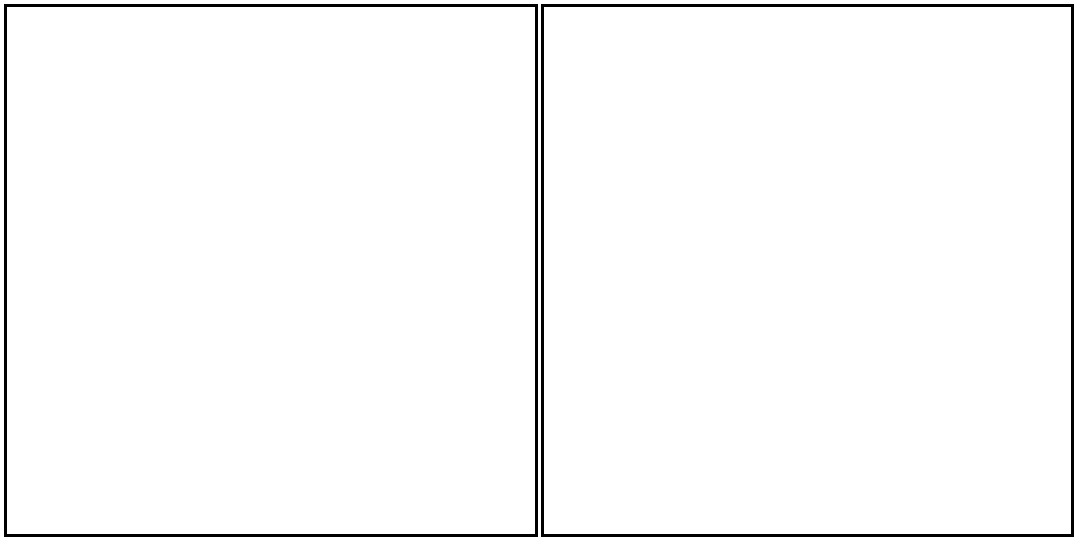
LFRX

Contents

- 1 Device Overview
- 2 Key Features
- 3 Daughterboard Specifications
  - 3.1 Frontends
  - 3.2 Gains
  - 3.3 Bandwidths
  - 3.4 Input/Output Impedance
  - 3.5 Input Power Levels
- 4 Hardware Specifications
  - 4.1 LFRX
  - 4.2 LFTX
- 5 Environmental Specifications
  - 5.1 Operating Temperature Range
  - 5.2 Operating Humidity Range
- 6 USRP Compatibility
  - 6.1 LFRX
  - 6.2 LFTX
- 7 Schematics
- 8 Key Component Datasheets
- 9 RF Connectors
- 10 Certifications
  - 10.1 RoHS
  - 10.2 China RoHS
- 11 Certificate of Volatility
- 12 Downloads

The LFTX daughterboard utilizes two high-speed operational amplifiers to allow transmission from 0-30 MHz. The boards accept real-mode only signals. The LFTX is ideal for applications in the HF band, or for applications using an external front end to up-convert and amplify the intermediate signal. The outputs of the LFTX can be processed independently, or as a single I/Q pair. Example applications include HF communications, radios with external front ends and direct signal generation below 30 MHz. The LFTX/LFRX daughterboards are supported by the USRP Hardware Driver? (UHD) software API for seamless integration into existing applications.

- DC-30Mhz coverage



LFRX

The LFRX 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)

LFTX

The LFTX 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)

LFRX

- The LFRX 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.

LFTX

- The LFTX 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.

LFRX

- **For Real-Mode (A or B frontend)**: 33 MHz
- **For Complex (AB or BA frontend)**: 66 MHz

LFTX

- **For Real-Mode (A or B frontend)**: 33 MHz
- **For Complex (AB or BA frontend)**: 66 MHz

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

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

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

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

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

- 0-40 °C

- 10% to 90% non-condensing

- N or X Series

- N or X Series

For detailed design files such as schematics and certain other more in-depth USRP documentation submit a request via the Support Request Manager.

Part Number	Description	Schematic ID (Page)
AD813x	Differential ADC Driver	U2, U3 (1)
LT3462	DC/DC Converter	U3 (1)
24LC025B	EEPROM	U1 (1)

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

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

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.

LFRX / LFTX Letter of Volatility

FPGA Resources

UHD Stable Binaries

UHD Source Code on Github