



## nM2-300

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

nM2-300 is an IEEE 802.11b/g/n 300 MHz to 400 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, nM2-300 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 300 MHz to 400 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**

<b>RADIO MODULE – GENERAL INFO</b>	
Chipset Info	Atheros AR9223-AC1A
Operating Frequency	300 MHz to 400 MHz
Security	WPA,WPA2, 802.11i with AES-CCM & TKIP Encryption, 802.1x, 64/128/152bit WEP
Data Rates Legacy 11g up to 54 Mbps	6Mbps, 9Mbps, 12Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps
11n HT20-1S up to 65Mbps @ 800GI, 72.2Mbps @ 400GI /11n HT40-1S up to135Mbps @ 800GI, 150Mbps @ 400GI	MCS0,MCS1,MCS2,MCS3,MCS4,MCS5,MCS6,MCS7 IEEE 802.11n HT20/HT40 Single Stream
11n HT20-2S up to 130Mbps @ 800GI, 144.4Mbps @ 400GI/11nHT40-2S up to 270Mbps @ 800GI, 300Mbps @ 400GI	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
<b>INTERFACE SPECIFICATIONS</b>	
Interface	PCI 32 bit,33 MHz, mini PCI Form Factor
Operating Voltage	3.3V
RF Antenna connector	Dual MMCX, VERTICAL
<b>PHYSICAL SPECIFICATIONS</b>	
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
<b>CUSTOM FEATURES</b>	
MAC ID	74-E2-77- 00 series
PCI Sub Vendor ID	168C
PCI Sub Device ID	1506
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
<b>REGULATORY INFORMATION</b>	
Regulatory Approval	TBD
<b>PACKAGING INFORMATION</b>	
100 Units per Carton Box	520 mm (L) x 240 mm (W) x 133 mm (H)
<b>ORDERING INFORMATION</b>	
nM2-300	Mini PCI Radio Module, 2x2 IEEE 802.11 b/g/n ,300 MHz, 29 dBm

**RADIO SPECIFICATION - RX**

Receiver Maximum input level (10% PER)	> -10 dBm
Receive Chain Noise Figure	5.5 dB
Frequency Accuracy	Within $\pm$ 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

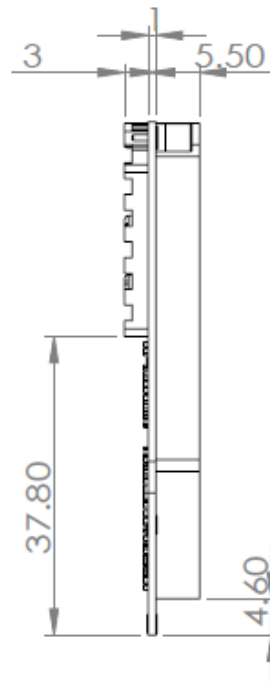
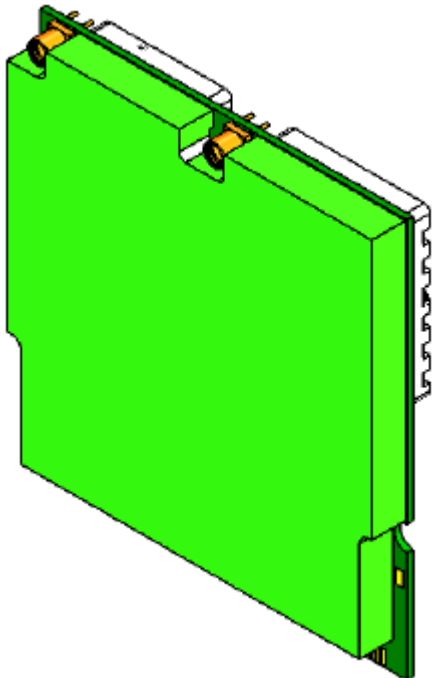
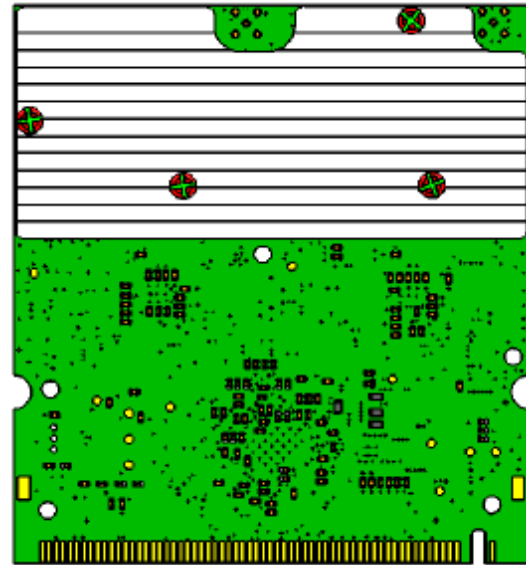
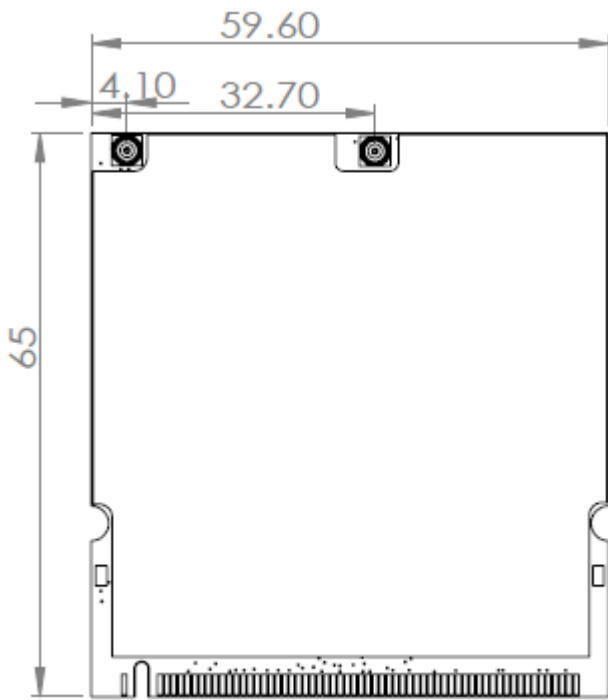
**RADIO SPECIFICATION - TX**

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 $\pm$ 1 dBm	TX CURRENT (A) AT 3.3V $\pm$ 0.1A	RX SENSITIVITY $\pm$ 2 dBm	RX CURRENT (A) AT 3.3V $\pm$ 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
11b	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
11n 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**



## **Disclaimer**

The information in this document is being provided in connection with Vizmonet products, which are subject to continuous developments and improvements. While every effort is made to ensure that the information contained in this document is correct and accurate at the time of this printing, Vizmonet makes no representations or warranties with respect to the accuracy of the information and is not liable for errors or mistakes that may arise. However, Vizmonet reserves the right to make changes to specifications and product descriptions at any time without notice. Vizmonet does not assume any responsibility for the use of the described product; neither does it convey any license under its patent rights, or the rights of others. Vizmonet products are not intended, authorized, or warranted for use as components in applications intended to support or sustain life.

## **Trademarks**

Built-to-Customize™ is a trademark of Vizmonet. It represents the wide range of high Performance radio modules that are tailored made to meet OEM Customer's requirements. All other trademarks, registered trademarks and product names are the sole property of their respective owners.

© 2016, Vizmonet. All rights reserved.

## **Contact Information**

Web site: <https://vizmonet.com>

Email: [enquiry@vizmonet.com](mailto:enquiry@vizmonet.com)

### **Address:**

Vizmonet Pte Ltd

21, Woodlands Close

#03-01, Primz Biz Hub

Singapore 737 854