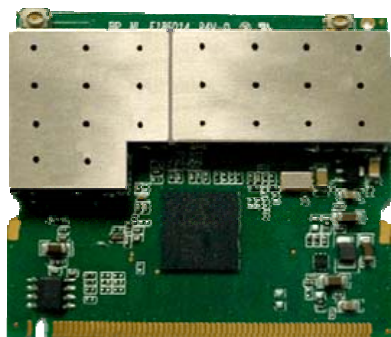




Radio module

WLM200N5-23 ESD MINIPCI

2 x 2 802.11N 5GHz Single-band MIMO miniPCI

Features

- Atheros XSPAN family chipset
- 5GHz IEEE draft 802.11n compliant and backward compatible with 802.11a
- 5GHz Single-band 2x2 MIMO spatial multiplexing technique
- Maximum 23dBm output (per antenna port) - 26dBm aggregate
- Built-in ESD Protection with RF ESD/EMP Immunity Threshold: 15KeV^①
- Supports up to 300Mbps physical data rates
- Delivers 10 times the throughput and nearly twice the range of legacy 802.11a network
- 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	Atheros AR9220									
Host Interface	PCI Interface v2.3 (Type III-A Mini PCI form factor)									
Operating Voltage	3.3 VDC									
Power Consumption	11a Cont. Tx @6M			3.5W						
	11na Cont. Tx@HT20 MCS0			3W						
	11na Cont. Tx@HT40 MCS0			3W						
	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 802.11n :	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.)										
Frequency Range	IEEE 802.11a/n:	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									
Radio & EMC Certificate	CE,FCC									
RoHS Compliance	Yes									
Environment Specifications	Operating: -20°C to 70°C Storage: -40°C to 90°C									
Humidity	5% to 95% (non-condensing)									
Dimension	59.6mm x 51.5mm x 6mm									

WLM200N5-23 ESD MIMO MINIPCI CARD RADIO											
TX SPECIFICATIONS											
		DataRate				TX Power				Tolerance	
802.11a		6-24Mbps				23dBm				±2dB	
		36Mbps				22dBm				±2dB	
		48Mbps				21dBm				±2dB	
		54Mbps				20dBm				±2dB	
	DataRate	TX Power (per chain)		Tolerance				DataRate	TX Power (per chain)		Tolerance
5GHz 11n HT 20	MCS 0/8	23dBm		±2dB		5GHz 11n HT 40		MCS 0/8	21dBm		±2dB
	MCS 1/9	22dBm		±2dB				MCS 1/9	21dBm		±2dB
	MCS 2/10	20.5dBm		±2dB				MCS 2/10	19.5dBm		±2dB
	MCS 3/11	20.5dBm		±2dB				MCS 3/11	19.5dBm		±2dB
	MCS 4/12	19.5dBm		±2dB				MCS 4/12	19dBm		±2dB
	MCS 5/13	19dBm		±2dB				MCS 5/13	17.5dBm		±2dB
	MCS 6/14	18dBm		±2dB				MCS 6/14	17.5dBm		±2dB
	MCS 7/15	17dBm		±2dB				MCS 7/15	14dBm		±2dB
RX SPECIFICATIONS											
	Data Rate	Sensitivity (2 chains)		Tolerance				Data Rate	Sensitivity (2 chains)		Tolerance
802.11a	6M	-95dBm		±2dB		802.11a		24M	-88dBm		±2dB
	9M	-95dBm		±2dB				36M	-87dBm		±2dB
	12M	-95dBm		±2dB				48M	-83dBm		±2dB
	18M	-92dBm		±2dB				54M	-80dBm		±2dB
5GHz 11n HT 20	MCS0	-94dBm		±2dB		5GHz 11n HT 40		MCS0	-91dBm		±2dB
	MCS1	-92dBm		±2dB				MCS1	-89dBm		±2dB
	MCS2	-90dBm		±2dB				MCS2	-87dBm		±2dB
	MCS3	-86dBm		±2dB				MCS3	-84dBm		±2dB
	MCS4	-83dBm		±2dB				MCS4	-81dBm		±2dB
	MCS5	-80dBm		±2dB				MCS5	-77dBm		±2dB
	MCS6	-78dBm		±2dB				MCS6	-76dBm		±2dB
	MCS7	-76dBm		±2dB				MCS7	-74dBm		±2dB

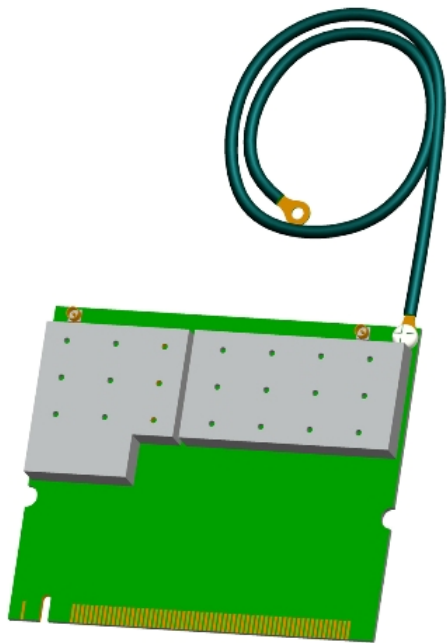
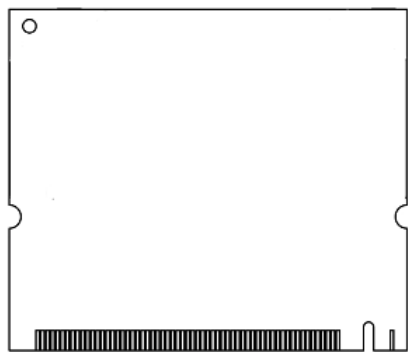
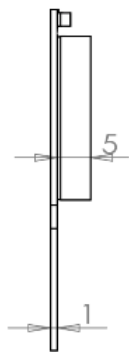
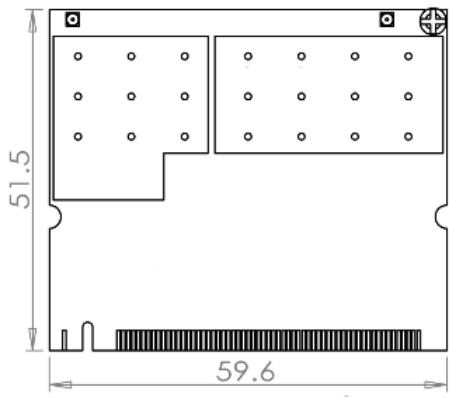
ESD CABLE SPECIFICATION	
Cable Dimensions	26cm length
Terminal Material	Copper
Attachment Procedure	End of ESD Cable tied to Earth Ground

Ordering Information^②

CODES	SPEED	Carton Dimension
WLM200N5-23 6AA1100	Up to 300Mbps physical data rates	For 50pcs (pcs/ctn), 0.40m * 0.22m * 0.085m / 0.006 = 1.5KG
WLM200N5-23 6AA1300	Up to 300Mbps physical data rates	For 250pc (pcs/ctn), 0.45m * 0.45m * 0.24m / 0.006 = 8.1KG

- ① Module grounding cable included
- ② Configurations are subjected to change without notice

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	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 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												

Compex Systems Pte Ltd

135 Joo Seng Road, PM Industrial Building #08-01,
Singapore 368363
Tel: (65) 6286 2086
Fax: (65) 6280-9947
Email: sales@compex.com.sg

Compex (Suzhou) Co. Ltd

No. 12, ChuangTou Industrial Square, LouFeng North, Suzhou
Industrial Park, Suzhou, Jiangsu Province, China 21122
Tel: (86)-512-62950031
Fax: (86)-512-62950032



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