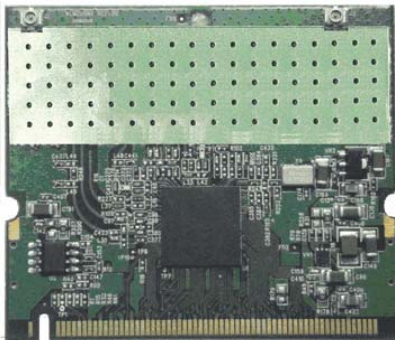**COMPEX**

WLM200NX MINIPCI

2 x 2 802.11N MIMO mini-PCI Modules

WLM200NX MiniPCI network adapter provides leading 802.11a/b/g/n performance, supporting up to 300Mbps physical data rates and 200Mbps of actual user throughput on both the uplink and downlink. With the dual-band design you will enjoy universal connectivity to any 802.11 device through your wireless AP or wireless Router.

Built on Atheros chipset, it can be used with all draft IEEE 802.11n compatible WLANs, and is ideally suited to be integrated into a wide range of OEM devices.

Features

- 2.4/5GHz IEEE 802.11a/b/g/n standard

- Output Power of up to 20dBm @ a/b/g/n Band

- Support for up to 2x2 MIMO with spatial multiplexing

- Four times the throughput of 802.11b/g and 802.11a

- Wireless Encryption and Authentication Supported

- Transmission Power Control (TPC)

- Enhanced performance with Atheros XSPAN technology Optimized for higher throughput at long range

- High Performance (up to 300Mbps physical data rates and 200Mbps of actual throughput) with Low Power Consumption

- Multi-Country Roaming Support (IEEE802.11d)

- 2 X U.FL Antenna Connector

- Suitable for Embedded System or OEM Project

- Affordable and Ideal for a Variety of Applications

-

Technical Specifications

Chipset	AR9220
Host Interface	PCI Interface v2.3 (Type III-B Mini PCI form factor)
Operating Voltage	3.3 VDC
Power Consumption	2.4W
Antenna Connector	2 x U.FL Antenna Connector
Data Rate	IEEE 802.11a : 54Mbps / 48Mbps / 36Mbps / 24Mbps / 18Mbps / 12Mbps / 9Mbps / 6Mbps IEEE 802.11b : 11Mbps / 5.5Mbps / 2Mbps / 1Mbps IEEE 802.11g : 54Mbps / 48Mbps / 36Mbps / 24Mbps / 18Mbps / 12Mbps / 9Mbps / 6Mbps / automatically — Fallback to 5.5Mbps, 2Mbps, 1Mbps IEEE 802.11n : 20MHZ — 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.); 2Nss: 130Mbps @ 800GI, 144.4Mbps @ 400GI (Max.) 40MHz — 1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.); 2Nss: 270Mbps @ 800GI, 300Mbps @ 400GI (Max.)
Modulation Techniques	OFMD: BPSK, QPSK, 16 QAM, 64QAM DSSS: DBPSK, DQPSK, CCK
Security	64/128-bit WEP, TKIP, AES, IEEE802.1x authentication
Certificate	FCC, CE
ROHS Compliance	Yes
Environment Specifications	Operating: -20°C to 70°C Storage: -65°C to 100°
Humidity	5% to 95% (non-condensing)
Dimension	59.6 x 51 x 3 mm

WLM200NX MIMO MINIPCI CARD RADIO

	TX SPECIFICATIONS					TX SPECIFICATIONS		
	DataRate	**TX Power**	**Tolerance**			**DataRate**	**TX Power**	**Tolerance**
802.11a	6-24Mbps	18dBm	±2dB		**802.11b**	1Mbps	20dBm	±2dB
	36Mbps	18dBm	±2dB			2Mbps	20dBm	±2dB
	48Mbps	17dBm	±2dB			5.5Mbps	20dBm	±2dB
	54Mbps	16dBm	±2dB			11Mbps	20dBm	±2dB
802.11g	6-24Mbps	20dBm	±2dB		**802.11n**	2.4GHz	HT20 @800GI(400GI): +16 ~ +20dBm	
	36Mbps	19.5dBm	±2dB				HT40 @800GI(400GI): +14 ~ +18dBm	
	48Mbps	18.5dBm	±2dB			5GHz	HT20 @800GI(400GI): +10 ~ +18dBm	
	54Mbps	17dBm	±2dB					

RX SPECIFICATIONS（802.11b）

	Data Rate	Sensitivity (Typical/Maximum 2Rx)	Tolerance
802.11b	1M	-96/-92Bm	±2dB
	5.5M	-94/-90dBm	±2dB
	11M	-91/-87dBm	±2dB

	RX SPECIFICATIONS(802.11a)				RX SPECIFICATIONS（802.11g）		
	Data Rate	**Sensitivity** (Typical/Maximum 2Rx)	**Tolerance**		**Data Rate**	**Sensitivity** (Typical/Maximum 2Rx)	**Tolerance**
802.11a	6M	-95/-91dBm	±2dB	**802.11g**	6M	-96/-92dBm	±2dB
	9M	-95/-91dBm	±2dB		9M	-96/-92dBm	±2dB
	12M	-95/-91dBm	±2dB		12M	-96/-92dBm	±2dB
	18M	-94/-90dBm	±2dB		18M	-95/-91dBm	±2dB
	24M	-90/-86dBm	±2dB		24M	-92/-88dBm	±2dB
	36M	-87/-83dBm	±2dB		36M	-89/-85dBm	±2dB
	48M	-83/-79dBm	±2dB		48M	-85/-81dBm	±2dB
	54M	-82/-78dBm	±2dB		54M	-83/-79dBm	±2dB

802.11 a/n HT20	MCS0	-95/-91dBm	±2dB		**802.11 b/g/n HT20**	MCS0	-96/-92dBm	±2dB
	MCS1	-94/-90dBm	±2dB			MCS1	-95/-91dBm	±2dB
	MCS2	-92/-88dBm	±2dB			MCS2	-93/-89dBm	±2dB
	MCS3	-88/-84dBm	±2dB			MCS3	-90/-86dBm	±2dB
	MCS4	-85/-81dBm	±2dB			MCS4	-87/-81dBm	±2dB
	MCS5	-81/-77dBm	±2dB			MCS5	-83/-76dBm	±2dB
	MCS6	-80/-76dBm	±2dB			MCS6	-81/-76dBm	±2dB
	MCS7	-77/-73dBm	±2dB			MCS7	-79/-73dBm	±2dB
	MCS8	-94/-90dBm	±2dB			MCS8	-95/-91dBm	±2dB
	MCS9	-92/-87dBm	±2dB			MCS9	-93/-89dBm	±2dB
	MCS10	-89/-85dBm	±2dB			MCS10	-90/-86dBm	±2dB
	MCS11	-86/-82dBm	±2dB			MCS11	-87/-83dBm	±2dB
	MCS12	-83/-79dBm	±2dB			MCS12	-84/-80dBm	±2dB
	MCS13	-78/-74dBm	±2dB			MCS13	-79/-75dBm	±2dB
	MCS14	-77/-73dBm	±2dB			MCS14	-77/-73dBm	±2dB
	MCS15	-74/-69dBm	±2dB			MCS15	-75/-71dBm	±2dB
802.11 a/n HT40	MCS0	-91/-87dBm	±2dB		**802.11 b/g/n HT40**	MCS0	-90/-86dBm	±2dB
	MCS1	-90/-86dBm	±2dB			MCS1	-90/-86dBm	±2dB
	MCS2	-88/-84dBm	±2dB			MCS2	-89/-85dBm	±2dB
	MCS3	-85/-81dBm	±2dB			MCS3	-87/-82dBm	±2dB
	MCS4	-82/-78dBm	±2dB			MCS4	-84/-79dBm	±2dB
	MCS5	-78/-74dBm	±2dB			MCS5	-79/-75dBm	±2dB
	MCS6	-77/-73dBm	±2dB			MCS6	-78/-74dBm	±2dB
	MCS7	-74/-70dBm	±2dB			MCS7	-75/-71dBm	±2dB
	MCS8	-91/-87dBm	±2dB			MCS8	-90/-86dBm	±2dB
	MCS9	-88/-84dBm	±2dB			MCS9	-89/-85dBm	±2dB
	MCS10	-86/-82dBm	±2dB			MCS10	-87/-83dBm	±2dB
	MCS11	-83/-79dBm	±2dB			MCS11	-84/-80dBm	±2dB
	MCS12	-80/-76dBm	±2dB			MCS12	-81/-77dBm	±2dB
	MCS13	-75/-71dBm	±2dB			MCS13	-76/-72dBm	±2dB
	MCS14	-73/-69dBm	±2dB			MCS14	-74/-68dBm	±2dB
	MCS15	-70/-66dBm	±2dB			MCS15	-71/-67dBm	±2dB

DRIVER INFORMATION	
Driver	Linux Madwifi, WindowsXP , Windows 2000,Windwos Vista

ORDERING CONFIGURATIONS[1]

CODES	SPEED	Carton Dimension
WLM200NX 6AA1100	Up to 300 Mbps physical data rates	For 50pcs (pcs/ctn), 0.40m * 0.22m * 0.085m / 0.006 = 1.5KG
WLM200NX 6AA1300	Up to 300 Mbps physical data rates	For 250pc (pcs/ctn), 0.45m * 0.45m * 0.24m / 0.006 = 8.1KG

[1] Configurations are subjected to change without notice

Compliance Information

FCC Compliance Statement: 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. This device must accept any interference received, including interference that may cause undesired operation.

Product that is a radio transmitter is labeled with FCC ID.

FCC Caution*:*

(1) Exposure to Radio Frequency Radiation. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) 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 or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

(2) Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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

(4) Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

(5) Outdoor Operations in the 5.15~5.25GHz band is prohibited.

NOTE:

(1) This device is approved for OEM installation with specified antennas as listed in this Manual. It is the responsibility of the Installer to comply with the separation distance for satisfying RF exposure compliance.

(2) This device only could work when being installed into "client devices" which could not transmit automatically, such as Notebook P.C. , with the software driver limit.

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.
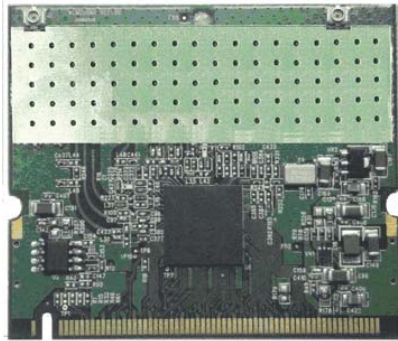
WARNING: This Wireless Mini PCI Adapter does not support ad-hoc mode Function

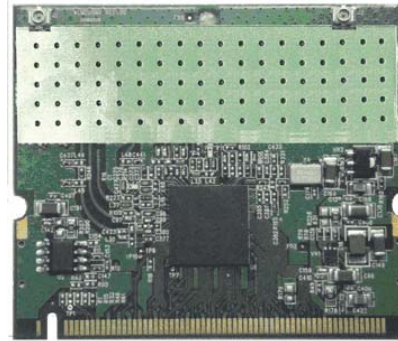**IMPORTANT NOTE REGARDING ANTENNA USE**

Antenna Use (Point to Multipoint)   **Antenna Use (Point to Point)**

2x2 Operation   **1x1 Operation**

Chain1   Chain2   Chain1

DIMENSIONS DRAWING
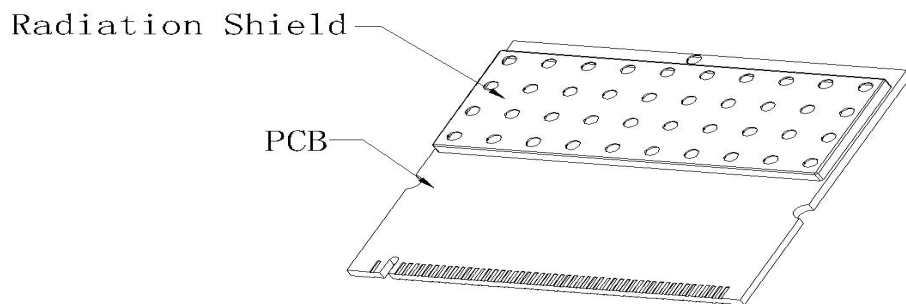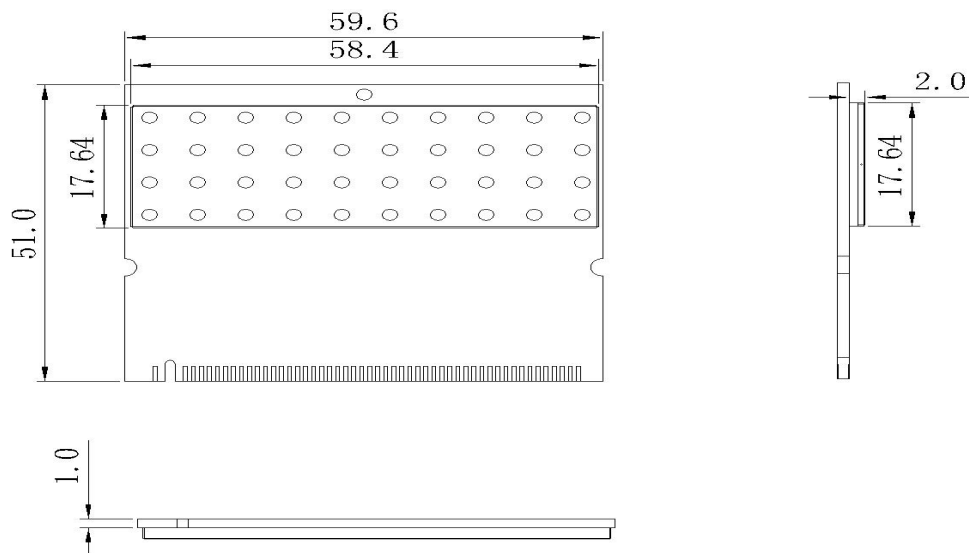
WLM FAMILY SERIES OF MINIPCI

	b / g (2.4GHz)					a / b / g (2.4/5GHz)		
MODEL	WLM 54G-20dBM	WLM 54G-23dBm	WLM 54G-26dBm	WLM 54G – 28dBm	WLM200N2	WLM 54AG – 20dBm	WLM 54 AG – 23dBm	WLM 54A – 26dBm
CHIPSET	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR9223	AR 5413/5414 (AR5006X/XS)	AR 5413/5414 (AR5006X/XS)	AR5414(AR5006XS)
SPEED	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 300Mbps physical data rates	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 108Mbps
OUTPUT POWER (Average)								
802.11a	-	-	-	-	-	-	23dBm@6-24Mbps	26dBm@6-24Mbps
						17dBm@36Mbps	21dBm@36Mbps	24dBm@36Mbps
						16dBm@48Mbps	19dBm@48Mbps	22Bm@48Mbps
						13dBm@54Mbps	17dBm@54Mbps	20dBm@54Mbps
802.11b	20dBm@1-11Mbps	23dBm@1-11Mbps	26dBm@1-11Mbps	28dBm@1-11Mbps	20dBm@1-11Mbps	20dBm@1-11Mbps	23dBm@1-11Mbps	
802.11g	20dBm@6-24Mbps	23dBm@6-24Mbps	26dBm@6-24Mbps	28dBm@6-24Mbps	20dBm@6-24Mbps	20dBm@6-24Mbps	23dBm@6-24Mbps	
	19dBm@36Mbps	22dBm@36Mbps	25dBm@36Mbps	26dBm@36Mbps	19.5dBm@36Mbps	18dBm@36Mbps	21dBm@36Mbps	
	17dBm@48Mbps	19dBm@48Mbps	24dBm@48Mbps	25dBm@48Mbps	18.5dBm@48Mbps	17dBm@48Mbps	19dBm@48Mbps	
	16dBm@54Mbps	17dBm@54Mbps	22dBm@54Mbps	23dBm@54Mbps	17dBm@54Mbps	15dBm@54Mbps	17dBm@54Mbps	
Modulation Techniques	OFDM and DSSS OFDM: BPSK, QPSK, 16QAM, 64QAM DSSS: DBPSK, DQPSK, CCK							
Interface	PCI Interface v2.3 (Type III-B Mini PCI Form Factor)							
Receiver Sensitivity	802.11g < -90dBm @ 6Mbps 802.11b < -92dBm@ 6Mbps 802.11a < -90dBm @ 6Mbps < -70dBm @ 54Mbps < -87dBm @11Mbps < -70dBm @ 54Mbps							
Operating Channels	IEEE 802.11g: 11 Channel (US & Canada) 13 Channel (Europe) 14 Channel (Japan)					IEEE 802.11a: 13 Channel (US & Canada) 19 Channel (Europe) 10 Channel (Japan)		
Power	3.3VDC							
Operating Temperature	-20°C to 70°C							
Dimensions	6.0cm x 4.5cm High Power Cards (26dBm/30dBm) has bigger dimensions.							

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