RINCON RESEARCH
EMPLOYEE OWNED

xSDR PRODUCT FAMILY
EXTREME SOFTWARE-DEFINED RADIOS

- Use LPFE base card with mix-and-match I/O cards to support diverse applications
    - High-rate RF-to-packets collect via 1GbE or 10GbE with 10GBASE-T daughter card
    - F1/F2 coherent relays
    - Demod-remod systems
    - Unattended, autonomous SIGNIT
- Compatible with REDHAWK, X-Midas, and GNU Radio
- Very low SWaP
- High-rate, high-order modulations include: FSK (2, 4, 8), BPSK, QPSK, SQPSK, 8PSK, QAM16 – QAM1024
- Accepts external time/frequency standards for geo-capable time-tagging
- Local data logging to microSD card or a USB disk

PROVIDING INCREDIBLE DSP CAPABILITY IN A MISSION-READY LOW SWAP PLATFORM, the xSDR is a versatile, reconfigurable, cost-effective DSP solution. The family includes the LPFE base card and RFXR and IFXR mezzanine cards.

LPFE Base card with a Zynq 7030, 7035, or 7045 FPGA/ARM SoC. Can be used without a mezzanine card for standalone applications.

RFXR 2x2 MIMO RF transceiver based on the Analog Devices AD9361. Tunable from 70 MHz to 6000 MHz with up to 56 MHz signal bandwidth. The RF front-end has been carefully engineered to achieve high performance without the need for external filters or LNAs.

IFXR High-performance dual IF transceiver: 14 bit, 500 MSPS ADCs, 16 bit, 615 MSPS DACs. Card includes filters and amplifiers to simplify interfacing with external receivers and antennas.

FOR MISSION SUCCESS, we design or xSDR products to meet rigorous specifications, including:

- Wide input power range: 9 VDC to 57 VDC or PoE Type 2
- Write-protection controls for all non-volatile memory
- Flexible boot-options: over mircoSD card, NFS, RAM-disc, etc.
- Rugged mechanical design provides excellent shielding and is easy to cool
- Accurate and precise time-tagging with external 1 PPS, NMEA-0183, DC IRIG-B, NTP, and 10 MHz frequency reference. Careful circuit design and unique firmware let us provide nanosecond-accurate time tags regardless of sample rate.
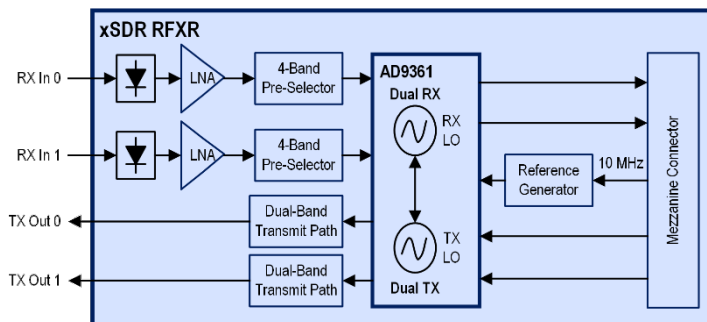
xSDR

xSDR LPFE DSP BASECARD
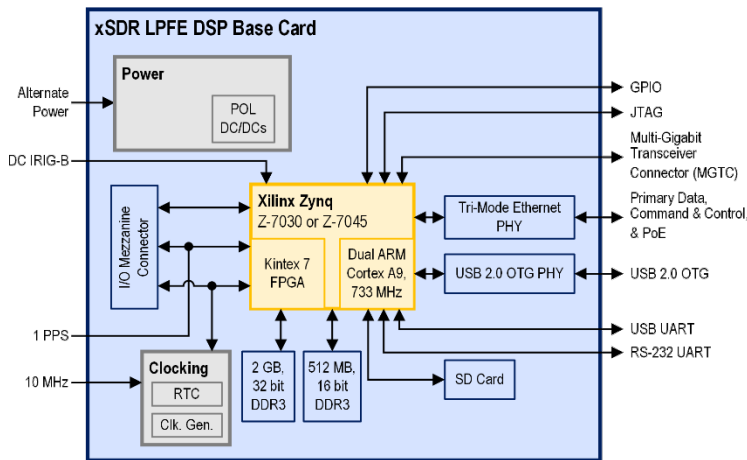
LPFE is a compact Zynq-based system that enables signal collection and processing in a standalone package. The Zynq SoC contains a Kintex-7 FPGA and dual-core ARM Cortex-A9 processor to process data without a host server or laptop. The embedded Linux APIs, file system, and control interfaces are common across all our products.

xSDR RFXR 70 MHZ TO 6 GHZ MIMO TRANSCEIVER

RFXR provides low-power RF capability for the xSDR family.

xSDR IFXR DUAL ADC AND DAC
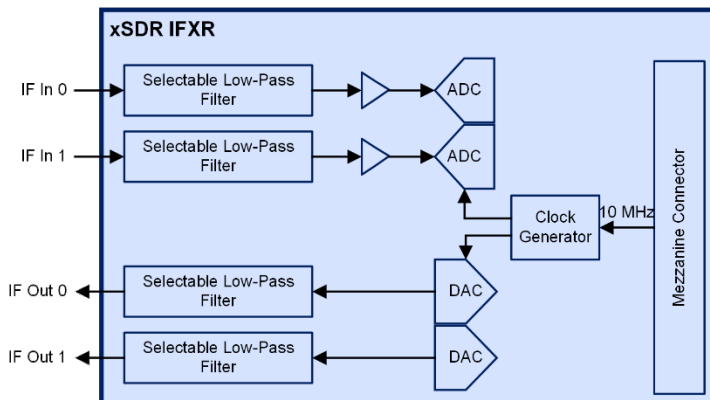
IFXR provides high resolution ADCs and DACs for IF digitization and direct-sampling applications, from HF to 1 GHz.

BASECARD
- **SoC:** Xilinx Zynq Z7045 standard, Z7030 and Z7035 also available
- **Memory:** DDR3-1066, 2 GByte on FPGA, 512 Mbyte on ARM
- **Peripherals:** 10/100/1000 Base-T Ethernet, USB 2.0 OTG, UARTs: USB and RS-232, 10GBASE-T (requires additional interface card)
- **Dimensions:** 5.26" x 2.32" (with connectors)
- **Weight:** 2.96 oz (84 g)

RFXR
- **Tuning Range:** 70 MHz to 6 GHz
- **Gain Adj. Range:** 1 dB to 60 dB, 1 dB steps
- **Noise Figure:** 5 dB to 7 dB (typ.)
- **Preselector:** 4-band RX
- **IF Bandwidth:** 250 KHz to 56 MHz (run-time configurable)
- **Sample Rate:** 0.25 MSPS to 61.44 MSPS (I and Q)
- **ADC/DAC Resolution:** 12 bit
- **TX Power (CW):** +4 dBm (max), 0 dBm (typ.), -4 dBm (min)
- **Phase Noise (1 kHz to 1 MHz):** 0.11° at 100 MHz, 0.26° at 1 GHz, 0.52° at 2.5 GHz, 1.3° at 6 GHz (accepts external LO)
- **Two-Tone SFDR:** >72 dB (typ.)
- **I/Q Image & DC Cancellation:** >80 dBc (typ.)
- **Dimensions:** 3.34" x 1.83" x 0.58" (84.7 mm x 46.4 mm x 14.7 mm) (with connectors)
- **Weight:** 1.94 oz (55 g)

IFXR
- **ADC:** Dual, 14 bit
- **Input Bandwidth (-3 dB):** Filter bypassed: 100 kHz to 1.0 GHz, With LPF: 205 MHz
- **Two-Tone SFDR:** >80 dB (typ.)
- **DAC:** Dual, 16 bit, 10 MSPS to 615 MSPS
- **Max RF Output Frequency:** 500 MHz with 2x interpolation
- **Dimensions:** 3.34" x 1.83" x 0.58" (84.7 mm x 46.4 mm x 14.7 mm) (with connectors)
- **Weight:** 1.94 oz (55 g)

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