

Wireless Networker  
LA-5033 PCI Adapter &  
LA-5030 PC Card

User Guide

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4,896,026; 4,897,532; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461;  
5,113,445; 5,130,520; 5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149; 5,180,904; 5,216,232; 5,229,591;  
5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 5,260,553; 5,262,627; 5,262,628; 5,266,787; 5,278,398;  
5,280,162; 5,280,163; 5,280,164; 5,280,498; 5,304,786; 5,304,788; 5,306,900; 5,324,924; 5,337,361; 5,367,151; 5,373,148;  
5,378,882; 5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140; 5,412,198; 5,418,812; 5,420,411; 5,436,440;  
5,444,231; 5,449,891; 5,449,893; 5,468,949; 5,471,042; 5,478,998; 5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577;  
5,528,621; 5,532,469; 5,543,610; 5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202;  
5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,668,803; 5,675,139; 5,693,929; 5,698,835; 5,705,800; 5,714,746;  
5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,731;  
5,808,287; 5,811,785; 5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050; 5,848,064; 5,850,078; 5,861,615;  
5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,478; 5,917,173; 5,920,059; 5,923,025; 5,929,420;  
5,945,658; 5,945,659; 5,946,194; 5,959,285; 6,002,918; 6,021,947; 6,029,894; 6,031,830; 6,036,098; 6,047,892; 6,050,491;  
6,053,413; 6,056,200; 6,065,678; 6,067,297; 6,082,621; 6,084,528; 6,088,482; 6,092,725; 6,101,483; 6,102,293; 6,104,620;  
6,114,712; 6,115,678; 6,119,944; 6,123,265; 6,131,814; 6,138,180; 6,142,379; 6,172,478; 6,176,428; 6,178,426; 6,186,400;  
6,188,681; 6,209,788; 6,209,789; 6,216,951; 6,220,514; 6,243,447; 6,244,513; 6,247,647; 6,308,061; 6,250,551; 6,295,031;  
6,308,061; 6,308,892; 6,321,990; 6,328,213; 6,330,244; 6,336,587; 6,340,114; 6,340,115; 6,340,119; 6,348,773; D305,885;  
D341,584; D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250; D405,077; D406,581;  
D414,171; D414,172; D418,500; D419,548; D423,468; D424,035; D430,158; D430,159; D431,562; D436,104.  
5,912,662; 6,011873; 6,080,001; 6,234,389; 6,193,152B1;  
Invention No. 55,358; 62,539; 69,060; 69,187 (Taiwan); No. 1,601,796; 1,907,875; 1,955,269 (Japan); European Patent 367,299;  
414,281; 367,300; 367,298; UK 2,072,832; France 81/03938; Italy 1,138,713

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Horizontal line



# Chapter 1 Introduction

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The Wireless Networker LA-5030 PC Card and LA-5033 PCI Adapter allow PC Card slot and PCI slot equipped devices to connect to a Wi-Fi IEEE 802.11 a, b or g wireless local area network (LAN), or communicate directly with other mobile devices enabled for wireless LAN connectivity.

- LA-5030 and LA-5033 adapters support the IEEE 802.11b, g, and a WiFi compliance specifications. This open architecture allows LA-5030 AND LA-5033 devices to communicate with wireless devices from other manufacturers that conform to the same specifications.
- LA-5030 and LA-5033 adapters allow mobile devices to roam throughout large facilities while remaining connected to the network.
- LA-5030 antenna diversity allows adapters to alternate between antennas with the best reception, increasing overall performance.
- LA-5030 and LA-5033 adapters allow the establishment of ad-hoc wireless workgroup networks.
- LA-5030 and LA-5033 adapters are protocol-independent, allowing mobile devices to communicate with a wide range of servers, hosts and systems.





## Chapter 2 **About the LA-5030 PC Card & LA-5033 PCI Adapter**

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A wireless LAN PCI adapter or PC Card allows a client PC to be connected to a Symbol wireless network.

Features Include:

- Operating mode options for access point or peer-to-peer associations
- Low-power operation for battery-powered devices with PC Card slots
- Standard NDIS (Network Driver Interface Specification) drivers
- Windows 2000 and XP operating system support
- WEP, WPA-PSK, 802.1x, EAP security
- Site survey capability
- Wi-Fi Protected Access (WPA)
- Power management. Disabled, Dynamic, and Maximum
- Rogue AP Detection

### 2.1 Installation Prerequisites

Keep the adapter serial number in a safe place. The Support Center uses the information to reference warranty and service contract data.

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**Note:** Verify the model indicated on the adapter before use. Contact the Symbol Support Center if an item is missing or not functioning. Refer to Appendix C for Customer Support contact information.

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Avoid exposing the adapter to liquids or abrasive materials.

### 2.1.1. LA-5033 PCI Adapter System Requirements

The LA-5033 PCI Adapter installation requires:

- a system with an available PCI slot
- Internet access (<http://www.symbol.com/services/downloads>) for the required driver and Symbol a/g Adapter Configuration Utility download
- an available interrupt (IRQ)???
- an available I/O port address

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**Note:** FCC RF exposure requirements state the PCI adapter external antenna should be positioned so it is at least 20 cm (8 inches) away from the user.

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### 2.1.2 LA-5030 PC Card System Requirements

The LA-5030 PC Card installation requires:

- a computer with a Type II PC Card slot
- Internet access (<http://www.symbol.com/services/downloads>) for the required LA-5030 driver and Symbol a/g Adapter Configuration Utility download

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**Note:** To comply with FCC and Industry Canada exposure requirements, this hand-held device is approved for operation near a user's hand when there is 20 cm or more between the antenna and the user's body.

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## 2.2 Operating Modes

The Symbol Wireless Networker a/g Adapter Configuration Utility installs with the Windows driver. Use the Configuration Utility to select the operational mode, ESSID, encryption algorithm, authentication scheme and power consumption mode used with the LA-5030 PC Card or LA-5033 PCI adapter.

The LA-5033 PCI adapter and LA-5030 PC Card support the following operational modes:

- Use **Infrastructure** to operate with an access point (AP). The adapter can roam freely between AP cells in the network or transmit and receive across subnets. Mobile Units (MUs) appear as network nodes to other devices in the network. Infrastructure is the adapter default mode.
- Select **Ad Hoc** to form peer-to-peer LA-5030 networks without APs. Use Ad Hoc to create networks within established network coverage areas or networks free of the constraints of access point provided radio coverage. The MU starting the Ad Hoc network (the first LA5030 adapter transmitting a beacon) determines the channel and data rate used for the other LA-5030 adapters within the network using the same ESSID.

The Symbol Ad Hoc mode is an *Independent Basic Service Set* (IBSS) mode requiring no backbone infrastructure. The lack of an access point results in MUs alternating the duty of sending beacons. There are no relay functions in an Ad Hoc (IBSS) network, not every MU is capable of communicating with other MUs due to the range

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limitations. Consequently, all stations need to be within range of each other.

## 2.3 54Mbps Operation and Frequency Bands

The LA -5033 PCI adapter and LA -5030 PC Card support a maximum 54Mbps data rate. The adapter automatically shifts data rate when unable to maintain a high quality connection at 54Mbps. When the WLAN adapter detects improved signal strength, it shifts to an increased data rate, up to the maximum 54Mbps. The following table indicates data rates and modulation method that can be used in different bands (standards).

IEEE 802.11a or IEEE 802.11g		IEEE 802.11b	
Data Rate	Modulation	Data Rate	Modulation
6Mbps	BPSK	1Mbps	DBPSK
9Mbps	BPSK	2Mbps	DQPSK
12Mbps	QPSK	5.5Mbps	CCK
18Mbps	QPSK	11Mbps	CCK
24Mbps	16QAM		
36Mbps	16QAM		
48Mbps	64QAM		
54Mbps	64QAM		

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USA Frequency Band	European Frequency Band	Japan Frequency Band
5.15 - 5.25 GHz	5.15 - 5.35 GHz	4.90 – 5.0 GHz
5.25 - 5.35 GHz	5.47 - 5.725 GHz	5.15 – 5.25 GHz
5.725 - 5.825 GHz		

The following factors can dynamically alter the data rate:

- signal strength between the access point and adapter
- the ratio of good transmitted packets vs attempted packets transmitted, but not received
- the MU finds a higher transmit rate with another AP.

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**Note:** Physical obstructions and numerous devices operating in close proximity to one another negatively impact the ability to maintain an 11Mbps access point association.

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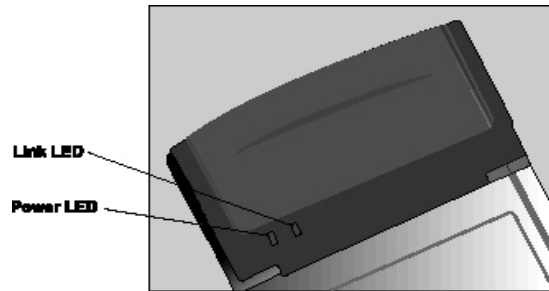
## 2.4 Power Management - TBD

## 2.5 LA-5033 PCI Adapter and LA-5030 PC Card LED Descriptions - TBD

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(T B D)

(PCI Adapter)



(PC Card)

There are two LED Indicators on the LA -5030 PC Card. The following table describes the meaning of each LED indicator:

LED	MEANING
POWER	Indicates that the card is powered on when the LED lights up.
LINK	Indicates link status. The LED lights up while the wireless connection is linked.

## 2.6 Wi-Fi Protected Access (WPA)

Wi-Fi Protected Access (WPA) is a security standard for systems operating with a Wi-Fi wireless connection. WPA is an upgrade from WEP, the current security standard that is outdated. WEP security's lack of user authentication mechanisms is addressed by WPA. Compared to WEP, WPA provides superior data encryption and user authentication.

The WPA enhanced encryption method addresses the weaknesses of WEP by including:

- a per-packet key mixing function

- 
- a message integrity check
  - an extended initialization vector with sequencing rules
  - a re-keying mechanism.

WPA uses an encryption method called *Temporal Key Integrity Protocol* (TKIP). WPA employs 802.1X and *Extensible Authentication Protocol* (EAP). Access points can operate in a combination of WEP/WPA modes to support both WEP and WPA Windows 2000 and XP clients.

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**Note:** For Windows XP users, if you want to use Zero Config to set WPA, ensure Service Pack #1 and WPA Hotfix Q815485 is installed.

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### 2.6.1 WPA-PSK

Wi-Fi Protected Access – Pre Shared Key (WPA-PSK) is a type of WPA providing the same durable encryption protection for users without an enterprise authentication server. With WPA-PSK, encryption keys are automatically re-keyed and authenticated after a designated period or after the transmission of a specified number of packets.

## 2.7 Draft IEEE 802.11h Compatibility--TBD

## 2.8 Symbol Value Add Features--TBD

**(Like Load Balancing, Rogue AP detection?)**

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## 2.9 Software Installation Options

Symbol recommends using Symbol a/g Adapter Configuration Utility to configure and manage LA-5030 adapter settings. The installation of Symbol a/g Adapter Configuration Utility is part of the device driver installation procedure.

Alternatively, the adapter can be managed using the Windows Zero Config utility. Zero Config is a Microsoft provided utility shipped with Windows 2000 and XP.

Use Symbol a/g Adapter Configuration Utility for a more diverse set of driver configuration settings designed specifically for use with the LA-5030 PC Card and LA-5033 PCI adapter and its custom feature set.

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**Note:** The Symbol a/g Adapter Configuration Utility and the Microsoft Zero Config utility cannot function if enabled simultaneously. Do not enable the Microsoft Zero Config utility if using the Symbol a/g Adapter Configuration Utility.

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## Chapter 3 LA-5033 PCI Adapter Installations

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The installation of the LA-5033 PCI adapter requires the physical installation of the adapter, the driver installation and the Symbol a/g Adapter Configuration Utility initial setup be completed as one process.

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**Note:** Use proper grounding for the environment when handling computer components.

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### 3.1 Windows 2000 Driver and Configuration Utility Installations

To install the LA-5033 PCI adapter, driver and Configuration Utility in Windows 2000:

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**Note:** A **Microsoft Digital Signature Not Found** dialog box could appear during the installation stating a digital signature was not found for either the Symbol adapter or the “unknown software package.” A Microsoft digital signature is not required for the driver or Configuration Utility installation. Click **Yes** to continue. If **No** is clicked, restart the installation.

---

1. Ensure the previously installed driver and Configuration have been removed (if necessary).
2. If downloading the driver and Configuration Utility from the Symbol Web site (<http://www.symbol.com/services/downloads>), extract the files to the computer.
3. Power off the computer before installing the PCI adapter.
4. Remove the computer cover.
5. Locate an available PCI slot in the computer.

- 
6. Remove the retaining screw and bracket for the slot.
  7. Align the adapter with the slot and insert firmly. Verify the adapter seats in the slot evenly.
  8. Verify the antenna connectors on the back of the PC are exposed.
  9. Secure the adapter to the chassis with a retaining screw.
  10. Replace the computer cover.
  11. Power on the desktop computer.  
The Windows Found New Hardware Wizard displays.
  12. Click **Next** to continue with the driver and Configuration Utility installation.  
The Windows Found New Hardware Wizard prompts the user to specify a driver installation method.
  13. Select the **Search for a suitable driver for my device** checkbox.  
Click **Next**.
  14. Select the **Specify a location** checkbox. Click **Next**.  
The Windows Found New Hardware Wizard prompts for the location of the driver and Configuration Utility files.
  15. Browse to the location of Symbol Web site file download and select **autorun.inf**. Click **Open**.
  16. Click **OK** from within the Found New Hardware Wizard to proceed with the installation.  
The Windows hardware installation window displays the location of the files. Click **Next**.  
The driver and Configuration Utility files download to the desktop computer.
  17. Click Finish.

---

*What displays to notify of a successful install ???.*

18. Refer to Appendix [A](#) for instructions on using the Configuration Utility.

## 3.2 Installing the LA-5033 PCI Adapter and Driver for use with Windows 2000 Zero Config

Use the Windows 2000 Zero Config utility as the adapter management tool if using the LA-4123 PCI adapter without the Symbol Configuration Utility or if using a 3<sup>rd</sup> party software supplicant. The Symbol Configuration Utility does not function properly while 3<sup>rd</sup> party software supplicants are loaded on the system.

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**Note:** If a version of the Symbol Configuration Utility resides on the system, use Windows 2000 Add/Remove Programs to uninstall it before installing the driver.

---

To install the LA-5033 PCI adapter and driver without the Symbol Configuration Utility in Windows 2000:

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**Note:** A **Microsoft Digital Signature Not Found** dialog box could appear during the installation stating a digital signature was not found for either the Symbol adapter or the “unknown software package.” A Microsoft digital signature is not required for the driver installation. Click **Yes** to continue. If **No** is clicked, restart the installation.

---

1. Ensure the previously installed driver and Configuration Utility have been removed (if necessary).
2. If downloading the driver files from the Symbol Web site (<http://www.symbol.com/services/downloads>), extract the files to the computer.

- 
3. Power off the computer before installing the PCI adapter.
  4. Remove the computer cover.
  5. Locate an available PCI slot in the computer.
  6. Remove the retaining screw and bracket for the slot.
  7. Align the adapter with the slot and insert firmly. Verify the adapter seats in the slot evenly.
  8. Verify the antenna connectors on the back of the PC are exposed.
  9. Secure the adapter to the chassis with a retaining screw.
  10. Replace the computer cover.
  11. Power on the desktop computer.

The Windows 2000 **Found New Hardware Wizard** displays.
  12. Click **Next** to continue.

The Windows Found New Hardware Wizard prompts the user to specify a driver installation method.
  13. Select the **Search for a suitable driver for my device** checkbox. Click **Next**.
  14. Select the **Specify a location** checkbox. Click **Next**.

The Windows Found New Hardware Wizard prompts for the location of the driver files.
  15. Browse to the location on the system where the files reside and select the Driver Only Installer.exe application from the top-level folder. Click **Open**.
  16. Click **OK** from within the Found New Hardware Wizard to proceed with the installation.

The Windows Found New Hardware Wizard displays the location of the files. Click **Next**.
  17. Click **Finish** from within the Windows Found New Hardware Wizard.

- 
18. Consult the system administrator for information on configuring the LA-5033 PCI adapter using the Windows 2000 Zero Config utility.

### 3.3 Windows XP Driver and Configuration Utility Installations

Windows XP LA-5033 PCI adapter installations require the physical installation of the adapter, driver and the installation of the Symbol Configuration Utility.

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**Note:** A **Hardware or Software Installation** dialog box could display during the Configuration Utility and driver installation stating the software and Symbol adapter have not passed Windows Logo testing to verify compatibility with Windows XP. Click **Continue Anyway**. If **STOP Installation** is clicked, restart the installation.

---

To install the PCI adapter, driver and Configuration Utility:

1. Ensure the previously installed Configuration Utility has been removed (if necessary).
2. If downloading the driver and Configuration Utility from the Symbol Web site (<http://www.symbol.com/services/downloads>), extract the files to the computer. Power off the computer before installing the adapter.
3. Remove the computer cover.
4. Locate an available PCI slot in the computer.
5. Remove the retaining screw and bracket for the slot.
6. Align the adapter with the slot and insert firmly. Verify the adapter seats in the slot evenly.
7. Verify the antenna connectors on the back of the PC are exposed.

- 
8. Secure the adapter to the chassis with a retaining screw.
  9. Replace the computer cover.
  10. Power on the desktop computer.
  11. Go to the location on the system where the software files were downloaded from the Symbol Web site and launch **setup.exe**.  
A **Symbol Installer** window displays.
  12. Click **Next** to continue.  
A **Symbol Installer** window displays prompting the user to select the installation method appropriate to the operating system used.
  13. Select the **Install XXXXXXXX on this computer** checkbox.
  14. Click **Next** to continue.  
The **Software License Agreement** window displays.
  15. Click **Yes** to accept the terms of the Software License Agreement.  
*The Symbol Installer window displays, prompting the user to enable 802.11d International Roaming support if connecting to components supporting 802.11d International Roaming.*
  16. Check the **International Roaming** checkbox if applicable. Click **Next** to continue.  
The **Installer** window displays verifying the installation of Configuration Utility on the Windows XP computer. Click **Next** to continue.  
The Configuration Utility updates on the Windows XP system.  
The **Windows Found New Hardware Wizard** displays identifying the Symbol LA-5033 PCI adapter.
  17. Select the **Install the software automatically** checkbox. Click **Next**.  
The driver files download to the desktop computer. Click **Finish**.  
*What displays to notify of a successful install ???.*

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Refer to Appendix [A](#) for instructions on using the Configuration Utility.

## 3.4 Installing the LA-5033 PCI Adapter and Driver for use with Windows XP Zero Config

Windows XP PCI driver only installations require the physical installation of the PCI adapter and the installation of the device driver.

Use the Windows XP Zero Config utility as the adapter management tool if using the Symbol PCI adapter without the Symbol Configuration Utility or if using a 3<sup>rd</sup> party software supplicant. The Symbol Configuration Utility does not function properly while 3<sup>rd</sup> party software supplicants are loaded on the system.

---

**Note:** A **Hardware or Software Installation** dialog box could display during the driver installation stating the software and Symbol PCI adapter have not passed Windows Logo testing to verify compatibility with Windows XP. Click **Continue Anyway**. If **STOP Installation** is clicked, restart the installation.

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To update the driver without the Symbol Configuration Utility in Windows XP:

1. Verify Windows XP SP1 is installed to use the latest Symbol driver in Windows XP and ensure the latest feature set is available.
2. If downloading the driver files from the Symbol Web site (<http://www.symbol.com/services/downloads>), extract the files to the computer.
3. Power off the computer before installing the adapter.
4. Remove the computer cover.
5. Locate an available PCI slot in the computer.

- 
6. Remove the retaining screw and bracket for the slot.
  7. Align the adapter with the slot and insert firmly. Verify the adapter seats in the slot evenly.
  8. Verify the antenna connectors on the back of the PC are exposed.
  9. Secure the adapter to the chassis with a retaining screw.
  10. Replace the computer cover.
  11. Power on the desktop computer.
  12. Go to the location on the system where the files reside and select the Driver Only Installer.exe application from the top-level folder.

The Symbol Technologies, Inc. Driver Only Installer dialog displays. Click **Next** to continue.

The driver only installer window displays stating the driver files are in the process of being transferred.

The **Windows XP Found New Hardware** wizard displays.
  13. When prompted for an installation method, select the **Install the software automatically (Recommended)** checkbox.

Click **Next**.
  14. Click **Finish** when prompted.

The Driver Only Installer displays stating the installation is completed. Click **OK**.
  15. Use the Windows Zero Config tool as required to connect to a network and configure the Symbol WLAN adapter. Consult the system administrator for information on configuring the access point and associated Symbol adapter for EAP security support.







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7. Click **Yes** to accept the terms of the Software License Agreement.

*The Symbol Symbol a/g Adapter Configuration Utility Installer window displays, prompting the user to disable 802.11d International Roaming support if using non-Symbol WLAN infrastructure components that do not support the International Roaming feature.*

8. *Insert the LA-5030 adapter when prompted by the Symbol Symbol a/g Adapter Configuration Utility Installer - Information window.*

---

**Note:** The **Microsoft Digital Signature Not Found** dialog box could appear at this point in the installation. A Microsoft digital signature is not required for the driver installation. Click **Yes** to continue.

---

Click **OK** when the display indicates the installation is complete.

*What displays to indicate the installation is complete?*

9. Proceed to *Configuring the LA-5030 Adapter in Windows 2000* on page [29](#).

## 4.2 Installing the Driver in Windows 2000 For Use With the Zero Config Utility

Use the Windows 2000 Zero Config utility as the adapter management tool if using the Wireless Networker LA-5030 PC Card without the Symbol Configuration Utility or if using a 3<sup>rd</sup> party software supplicant. The Symbol Configuration Utility does not function properly while 3<sup>rd</sup> party software supplicants are loaded on the system.

If a version of the Symbol Configuration Utility resides on the system, use the Windows 2000 Add/Remove Programs utility to uninstall it before installing the driver.

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**Note:** The user is required to have Windows 2000 SP4 installed for full feature functionality.

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**Note:** A **Microsoft Digital Signature Not Found** dialog box could appear during the installation stating a digital signature was not found for either the Symbol adapter or the “unknown software package.” A Microsoft digital signature is not required for the driver installation. Click **Yes** to continue. If **No** is clicked, restart the installation.

---

To install the driver in for use with Zero Config:

10. Ensure the previously installed Windows 2000 driver has been removed.
11. If downloading the driver files from the Symbol Web site (<http://www.symbol.com/services/downloads>), extract the files to the computer. If using a CDROM for the driver installation, insert the CD and copy the driver files to the system.
12. Go to the location on the system where the files reside and select the executable (.exe file) for the driver only installation.

The Symbol Technologies Driver Only installer displays prompting the user to not insert the PC Card until prompted.

13. Click **Next** to continue.

The dialog window indicates the driver files are in the process of being transferred.

14. When prompted, insert the adapter in the system.

The Symbol Technologies Driver Only installer displays stating the installation is complete. Click **OK**.

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Consult the system administrator for information on configuring the access point and associated Symbol adapter for EAP security support using Windows 2000 Zero Config.

## 4.3 Removing the PC Card Driver in Windows 2000

If an existing version of the LA-5030 driver exists in the system, remove it and install the latest version from the Symbol Web site (<http://www.symbol.com/services/downloads>).

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**Note:** If the LA-5030 adapter was installed in the computer and setup.exe was launched (Web download installations) or a CDROM was inserted, the user is required to remove the driver from the system and begin the installation over.

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To remove a LA-5030 driver from the system in Windows 2000:

1. Click **Start** and select **Control Panel**.
2. Select the **Switch to Classic View** Windows 2000 option.
3. Select **System** and click on the **Hardware** tab.
4. Click the **Device Manager** button.
5. Double-click Network Adapters.
6. A list of the devices currently supported on the system by Windows 2000 displays.
7. Rick-click on the LA-5030 Wireless LAN PC Card and select **Uninstall**.
8. A **Confirm Device Removal** window warns the user the system will uninstall the device.
9. Select **OK**.

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Chapter 5 L

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## 5.1 Installing the LA-5030 PC Card Driver and Wireless Utility in Windows XP

Installing the LA-5030 driver in Windows XP requires the user to replace the Symbol LA-5030 driver provided by the Windows XP operating system with a newer version of the driver downloaded from the Symbol Website or software installation CDROM.

To install the LA-5030 driver in Windows XP:

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**Note:** Ensure the previously installed driver or Symbol a/g Adapter Configuration Utility has been removed (if necessary).

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**Note:** Windows XP Service Pack #1 is required on the system in order to support WPA with the LA-5030 adapter. To download the latest service pack, go to <http://www.support.microsoft.com>

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1. If downloading the driver and Symbol a/g Adapter Configuration Utility from the Symbol Web Site (<http://www.symbol.com/services/downloads>), extract the files to the computer.
2. Extract the driver files and launch **setup.exe**.  
A **Symbol Symbol a/g Adapter Configuration Utility Installer – Welcome** window displays.
3. Click **Next** to continue the Windows XP driver and Symbol a/g Adapter Configuration Utility installation.  
A **Symbol Symbol a/g Adapter Configuration Utility Installer** window displays prompting the user to select the installation method appropriate to the operating system used.



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## 5.3 Installing the Driver in Windows XP For Use With the Zero Config Utility

Use the Windows XP Zero Config utility as the adapter management tool if using the LA-5030 adapter without the Symbol a/g Adapter Configuration Utility.

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**Note:** If a version of the Symbol a/g Adapter Configuration Utility resides on the system, use Windows XP Add/Remove Programs to uninstall it before installing the driver for use with the Windows XP Zero Config utility.

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To install the driver without Symbol a/g Adapter Configuration Utility in Windows XP:

1. Ensure the previously installed Windows XP driver has been removed.. The user is required to have SP1 installed to use the latest LA-5030 driver in Windows XP.
2. If downloading the driver files from the Symbol Web site (<http://www.symbol.com/services/downloads>), extract the files to the computer.
3. Go to the location on the system where the files reside and select the Driver Only Installer.exe application from the top-level folder.  
The Symbol Technologies, Inc. Driver Only Installer dialog displays.. Click **OK** to continue.
4. The driver only installer window displays, stating the driver files are in the process of being transferred.  
The **Windows XP Found New Hardware** wizard displays.
5. When prompted for an installation method, select the **Install the software automatically (Recommended)** checkbox.  
Click **Next**.

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**Note:** A Hardware Installation dialog box could also display at this stage of the installation stating the LA -5030 adapter has not passed Windows Logo testing to verify its compatibility with Windows XP. Click **Continue Anyway**.

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6. Click **Finish** when prompted.
7. Use the Windows Zero Config tool as required to connect to a network and configure the LA -5030 WLAN adapter. Consult the system administrator for information on configuring the access point and associated LA -5030 adapter for EAP security support.

## Appendix **A Using the Wireless LAN Utility**

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### A.1 Installing Wireless LAN Utility

The Symbol a/g Adapter Configuration Utility comes bundled with the adapter. The driver and Symbol a/g Adapter Configuration Utility are available from the Symbol Web site at <http://www.symbol.com/services/downloads>.

Use Symbol a/g Adapter Configuration Utility to view and configure the adapter settings. Complete the driver installation instructions for Windows 2000 or XP to install Symbol a/g Adapter Configuration Utility.

### A.2 About the Wireless LAN Utility

Once installed, the Symbol a/g Adapter Configuration Utility starts automatically and appears as an icon on the task tray. The status icon changes in real-time to reflect the signal strength and availability of the adapter and the wireless network. Right-click the icon on the task tray to open the utility.

### A.3 Wireless LAN Utility Task Tray Icons

Wireless LAN Utility task tray icon displays the .....(TBD).

<b>ICON</b>	<b>Adapter Status</b>
	TBD TBD.
	(TBD)Out-of-network range

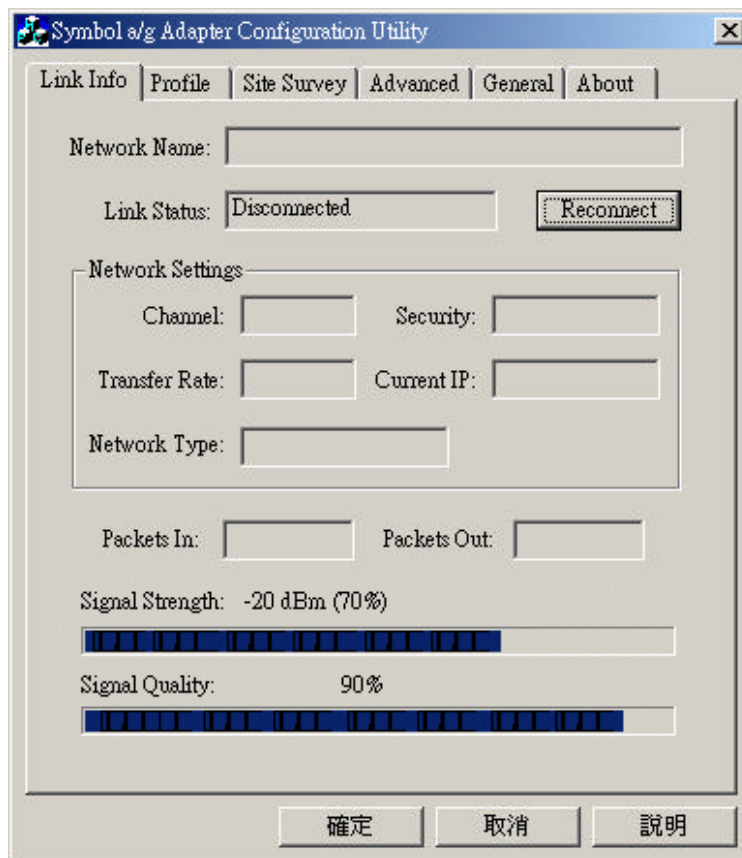


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The Symbol a/g Adapter Configuration Utility property pages contain wireless network and service quality information for the adapter.

## A.4 Link Info Page

The Link Info page provides information about the current link between the adapter and its wireless network connection.





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**Network Name-** The “Service Set Identifier” (SSID) of the wireless network used by the card.

**Link Status-** The current connection status of the card.

**Reconnect-** Use the control button to re-search the available wireless network. Sometime the wireless card is not able to establish a connection to the specified network because of link quality. In that case, click the Reconnect button to re-search again.

**Channel-** The channel the card is using. The possible channels are 1 through 11 and A-band allowed channels.

**Security-** The security used on the current wireless connection.

**Transfer Rate-** The current transfer rate in megabits per second. The possible transfer rates are 1, 2 , 5.5, 6, 9, 11, 18, 24, 36, 48, and 54 Mbps. Transfer Rate varies dynamically based on the link quality on the wireless connection.

**Network Connection Type-** The type of network the wireless card is connected to. The possible network types are: Infrastructure and Ad-hoc.

**Current IP-** The IP address of the current wireless connection.

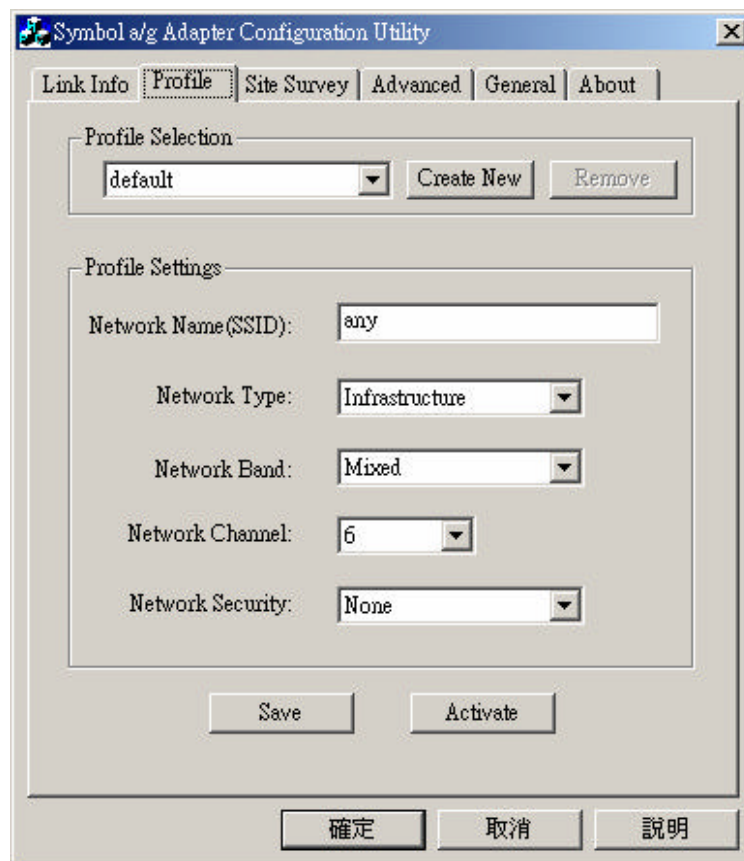
**Packets In/Packets Out-** This shows the amount of data transmitted and received by the wireless card since connection.

**Signal Strength-** Indicates the strength of the signal between the wireless card and the partner wireless device. A dBm value is shown along with a percentage value, eg. “-20 dbm (70%) “. A higher percentage indicates better signal strength. The indicator is be a “smooth” progress bar.

**Signal Quality-** Unit is in percentage. This is a Signal to Noise Ratio (SNR) indication. It shows how noisy the current environment is. Higher value indicates a better wireless environment.

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## A.5 Configuration Page



Use the Configuration Page to customize the settings of the wireless card and wireless network.

**Profile Selection-** The profile selection setting allows the user to save different configurations for different working environments. The “default”

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profile contains the initial configuration settings when the card is initially installed. Create a new profile by selecting the **Create New** button. An **Input Dialog** box displays prompting for the profile name. After a profile name is entered, make additional changes in the Profile Settings. Click **Save** button to save the changes, or click **Activate** to save the changes and make a wireless connection immediately. To modify an existing profile, select the profile from the dropdown list and make the desired changes and save it. To remove an existing profile, select the profile from the dropdown list, then click **Remove** button to remove it.

**Network Name (SSID)**- The network name determines the wireless network a wireless card can connect to. The name is case-sensitive and cannot exceed 32 characters. The name **any** is a special SSID. It allows a wireless device to connect to any available access points that it can find.

**Network Type**- The network type setting determines the architecture of the wireless network. Select Ad-Hoc or Infrastructure mode depending on your network type. The Ad-Hoc mode is used for peer to peer networks. It allows sharing of local resources between wireless cards without using a wireless Access Point. Infrastructure mode allows a wireless card to be integrated into an existing network through an Access Point. Infrastructure network permits roaming between Access Points while maintaining a connection to all network resources and providing additional features, such as power saving and extended range.

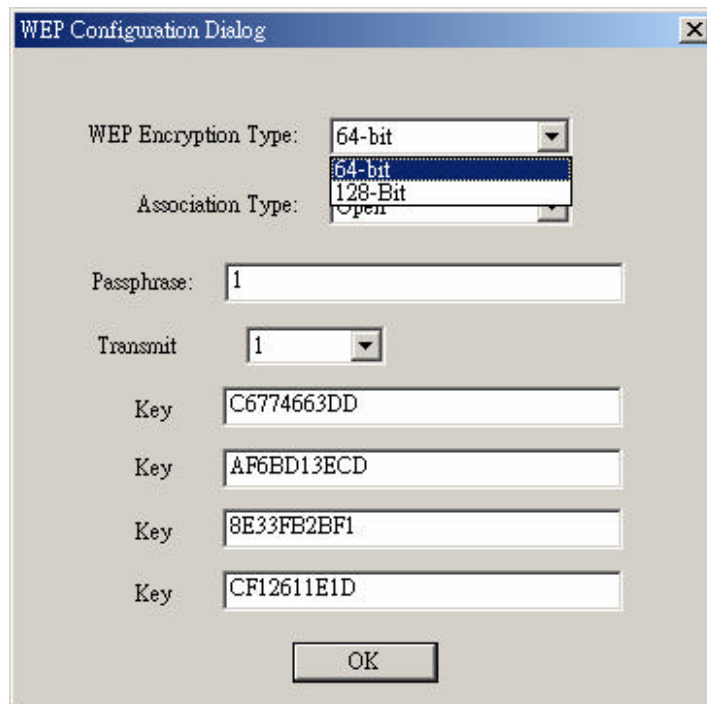
**Network Band**- The network band comes in Mixed, B/G-Band (2.4GHz), and A-Band (5GHz). Specify the band for the network in this location. The default is Mixed.

**Network Channel**- The channel setting is valid only when the Network Type is set to Ad-Hoc mode, and the target adapter is initiating an Ad Hoc network.

**Network Security**- allows the configuration of the security setting for the profile. A security setting box displays when selecting from the dropdown menu. There are 5 options in selection box: None, WEP, WPA-PSK, WPA-Radius and Radius. Each security type provides its own level of safety.

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## WEP-



**WEP Encryption Type** - The 64-bit and 128-bit WEP encryption algorithm is provided by RSA and uses RC4 encryption/decryption, which is based on a 40-bit key, 104-bit key and 128-bit key respectively. Select the same encryption used by the Access Point in order to interoperate.

**Association Type** - Includes Open and Shared mode.

**Passphrase** - Some Access Points use a Passphrase. The Passphrase automatically generates WEP keys. The primary reason for using Passphrase is to avoid using the long and difficult to remember WEP keys.

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**Note:** WEP keys are used for packet encryption. The Passphrase is used to save time. If a Passphrase is entered, the keys are generated in real time.

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**Transmit Key** - There are 4 WEP Keys available. Specify which key to use to encrypt the wireless packets by setting the Transmit Key.

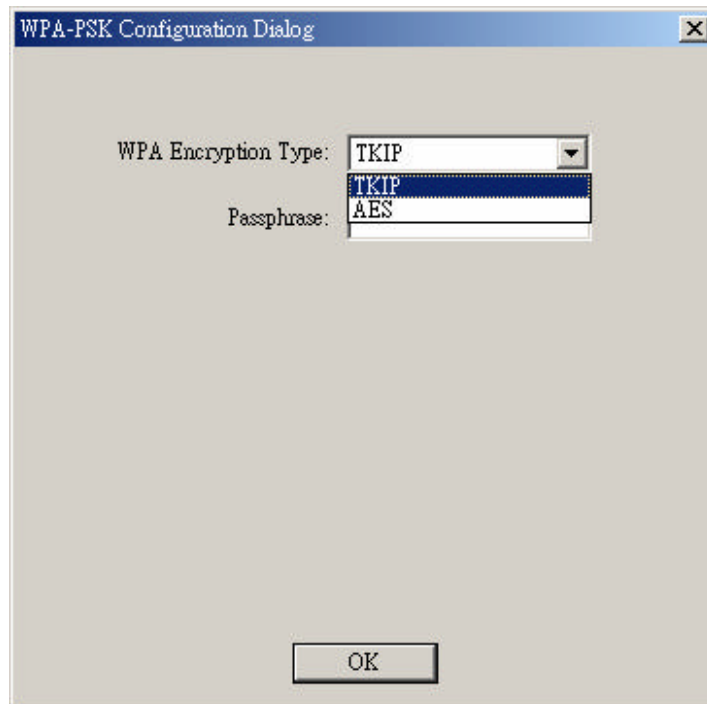
**Key 1-** This is 1<sup>st</sup> WEP key used for packet encryption. Note the key must be in HEX format.

**Key 2-** This is 2<sup>nd</sup> WEP key used for packet encryption. Note the key must be in HEX format.

**Key 3-** This is 3<sup>rd</sup> WEP key used for packet encryption. Note the key must be in HEX format.

**Key 4-** This is 4<sup>th</sup> WEP key used for packet encryption. Note the key must be in HEX format.

**WPA-PSK** - WPA-PSK is another pre-shared key encryption method. In order to use this method, obtain the passphrase used by the target Access Point. Packets are encrypted based on this passphrase.



**WPA Encryption Type** - TKIP and AES are the actual encryption algorithms used on the packets

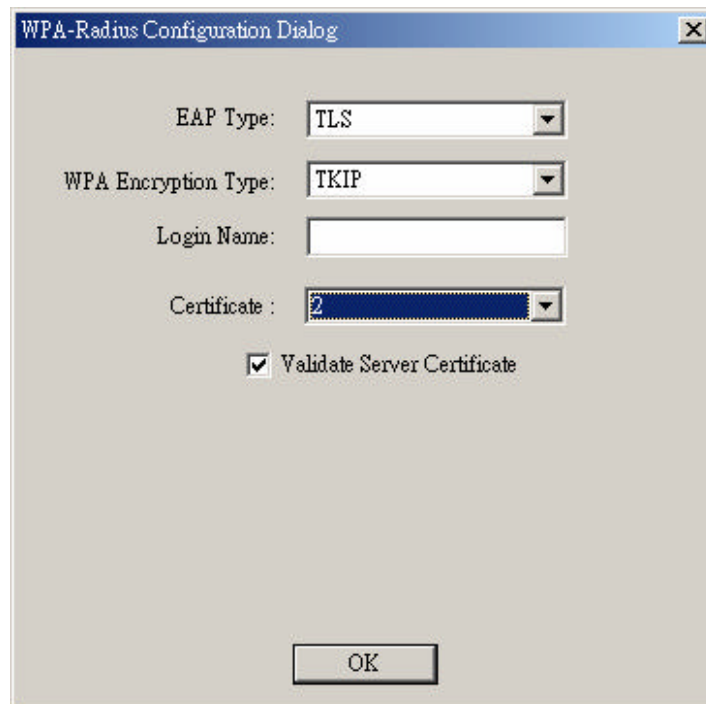
**Passphrase** - Enter the same passphrase (8~63 characters) on the target Access Point.

**WPA-Radius** - WPA-Radius provides both packet encryption and network/user authentication. The packets are encrypted using Auto algorithm; the network is verified to be the network that you want to connect to; and your identity is also verified by the network. This security method does not require a WPA passphrase. The server that authenticates the user identity issues a WPA passphrase automatically once it accepts the user's identity.

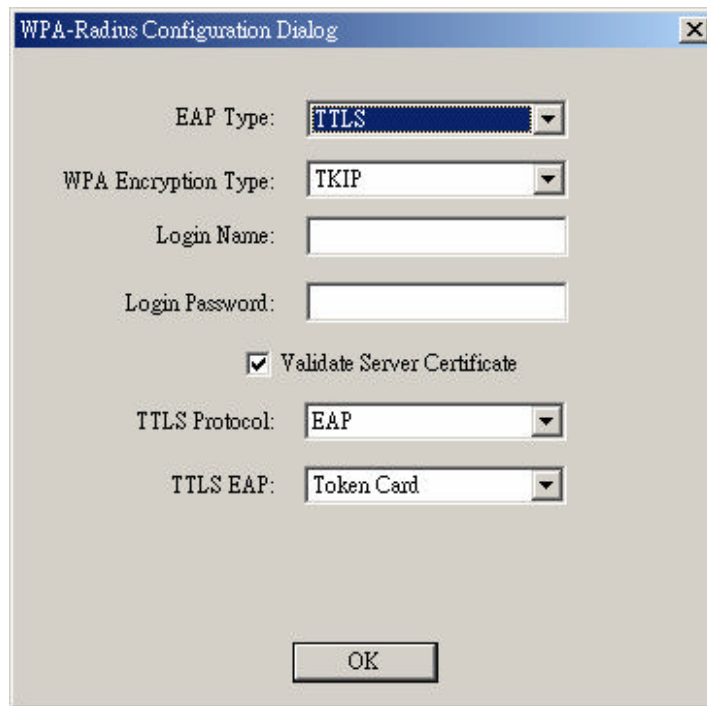
**EAP Type** - There includes TLS, TTLS, MD5, LEAP, and PEAP.

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**TLS** – TLS requires a login name and a certificate issued by the target Radius server. The login name and the certificate allow the Radius server to authenticate the user's identity. The user can choose to authenticate the identity of the Radius server by enabling the **Validate Server Certificate** check box.

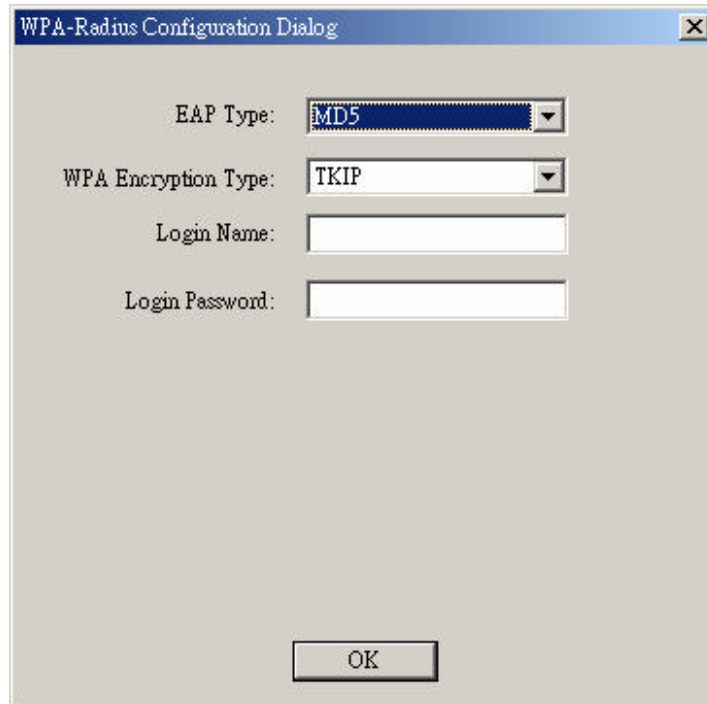


**TTLS**- TTLS requires a login name, password and additional TTLS protocols. The TTLS protocol should match the one on the target Radius server. Optionally authenticate the Radius server identity by checking **Validate Server Certificate** check box.

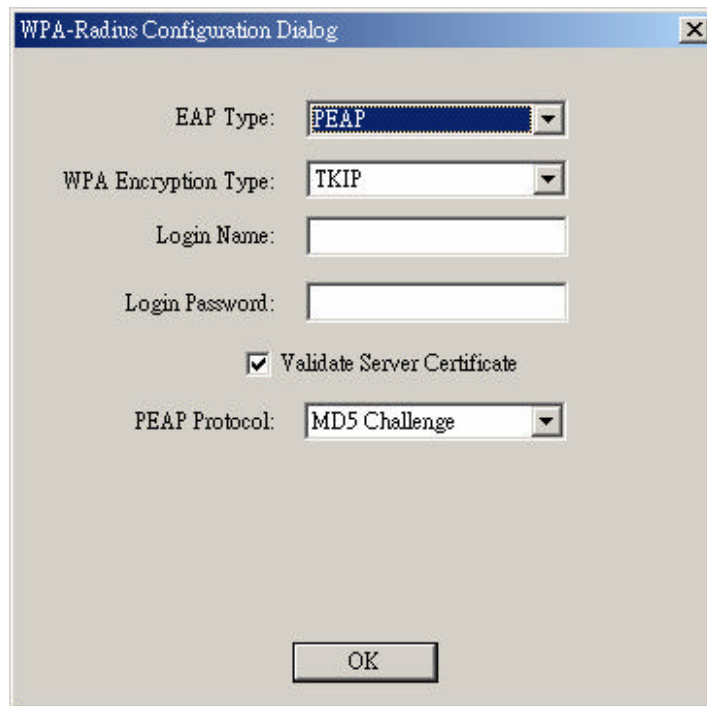


**MD5-** The MD5 method requires a login name and a login password.

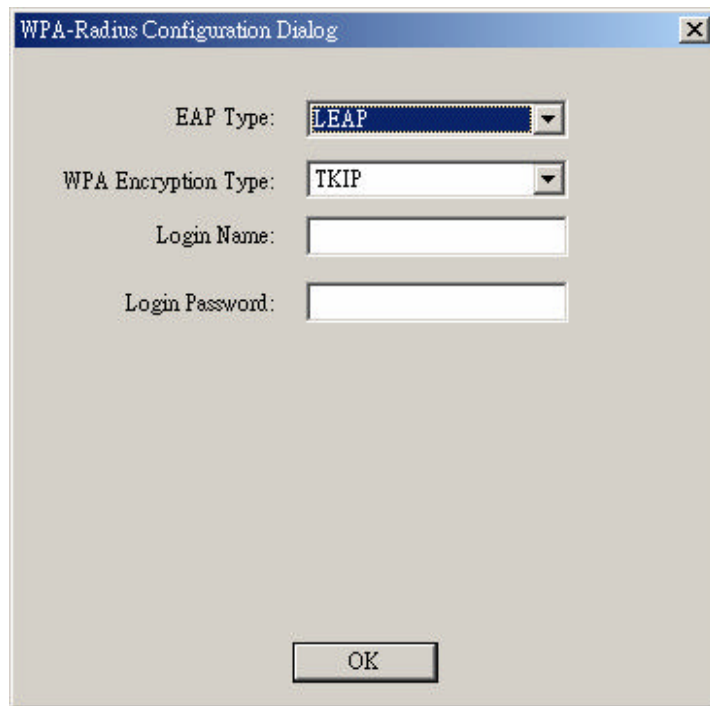




**PEAP** - PEAP requires a login name, password and a PEAP protocol. The PEAP protocol should match the one used on the target Radius server. Optionally authenticate the Radius server identity by checking **Validate Server Certificate** check box.



**LEAP** - LEAP is a Cisco based 802.1x authentication scheme. LEAP requires a login name and password for user authentication.



**WPA Encryption Type-** TKIP and AES are the encryption algorithms used on the packets

**Radius-** Radius is similar to WPA-Radius authentication; however, the user is not required to perform WPA encryption. Please refer to WPA-Radius for details.

Click **OK** button when finished.

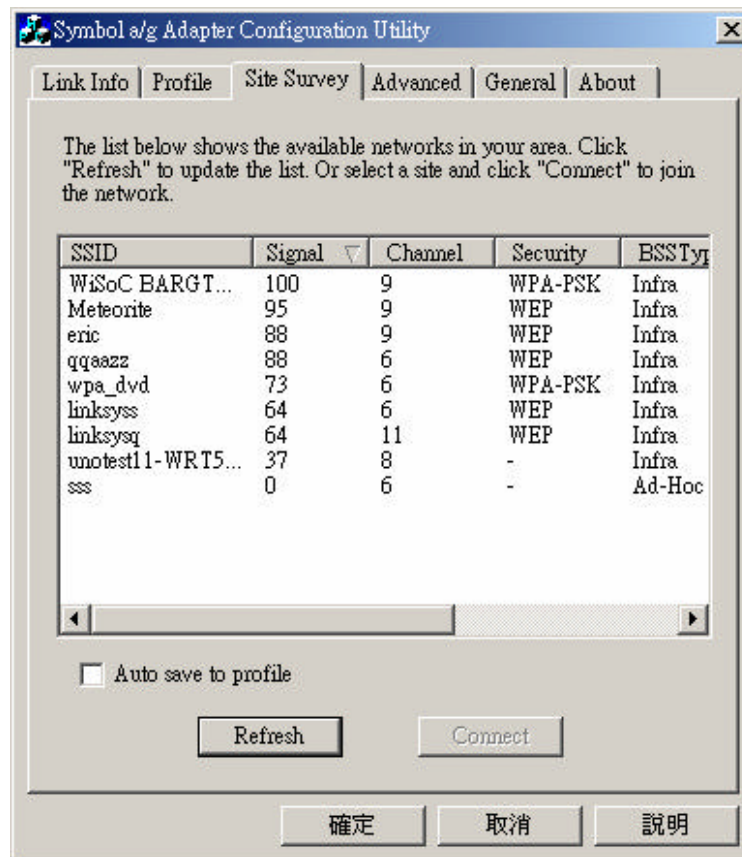
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**Note:** Updates to WPA-Radius configuration Dialog that are not saved before exiting the page are deleted and not available.

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## A.6 Site Survey Page



The Site Survey page displays the list of last found Access Points available to the wireless card. The list information includes:

- **SSID**- This is the name of Access Point.

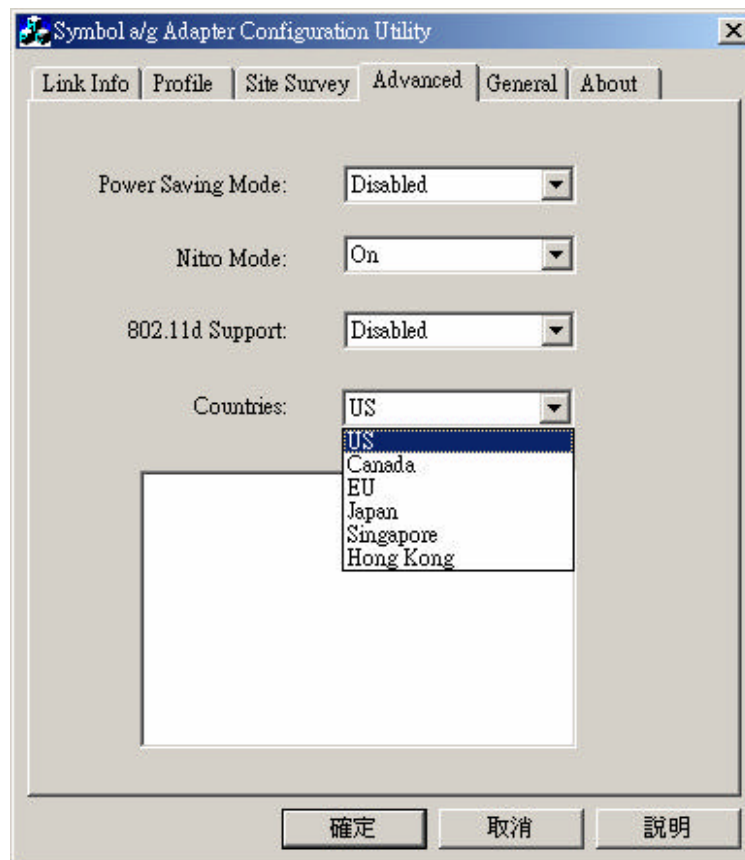
- 
- **Signal** - This signal is defined in percentages or dbm. Switch between these two units by right clicking on the column heading for Signal.
  - **Channel**- The frequency the Access Point uses
  - **Security**- None, WEP, WPA-PSK, or WPA.
  - **BSS Type**- Infrastructure or Ad-Hoc
  - **Mode**- This is max speed that the Access Point can provide. It can be G or B mode.
  - **MAC Address**- address of access point.

**Auto Save to Profile** – If the checkbox is selected, a profile is automatically saved after a successful connection is made. It will try to use the SSID as the profile name first. It is silent if the profile does not exist yet, otherwise it prompts the user to enter a new profile name or overwrite the old one.

To refresh the list, click the **Refresh** button. When the search is finished, the list displays all available Access Points. To connect to one of the Access Points on the list, select the desired Access Point by clicking the SSID field of the entry. Click the **Connect** button to connect to the Access Point. If the network has security protection, a security dialog displays prompting for the information.

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## A.7 Advanced Page



Use the Advanced page to configure the **Power Saving Mode**. There are 3 options: **Disabled**, **Dynamic**, and **Maximum**. If selecting Disabled, the device does not conserve power. Select Maximum, to conserve as much power as possible. If Dynamic is selected, the device constantly switches between the power-saving state and awake state.

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**Nitro Mode** – Use Nitro mode to gain higher transfer throughput (a maximum data of 54Mbps) if the associated device is capable of supporting it.

**802.11d Support** – 802.11d provides a means for communicating regulatory information among 802.11 stations. The information includes the country of operation, the channels that are defined and allowed and the output power limits that apply to these channels. There are 3 options:

- a) Disabled –the device uses its built-in country list to determine the set of valid channels and their corresponding output power limits. The device scans actively on these channels.
- b) Flexible – the device uses those channels certified to perform passive scanning. If the device receives a beacon from Access Point on any of these channels, it starts scanning that channel actively.
- c) Strict – the device uses only the channels certified for passive scanning. No output power limits apply. As long as the device has not adapted a country-string, it never transmits and therefore is not able to join other Access Points.

**Countries** –Use the Countries pull-down menu to select the country regions for operation. The channels and other relevant information are shown in the list box. The Countries feature is disabled if 11d is enabled. Default country is USA. A warning message appears when a country selection is made.

The message box displays “WARNING: Select only the country in which you are using the device. Any other selection will make the operation of this device illegal.”

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## A.8 General Page





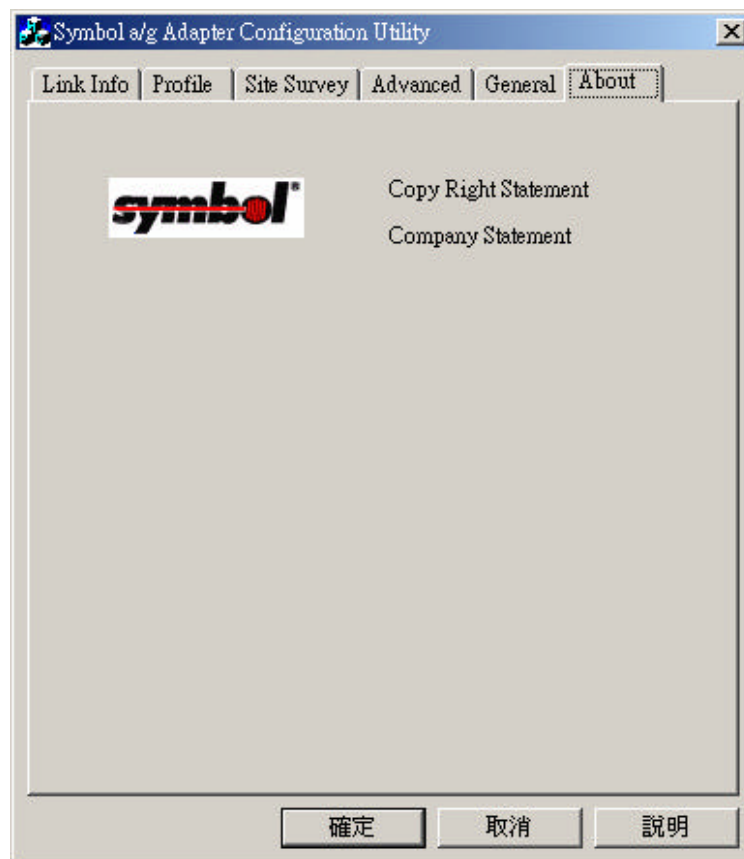
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The General page displays:

- Hardware board version.
- Chipset used.
- MAC address of the hardware.
- Driver version
- Utility version
- Firmware version

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## A.9 About Page



This page shows:

- Logo
- Copyright Statement
- Company Statement



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## Appendix **B WLAN Adapter Specifications**

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### LA-5033 PCI Adapter Physical

<i>Dimensions</i>	119.72mm x 63mm.
<i>Weight</i>	TBD
<i>Operating temperature</i>	-4 to 158+ F (-20 to 70+ C)
<i>Storage temperature</i>	-22 to 176 +F (-30 to 80 +C)
<i>Humidity</i>	95% maximum non condensing
<i>Cargo/Packaged</i>	6ft (1.6m) drop 5hz vibration Mil-Std 810E
<i>Altitude</i>	15,000 ft. (4.6 km) - Storage 8,000 ft. (2.4 km) - Operating
<i>Vibration</i>	2 G peak, sine; 0.02 G peak random (5Hz - 2000Hz)
<i>Shock</i>	40 G, 11mS, half sine
<i>ESD</i>	meets CE-Mark

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## LA-5030 PC Card Physical

<i>Dimensions (less antenna)</i>	TBD
<i>Weight (with antenna)</i>	TBD
<i>Operating temperature</i>	-4 to 158+ F (-20 to 70+ C)
<i>Storage temperature</i>	-22 to 176 +F (-30 to 80 +C)
<i>Humidity 95%</i>	95% maximum non condensing
<i>Cargo/Packaged</i>	6ft (1.8m) drop 5hz vibration Mil-Std 810E
<i>Altitude</i>	15,000 ft. (4.6 km) - Storage 8,000 ft. (2.4 km) - Operating
<i>Vibration</i>	2 G peak, sine; 0.02 G peak random (5Hz - 2000Hz)
<i>Shock</i>	40 G, 11mS, half sine
<i>ESD</i>	meets CE-Mark
<i>PCMCIA Compliance</i>	Type II

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## Radio

<i>Frequency Range</i>	country dependent. Typically 2412 MHz to 2462 MHz, 5.15 to 5.85GHz
<i>Radio Data Rate</i>	11 Mbps - Optional 5.5 Mbps - Optional 2 Mbps - Required 1 Mbps – Required 54 Mbps 48 Mbps 36 Mbps 24 Mbps 18 Mbps 12 Mbps 9 Mbps 6 Mbps
<i>Power Input</i>	LA-5030 PC Card - 5V LA-5033 PCI Adapter - 5V

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<i>Range</i>	open environment over 100 ?? ft (at 11 , 54Mbps). Typical office or retail environment 30 - 50 ??ft (at 11, 54 Mbps).
<i>TX Max.</i>	Radiated EIRP US: FCC part 15.247 Europe: ETS 300 328 Japan: RCR STD-31,33
<i>TX Out-of-Band Emissions</i>	US: FCC part 15.247, 15.205, 15.209 Europe: ETS 300 328 Japan: RCR STD-33, 31





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## Appendix **C** Customer Support

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Symbol Technologies provides its customers with prompt and accurate customer support. Use the Symbol Support Center as the primary contact for any technical problem, question or support issue involving Symbol products.

If the Symbol Customer Support specialists cannot solve a problem, access to all technical disciplines within Symbol becomes available for further assistance and support. Symbol Customer Support responds to calls by email, telephone or fax within the time limits set forth in individual contractual agreements.

When contacting Symbol Customer Support, please provide the following information:

- serial number of unit
- model number or product name
- software type and version number.

### North American Contacts

Inside North America, contact Symbol by:

- Symbol Technologies, Inc.

One Symbol Plaza Holtsville, New York 11742-1300

Telephone: 1-631-738-2400/1-800-SCAN 234

Fax: 1-631-738-5990

- 
- Symbol Support Center (for warranty and service information):
    - telephone: 1-800-653-5350
    - fax: (631) 563-5410
    - Email: [support@symbol.com](mailto:support@symbol.com)

### International Contacts

- Outside North America, contact Symbol by:  
Symbol Technologies  
Symbol Place  
Winnersh Triangle, Berkshire, RG41 5TP  
United Kingdom  
0800-328-2424 (Inside UK)  
+44 118 945 7529 (Outside UK)

### Web Support Sites

#### **MySymbolCare**

<http://www.symbol.com/services/msc>

#### **Symbol Services Homepage**

<http://symbol.com/services>

#### **Symbol Software Updates**

<http://symbol.com/service/downloads>

#### **Symbol Developer Program**

<http://software.symbol.com/devzone>

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### **Symbol Knowledge Base**

<http://kb.symbol.com/>

### **Additional Information**

Obtain additional information by contacting Symbol at:

- 1-800-722-6234, inside North America
- +1-631-738-5200, in/outside North America
- <http://www.symbol.com/>

### **Symbol Knowledge Base**

• <http://kb.symbol.com/>

### **Additional Information**

Obtain additional information by contacting Symbol at:

- 1-800-722-6234, inside North America
- +1-631-738-5200, in/outside North America
- <http://www.symbol.com/>

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## Appendix **D** Troubleshooting

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### D.1 LA-5033 PCI Adapter Windows 2000 Troubleshooting Tips

Use the tools provided by Windows 2000 to diagnose problems.

#### D.1.1. The MU cannot associate to the access point

- Verify the adapter ESSID matches the ESSID of the AP.
- Verify the security settings set for the access point match those configured for the MU.

#### D.1.2. Degraded performance from the LA-5033 WLAN PCI adapter

- Verify a secure antenna connection on the LA-5033 adapter.
- Verify the antennas remain attached to the LA-5033 adapter if Diversity is selected.

#### D.1.3. Nonfunctioning adapter LEDs

- Verify the Card Type parameter is set correctly.
- Verify that the adapter ESSID matches the ESSID of the AP.

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## D.2 LA-5033 PCI Adapter Windows XP Troubleshooting

The following problem scenarios could be encountered when using the LA-5033 PCI Adapter or the LA-5030 PC Card in a Windows XP environment:

## D.3 LA-5030 PC Card Windows 2000 Troubleshooting Tips

Use the tools provided by Windows 2000 to diagnose problems.

### D.3.1. The MU cannot associate to the access point

- Verify the adapter ESSID matches the ESSID of the AP.
- Verify the security settings set for the access point match those configured for the MU.

### D.3.2. Degraded performance from the LA-5030 WLAN PCI adapter

- Verify a secure antenna connection on the LA-5030 adapter.
- Verify the antennas remain attached to the LA-5030 adapter if Diversity is selected.

### D.3.3. Nonfunctioning adapter LEDs

- Verify the Card Type parameter is set correctly.
- Verify that the adapter ESSID matches the ESSID of the AP.



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

- 1) The antenna should be integral if the end device is intended to be operated in 5.15 ~ 5.25GHz frequency range.

As long as 1 condition above are met, further transmitter 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, digital device emissions, PC peripheral requirements, etc.).

**IMPORTANT NOTE:** In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not 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**

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The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: H9PLA5030".

**Manual Information That Must be Included**

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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 end users must include the following information in a prominent location " IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements. The antenna must not be co-located or operating in conjunction with any other antenna or transmitter" .

If the end product integrating this module is going to be operated in 5.15 ~ 5.25GHz frequency range, the warning statement in the user manual of the end product should include the restriction of operating this device in indoor could void the user's authority to operate the equipment.

Symbol declared that LA-5030 is limited in CH1-CH11 by specified firmware controlled in USA.