nM2-1000

2x2 IEEE 802.11 b/g/n High Power Mini PCI Radio Module

nM2-1000 is an IEEE 802.11b/g/n 1000 MHz to 1500 MHz Radio Module built over Vizmonet's innovative Built-to-Customize™ platform engineered for carrier class long range high data capacity applications.

With superior TX power efficient RF design, the product supports high TX Power offering best-in class EVM performance at higher modulation schemes. This facilitates to achieve long range without compromising data throughput.

With well-engineered RX Design, nM2-1000 offers ultra-low receive sensitivity to achieve long range.

Backed by military grade technology, the product is ideal for deployment in harsh outdoor environment and available with plenty of options for customization to enable easy integration into OEM systems.

FEATURES

- IEEE 802.11n standards compliant operating in the frequency range 1000 MHz to 1500 MHz
- Backward compatible with legacy IEEE 802.11b/g systems
- 2x2 MIMO with 2xMMCX Antenna connector supports spatial multiplexing
- High TX Power of up to +29 dBm for lower data rates
- Atheros AR9223-AC1A Chipset
- Mini PCI Type IIIA form factor – 59.6mm(W)x51mm(L)
- Support for Customization for OEM integration
- Operating Temperature range (-20 deg C to +70 deg C)

TECHNICAL SPECIFICATION

RADIO MODULE – GENERAL INFO	
Chipset Info	Atheros AR9223-AC1A
Operating Frequency	1000 MHz to 1500 MHz, configurable in 100 MHz Band width
Security	WPA,WPA2, 802.11i with AES-CCM & TKIP Encryption, 802.1x, 64/128/152bit WEP
Data Rates Legacy 11g up to 54 Mbps 11n HT20-1S up to 65Mbps @ 800GI, 72.2Mbps @ 400GI /11n HT40-1S up to135Mbps @ 800GI, 150Mbps @ 400GI 11n HT20-2S up to 130Mbps @ 800GI, 144.4Mbps @ 400GI/11nHT40-2S up to 270Mbps @ 800GI, 300Mbps @ 400GI	 6Mbps, 9Mbps, 12Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps MCS0,MCS1,MCS2,MCS3,MCS4,MCS5,MCS6,MCS7 IEEE 802.11n HT20/HT40 Single Stream MCS8,MCS9,MCS10,MCS11,MCS12,MCS13,MCS14,MCS15 IEEE 802.11n HT20/HT40 Dual Stream
Channel Bandwidth	5 MHz/10 MHz/20 MHz/40 MHz
RoHS Compliance	Compliant
Operating System Support	Linux Open WRT and Ath9K driver
INTERFACE SPECIFICATIONS	
Interface	PCI 32 bit,33 MHz, mini PCI Form Factor
Operating Voltage	3.3V
RF Antenna connector	Dual MMCX, VERTICAL
PHYSICAL SPECIFICATIONS	
Mechanical Dimension (Assembled condition)	(L) 59.6 mm x (W) 65 mm x (H) 9.5 mm
Weight of the Module without ESD Bag	39 g
Weight of the module with ESD Bag	41 g
CUSTOM FEATURES	
MAC ID	74-E2-77- 00 series
PCI Sub Vendor ID	168C
PCI Sub Device ID	150D
TX Power offset	6 dB
Frequency offset	TBD
Labels	MAC Label x1 pc on the Radio Module Model Label x pc with dual barcode on the ESD bag
REGULATORY INFORMATION	
Regulatory Approval	TBD
PACKAGING INFORMATION	
100 Units per Carton Box	520 mm (L) x 240 mm (W) x 133 mm (H)

ORDERING INFORMATION	
nM2-1000	Mini PCI Radio Module, 2x2 IEEE 802.11 b/g/n ,1000 MHz, 29 dBm

RADIO SPECIFICATION - RX

Receiver Maximum input level (10% PER)	> -10 dBm
Receive Chain Noise Figure	5.5 dB
Frequency Accuracy	Within ± 15 PPM
Receiver Adjacent Channel Rejection (ACR)	
10 to 20 MHz, 10% PER 6 Mbps	> 30 dB
HT20 MCS0,MCS8	> 30 dB
HT40 MCS0,MCS8	> 20 dB
Receiver Alternate Channel Rejection (ALCR)	
20 to 30 MHz, 10% PER 6 Mbps	> 40 dB
HT20 MCS0,MCS8	> 40 dB
HT40 MCS0,MCS8	> 35 dB

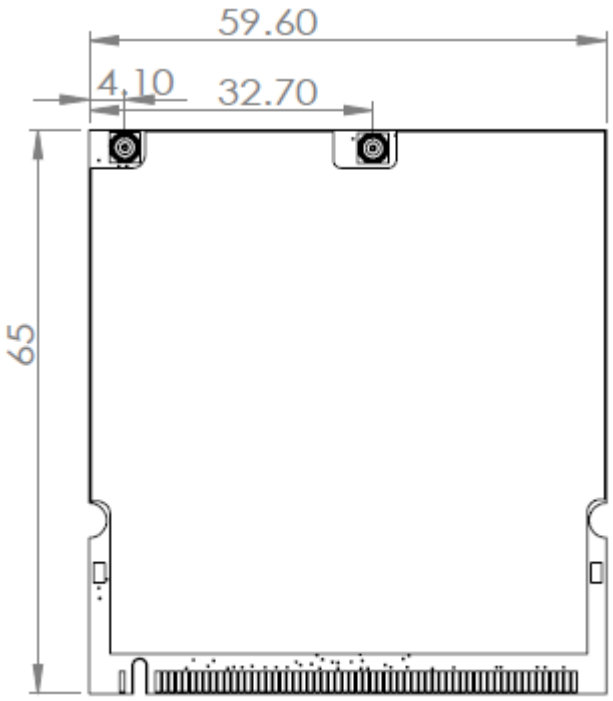
RADIO SPECIFICATION - TX

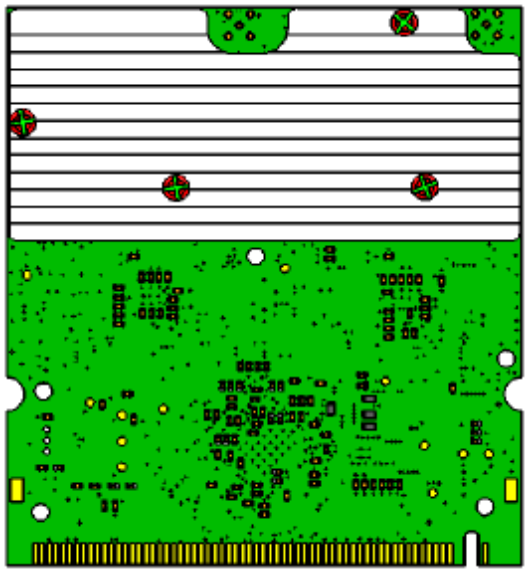
Transmit Spectral mask 11 MHz/20 MHz/30MHz Offset	> -20 dBr/> -28 dBr/> -40 dBr
RF Power control Step	0.5 dBm
Second Harmonic Spurious Emission	-30 dB
Third Harmonic Spurious Emission	-40 dB
Transmitter Spurious Emission	TBD

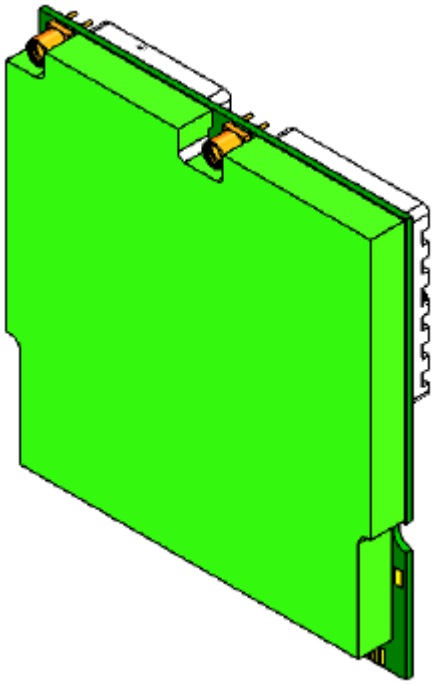
RADIO SPECIFICATION – TX/RX

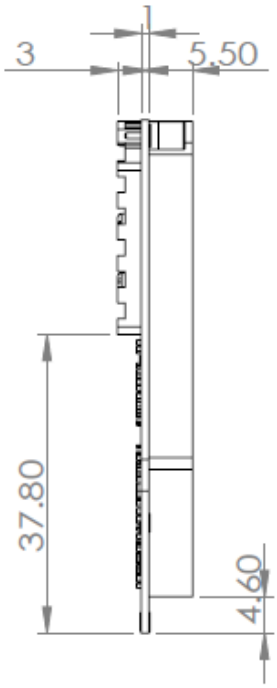
RADIO TX/RX PERFORMANCE, 20 MHz BW,2 CHAINS						
	DATA RATE	**MODULATION**	**TX POWER ± 1 dBm**	**TX CURRENT (A) AT 3.3V ± 0.1A**	**RX SENSITIVITY ± 2 dBm**	**RX CURRENT (A) AT 3.3V ± 0.1A**
11g	6 Mbps	BPSK	28	1.3	-93	0.15
	9 Mbps	BPSK	28	1.3	-93	0.15
	12 Mbps	QPSK	28	1.3	-92	0.15
	18 Mbps	QPSK	28	1.3	-91	0.15
	24 Mbps	16QAM	28	1.3	-87	0.15
	36 Mbps	16QAM	26	1.2	-83	0.15
	48 Mbps	64QAM	23	1.1	-78	0.15
	54 Mbps	64QAM	22	1.0	-75	0.15
11 b	1 Mbps	BPSK	29	1.4	-95	0.15
	2 Mbps	QPSK	29	1.4	-93	0.15
	5.5 Mbps	CCK	29	1.4	-91	0.15
	11 Mbps	CCK	29	1.4	-90	0.15
11 n HT20	MCS0/8	BPSK	28	1.3	-92	0.15
	MCS1/9	QPSK	28	1.3	-91	0.15
	MCS2/10	QPSK	28	1.3	-90	0.15
	MCS3/11	16QAM	28	1.3	-86	0.15
	MCS4/12	16QAM	26	1.2	-83	0.15
	MCS5/13	64QAM	23	1.1	-76	0.15
	MCS6/14	64QAM	21	0.9	-75	0.15
	MCS7/15	64QAM	19	0.9	-74	0.15
	MCS7/15	64QAM	22	0.6	-74	0.15

MECHANICAL DIMENSIONS









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