MP54G5 (MS-6833B)
Wireless 11g MiniPCI Card

User's Guide

Federal Communications   Commission   (FCC)   Caution

1. 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.

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.The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

4. The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204(c). The antenna must either be permanently attached or employ a "unique" antenna coupler (at all connections between the module and the antenna, including the cable). Any antenna used with the module must be approved with the module, either at the time of initial authorization or through a Class II permissive change. The "professional installation" provision of Section 15.203 may not be applied to modules.

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

6.The modular transmitter must be labeled with its own FCC ID number, and if the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following:
" Contains Transmitter Module FCC ID:XYZMODEL1" or "Contains FCC ID:XYZMODEL1."

Federal Communications   Commission   (FCC) Statement

All Antennas listed below have to be provided to the OEM for his use. No other antennas are authorized to be used by the OEM except listed in the Manual.

No.	Model #	Type of Ant.
1	505900000110	DIPOLE
2	5059000090110G	DIPOLE
3	YQ-Z009-0545	DIPOLE
4	RFA-02-3-C5H1-06-50	DIPOLE
5	RFA-02-3-C5M3	DIPOLE
6	RFA-02-5-F7H1-06-50	DIPOLE
7	M560A SK560WIPI01A	PIFA
8	M540G K05007000403	PIFA
9	M30	PIFA
10	C05092208_1	PIFA
11	THW1139A1	PIFA
12	EY1002430060R	DIPOLE

13	CAN4313552012501B (L)	PIFA
	CAN4313552022501B(R)	
14	0ACMS006004N(L)	PIFA
	0ACMS006005N(R)	
15	SAA05-220580 (L)	PIFA
	SAA05-22058A(R)	
16	MS104-05351A	PIFA

This device is intended only for OEM integrators under the following:
- The antenna must be installed such that 20cm is maintained between antenna and users
1) The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

As long as 2 conditions above are met, further transmitter test will not required. However, the OEM integrator is still responsible for testing end-product for any additional compliance requirements required with module installed (for example, digital device emissions, P peripheral requirements, etc.)

Important Note

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

Manual Information for End Users

The end user must not have manual instructions to remove or install device. The user manual for end users 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 operating in conjunction with any other antenna or transmitter." as a result of e-mail transmission."

Important Safety Precautions

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

1. Keep this *User's Guide* 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.

❶ Introduction

MSI MP54G5, the Wireless 11g miniPCI Card, is a **Type IIIB** card, which can be used to integrate with such systems as notebook, mini-barebone and portable PC. With MSI MP54G5 embedded inside, a system could provide users with the ability and flexibility to connect up to Internet wirelessly via **802.11g** with speed up to 54Mbps.

MSI MP54G5 is taking advantage of leading technologies from Ralink. It addresses WLAN (Wireless Local Area Network) markets by providing true simultaneous connectivity while deploying IEEE 802.11g. Along with this solution, a system installed in a single card is able to offer capability of WiFi mode. It will benefit system vendors in miniaturization of system dimension and BOM cost reduction, as well as also make users happy with the all-in-one functionality.

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.

MP54G5

WLAN MiniPCI Card

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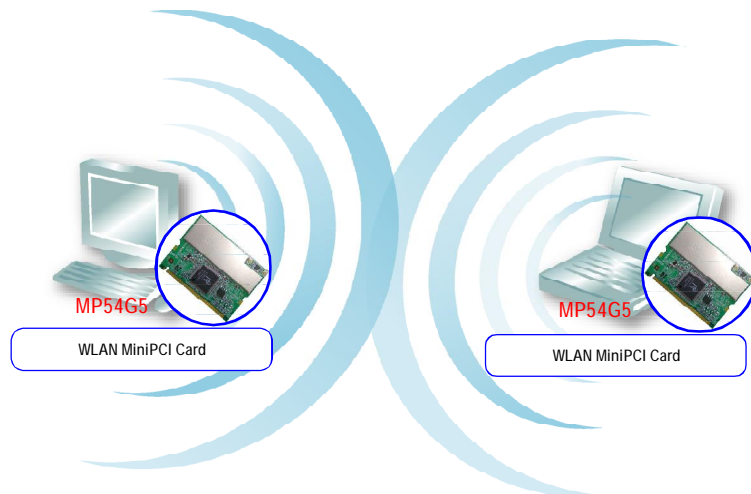
❏ **Infrastructure Mode :** The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless 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

Hardware Specification	Form Factor	32-bit Type IIIB
	Operation voltage	3.3V
	Antenna Connector	Two antenna connectors
	Operating System	Microsoft® Windows® 98SE/ME/2000 /XP

	Environmental	- Operating Temperature:
		  0 ~ 55°C
		- Operating Humidity:
		  10 ~ 90%, non-condensing

	Dimensions (WxDxH)	59.75 x 44.6 x 3.5mm
WLAN Specification	Network Standard	IEEE 802.11; IEEE 802.11b/g
	Frequency Band	2.412-2.484 GHz
	Data Rate	IEEE 802.11g (auto-fallback): - OFDM: 54, 48, 36, 24, 18, 12, 9 and 6Mbps IEEE 802.11b (auto-fallback): - CCK: 11, 5.5 Mbps - DQPSK: 2 Mbps - DBPSK: 1 Mbps
	Media Access Control	CSMA/CA with ACK
	Transmission	DSSS (direct sequential spread spectrum)
	Network Architecture	Ad-Hoc Mode (Peer-to-Peer); Infrastructure Mode
	Antenna Type	Two antenna connectors support
	Power Consumption	TX peak: 350mA RX peak: 260mA Idle:5mA Standby: 160mA

Channel	IEEE 802.11g: 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. 1-13 – Japan
	Ch. 1-13– Europe ETSI
	Ch. 10-11 – Spain
	Ch. 10-13 – France
Output Power	Output Power
	11b: 18dBm+/-2 Max
	11g: 14dBm+/-2 Max
Receiver Sensitivity (Average Value)	54 Mbps OFDM @ 10% PER = -65 dBm
	48 Mbps OFDM @ 10% PER = -66 dBm
	36 Mbps OFDM @ 10% PER = -70 dBm
	24 Mbps OFDM @ 10% PER = -74 dBm
	18 Mbps OFDM @ 10% PER = -77 dBm
	12 Mbps OFDM @ 10% PER = -79 dBm
	11 Mbps CCK @ 8% PER = -80 dBm
	9 Mbps OFDM @ 10% PER = -81 dBm
	6 Mbps OFDM @ 10% PER = -82 dBm
	5.5 Mbps CCK @ 8% PER = -82 dBm
	2 Mbps QPSK @ 8% PER = -83 dBm
	1 Mbps BPSK @ 8% PER = -83 dBm

>>> 1.4 System Requirements

Before installing MP54G5, your PC should meet the following items:
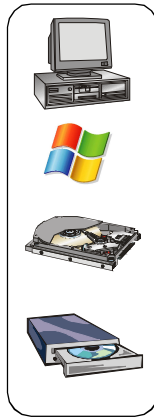
- One desktop/notebook PC with an available MiniPCI slot.

- Windows® 98SE/ME/2000/XP 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:
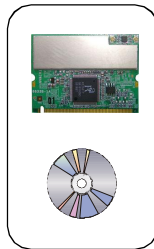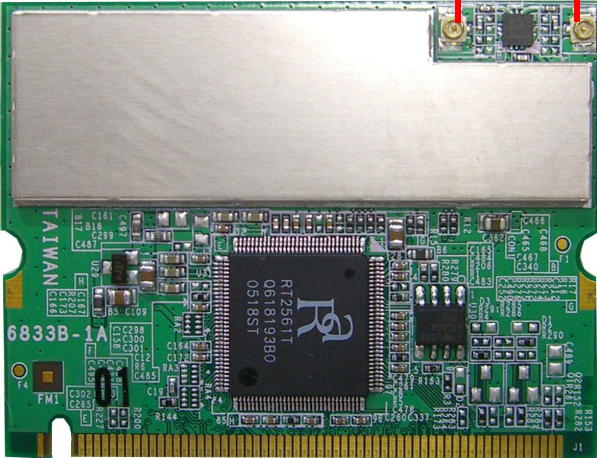
- One Wireless 11g MiniPCI Card.

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

WLAN 11g antenna connectors
Connect to external antennas for enhanced data transmission and reception. The external antennas are well designed on the desktop or notebook computers.

Golden Finger

➋ Hardware Installation

The following diagrams provide you a basic installation for your MP54G5. 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 MP54G5:**

1. Locate the MiniPCI slot on the mainboard.Place your MP54G5 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.

Foolproof notch

30°
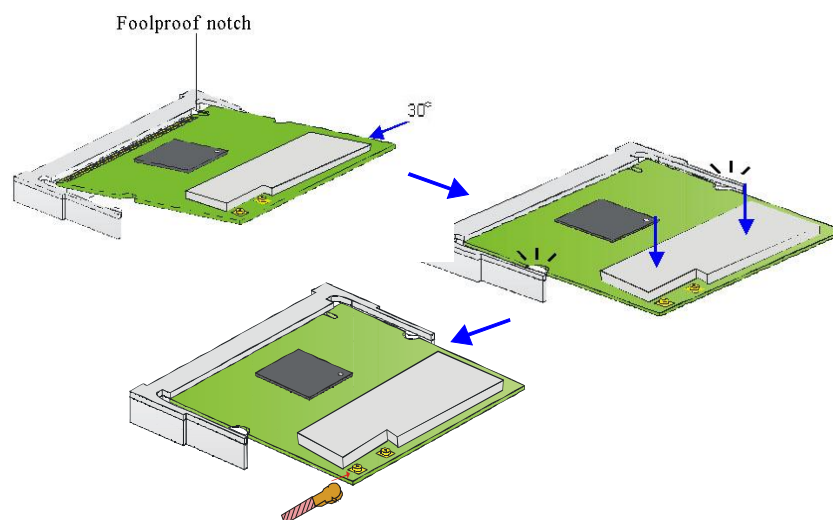
3 Software Installation

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 MP54G5 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.

Click
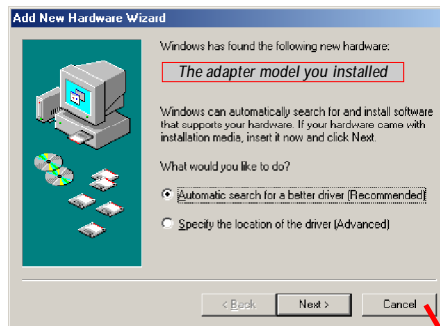
Tip: The MP545 adapter should be installed into your PC before installing the driver and utility.

STEP 1   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.

STEP 2

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.