# Progress on sub-task 1. Double length CLIC PETS

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GOBIERNO
DE ESPAÑA

MINISTERIO
DE ECONOMÍA
Y COMPETITIVIDAD

Ciemat

Centro de Investigaciones
Energéticas, Medioambientales
y Tecnológicas

First prototype: present status

- Final welding in September.
- Final RF measurements with bead-pull were taken in October.
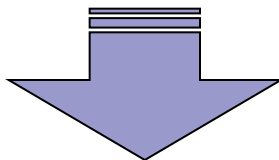- After CERN approval, PETS was sent to CERN on week 47.
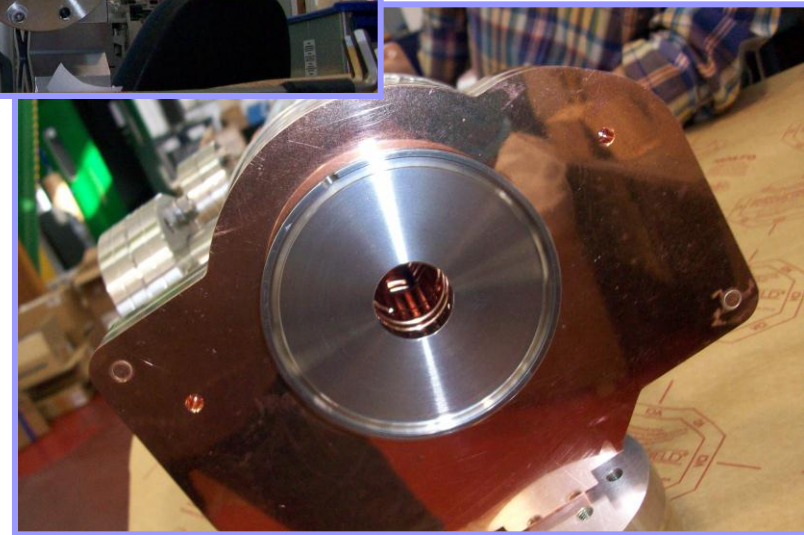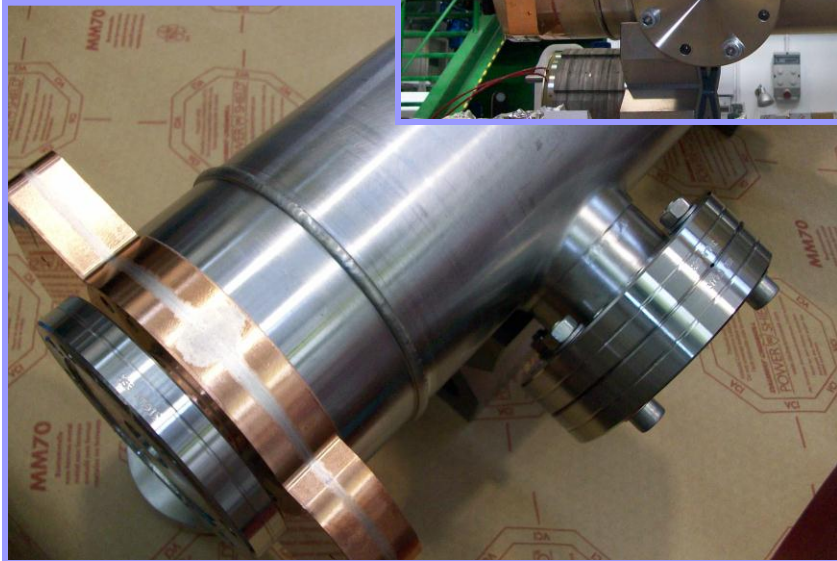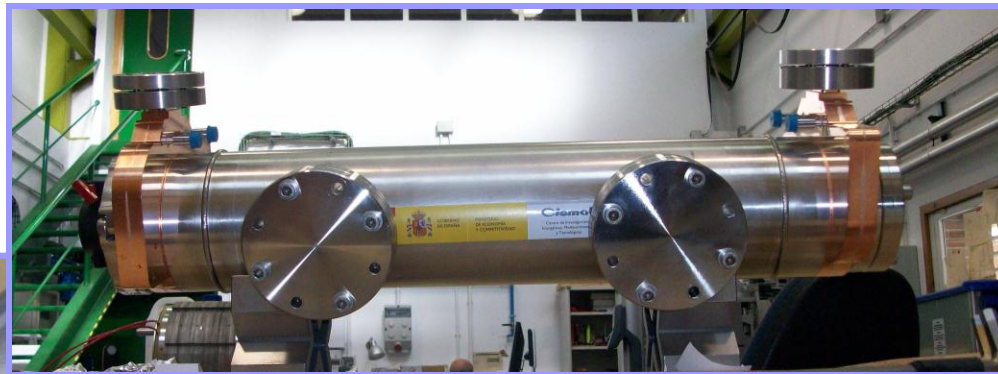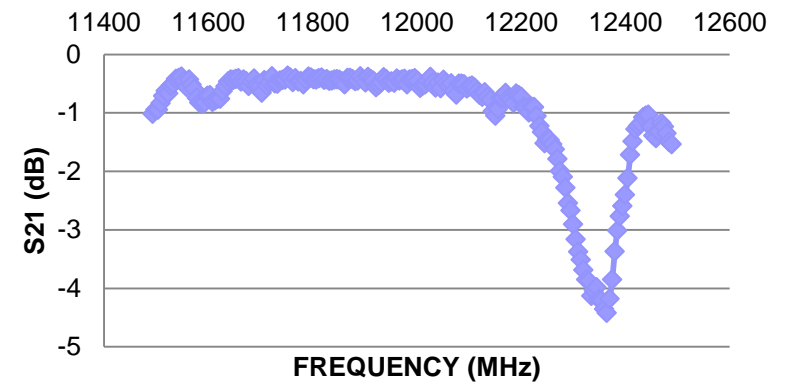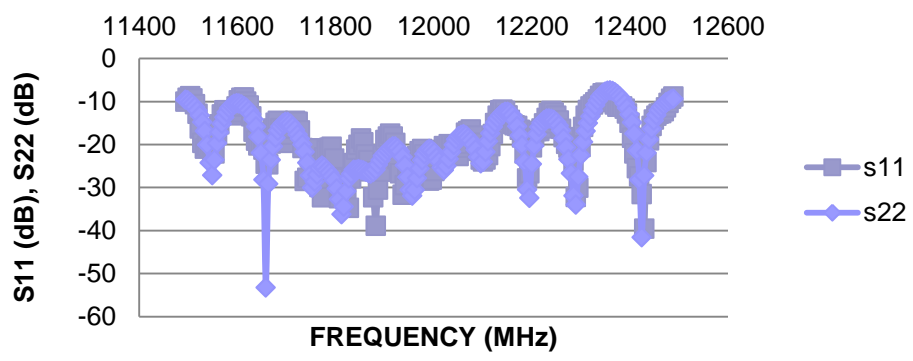
S-parameters

WELDED PETS

BARS + COUPLERS

Port 2

Port 2

- S_{11}= -28.3 dB
- S_{22}= -21 dB
- S_{21}= -0.4 dB

11994 MHz

- S_{11}= -14.6 dB
- S_{21}= -0.5 dB

Port 1

Port 1

Electric contact has been improved

s parameters

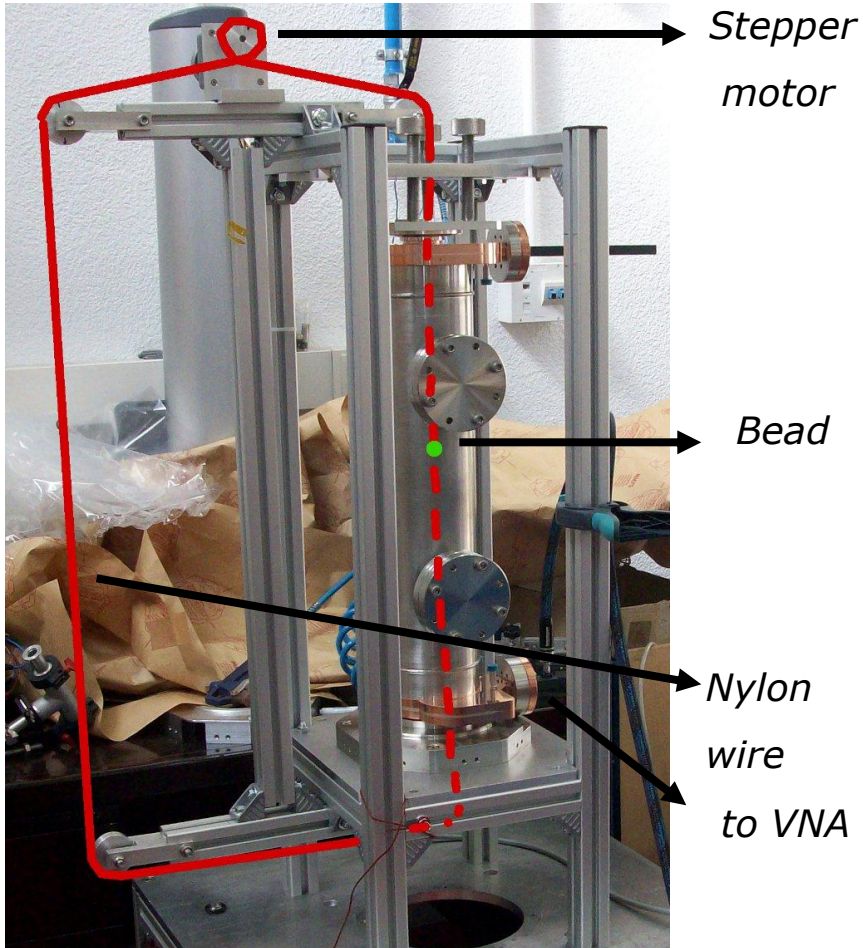

Welded PETS. Reflection
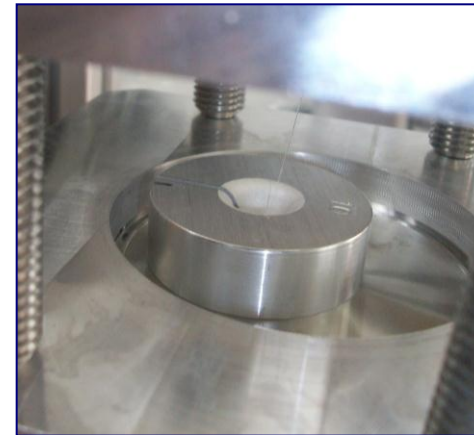

Welded PETS. Transmission

Bead pull measurements (i)

In order to improve the positioning of the bead, additional parts have been used.
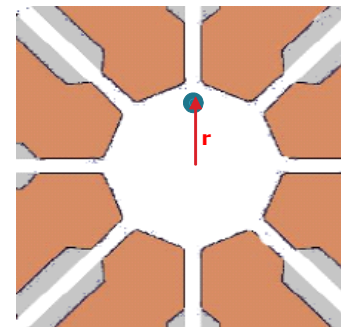
Discs for fixing the wire/bead at fixed eccentricities.

Stepper

motor

Bead

Nylon

wire

to VNA

Test bench

Bead position

Beads:
**Cylindrical
(Ø4mm x 0.5mm)
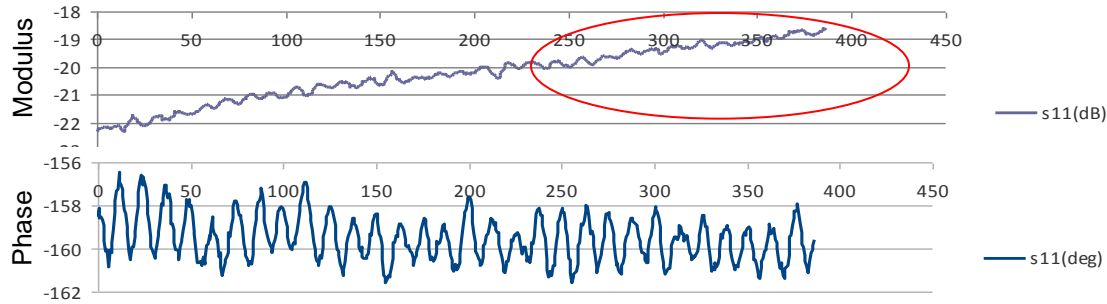Spherical Ø3 mm**

Eccentricity
r (mm)
7.5
8.5
9.5
10.0
10.5
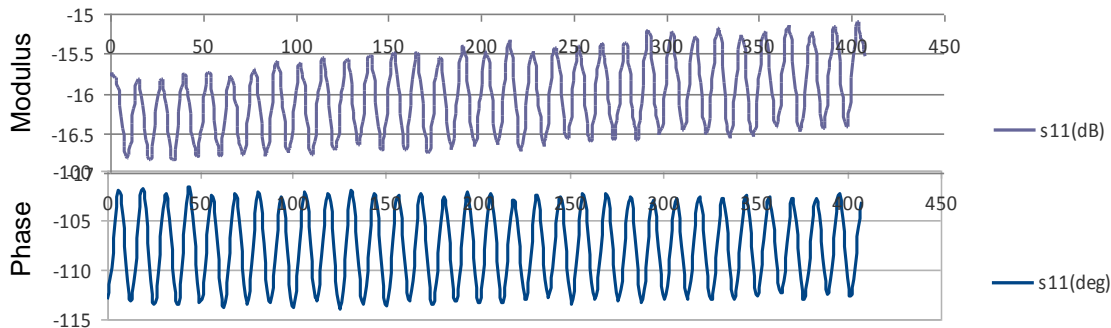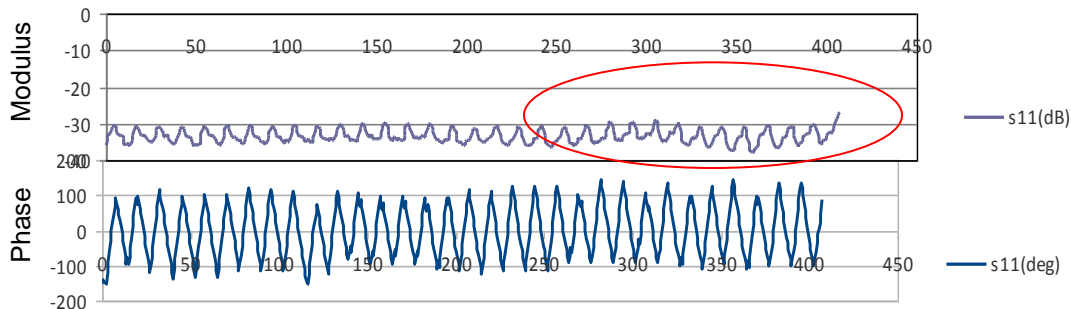11.0

Bead pull measurements (ii)

Ø4mm x 0.5mm cylindrical bead

r= 7.5 mm.
Detected field too low for measuring.
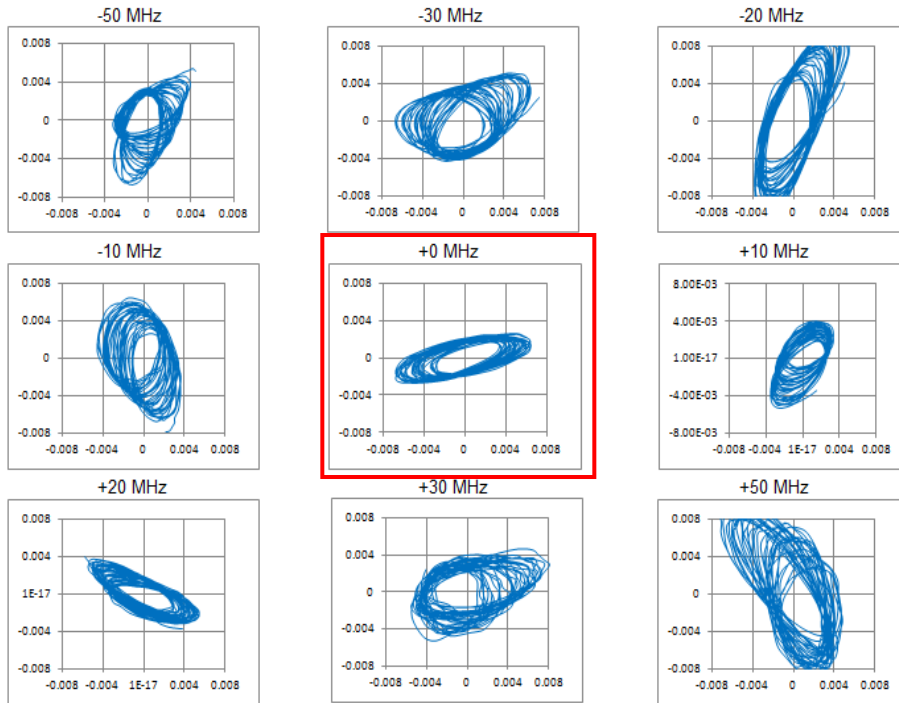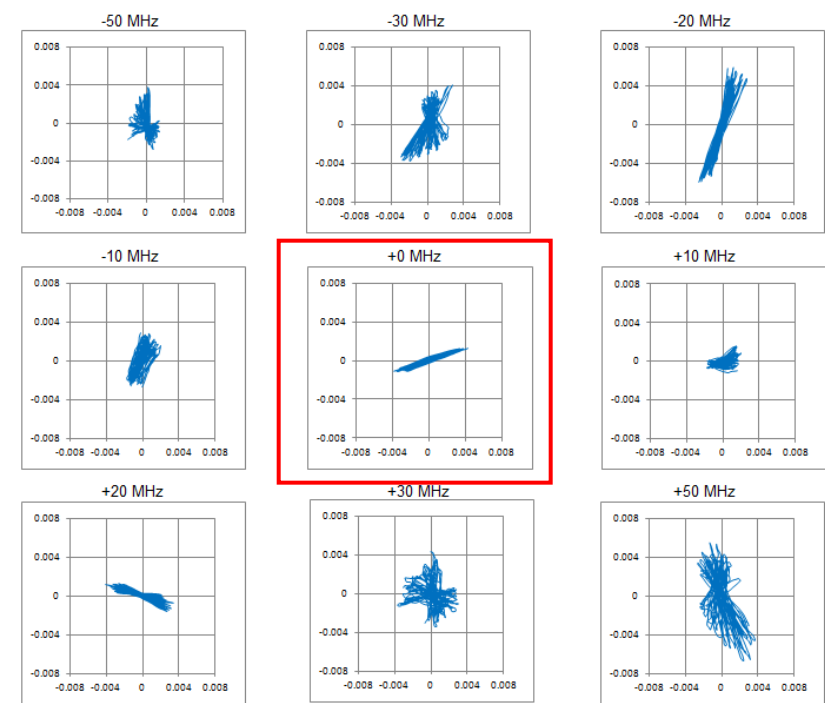
r= 10.0 mm.
Best results

r= 11.0 mm.
No significant field is detected.
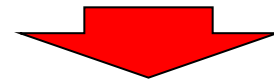
Bead pull measurements (iii)

Ø4mm x 0.5mm cylindrical bead, r=10.0 mm

Ø3 mm spherical bead r=11.0 mm

No significant frequency detuning is observed.

Welding process has not affected the structure

Second prototype: present status

Design modifications.

Contact area between coupler and rods.
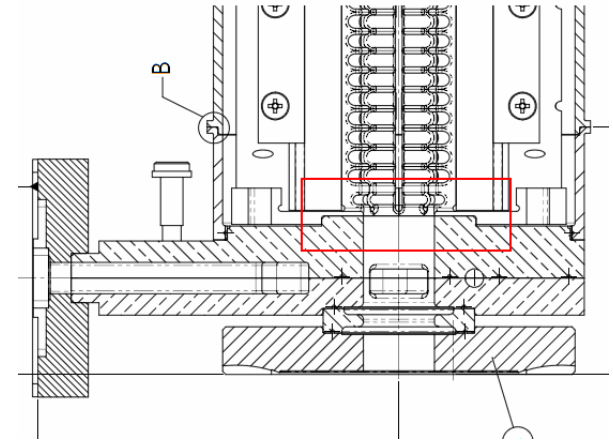
Increased. ▶ Easier and safer assembly.

Tolerances ▶ Modified | Ensure assembly Avoid friction/deformation

Pin Tolerances (brazing alignment).

Modified ▶ More relaxed | Previous pin/hole: 6 m6/ 6 H7
Proposed pin/hole: 6 k6/ 6 E6

Second prototype: present status

- First copper rod finished on week 49/50. Expected to send to CERN for 3D measurement checking.

- **Production.** Expected schedule:
  - ☐ Rest of the copper bars: finished at the end of January.
  - ☐ Compact couplers: finished at the end of January.
  - ☐ SiC plates: received.