

C700 – VSM1 Module Vector Signal Modulator

400 MHz to 6 GHz Quadrature Modulator
Integrated with a Programmable FPGA Core

- Direct FPGA access with custom code
- Supports **Altera**^{®i} & Xilinx^{®ii} FPGAs & tools
- Coherent Multi Channel & MIMO Ready
- Superior Phase Noise & SFDR performance
- Integrates with your design environment of choice: MATLAB^{®iii}, LabVIEW^{®iv}, .NET & more...

The Vector Signal Modulator module is the flagship signal generation Module for the SpectraTronix C700 Platform. The RF Module integrates high performance FPGAs with top performance RF chips while the C700 Platform takes care of Synchronization, LO Control, power management, data communication and all other ancillary functions.



Ideal Solution for Cognitive Radio, DSP,
Wireless Communications & Massive
MIMO Applications

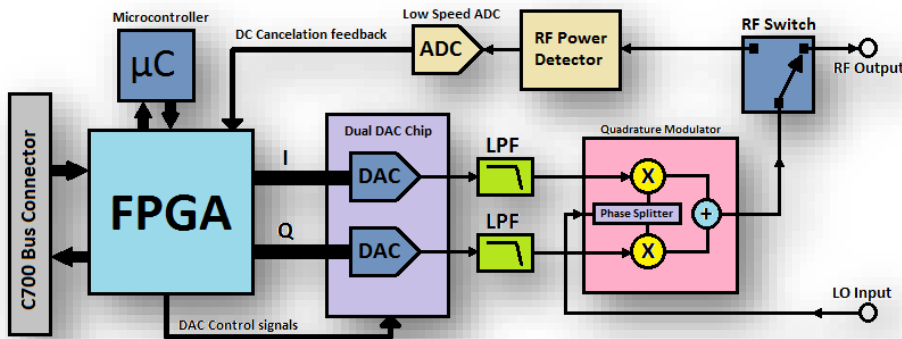


The C700 is a Modular Development & Verification platform designed specifically to bring about speed and flexibility to FPGA & System Designers. Allowing you to test your RF design without draining your time & resources integrating and troubleshooting RF boards.

Works out of the box. No time wasted on Setup Integration, testbed creation or code re-design

- Frequency range: 400 MHz to 6 GHz
- Wide IQ Bandwidth up to 40 MHz
- Digital I & Q with 16-bit resolution
- Analog, Digital & Arbitrary modulation
- Phase Noise -107 dBc/Hz @ 10 KHz
- Switching time < 10 μ s
- Cutting-edge baseband generation with Modular architecture to meet various applications

Module firmware natively supports programming the FPGA with custom HDL code through direct JTAG access, this allows developers to use separate design environments for HDL development and for system level testing simultaneously and independently.



The RF characteristics of the C700 outperforms traditional Test & Measurement Equipment of its class, enabling the use of the C700 as a general-purpose test bench or a fully optimized automated test station. The C700 VSM Can function as a traditional standalone Arbitrary Vector Signal Generator for a very wide range of Applications

Debug right from your Comfort Zone

SpectraTronix C700 VSM module gives developers the ability of generating complex baseband I/Q signals through VHDL programming of its fully configurable FPGA blocks then Vector Modulate them to an RF Carrier up to 6 GHz. HDL Developers can easily implement system functions inside the FPGA and also use the connected PC for preprocessing.

Arbitrary Waveform Generator

The C700 structure is highly modular and configurable to adapt to almost every design need. Modules or even entire units can be stacked and aggregated for large scale designs (massive MIMO, cognitive radio networks...et.) and easily connected to your PC for control, data I/O or as hardware in the loop for simulation.

C700 goes all the way to help you focus on your job. The system can be fully programmed and controlled right from your design environment of choice (MATLAB®, LabView®, .NET Visual Studio, ...etc.) in addition to a multitude of programming languages (VHDL, C and many others). This allows reusing the same test bed during the design and prototyping phases completely eliminating inconsistency and guaranteeing a streamlined testing procedure through the project lifecycle. No more you will need to create new complex and expensive test bed for your prototype, now design engineers can easily move back and forth testing the code AND the actual prototype side by side greatly accelerating debugging and design iteration.

Specifications

General Specifications	
Frequency	0.4 GHz to 6 GHz
IQ Bandwidth	40 MHz (@ 16-bit resolution)
Sampling Rate	50 MSps (400 MSps with Interpolation) (Cyclone IV is limited to 25 MSps)
IQ Resolution	16-bit
Frequency Switching Speed	< 10 μ s (Within \pm 160 MHz from LO frequency)
LO Input level	-6 dBm to 6 dBm
RF Output Power	-37 dBm to -7 dBm (Optional amplifiers/attenuators available)
Level Accuracy	<0.5 dB (Typical 0.2 dB)
Power Consumption	< 5 Watt
FPGA	
FPGA Configuration	Downloadable via JTAG port
Model Number	Cyclone III Cyclone IV
Part Number	EP3C10E14417 EP4CE55F2317
Memory Size	414 Kbits 2,340 Kbits
Logic Elements	10,320 55,856
No of Multipliers (18x18)	23 154
No of PLLs	2 4
Available FPGA Space	50 % Memory 90 % Memory 80 % Logic 95 % Logic
Physical Characteristics	
Connector Type	SMA female
External Dimensions	L95 x W80 x D15 mm (Including connectors)
Weight	< 100 gm.
Operating Temperature	-10 to +50 C
Operating Humidity	<95 % rel. humidity
Included accessories	SMA male cable (please choose relevant model)

Order Information

VSM1

Cyclone 3 version

VSM1e

Cyclone 4 version

ⁱ Altera® is a trademark and registered in U.S.

ⁱⁱ Xilinx® is a trademark and registered in U.S.

ⁱⁱⁱ MATLAB® is a registered trademark of MathWorks.

^{iv} LabVIEW® is a trademark of National Instruments.