

Device Overview

The BasicRX/BasicTX daughterboards are low-cost daughterboards that provides direct access to the ADC inputs. The boards accept real-mode only signals from 1 to 250 MHz. The BasicRX/BasicTX is ideal for applications using an external front end providing relatively clean signals within operable bandwidth. Wideband transformers couple each RF input to a single channel of the USRP device's ADC. The signals sampled by the ADC are manipulated in the FPGA, and the outputs can be processed independently, or as a single I/Q pair. The BasicTX/BasicRX daughterboards are supported by the USRP Hardware Driver™ (UHD) software API for seamless integration into existing applications.

Key Features

- 1–250 MHz coverage
- Real or Complex sampling

Daughterboard Specifications

Frontends

BasicRX

The BasicRX has 4 frontends:

- **Frontend A:** real signal on antenna RXA
- **Frontend B:** real signal on antenna RXB
- **Frontend AB:** quadrature frontend using both antennas (IQ)
- **Frontend BA:** quadrature frontend using both antennas (QI)

BasicTX

The BasicTX has 4 frontends:

- **Frontend A:** real signal on antenna TXA
- **Frontend B:** real signal on antenna TXB
- **Frontend AB:** quadrature frontend using both antennas (IQ)
- **Frontend BA:** quadrature frontend using both antennas (QI)

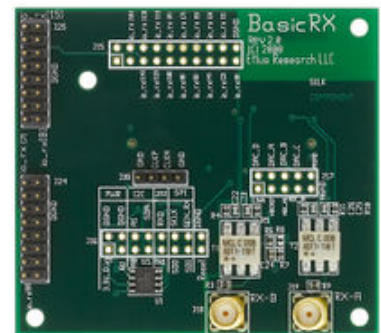
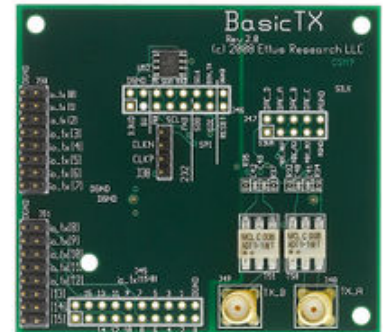
Gains

BasicRX

- The BasicRX has no tunable elements or programmable gains. Through the magic of aliasing, you can down-convert signals greater than the Nyquist rate of the ADC.

BasicTX

- The BasicTX has no tunable elements or programmable gains. Through the magic of aliasing, you can up-convert signals greater than the Nyquist rate of the DAC.



Bandwidths

BasicRX

- For Real-Mode (A or B frontend): 250 MHz
- For Complex (AB or BA frontend): 500 MHz

BasicTX

- For Real-Mode (A or B frontend): 250 MHz
- For Complex (AB or BA frontend): 500 MHz

Input/Output Impedance

- All RF Ports are matched to 50 Ohm with -10dB or better return loss generally. Detailed test is pending.

Input Power Levels

- The maximum input power for the BasicRX is +10 dBm.

Hardware Specifications

- Ettus Research recommends to always use the latest stable version of UHD

BasicRX

- Current Hardware Revision: 1
- Minimum version of UHD required: 3.8.0

BasicTX

- Current Hardware Revision: 1
- Minimum version of UHD required: 3.8.0

Environmental Specifications

Operating Temperature Range

- 0-40 °C

Operating Humidity Range

- 10% to 90% non-condensing

USRP Compatibility

BasicRX

- N or X Series

BasicTX

- N or X Series

Schematics

Basic RX

Basic RX Schematics

Basic TX

Basic TX Schematics

Key Component Datasheets

Part Number	Description	Schematic ID (Page)
24LC025B	EEPROM	U1 (1); U52 (1)
ADT1-1WT	RF Transformer	T1 (1); T2 (1); T50 (1); T51 (1)

Mechanical Information

Drawings

- BasicRX – File:cu ettus-cca-basic-rx.pdf

RF Connectors

- The BasicTX/RX daughterboard features female SMA connectors for both the RX and TX connectors.

Certifications

RoHS

As of December 1st, 2010 all Ettus Research products are RoHS compliant unless otherwise noted. More information can be found at <http://ettus.com/legal/rohs-information>

China RoHS

Management Methods for Controlling Pollution Caused by Electronic Information Products Regulation

Chinese Customers

National Instruments is in compliance with the Chinese policy on the Restriction of Hazardous Substances (RoHS) used in Electronic Information Products. For more information about the National Instruments China RoHS compliance, visit ni.com/environment/rohs_china.

Certificate of Volatility

BasicRX / BasicTX Letter of Volatility

Downloads

FPGA Resources

UHD Stable Binaries

UHD Source Code on Github

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- This page was last modified on 29 September 2020, at 10:50.

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