



Product Specification

XW204E2

IEEE802.11BGN 2T2R PCIe Mini-Card

Version: 1.2

Date: May. 10, 2012

Release History

| DATE | REV | Description of Change |
|-------------|------------|--------------------------------------|
| 2010/01/15 | 0.1 | Initial release |
| 2010/03/05 | 0.2 | Update PID, update power consumption |
| 2010/09/27 | 1.0 | Update SVID/SSID, update ART Version |
| 2011/02/15 | 1.1 | Update Form Factor Dimension |
| 2012/05/11 | 1.2 | Change to Atheros default SVID/ SSID |
| | | |

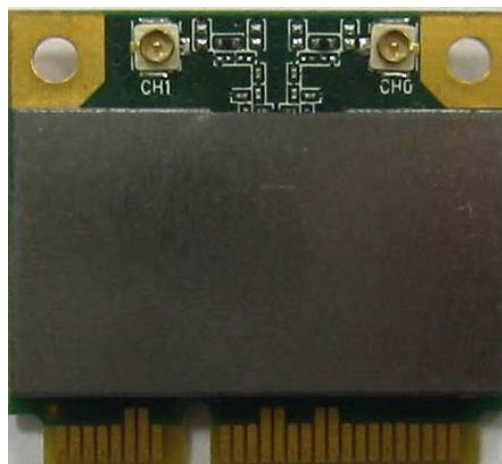


XW204E2

IEEE802.11BGN 2T2R PCIe Mini-Card

1 Introduction

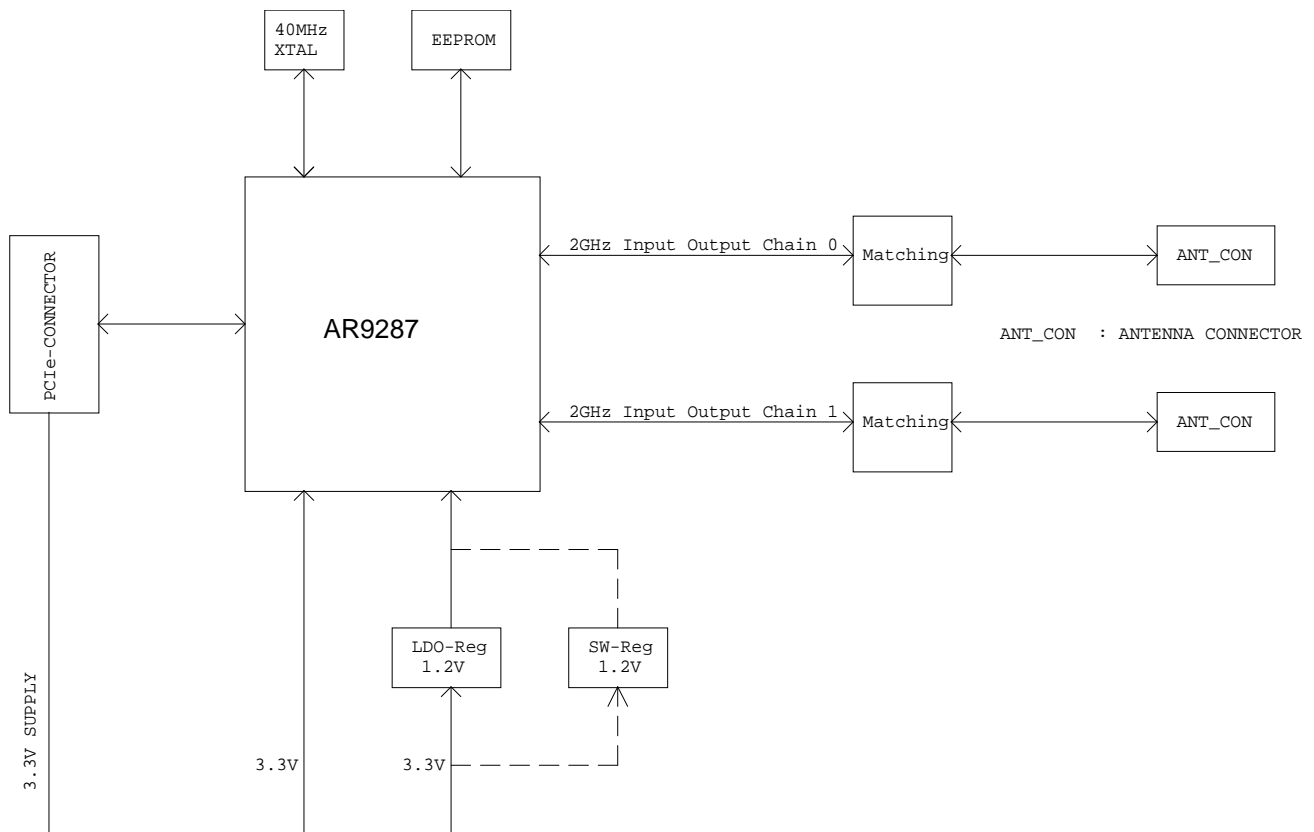
XW204E2 is an integrated IEEE802.11b/g/n half size Mini PCI Express MIMO wireless LAN module. It adopts Atheros AR9287 single-chip solution for 2.4GHz 802.11n-ready wireless local area network that enables high performance 2x2 configurations for wireless station application demanding robust link quality and maximum throughput and range. **XW204E2** supports 130Mbps for 20 MHz and 300 Mbps for 40 MHz channel, and IEEE 802.11b/g data rates. **XW204E2** provides a flexible, high performance and low cost solution for NB, PC and mobile equipment application.



2 Features

- Half size Mini PCI Express card
- Interoperable with IEEE802.11b/g/n WLAN.
- 2x2 MIMO technology improves effective throughput and range over existing 802.11b/g products.
- Supports 130 Mbps for 20MHz and 300Mbps for 40MHz channel operations.
- Wireless multimedia enhancements quality of service support (QoS).
- 802.11e-compatible bursting.
- Support for IEEE802.11e, 11h and 11i standards.
- WEP, TKIP, and AES hardware encryption.
- PCI express 1.1 compliant.
- Reduced (short) guard interval
- Frame aggregation.
- Support for 2-3 wire Bluetooth coexistence.

3 Block Diagram



4 General Specifications

| | | |
|--|--|--|
| ■ Module Name | | |
| <ul style="list-style-type: none"> XW204E2 | | |
| ■ Product Description | | |
| <ul style="list-style-type: none"> WLAN Standard | IEEE 802.11b/g/n | |
| <ul style="list-style-type: none"> Host interface | Mini PCI Express complaints with PCI express 1.1 | |
| <ul style="list-style-type: none"> Major Chipset | Atheros AR9287 | |
| <ul style="list-style-type: none"> PID | 002E | Atheros defined |
| <ul style="list-style-type: none"> VID | 168C | Atheros defined |
| <ul style="list-style-type: none"> SSID | 30A4 | Default setting from Atheros for standard function |
| <ul style="list-style-type: none"> SVID | 168C | Default setting from Atheros for standard function |
| <ul style="list-style-type: none"> Firmware(Calibration tool version) | ART 09B34 | Calibration tool will be updated from Atheros |

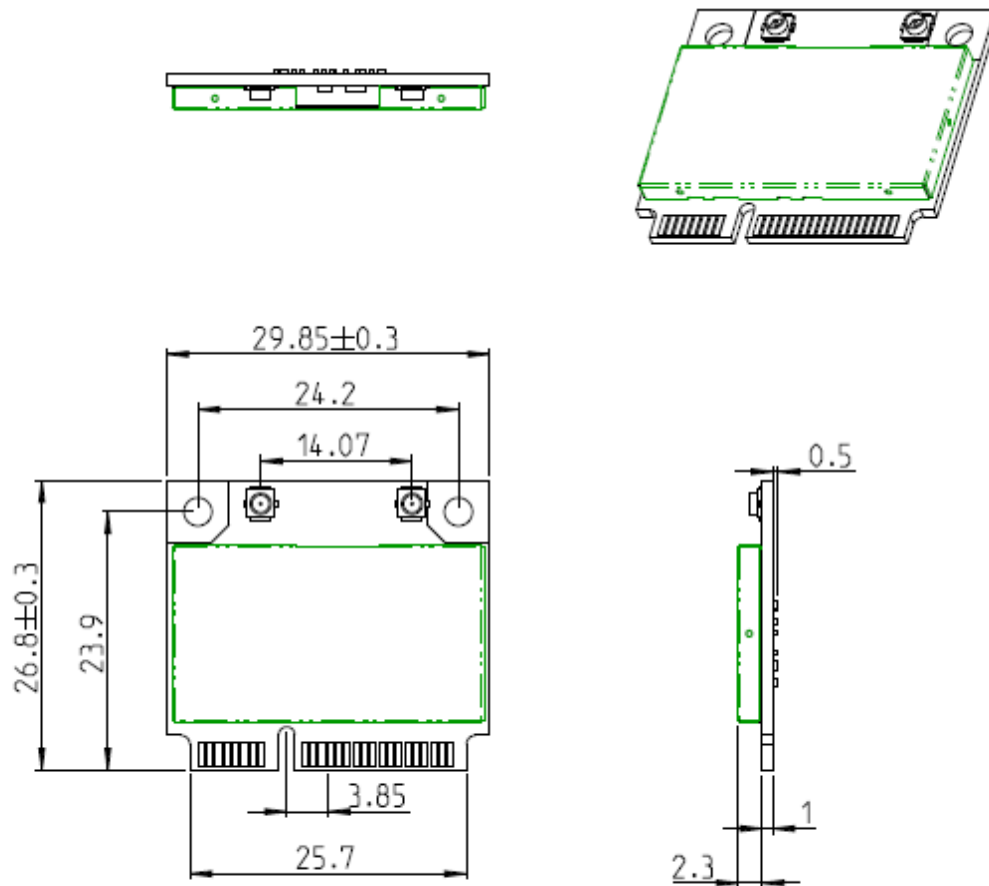
| | | | | | |
|--|-----------|---|---------|---------|------|
| • Dimensions | | | | | |
| | | Minimum | Typical | Maximum | Unit |
| | Length | 26.5 | 26.8 | 27.1 | mm |
| | Width | 29.55 | 29.85 | 30.15 | mm |
| | Height | | 3.2 | | mm |
| | Weight | | 3.5 | | g |
| • Antenna Connector | | Two U.LF connector | | | |
| ■ Operating Condition | | | | | |
| | | Minimum | Typical | Maximum | Unit |
| • Voltage | DC | 3.15 | 3.3 | 3.45 | V |
| • Temperature | | 0 | | 70 | °C |
| • Storage temperature | | -20 | | 70 | °C |
| • Humidity Non-Operating | | 5 | | 80 | % |
| ■ Electrical Specification | | | | | |
| • Frequency Range | | 2400 – 2483.5MHz | | | |
| • Modulation | | BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, and CCK | | | |
| • Output power | | | | | |
| | | Minimum | Typical | Maximum | Unit |
| 802.11b Mode | 11MHz | 13.5 | 15 | 16.5 | dBm |
| 802.11g Mode | 54MHz | 9.5 | 11 | 12.5 | dBm |
| 802.11n Mode | HT20-MCS7 | 7.5 | 9 | 10.5 | dBm |
| 802.11n Mode | HT40-MCS7 | 6.5 | 8 | 9.5 | dBm |
| • Receiver Sensitivity | | | | | |
| | | Minimum | Typical | Maximum | Unit |
| 802.11b Mode | 11Mbps | | | -86 | dBm |
| 802.11g Mode | 54Mbps | | | -73 | dBm |
| 802.11n Mode | HT20 MCS7 | | | -68 | dBm |
| 802.11n Mode | HT40 MCS7 | | | -65 | dBm |
| ■ Security | | | | | |
| • WEP, TKIP, and AES hardware encryption | | | | | |
| ■ Operating System Compatibility | | | | | |
| • Windows XP 32/64 | | | | | |
| • Windows Vista 32/64 | | | | | |
| • Windows 7 32/64 | | | | | |

5 Power Consumption

| Item | Description | Current (mA @ 3.3V) |
|-------------|-------------------|---------------------|
| Continue TX | B mode 1Mbps | 315 |
| Continue TX | B mode 11Mbps | 315 |
| Continue TX | G mode 6Mbps | 322 |
| Continue TX | G mode 54Mbps | 307 |
| Continue TX | N mode HT20 MCS8 | 603 |
| Continue TX | N mode HT20 MCS15 | 523 |
| Continue TX | N modeHT40 MCS8 | 601 |
| Continue TX | N modeHT40 MCS15 | 518 |
| Continue RX | B mode 1Mbps | 182 |
| Continue RX | B mode 11Mbps | 182 |
| Continue RX | G mode 6Mbps | 181 |
| Continue RX | G mode 54Mbps | 182 |
| Continue RX | N mode HT20 MCS0 | 182 |
| Continue RX | N mode HT20 MCS7 | 182 |
| Continue RX | N modeHT40 MCS0 | 216 |
| Continue RX | N modeHT40 MCS7 | 215 |

| Item | Description | Current (mA @ 3.3V) |
|----------------|--------------------------------------|---------------------|
| Throughput TX | G mode 54Mbps | 237 |
| Throughput TX | N mode HT20 MCS15 | 488 |
| Throughput TX | N modeHT40 MCS15 | 472 |
| Throughput RX | G mode 54Mbps | 151 |
| Throughput RX | N mode HT20 MCS7 | 202 |
| Throughput RX | N modeHT40 MCS7 | 257 |
| Idle | Associated with AP (20MHz) | 131 |
| | Associated with AP (40MHz) | 208 |
| Idle | Unassociated with AP (20MHz) | 134 |
| | Associated with AP (40MHz) | 180 |
| Radio off | Hotkey turn off WiFi radio (Adapter) | 67 |
| | Battery (L1 mode, 5mins) | 11 |
| Driver disable | Disable DUT on device Mgmt | 8 |
| OS | Windows XP SP3 | |
| Driver Version | 7.7.0.394 | |

6 Mechanical Dimensions



Unit:mm

7 Connector Pin-out Definitions

| Pin | Definition | Type | Description |
|-----|-------------|------|---|
| 1 | WAKE_L | I | Wake on Wireless LAN |
| 2 | 3.3V | P | 3.3V power supply. |
| 3 | NC | | No connect. |
| 4 | GND | P | Ground. |
| 5 | NC | | No connect. |
| 6 | NC | | No connect. |
| 7 | CLKREQ_L | O | Reference clock request signal. |
| 8 | NC | | No connect. |
| 9 | GND | P | Ground. |
| 10 | NC | | No connect. |
| 11 | REFCLK- | I | Differential reference clock. |
| 12 | NC | | No connect. |
| 13 | REFCLK+ | I | Differential reference clock. |
| 14 | NC | | No connect. |
| 15 | GND | P | Ground. |
| 16 | NC | | No connect. |
| 17 | NC | | No connect. |
| 18 | GND | P | Ground. |
| 19 | NC | | No connect. |
| 20 | W_DISABLE_L | I | WLAN disable: Active low. |
| 21 | GND | P | Ground. |
| 22 | PERST | I | PCI express reset signal: Active low. |
| 23 | PERn0 | O | PCI express transmit differential signal. |
| 24 | NC | | No connect. |
| 25 | PERp0 | O | PCI express transmit differential signal. |
| 26 | GND | P | Ground. |
| 27 | GND | P | Ground. |
| 28 | NC | | No connect. |
| 29 | GND | P | Ground. |
| 30 | NC | | No connect. |

| Pin | Definition | Type | Description |
|-----|------------|------|--|
| 31 | PETn0 | I | PCI express receive differential signal. |
| 32 | NC | | No connect. |
| 33 | PETp0 | I | PCI express receive differential signal. |
| 34 | GND | P | Ground. |
| 35 | GND | P | Ground. |
| 36 | NC | | No connect. |
| 37 | NC | | No connect. |
| 38 | NC | | No connect. |
| 39 | RESERVED | | No connect. |
| 40 | RESERVED | | No connect. |
| 41 | NC | | No connect. |
| 42 | NC | | No connect. |
| 43 | GND | P | Ground. |
| 44 | LED_WLAN_L | O | LED signal. |
| 45 | NC | | No connect. |
| 46 | NC | | No connect. |
| 47 | NC | | No connect. |
| 48 | NC | | No connect. |
| 49 | NC | | No connect. |
| 50 | GND | P | Ground. |
| 51 | NC | | No connect. |
| 52 | 3.3V | P | 3.3V power supply. |

P: Power/Ground; I: Input; O: Output.