

WMIR-200Nv2 PRODUCT APPROVAL SHEET

Version:1.3

Customer	SparkLAN Communication, Inc.
Part Number	R9900017647
Product Number	WMIR-200Nv2/E
Description	802.11b/g/n Mini-PCI Module, RT2860+RT2850

SparkLAN		Customer
Sales	PM	Approved by
	Angela Hung	

Revised History

Version	Purpose	Date	Editor
1.0	Initial Doc	2009/01/15	Irene
1.1	Added 3.2 Mechanical drawing	2010/06/30	Angela
	Revise Product Photo		
1.2	Revise Mechanical drawing	2010/08/13	Angela
1.3	Revised RoHS logo on label (deletion 2002/95/EC)	2012/12/07	Jane

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1. Introduction

1.1 Scope

This document describes the WMIR-200Nv2 dual band MiniPCI card hardware and software specifications.

1.2 Product Features

- ◆ Comply with IEEE 802.11n draft 2.0 and IEEE 802.11b/g standards.
- ◆ High data transfer rate - up to 300Mbps.
- ◆ High throughput supports multi-media data bandwidth requirement.
- ◆ Farther coverage, less dead spaces and higher throughput with MIMO technology.
- ◆ Supports QoS-WMM, WMM-PS.
- ◆ Supports 64/128-bit WEP,WPA (TKIPwith IEEE 802.1x),WPA2 (AES with IEEE 802.1x) functions for high level of security.
- ◆ Supports the most popular operating system: Windows 2000/XP/XP64/Vista and Linux.
- ◆ Supports MiniPCI Type III B interface.
- ◆ Supports WPS (WiFi Protected Setup)
- ◆ Support 32-bit MiniPCI interface.

2. Product Specification

Product	802.11b/g/n Wireless LAN MiniPCI Card
Standard	IEEE 802.11 b/g and IEEE 802.11n Draft 2.0
Interface Type	MiniPCI Type III A
Frequency Band	2.4000~2.4835GHz (subject to local regulations) .
Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM (11n) OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) BPSK, QPSK, CCK (11b)
Data Rate	11n (20MHz): MCS0-15, 32 with Half Guard Interval Support (up to 144Mbps) 11n (40MHz): MCS0-15, 32 with Half Guard Interval Support (up to 300Mbps)11g: 54/48/36/24/18/12/9/6 11b: 11/5.5/2/1Mbps auto fallback
Security	WEP 64/128, WPA, WPA2, Cisco CCX Support
Antenna	I-PEX Connector x 3
Drivers	Windows 2000/XP/XP64/Vista and Linux
Power Consumption	Idle: 244mA Power Save Mode: 82.3mA 2.4GHz -11n Continuous TX: 430mA -11n Continuous RX: 681mA . . .
Transmit Power	2.4GHz -11b:17~18dBm -11g:14~15dBm -11n:14~15dBm

Receive Sensitivity	2.4GHz -300Mbps OFDM, 10% PER, -65dBm -54Mbps OFDM, 10% PER, -75dBm -11Mbps CCK, 8% PER, -89dBm . . .
Dimension	59.75(W) x 50.95(D) x 1.0(H)mm
Temperature	32~122°F (0~55°C)
Humidity	Max.95% (NonCondensing)
Antenna	2T3R
Antenna Type	PCB
Antenna Connectr	IPEX, Antenna
Gain	2dBi

3. Hardware Architecture

3.1 Hardware Picture



3.6 Main Chipset Specification

MAC/Baseband Processor

The RT2800 dual band MIMO 2T3R chipset for PCI consists of two highly integrated ICs (RT2860 and RT2850) that fully comply with IEEE 802.11n draft 2.0 and IEEE 802.11 a/b/g standards and operate in 2.4GHz or 5GHz bands. The chipset delivers reliable, cost-effective, feature rich wireless connectivity at high throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance and low power consumption. Intelligent MAC design deploys a high efficient DMA engine and hardware data processing accelerators without overloading the host processor. The RT2800 is designed to support standard based features in the areas of security, quality of service and international regulation, giving end users the greatest performance anytime in any circumstance.

RT2860 MAC/BBP Features

- ◆ 1x1/1x2/1x3/2x1/2x2/2x3 modes
- ◆ STBC Support for Extended Range
- ◆ 300MHz PHY Rate Support
- ◆ Legacy and High Throughput Modes
- ◆ 20MHz/40MHz bandwidth
- ◆ Reverse Direction Data Flow and Frame Aggregation
- ◆ WEP 64/128, WPA, WPA2 Support
- ◆ QoS – WMM, WMM-PS
- ◆ Wake on Wireless LAN
- ◆ Multiple BSSID Support
- ◆ CardBus / Mini PCI / PCI
- ◆ International Regulation - 802.11d + h
- ◆ Cisco CCX V1.0 V2.0 V3.0 Compliance
- ◆ Bluetooth Co-existenc
- ◆ Low Power with Advanced Power
- ◆ Low Power with Advanced Power Management
- ◆ Operating Systems - Windows XP, 2000, ME, 98SE, Vista, Linux, MAC
- ◆ 16mm x 16mm TQFP-144 Package 3.3V/1.2V, 3/5V PCI I/O

11/b/g/n Transceiver

RT2850 is a monolithic SiGe RF IC that integrates multiple half-duplex direct-conversion radio transceivers designed for IEEE802.11b/g/n WLAN systems or other wireless LAN applications 2.4GHz (low-band) ISM bands.

The IC has two concurrent transmit channels and three concurrent receive channels. The multiple channels are designed to improve robustness and throughput during wireless operation. Each receive channel achieves low noise figure, high input sensitivity, high linearity, and high output power while consuming low dc power. Each receive path features a gain selectable, low-noise amplifiers (LNA), followed by RF-to-baseband I/Q demodulators, discrete-step variable-gain amplifiers and integrated channel-selection filters. The transmit chain includes integrated reconstruction filters, a baseband-to-RF I/Q modulator, discrete-step variable-gain amplifiers for power-level control, and pre-drivers for external power amplifiers. The modulator and demodulator are driven by internal VCO. The VCO is phase-locked by an internal 3-wire-interfaced PLL. The bandwidth of the integrated channel-selection filters and the reconstruction filters can be programmed to narrow-band (10MHz) and wide- band (20MHz). Their bandwidth is calibrated by an internal autonomous calibration circuit. To help IQ mismatch calibration, a baseband transmit-to-receive loopback feature is provided. A crystal oscillator using external crystal and three low dropout regulators (LDO) are also integrated.

The RT2850 is housed in a 76-pin 9x9mm² leadless QFN package well suited for PCMCIA, MiniPCI, PCI, USB boards or embedded applications. It is designed to work seamlessly with RT2860B and RT2880 base band/Mac IC.

RT2850 Transceiver Features

- ◆ 3 receivers and 2 transmitters
- ◆ World-wide bands
- ◆ Low noise figure
- ◆ High linearity
- ◆ Low power consumption
- ◆ Integrated channel-selection filters
- ◆ Integrated reconstruction filters
- ◆ Power management/standby mode
- ◆ Integrated low dropout regulators
- ◆ Single supply 3.0 to 3.6V operation

4.0 Hardware Specification

4.1 Power Consumption

- ◆ Voltage: 3.3V
- ◆ Idle: 244mA
- ◆ Power Save Mode: 82.3mA
- ◆ Radio Off: 26mA

4.2 2.4G band Power consumption Test Results (Unit: mA)

Model	Continuous TX	Continuous RX
11b	612	--
11g	651	344
11n (20MHz)	657	357
11n (40MHz)	681	430

4.4 Transmit Power

2.4GHz band Transmitter power test results (Unit: dBm)

Channel	Channel 1	Channel 6	Channel 11	Channel 13
11b	17.9	17.6	17.3	16.9
11g	14.9	14.2	14.0	13.6
11n (20MHz)*	15.3/15.3	14.8/15.3	14.7/15.0	14.5/15.2

Channel	Channel 3	Channel 6	Channel 9
11n (40MHz)*	15.8/15.7	14.8/15.2	14.5/14.7

*Note: The output power for two antennas (2T).

4.5 Receiver Sensitivity

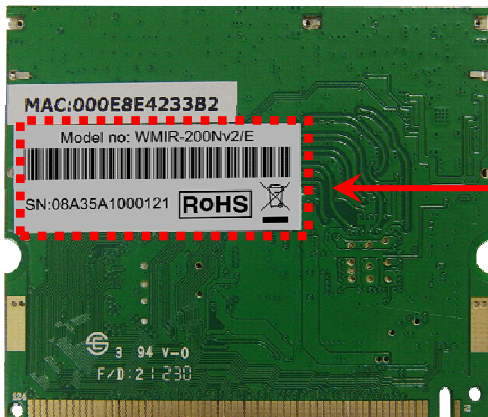
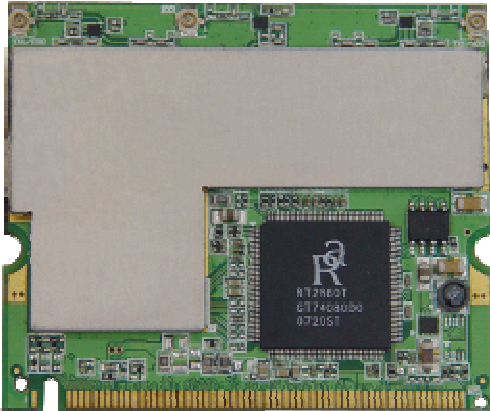
2.4GHz band Receiver Sensitivity test results (Unit: dBm)

Channel	Channel 1	Channel 6	Channel 11	Channel 13
11b	-89	-89	-89	-89
11g	-76	-76	-77	-75
11n (20MHz)	-68	-68	-68	-68

Channel	Channel 3	Channel 6	Channel 9
11n (40MHz)	-65	-65	-65

5. Standard Packing

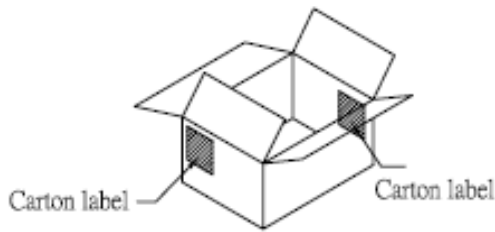
5.1 Product Label



Label Size: 38*15mm



5.2 Packing & Carton Label



Carton label Size: 100x165mm

802.11n draft Mini-PCI

Part Number: R9900017647

Model No.: WMIR-200Nv2/E

Q'TY: XXX PCS

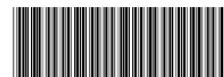


S/N: From:



XXXXXXXXXXXXXXXXXX

To:



XXXXXXXXXXXXXXXXXX

NW : ____ Kgs

GW: ____ Kgs

Carton of No.: /



Made In XXX

6. CUSTOMIZE REQUIREMENT

NA

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 UNDESIRE OPERATION.

Federal Communications Commission Requirements

The equipment has been tested and found to comply with the limits for 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 instruction, may cause harmful interference to radio communication. 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.

THE 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 receiver.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

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.

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,

IMPORTANT NOTE:

In the event that these conditions cannot 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: XXX-YYYYYYYY”