



UPPSALA
UNIVERSITET



Status

02 Sept 2022



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Pepitone - Status





LLRF

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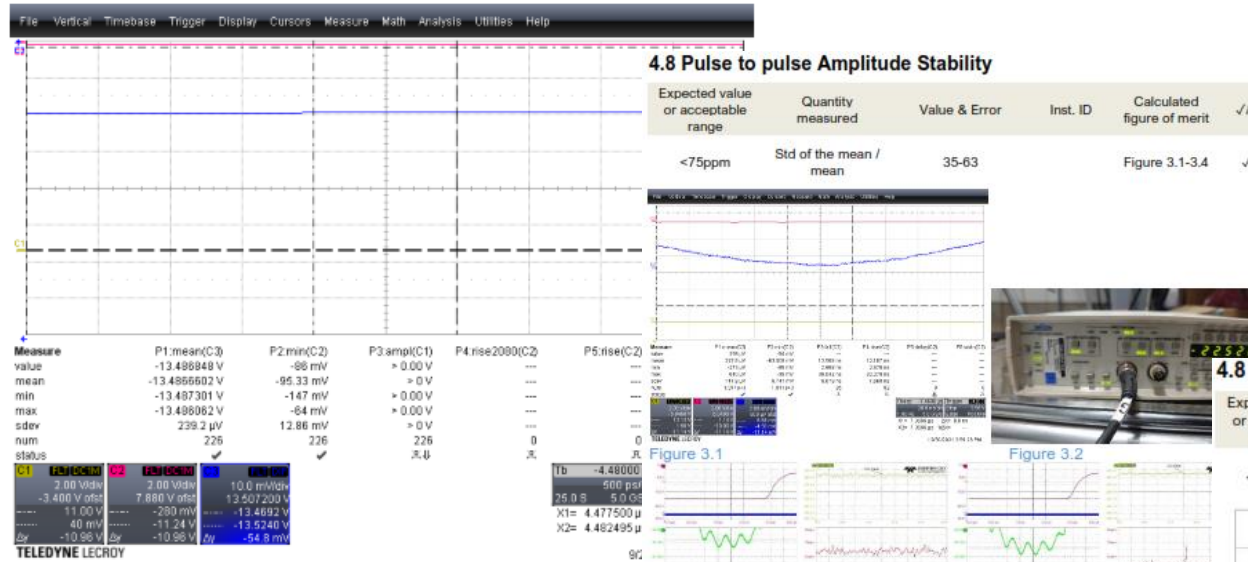
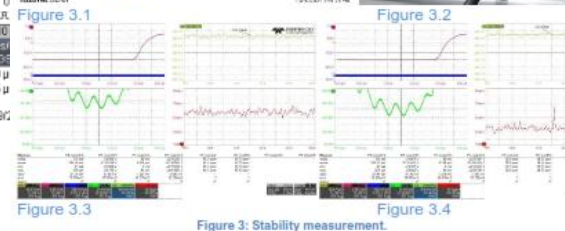


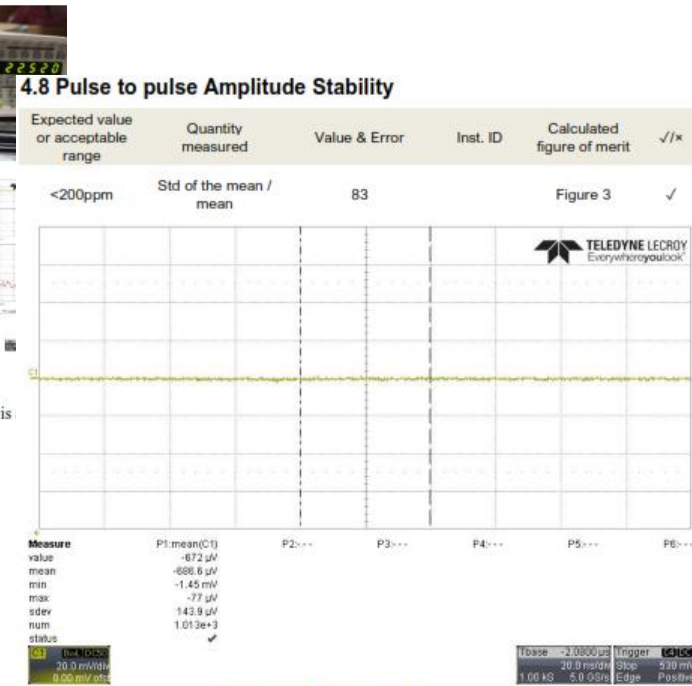
Figure 3 - 4,5µs Pulse to pulse stability 18ppm
50 Hz, 4.5 us



Two methods of measuring stability is shown. From figure 1 and 2 the calculation is following: the sdev/offset = 63ppm.(attenuation /10 corrected for)
The other method is from the script with trend that shows 57ppm from the entire measurement.
An optimisation was made to increase the stability by tuning the cepts for the last picture (figure 3.4) and the stability increased to 35ppm.

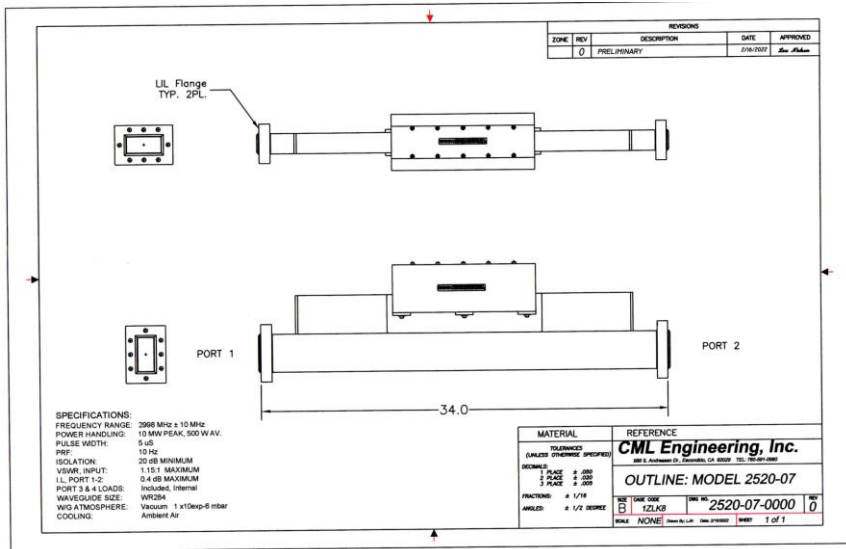
250 Hz, 4.0 us

K100 with 10 MW
klystron



Two methods of measuring stability is shown. From figure 1 and offset voltage 17.29 the calculation is as following: the sdev/offset = 83ppm.(attenuation /10 corrected for)

10 Hz, 3.0 us



Dear Kevin:

The machined parts have been received except for the LIL flanges and we are in the brazing process. It is looking like the brazing will not be complete by the scheduled date of August 18, as previously anticipated. After completion of the brazing we will proceed to test and tune the Circulator. At this time it looks like September 30 for delivery. We will keep you informed of progress.

Best regards,

LOUIS NIELSEN

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SPECIFICATIONS: Model 2520-07 Vacuum Circulator

- Frequency Range: 2998 MHz +/- 10 MHz
- Peak Power: 10 MW maximum
- Pulse Width: 5 uS
- PRF: 10 Hz
- Average Power: 500 Watts
- Input VSWR: 1.15:1 maximum
- Insertion Loss: 0.4 dB maximum
- Isolation: 20 dB minimum
- Waveguide Size: WR284
- Waveguide Flanges: LIL
- Waveguide Atmosphere: < 1 x 10⁻⁶ Torr
- Cooling: Ambient Air
- Materials: OFHC Copper waveguide (0.173" wall)
 Stainless Steel, Alloy 316L, Ferrite
- Outline: Dwg. 2520-07-0000 Rev.0

Testing will be done at low power using laboratory test equipment. High Power testing is not included in or contemplated by this quotation. Swept test data for all relevant parameters is included.

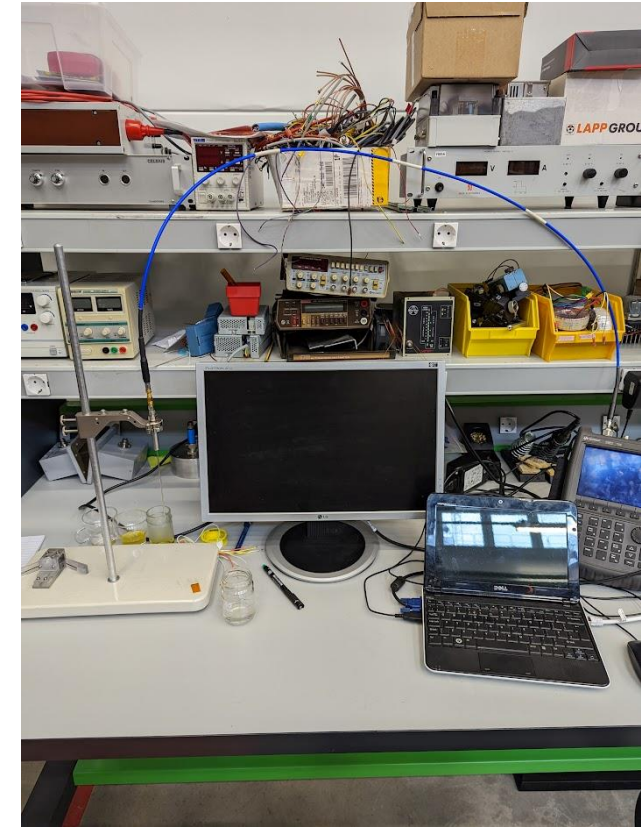
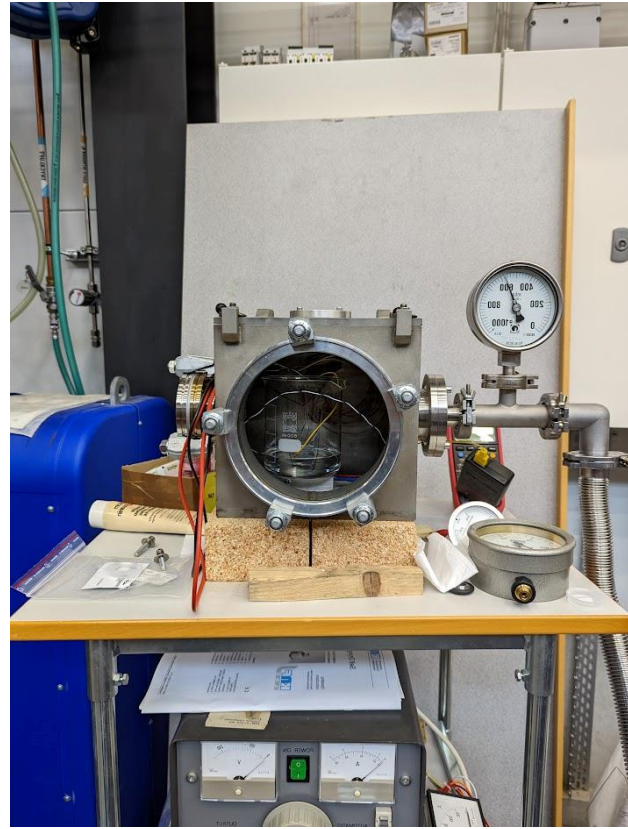


Vacuum oven

100 kV HV tester

Dielectric measurements

Mineral and ester samples





After discussion with ScandiNova and VPdiagnose

- Ester are more sticky, high viscosity. Circulation is slower than with mineral.
- Ester oxidation is higher, faster not good for our application where the oil tank is not sealed and not designed for ester oils.
- Need to redesign everything and train operators/industry if we want to use it
- Shell S5 (biodegradable) is promising S4 is excellent
- PFAE (Palm Fatty Acid Ester) - to be tested
- Filtering before cooking the oil and keep it under vacuum as much as possible. Esters are real sponges
- Brd produces alcohol, water and acids which helps to get more brd. Self running process

Ideas

- Measure water content before and after the cleaning
- Study the cleaning effect on ester oils
- Understand the needed improvements on HV modulators to use ester oils