C700 – PLLx Module System Local Oscillator

100 MHz to 18 GHz RF Local Oscillator with high frequency stability and 1 GHz/ms Sweep time

- Coherent Multi Channel & MIMO Ready
- Superior Phase Noise performance
- Low Harmonics Level < -40 dBc
- Fast Frequency Locking < 0.25 ms.

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

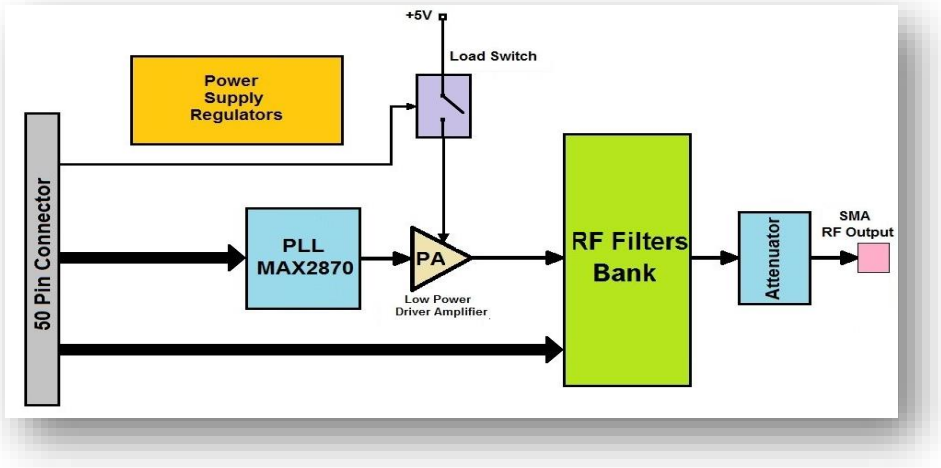
Ideal Solution for Cognitive Radio, DSP, Wireless Communications & Massive MIMO Applications

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: 100 MHz to 18 GHz.
- Phase Noise -107 dBc/Hz @ 10 KHz
- Switching speed **<0.25 ms**

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.



SpectraTronix C700 gives developers the ability of generating complex baseband I/Q signals through VHDL programing of its fully configurable FPGA blocks then Vector Modulate them to an RF Carrier up to 6 GHz using the PLL mpodule, also C700 can capture these waveforms integrating PLL module with other modules.

CW 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.

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 PLL is one module of C700 that can function as a traditional standalone CW Signal Generator for a very wide range of Applications, or can be integrated with other modules like VSM or VSD to provide high accuracy and shared LO signal for various applications.

Debug right from your Comfort Zone

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®, SystemVue® (soon)*, GNURadio (soon) ..etc.)[i] 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 thought 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	C700-PLL1e	C700-PLL2	C700-PLL3	C700-PLL4
	0.1 to 6 GHz	4 to 8 GHz	6 to 12 GHz	10 to 18 GHz
Number of LO outputs	2	1		
Reference frequency stability	1×10^{-7} (Based on SYNC1 module)			
Frequency Resolution	250 KHz, 500 KHz, 1 MHz	1 MHz		
	(Fine frequency resolution down to 1Hz is possible by using VSM module)			
Phase noise (1Hz normalized)	-107 dBc	N.A.		
	(@ 1 GHz carrier, 10kHz Offset)			
Harmonics	<-40 dBc Typ.	N.A.		
Non-harmonics	<-60 dBc Typ.	N.A		
RF power level	7 dBm Typ.	+5 dBm Typ.		
Frequency switching speed	<0.25 ms	< 1 ms (within 1 GHz)		
Sweep Range	N.A.	Full band		
Sweep Time	N.A.	1GHz/ms		
Output impedance VSWR	<3 (in 50 Ω system)			
Power Consumption	<1 Watt			
FPGA				
Model Number	Cyclone III			
Part Number	EP3C5E144I7			
Memory Size	414 Kbits			
Logic Elements	5,136			
No of Multipliers (18x18)	23			
No of PLLs	2			
Physical Characteristics				
RF 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			

[i] [i] **MATLAB**®, is a registered trademark of The MathWorks, Inc. **LabVIEW®,** is U.S. registered trademarks of National Instruments. **SystemVue®** is a trademark of Keysight Technologies Inc.