

FMC270

Quad RF 12-GSPS DAC and Quad RF 3-GSPS ADC

FMC270

Key Features

- FPGA Mezzanine Card (FMC) per VITA 57
- Complete transceiver signal chain solution utilizing Texas Instrument AFE7950
- Max RF single bandwidth:
 - 4TX or 2FB: 1200MHz or 2TX:2400MHz
 - RX: 1200MHz (no FB), 600 MHz (with FB)
- RF frequency range:
 - TX: 600MHz-12GHz
 - RX/FB: 600MHz-12GHz
- Digital step Attenuators
- Onboard clocking and/or external sampling clock
- With operation up 12 GHz, the AFE7950 enables direct RF sampling in the L, S, C and X-band frequency ranges without the need for additional frequency conversions stages
- 29.5Gbs JESD204B/JESD204C digital interface

Benefits

- Ideal for Radar, Seeker front end and/or wireless communications
- Array of FMC's and FMC carriers available from VadaTech
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

 FMC™



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FMC270

The FMC270 is a FPGA Mezzanine Card (FMC) per VITA 57.1 standard. This low powered unit boasts a small footprint and utilizes a single Texas Instrument AFE7950 highly integrated, wideband RF transceiver.

The AFE7950 is a high performance, wide bandwidth multi-channel transceiver, integrating four RF sampling transmitter chains, four RF sampling receiver chains and two RF sampling feedback chains (six RF sampling ADCs total). With operation up to 12 GHz, this device enables direct RF sampling in the L, S, C and X-band frequency ranges without the need for additional frequency conversions stages. This improvement in density and flexibility enables high-channel-count, multi-mission systems.

The TX signal paths support interpolation and digital up conversion options that deliver up to 1200 MHz of signal bandwidth for four TX or 2400 MHz for two TX. The output of the DUCs drives a 12-GSPS DAC (digital to analog converter) with a mixed mode output option to enhance 2nd Nyquist operation. The DAC output includes a variable gain amplifier (TX DSA) with 40-dB range and 1-dB analog and 0.125-dB digital steps.

The VadaTech family of Multiple Input Multiple Output (MIMO) modules are the most versatile FMCs of this type on the market.

Figure 1: FMC270

Block Diagram

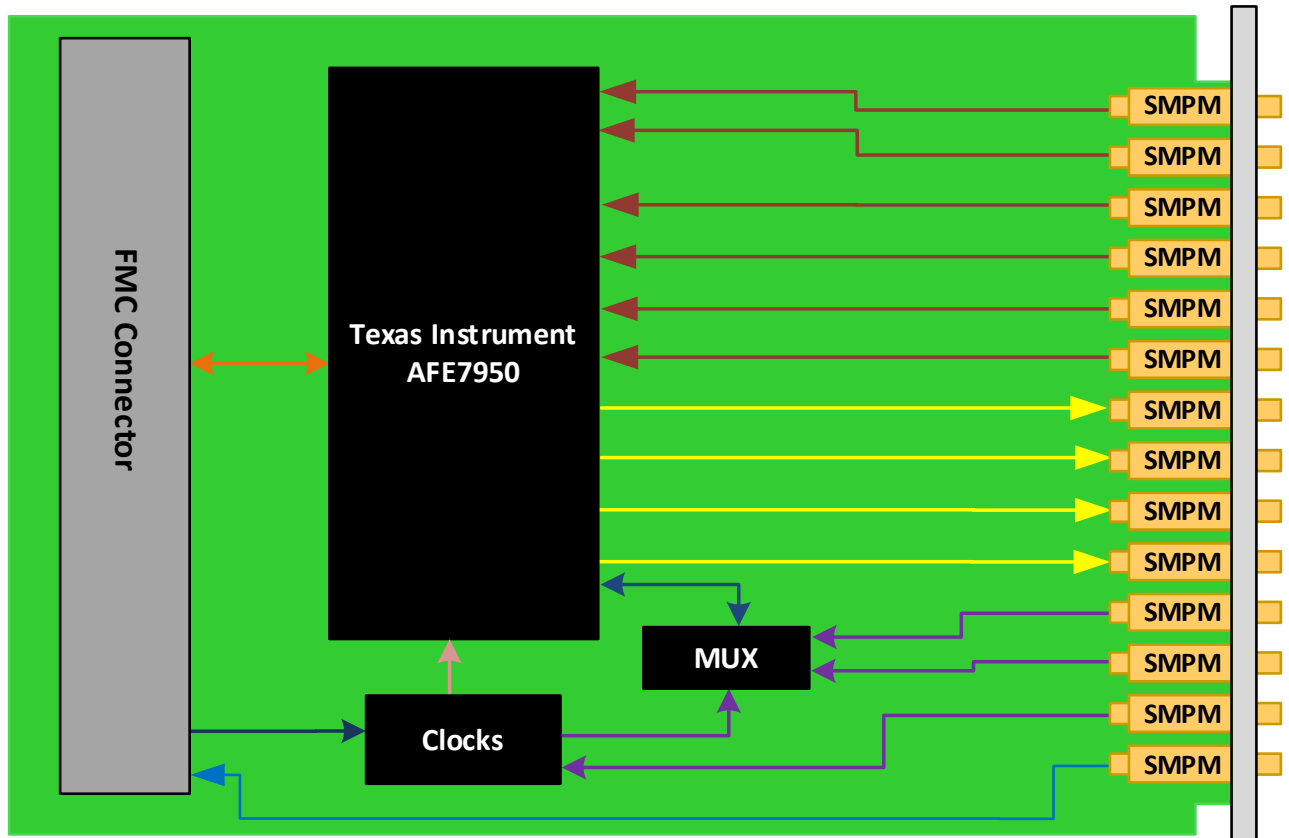


Figure 2: FMC270 Functional Block Diagram

Front Panel

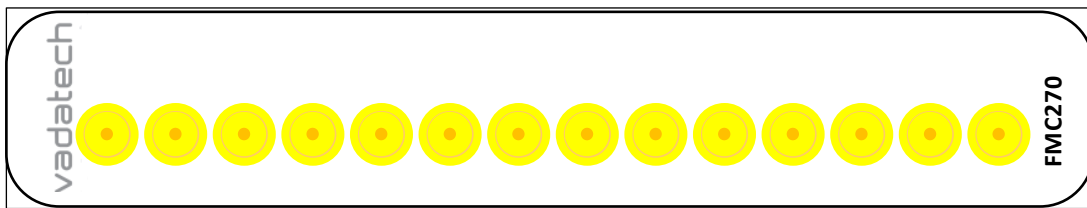


Figure 3: FMC270 Front Panel

Specifications

Architecture		
Physical	Dimensions	Single Module Width 2.71" (69 mm) Depth 3.01" (76.5 mm)
Type	FMC	4T6R Sampling AFE with TI AFE7950 FMC connector
Standards		
FMC	VITA 57	ANSI/VITA 57.1-2008
Configuration		
Power	FMC270	~12W
Performance	Transmitter	Quad RF sampling 12-GSPS DACs
	Receiver	Quad RF sampling 3-GSPS ADCs
	Bandwidth	4TX or 2FB: 1200 MHz or 2TX: 2400 MHz RX: 1200 MHz (no FB), 600 MHz (with FB)
	Digital step attenuators	TX: 40 dB range, 0.125-dB steps RX or FB: 25 dB range, 0.5-dB steps
Environmental	Temperature	See Ordering Options (air flow requirements >400 LFM) Storage Temperature: -40° to +85°C
	Vibration	1G, 5 to 500 Hz on each axis
	Shock	30Gs each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	Interface Connectors	14 SMPM Front Panel Connector
	LEDs	Status
Software Support	Operating System	Agnostic
Other		
MTBF	MIL Hand book 217-F@ TBD hrs	
Certifications	Designed to meet FCC, CE and UL certifications, where applicable	
Standards	VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards	
Warranty	Two (2) years, see VadaTech Terms and Conditions	

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of OpenVPX, ATCA and MTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTMs), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

Ordering Options

FMC270 – AB0-000-0HJ

A = RF Sampling Clock		
0 = PLL Based 1 = Direct RF 500 MHz and lower 2 = Direct RF 4 GHz and lower 3 = Direct RF 3 GHz to 12 GHz		
B = VCXO for PLL Based Clocking		H = Operating Temperature
0 = None (for direct sampling clock (option A = 1 thru 3) 1 = 100 MHz 2 = 122.88 MHz 3 = 153.6MHz 4 = Reserved		0 = Commercial (-5° to +55°C) 1 = Industrial (-20° to +70°C) 2 = Extended (-40° to +80°C)
		J = Conformal Coating
		0 = No coating 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Related Products

AMC515



- AMC FPGA carrier for FMC per VITA 57
- AMC Ports 4-11 are routed to FPGA (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- Xilinx Virtex-7 XC7V2000T in 1925 package

FMC108



- Single width FMC per VITA 57
- Two QSPF+ cages for 10GbE/SRIO/PCIe and Aurora
- Re-driver on both ports for a better signal quality

FMC223



- Single module AD9739 DAC 14-bit @ 2.5 GSPS
- 2 Vpp differential Analog output swing
- Programmable DSP clock

Contact

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DOC NO. 4FM737-12 REV 01 | VERSION 1.2 – MAY/23