MSI MP11BGN (MS-6893)
Wireless 11b/g/n 2T3R MiniPCI Card

User's Guide

FCC Caution

1. The 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.
2. FCC RF Radiation Exposure Statement: The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
3. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
4. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

NOTE: *This device is approved for OEM installation with specified antennas as listed in this Manual. It is the responsibility of the Installer to comply with the separation distance for satisfying RF exposure compliance.*

Copyright Notice

Trademarks

- Microsoft Windows and Internet Explorer are registered trademarks or trade marks of Microsoft Corporation.
- All brand names, icons, and trademarks used in this manual are the sole property of their respective owners.

Important Safety Precautions

Always read and follow these basic safety precautions carefully when handling any piece of electronic component.

1. Keep this User's Manual for future reference.
2. Keep this equipment away from humidity.
3. Lay this equipment on a reliable flat surface before setting it up.
4. The openings on the enclosure are for air convection hence protects the equipment from overheating.
5. All cautions and warnings on the equipment should be noted.
6. Never pour any liquid into the opening that could damage or cause electrical shock.
7. If any of the following situations arises, get the equipment checked by a service personnel:
   - Liquid has penetrated into the equipment
   - The equipment has been exposed to moisture
   - The equipment has not work well or you can not get it work according to User's Manual
   - The equipment has dropped and damaged
   - If the equipment has obvious sign of breakage
8. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C OR BELOW -20°C, IT MAY DAMAGE THE EQUIPMENT.

Technical Support

- Visit the MSI website for FAQ, technical guide, driver and software updates, and other information: ***http://www.msi.com.tw/***.
- Contact our technical staff at: ***support@msi.com.tw***.

1 Introduction

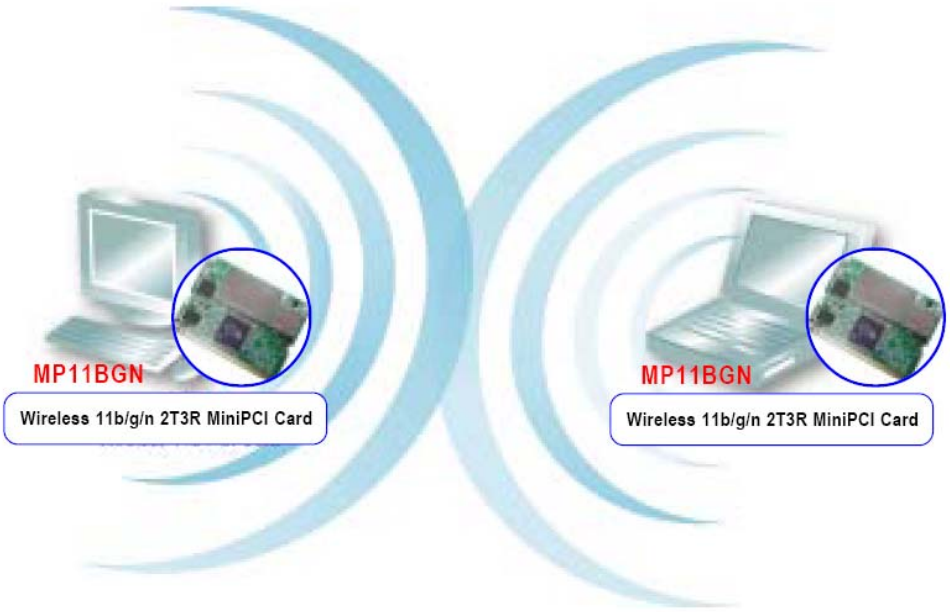
>>> 1.1 MP11BGN (MS-6893) Wireless 11b/g/n 2T3R miniPCI card

MSI MP11BGN, the Wireless 11b/g/n 2T3R miniPCI Card, is a Type IIIA card, which can be used to integrate with such systems as notebook, mini-barebone, AP router, portable PC. With MSI MP11BGN embedded inside, a system could provide users with the ability and flexibility to connect up to Internet wirelessly via 802.11b/g/n with speed up to 300Mbps.

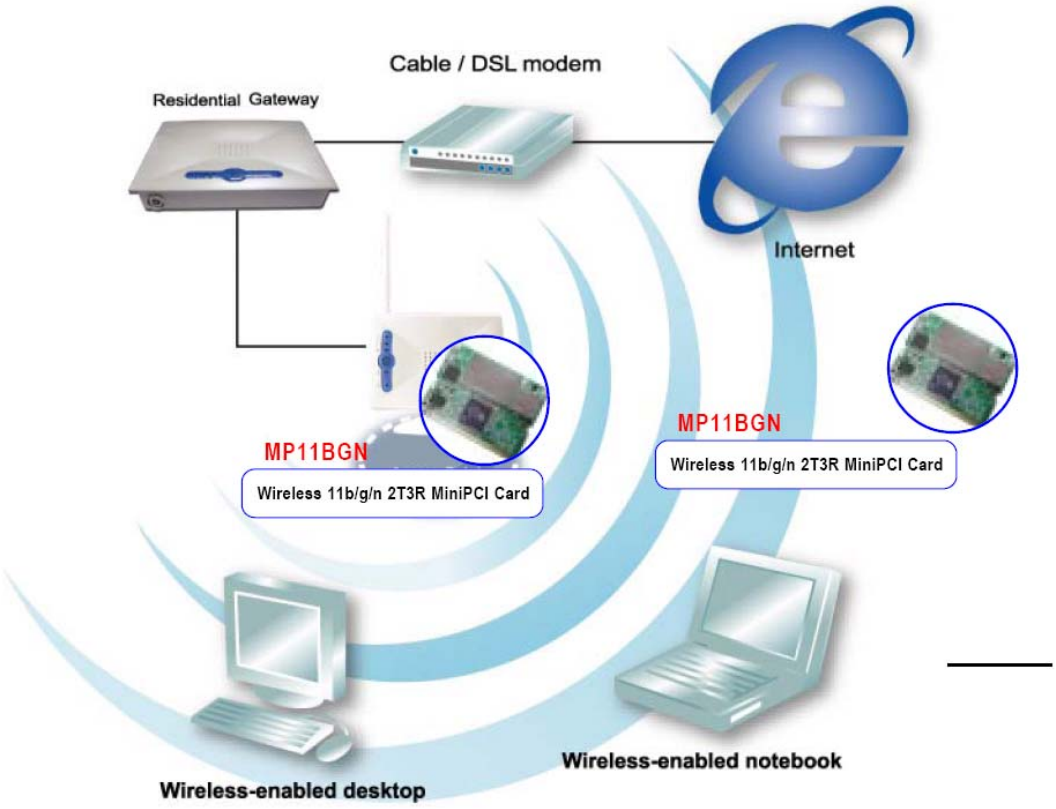
>>> 1.2 How MP11BGN Works

1.2.1 In WLAN Environment

- Ad-hoc Mode : An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, and access the Internet with a shared modem. In this kind of network, new devices can be quickly added; however, users can only communicate with other wireless LAN computers that are in this wireless LAN workgroup, and are within range.



- Infrastructure Mode : The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.



>>> 1.3 Specifications

General specification		
Network Standard	IEEE 802.11n Draft 2.0 IEEE 802.11b IEEE 802.11g	
Frequency Band	2.400-2.4835 GHz	
Form factor	Mini PCI v1.0 TypeⅢA	
Data Rate	*IEEE 802.11g* (auto-fallback): - OFDM: 54, 48, 36, 24, 18, 12, 9 and 6 Mbps *IEEE 802.11b* (auto-fallback): - CCK: 11, 5.5 Mbps - DQPSK: 2 Mbps - DBPSK: 1 Mbps *IEEE 802.11n Draft 2.0* (auto-fallback): - OFDM: 6.5 to 300 Mbps (Follow MCS 0~15 standard)	
Media Access Control	CSMA/CA with ACK	
Channel	*IEEE 802.11g/n* Ch. 1-11 – N. America Ch. 1-13 – Japan Ch. 1-13– Europe ETSI Ch. 10-11 – Spain Ch. 10-13 – France	*IEEE 802.11b* Ch. 1-11 – N. America Ch. 1-14 – Japan Ch. 1-13– Europe ETSI Ch. 10-11 – Spain Ch. 10-13 – France
Transmission	IEEE 802.11b (DSSS)、IEEE 802.11g/n (OFDM)	
Modulation	*IEEE 802.11b* (DSSS): CCK @ 11, 5.5 Mbps DQPSK @ 2 Mbps DBPSK @ 1 Mbps *IEEE 802.11n Draft 2.0* (OFDM): OFDM @ 6.5 to 300 Mbps (Follow MCS 0~15 standard)	*IEEE 802.11g* (OFDM): BPSK @ 6, 9 Mbps QPSK @ 12, 18 Mbps 16-QAM @ 24, 36 Mbps 64-QAM @ 48, 54 Mbps
Network Architecture	Ad-Hoc Mode (Peer-to-Peer) Infrastructure Mode	
Antenna Type	Three antenna RF connectors configuration	
Temperature / Operating Temperature	0° to 70°C	

	Storage Temperature	-20° to 100°C
Humidity		10%-90% (non-condensing)
Power Consumption		802.11b (11Mbps): 660mA@3.3V in continue Tx / 520mA@3.3V in continue Rx
		802.11g (54Mbps): 670mA@3.3V in continue Tx / 520mA@3.3V in continue Rx
		802.11n Draft 2.0: HT20MHz:740mA@3.3V in continue Tx / 520mA@3.3V in continue Rx HT40MHz:740mA@3.3V in continue Tx / 520mA@3.3V in continue Rx
		330mA@3.3V in standby mode
Dimension		50.95*59.75*4.5mm
Weight		14g
Operating Voltage		3.3V+/-10%
Output Power (Peak Max)		802.11g (54Mbps): 20.0+/-1 dBm 802.11b (11Mbps): 23.0+/-1 dBm 802.11n Draft 2.0: HT20MHz: 25.0+/-1 dBm / HT40MHz: 23.0+/-1 dBm
Output Power (Average Max)		802.11g (54Mbps): 15.0+/-1 dBm 802.11b (11Mbps): 15.0+/-1 dBm 802.11n Draft 2.0: HT20MHz: 15.0+/-1 dBm / HT40MHz: 14.0+/-1 dBm
Error Vector Magnitude (EVM) (Typical Value)		802.11g (54Mbps): <-25dB 802.11b (11Mbps): <35% 802.11n Draft 2.0: <-28dB
Receiver Sensitivity (Typical Value)		802.11b (11Mbps): CCK @ 8% PER = -76 dBm 802.11g (54Mbps): OFDM @ 10% PER = -65 dBm 802.11n Draft 2.0: HT20 @ 10% PER = -64 dBm / HT40 @ 10% PER = -61 dBm
Range		Up to 400m (outdoor operating range)
Security		64/128-bit WEP, WPA, WPA2, WPA-PSK, WPA2-PSK, 802.1X, CCX

>>> 1.4 System Requirements

Before installing MP11BGN, your PC should meet the following items:

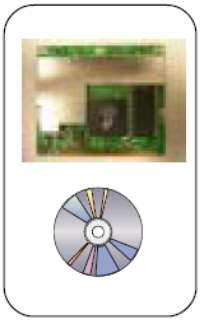
- One desktop/notebook PC with an available MiniPCI slot.

-Windows® 2000/XP/Vista 32/64bit operating system.

- Minimum 5MB free disk space for installing the driver and utilities.

- One CD-ROM drive, double speed or higher.

>>> 1.5 Package Contents

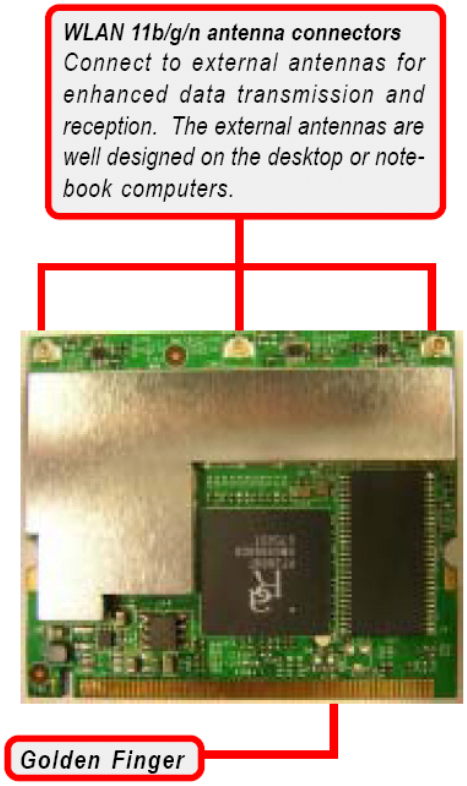


Unpack the package and check all the items carefully. If any item contained is damaged or missing, please contact your local dealer as soon as possible. Also, keep the box and packing materials in case you need to ship the unit in the future. The package should contain the following items:

- One Wireless 11b/g/n 2T3R MiniPCI Card.

- One Installation CD-ROM including drivers, utilities, and the manual files

>>> 1.6 Product View

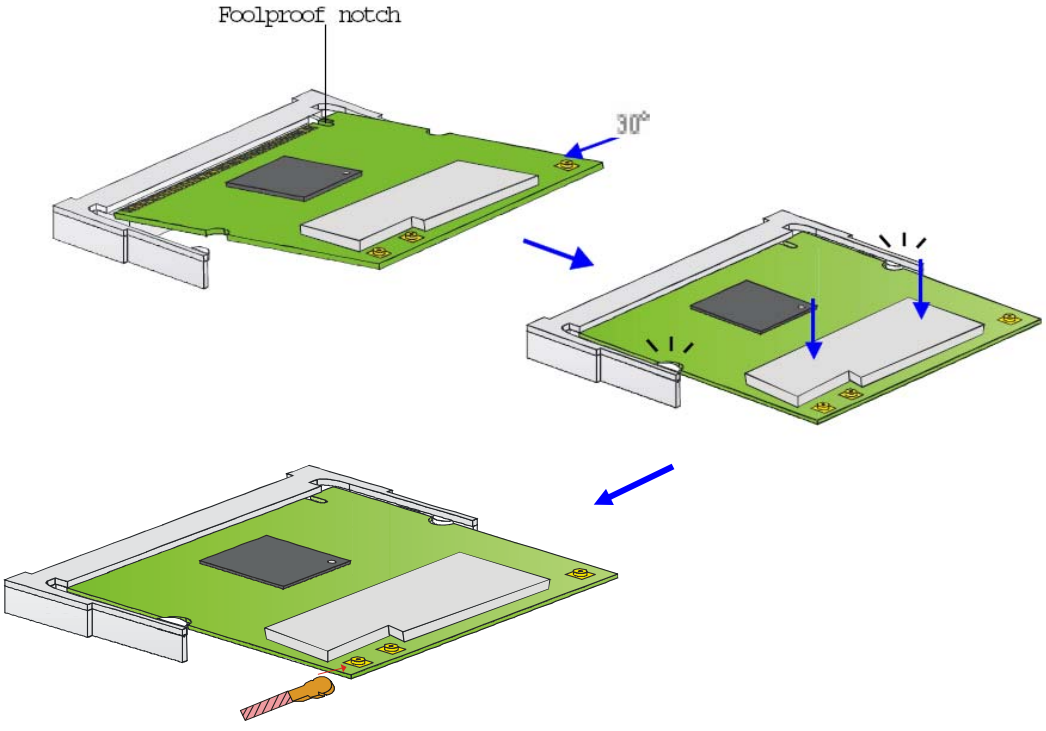


2 Hardware Installation

The following diagrams provide you a basic installation for your MP11BGN. The instruction below is suitable for most computers with MiniPCI slot. For more information about the MiniPCI module, please refer to your computer 's manual.

Installing MP11BGN:

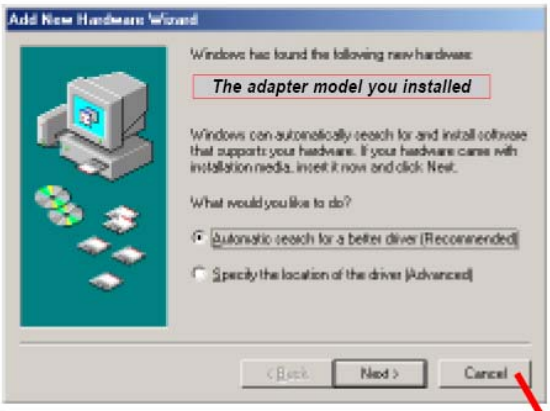
1. Locate the MiniPCI slot on the mainboard.Place your MP11BGN over the MiniPCI slot (at an angle of 30 degrees). Then, gently insert it into the slot until the golden finger of the card gets fully inserted.
2. Press down the card, and the retaining clips (on two sides of the slot) will lock onto the notches of the card.
3. Connect the attenna' s cable to the connector on the card.



3 Software Installation

This chapter describes the procedures of installing the driver and utility. Follow the instruction step by step to finish the installation. If you use Windows® 98SE/ME, please prepare the Windows® Setup CD at hand before installing the driver; because the system will ask you to insert the Setup CD to copy files during the installation.

Please NOTE that the MP11BGN should be installed into your computer before installing the driver and utility. Then, the operating system will detect a new device and start to configure the new device. Click ***Cancel*** here to start installation from the InstallShield Wizard.



Tip: *The MP11BGN adapter should be installed into your PC before installing the driver and utility.*

Insert the software CD into your CD-ROM drive, and the Setup program should launch automatically.

If the Autorun program doesn't launch automatically, click Start at the taskbar and select Run.... Type ***E:\setup.exe*** (where ***E*** is your CD-drive) in the Open box and click ***OK*** to launch the Setup program manually.

The main screen of Setup program will appear as below.

1. Click the **Install WLAN Driver** button.
2. The welcome screen of InstallShield Wizard appears. Click ***Next***.
3. Read and accept the License Agreement; then, click ***Next***.
4. Click ***Install*** and the program will copy the necessary files to the system. The progress indicator shows the installing status.
5. Click ***Finish*** when the WLAN driver installation is completed.

Wireless LAN icon

FEDERAL COMMUNICATIONS 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 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:

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

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.

RF exposure warning ·

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) 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. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.