mbits/s\)](#)

This is the speed at which the access point 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.

[PHY Profiles](#)

These profiles control a number of settings for overall wireless network usage. Their meanings are self-explanatory. Users have 7 options, they are: "802.11 g only", "802.11 g only, Maximum Performance", "802.11 b/g Mixed Mode", "802.11 b/g Mixed Mode Long", "802.11 b WiFi", "802.11 b only", and "Test Mode".

Security

On this page (Figure 6) you can set the 802.11g security and encryption options. WEP is the wireless encryption standard. To use it, you must enter the same key(s) into the access point and the wireless stations. For 64 bit keys you must enter 10 hex digits into each key box. For 128 bit keys you must enter 26 hex digits into each key box. A hex digit is either a number from 0 to 9 or a letter from A to F. Leaving a key box blank implies a key of all zeros.

802.11g Bridge (Beta Release)		Wireless Enabling Desktops PCs, Printers & Game Consoles (Use an Ethernet Hub or Switch to Support Multiple Devices)	
		Info	Wireless
Security and Encryption Settings		On this page you can set the 802.11g security and encryption options. Any new settings will not take effect until the bridge is rebooted.	
WEP configuration		WEP is the wireless encryption standard. To use it you must enter the same key(s) into the bridge and the access point. For 64 bit keys you must enter 10 hex digits into each key box. For 128 bit keys you must enter 26 hex digits into each key box. A hex digit is either a number from 0 to 9 or a letter from A to F. If you leave a key box blank then this means a key of all zeros.	
Enable WEP:	<input type="checkbox"/>	Check this box to enable WEP. For the most secure use of WEP, also select "Deny Unencrypted Data" and set Authentication to "Shared Key" when WEP is enabled	
Default WEP key to use:	WEP Key 1	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:	<input type="checkbox"/>	Select this to require peers to use encryption. This is only effective when WEP is enabled.	
Authentication:	<input checked="" type="radio"/> Open <input type="radio"/> Shared Key	Select the type of authentication used when connecting to an access point. 'Open' is used if anyone can connect to the AP. 'Shared key' is used if both devices must know the encryption key.	
WEP key lengths:	64 bit (10 hex digits)	Select the WEP key size. This length applies to all keys.	
WEP key 1:	<input type="text"/>		
WEP key 2:	<input type="text"/>		
WEP key 3:	<input type="text"/>		
WEP key 4:	<input type="text"/>		
		Save	Cancel

Figure 6. Security and Encryption Settings

Enabled WEP:

This check box allows users to enable or disable WEP feature. While WEP is disabled, all the other fields on this "Encryption" page are disabled too. A set of four keys needs to be created in the default-key scheme.

[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'. 'Open' allows anyone to authenticate to this access point. 'Shared key' allows only stations that know the key(s) to authenticate. 'Both' allows a station to use either mode.

[WEP 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. 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 1/ 2/ 3/ 4:](#)

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

Advance

On this page (Figure 5) 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 card option allowing multiple clients connecting to an AVCW-G unit. If Ethernet client option is selected, the AVCW-G 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, such as interference, frames longer than this threshold numbers in bytes are divided prior to transmission into one or more fragments equal in length to the fragmentation threshold. The default value is set at 2346 bytes. 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.

802.11g Bridge (Beta Release)		Wireless Enabling Desktops PCs, Printers & Game Consoles (Use an Ethernet Hub or Switch to Support Multiple Devices)	
		Info	Wireless
		Security	Advanced
		Admin	Help
Advanced		On this page you can configure the advanced 802.11g wireless settings. Any new settings will not take effect until the bridge is rebooted.	
Cloning		<p>Cloning mode: <input checked="" type="radio"/> WLAN Card <input type="radio"/> Ethernet Client</p> <p>Select "WLAN Card" to set the MAC Address of the Bridge (as seen by the Access Point and other wireless devices) to be that of the MAC Address of WLAN Card inside the Bridge. Select "Ethernet Client" to set the MAC Address to that of the first Ethernet client that transmits data from behind the Bridge.</p>	
Advanced wireless		<p>Fragmentation threshold: <input type="text" value="2346"/></p> <p>Transmitted wireless packets larger than this size will be fragmented to maintain performance in noisy wireless networks.</p> <p>RTS threshold: <input type="text" value="2432"/></p> <p>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.</p> <p>Maximum burst time: <input type="text" value="0"/></p> <p>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 increasing 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.</p>	
Firmware upgrading		<p>Allow upgrade uploads: <input type="checkbox"/></p> <p>If this box is checked it enables the TFTP server that is used to accept firmware upgrades. <i>Leave this box unchecked during normal operation. Only check the box when you are upgrading the bridge firmware.</i></p> <p style="text-align: right;">Save Cancel</p>	

Figure 5. Advanced Wireless

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 “2346” (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.

3. Firmware Upgrade

[Allow Upgrade Uploads](#)

If this box is checked, it enables the TFTP server that is used to accept firmware upgrades. *Leave this box unchecked during normal operation. Only check the box when you are upgrading the access point firmware.*

Admin

In this web page, users are able to change settings, which are used for administration purposes. The web page is divided into four sections: Device Name, IP settings, Security, and Commands.

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.

[Default IP address](#)

Type in the IP address of your Access Point. 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 following 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.

[Default subnet mask](#)

The subnet mask specifies the network number portion of an IP address. The factory default is 255.255.255.0. 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.

[Default 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.

802.11g Bridge (Beta Release)		Wireless Enabling Desktops PCs, Printers & Game Consoles (Use an Ethernet Hub or Switch to Support Multiple Devices)					
		Info	Wireless	Security	Advanced	Admin	Help
Administration		<p>On this page you can configure the IP address used by the Web and TFTP servers running on this bridge. For "static" mode, the IP address settings are given here. For "DHCP" mode, these settings are supplied by a DHCP server on your network. You can also change the password, reboot the bridge, or reset all settings to their factory defaults. If you have changed any settings it is necessary to reboot the bridge for the new settings to take effect.</p>					
Device name		<p>Device name: <input type="text" value="802.11g Bridge"/></p> <p>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.</p>					
IP settings		<p>IP Address Mode: <input checked="" type="radio"/> Static <input type="radio"/> DHCP</p> <p>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.</p> <p>Default IP address: <input type="text" value="192.168.1.241"/></p> <p>Type the IP address of your bridge</p> <p>Default subnet mask: <input type="text" value="255.255.255.0"/></p> <p>The subnet mask specifies the network number portion of an IP address. The factory default is 255.255.255.0.</p> <p>Default gateway: <input type="text" value="192.168.1.1"/></p> <p>This is the IP address of the gateway that connects you to the internet. The factory default is 192.168.1.1.</p>					
Security		<p>User name: <input type="text"/></p> <p>This is the user name that you must type when logging in to these web pages.</p> <p>Administrator password: <input type="text"/> <input type="text"/></p> <p>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</p> <p style="text-align: right;"><input type="button" value="Save"/> <input type="button" value="Cancel"/></p>					
Commands		<p>Reboot bridge: <input type="button" value="Reboot"/></p> <p>Reset to factory defaults: <input type="button" value="Reset"/></p>					

Figure 7. IP Settings

3. Security

[User Name](#)

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

[Administrator 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](#)

Press this button to reboot Access Point. You will need to reboot the unit after most of 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!). Please be careful: once reset is completed, the current settings are all over-written. There is no way to get back to your current settings unless you remember them or keep an adapter settings copy. It is always a good idea to keep a copy of the current setting before you change the current settings.

Help

See the following figure



Chapter 4 Troubleshooting

No Page Displayed When Accessing the Web-based Utility

This is either 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 hub, if a 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 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 “any” or “ANY” 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

- 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, not a crossover.
- Make sure that the AVCW-G is not connected to a hub with multiple computers/devices plugged in.
- 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 turned on may be necessary in order for the AVCW-G to “learn” the MAC address of the host computer.

Poor Link Quality

If the “Communication Strength” stays in the Poor range, it could be due to one of the following reasons:

- 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 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 radio away from the microwave oven and large metal objects.
- Consult the dealer or an experienced radio technician for help.

TFTP Timeouts

If TFTP command timeouts, please check whether you can ping the Wireless Adapter. Another possible cause for the timeout is the network traffic is too busy.

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 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:

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 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

OTC Wireless, Inc. vakuuttaa täten että AVCW-G 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 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 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 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 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 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 overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF

Hiermit erklärt OTC Wireless, Inc., dass sich dieser AVCW-G 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 mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)

OTC Wireless, Inc. dichiara che questo AVCW-G 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 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 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.

France

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

France

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 publiq