User's Manual

Model : WMP-G11

(Wireless Lan Card)

1.0 Scope

1.1 Document

This document is to specify the product requirements for **802.11 g/b `Wireless Lan Card`**. This Card is based on Ralink chipset that complied with IEEE 802.11g and IEEE 802.11b standard from 2.4~2.5GHz, and it can be used to provide up to 54Mbps for IEEE 802.11g, or 11Mbps for IEEE 802.11b to connect your wireless LAN.

With seamless roaming, fully interoperability and advanced security with WEP standard, **802.11 g/b `Wireless Lan Card`** offers absolute interoperability with different vendors' 802.11g and 802.11b Access Points through the wireless LAN.

1.2 Product Features

- Ÿ Compatible with IEEE 802.11g high rate standard to provide wireless 54Mbps data rate
- Ÿ Compatible with IEEE 802.11b high rate standard to provide wireless 11Mbps data rate
- Ÿ Operation at 2.4 ~ 2.5GHz frequency band to meet worldwide regulations
- Ÿ Dynamic date rate scaling at 6, 9, 12, 18, 24, 36, 48, 54Mbps for IEEE 802.11g
- Ÿ Dynamic date rate scaling at 1, 2, 5.5, and 11Mbps for IEEE 802.11b
- Ÿ Maximum reliability, throughput and connectivity with automatic data rate switching
- Ÿ Supports wireless data encryption with 64/128-bit WEP for security
- Ÿ Supports infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
- Ÿ One-piece PC Card design to fully support PC Card type II defined mechanical and environmental stress conditions
- Ÿ Support WPA and WPA2 enhanced security
- Ÿ Friendly user configuration and diagnostic utilities
- Ÿ Drivers support Windows 98SE, ME, 2K, and XP

2.0 Requirements

The following sections identify the detailed requirements of the **802.11 g/b `Wireless Lan Card`.**

2.1 Functional Block Diagram
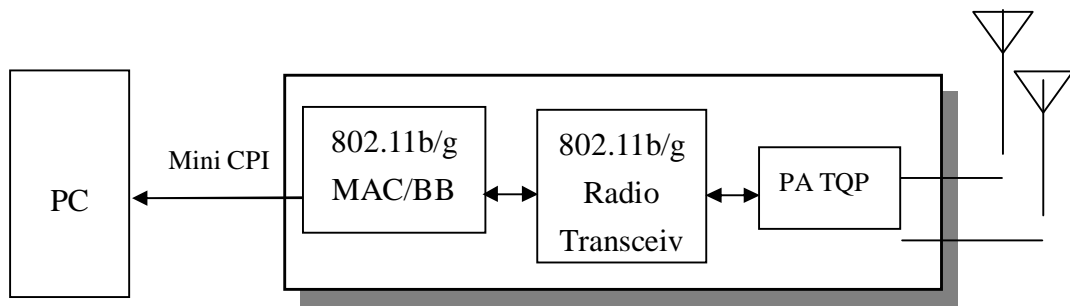
2.2 General Requirements

2.2.1 IEEE 802.11g Section

#	Feature	Detailed Description
2.2.1.1	Standard	Ÿ IEEE 802.11g
2.2.1.2	Radio and Modulation Type	Ÿ BPSK, QPSK, 16QAM, 64QAM, OFDM
2.2.1.3	Operating Frequency	Ÿ 2400~2483.5 MHz ISM band
2.2.1.4	Channel Numbers	Ÿ 11 channels for United States / Canada 13 channels for Europe Countries 13 channels for Japan 11 channels for Taiwan
2.2.1.5	Data Rate	Ÿ 6, 9, 12, 18, 24, 36, 48, 54Mbps
2.2.1.6	Media Access Protocol	Ÿ CSMA/CA with ACK
2.2.1.7	Transmitter Output Power	Ÿ Average Power 12dBm at 6Mbps ~ 54Mbps
2.2.1.8	Receiver Sensitivity	Ÿ Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 10% Ÿ −85dBm at 6Mbps Ÿ −79dBm at 24Mbps Ÿ −70dBm at 48Mbps Ÿ −67dBm at 54Mbps

2.2.2 IEEE 802.11b Section

#	Feature	Detailed Description
2.2.2.1	Standard	Ÿ IEEE 802.11b
2.2.2.2	Radio and Modulation Schemes	Ÿ DQPSK, DBPSK, DSSS, and CCK
2.2.2.3	Operating Frequency	Ÿ 2400~2483.5MHz ISM band
2.2.2.4	Channel Numbers	Ÿ 11 channels for United States / Canada 13 channels for Europe Countries 14 channels for Japan

#	Feature	Detailed Description
		11 channels for Taiwan
2.2.2.5	Data Rate	Ÿ 11, 5.5, 2, and 1Mbps
2.2.2.6	Media Access Protocol	Ÿ CSMA/CA with ACK
2.2.2.7	Transmitter Output Power	Ÿ Average Power 16dBm at 11, 5.5, 2, and 1Mbps
2.2.2.8	Receiver Sensitivity	Ÿ Typical −83dBm for 11Mbps @ 8% PER Ÿ Typical −88dBm for 2Mbps @ 8% PER

2.2.3 General Section

#	Feature	Detailed Description
2.2.3.1	Antenna Type	Ÿ Integrated Printed-PCB antennas with dual diversity function
2.2.3.2	Operating Voltage	Ÿ 3.3VDC +/- 5%
2.2.3.3	Current Consumption	Ÿ 450 mA at transmit mode Ÿ 300 mA at receive mode Ÿ 50 mA at sleep mode
2.2.3.4	Form Factor and Interface	Ÿ PC Card Type II
	LEDs	Ÿ Power LED Ÿ Link LED

2.3 Software Requirements

The Configuration Software supports Microsoft Windows 98SE, ME, 2000, and XP. This configuration software includes the following functions:

Ÿ **Information**

Information allows you to monitor network status.

Ÿ **Configuration**

Configuration allows you to configure parameters for wireless networking.

Ÿ **Security**

Supports enhanced security WEP, 802.1x,WPA,WPA2

2.3.1 Information

#	Feature	Detailed Description
2.3.1.1	General Information	Ÿ General Information shows the name of Wireless Adapter, Adapter MAC Address, Regulatory Domain, Firmware Version, and Utility Version.
2.3.1.2	Current Link Information	Ÿ Current Link Information shows the Current Setting ESSID, Channel Number, Associated BSSID, Network Type (infrastructure or Ad-hoc network), WEP Status (enable or disable), Link Status (Connect or Dis-connect), 802.11g Transmit Speed (6, 9, 12, 18, 24, 36, 48, 54Mbps), 802.11b Transmit Speed (1, 2, 5.5, 11Mbps), Signal Strength, and Link Quality.
2.3.1.3	Site survey	Ÿ To search the neighboring access points and display the information of all access points.

2.3.2 Configuration

#	Feature	Detailed Description
2.3.2.1	ESS ID	Ÿ Input an SSID number if the roaming feature is enabled Ÿ Supports for ASCII printable characters.
2.3.2.2	Network Type	Ÿ Ad-hoc Mode and 802.11 Ad-hoc Mode for network configurations that do not have any access points Ÿ Infrastructure Mode for network configurations with access points
2.3.2.3	Power Save	Ÿ Extend the battery life of clients by allowing the client to sleep for short periods of time while the Access Point buffers the messages.
2.3.2.4	RTS Threshold	Ÿ Set the number of bytes used for fragmentation boundary for messages
2.3.2.5	Fragment Threshold	Ÿ Set the number of bytes used for RTS/CTS boundary
2.3.2.6	Transmission Speed	Ÿ This indicates the communication rates. Select appropriate transmission speed to match your

#	Feature	Detailed Description
		wireless LAN settings
2.3.2.7	Roaming	Ÿ Support Automatic or Manual Rescan to associate with access point.

2.3.3 Security

#	Feature	Detailed Description
2.3.3.1	Encryption	Ÿ RC4 encryption algorithm Ÿ Support 64-bit and 128-bit WEP encryption Ÿ Support open system and shared key authentication
2.3.3.2	WEP Management	Ÿ Four WEP keys can be selected Ÿ STA with WEP off will never associate any AP with WEP enabled Ÿ WEP Key Format: Option for Hex format
2.3.3.3	802.1x	Ÿ Support EAP-TLS, EAP-TTLS, and EAP-PEAP
2.3.3.4	WPA&WPA2	Ÿ Support WPA/WPA2-PSK and WPA/WPA2-EAP Ÿ Support Cipher Mode AES and TKIP

2.4 Mechanical Requirements

#	Feature	Detailed Description
2.4.1	Length	Ÿ 110mm
2.4.2	Width	Ÿ 54mm
2.4.3	Height	Ÿ 5mm

2.5 Compatibility Requirements

This device passes the following compatibility requirements.

#	Feature	Detailed Description
2.5.1	Wi-Fi	Ÿ Meet Wi-Fi certification for IEEE 802.11a and IEEE 802.11b/g product
2.5.2	WHQL	Ÿ Meet applicable WHQL certification requirements
2.5.3	Physical Layer and Functionality	Ÿ Meet ALPHA Engineering Test Plan and Test Report

2.6 Requirements of Reliability, Maintainability and Quality

#	Feature	Detailed Description
2.6.1	MTBF	Ÿ Mean Time Between Failure > 30,000 hours
2.6.2	Maintainability	Ÿ There is no scheduled preventive maintenance required
2.6.3	Quality	Ÿ The product quality is followed-up by ALPHA factory quality control system

2.7 Environmental Requirements

#	Feature	Detailed Description
2.7.1	Operating Temperature Conditions	Ÿ The product is capable of continuous reliable operation when operating in ambient temperature of 0 ℃ to +55℃.
2.7.2	Non-Operating Temperature Conditions	Ÿ Neither subassemblies is damaged nor the operational performance is degraded when restored to the operating temperature after exposing to storage temperature in the range of –20 ℃ to +75 ℃.
2.7.3	Operating Humidity conditions	Ÿ The product is capable of continuous reliable operation when subjected to relative humidity in the range of 10% and 90% non-condensing.
2.7.4	Non-Operating Humidity Conditions	Ÿ The product is not damaged nor the performance is degraded after exposure to relative humidity ranging from 5% to 95% non-condensing

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.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

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

The antenna must be installed such that 20 cm is maintained between the antenna and users, and

The transmitter module may not be co-located with any other transmitter or antenna,

For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions 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

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. The final end product must be labeled in a visible area with the following: "Contains FCC ID: RRK2005100093".

Manual Information To the End User

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 user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

1) this device may not cause interference and

2) this device must accept any interference, including interference that may cause undesired operation of the device

This device has been designed to operate with an antenna having a maximum gain of 4.74 dBi.

Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna

impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with IC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

以下警語適用台灣地區:

經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時,應立即停用,並改善至無干擾時方得繼續使用。前項合法通信,指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

本模組於取得認證後將依規定於模組本體標示審驗合格標籤,並要求平台上標示「本產品內含射頻模組:ID 編號」