

Update and Enhancements for Locked VCXOs for Stable Microwave Local Oscillators with Low Phase Noise

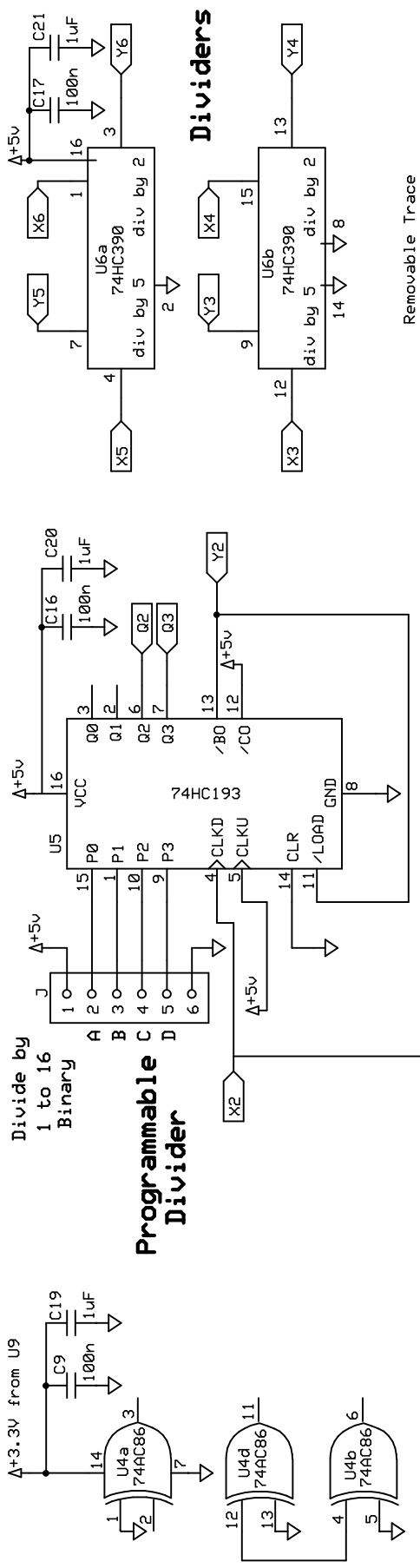
Paul Wade W1GHZ ©2014

w1ghz@arri.net

The 96 MHz VCXO is used as an accurate source for a 1152 MHz local oscillator for a 1296 MHz transverter. I found that spurious outputs generated by the locking scheme are reduced by powering the VCXO and the phase detector chip, a 74AC86, from separate voltage regulators. The latest PC board revision, marked "2014b," includes separate voltage regulators – U9 has been added, as shown in the schematic diagram, Rev 1.2. Unfortunately, I got the silk screen shape for U9 backwards, so insert it in the opposite direction.

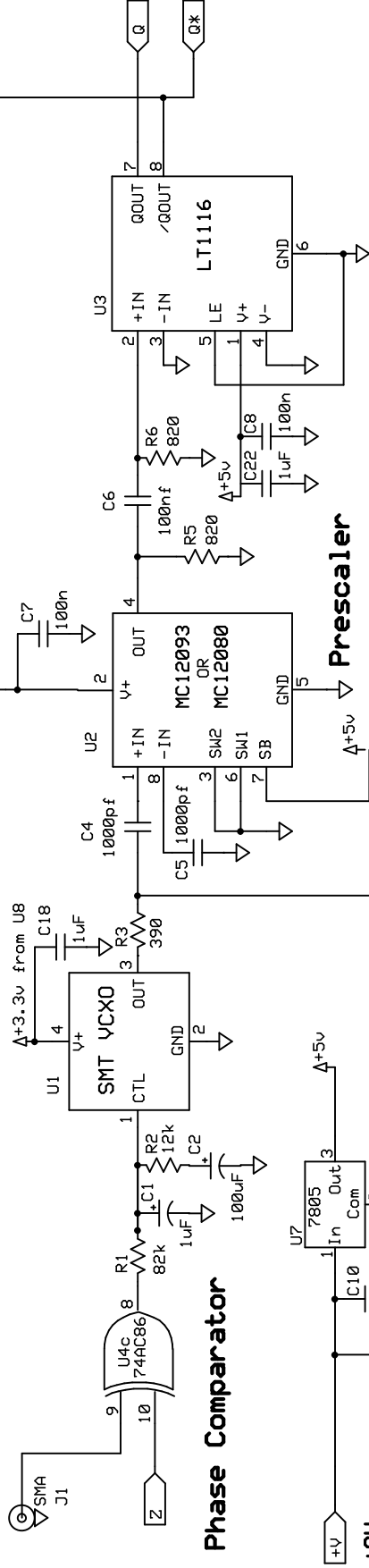
In order to get the bypass capacitors close to power pins on the chips, some of the chip capacitors are on the bottom of the board.

One user reported that his VCXO required a high tuning voltage to reach the desired frequency, near the 3.3 volt limit, and the resistors in the circuit prevented the voltage from rising high enough. The solution is to replace U9, the regulator powering U4, the 74AC86 phase detector, with a 5-volt 78L05 regulator. This provides the needed voltage margin, and the locking circuit prevents overvoltage.



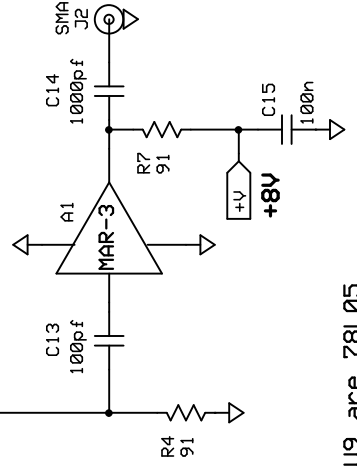
REF IN

CRYSTEK CVHD-950
ABRACON ABJLO-V



Prescaler

OUTPUT to LO



NOTE: for 5 volt oscillator, U8 and U9 are 78L05

W1GHZ	
Microwave Flexible YCX0 Lock	
W1GHZ	Rev 1.2
	03/17/2014c
	1