

Review of Analog Devices AD9548 Evaluation Board

NTMS Meeting
December 3, 2016
N5BRG

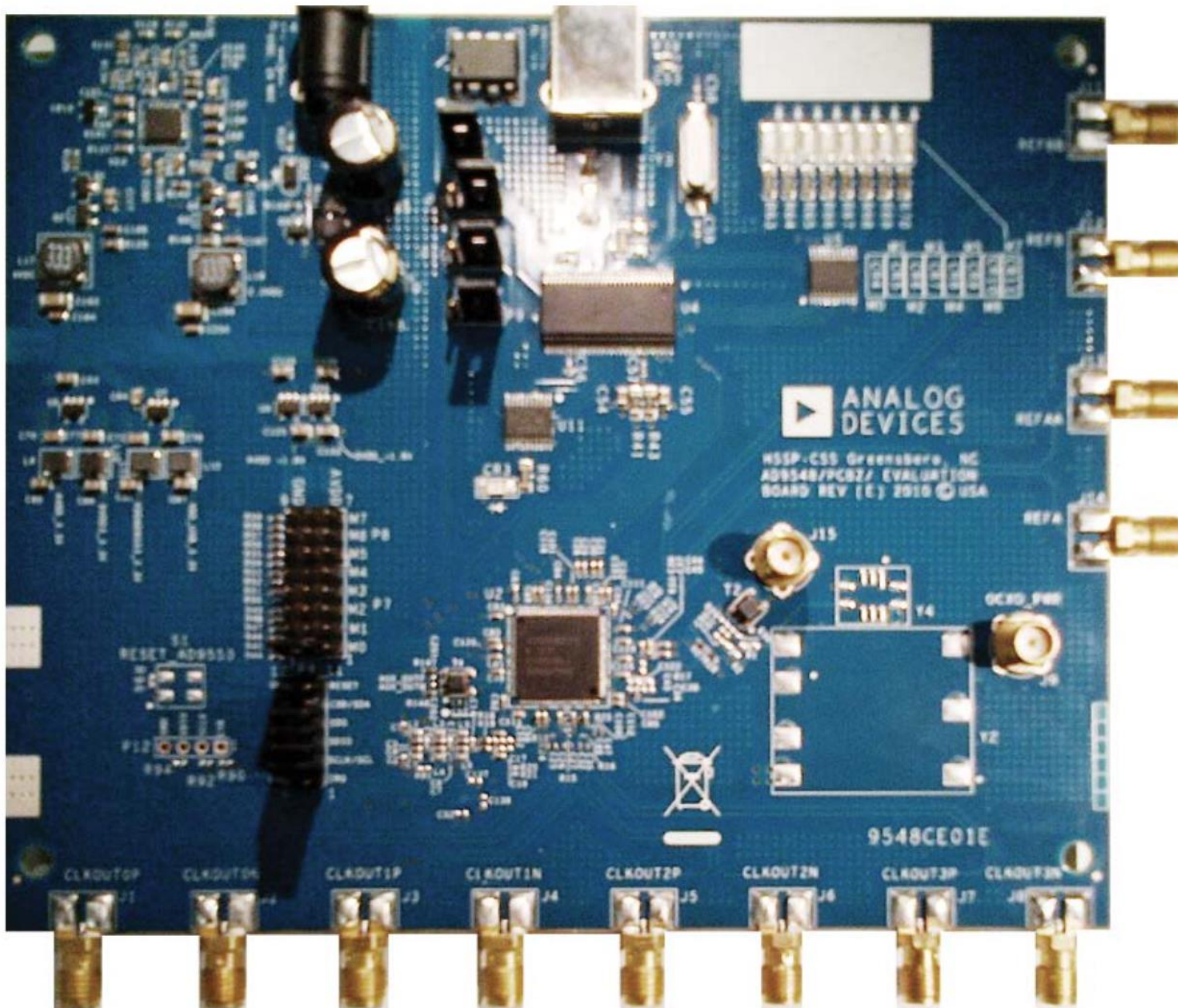


Figure 1. *AD9548 Evaluation Board, Revision E*

FEATURES

Simple power connection using 6 V wall adapter and on-board switching and LDO voltage regulators

Regulators easily bypassed for power measurements

8 ac-coupled SMA connectors for output

SMA connectors for

2 differential or 4 single-ended reference input

System clock input

On-board provisions for OCXO, crystal oscillator, or crystal

USB connection to PC

32-bit or 64-bit Windows-based evaluation software with simple graphical user interface

On-board PLL loop filter

Easy access to digital I/O and diagnostic signals via I/O header

Status LEDs for diagnostic signals

APPLICATIONS

GPS 1 pps applications ([AD9548](#) only)

Networking and communications line cards and synchronous equipment timing source (SETS) devices

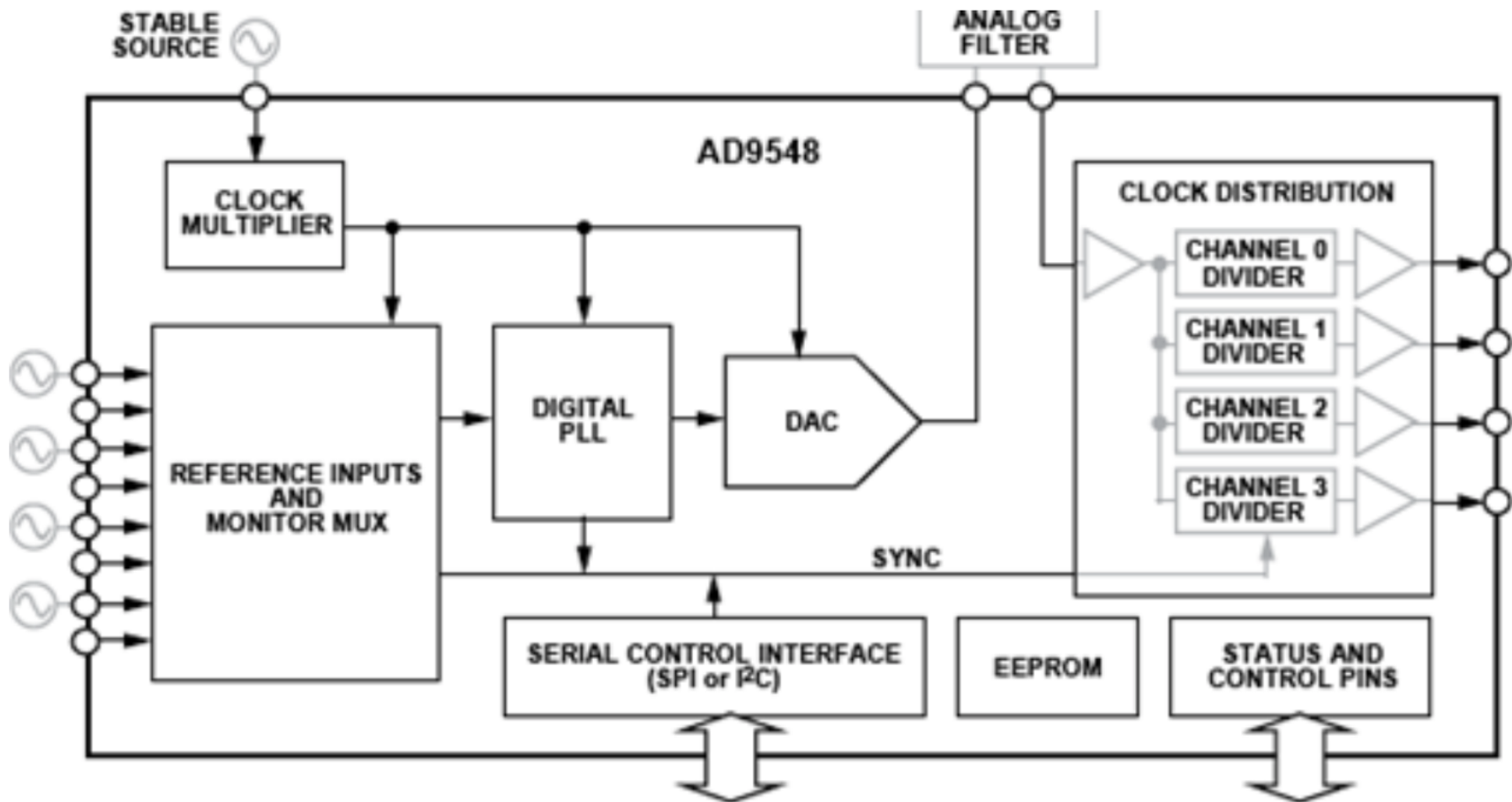
Test and measurement equipment

Wireless base stations, controllers

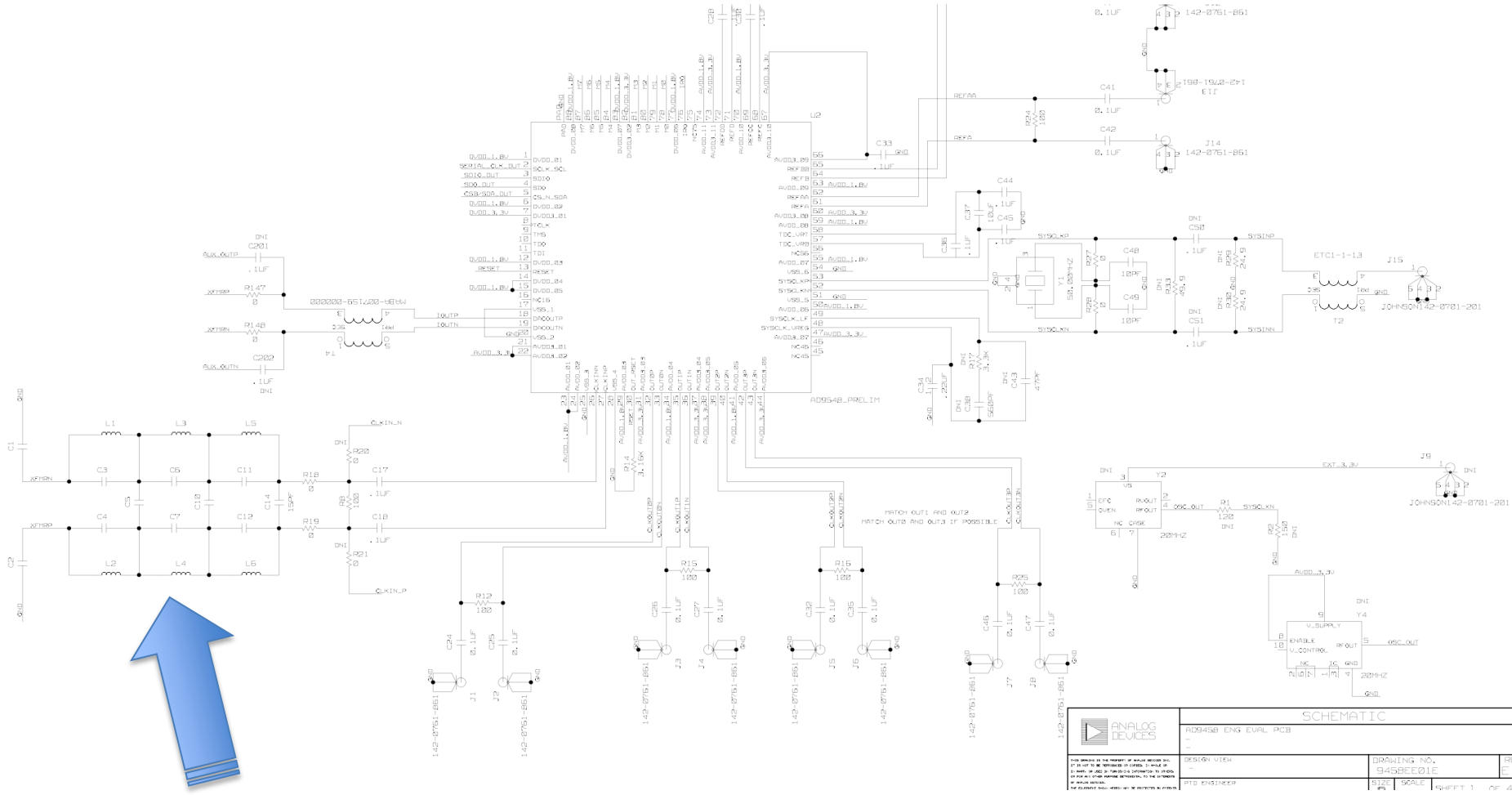
Clock cleanup/jitter attenuation

Output Frequency Capability

- The AD9548 supports for outputs that can be configured as single ended or differential. In single ended mode max frequency is 450 MHz in differential mode max frequency is 750 MHz.
- The Eval board includes a differential filter circuit which limits bandwidth and common mode noise. This is a 250 MHz low pass filter. For higher frequencies you would have to change the filter circuit design.



Block Diagram of AD9548 - Uses an onboard clock oscillation and a external reference to provide GPS disciplined clocking. Control of chip is via SPI or I2C which could be driven by a PIC or another computer.



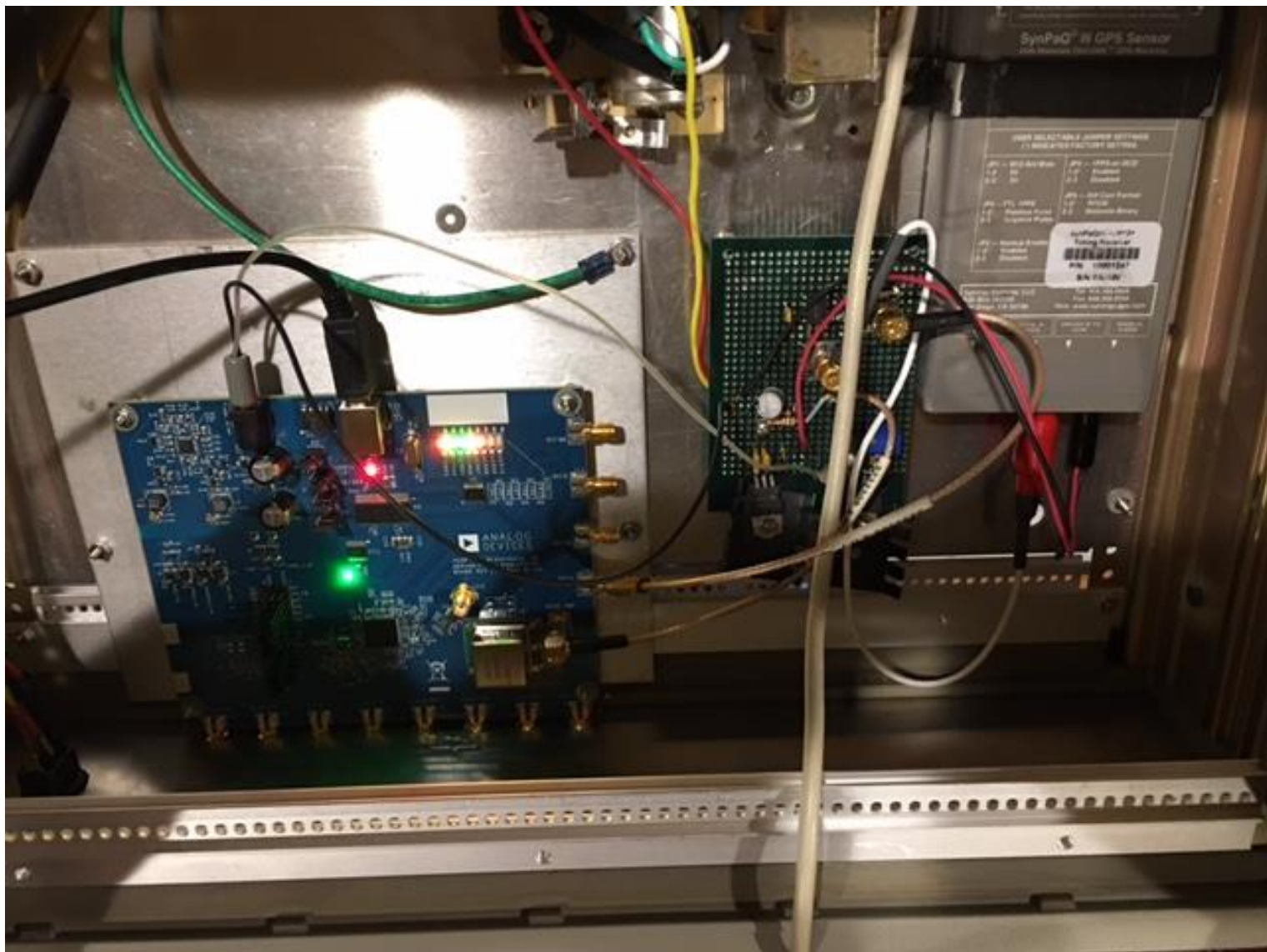
Low Pass Filter Circuit

Portion of schematic for AD9845 Evaluation Board.
 See www.analog.com for details.

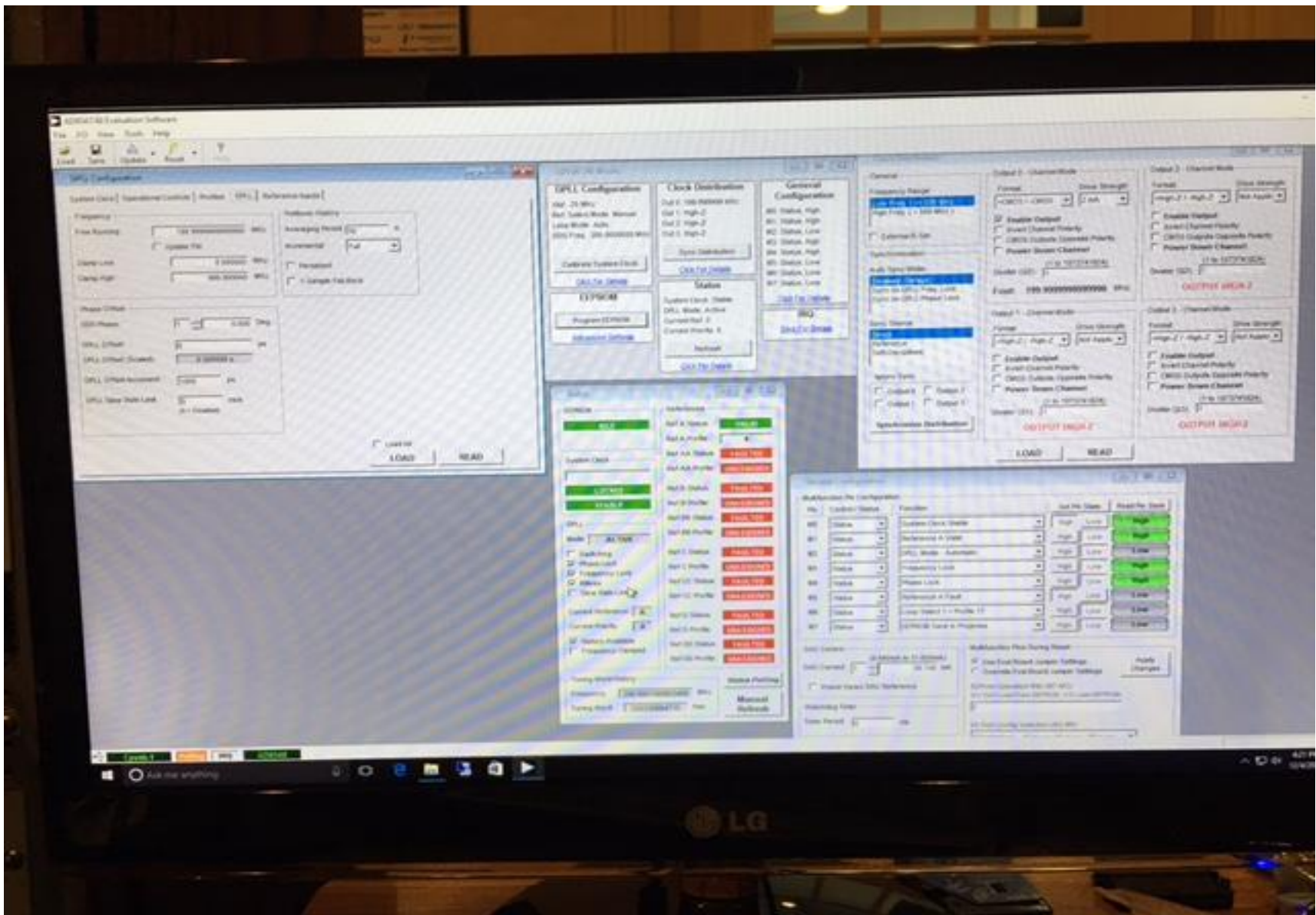
		SCHEMATIC	
		AD9845B ENG EVAL PCB	DESIGN VIEW
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DESIGNED BY R12C	SCALE 1:1	SHEET NO. 1	OF 2



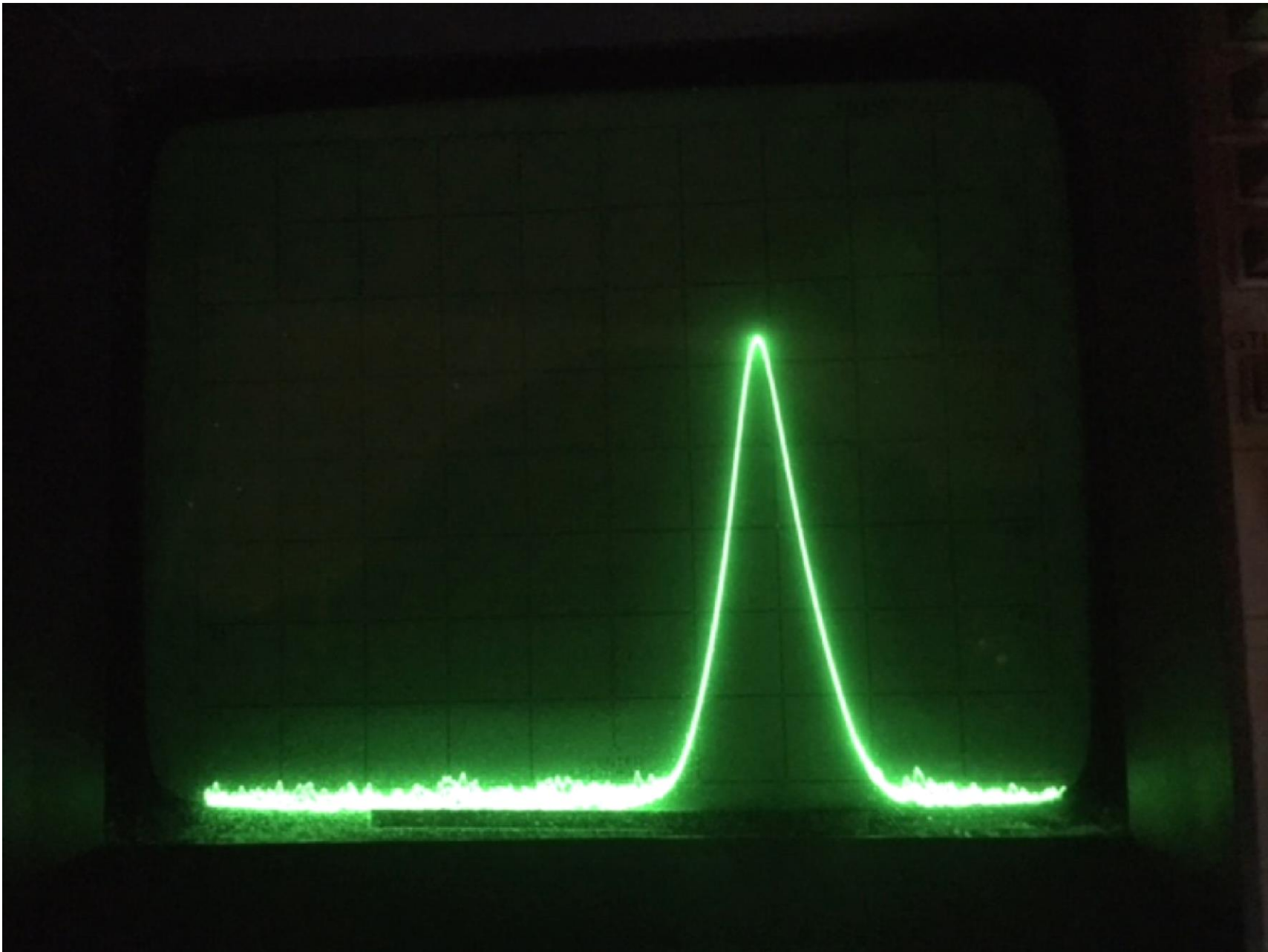
The unit mounted in a rack box with 3 power supplies; 12V GPS, 6V, Eval Board, 3.3 V Reference Oscillator interface. The cable is USB connection to computer.



Eval Board, Power Supply and regulators, GPS. Antenna for GPS is remotely located.



The software interface provided for the Eval Board runs on Windows



200 MHz Single Ended Output



600 MHz \sim -20 dB

200 MHz \sim -10 dB

The image shows a spectrum analyzer display with a green grid. A bright horizontal band at the bottom represents the signal's spectrum. Two prominent vertical spikes are visible. The first spike is at 200 MHz and is labeled with a blue arrow and text as being at approximately -10 dB. The second spike is at 600 MHz and is labeled with a blue arrow and text as being at approximately -20 dB. There are several smaller spikes between these two, representing harmonics of the 200 MHz signal.

Harmonics are present so a filter is needed.

More Applications

- AD9845 support PLL Frequency selection and Phase adjustment.
- On a dedicated board with a PIC or other I2C driving interface this part can be used as a signal/sweep generator. Add an external mixer and use two of the outputs to take max frequency up to 1500 MHz. Lots of possibilities!