



nM1-600

1x1 IEEE 802.11 b/g/n High Power Mini PCI Radio Module

nM1-600 is an IEEE 802.11b/g/n 600 MHz to 700 MHz Radio Module built over Vizmonet's innovative Built-to-Customize™ platform engineered for carrier class long range high data capacity applications.

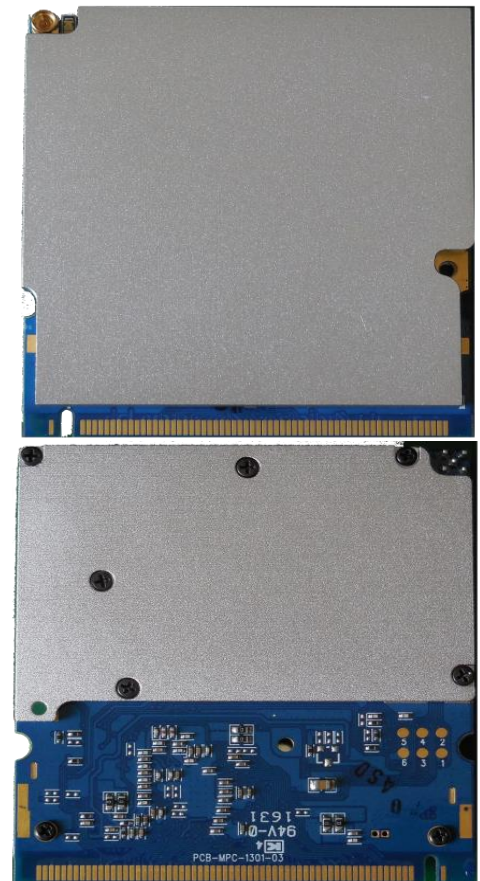
With superior TX power efficient RF design, the product supports high TX Power offering best-in class EVM performance at higher modulation schemes. This facilitates to achieve long range without compromising data throughput.

With well-engineered RX Design, nM1-600 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 802.11b/g/n standards compliant operating in the frequency range 600 MHz to 700 MHz
- High TX Power of up to +29 dBm for lower data rates
- Atheros AR9223-AC1A Chipset
- Mini PCI Type IIIA form factor 59.6 mm (L) x 65 mm (W)
- 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 | 600 MHz to 700 MHz |
| Security | WPA,WPA2, 802.11i with AES-CCM & TKIP Encryption, 802.1x, 64/128/152bit WEP |
| Data Rates | 6Mbps, 9Mbps, 12Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps |
| 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 | Single MMCX, Vertical |

PHYSICAL SPECIFICATIONS

| | |
|--|--------------------------------------|
| Mechanical Dimension (Assembled condition) | 59.6 mm (L) x 65 mm (W) x 9.5 mm (H) |
| Weight of the module without ESD Bag | 41 g |
| Weight of the Module with ESD Bag | 43 g |

CUSTOM FEATURES

| | |
|-------------------|--|
| MAC ID | 74-E2-77-00 series |
| PCI Sub Vendor ID | 168C |
| PCI Sub Device ID | 1309 |
| TX Power offset | 10 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 Approvals | TBD |
|----------------------|-----|

PACKAGING INFORMATION

| | |
|--------------------------|--------------------------------------|
| 100 Units per Carton Box | 520 mm (L) x 240 mm (W) x 133 mm (H) |
|--------------------------|--------------------------------------|

ORDERING INFORMATION

| | |
|---------|---|
| nM1-600 | Mini PCI Radio Module, 1x1 IEEE 802.11 b/g/n, 600 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

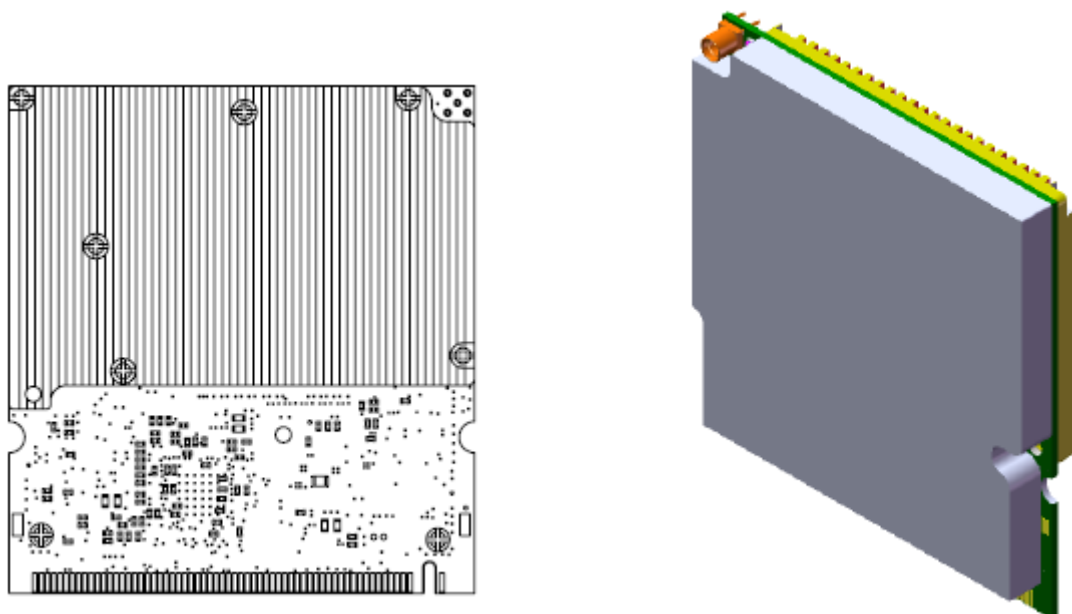
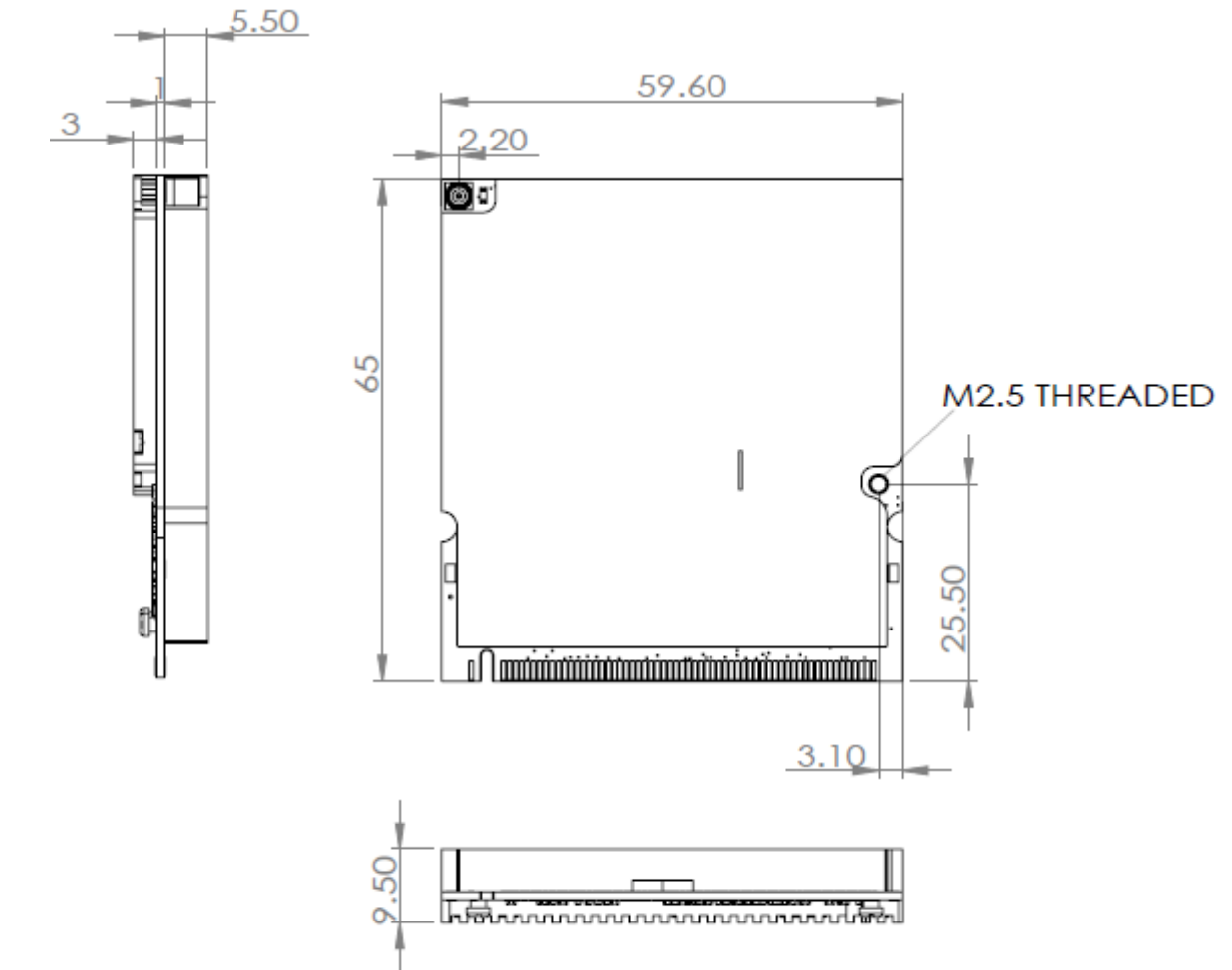
| | |
|-----------------------------------|----------------------------|
| Transmit Spectral mask | |
| 11 MHz/20 MHz/30MHz Offset | > -20 dB/> -28 dB/> -40 dB |
| RF Power control Step | 0.5 dBm |
| Second Harmonic Spurious Emission | -30 dB |
| Third Harmonic Spurious Emission | -40 dB |
| Transmitter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

RADIO SPECIFICATION – TX/RX

| RADIO TX/RX PERFORMANCE, 20 MHz BW | | | | | | |
|------------------------------------|-----------|------------|----------------------|-----------------------------------|----------------------------|----------------------------------|
| | 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 |
| 11 g | 6 Mbps | BPSK | 29 | 1.3 | -92 | 0.15 |
| | 9 Mbps | BPSK | 29 | 1.3 | -91 | 0.15 |
| | 12 Mbps | QPSK | 29 | 1.3 | -91 | 0.15 |
| | 18 Mbps | QPSK | 29 | 1.3 | -88 | 0.15 |
| | 24 Mbps | 16QAM | 29 | 1.3 | -84 | 0.15 |
| | 36 Mbps | 16QAM | 27 | 1.2 | -81 | 0.15 |
| | 48 Mbps | 64QAM | 25 | 1.1 | -75 | 0.15 |
| | 54 Mbps | 64QAM | 24 | 1.1 | -72 | 0.15 |
| 11 b | 1 Mbps | BPSK | 30 | 1.3 | -95 | 0.15 |
| | 2 Mbps | QPSK | 30 | 1.3 | -93 | 0.15 |
| | 5.5 Mbps | CCK | 30 | 1.3 | -91 | 0.15 |
| | 11 Mbps | CCK | 30 | 1.3 | -90 | 0.15 |
| 11 n HT20 | MCS0/8 | BPSK | 29 | 1.3 | -91 | 0.15 |
| | MCS1/9 | QPSK | 29 | 1.3 | -90 | 0.15 |
| | MCS2/10 | QPSK | 29 | 1.3 | -87 | 0.15 |
| | MCS3/11 | 16QAM | 29 | 1.3 | -83 | 0.15 |
| | MCS4/12 | 16QAM | 27 | 1.2 | -80 | 0.15 |
| | MCS5/13 | 64QAM | 24 | 1.1 | -73 | 0.15 |
| | MCS6/14 | 64QAM | 22 | 0.9 | -72 | 0.15 |
| | MCS7/15 | 64QAM | 21 | 0.9 | -71 | 0.15 |

For RX Sensitivity for 40 MHz Channel BW, Add +3 dB to 20 MHz BW
 For RX Sensitivity for 10 MHz Channel BW, Add -3 dB to 20 MHz BW
 For RX Sensitivity for 5 MHz Channel BW, Add -6 dB to 20 MHz BW

MECHANICAL DIMENSIONS



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