RFQ tests of new rods

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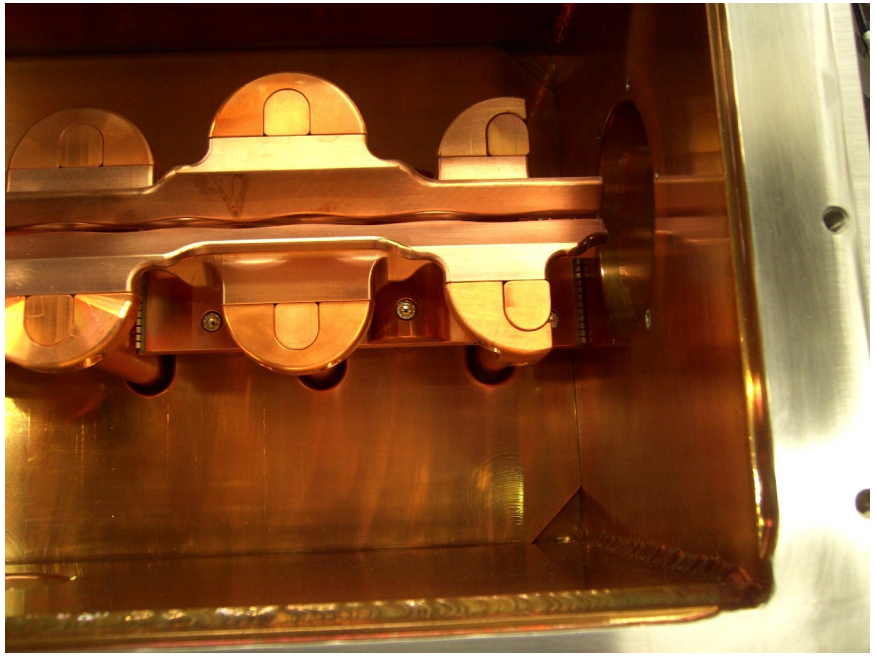
New rods vs old rods

Old rods



New rods

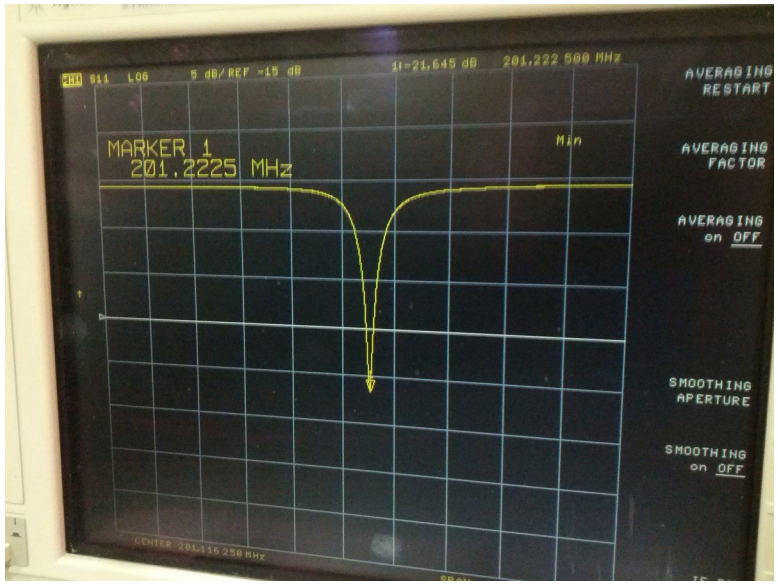
Upstream end plate will be put back because the Einzel lens picks up the RF and radiates it when any cable is connected to it. The RF trips EVERYTHING!

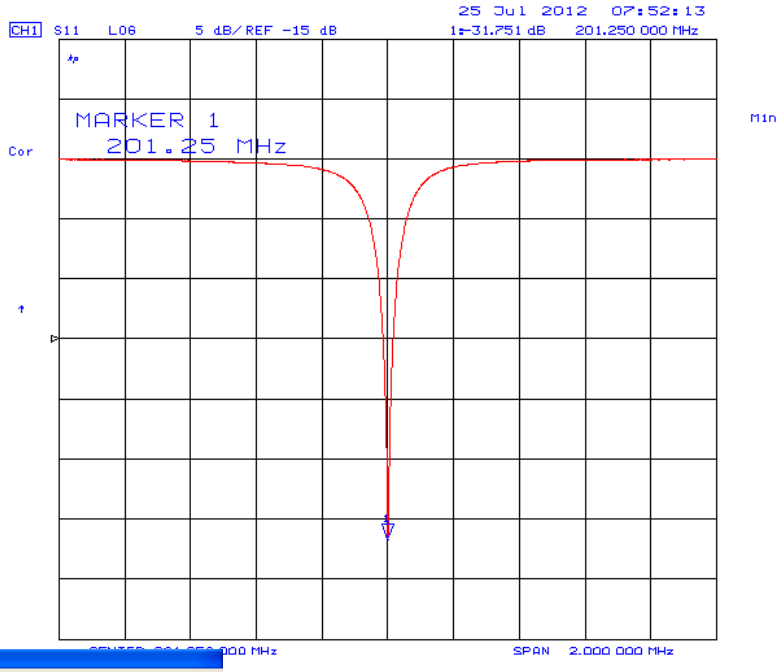
Conditioning

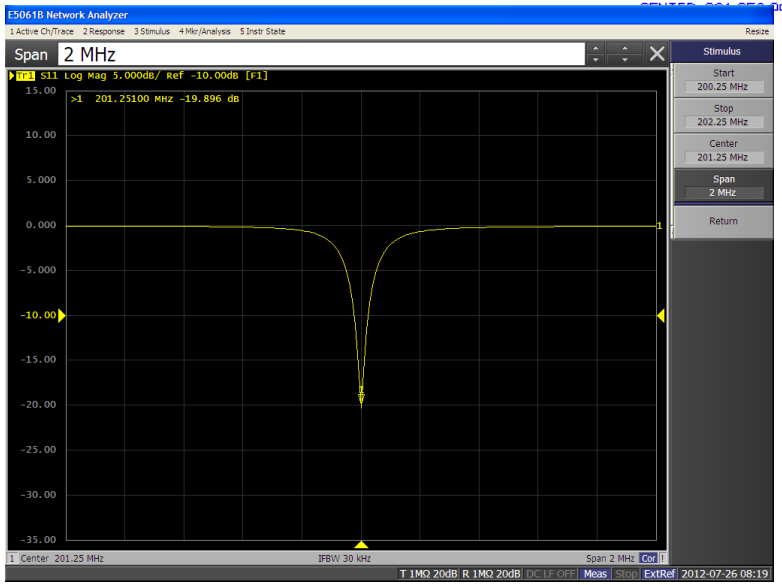
Low power conditioning is very fast, ~30 minutes.

High power conditioning also very fast, ~2 hours.

Some evolution of s11 at power port



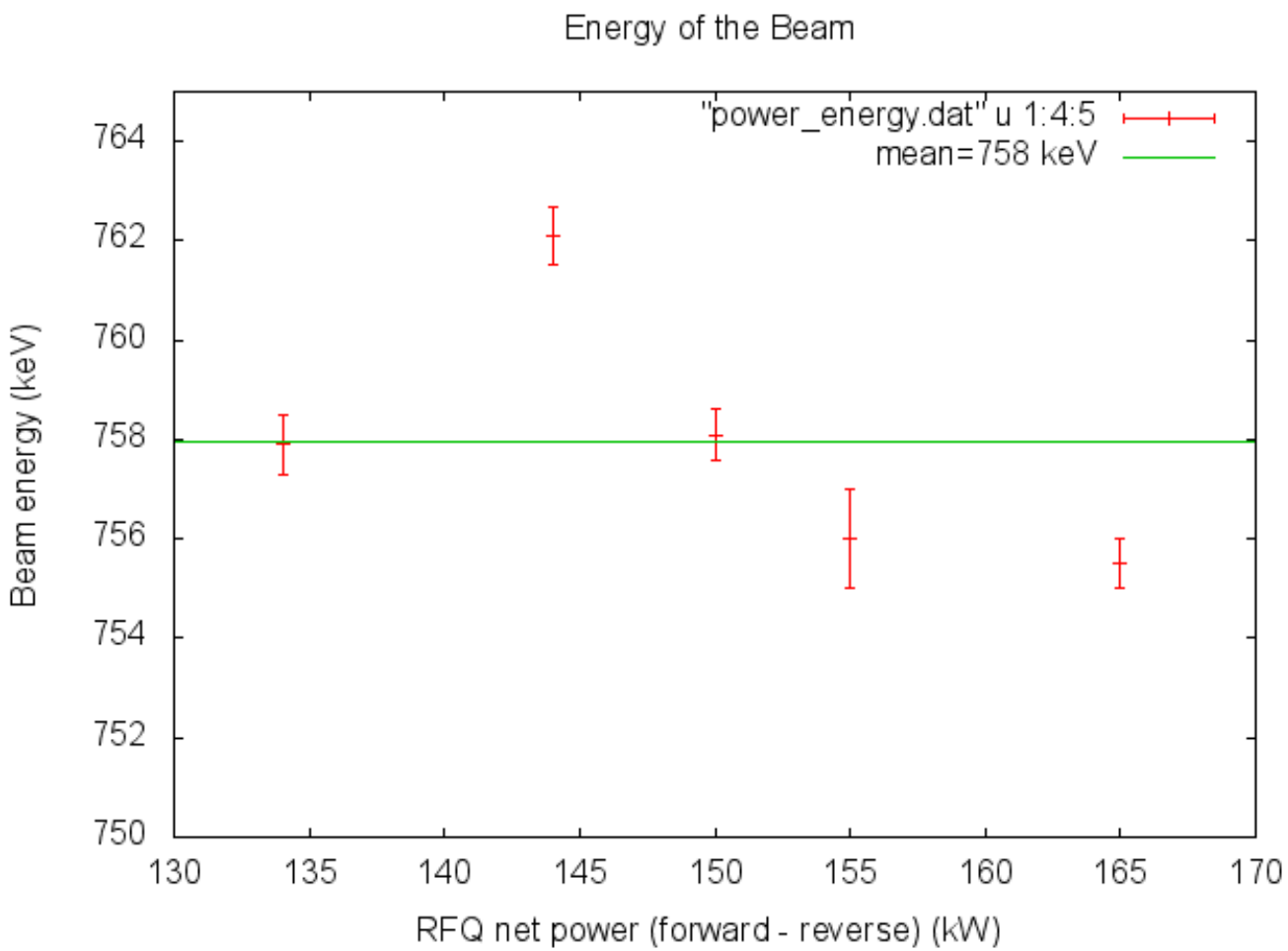




S11 changes from -20 dB after low power conditioning, then to -30 dB overnight then back to -20 dB again after beam.

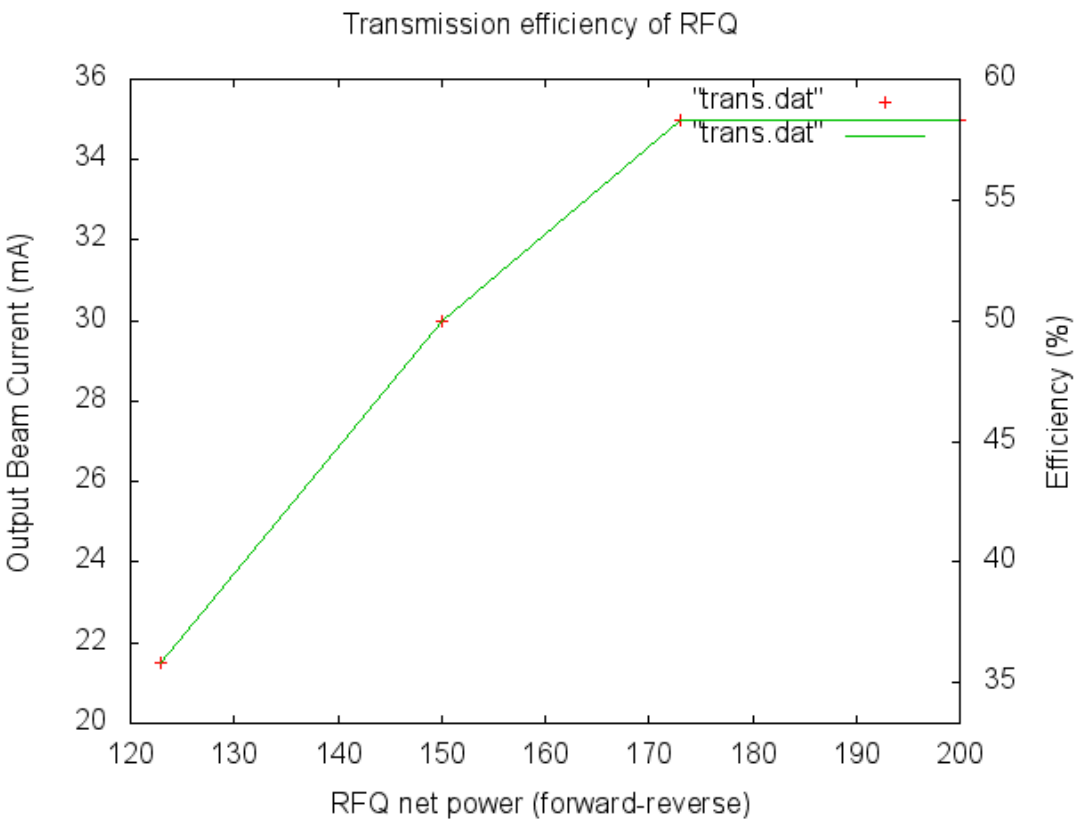
We will have to rebend, or re-orientate the antenna again to get back to -30 dB

Energy measurements



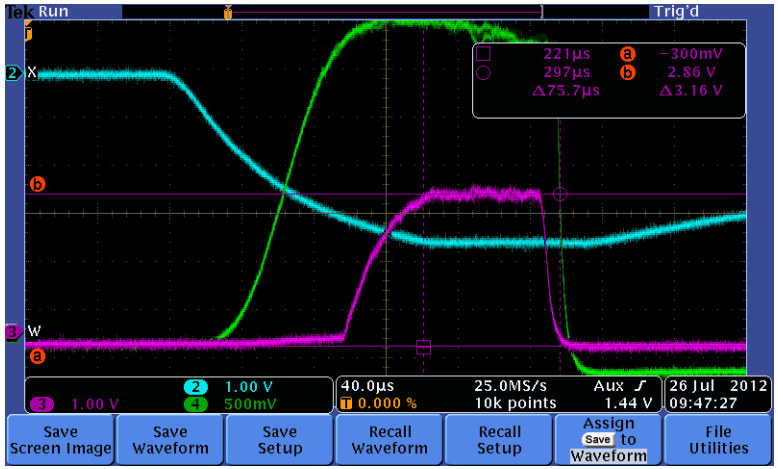
There is a range, but always higher than 750 keV. Max is 1.6% higher.

Transmission efficiency at 60 mA

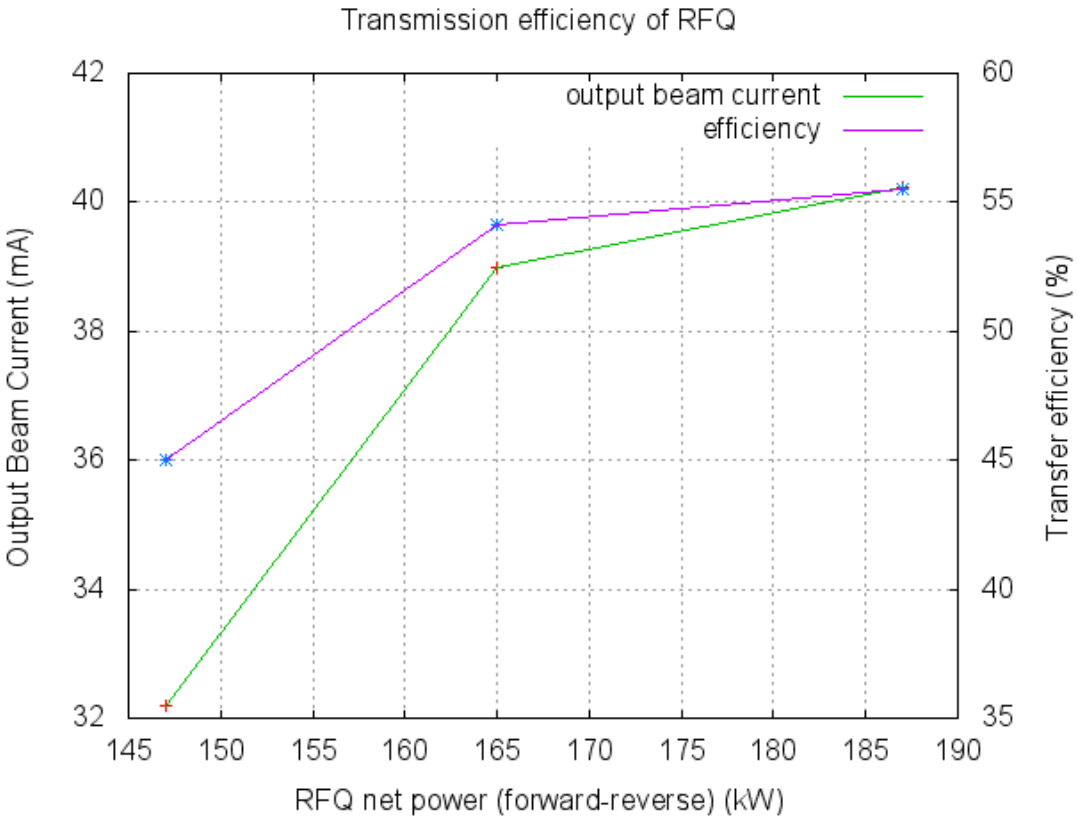


We need 40 mA and lower power!

Input is 60 mA

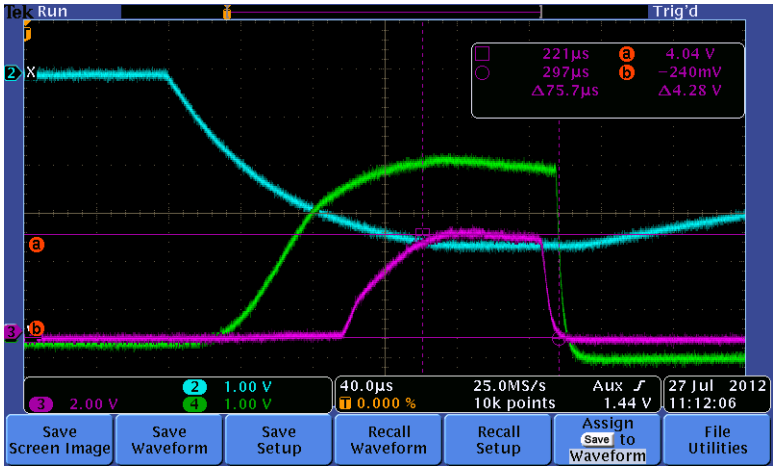


Transmission efficiency at 72 mA



We have 40 mA but we cannot operate this way! Need at least 170 kW net!

S11 is about -17 dB when we look at the ratio of forward and reflected power.



Plans

- Measure
  - Bunching in time domain.
  - Transverse emittances.
- Open RFQ
  - Put upstream plate back (when it is ready)
  - Survey RFQ (see if we are crooked)
  - Reduce s11 of antenna (can the antenna be bent so that it does not move?)
- We must have 40 mA out of the RFQ at a reasonable power for this project to be viable!