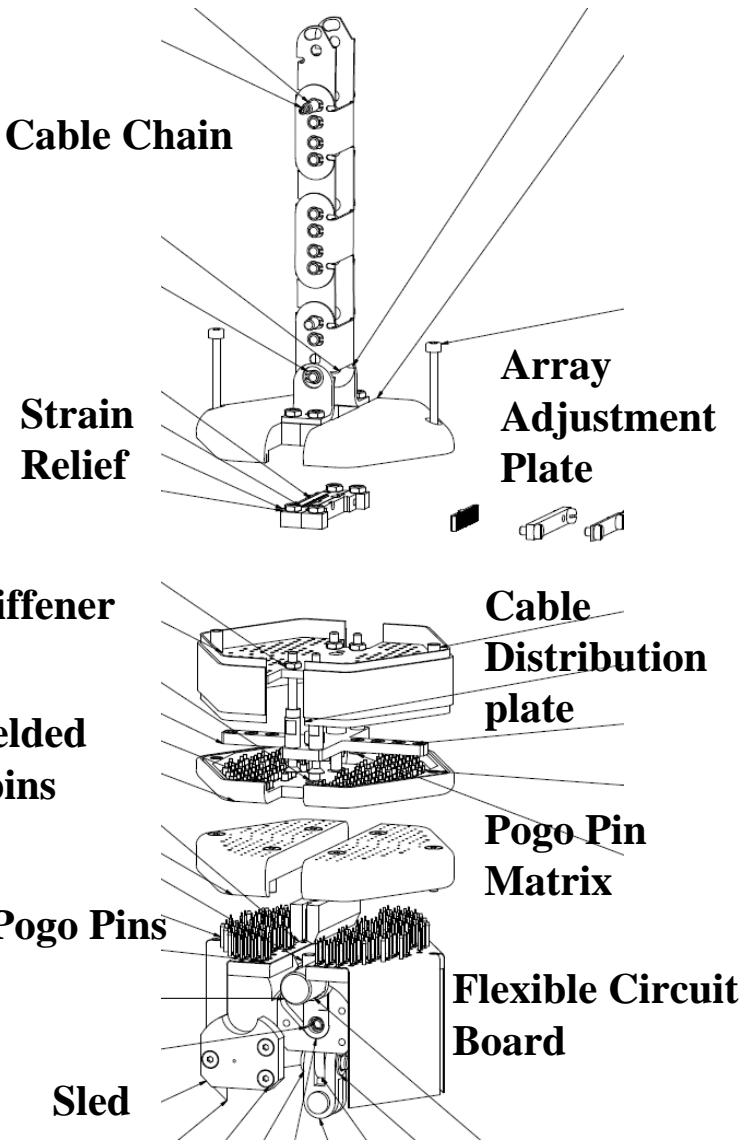
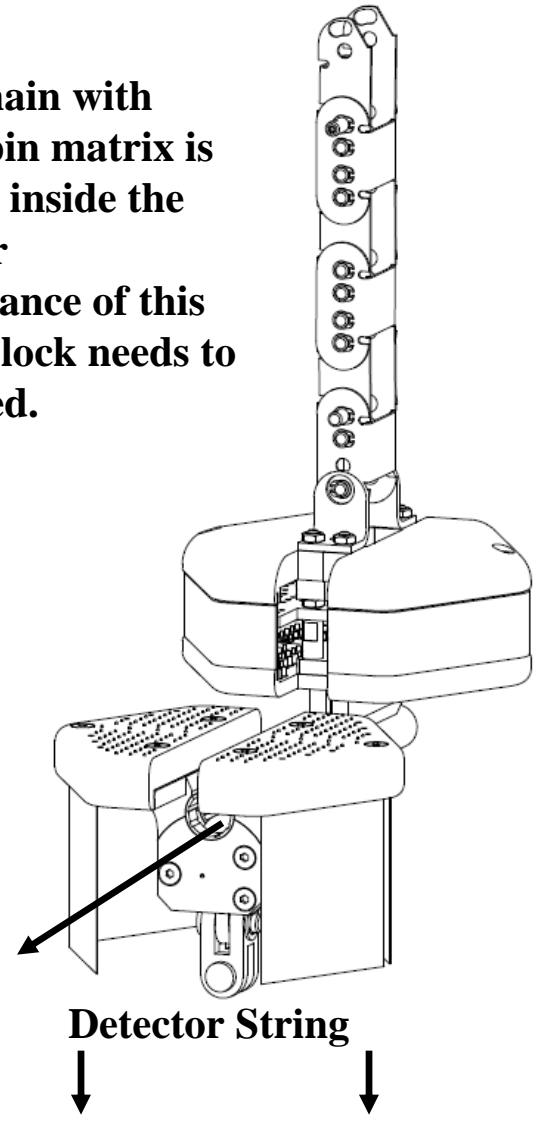




The Connecting Matrix:



Cable chain with copper pin matrix is installed inside the lock. For Maintenance of this part the lock needs to be opened.

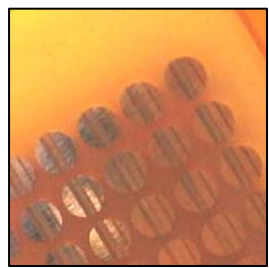


String on Pogo Pin matrix can be removed from lock



The Connecting Matrix:

Transmission line design is ugly:
too many connections, too many
components!

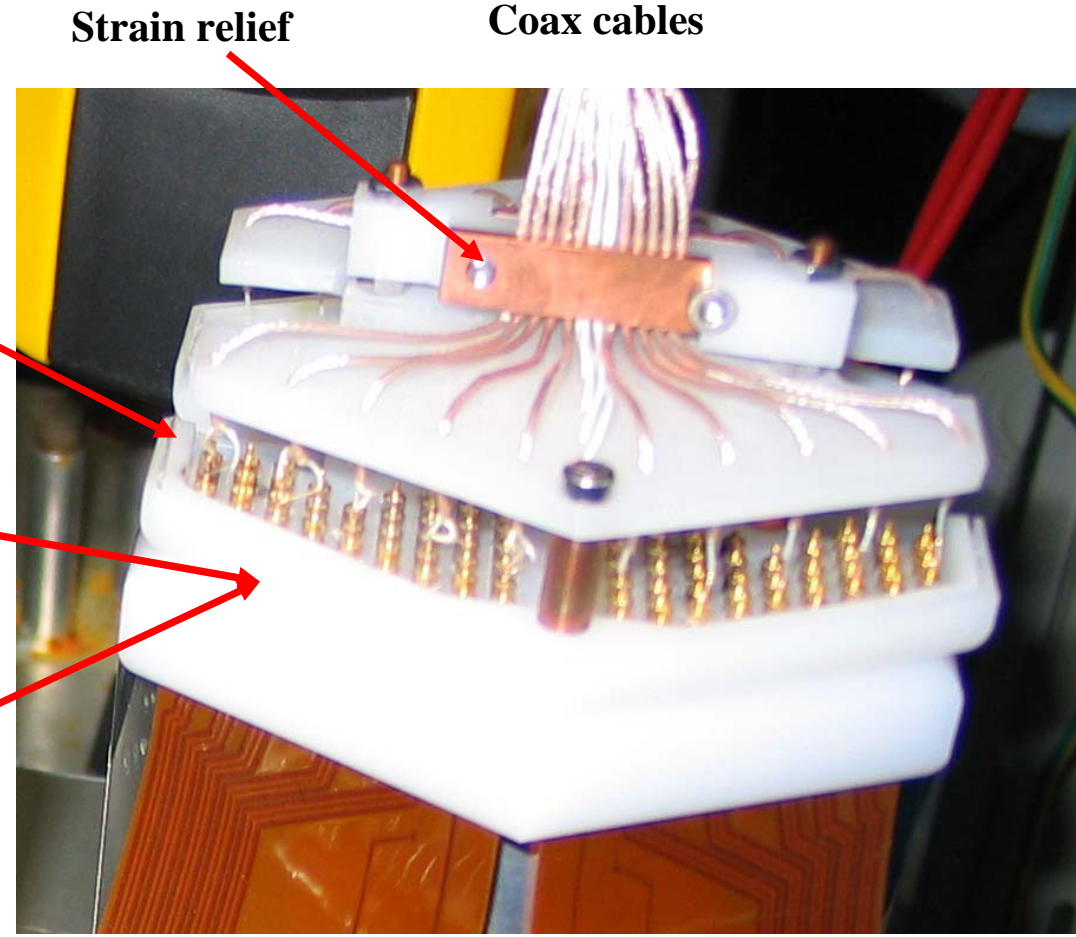


Cables laser
welded to
copper pins

Contact surface of
Copper pins Ni Au
plated



Pogo pin matrix

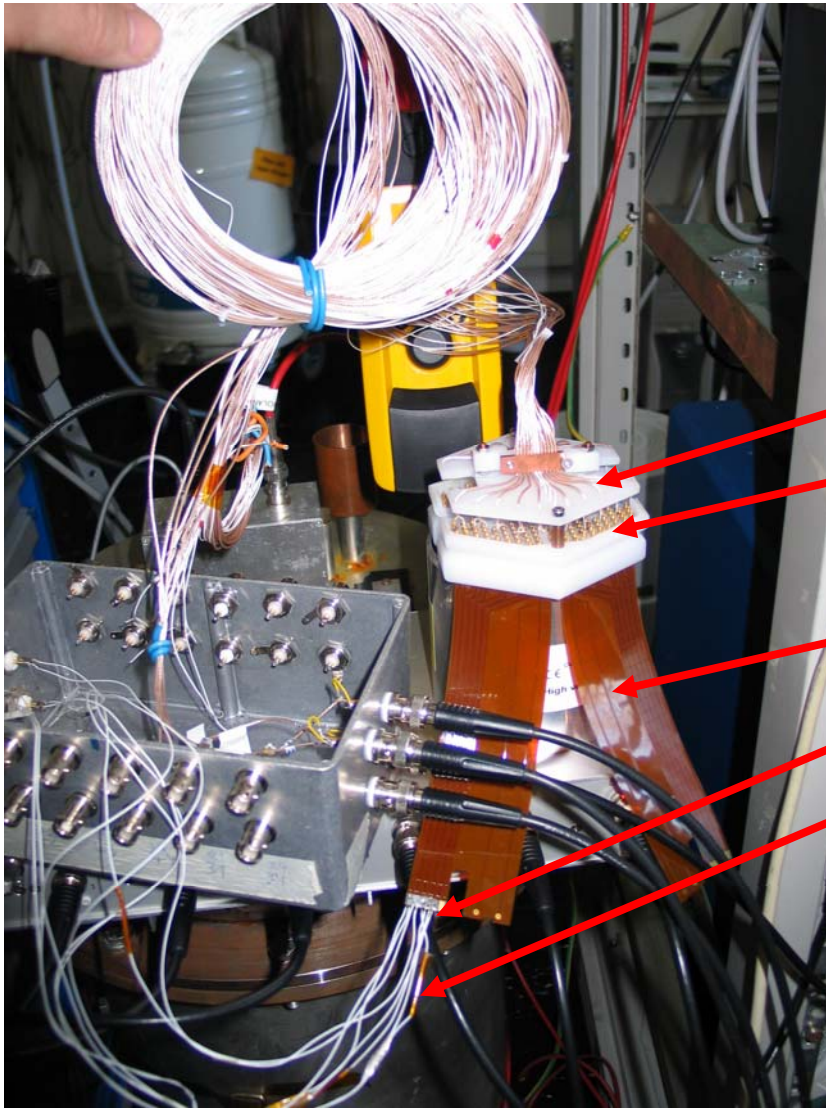


Strain relief

Coax cables

Kapton flat cable

The Connecting Matrix:



But: It works....should be sufficient for commissioning phase.

Whoever has a realistic (!) better idea, let us know!

Coax cables

Copper Pin

Pogo Pins inside Plastic (screened)

Kapton flat cable

Cables laser welded to FPC

Cables towards FE

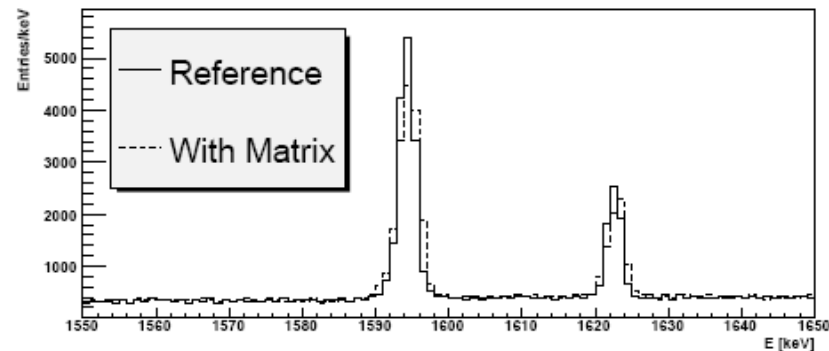
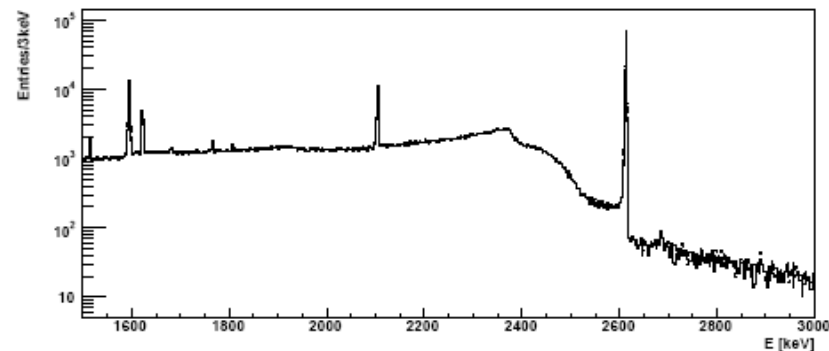
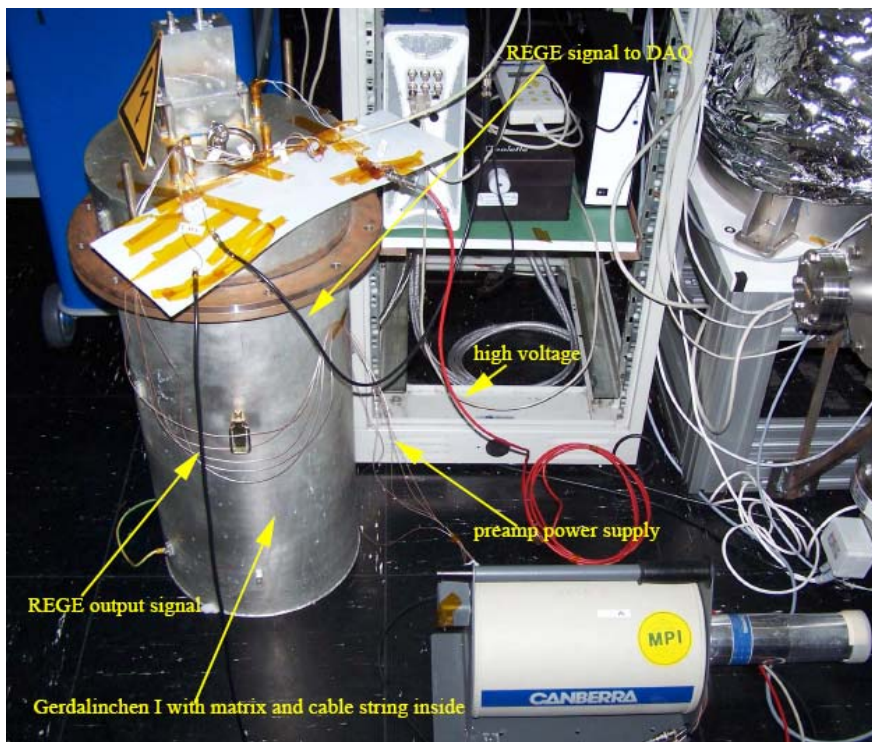
Copper on kapton not screened → Trying to replace with PEN FPC

The Connecting Matrix:

Signal, HV and preamp power supply have been fed through the full cable chain!

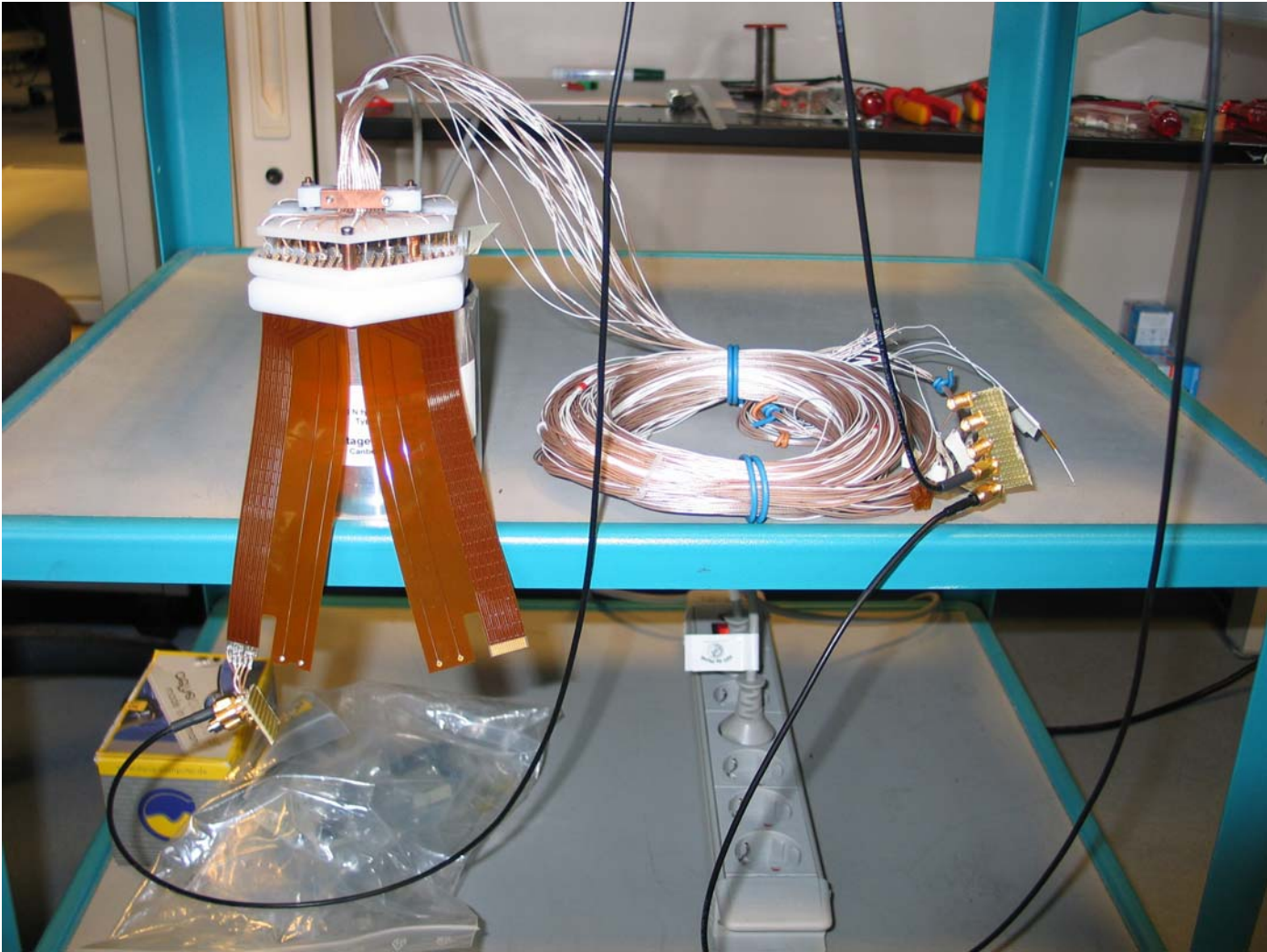
GSTR-08-013, GSTR-08-019

FWHM [keV]; REGE 2			
peak [keV]	reference I	with matrix II	preamp III
1173.0 (Co)	2.140 ± 0.037	1.976 ± 0.030	2.208 ± 0.041
1332.0 (Co)	2.175 ± 0.035	2.135 ± 0.032	2.267 ± 0.045
1460.0 (bg)	2.220 ± 0.061	2.016 ± 0.016	-
2614.0 (bg)	2.630 ± 0.152	2.820 ± 0.038	-





The Tested GERDA Signal Transmission Line:



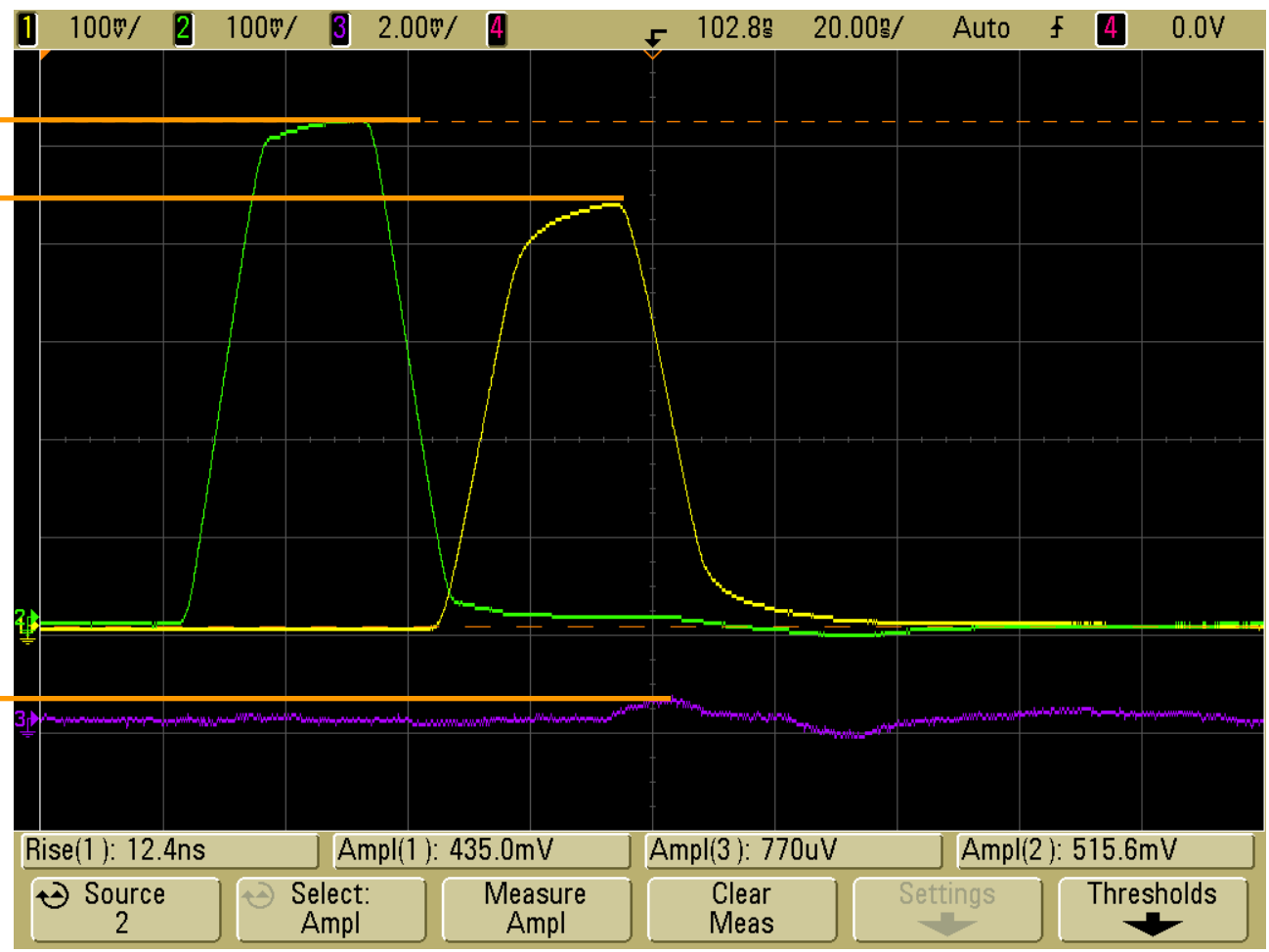


Signal Transmission:

Test Pulse
 Rise time: 10ns
 Flat: 20ns
 Fall time: 10ns
 Amplitude: 516 mV

Transmitted Signal:
 Rise time: 12.4ns
 Amplitude: 435 mV

Cross-talk Signal:
 Amplitude: 0.77 mV
 1.8‰ → ok

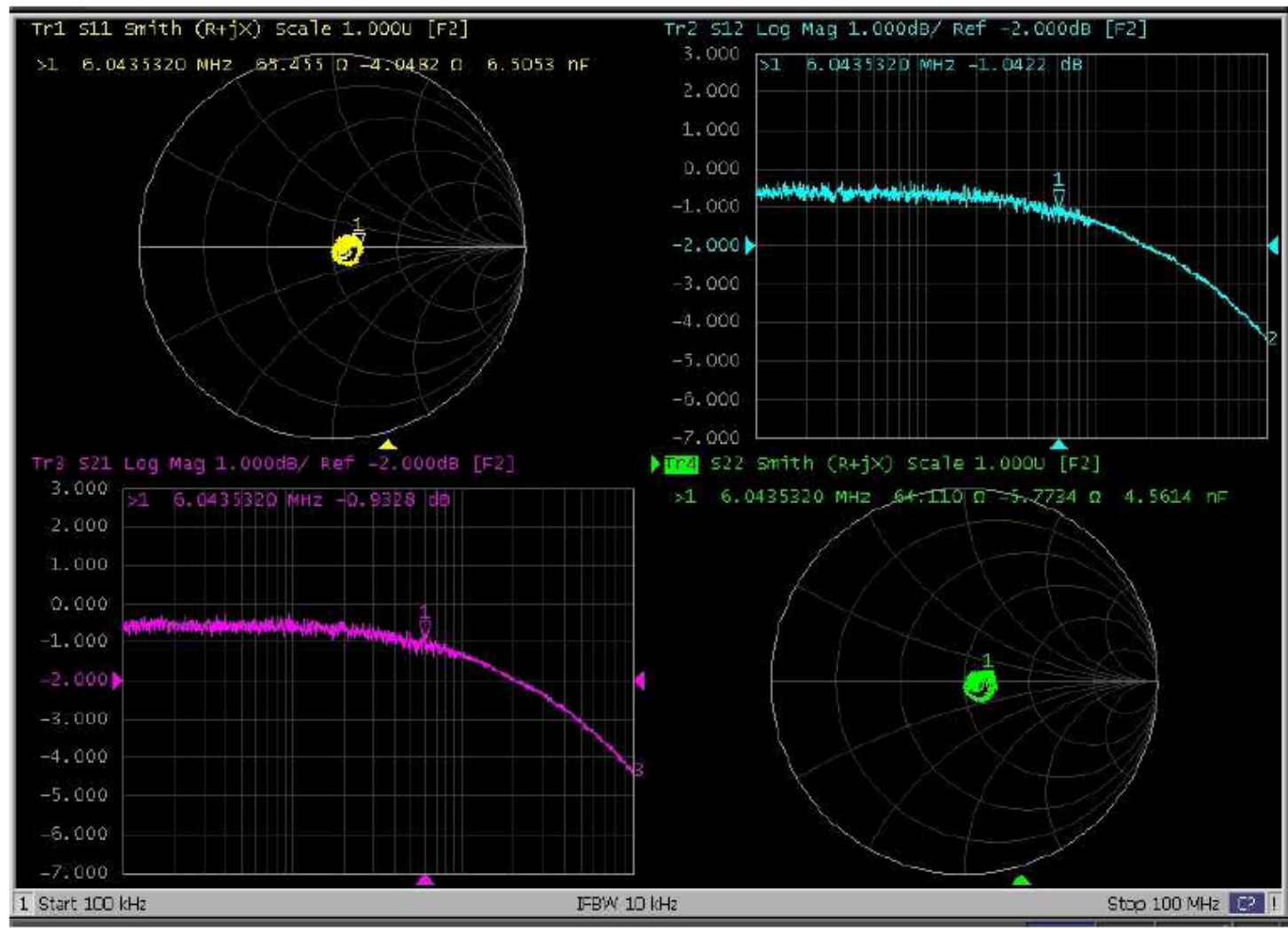


Timing Information: Rise time increase (10%-90%) by 2ns → ok



Signal Attenuation:

Basically the same as with cable only → ok





Matrix Stability:

Long term test over 6 months has shown:

- All 60 tested contacts have been stable over the period of 6 months. All below 2 Ohm.
- Cycling the matrix: 5 cycles under “not ideal conditions” have not lead to any contact failure.

Note that in Hall di Montaggio matrix suffered some damage:

- Pins have been inserted the wrong way round → cross side made scratches on copper pad side → potential contact problem (uneven)
- When cooling down with leak → Condensation on matrix → Water inside pogo pins → erratic behavior

