MOXA IEEE 802.11 a/b/g/n PCI-e

WAPN002 User's Manual

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WAPN002 User's Manual

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Introduction

The following topics are covered in this chapter:

❑ **Overview**

❑

❑ Features

❑ **Specifications**

Overview

WAPN002 PCI Express Module is designed to provide wireless communication for all wireless device based systems. It communicates via the standard 802.11a/b/g/n protocols. The WAPN002 uses the AR9280 wireless chipset from Atheros. This module is connected to the PCI bus through a PCI Express connector and special circuitry to allow for compatibility with either 3.3V or 5V PCI signaling.
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Features

- Dynamic frequency selection (DFS) in required 5-GHz bands
- All-CMOS MIMO solution interoperable with IEEE 802.11a/b/g/n WLANs
- 2x2 MIMO technology improves effective throughput and range over existing 802.11a/b/g products
- Supports spatial multiplexing, cyclic-delay diversity (CDD), and maximal ratio combining (MRC)
- 2.4/5 GHz WLAN MAC/BB processing
- BPSK, QPSK, 16 QAM, 64 QAM, DBPSK,DQPSK, and CCK modulation schemes
- Data rates of up to 130 Mbps for 20 MHz channels and 300 Mbps for 40 MHz channels
- Wireless multimedia enhancements quality of service support (QoS)
- 802.11e-compatible bursting
- WEP, TKIP, and AES hardware encryption
- 88-pin, 10 mm x 10 mm LPCC package
- Case temperature 85℃

Specification

| Features	WAPN002
Chipset	Atheros AR9280
Baseband Processor (BBP)	· DSS with DBPSK, DQPSK, CCK · OFDM with BPSK, QPSK, 16QAM, 64QAM · 802.11b: CCK@11/5.5 Mbps, DQPSK@2 Mbps, DBPSK@11 Mbps · 802.11a/g: 64QAM@54/48 Mbps, 16QAM@36/24 Mbps, QPSK@18/12 Mbps BPSK@9/6 Mbps · 802.11n: 64QAM@300 to BPSK@6.5 Mbps (multiple rates supported)
security engine	WEP64,WEP128, WEP256, AES-CCM, TKIP ,WPS
Bus Interface	PCI Express 1.1 complaint
Connectors	Defined BTB connector is using 2x40 pins header, and Support PCI Express standard.
Power requirement	1.2V +/-5% 1.8V +/-5% 3.3V +/-10%
Dimension	50mm x 49mm x 1.2mm
Weight	15g
Operating Temperature	-40 to +80 ℃
Storage Temperature:	-40 to +150℃

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Getting Started

This chapter covers the module layout, and block diagram, hardware installation of the WAPN002. Software installation is covered in the next chapter.

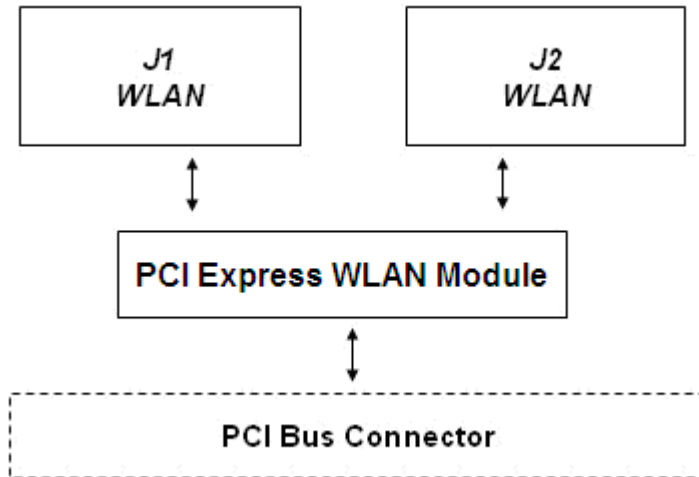The following topics are covered:

❑ **Module Layout**
❑ **Block Diagram**
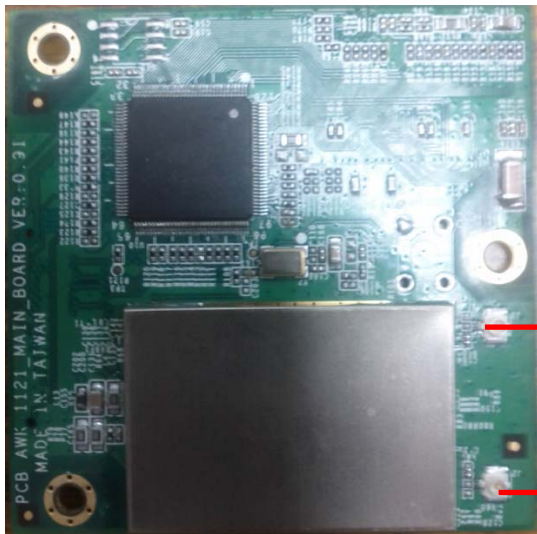❑ **Hardware Installation**
❑ **Software Installation**

Module Layout
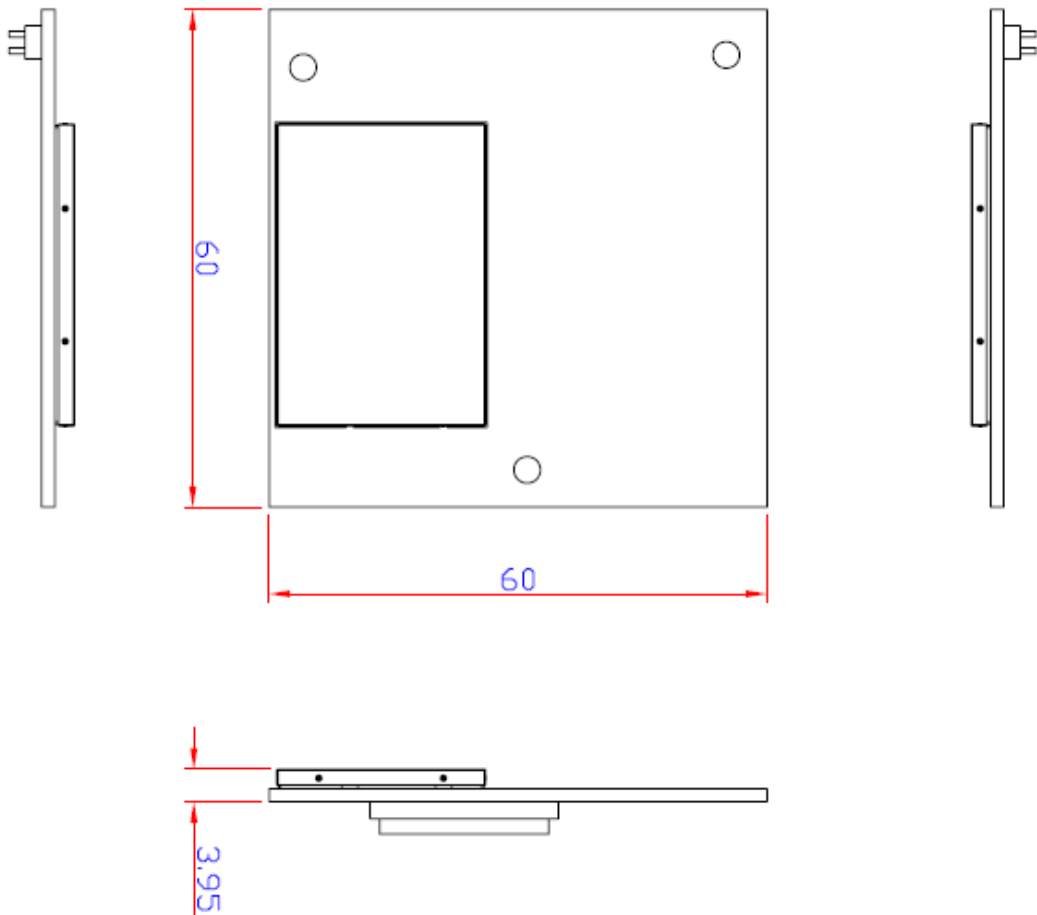
Block Diagram

Below is a block diagram of the WAPN002. Primary board components are in bold, while external connections are italicized.
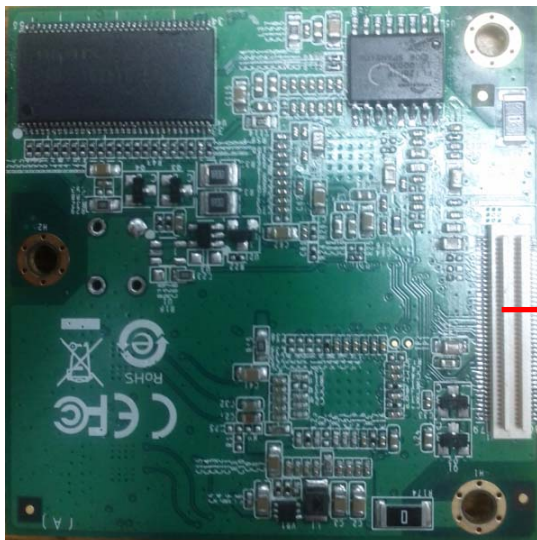
```
┌─────────────┐         ┌─────────────┐
│     J1      │         │     J2      │
│    WLAN     │         │    WLAN     │
└─────────────┘         └─────────────┘
       ↕                       ↕
   ┌───────────────────────────────┐
   │  PCI Express WLAN Module       │
   └───────────────────────────────┘
                  ↕
   ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
       PCI Bus Connector
   └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
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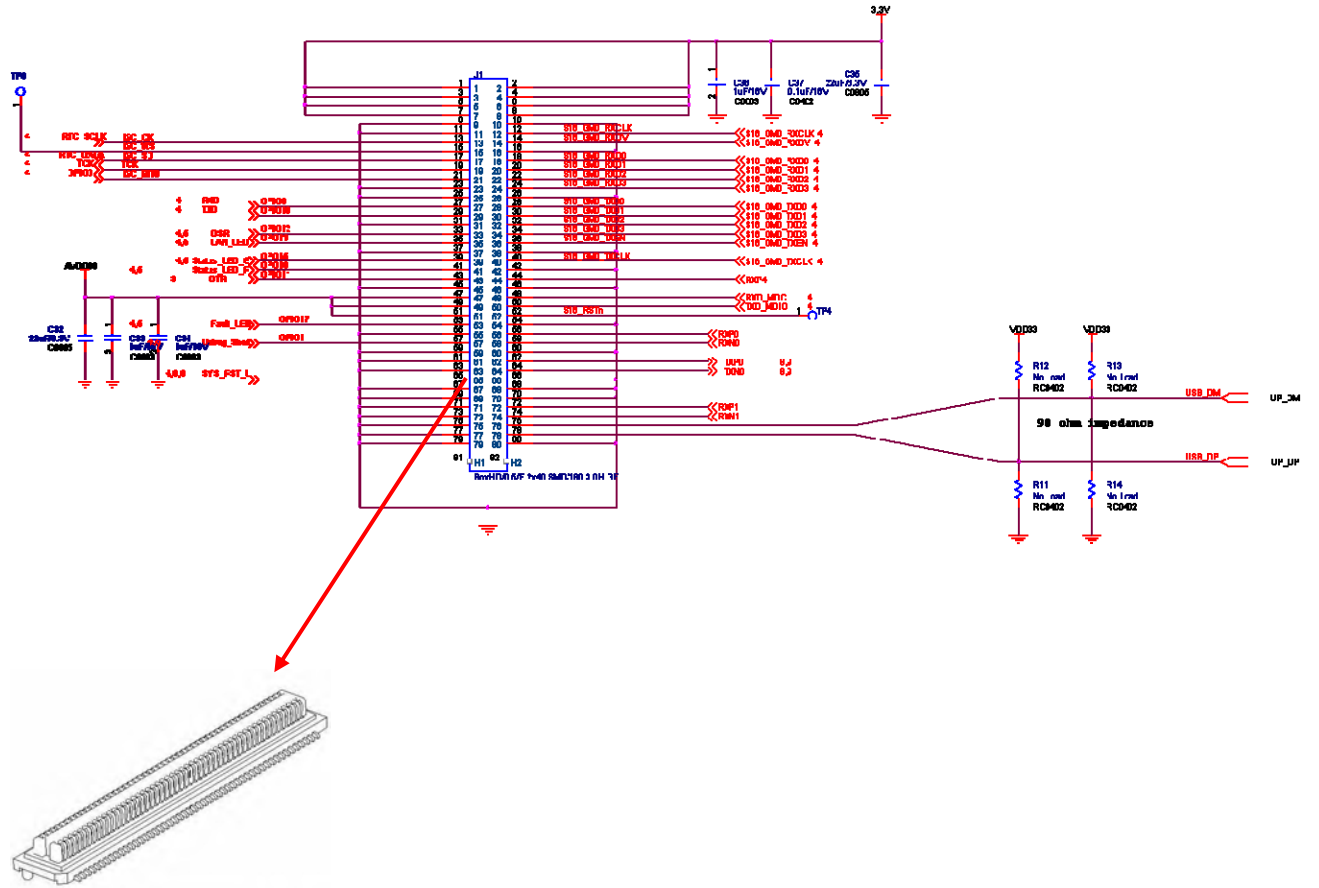
Connector Locations

J1

J2

PCI Express Connector

PCI Express Bus Connector PIN Assignments

Hardware Installation

The WAPN002 can be installed into all Moxa wireless system board series.

Step for Installation

1. Attach the WLAN antenna to connector J1.
2. If using 2nd WLAN antenna, attach it to connector J2.
3. Install the WAPN002 PCI Express card on the system board. Apply pressure to both bus connectors and gently press the board onto the stack. The board should slide into the matching bus connectors. Do not attempt to force the board, as this can lead to bent/broken pins.
4. Screw on the WAPN002 PCI Express card.
5. If any power boards are to be stacked above the WAPN002, install them.
6. Screw on the all the necessary chassis.

Software Installation

After physically installing the WAPN002, your operating system must be configured to recognize the new system board.

Step for Installation

1. Apply power to the system board.
2. Connect system board and PC with Ethernet cable.
3. Open a browser and type: 192.168.127.253 to open the system login webpage.
4. Login the webpage with default password: root in order to verify that all of the hardware is install properly.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

This device is slave equipment, the device is not radar detection and not ad-hoc operation in the DFS band.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: SLE-WAPN002 "

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.
This device is intended for OEM integrators only.
Please See the full Grant of Equipment document for other restrictions.
This device must be operated and used with a locally approved access point.