

FMC269

75 MHz to 6 GHz Quad Versatile Wideband Transceiver (MIMO), FMC

FMC269



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Key Features

- FPGA Mezzanine Card (FMC) per VITA 57
- Complete transceiver signal chain solution using Single Analog Device (ADRV9029)
- Frequency range 75 MHz to 6 GHz with receiver bandwidth up to 200 MHz and transmitter synthesis bandwidth up to 450 MHz
- MIMO transceiver is Time Domain Duplex (TDD) for 3G/4G/5G
- Compatible with Analog Devices design tools for ADRV9029
- Onboard clocking with multi-card synchronization capability
- 24.33Gbs JESD204B/JESD204C digital interface

Benefits

- Ideal for 3G/4G/5G SDR applications with wideband range versatility
- High modulation accuracy with ultralow noise
- 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**TM



FMC269

The FMC269 is a FPGA Mezzanine Card (FMC) per VITA 57.1 standard. This low powered unit boasts a small footprint and utilizes a single ADRV9029 highly integrated, wideband RF transceiver.

The ADRV9029 features quad channel Transmitters (TX) and Receivers (RX) with integrated synthesizer and digital signal processing functions. Each complete RX and TX subsystem includes DC offset correction, Quadrature Error Correction (QEC), and programmable digital filters. The transceivers also provide Automatic Gain Control (AGC) and flexible external gain control modes, allowing significant flexibility in setting system level gain dynamically.

The FMC269 operates within the 75 MHz to 6.0 GHz frequency range, covering most licensed and unlicensed bands. The clocking is via the front panel or an internal clock. This makes the FMC269 an ideal choice for the development and/or deployment of advanced RF solutions.

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

Figure 1: FMC269

Block Diagram

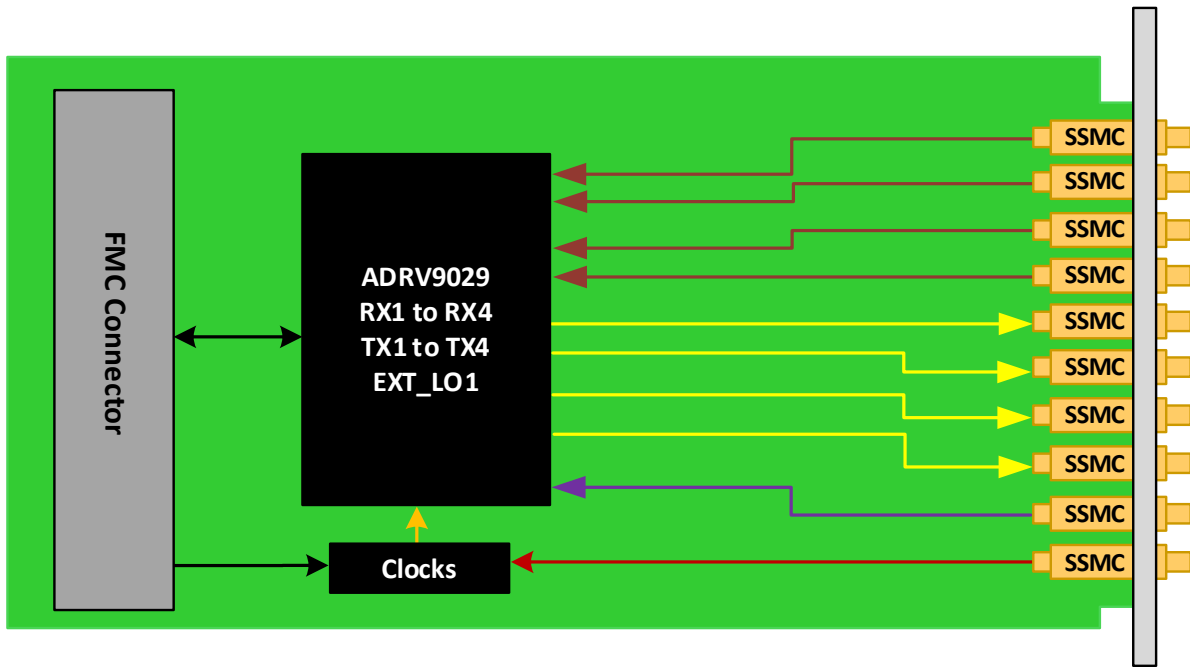


Figure 2: FMC269 Functional Block Diagram

Front Panel

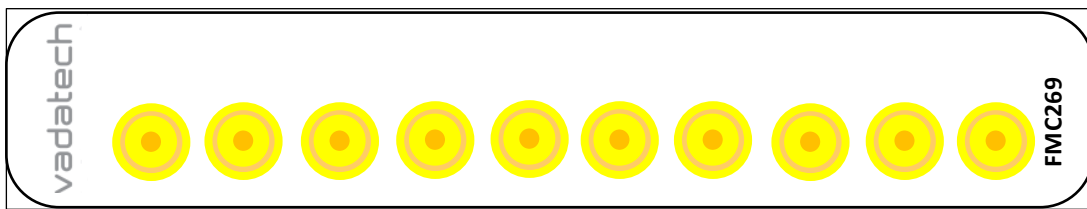


Figure 3: FMC269 Front Panel

Supported Software

The FMC269 is compatible with Analog Devices design tools for ADRV9029.

The screenshot displays the 'ADRV9009 Transceiver Evaluation Software' interface. The top menu includes 'Connect', 'Program', 'Device', 'File', 'Tools', and 'Help'. Below the menu is a toolbar with options like 'Config', 'Iron Python Script', 'ObsRx Data', 'Receive Data', 'Transmit Data', and 'TDD/FDD Switching'. The main window shows a 'Configuration' tab with a block diagram of the ADRV9008-2 transceiver. The diagram includes sections for RX (ORX1, ORX2), TX (TX1, TX2), Digital Processing (ADC, DAC, LPF, MUX), and Clock Generation. It also shows connections to external components like ARM M3, LO1, LO2, and various GPIOs and AUXDACs. A list of pins and signals is provided on the right side of the diagram.

Below the diagram is a configuration panel with the following settings:

- Device: ADRV9008-2
- Device Clock: 122.88MHz
- Tx Channel: TX1 and TX2 Enabled
- Tx Profile: Tx 200/450MHz, IRate 491.52MHz
- Observation Channel: Observation Rx1
- Obs Profile: ORX 450MHz, IRate 491.52MHz
- Load Custom Stream:

Additional configuration options include:

- LO PLL: RF PLL
- Freq(MHz): 1800
- Ext. LO: NO
- RFPLL Phase Sync: Disable

A table for Tx Channel Attenuation is shown below:

Tx Channel	Attenuation
Tx1	0.00
Tx2	0.00

At the bottom of the interface, it indicates 'Zynq Platform: Disconnected' and the Analog Devices logo.

Figure 4: FMC269 Compatible Design Tools for ADRV9029

Specifications

Architecture		
Physical	Dimensions	Single Module
		Width 2.71" (69 mm)
		Depth 3.01" (76.5 mm)
Type	FMC	Quad wideband transceiver, single ADRV9029 FMC connector
Standards		
FMC	VITA 57	ANSI/VITA 57.1-2008
Configuration		
Power	FMC269	~5W
Performance	Broadband transmitter	Tuneable range from 75 MHz to 6 GHz, maximum synthesis bandwidth 450 MHz
		Transmitter attenuation power control range: 0 to 32 dB
	Broadband receiver	Tuneable range from 75 MHz to 6 GHz, maximum receiver bandwidth 200 MHz
		Receiver gain range: 30 dB
Observation receiver	Tuneable range from 75 MHz to 6 GHz, maximum receiver bandwidth 450 MHz	
	Integrated synthesizers	2.3 Hz typical LO step size
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	10x SSMC 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

FMC269 – 0B0-000-0HJ

B = VCXO 0 = 100 MHz 1 = 122.88 MHz 2 = 153.6 MHz 3 = Reserved 4 = Reserved		H = Operating Temperature 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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