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The USRP E320 brings performance to embedded software defined radios by offering four times more FPGA resources compared to the USRP E31x devices. The USRP E320 also introduces improvements in streaming, synchronization, integration, fault-recovery, and remote management capability. This field deployable SDR continues to use the flexible 2x2 MIMO AD9361 transceiver from Analog Devices, which covers frequencies from 70 MHz to 6 GHz and provides up to 56 MHz of instantaneous bandwidth.

- Xilinx Zynq 7045 SoC
  - ◆ 7 Series FPGA with 2GB DDR3 RAM
  - ◆ ARM Cortex A9 800 MHz dual-core processor
- Analog Devices AD9361 RFIC direct-conversion transceiver
- Frequency range: 70 MHz - 6 GHz
- Up to 56 MHz of instantaneous bandwidth
- 2x2 MIMO transceiver
- Up to 10 MS/s sample data transfer rate to ARM processor
- Up to 61.44 MS/s sample data transfer to host (10Gb/SFP+)
- RX, TX filter banks
- Integrated GPSDO
- 9-axis inertial measurement unit
- RF Network on Chip (RFNoC?) FPGA development framework support
- Board-only and Full Enclosure Options



- Power Output >10dBm
- IIP3 (@ typical NF) -20dBm
- Typical Receive Noise Figure <8dB

• The maximum input power for the E320 is -15 dBm.

- Ettus Research recommends to always use the latest stable version of UHD
- UHD version on the host computer must match what is running on the E320

- Current Hardware Revision: 1
- Minimum version of UHD required: 3.14.0.0

- 173 x 100 x 36 mm

- 175 x 106 x 38 mm

- 0-45 °C

- -40-85 °C

- 10% to 90% non-condensing

- 5% to 95% non-condensing

- 0.16 kg

- 0.86 kg

The RF frontend has individually tunable receive and transmit chains. Both transmit and receive can be used in a MIMO configuration. For the MIMO case, both receive frontends share the RX LO, and both transmit frontends share the TX LO. Each LO is tunable between 50 MHz and 6 GHz.

All frontends have individual analog gain controls. The receive frontends have 76 dB of available gain; and the transmit frontends have 89.8 dB of available gain. Gain settings are application specific, but it is recommended that users consider using at least half of the available gain to get reasonable dynamic range.

- RJ45 (1 GbE)
- SFP+ (1/10 GbE, Aurora)
- Type A USB Host
- Micro-USB (serial console, JTAG)
- GPIO
- Integrated GPSDO
- 9-axis IMU

- **PWR:** Power button
- **RF A Group**
  - ◆ **TX/RX LED:** Indicates that data is streaming on the TX/RX channel on frontend side A
  - ◆ **RX2 LED:** Indicates that data is streaming on the RX2 channel on frontend side A
- **RF B Group**
  - ◆ **TX/RX LED:** Indicates that data is streaming on the TX/RX channel on frontend B
  - ◆ **RX2 LED:** Indicates that data is streaming on the RX2 channel on frontend B
- **PPS IN:** Input port for external PPS signal
- **REF IN:** Input port for external 10 MHz signal
- **GPS ANT:** Connection for the GPS antenna



- **POWER:** 10-14v DC Power connector
- **GPIO:** Mini-HDMI connector for GPIO
- **USB:** USB 2.0 Port
- **1G ETH:** RJ45 port for remote management
- **SFP+:** SFP+ connection for sample streaming
- **CONSOLE JTAG:** Micro USB connection for serial UART/JTAG console



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