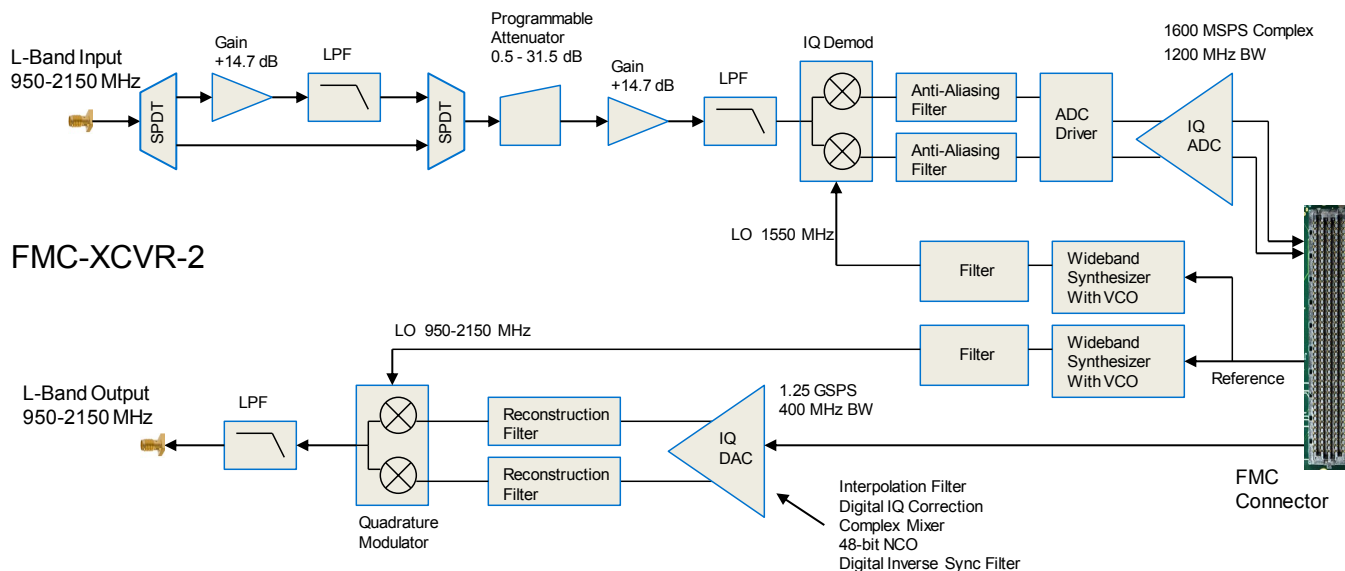


- **SATCOM**
- **Software Defined Radio**
- **Modulation / Demodulation**
- **Interference Cancellation**
- **Search and Survey**
- **Spectral Monitoring**

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

