XIAMEN HEJIAXING ELECTRONICS CO.,LTD.
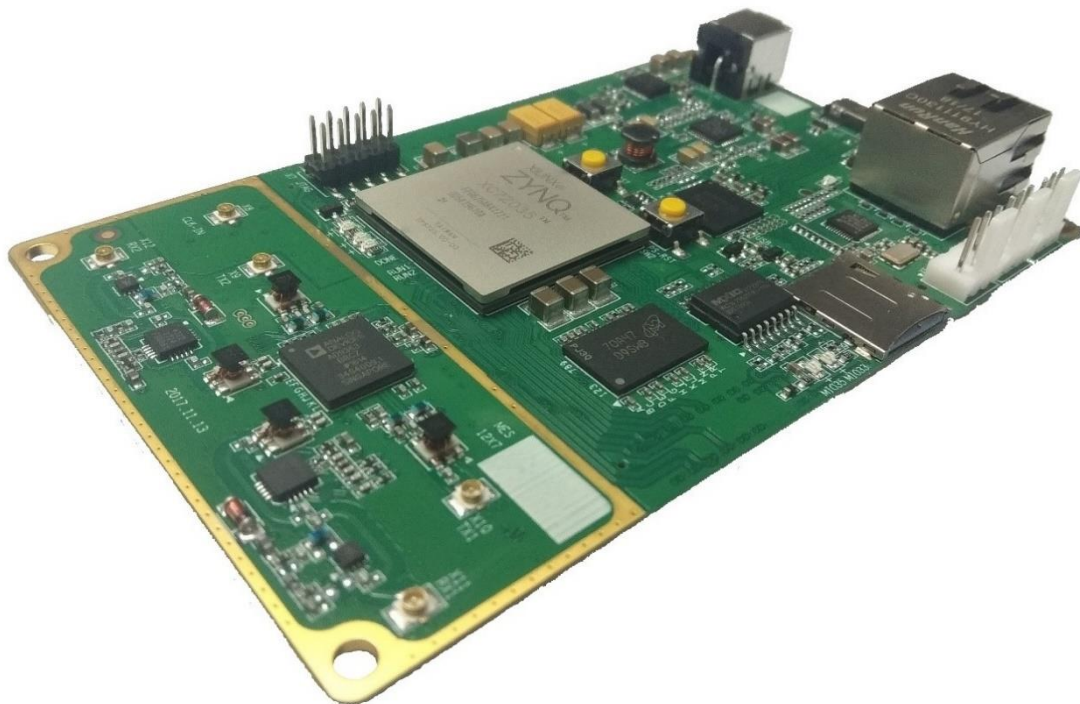
MiniTRX-Z

Getting Started Guide

Project：MiniTRX-Z
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Editor：luohaomin@hjx.cn
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Contents

厦门市合佳兴电子有限公司 www.hjx.cn

1   Getting Started with MiniTRX-Z

MiniTRX-Z is a low-power and small footprint board, based on ADI's RadioVerse™ technology AD9361, enables dramatic reduction in design cycles of your products. This guide will show you how to setup MiniTRX-Z board and your computer to get started.

2   What's inside the Box

Figure1 – MiniTRX-Z Contents

- MiniTRX-Z with 7Z035 and AD9361
- IPEX to SMA cables (4)
- 12V power supply

3   Documentation and Reference Designs

3.1   Documentation
- MiniTRX-Z Getting Started Guide (this document)
- MiniTRX-Z Schematics (PDF format)
- Bill of materials

3.2   Reference Designs
- MiniTRX-Z No-OS Software:
based on ADI's AD9361 No-OS API Branch 2017_R1

4 MiniTRX-Z Key Features

- Fully-verified, low-power, ready for end-product deployment
- Xilinx Zynq XC7Z035-2FFG676I AP SoC
- 1GB DDR3 SDRAM
- 256Mb QSPI Flash
- microSD Card Interface
- 10/100/1000 Ethernet PHY
- USB 3.0 PHY (Hardware Ready)
- RS232/RS422/I2C
- Humidity Sensor with Integrated Temperature Sensor
- GPIO
- LNA operate between 2 GHz and 6 GHz
- RF Digital Step Attenuator(DSA), 31.5 dB attenuation range in 0.5 dB steps(1MHz to 4GHz)
- Bypass LNA and DSA to support 70MHz to 6.0 GHz
- Size: 120mm*75mm
- Analog Devices AD9361-BBCZ Integrated RF Agile Transceiver™
    - RF 2 × 2 transceiver with integrated 12-bit DACs and ADCs
    - Band: 70 MHz to 6.0 GHz
    - TDD and FDD operation
    - Tunable channel BW: <200 kHz to 56 MHz
    - Supports MIMO radio: < 1 sample sync on both ADC and DAC
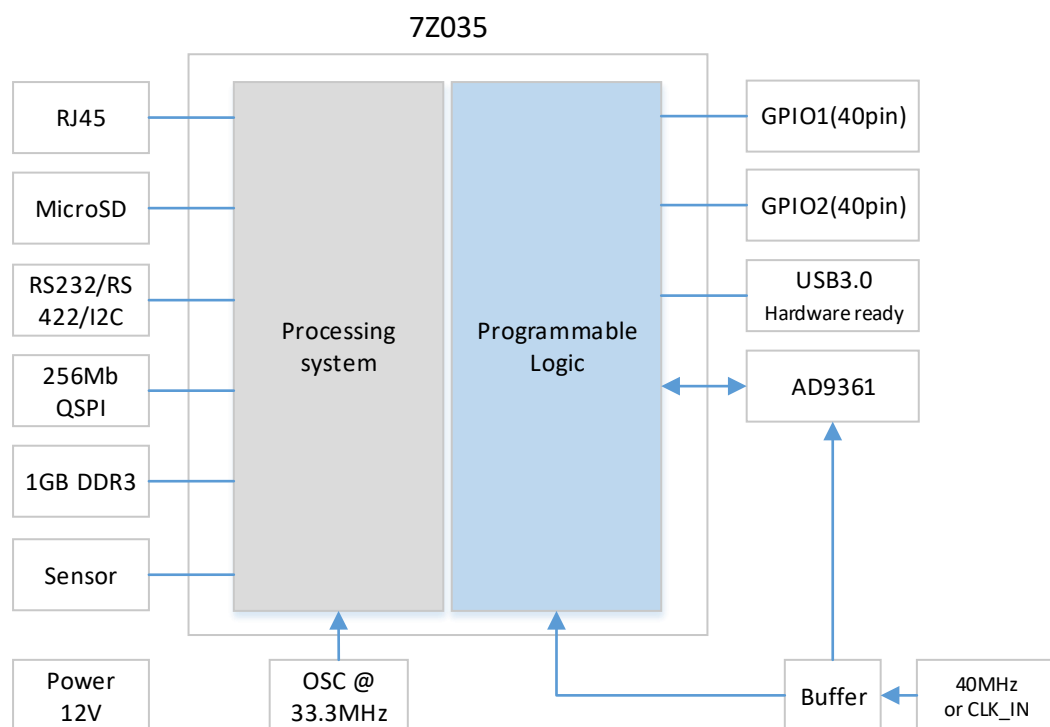   - Miniature RF connectors – 4 TX, 4 RX, 2 TX monitor

Figure2 – Simplified Block Diagram

5 MiniTRX-Z Getting Started Design

The Getting Started design implements the data interfaces to/from the AD9361 RF transceiver through which baseband signals are mixed to RF for over-the-air loopback from transmitter to receiver. Data path and control signals between the AD9361 and Zynq SoC are shown below.
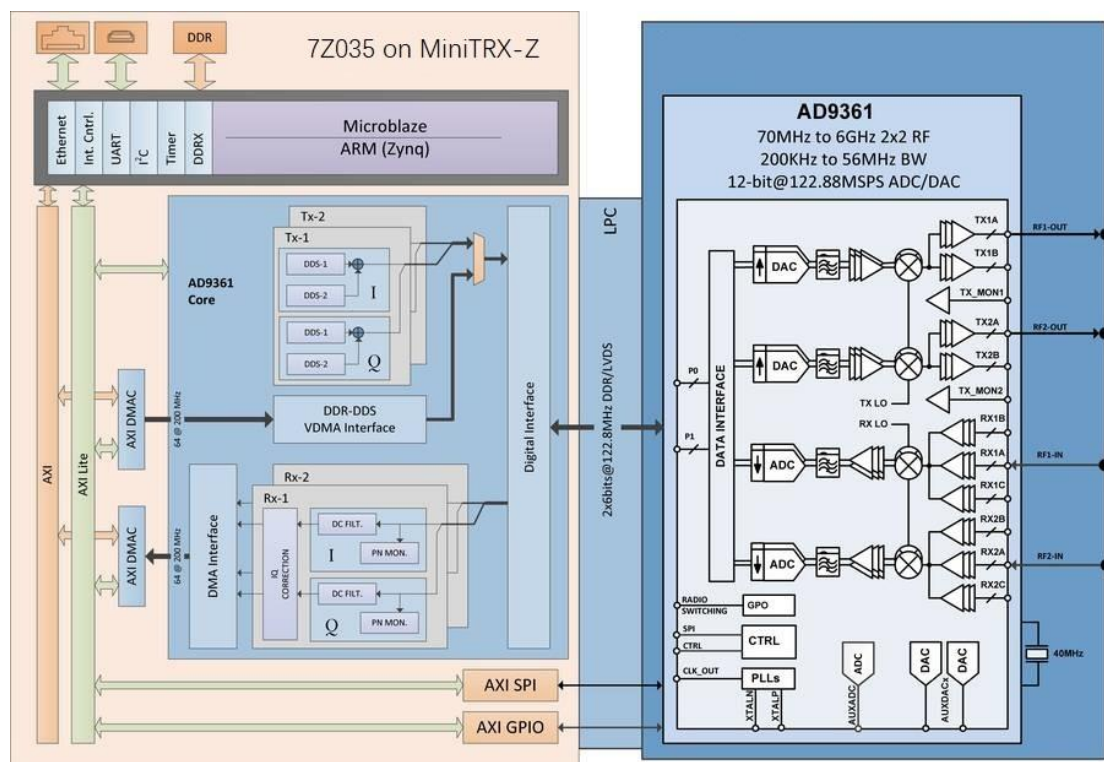

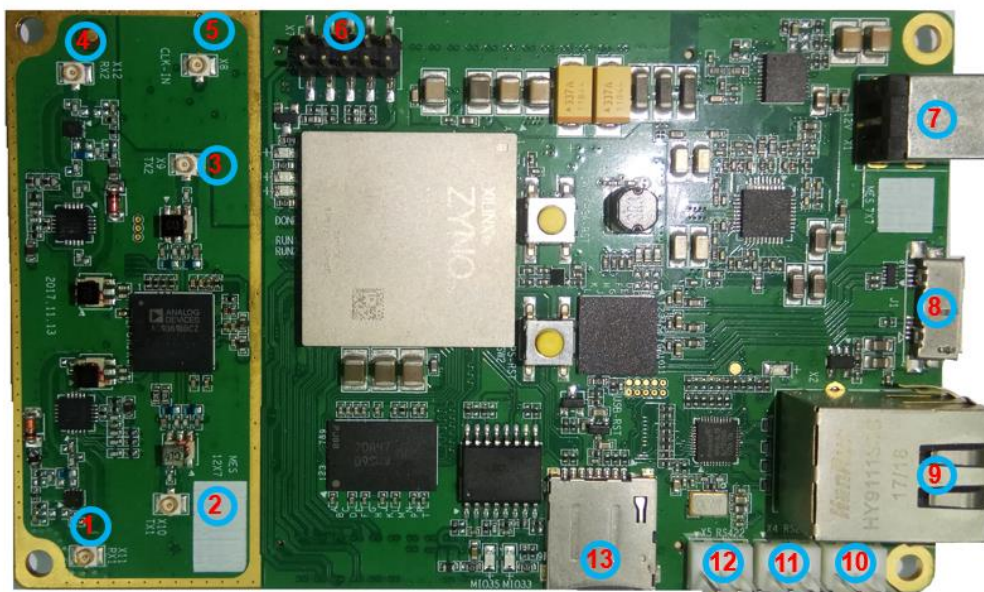Figure3 – HDL Reference Design

6 MiniTRX-Z Setup and Operation

Figure4

(1) IPEX AD9361 RX1
(2) IPEX AD9361 TX1
(3) IPEX AD9361 TX2
(4) IPEX AD9361 RX2
(5) IPEX CLK_IN (optional clk input)
(6) JTAG
(7) Power 12V
(8) USB3.0
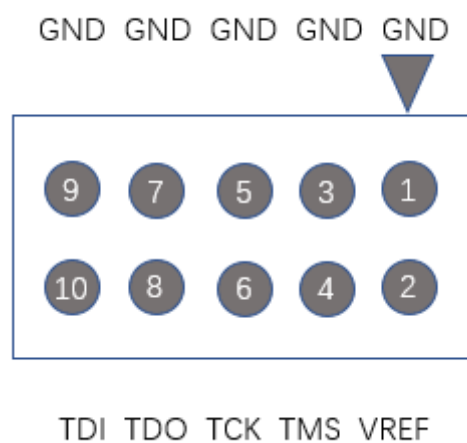(9) RJ45
(10) I2C
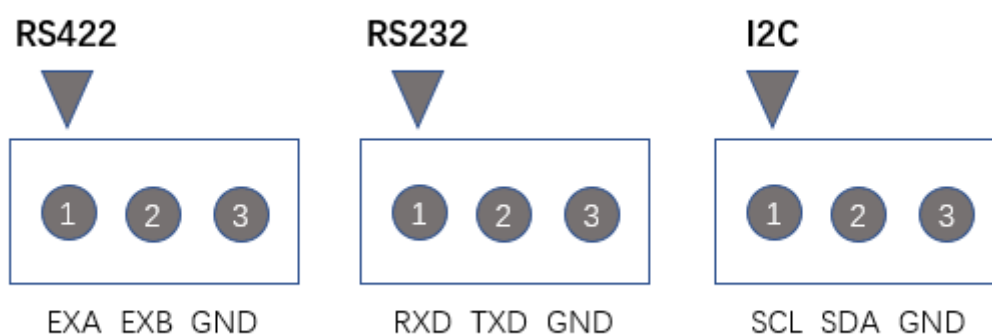(11) RS232
(12) RS422
(13) MicroSD

JTAG:

Figure5

RS422, RS232, I2C:

Figure6

Toggle switches:
Toggle switches are on the back of the board.
1) 7Z035 JTAG MODE:
   Place the toggle switches in the positions as shown in Figure7(toggle switch 1 and toggle switch 2 = on),
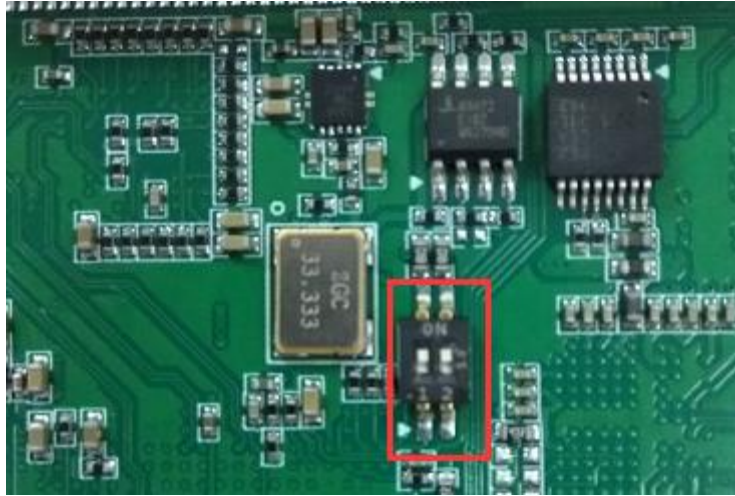2) 7Z035 QSPI MODE: Place toggle switch 2 = off

Figure7