

## WPCA-112AG IEEE 802.11a/g PC CARD User Manual

### Specification

Product Name	54 Mbps/ 11Mbps Wireless LAN PC Card
Model Number	WPCA-107AG
Host Interface	PCMCIA PC Card Type II CardBus (32-bit)
Dimensions	120 x 54 x 8 mm
Weight	42 g
Frequency Band	<p><b>802.11a</b>                      Unlicensed National Information Infrastructure (U-NII) frequency band, 5.15GHz to 5.85GHz (subject to local regulations)</p> <p><b>802.11b/g</b>                      ISM band 2.400 ~ 2.4835GHz (subject to local regulations)</p>
Number of Non-Overlapping Channels	<p><b>802.11a</b>                      USA and Canada-13                      Europe – up to 19, subject to local regulations                      Japan - 4</p> <p><b>802.11b</b>                      USA and Canada – 3                      Most European countries – 3                      Japan – 4                      France – 1</p> <p><b>802.11g</b>                      USA and Canada – 3                      Most European countries – 3                      Japan – 3</p>
Operating Voltage	3.3V ± 5%
Modulation	802.11a/g: OFDM; 802.11b: CCK (11 Mbps, 5.5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps)
Data Rate	<p><b>802.11a</b>                      54, 48, 36,24,18,12, 9, 6 Mbps per channel, auto fallback for extended range; (option : Enhanced proprietary Turbo Mode up to 108 Mbps)</p> <p><b>802.11b</b>                      11,5.5, 2, 1 Mbps per channel, auto fallback for extended range</p> <p><b>802.11g</b>                      54, 48, 36,24,18,12,11, 9, 6, 5.5 , 2 , 1 Mbps per channel, auto fallback for extended range</p>
Security	<p><b>802.11a</b>                      64/128/152-bit WEP Encryption, AES</p> <p><b>802.11b</b>                      64/128-bit WEP Encryption , TKIP , AES</p> <p><b>802.11g</b>                      64/128-bit WEP Encryption, TKIP , AES  <a href="#">refer to software spec for detail.</a></p>
Antenna	Internal Dual band antenna supporting diversity
Peak Gain of the Antenna	5 GHz(11a)=> 1.5 dBi Max 2.4 GHz(11b)=>1dBi Max
Transmitted power	<p><b>802.11a</b>                      please see the output power table for detail. tolerance: +/-1.5dBm</p> <p><b>802.11b</b>                      please see the output power table for detail. tolerance: +/-1.5dBm</p> <p><b>802.11g</b>                      please see the output power table for detail. tolerance: +/-1.5dBm</p>

Receive Sensitivity	<b>802.11a/g</b> Nominal Temp Range: - 6Mbps 10-5 BER @ -90dBm, typical - 9Mbps 10-5 BER @ -89dBm, typical - 12Mbps 10-5 BER @ -88dBm, typical - 18Mbps 10-5 BER @ -87dBm, typical - 24Mbps 10-5 BER @ -83dBm, typical - 36Mbps 10-5 BER @ -80dBm, typical - 48Mbps 10-5 BER @ -74dBm, typical - 54Mbps 10-5 BER @ -70dBm, typical <b>802.11b</b> Typ. -88 <b>dBm @ 11Mbps</b> , +/-2 dBm Typ. -91 dBm @ 5.5Mbps Typ. -92 <b>dBm @ 2Mbps</b> Typ. -93 dBm @ 1Mbps
Power consumption	<b>802.11a</b> Max.2W Continue Tx : 560 mA @ 3.3V Continue RX : 260 mA @3.3V <b>802.11g</b> Max.2W Continue Tx : 560mA @3.3V Rx : 260mA @3.3V <b>802.11b</b> Continue Tx : 510mA @3.3V Continue RX : 250 mA @3.3V
Supplied Driver	Windows 98SE/ME/NT4.0/2000/XP
Standards	IEEE 802.3, IEEE 802.3u, IEEE 802.11a, IEEE 802.11b, IEEE 802.11g draft standard ,Wi-Fi compliant
Warranty	1 year
Temperature Range	0 ~ 55°C (Operating); -20 ~ 85°C (Storing)
	Operating Humidity 10% to 85% Non-Condensing Storage Humidity 5% to 90% Non-Condensing
Operating Range	Open Space: Up to 260 m: Indoor: 100 m The transmission speed varies in the surrounding environment
Network Protocol	TCP/IP, IPX, NDIS4, and NDIS5 ,NDIS 5.1
Management Utility	Monitor Internet Access Status via UI
EMC certification	TBD(FCC part 15C/15.247; ETS 300 328-2; UL; IEC60950; EN 301 489-1,17; prEN50371; CE Mark; TELEC)
System Requirements	Laptop PC containing → 32-bit CardBus slot (or Desktop PC with PC Card-PCI adapter) → 64MB memory or greater → 300MHz processor or greater Microsoft Windows 98 Second Edition/Millennium Edition/2000/NT 4.0 with Service Pack 6,Windows XP

\*valid operating channel numbers by **FCC**

Regulatory domain	Band(GHz)	Operating Channel Numbers	Channel center frequencies(MHz)
The United States	U-NII I band (5.15GHz~5.25GHz)	36	5180
		40	5200
		44	5220

		48	5240
The United States	U-NII II band (5.25GHz~5.35GHz)	52	5260
		56	5280
		60	5300
		64	5300
The United States	U-NII III band (5.725GHz~5.825GHz)	149	5745
		153	5765
		157	5785
		161	5805

\*valid operating channel numbers by **ETSI,HYPERLAN/2**

Regulatory domain	Band(GHz)	Operating Channel Numbers	Channel center frequencies(MHz)
ETSI	5.15GHz~5.25GHz	36	5180
		40	5200
		44	5220
		48	5240
ETSI	5.25GHz~5.35GHz	52	5260
		56	5280
		60	5300
		64	5300
ETSI	5.500GHz~5.700GHz	100	5500
		104	5520
		108	5540
		112	5560
		116	5580
		120	5600
		124	5620
		128	5640
		132	5660
		136	5680
140	5700		

\*valid operating channel numbers by **TELEC**

Regulatory domain	Band(GHz)	Operating Channel Numbers	Channel center frequencies(MHz)
TELEC	5.15GHz~5.25GHz	34	5170
		38	5190
		42	5210
		46	5230

Output power table [dBm],base mode for 802.11a ,**FCC**( preliminary DATA)

CH	5180 MHz	5200 MHz	5220 MHz	5240 MHz	5260 MHz	5280 MHz	5300 MHz	5320 MHz	5745 MHz	5765 MHz	5785 MHz	5805 MHz
6~24 Mbps	17	17	17	17	17	17	17	17	16	16	16	16

36 Mbps	15	15	15	15	15	15	15	15	15	15	15	15
48 Mbps	14	14	14	14	14	14	14	14	14	14	14	14
54 Mbps	13	13	13	13	13	13	13	13	13	13	13	13

Output power table [dBm], turbo mode for 802.11a, **FCC**( preliminary DATA)

CH	5210 MHz	5250MHz	5290 MHz	5760 MHz	remark
12~48 Mbps	17	17	17	16	
72 Mbps	15	15	15	15	
96 Mbps	14	14	14	14	
108Mbps	13	13	13	13	

Output power table [dBm],base mode for 802.11a ,**ETSI**( preliminary DATA)

CH	5180 MHz	5200 MHz	5220 MHz	5240 MHz	5260 MHz	5280 MHz	5300 MHz	5320 MHz	5500~5700 MHz	remark
6~24 Mbps	17	17	17	17	17	17	17	17	17	
36 Mbps	15	15	15	15	15	15	15	15	15	
48 Mbps	14	14	14	14	14	14	14	14	14	
54 Mbps	13	13	13	13	13	13	13	13	13	

Output power table [dBm],base mode for 802.11a ,**TELEC**( preliminary DATA)

Channel	5170 MHz	5190MHz	5210 MHz	5230 MHz
6~24 Mbps	16	17	17	17
36 Mbps	15	15	15	15
48 Mbps	14	14	14	14
54 Mbps	13	13	13	13

Output power table [dBm] in 802.11g, **FCC**( preliminary DATA)

CH	2412 MHz	2447MHz	2472 MHz	remark
6~24 Mbps	16.5	19	16.5	
36 Mbps	16	18	16	
48 Mbps	16	16	16	
54Mbps	15	15	15	

Output power table [dBm] in 802.11g, **ETSI**( preliminary DATA)

CH	2412 MHz	2447MHz	2472 MHz	remark
6~24 Mbps	17	17	16.5	
36 Mbps	17	17	16.5	
48 Mbps	16	16	16	
54Mbps	15	15	15	

Output power table [dBm] in 802.11g, **TELEC**( [preliminary DATA](#))

CH	2412 MHz	2447MHz	2472 MHz	remark
6~24 Mbps	16	16	16	
36 Mbps	16	16	16	
48 Mbps	16	16	16	
54Mbps	15	15	15	

Output power table [dBm] in 802.11b,**FCC**( [preliminary DATA](#))

CH	2412 MHz	2447MHz	2472 MHz	remark
1 Mbps	19	19	19	
2Mbps	19	19	19	
5.5Mbps	19	19	19	
11Mbps	19	19	19	

Output power table [dBm] in 802.11b,**ETSI**( [preliminary DATA](#))

CH	2412 MHz	2447MHz	2472 MHz	remark
1 Mbps	17	17	17	
2Mbps	17	17	17	
5.5Mbps	17	17	17	
11Mbps	17	17	17	

Output power table [dBm] in 802.11b,**TELEC**( [preliminary DATA](#))

CH	2412 MHz	2447MHz	2472 MHz	remark
1 Mbps	16	16	16	
2Mbps	16	16	16	
5.5Mbps	16	16	16	
11Mbps	16	16	16	

## **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.

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.

For operation within 5.15 ~ 5.25GHz frequency range, it is restricted to indoor environment, and the antenna of this device must be integral.

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.

### **IMPORTANT NOTE:**

#### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment has been SAR-evaluated for use in laptops (notebooks) with side slot configuration.

Maximum average SAR(1g) for 802.11b is 0.845 W/Kg.

Maximum average SAR(1g) for 802.11g is 0.522 W/Kg.

Maximum average SAR(1g) for 802.11a is 0.974 W/Kg.

### **IC Statement**

The device is certified to the requirements of RSS-210 for 2.4 GHz spread spectrum devices. To prevent radio interference to the licensed service (i.e. co-channel Mobile Satellite systems) this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Because high power radars are allocated as primary users (meaning they have priority) in 5250-5350 MHz, these radars could cause interference and/or damage to license exempt LAN devices.

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.