

Radio module

WLM200NX MINIPCI

2 x 2 802.11N 2.4/5GHz Dual-band MIMO miniPCI



Features

- Atheros XSPAN family chipset
- 2.4/5GHz IEEE 802.11n draft compliant and backward compatible with 802.11
- 2.4/5GHz Dual-band 2x2 MIMO spatial multiplexing technique
- Maximum 20dBm output (per antenna port) - 23dBm aggregate
- Supports up to 300Mbps physical data rates
- Delivers 10 times the throughput and nearly twice the range of legacy 802.11 and 802.11b/g networks
- Transmission Power Control (IEEE 802.11h TPC)
- Dynamic Frequency Selection (DFS)
- Multi-Country Roaming Supported (IEEE802.11d Global Harmonization Standard)
- 2 x U.FL Antenna Connectors

Technical Specifications											
Chipset	AR9220										
Host Interface	PCI Interface v2.3 (Type III-A Mini PCI form factor)										
Operating Voltage	3.3 VDC										
Power Consumption [2T2R]	11b Cont. Tx @5.5M	2.5W									
	11g Cont. Tx @6M	2.5W									
	11a Cont. Tx @6M	2.5W									
	11ng Cont. Tx@HT20 MCS0	2.3W									
	11ng Cont. Tx@HT40 MCS0	2.3W									
	11na Cont. Tx@HT20 MCS0	2.3W									
	11na Cont. Tx@HT40 MCS0	2.3W									
	11g Cont. Rx	0.9W									
	11a Cont. Rx	0.9W									
Standby	0.7W										
Antenna Connector	2 x U.FL										
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		
	IEEE 802.11n :	20MHz	1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.)								
			2Nss: 130Mbps @ 800GI, 144.4Mbps @ 400GI (Max.)								
IEEE 802.11n :	40MHz	1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.)									
		2Nss: 270Mbps @ 800GI, 300Mbps @ 400GI (Max.)									
Frequency Range	IEEE 802.11b/g:	2.412GHz ~ 2.462GHz (US & Canada)									
		2.412GHz ~ 2.472GHz (Europe)									
		2.412GHz ~ 2.484GHz (Japan)									
	IEEE 802.11a:	5.150 ~ 5.350 GHz, 5.470 ~ 5.725GHz, 5.725 ~ 5.850 GHz (US & Canada)									
		5.150 ~ 5.350 GHz, 5.470 ~ 5.725GHz, 5.725 ~ 5.875 GHz (Europe)									
		5.150 ~ 5.250 GHz, 5.250 ~ 5.350GHz, 5.470 ~ 5.725GHz (Japan)									
	IEEE 802.11n	2.412GHz ~ 2.462GHz (US & Canada)									
		2.412GHz ~ 2.472GHz (Europe)									
		2.412GHz ~ 2.484GHz (Japan)									
		5.150 ~ 5.350 GHz, 5.470 ~ 5.725GHz, 5.725 ~ 5.850 GHz (US & Canada)									
5.150 ~ 5.350 GHz, 5.470 ~ 5.725GHz, 5.725 ~ 5.875 GHz (Europe)											
5.150 ~ 5.250 GHz, 5.250 ~ 5.350GHz, 5.470 ~ 5.725GHz (Japan)											
Modulation Techniques	OFDM: BPSK, QPSK, 16QAM, 64QAM DSSS: DBPSK, DQPSK, CCK										
Radio & EMC Certificate	FCC Part 15.407 (5.150--5.350GHz & 5.470--5.725GHz & 5.725 ~ 5.825GHz), FCC Part 15.247 (5.725 ~ 5.850GHz), FCC Part 15.247 (2.400 ~ 2.4835GHz), FCC CFR Title 47 Part 15 Subpart C: Section 15.207 FCC CFR Title 47 Part 15 Subpart C: Section 15.209 FCC CFR Title 47 Part 15 Subpart C: 15.215(c) FCC CFR Title 47 Part 15 Subpart B: Class B ANSI C63.4 FCC OET 65 Limited module level approval. ETSI, EN 301 893, EN 302 502, EN 300 328, EN 301 489-1/17, EN 50392, EN 55022, EN 55024, EN 61000-3-2/3, EN 61000-4-3/4/5/6/11										
RoHS Compliance	Yes										
Environment Specifications	Operating: -20°C to 70°C Storage: -40°C to 90°C										
Humidity	5% to 95% (non-condensing)										
Dimension	59.6 x 51 x 3 mm										

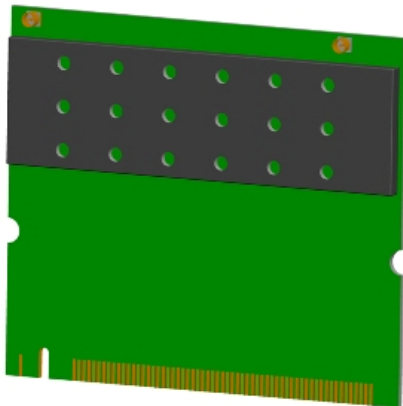
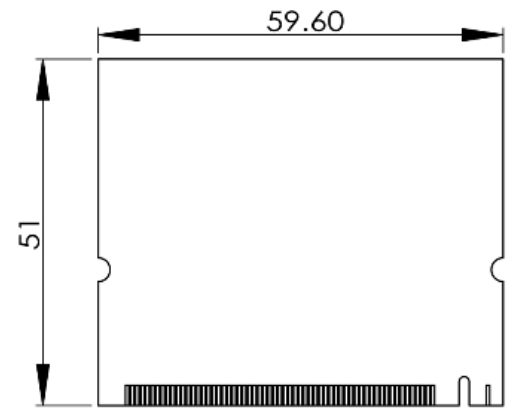
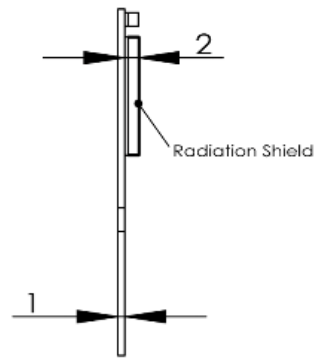
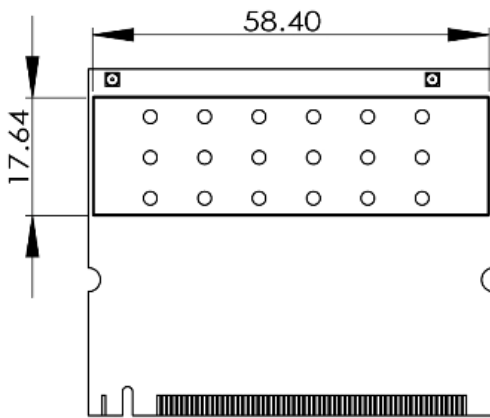
WLM200NX MIMO MINIPCI CARD RADIO									
TX SPECIFICATIONS									
	DataRate	TX Power (per chain)	TX Power (2 chains)	Tolerance		DataRate	TX Power (per chain)	TX Power (2 chains)	Tolerance
802.11a	6-24Mbps	18dBm	21dBm	±2dB	802.11b/g	6-24Mbps	20dBm	23dBm	±2dB
	36Mbps	18dBm	21dBm	±2dB		36Mbps	19.5dBm	22.5dBm	±2dB
	48Mbps	17dBm	20dBm	±2dB		48Mbps	18.5dBm	21.5dBm	±2dB
	54Mbps	16dBm	19dBm	±2dB		54Mbps	17dBm	20dBm	±2dB
	DataRate	TX Power (per chain)	TX Power (2 chains)	Tolerance		DataRate	TX Power (per chain)	TX Power (2 chains)	Tolerance
2.4GHz 11n HT20	MCS 0/8	18dbm	21dBm	±2dB	2.4GHz 11n HT40	MCS 0/8	18dBm	21dBm	±2dB
	MCS 1/9	18dbm	21dBm	±2dB		MCS 1/9	18dBm	21dBm	±2dB
	MCS 2/10	18dbm	21dBm	±2dB		MCS 2/10	17.5dBm	20.5dBm	±2dB
	MCS 3/11	17.5dbm	20.5dBm	±2dB		MCS 3/11	17dBm	20dBm	±2dB
	MCS 4/14	17.5dbm	20.5dBm	±2dB		MCS 4/14	16.5dBm	19.5dBm	±2dB
	MCS 5/13	17dbm	20dBm	±2dB		MCS 5/13	16dBm	19dBm	±2dB
	MCS 6/14	16dbm	19dBm	±2dB		MCS 6/14	15.5dBm	18.5dBm	±2dB
	MCS 7/15	15dbm	18dBm	±2dB		MCS 7/15	14.5dBm	17.5dBm	±2dB
5GHz 11n HT20	MCS 0/8	18dBm	21dBm	±2dB	5 GHz 11n HT40	MCS 0/8	16.5dBm	19.5dBm	±2dB
	MCS 1/9	18dBm	21dBm	±2dB		MCS 1/9	16.5dBm	19.5dBm	±2dB
	MCS 2/10	17.5dBm	20.5dBm	±2dB		MCS 2/10	16.5dBm	19.5dBm	±2dB
	MCS 3/11	17.5dBm	20.5dBm	±2dB		MCS 3/11	16.5dBm	19.5dBm	±2dB
	MCS 4/14	16.5dBm	19.5dBm	±2dB		MCS 4/14	16.5dBm	19.5dBm	±2dB
	MCS 5/13	16dBm	19dBm	±2dB		MCS 5/13	14.5dBm	17.5dBm	±2dB
	MCS 6/14	15dBm	18dBm	±2dB		MCS 6/14	14dBm	17dBm	±2dB
	MCS 7/15	12dBm	15dBm	±2dB		MCS 7/15	9dBm	12dBm	±2dB
RX SPECIFICATIONS (802.11b)									
	DataRate		Sensitivity (2 chains)		Tolerance				
802.11b	1M		-94dBm		±2dB				
	5.5M		-94dBm		±2dB				
	11M		-94dBm		±2dB				
RX SPECIFICATIONS									
	DataRate	Sensitivity (2 chains)		Tolerance		DataRate	Sensitivity (2 chains)		Tolerance
802.11a	6M	-94dBm		±2dB	802.1g	6M	-94dBm		±2dB
	9M	-94dBm		±2dB		9M	-94dBm		±2dB
	12M	-93dBm		±2dB		12M	-93dBm		±2dB
	18M	-90dBm		±2dB		18M	-90dBm		±2dB
	24M	-86dBm		±2dB		24M	-86dBm		±2dB
	36M	-83dBm		±2dB		36M	-83dBm		±2dB
	48M	-79dBm		±2dB		48M	-80dBm		±2dB
	54M	-77dBm		±2dB		54M	-78dBm		±2dB
2.4GHz 11n HT20	MCS0	-93dBm		±2dB	2.4GHz 11n HT40	MCS0	-90dBm		±2dB
	MCS1	-92dBm		±2dB		MCS1	-89dBm		±2dB
	MCS2	-90dBm		±2dB		MCS2	-87dBm		±2dB
	MCS3	-86dBm		±2dB		MCS3	-84dBm		±2dB
	MCS4	-83dBm		±2dB		MCS4	-80dBm		±2dB
	MCS5	-78dBm		±2dB		MCS5	-76dBm		±2dB
	MCS6	-77dBm		±2dB		MCS6	-74dBm		±2dB
	MCS7	-74dBm		±2dB		MCS7	-72dBm		±2dB
5 GHz 11n HT20	MCS0	-93dBm		±2dB	5 GHz 11n HT40	MCS0	-90dBm		±2dB
	MCS1	-91dBm		±2dB		MCS1	-88dBm		±2dB
	MCS2	-87dBm		±2dB		MCS2	-85dBm		±2dB
	MCS3	-85dBm		±2dB		MCS3	-82dBm		±2dB
	MCS4	-82dBm		±2dB		MCS4	-80dBm		±2dB
	MCS5	-78dBm		±2dB		MCS5	-76dBm		±2dB
	MCS6	-77dBm		±2dB		MCS6	-74dBm		±2dB
	MCS7	-74dBm		±2dB		MCS7	-72dBm		±2dB

Ordering Information ^①

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

Dimensions Drawing



WLM SERIES MINIPCI

b / g (2.4GHz)								a / b / g (2.4/5GHz)				
MODEL	WLM 54G-20dBm	WLM 54G-23dBm	WLM 54G-26dBm	WLM 54G-28dBm	WLM54G-30dBm	WLM200N2	WLM200N2-26dBm	WLM 54AG - 20dBm	WLM 54AG - 23dBm	WLM 54A - 26dBm	WLM200NX	WLM200N5-26
CHIPSET	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR 2413/2414 (AR5005G/GS)	AR9223	AR9223	AR 5413/5414 (AR5006X/XS)	AR 5413/5414 (AR5006X/XS)	AR5414 (AR5006XS)	AR9220	AR9220
SPEED	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 300Mbps physical data rates	UP TO 300Mbps physical data rates	UP TO 54/108Mbps	UP TO 54/108Mbps	UP TO 108Mbps	UP TO 300Mbps physical data rates	UP TO 300Mbps physical data rates
OUTPUT POWER (Average)												
802.11a								20dBm@6-24Mbps	23dBm@6-24Mbps	26dBm@6-24Mbps	20dBm@6-24Mbps	26dBm@6-24Mbps
								17dBm@36Mbps	21dBm@36Mbps	24dBm@36Mbps	17dBm@36Mbps	26dBm@36Mbps
								16dBm@48Mbps	19dBm@48Mbps	22Bm@48Mbps	16dBm@48Mbps	25Bm@48Mbps
								13dBm@54Mbps	17dBm@54Mbps	20dBm@54Mbps	13dBm@54Mbps	19dBm@54Mbps
802.11b	20dBm@1-11Mbps	23dBm@1-11Mbps	26dBm@1-11Mbps	28dBm@1-11Mbps	30Bm@1-11Mbps	20dBm@1-11Mbps	26dBm@1-11Mbps	20dBm@1-11Mbps	23dBm@1-11Mbps	-	20dBm@1-11Mbps	-
802.11g	20dBm@6-24Mbps	23dBm@6-24Mbps	26dBm@6-24Mbps	28dBm@6-24Mbps	30dBm@6-24Mbps	20dBm@6-24Mbps	26dBm@6-24Mbps	20dBm@6-24Mbps	23dBm@6-24Mbps	-	20dBm@6-24Mbps	-
	19dBm@36Mbps	22dBm@36Mbps	25dBm@36Mbps	26dBm@36Mbps	28dBm@36Mbps	19.5dBm@36Mbps	26dBm@36Mbps	18dBm@36Mbps	21dBm@36Mbps	-	18dBm@36Mbps	-
	17dBm@48Mbps	19dBm@48Mbps	24dBm@48Mbps	25dBm@48Mbps	27dBm@48Mbps	18.5dBm@48Mbps	22dBm@48Mbps	17dBm@48Mbps	19dBm@48Mbps	-	17dBm@48Mbps	-
	16dBm@54Mbps	17dBm@54Mbps	22dBm@54Mbps	23dBm@54Mbps	25dBm@54Mbps	17dBm@54Mbps	21dBm@54Mbps	15dBm@54Mbps	17dBm@54Mbps	-	15dBm@54Mbps	-
Interface	PCI Interface v2.3 (Type III-B Mini PCI Form Factor)					PCI Interface v2.3 (Type III-A Mini PCI Form Factor)		PCI Interface v2.3 (Type III-B Mini PCI Form Factor)			PCI Interface v2.3 (Type III/A Mini PCI Form Factor)	
Receiver Sensitivity	802.11g -94dBm @ 6Mbps < -73dBm @ 54Mbps 802.11b -94dBm @ 6Mbps -91dBm @ 11Mbps		802.11g -96dBm @ 6Mbps < -83dBm @ 54Mbps 802.11b -96dBm @ 6Mbps -91dBm @ 11Mbps			802.11g -96dBm @ 6Mbps < -83dBm @ 54Mbps 802.11b -96dBm @ 6Mbps -91dBm @ 11Mbps		802.11g -94dBm @ 6Mbps < -73dBm @ 54Mbps 802.11b -94dBm @ 6Mbps -91dBm @ 11Mbps 802.11a -94dBm @ 6Mbps < -73dBm @ 54Mbps		-94dBm @ 6Mbps -73dBm @ 54Mbps	Refer to datasheet	Refer to datasheet
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)				
Input Power	3.3V DC											
Operating Temperature	-20°C to 70°C											

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