

## Lab 4: Low Power Mode

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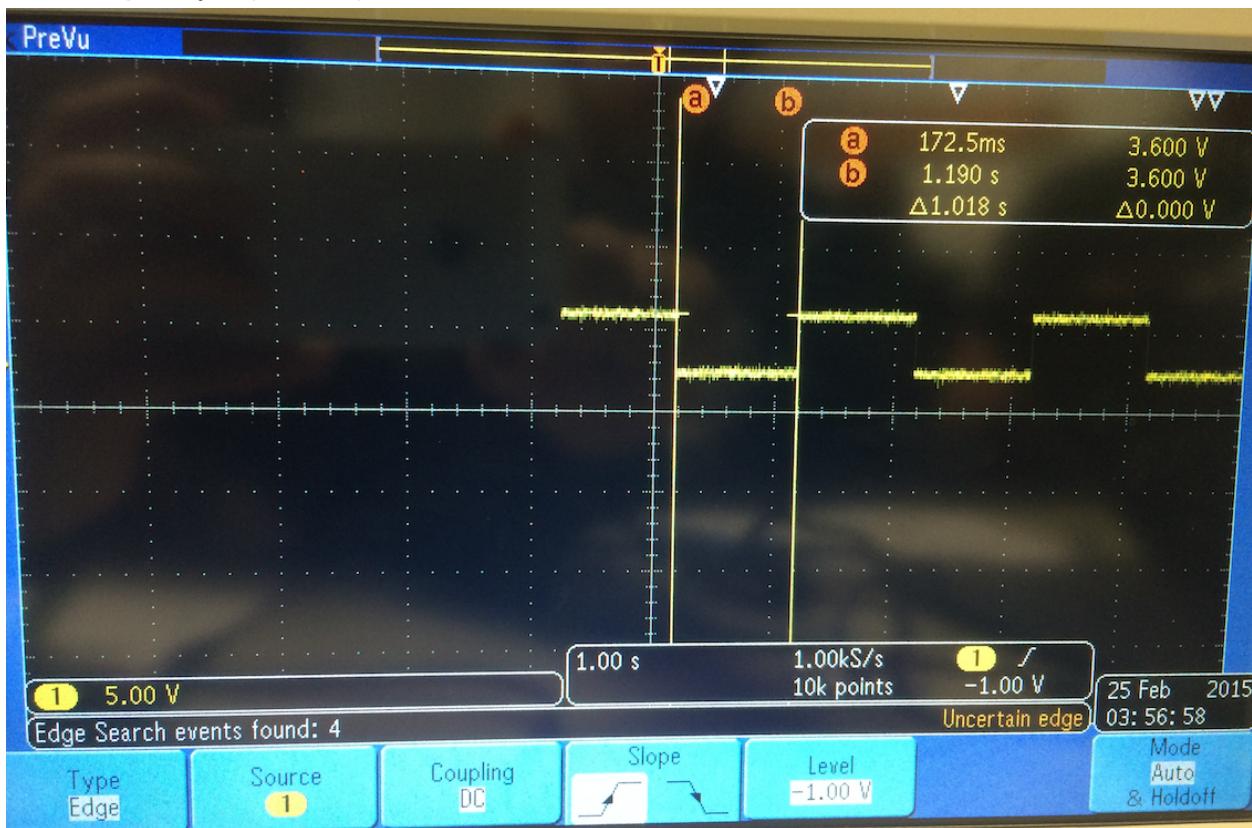
### Timing with VLO

$$TA0CCR0 = (16\text{MHz} / 11.5\text{KHz}) = 1400(\text{approx})$$

$$\text{VLO} = 8 * 1400 = 11,200$$

Oscilloscope Time Interval = 1.018s.

VLO Frequency =  $(1/1.018) = 0.98\text{Hz}$



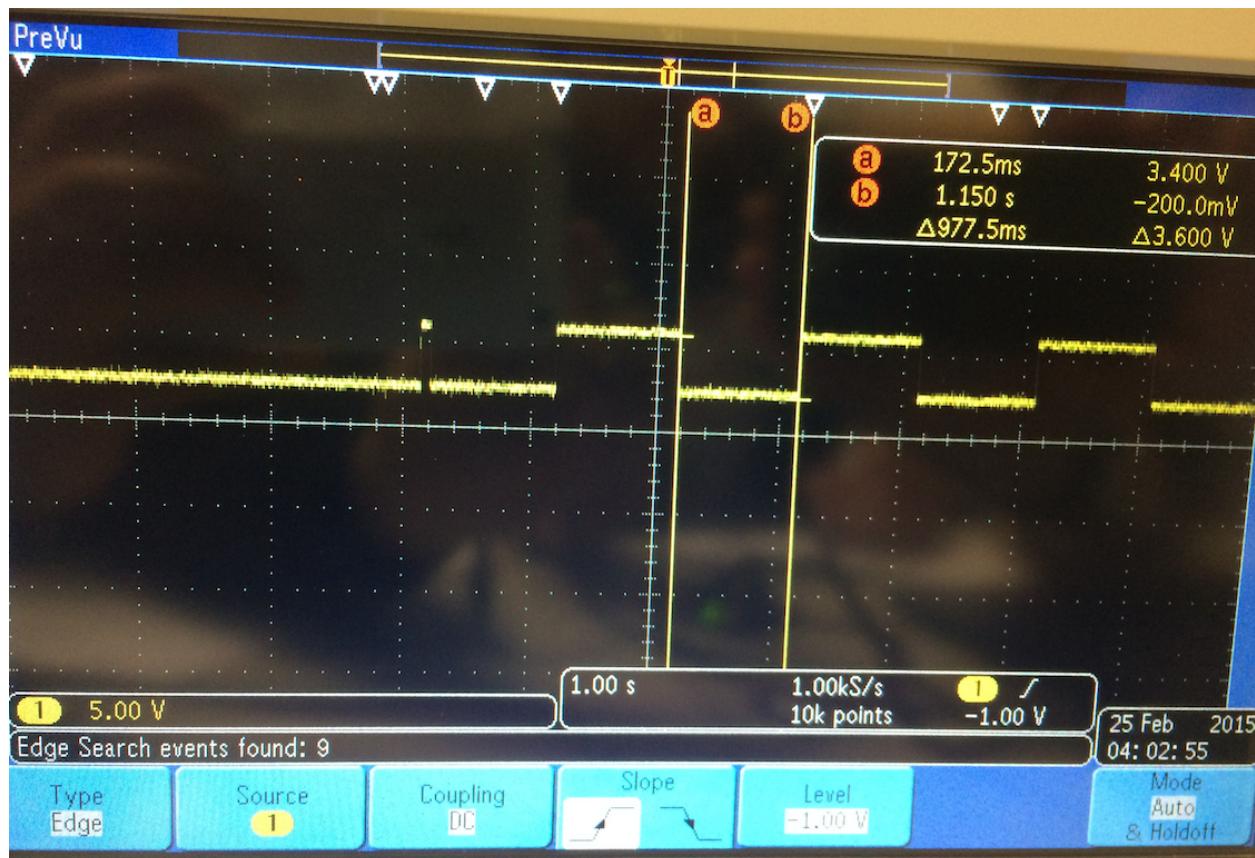
## VLO Drift

After warming up, oscilloscope time interval = 0.9775s

VLO Frequency =  $(1/0.9775) = 1.02\text{Hz}$

After warming up, the VLO Frequency is faster than it originally was.

It increased by:  $((1.02-0.98)/0.98)*100 = 4.08\%$ .

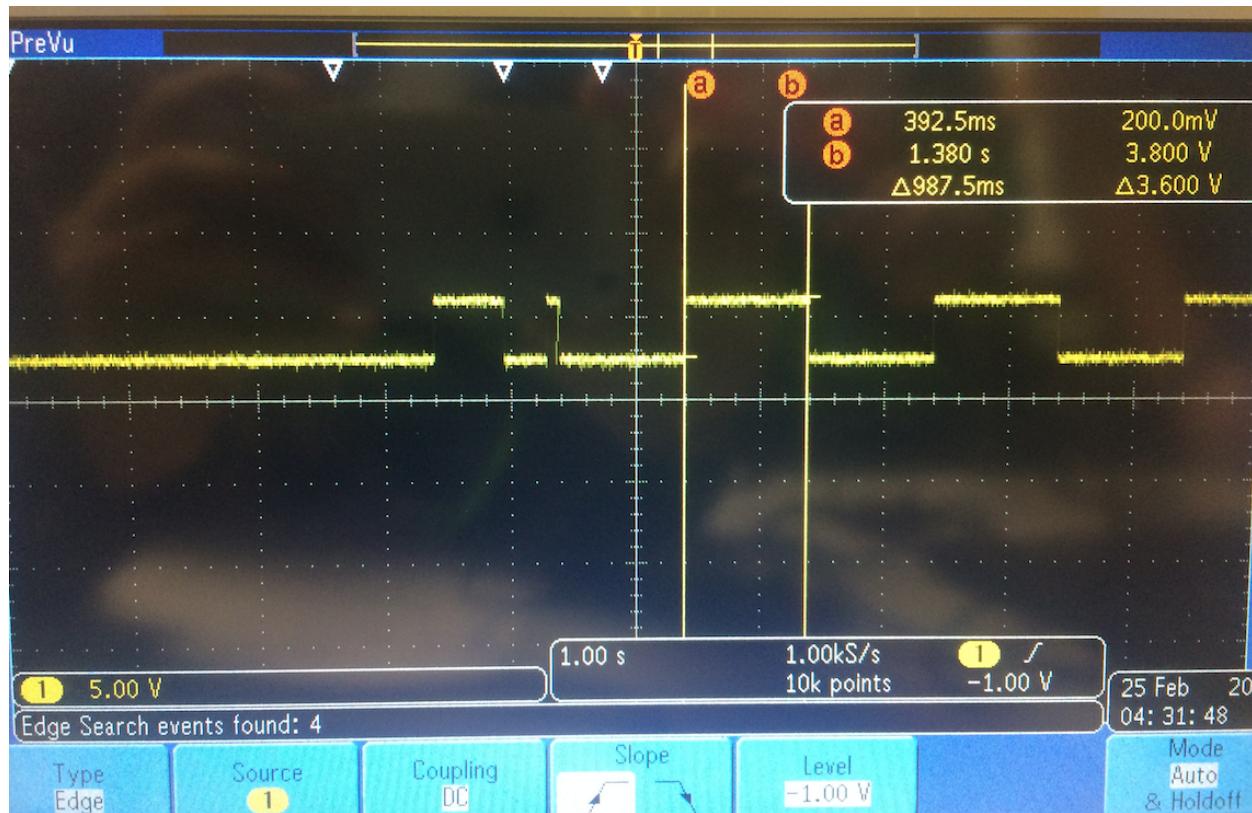


## Timing with the Crystal Oscillator

$$TA0CCR0 = (32,768\text{Hz}/8)-1 = 4095$$

Oscilloscope Time Interval = 0.9875s

Crystal Oscillator Frequency =  $(1/0.9875) = 1.01\text{Hz}$



Oscilloscope Time Interval after warming up = 0.9875s

Crystal Oscillator Frequency =  $(1/0.9875) = 1.01\text{Hz}$

The Crystal Oscillator Frequency do not change even after warming up. (This might be because the very small and negligible change was not captured by oscilloscope since for every 1 degree Celsius in temperature, the Crystal's timing is changed only by 0.01%.)

