

Frequency adjustment of the Rubidium oscillator.

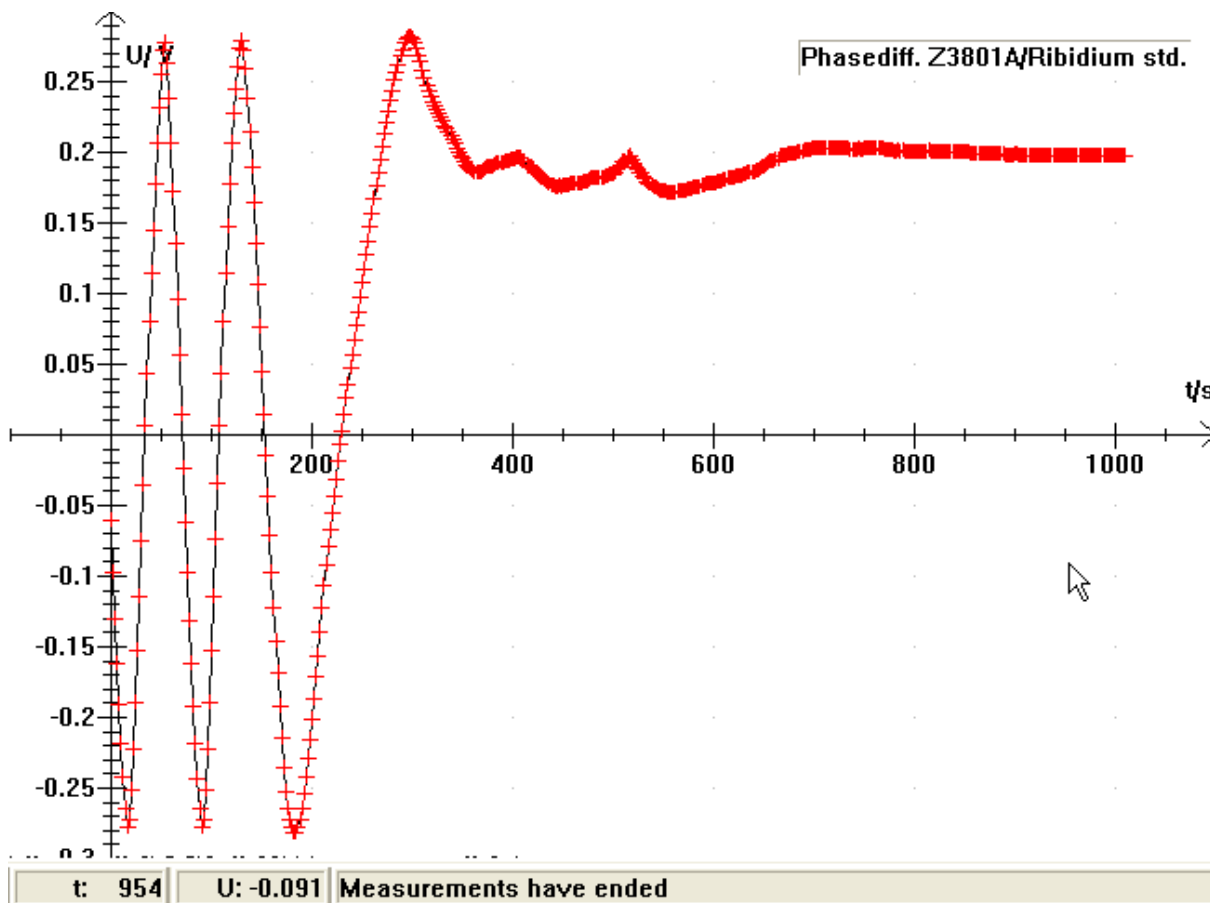
I used a double balanced diode mixer feeding the 10 MHz signal from the Z3801A GPS standard to one port and the 10MHz from the Rubidium standard to the other port. Both these signals were attenuated with a 6 dB pad before they entered the mixer. The phase difference was measured at the IF port.

On the graph below is clearly seen that the frequency was way off initially.

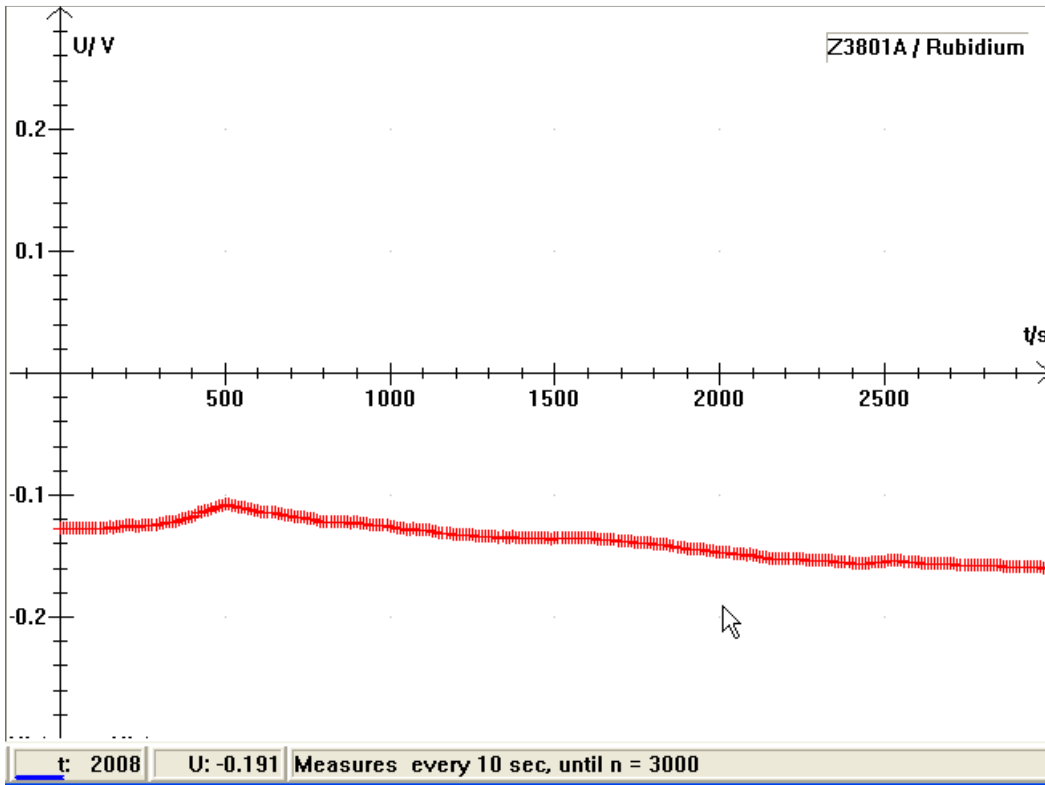
I used the internal C-field control potentiometer to correct the frequency. The response time to a potentiometer setting is very low so you will see immediately what happens turning that potmeter. The real problem is to find that setting that gives constant phase difference. We are talking about only a few degrees of a turn!!

I have to say that the Rubidium oscillator must have been running several hours (days) before you do the adjustment.

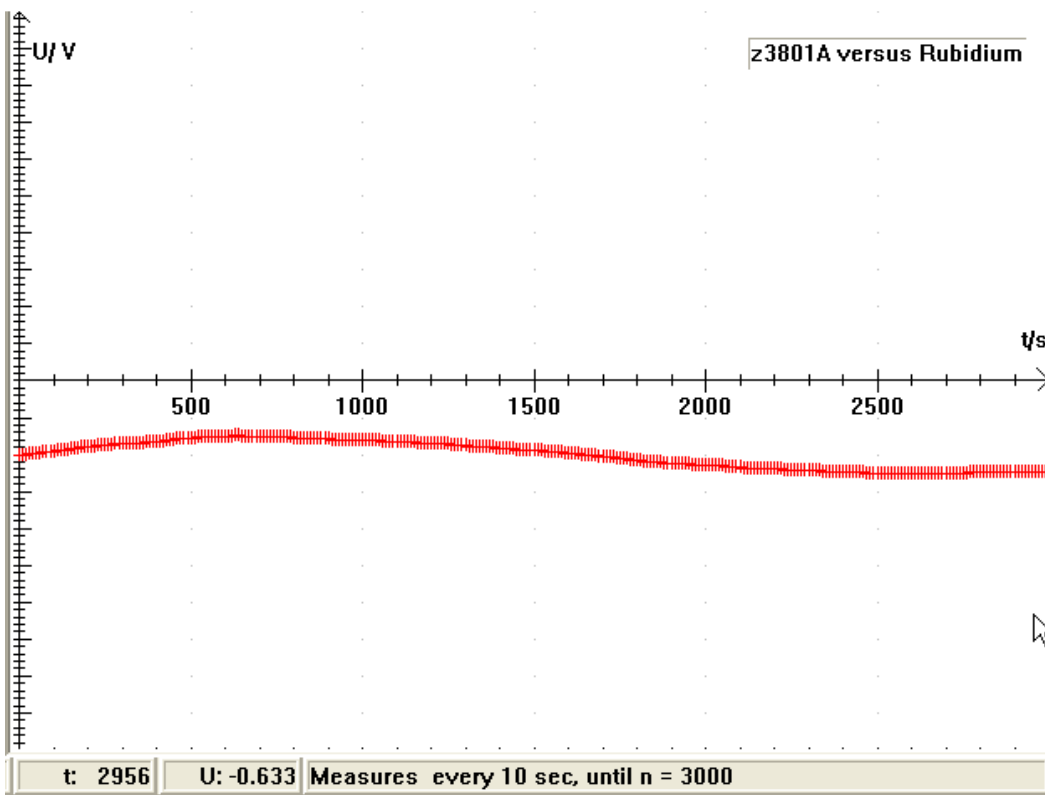
Any further improvements must be done with an external voltage added to pin J1-7. I guess it will be a bigger project to make a temperature stable adjustable voltage source.



Short explanation to the graph: The Y-axis is the voltage from the mixer and is an expression of the phase difference between the two 10MHz signals. The first 200 seconds is how it looked like without any adjustments. From approx. 200 seconds I start adjusting the internal C-field potentiometer. From approx. 800 seconds it was very difficult to make improvements. Any further improvement must be done with an external supply.



Another test run. At the point 500 sec. I made a small correction. (1/10 of a degree !!)



And another test run.