

Moxa 900MHz PCI Module

WFS001 User's Manual

www.moxa.com

First Edition, July 2014



© 2014 Moxa Inc. All rights reserved.
Reproduction without permission is prohibited.

WFS001 User's Manual

The hardware and software described in this manual is furnished under a license agreement and may be used only in accordance with the terms of that agreement.

Copyright Notice

Copyright © 2014 Moxa Inc.
All rights reserved.
Reproduction without permission is prohibited.

Trademarks

MOXA is a registered trademark of Moxa Inc.
All other trademarks or registered marks in this manual belong to their respective manufacturers.

Disclaimer

Information in this document is subject to change without notice and does not represent a commitment on the part of Moxa.

Moxa provides this document "as is," without warranty of any kind, either expressed or implied, including, but not limited to, its particular purpose. Moxa reserves the right to make improvements and/or changes to this manual, or to the products and/or the programs described in this manual, at any time.

Information provided in this manual is intended to be accurate and reliable. However, Moxa assumes no responsibility for its use, or for any infringements on the rights of third parties that may result from its use.

This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Technical Support Contact Information

www.moxa.com/support

Moxa Americas:

Toll-free: 1-888-669-2872

Tel: +1-714-528-6777

Fax: +1-714-528-6778

Moxa Europe:

Tel: +49-89-3 70 03 99-0

Fax: +49-89-3 70 03 99-99

Table of Contents

Chapter 1 Introduction

- Overview
- Features
- Specification

Chapter 2 Getting Started

- Module Layout
- Block Diagram
- Hardware Installation
- Software Installation

1

Introduction

The following topics are covered in this chapter:

- OverviewFeatures**
- Specifications**

Overview

WFS001 PCI Module is designed to provide wireless communication for all wireless device based systems. It communicates via the standard 802.11b/g protocols but with transmission frequency shifted to 900MHz (902-928MHz). The WFS001 uses the AR5414 wireless chipset from Atheros. This module is connected to the PCI bus through a PCI connector and special circuitry to allow for compatibility with either 3.3V or 5V PCI signaling..

Features

- **All-CMOS single chip for IEEE 802.11 b/g compatible WLANs in 900MHz**
- Baseband in-phase (I) and quadrature (Q) signals, converts them to the desired frequency, and drives the RF signal off-chip.
- Integrated low-noise amplifier (LNA)
- **External PA and/or LNA can be used for special applications**
- Advanced wideband receiver with best path sequencer for better range and multipath resistance than conventional equalizer-based designs
- High speed UART with DMA supports data rates up to 1 Mbps

Specification

Features	WFS001
Chipset	Atheros AR5414
Baseband Processor (BBP)	- BPSK, QPSK, 16 QAM, 64 QAM, DBPSK, DQPSK, and CCK modulation schemes - Data rates of 6–54 Mbps for 802.11a, 1–54 Mbps for 802.11g, 1–11 Mbps for 802.11b, Atheros Super A/G mode with up to 108 Mbps
security engine	WEP64,WEP128, WEP256, AES-CCM, TKIP ,WPS
Bus Interface	PCI 2.3 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 °C
Storage Temperature:	-40 to +150°C
Operates in 2.4 and 5 GHz frequency bands.	2.4 GHz 2.312–2.472 GHz, 2.484 GHz 5 GHz U-NII 5.15–5.35 GHz, 5.725–5.825 GHz ISM 5.725–5.850 GHz DSRC 5.850–5.925 GHz Europe 5.15–5.35 GHz, 5.47–5.725 GHz Japan 4.90–5.00 GHz, 5.03–5.091 GHz, 5.15–5.25 GHz

2

Getting Started

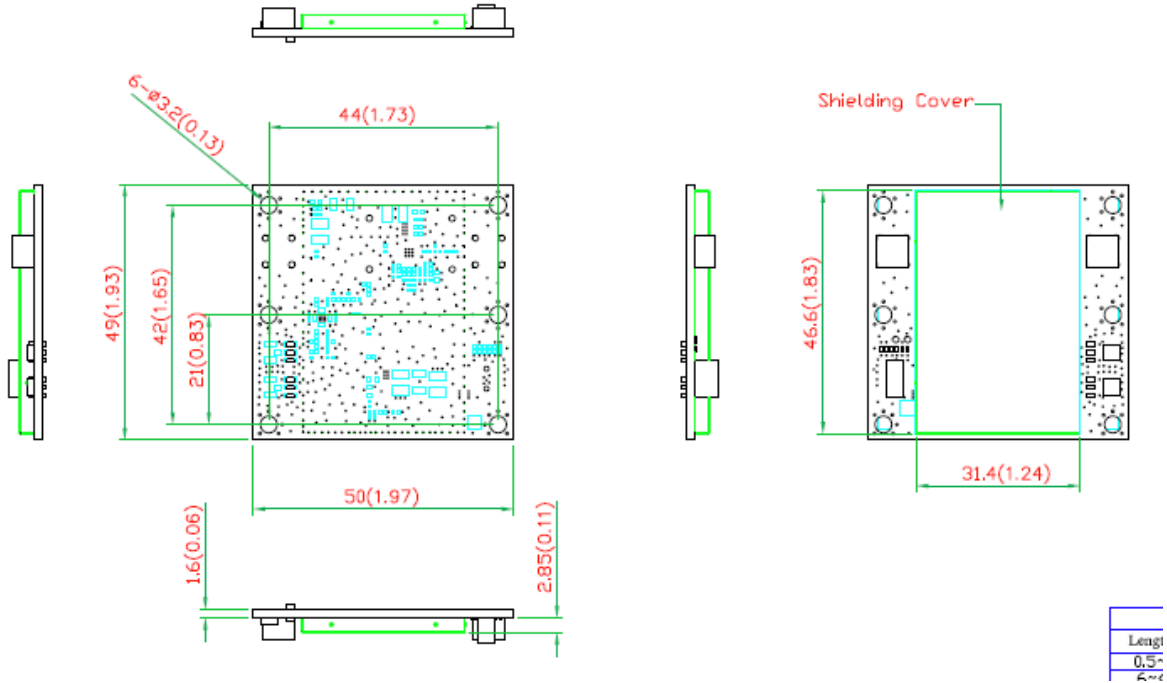
This chapter covers the module layout, and block diagram, hardware installation of the WFS001. Software installation is covered in the next chapter.

The following topics are covered:

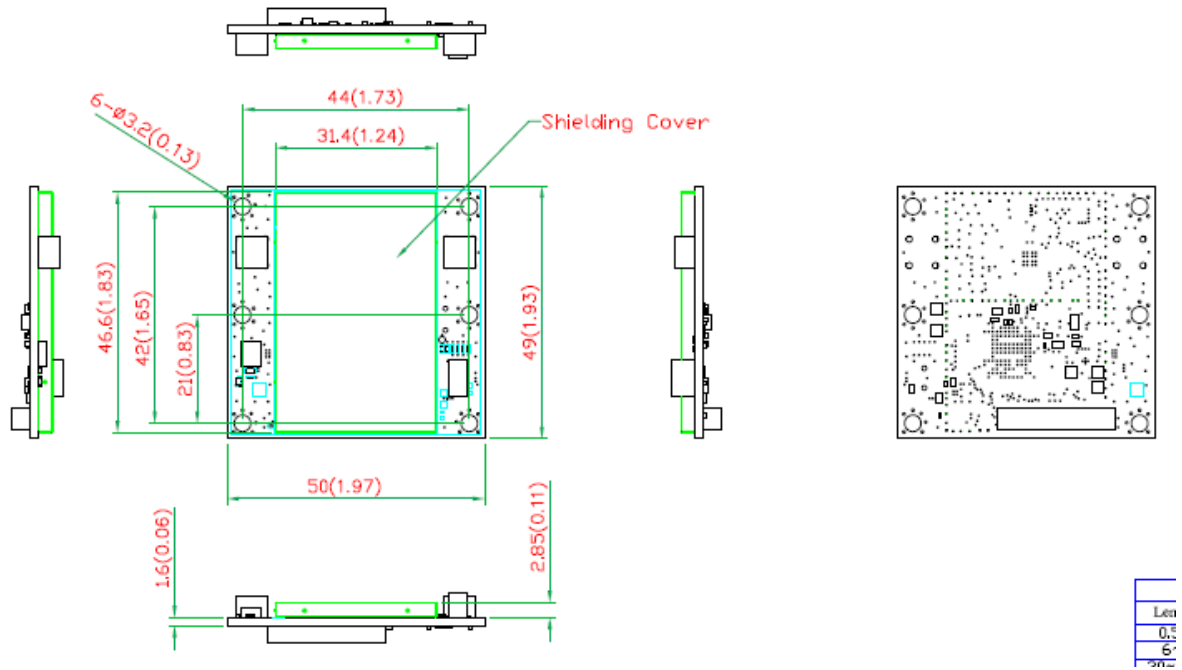
- Module Layout**
- Block Diagram**
- Hardware Installation**
- Software Installation**

Module Layout

Top

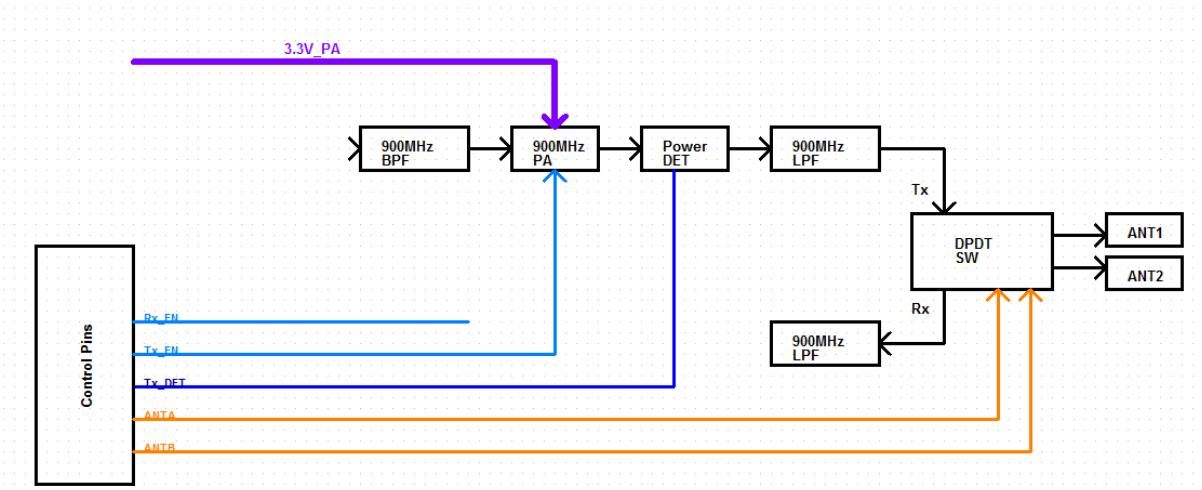
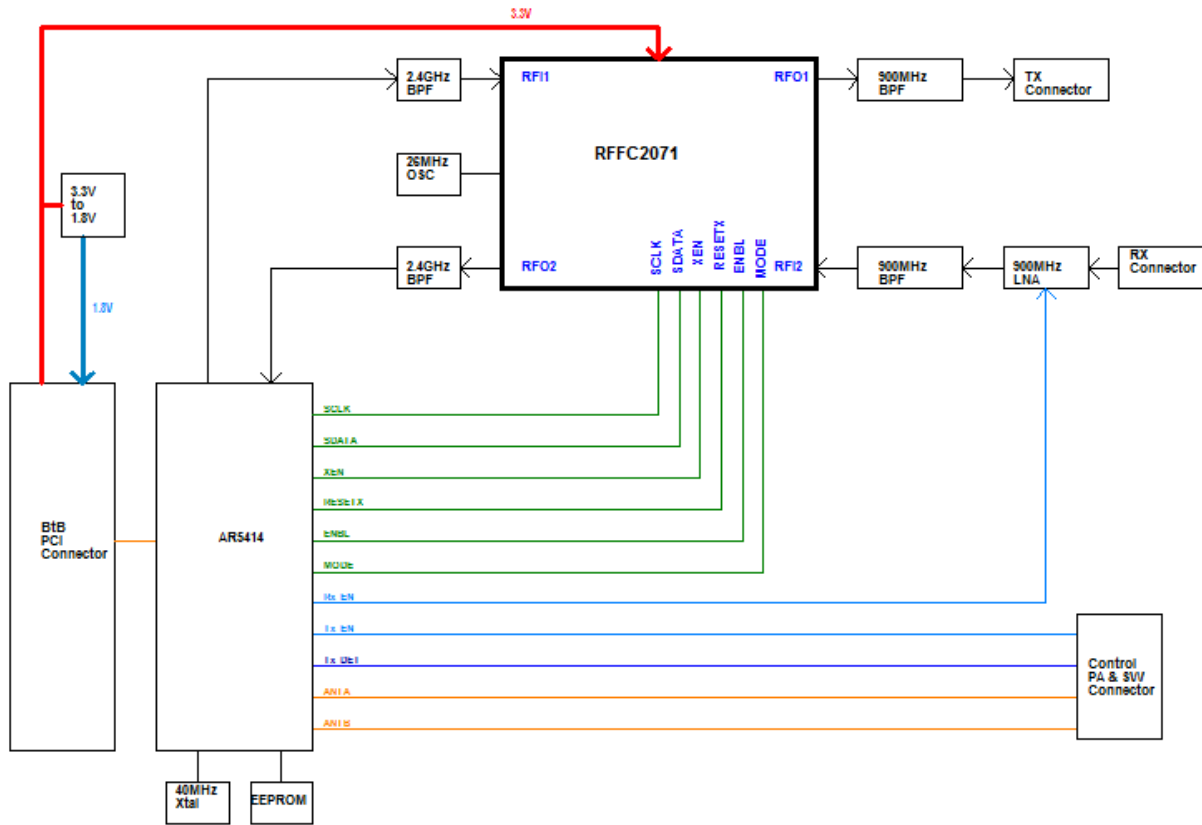


Bottom

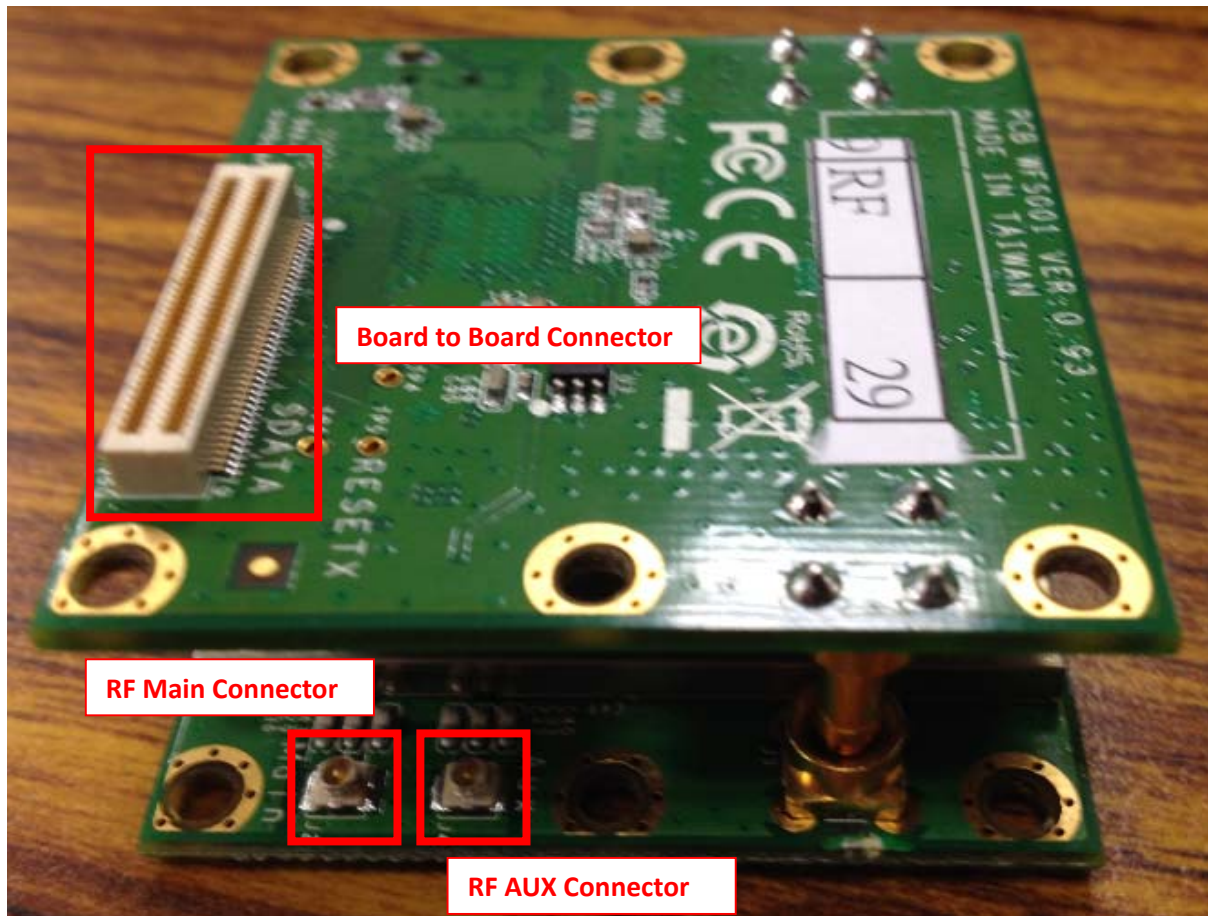


Block Diagram

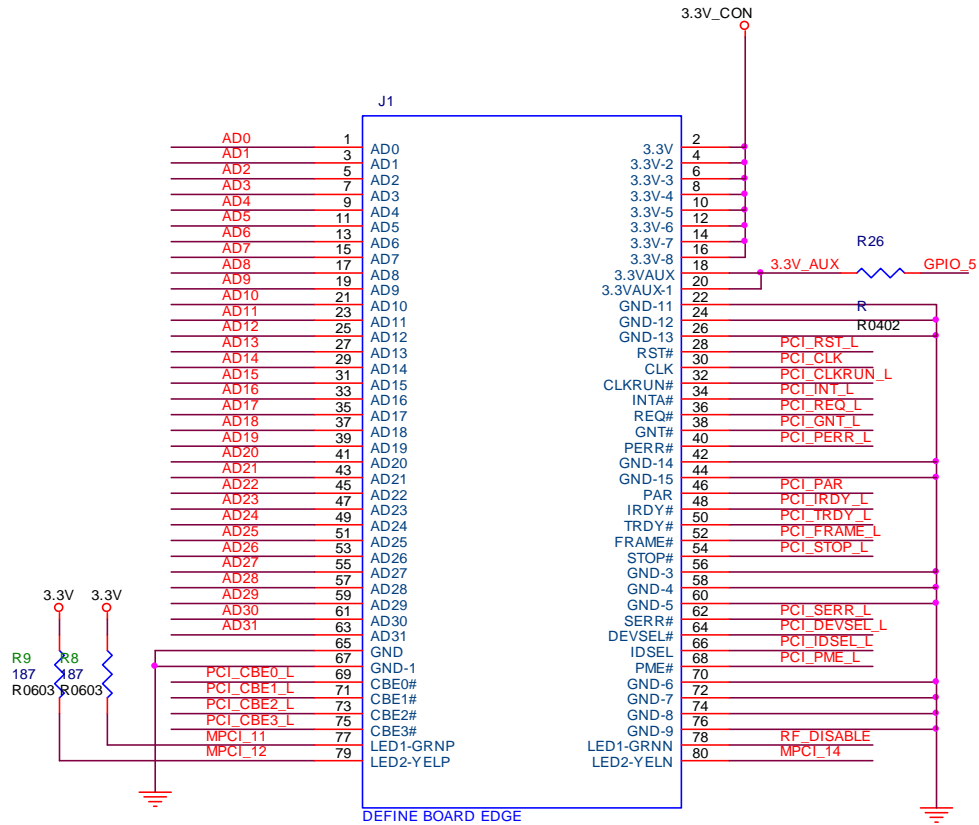
Below is a block diagram of the WFS001.



Connector Locations



PCI Bus Connector PIN Assignments



Hardware Installation

The WFS001 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 WFS001 PCI 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 WFS001 PCI card.
5. If any power boards are to be stacked above the WFS001, install them.
6. Screw on the all the necessary chassis.

Software Installation

After physically installing the WFS001, 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 module is restricted to mobile configuration. To comply with FCC RF exposure compliance requirements, the antenna 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. This transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter

CAUTION:

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

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-WFS001 "

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.

- 1) This device is intended for OEM integrators only.
- 2) Please see the full Grant of Equipment document for other restrictions.

This radio transmitter FCC ID: SLE-WFS001 has been approved by FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Wanshih	QJ1MPA0003A	Dipole Antenna	2.37dBi

Note: The antenna connector is Reverse SMA type.