SENAO

High-Speed Wireless Mini PCI Adapter

OEM installation Manual

Version: 1.0

Table of Contents

1 Introduction

This chapter describes the features & benefits, package contents, applications, and network configuration.

1.1 Features & Benefits

2.4GHz IEEE802.11b/g (draft) standard	Fully interoperable with IEEE802.11b/g (draft) compliant products.
Up to 54Mbps and 108Mbps (turbo mode) high-speed data rates	Capable of handling heavy data payloads such as MPEG video streaming.
Up to 152-bit WEP Data Encryption with TKIP	Powerful data security.
IEEE802.11x Client support (Optional)	Enhances authentication and security.
Transmission Power Control (TPC) support	Offers flexibility to adjust RF output power.
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Transmission Power Control (TPC) support	Offers flexibility to adjust RF output power.

1.2 Package Contents

- ➤ One Access Point (with Mini PCI Adapter)
- ➤ One Power Adapter
- ➤ One CAT 5 UTP Cable
- ➤ One Fast Start Guide
- ➤ One CD-ROM with User's Manual Included

2 Understanding the Hardware

2.1 Hardware Configuration

> ➤ **RJ-45 Ethernet Connector –** Provides 10/100 Mbps connectivity to a wired Ethernet LAN.
> ➤ **Reset Button –** By holding this down for more than five seconds, the AP will reset to its factory default settings.
> ➤ **Power Supply Connector –** Connects to the power adapter.

2.2 Hardware Installation

A. Configure your notebook or PC with a wireless LAN card.
B. For a wired LAN, connect your PC's Ethernet port to the AP's LAN port via an Ethernet cable.
C. For WLAN, position the Access Point in a proper position.
D. Plug in the power cord into the power outlet.

3 PC Configuration

3.1 TCP/IP Configuration

Follow the steps below in order to configure the TCP/IP settings of your PC.

A. In the Control Panel double click **Network Connections**, and then double click on the connection of your Network Interface Card (NIC). You will then see the following screen.
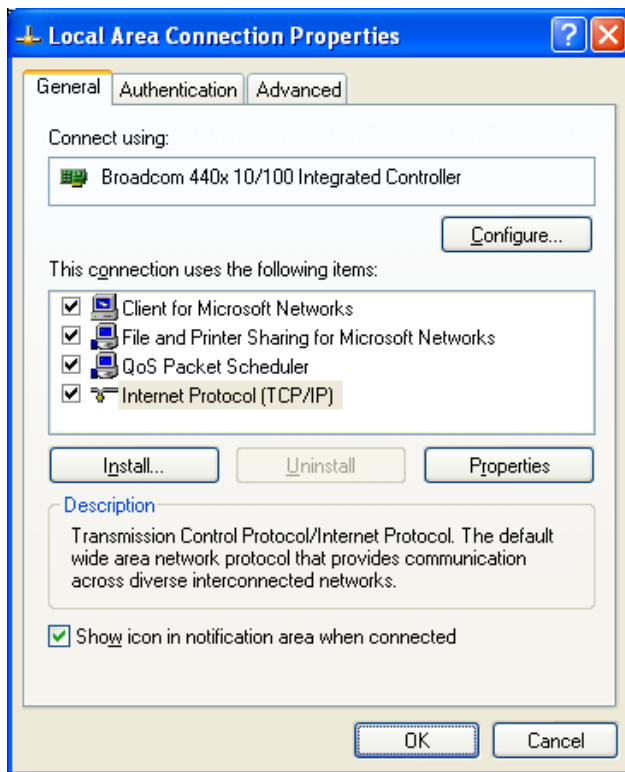
B. Select **Internet Protocol (TCP/IP)** and then click on the **Properties** button. This will allow you to configure the IP address of your PC. You will then see the following screen.
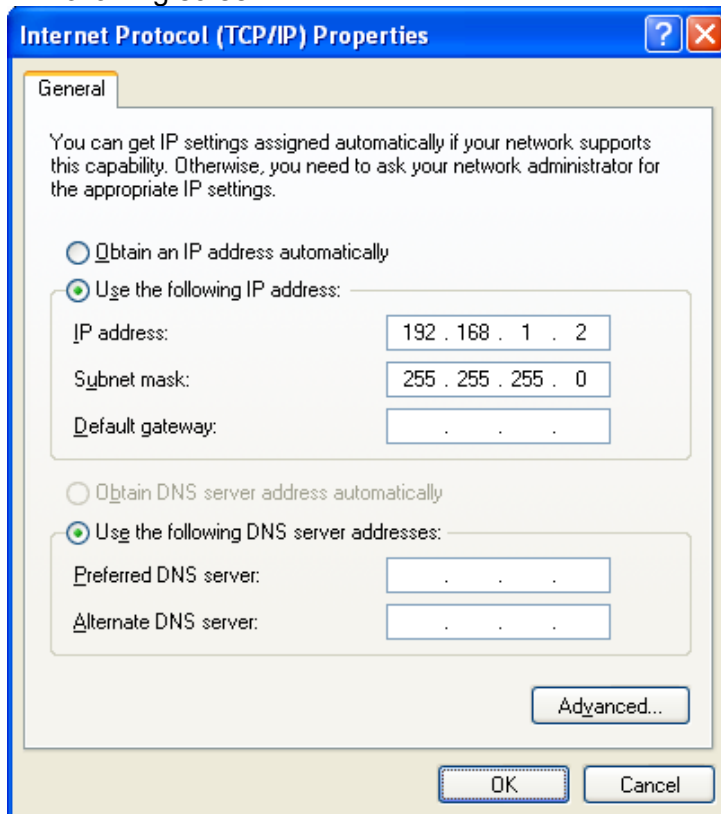
C. Select **Use the following IP address** radio button, and then enter an IP address and subnet mask for your PC. Make sure that the Access Point and your PC are on the same subnet. The default IP address and subnet mask of the Access Point are **192.168.1.1** and **255.255.255.0** respectively.

D. Click on the **OK** button, your PC's TCP/IP settings have been configured.

3.2 Wireless LAN Configuration

Follow the steps below in order to configure the Wireless LAN settings.

A. Launch the **WLAN Client Utility** and click on the **Configuration** tab.
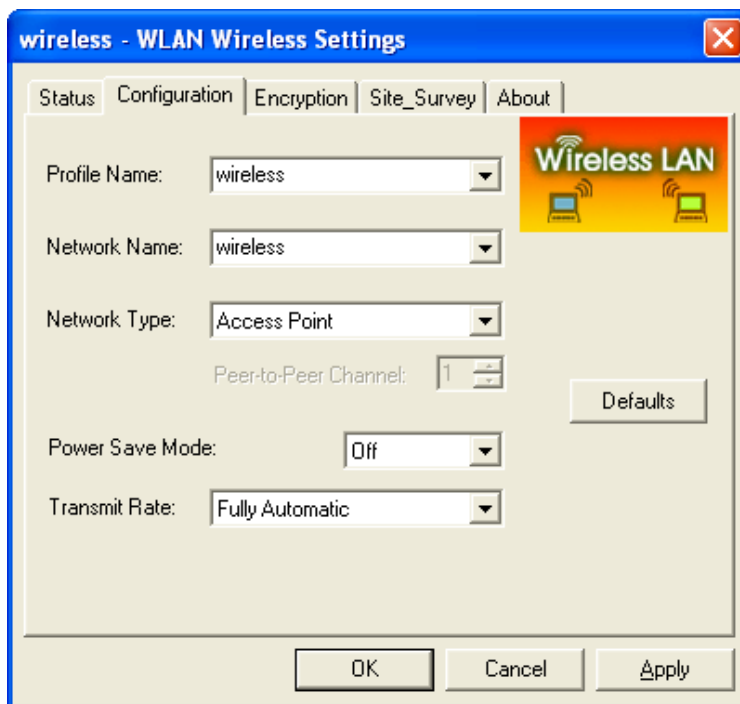
B. **Profile Name**: enter a name for this profile.
C. **Network Name**: enter the SSID. (Default name: Any)
D. **Network Type**: select **Access Point** from the drop-down list.
E. **Power Save Mode**: Select **Off** or **On** from the drop-down list.
F. **Transmit Rate**: select **Fully Automatic** from the drop-down list.
G. Click on the **OK** button.
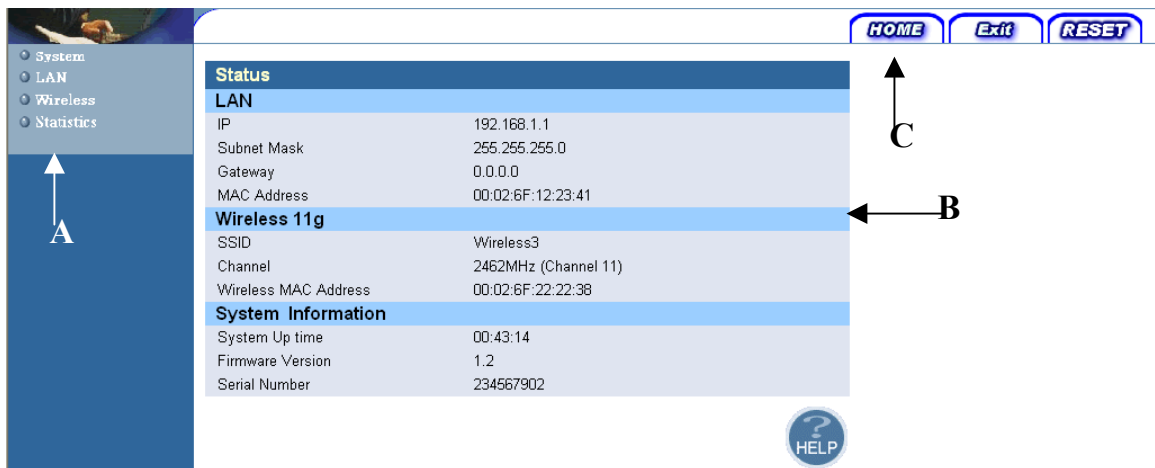
4 Web Configuration

4.1 Logging In

➤ To configure the Access Point through the web-browser, enter the IP address of the Access Point (default: 192.168.1.1) into the address bar of the web-browser, and press **Enter**.

➤ You will then see the login window. Enter **admin** as the User name and **iktpw** as the Password and then click on the **OK** button.

➤ You can also change the username and password under the **Administrator Settings** option. Refer to section **4.3.1 Administrator Settings** to change the username and password.

➤

4.2 Getting Familiar with the GUI

➤ After logging in, the first page that is displayed in the **Status** page.

➤ The GUI consists of three parts and is displayed in the image below:
   A. **Navigation Bar**: used to navigate through the available options.
   B. **Main Page**: used to view and configure the AP's settings.
   C. **Top Right-hand Corner**: quick buttons for **Home**, **Exit**, and **Reset**. Click on the **Home** button to return to the status page. Click on the **Exit** button to logout, and click on the **Reset** button to restart the AP.

4.3 System

➢ Click on the **System** link on the navigation bar, you will then see five options: Administrator Settings, Firmware Upgrade, Configuration Tools, Factory Default, and Rest. Each one is described in detail below.

4.3.1 Administrator Settings

➢ Click on the **Administrator Settings** link. On this page you can configure the user name, password, system name and telnet.
➢ Set another username and password to restrict management access to the Access Point.

➢ **Username:** enter a new user name.
➢ **Password:** enter a new password.
➢ **System Name:** enter a unique name for this device.
➢ **Enable Telnet:** place a check in this box if you would like to allow telnet access to

this device.
➤ Click on the **Apply** button to confirm and save the changes.

4.3.2 Firmware Upgrade

➤ Click on the **Firmware Upgrade** link. This page is used to upgrade the firmware on the AP.

Host Name	
User Name	
Password	
Image Path	
Image Name	

Firmware Upgrade

HELP   APPLY   CANCEL

➤ **Host Name:** enter the host name or host IP address.
➤ **User Name:** enter the user name for the host.
➤ **Password:** enter the password for the host.
➤ **Image Path:** enter the path of the image file.
➤ **Image Name:** enter the name of the image file.
➤ Click on the **Apply** button to confirm and save the changes.

4.3.3 Configuration Tools

➤ Click on the **Configuration Tools** link on the navigation bar, you will then see the **Configuration Script** page. This page allows you to develop a script for an application.

Configuration Script

Host Name	
User Name	
Password	
Script Path	
Script Name	

HELP APPLY CANCEL

- ➤ **Host Name:** enter the host name for the script resides.
- ➤ **User Name:** enter the user name of the host.
- ➤ **Password:** enter the password of the host.
- ➤ **Script Path:** enter the path of the script file.
- ➤ **Script Name:** enter the name of the script file.
- ➤ Click on the **Apply** button to confirm and save the changes.

4.3.4   Factory Defaults

- ➤ Click on the **Restore** button of the Access Point to perform a reset and restore the original factory settings.
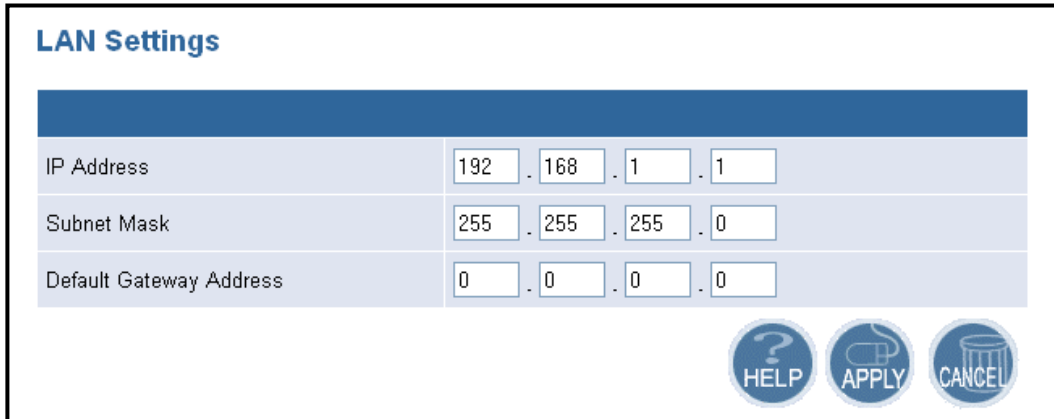
Restore Factory Default

To restore the factory default settings of the Access Point, click on the "Restore" button. You will be asked to confirm your decision.

Restore...

BACK

4.4   LAN

➤ Click on the **LAN** link on the navigation bar, and then click on **LAN Settings.** You will then see the LAN Settings page. On this page you can configure the LAN IP, subnet mask, and default gateway IP addresses.

LAN Settings

IP Address	192 . 168 . 1 . 1
Subnet Mask	255 . 255 . 255 . 0
Default Gateway Address	0 . 0 . 0 . 0

HELP   APPLY   CANCEL

➤ **IP Address:** enter the IP address of the Access Point.
➤ **Subnet Mask:** enter a subnet mask for the IP address.
➤ **Default Gateway Address:** enter a gateway IP for the Access Point.
➤ Click on the **Apply** button to confirm and save the changes.

4.5 Wireless

➤ Click on the **Wireless** link on the navigation bar, you will then see two options: General and 80211g. Each one is described in detail below.

4.5.1 General

➤ Click on the **General** link on the navigation bar. On this page you can select for the Access Point, and choose to enable or disable the 2.4GHz radio.

> ➤ **2.4 GHz Radio**: select **Disable** or **Enable** for the 2.4GHz radio.
> ➤ Select a radio button for the type of device you would like this to be. Options available are: **Access Point**, **Wireless Client**, and **Repeater**. If you select **Access Point**, you are not required to enter any additional information. If you select **Wireless Client**, you are required to enter the MAC address of the remote Access Point. If you select **Repeater**, you are required to enter the MAC address of the Access Point. If you do not know the MAC address of the Access Point, click on the **Site Survey** button to view and select one from the list.
> ➤ Click on the **Apply** button to confirm and save the changes.

4.5.2   802.11g

> ➤ Click on the **802.11g** link on the navigation bar. On this page you can configure the 802.11g settings.

> ➢ **SSID:** enter the SSID of the wireless network. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.
> ➢ **Suppress SSID:** place a check in this box if you would like the SSID to be hidden from other Access Points or a site survey.
> ➢ **Wireless Mode:** select a data rate from the drop-down menu. One option is 11Mbps and the other is 54Mbps.
> ➢ **Security:** place a check is this box if you would like to use **WPA** only. If you would like to configure a more detailed security, click on the **Edit Security Setting** button. This option is described in the next section.
> ➢ **Data Rate:** select a data rate from the drop-down list; by default **Best** is selected.
> ➢ **Transmit Power:** select a transmit power from the drop-down list; by default **full** is selected.
> ➢ **Antenna Diversity:** select **Best**, **1** or **2** from the drop-down list.
> ➢ **Beacon Interval (20-1000):** enter a value between 20 and 1000 for the beacon interval. Beacons announce the existence for the 802.11 networks at regular intervals.
> ➢ **Data Beacon Rate DTIM (1-16384):** enter the data beacon rate; the default rate is 1.
> ➢ **Fragment Length (256-2346):** enter a value between 256 and 2346 for the

fragment length.

➤ **RTS/CTS Threshold (256-2346):** enter a value between 256 and 2346 for the RTS/CTS threshold. Any packet in the RTS/CTS handshake larger than the specified size will be discarded.

➤ **Short Preamble:** use this radio button to specify short preamble usage. When **Enable** is selected, both short and long preambles are used. When **Disable** is selected only long preambles are used.

➤ **Allow 2.4GHz 54Mbps Stations Only:** use this radio button to Enable or Disable the association of 2.4GHz Mbps station only.

➤ Click on the **Apply** button to confirm and save the changes.

4.5.2.1   Security Setting

➤ **Security Mode:** select a security mode; options available are **Disabled**, **Pre-shared Key**, or **Dynamic**.

➤ **Key Entry Method:** select a type of key method; options available are **Hexadecimal** or **Ascii Text**.

➤ **Default Shared Key:** select a default-shared key, and then enter the key in the **Encryption Key** text box. From the **Key Length** drop down list, select **none**, **64-bit**, **128-bit** or **152-bit**.

➤ **Access Control List:** select Enable or Disable for MAC access control lists. Then click on the **Edit ACL Settings** button.

4.5.2.2 Security Server Settings

RADIUS Server

Domain Name Server IP Address	[ ] . [ ] . [ ] . [ ]
Domain Name Server	[ ]
RADIUS Server	[ ]
RADIUS Port	[1812]
RADIUS Secret	[ ]
5GHz Key Source	Local ☑ Remote ☐

BACK   HELP APPLY CANCEL

➤ **Domain Name Server IP address:** enter the IP address of the domain name server.
➤ **Domain Name Server:** enter the name of the domain name server.
➤ **RADIUS Server:** enter the IP address of the RADIUS server.
➤ **RADIUS Port:** enter the port of the RADIUS server.
➤ **RADIUS Secret:** enter the password of the RADIUS server.
➤ **5GHz Key Source:** select a location of the RADIUS key. **Local** specifies that the RADIUS key is located in the AP. **Remote** specifies that the RADIUS key is located in the RADIUS server.
➤ Click on the **Apply** button to confirm and save the changes.

4.5.2.3 ACL Settings

> ➤ To delete an existing MAC ACL, click on the **Delete** button.
> ➤ Click on the **Add** button to add another MAC ACL.

Add New ACL

> ➤ **MAC Address**: enter the MAC address.
> ➤ **ACL Type**: select an ACL type from the drop-down list. Options available are **Allow, Deny, Default Shared Key, 64-bit, 128-bit** or **152-bit.**
> ➤ **Unique Key:** this is only required if a unique key is used in the ACL type.
> ➤ Click on the **Apply** button to confirm and save the changes.

4.6 Statistics

> ➤ Click on the **Statistics** link on the navigation bar, you will then see the 2.4GHz Statistics options.

4.6.1   2.4 GHz Statistics

➤   Click on the **2.4GHz Statistics** link on the navigation bar. You will then see a list of stations that are currently part of the BSS.

2.4GHz Statistics

This shows the Access Point and the stations that are currently part of the BSS.

ID	MAC Address	State
AP	00:02:6F:BE:F0:F6	up

➤

2.4GHz BSS Stats
2.4GHz AP is up
Wireless Mode: 2.4GHz 54Mbps (802.11g)

Authentication Type	Encryption	Cipher Advertised
Open System	no	None

Authentication	Deauthentication	Association	Disassociation	Reassociation
7	9	7	3	0

	MSDU	Data	Multicast	Management	Control	Errors
Receive	817603	292	99	817311	0	3058529
Transmit	12501	318	329	19700	0	7523

Receive Errors	Discarded Frames	Duplicate Frames	CRC Errors	Decrypt Errors	PHY Errors	DMA Errors
3058529	10	10	223954	0	2834575	0

Transmit Errors	Discarded Frames	Excessive Retries	DMA Errors
7523	7518	7523	0

Appendix A – Specifications

1. General

Radio Data Rate (Auto-rate capable)	802.11g : 6, 9, 12, 18, 24, 36, 48 & 54Mbps 802.11b : 1, 2, 5.5, 11Mbps
Network Standards	WECA (Wi-Fi & Wi-Fi5 Compliant), IEEE802.11, IEEE802.11g draft, IEEE802.11b, draft IEEE802.11e, f, h and I standards, IEEE802.11x (Optional)
Security	IEEE802.11x Support for LEAP (Optional) WPA – Wi-Fi Protected Access (64, 128, 152-WEP with TKIP)
Network Architecture	Support ad-hoc, peer-to-peer networks and infrastructure communications to wired Ethernet networks via Access Point
Access Protocol	CSMA/CA with ACK
Roaming	IEEE802.11b compliant
Operating Voltage	3.3V/5V
Regulation Certifications	FCC Part 15/UL, ETSI 300/328/CE
LED Indicator	RF Link activity

2. RF Information

Frequency Band	802.11b/g : 2.412 to 2.462GHz (United States)
Modulation Technology	**802.11g :** OFDM (64-QAM, 16-QAM, QPSK, BPSK) **802.11b :** DSSS (DBSK, DQPSK, CCK)
Receive Sensitivity (Typical)	802.11b/g : -91dBm@1Mbps, -85dBm@9Mbps, -77dBM@36Mbps -89dBm@2Mbps, -82dBm@12Mbps, -76dBM@48Mbps -87dBm@5.5Mbps, -80dBm@18Mbps, -73dBM@ 54Mbps -86dBm@6Mbps, -78dBm@24Mbps
Transmit Output Power	**802.11b/g :** Up to 21dBm

3. Environmental

Temperature Range	-10℃ to 60℃ (14℉ to 140℉) – Operating -40℃ to 70℃ (-40℉ to 158℉) - Storage
Humidity (non-	5% to 95% Typical

condensing)

4. Physical Specifications

Interface	Mini PCI TypeIII A
Antenna	Two Antenna Connectors(U.FL)
Dimensions	50.9(L) mm x 59.6(W) mm x 4.8.(H) mm 2 (L) in x 2.3(W) in x 0.2.(H) in

Appendix B Regulatory Compliance Information

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one 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.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further <u>transmitter</u> test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, AP,Router, etc.).

IMPORTANT NOTE: In the event that these conditions <u>can not be met</u> (for example certain AP configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID <u>can not</u> be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example :WireLess LAN AP). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: NI3-AT30V216".

Manual Information That Must be Included

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the users manual of the end product which integrate this module.

The users manual for OEM integrators must include the following information in a prominent location " IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.