



# **AVCW-G AP**

(AVCW109-G, AVCW115-G, AVCW100-G)

**802.11g Outdoor Wireless Access Point**

## **Technical Manual**



[www.otcwireless.com](http://www.otcwireless.com)



**AVCW-G AP  
Wireless Access Point  
Technical Manual  
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# Table of Contents

## AVCW-G AP Technical Manual

<b>CHAPTER 1 INTRODUCTION.....</b>	<b>1</b>
SPECIFICATIONS .....	2
AVCW-G AP 802.11G ACCESS POINT .....	2
<b>CHAPTER 2 INSTALLATION AND BASIC OPERATION.....</b>	<b>3</b>
SAFETY STATEMENTS .....	3
INSTALLING THE HARDWARE.....	3
<b>CHAPTER 3 WEB-BASED ADMINISTRATION UTILITY.....</b>	<b>5</b>
SYSTEM REQUIREMENTS FOR USING WEB-BASED ADMINISTRATION UTILITY .....	5
USE THE WEB-BASED ADMINISTRATION UTILITY .....	5
THE FACTORY DEFAULT IP SETTINGS: .....	5
OVERVIEW OF THE WEB PAGES.....	6
THE HOME PAGE: THE “INFORMATION” PAGE .....	6
CONFIGURATION PARAMETER ORGANIZATION .....	7
CONFIGURATION PARAMETER SETTING.....	9
<b>CHAPTER 4 TROUBLESHOOTING.....</b>	<b>10</b>
NO PAGE DISPLAYED WHEN ACCESSING THE WEB-BASED UTILITY .....	10
NO RADIO LINK.....	10
NO NETWORK CONNECTION WHILE THE RADIO LINK IS GOOD.....	10
POOR LINK QUALITY .....	11
RADIO INTERFERENCE .....	11
SETTINGS APPEAR NOT TO BE MODIFIED.....	12
ADAPTER SETTINGS AND PASSWORD RECOVERY .....	12
TECHNICAL SUPPORT.....	12
<b>APPENDIX A: LIMITED WARRANTY .....</b>	<b>13</b>
<b>APPENDIX B: REGULATORY COMPLIANCE .....</b>	<b>14</b>
<b>GLOSSARY .....</b>	<b>18</b>

## Chapter 1 Introduction

AVCW-G AP is an 802.11g compliant access point designed for both indoor and outdoor wireless networking applications. It is the perfect choice for access point for Inter-building Networking as well as Hotspots and Wireless LANs. It has a weatherproof enclosure and can be powered over the Ethernet. AVCW-G AP meets the challenges of many of today's demanding applications.

One can use the AVCW-G AP in conjunction with the AVCW-G wireless bridge to connect computer networks between buildings thereby adding redundancy, or replacing existing leased lines.

One can also use AVCW-G AP as the access point in an indoor wireless LAN network or a hotspot. The power over Ethernet feature of AVCW-G AP allows it to be conveniently installed at the most desirable location to provide the best signal coverage.

The AVCW-G AP comes with three models offering the user a wide choice of antennae. The AVCW109-G has a built-in 9dBi patch antenna. The AVCW115-G has a built-in 15dBi patch antenna and the AVCW100-G has a type N female RF connector to allow a variety of choice of external antenna options. The flexibility of using different antennae allows the AVCW-G AP to provide optimal link distances up to 20 miles.

AVCW-G 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 AP provides seamless incorporation of a wireless network into an existing wired LAN infrastructure. Existing wired-network resources such as DHCP, VPN, firewall, etc., reach across the AVCW-G AP to the wireless client workstations with total transparency. AVCW-G AP simply wirelessly incorporate a group of workstations or other kinds of devices with wireless connectivity into a wired network—just like a hub and switch.

In addition to higher speed, the AVCW-G AP fully supports the current wireless security standard in force. “WPA – Wi-Fi Protected Access” offers unprecedented wireless security including both access control with 802.1X and communications confidentiality with dynamic TKIP encryption.

AVCW-G AP also offers MAC-address-based access control. This access control used in conjunction with the WPA for data encryption provides the highest degree of security for the wireless network.

AVCW-G AP includes a built-in Web server providing a web-based administration utility to configure, monitor, and manage the radio. The network operator can access the AVCW-G AP from any immediate or remote host with a Web browser on the connected network. Once the AVCW-G AP is properly configured to match up with your wireless network, the radio runs self-sufficiently without the aid of any driver program or connected Web browser.

## AVCW-G AP 802.11g Access Point

### Key Features

- ❑ Portable form factor and transparency to network settings allow quick deployment, especially suitable for temporary wireless network
- ❑ Industry standard IEEE 802.11g-compliant wireless interface; Interoperable with compatible 802.11g as well as 802.11b Station radios from all vendors
- ❑ Highest degree of security provided by the **WPA capability**, including WEP of 64 and 128 bits.
- ❑ Tight access control provided by checking the MAC-address of the Stations
- ❑ 54Mbps data rate at maximum and automatic selection of a suitable lower data rate in degraded RF environment
- ❑ Options of integrated directional-antenna or RF connector for external antenna connection to provide best tradeoff between link-quality and portability.
- ❑ Remote network management achievable through embedded Web-based Administration Utility, accessible from any Web browser

### Specifications

<b>Model</b>	AVCW100-G, AVCW109-G, AVCW115-G
<b>Standard</b>	802.11 and 802.11g; WPA
<b>Host Interface</b>	Ethernet, 100/10 Base T, 802.3, RJ-45 receptacle
<b>Frequency</b>	2.4 – 2.4835 GHz (US and Europe) 2.4 – 2.497 GHz (Japan)
<b>RF Channels</b>	11 channels (US, Canada, Brazil, Australia, New Zealand) 13 channels (Europe, except France) 4 channels (France, Mexico)
<b>Transmission power</b>	14 dBm at antenna input typical for 802.11g 16.2 dBm at antenna input typical for 802.11b
<b>Receiver sensitivity</b>	-65dBm@54Mbps, -80dBm @11Mbps, at 1e-5 BER typical
<b>Antenna</b>	9dBi patch (AVCW209-G), 15dBi patch (AVCW215-G)
<b>RF Connector</b>	Type N Female (AVCW200-G)
<b>Data Rate</b>	1/ 2/ 5.5/ 6/ 9/ 11/ 12/ 18/ 24/ 36/ 48/ 54 Mbps, fixed or automatic rate selection
<b>Modulation</b>	OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) CCK, DQPSK, DBPSK (11b)
<b>Max. Link Distance</b>	Up to 30Km, depending on the line-of-sight condition and antenna used
<b>Data Encryption</b>	Support the WPA: Wi-Fi Protected Access standard as well 64/128-bit WEP
<b>Input Power</b>	9V DC at DC-injector input, 5V DC at radio input
<b>Current consumption</b>	<650mA (max. reached in transmit-mode)
<b>LED Indicators</b>	4: Power, Transmission, Receiving, Link/Ethernet-connection
<b>Operating Temper.</b>	-10°C – +60°C
<b>Regulatory Compliance</b>	FCC, CE
<b>Physical Dimension</b>	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 and Basic Operation

### **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 AP, 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 AVCW100-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.

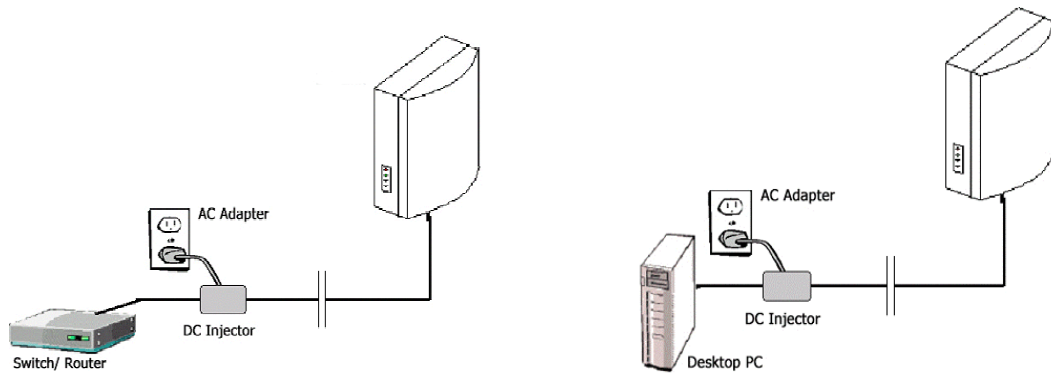
The AVCW-G AP can be connected to a computer's Ethernet port, or a router's WAN port via the included Straight-through UTP cable. The AVCW-G AP can also be connected to a hub or switch with blue cross-over cable.

### **Status LEDs**

Power on the AVCW-G AP, 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 AP 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 Web-based Utility software. Refer to Chapter 3 for instructions on how to change the RF channel and security settings.



Example of Typical Installation for AVCW-G AP

## Chapter 3 Web-Based Administration Utility

### System Requirements for Using Web-Based Administration Utility

Your computer must meet the following requirements in order to access the AVCW-G AP web-based Administration Utility:

- (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, 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 network (or direct) connection to the AVCW-G AP with proper IP addressing.

No installation of any other software program is necessary.

### Use the Web-Based Administration Utility

Once the AVCW-G AP radio is properly turned on and connected either directly or through network to a computer, the Web-based Utility is ready for use. To access the web-based administration utility, open a Web browser and type in the IP address of the AVCW-G AP in the address bar. For factory default IP settings, see below:

The factory default IP settings:

IP address: 169.254.98.201  
Subnet mask: 255.255.0.0  
Gateway: 169.254.1.1

User name: admin  
Password: public

**NOTE:** *The IP address of the network interface of the computer must be in the same IP subnet as the IP address of AVCW-G AP radio. For example, the computer network interface should have an IP address like **169.254.1.100***

**Warning:** *You must keep good record of the IP settings, if changed. Else, you won't be able to access the Administration Utility.*

Upon initial connection with the Administration Utility Web site, a user login page will be shown at the Web Browser. Enter the correct user name and password which you may have modified last time. Otherwise, use the factory default settings shown above.



**Overview of the Web Pages**


AVCW-G AP web-based administration utility allows you to set and modify many operating parameters of the AP. The parameters are organized into ten categories and each category has its own web page. The categories are: *Info, Assoc, Wireless, Access, Template, Advanced, Security, IP Addr, Admin, and Help*. Each category can be accessed by clicking the tabs at the top of all web pages as shown in the following figure.



Tabs Linking to Different Web Pages

**The Home Page: the “Information” Page**

The home page, which is the Info page, is shown below. The home page can be re-accessed and refreshed by clicking on the “Info” tab. The title box just below the OTC logo tells you the current page being accessed. In this case, it is the “Information” page. The purpose of each web page is briefly explained in the area to the right of the title box. The remainder of the page shows the parameters in their groups.

 <b>AVCW-G Access Point</b>	
<a href="#">Info</a> <a href="#">Assoc</a> <a href="#">Wireless</a> <a href="#">Access</a> <a href="#">Template</a>	
<a href="#">Advanced</a> <a href="#">Security</a> <a href="#">IP Addr</a> <a href="#">Admin</a> <a href="#">Help</a>	
<b>Information</b>	Basic information about this access point. NOTE: You may have to reload this page to see the current settings.
<b>Access Point Information</b>	<p><b>Access Point Name:</b> AVCW-G AP</p> <p><b>MAC address of AP:</b> 0060B3139903</p> <p><b>Associated stations:</b> 0</p> <p><b>Radio Firmware version:</b> 1.0.4.3</p> <p><b>AVCW-G Firmware version:</b> 3.0.0</p>
<b>Current IP Settings</b>	<p><b>IP address:</b> 169.254.98.201</p> <p><b>DHCP client:</b> disabled</p>
<b>Current Wireless Settings</b>	<p><b>Operational PHY Profile:</b> 802.11b/g Mixed Mode</p> <p><b>Wireless network name (SSID):</b> AVCW-G-AP</p> <p><b>Channel:</b> 1</p> <p><b>WEP:</b> disabled</p> <p><b>WPA:</b> disabled</p>

Home Page: Information Page

## **Configuration Parameter Organization**

The following chart displays the web pages and the parameters in groups.

<b><u>Web Page</u></b>	<b><u>Group</u></b>	<b><u>Parameters</u></b>
<b>Info</b> (display current radio settings and connection status)	<u>Access Point Information</u>	Access Point Name: MAC address: Associated stations: Radio Firmware version: AVCW-G Firmware version:
	<u>Current IP Settings</u>	IP address: DHCP client:
	<u>Current Wireless Settings</u>	Profile: SSID: Channel: WEP: WPA:
<b>Assoc</b> (display the associated stations' MAC addresses)	<u>MAC address</u>	- List of associated station radios
<b>Template</b> (allow the user to save and restore adapter settings)	<u>Create Template</u>	Create Template
	<u>Launch Template</u>	Choose Template Launch Template
<b>Wireless</b> (allow the user to modify wireless configuration parameters)		Visibility Status: PHY Profiles: SSID: Channel: Transmission rate (Mbps):
<b>Access</b> (set allowable station MAC addresses)		Enable access control MAC address 1: MAC address 2: - - - MAC address 8: Transmission rate (Mbps):

**Advanced** – (set detailed wireless operating parameters)

Maximum associated stations:  
Fragmentation threshold:  
RTS threshold:  
Beacon period:  
DTIM interval:  
Maximum burst time:  
Enable PSM buffer:

**Security** (set WPA, 802.1X, and WEP parameters.)

WPA configuration

WPA enabled:  
PSK pass-phrase  
(select either ASCII or HEX format)  
WPA Multicast Cipher Type:  
WPA Pairwise Cipher Type:  
WPA Group Key Update Interval:

802.1X configuration

802.1X enabled:  
Authentication timeout (min's):  
RADIUS server IP address:  
RADIUS server port number:  
RADIUS server shared secret:  
MAC Address Authentication:

WEP configuration

Enable WEP:  
WEP key lengths:  
WEP key:  
Default WEP key to use:  
Deny unencrypted data:  
Authentication:

**IP Addr** (set IP Settings for web-based administration utility purpose)

IP Address

IP Address Mode:  
Default IP address:  
Default subnet mask:  
Default gateway:  
MAC address 1:

Access point name

Access point name

**Admin** (configure the radio administration settings)

Administrator

User name:  
Administrator password:

Commands

Reboot access point:

Reset to factory defaults:

### Upgrade firmware

File to upload:

Upload:

[Help](#) (Help and Support Information)

- Information on technical support

### Configuration Parameter Setting

The Web pages have been designed to explain the parameters clearly in place. The same information would not be duplicated in this Technical Manual. The following shows one example page where an administrator sets parameter values. Observe that the meaning of each field is clearly explained. The check boxes and dropdown list of valid values are provided wherever applicable in some web pages.

OTC WIRELESS AVCW-G Access Point	
Info Assoc Wireless Access Template	
Advanced Security IP Addr Admin Help	
<b>Administration</b>	On this page you can change the password, reboot the access point, or reset all settings to their factory defaults. If you have changed any settings it is necessary to reboot the access point for the new settings to take effect.
User name:	<input type="text" value="admin"/>
This is the user name that you must type when logging in to these web pages.	
Administrator password:	<input type="password" value="XXXXXXXXXX"/>
	<input type="password" value="XXXXXXXXXX"/>
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	
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	
<b>Commands</b>	
Reboot access point:	<input type="button" value="Reboot"/>
Reset to factory defaults:	<input type="button" value="Reset"/>
<b>Upgrade firmware</b>	
File to upload:	<input type="text"/> <input type="button" value="Browse..."/>
	<input type="button" value="Upload"/>
The upload may take up to 60 seconds.	

Example: Administration Page

## 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**

Check the following possible causes:

- Make sure that the target radio, the Station, is turned on and operating properly.
- Make sure that the “Signal Strength” indicator on the target Station radio’s utility program is not zero. A minimum of 20% is recommended. If the “Signal Strength” is less than 20%, the distance between the AVCW-G AP and the targeted Station radio may be too far. Decrease the distance to see if the radio link can be established.
- Make sure that the target Station radio’s SSID is left blank or the same as that for the AVCW-G AP Access Point.
- If the WPA is turned on, make sure that the entire chain of necessary configuration from the host supplicant to the RADIUS is properly configured. If you only turned on WEP and/or 802.1X, again make sure that all the necessary configuration is correct.
- For troubleshooting purposes, turn off all the security settings and see if the station radio and the AP can be linked.
- Make sure that the target Station radio’s MAC address is added to the “Allowed Station List” if this feature on AVCW-G AP is turned on.
- Make sure that there is no RF interference present in the radio network.

### **No Network Connection While the Radio Link is Good**

If the target Station radio’s utility indicates good “link quality” with AVCW-G AP, 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 AVCW-G AP radio and the network equipment (switch or router) meets at least the CAT-3 standard and has the correct straight-through or cross-over connection. Perform similar checks of the Ethernet cable connection of the target Station radio to its host device.
- Make sure that the IP address of the host computer/device connected to the target Station radio is properly set up for the network.

### **Poor Link Quality**

If the “Signal Strength” is reasonably high (>20%) and the “Link Quality” is not zero, but the “Link Quality” 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 AP radio to a location where the interference is minimized for all Station radios in the network.
- Avoid using 2.4GHz cordless phone in the vicinity of the radio
- Keep the computer with the AVCW-G AP radio and its associated Station radios 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 AVCW-G AP radio. 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.

### **Adapter Settings and Password Recovery**

You can recover the adapter’s settings by uploading the saved template file back to the adapter (see section “Use Settings Template” for details). The template file contains valuable information in case you forgot the IP address, user name or password, as long as you saved the settings to template right after you made any configuration change. Simply open the template file in a web browser. You can see the device’s IP address listed in the “Device current IP address” field. If you forgot the user name and password, you can open the template file with a text editor, and search for “user name” and “password”. The corresponding values are listed as the value attributes for these two fields.

**IMPORTANT:** please save your configuration to template right after you have any change so that you can recover your settings.

### **Technical Support**

Please contact OTC Wireless for Technical Support.

*E-mail:* [support@otcwireless.com](mailto: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: AirEZY2411-BT 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

#### **FCC ID:MKZAVCW11G628**

AVCW-109-G Outdoor AP

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.

## **Industry Canada compliance statement**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

This device complies with Industry Canada specification RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF fields in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's Web site: [www.hc-sc.gc.ca/rpb](http://www.hc-sc.gc.ca/rpb).

## **Avis de conformité aux normes d'Industrie Canada**

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.


Cet appareil est conforme à la spécification RSS-210 d'Industry Canada. Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne peut engendrer aucune interférence et (2) il doit accepter toute interférence qu'il reçoit, y compris celles qui peuvent altérer son fonctionnement.

Pour éviter toute interférence radio au service sous licence, cet appareil est conçu pour être utilisé à l'intérieur et loin des fenêtres afin de garantir une protection optimale. L'équipement (ou son antenne émettrice) est soumis à l'obtention d'une licence s'il est installé à l'extérieur.

L'installateur de cet équipement radio doit veiller à ce que l'antenne soit implantée et dirigée de manière à n'émettre aucun champ HF dépassant les limites fixées pour l'ensemble de la population par Santé Canada. Reportez-vous au Code de sécurité 6 que vous pouvez consulter sur le site Web de Santé Canada: [www.hc-sc.gc.ca/rpb](http://www.hc-sc.gc.ca/rpb)

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

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

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

*ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ ΟΤC Wireless, Inc. ΔΗΛΩΝΕΙ ΟΤΙ AVCW-G AP 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 AP 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 AP 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 AP 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 publiques.

## Glossary

**100/10BaseT** An IEEE standard (802.3) for operating 10/100 Mbps Ethernet networks (LANs) with twisted pair cabling and a wiring hub.

**Access Point** An internetworking device that seamlessly connects wired and wireless networks. Access Points combined with a distributed system support the creation of multiple radio cells that enable roaming throughout a facility.

**Ad Hoc Network** A network composed solely of stations within mutual communication range of each other (no Access Point connected). The Ad Hoc network offers peer-to-peer connections between workstations, allowing communication between computers within range that have an 802.11 DSSS compatible PC card installed.

**BSS** *Basic Service Set*. A set of stations controlled by a single coordination function.

**Channel** A medium used to pass data units that can be used simultaneously in the same volume of space by other channels of the same physical layer, with an acceptably low frame error ratio due to the absence of mutual interference.

**CSMA/CA** *Carrier Sensing Multiple Access/Collision Avoidance* The medium access control method used by the 802.11 standard. Basically, a radio can start transmitting signal only when no carrier from another radio is sensed and after a randomized wait time has expired.

**DTIM** *Delivery Traffic Indication Map* The Stations that currently have data held in an AP are identified by a Traffic Indication Map (TIM). This TIM is included in the beacon sent by an AP. DTIM is a special type of TIM. When a DTIM is sent in a beacon frame, it signals that all the broadcast and multicast data held for Stations in PS mode will be sent immediately following the beacon frame.

**Encapsulated** An Ethernet address mode that treats the entire Ethernet packet as a whole and places it inside an 802.11 frame along with a new header.

**EAP** *Extended Authentication Protocol*. EAP is an extension to the RADIUS protocol. [IETF RFC 2869] It establishes a framework that allows a variety of authentication methods to be used between a requester and RADIUS.

**ESS** *Extended Service Set*. A set of one or more interconnected Basic Service Sets (BSSs) and integrated Local Area Networks (LANs) can be configured as an Extended Service Set.

**Ethernet** The most widely used medium access method, which is defined by the IEEE 802.3 standard. Ethernet is normally a shared media LAN; i.e., all the devices on the network segment share the total bandwidth. Ethernet networks operate at 10Mbps/100Mbps using CSMA/CD to run over 100/10BaseT/100BaseT cables.

**Hidden Node** The situation where two or more radios in a multiple-radio network fail to detect the RF signals from each other. For example, in a 3-radio network, radio 2 and 3 both have good link to radio 1. Radio 2 and 3, however, are isolated from each other by, say, a metal wall. Radio 2 therefore is a "hidden node" to radio 3, and vice versa. Since an 802.11 network relies on the CSMA/CA protocol to control network access, hidden nodes break down the Carrier Sensing mechanism of controlling medium access because two or more radios cannot sense the carrier from each other.

**IEEE 802.11** The IEEE 802.xx is a set of specifications for LANs from the Institute of Electrical and Electronic Engineers (IEEE). Most wired networks conform to 802.3, the specification for CSMA/CD-based Ethernet networks or 802.5, the specification for token ring networks. IEEE 802.11 defines the standard for wireless LANs encompassing three incompatible (non-interoperable) technologies: Frequency Hopping Spread Spectrum (FHSS), Direct Sequence Spread Spectrum (DSSS), and Infrared. IEEE standards ensure interoperability between systems of the same type.

**IEEE 802.1X**. The "Port Based Network Access Control" requires that a device that accesses a network be first authenticated. [<http://www.ieee802.org/1/pages/802.1x.html>] The initial connecting point of the network is the "authenticator." It relays the accessing device's credential to a backend "authentication server." The process that presents the request is referred to as the "Supplicant." Only when the authentication server so determines, the network access device will open its port for the requesting device. The authentication server is generally a RADIUS. In order for the request to be granted, the RADIUS must be properly configured to recognize the requester's credential.

**Infrastructure Network** A wireless network centered about an Access Point. In this environment, the Access Point not only provides communication with the wired network but also mediates wireless network traffic in the immediate neighborhood.

**IP Internet Protocol.** The standard protocol within TCP/IP that defines the basic unit of information passed across an Internet connection by breaking down data messages into packets, routing and transporting the packets over network connections, then reassembling the packets at their destination. IP corresponds to the network layer in the ISO/OSI model.

**IP Address** An IP address is a 32-bit number that identifies each sender or receiver of information sent across the Internet. An IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network.

**ISP Internet Service Provider.** An organization that provides access to the Internet. Small ISPs provide service via modem and ISDN while the larger ones also offer private line hookups (T1, fractional T1, etc.).

**LAN Local Area Network.** A communication network that serves users within a defined geographical area. The benefits include the sharing of Internet access, files, and equipment, such as printers and storage devices. Special network cabling (100/10BaseT) is often used to connect the PCs together.

**NAT Network Address Translation.** The translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the internal network and the other is the external. The internal network then appears as one entity to the outside world.

**PCMCIA Personal Computer Memory Card International Association.** This Association develops standards for PC cards, formerly known as PCMCIA cards. These cards are available in three types, and are about the same length and width as credit cards. However, the different cards range in thickness from 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type III). These cards can be used for various functions, including memory storage, landline modems, and wireless modems.

**PS Mode Power Save Mode.** This mode is recommended for devices where power consumption is a major concern, such as battery-powered devices.

**RADIUS Remote Authentication Dial-in User Service.** This service generally authenticates users by their credentials. The host of a user uses the RADIUS protocol to send the credential of the user to a designated RADIUS server. The user will be granted access rights based on the privilege configured in the RADIUS server. A Microsoft article provides a good review: "RADIUS Protocol Security and Best Practices."  
[<http://www.microsoft.com/windows2000/techinfo/administration/radius.asp>]

**Radio Frequency RF,** Terms: GHz, MHz, Hz —The international unit for measuring frequency is Hertz (Hz), equivalent to the older unit of cycles per second. One megahertz (MHz) is one Million-Hertz. One gigahertz (GHz) is one Billion-Hertz. The standard U.S. electrical power frequency is 60 Hz, the AM broadcast radio frequency band is 0.55–1.6 MHz, the FM broadcast radio frequency band is 88–108 MHz, and wireless 802.11 LANs operate at 2.4GHz.

**SSID Service Set ID.** A group name shared by every member of a wireless network.

**Station** The Station is the component that connects a host computer or device to the wireless medium. It may be referred to as the Wireless Network Adapter or the Wireless Network Interface Card.

**WPA Wireless Protected Access.** WPA is the current industry-agreed requirement for secured wireless 802.11 communications. It is a subset of the upcoming 802.11i standard. It comprises 802.1X and EAP based access control and communications confidentiality based on TKIP data encryption. For more details, visit Wi-Fi Alliance Web page: [http://www.wifialliance.com/OpenSection/protected\\_access.asp](http://www.wifialliance.com/OpenSection/protected_access.asp).

**WEP Wired Equivalent Privacy.** The optional cryptographic confidentiality algorithm specified by 802.11 used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired LAN medium that does not employ cryptographic techniques to enhance privacy.