



DATA SHEET

802.11B/G MINI PCI

WN4402A



INTRODUCTION

WN4402A is an industrial MiniPCI Card which enables wireless networking systems to attain data transmission speeds at least up to 54 megabits-per-second (Mbps), while remaining backward compatible to the existing installed base of over 15 million Wi-Fi systems worldwide. It supports operation to both the IEEE 802.11b and IEEE 802.11g standards.

WN4402A enables a next generation of high-data-rate platforms for operation in the 2.4 GHz band that deliver a five-fold speed increase. The cost and performance advantages will make it an ideal solution for high bandwidth enterprise applications, such as wireless video conferencing and large file transfers, as well as advanced home networking applications such as multi-channel CD-quality audio and DVD-quality video streaming. WN4402A incorporates the 802.11g Draft Standard's mandatory modulation schemes—Complementary Code Keying (CCK), which is used in 802.11b, and Orthogonal Frequency Division Multiplexing (OFDM), used in 802.11g. Using CCK ensures backward-compatibility with the installed Wi-Fi 802.11b base, while OFDM provides the speed required for today's high-bandwidth applications

PRODUCT FEATURES

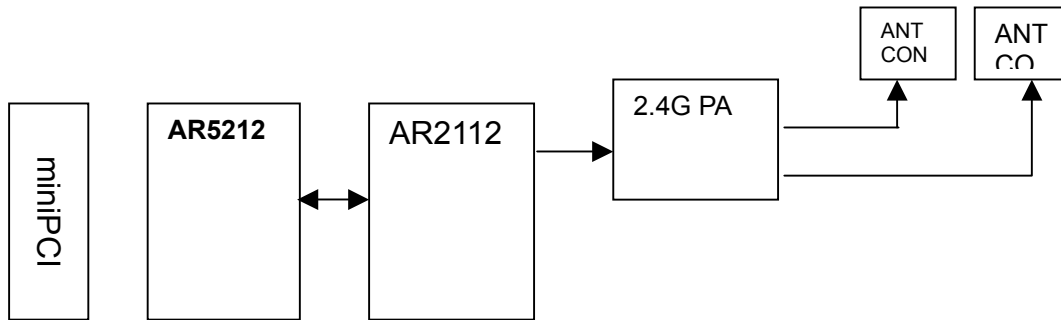
- High speed for wireless LAN connection, up to 54 Mbps data rate.
- A new WLAN software solution that improves 802.11g throughput by over 3x.
- Backward compatible to the existing IEEE 802.11b WLAN infrastructure.
- An user-friendly utility to configure SSID, security setup and site survey.
- Wireless data encryption using WEP 64, 128 bit encryption for security.
- Hardware AES Accelerator.
- Built-in antenna connectors.
- Firmware upgrade-able by only changing driver.

APPLICATIONS

- Home networking for device sharing.
- Wireless multimedia.
- Wireless office for extension Ethernet range.
- Mobile networking for notebook PC, PDA, Web Pad or Wireless Gateway Built-in Application.

HARDWARE

2.2 Hardware Architecture



MAIN CHIPSET INFORMATION

AR5212: An IEEE 802.11a/g/b MAC/Baseband processor, and CardBus/PCI bus interface.

AR2112: Radio-on-Chip (RoC). An all-CMOS single-chip radio transceiver that converts 2.4GHz signal to the baseband range for use by the AR5212. The AR2112 offers fully integrated transmitter, receiver, and frequency synthesizer functions; eliminating the need for external voltage controlled oscillators (VCOs) or SAW filters.

SOFTWARE

OPERATING SYSTEMS SUPPORTED

Windows 98SE, Windows ME, Windows 2000/XP and Linux

SECURITY

Wired Equivalent Privacy (WEP) supports 40, 64, and 128 bit keys.

Support WPA, IEEE 802.11i

CONFIGURATION UTILITY

A Utility to set SSID, WEP key and dynamically view configuration and receiving signal quality.

Support worldwide country channel selection.

SPECIFICATIONS

FREQUENCY BAND

802.11g Radio: 2.4 GHz

802.11b Radio: 2.4 GHz

USA - FCC

2412-2462MHz (Ch1-Ch11)

Canada - IC

2412-2462MHz (Ch1-Ch11)

Europe - ETSI

2412-2472MHz (Ch1-Ch13)

Spain

2457-2462MHz (Ch10-Ch11)

France

2457-2472MHz (Ch10-Ch13)

Japan - STD-T66/STD-33

2412-2484MHz (Ch1-Ch14)

MODULATION TYPE

OFDM, CCK

OPERATING CHANNELS

IEEE 802.11b compliant

11 channels (US, Canada)

13 channels (ETSI)

2 Channels (Spain)

4 Channels (France)

14 channels (Japan)

IEEE 802.11g compliant

11 channels (US, Canada)

13 channels (ETSI)

2 Channels (Spain)

4 Channels (France)

14 channels (Japan)

SECURITY

Security: 64/128-bit WEP/TKIP/AES-CCM/AES-OCB/ 802.1x, WPA and 802.11i

OPERATING VOLTAGE

3.0V ~ 3.6V

TRANSMITTED POWER

See Table 1

RATES/SENSITIVITY/ALLOWABLE PATH LOSS

See the Table 2

MECHANICAL SPECIFICATION

MiniPCI Type 3B

REGULATORY COMPLIANCE

Power Limit: FCC 15.407

ETSI, CE

CURRENT CONSUMPTION

TX: 420 438 mA Max; RX: 400 370mA Max; Power Saving: 20 24mA

OPERATING TEMPERATURE

0 ~ 55 oC ambient

STORAGE TEMPERATURE

-20 ~ 75 oC ambient

HUMIDITY

5 ~ 90% and must be non-condensing

ESD

EN61000-4-2, which specifies 4kV contact and 8kV air discharge.

TABLE 1: MODULATION SCHEME AND TRANSMIT POWER

MODULATION RATE	Output Power 2.4-2.5GHz (dBm)
802.11b - 1Mbps	1. 17
802.11b - 2Mbps	2. 17
802.11b - 5.5Mbps	3. 17
802.11b - 11Mbps	4. 17

Modulation Rate	Output Power 2.4-2.5GHz (dBm)
802.11g - 6Mbps	14

802.11g - 9Mbps	14
802.11g - 12Mbps	14
802.11g - 18Mbps	14
802.11g- 24Mbps	11
802.11g - 36Mbps	11
802.11g- 48Mbps	10
802.11g - 54Mbps	9

Table 2: Typical Range at Which Frame (1000 Bytes PDUs) Packet Error Rate < 10%

Modulation Rate		Receiver Sensitivity (dBm) 2.412 ~ 2.484 GHz
802.11b - 1Mbps		-88
802.11b - 2Mbps		-86
802.11b - 5.5Mbps		-84
802.11b- 11Mbps		-81
Modulation Rate	Receiver Sensitivity Typical (dBm)	
802.11g - 6Mbps	-87	
802.11g - 9Mbps	-85	
802.11g - 12Mbps	-82	
802.11g - 18Mbps	-81	
802.11g- 24Mbps	-77	
802.11g - 36Mbps	-74	
802.11g- 48Mbps	-67	
802.11g - 54Mbps	-66	

REFERENCES

Atheros STA Reference Design Functional Specification
 IEEE 802.11b Standard Specification
 IEEE 802.11g Draft Specification D7.1

REVISION HISTORY

Edition #	Reason for revision	Issue date	Written by
V 0.1	Initial Document	5/14, 2003	Christine Young

LIFE SUPPORT APPLICATIONS

These platforms are not designed for use in life support appliances, devices, or systems where malfunctions of these platforms can reasonably be expected to result in personal injury. Arcadyan customers using or selling these platforms for use in such applications do so at their own risk and agree to fully indemnify Arcadyan for any damages resulting from such improper use or sale.

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