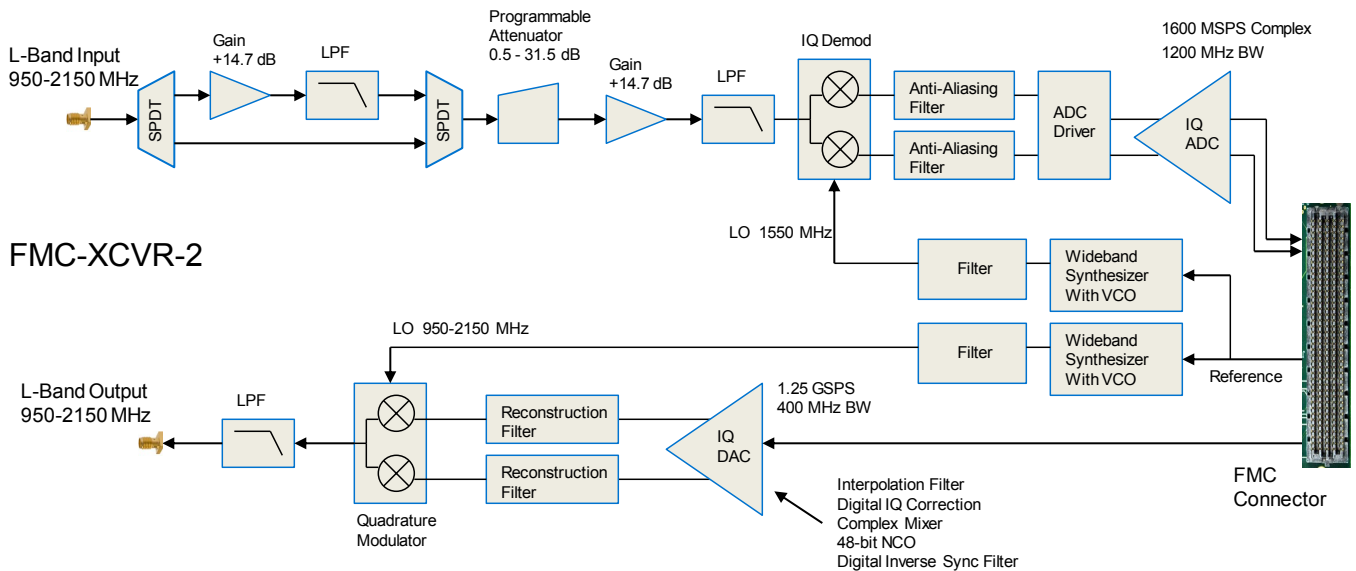


- SATCOM
- Software Defined Radio
- Modulation / Demodulation
- Interference Cancelation
- Search and Survey
- Spectral Monitoring

FMC Wideband L-Band Transceiver

The FMC-XCVR-2 uses an analog mixer to center 1200 MHz of the analog L-Band input (950 MHz–2150 MHz input frequency range) at baseband. The 1200 MHz bandwidth is then digitized by a 1.6 GSPS Complex ADC, with the LVDS output routed to the FMC connector.

The FMC-XCVR-2 also features an IQ 16-bit DAC, followed by an IQ modulator to provide up to 400 MHz bandwidth between 950 MHz-2150 MHz. The output center frequency is tunable across the L-Band Output.



Key Specifications— L-band Input and Digitizer

| | |
|---|--|
| Connector..... | SMA, 50 Ohm |
| L-Band Input Frequency Range..... | 950-2150 MHz |
| Input Power Range, VSWR..... | -87 dBm to 0 dBm (up to +10 dBm without damage), VSWR ≤ 1.3:1 |
| Gain..... | 14.7dB (selectable), +14.7dB Fixed |
| Attenuation..... | Programmable 0.5–31.5 dB |
| IQ Demod..... | 950-2150 MHz, 1550 MHz LO |
| ADC Clocking..... | Internal Wideband Synthesizer with VCO, lockable to Carrier 10 MHz reference |
| Carrier 10 MHz Reference Requirement..... | LVDS, 325mV swing |
| IQ ADC Converter..... | 12-bit, 1.6 GSPS, Texas Instruments—ADC12D1600CIUT |
| IQ Output Correction..... | Digital, IP Core provided by Apogee |
| ADC LVDS Output..... | LVDS outputs are compatible with IEEE 1596.3-1996 |
| FMC Card Form Factor..... | ANSI/ VITA 57.1 FPGA Mezzanine Card (FMC), High Pin Count (HPC) |



Wideband L-Band Transceiver

1200 MHz ADC BW

400 MHz DAC BW

FMC-XCVR-2

RF Input Chain and Digitizer Performance

| | |
|----------------------------------|--|
| Amplitude Flatness..... | Uncorrected amplitude ripple over any 80 MHz segment less than ± 0.5 dB Uncorrected amplitude ripple over any 40 MHz segment less than ± 0.3 dB |
| Out of Band Rejection..... | Minimum of 50 dB rejection between 0-900 MHz. Minimum of 50 dB rejection between 2200 -3200 MHz. |
| System Spurious Performance..... | Minimum SFDR of -50 dBc, Minimum IMD3 of -57 dBFS |
| Noise Figure..... | Typical Noise Figure of 26.9 dB, bypassed input gain Typical Noise Figure of 10 dB with input gain selected |
| Phase Noise..... | -78 dBc at 100 Hz. -82 dBc/Hz at 1 kHz. -89 dBc/Hz at 10kHz. -103 dBc/Hz at 100 kHz. -115 dBc/Hz at 1 MHz. |

Digital to Analog Converter

| | |
|----------------------------------|---|
| Digital to Analog Converter..... | Texas Instruments— Part Number — DAC3482IRKDT |
| Resolution, Sample Rate..... | 16-bit, Dual Channel, 800 MSPS |
| Data Interface..... | The DAC3482 has a 16-bit LVDS bus that accepts 16-bit I and Q data in either word-wide or byte-wide formats. In word-wide mode data is sent through a 16-bit bus. |
| Input FIFO..... | The DAC3482 includes a 2-channel, 16-bits wide, and 8-samples deep input FIFO which acts as an elastic buffer. |
| Interpolation..... | 2x to 16x digital interpolation filters with over 90 dB of stop-band rejection |
| Mixer..... | Complex mixer allows flexible carrier placement, 32-bit frequency register, 12-bit phase |
| IQ Offset Correction..... | Digital Offset, 2s-complement range from -4096 to 4095 |
| Group Delay Correction..... | DAC3482 has group delay correction block for each DAC channel. The maximum delay ranges from 30 ps to 100 ps. |
| Quadrature Modulator..... | Up-convert DAC output to RF frequencies of 950—2150 MHz |
| Output Power..... | 3-5 dBm typical |
| Output Frequency Range..... | L-band, 950 to 2150 MHz |
| Output Connector..... | SMA, 50 Ohm |

