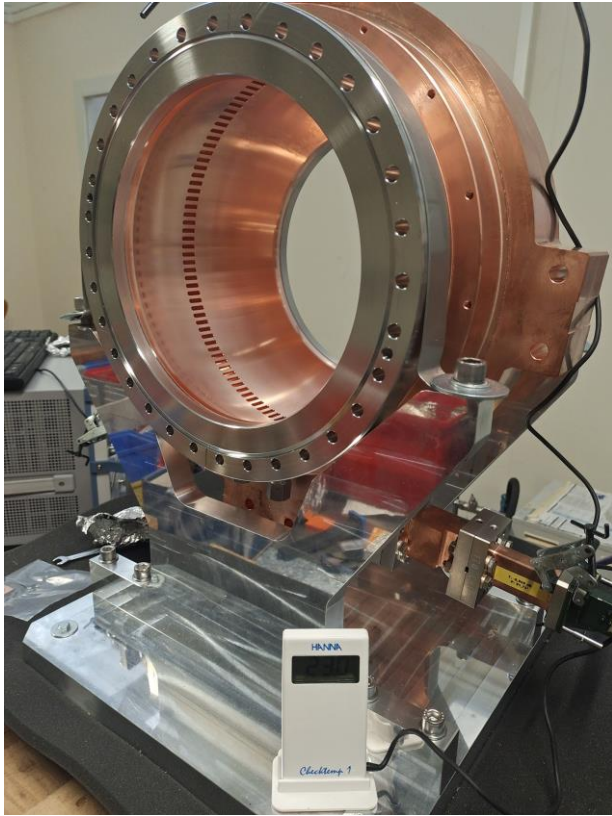


RF measurements of the pulse compressors

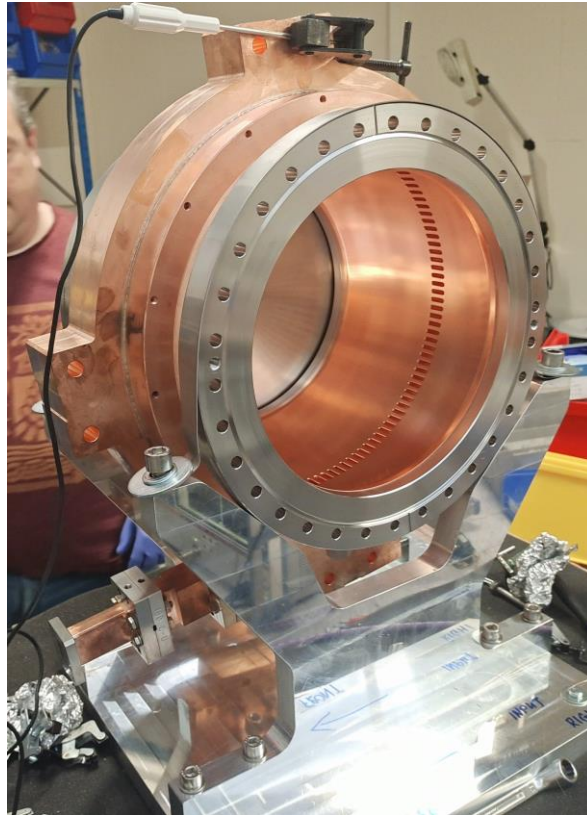
Ping Wang, Alexej Grudiev

2024.06.26

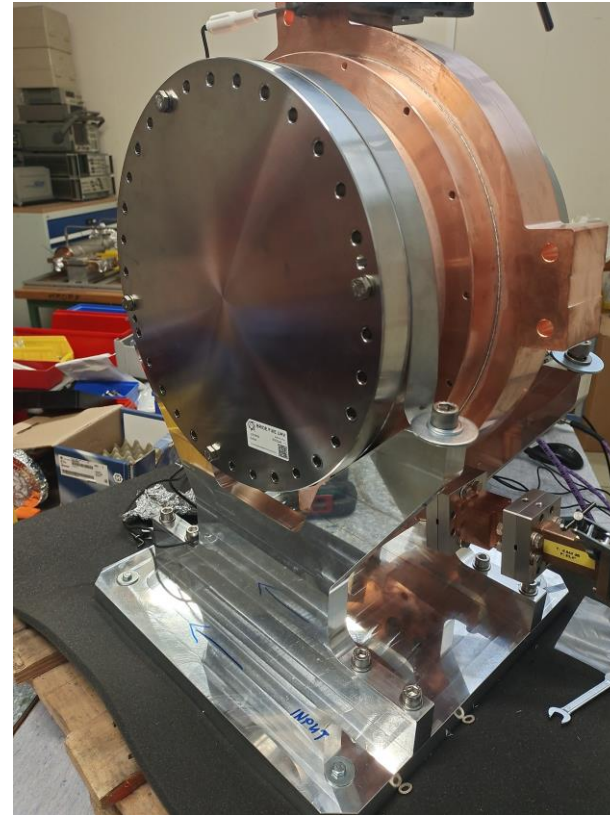
RF measurements for the BOC



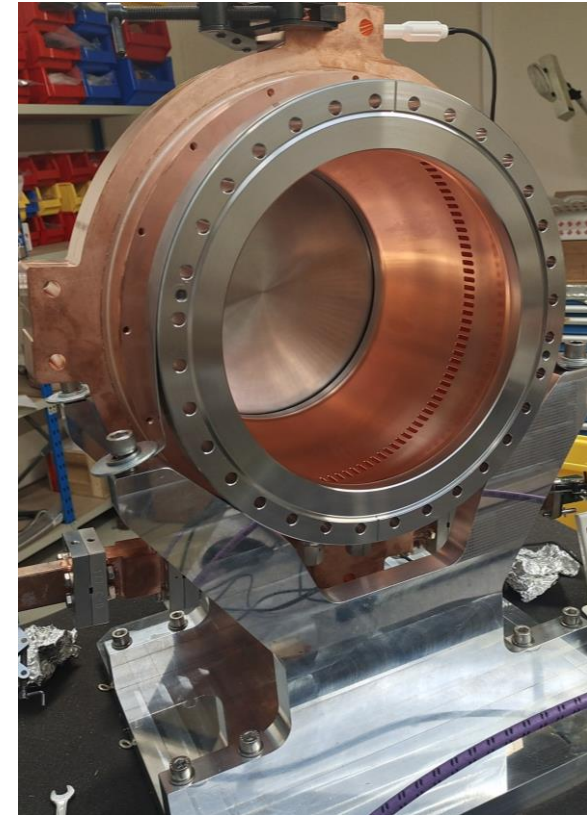
Full-Open



Open-Front



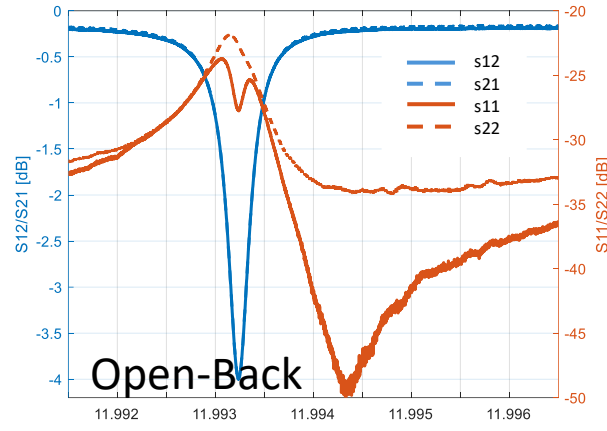
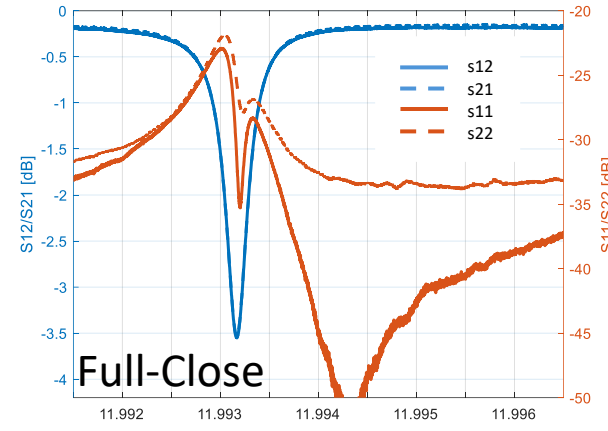
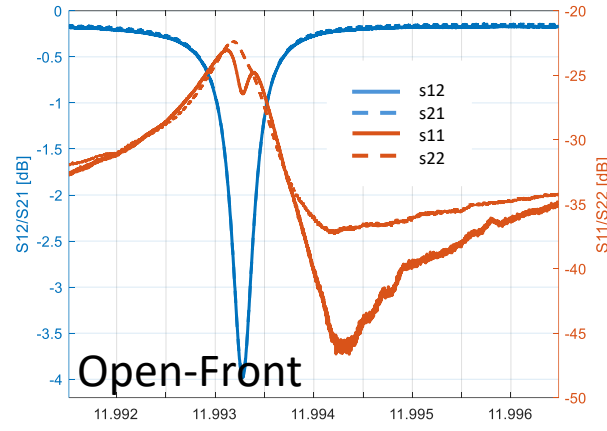
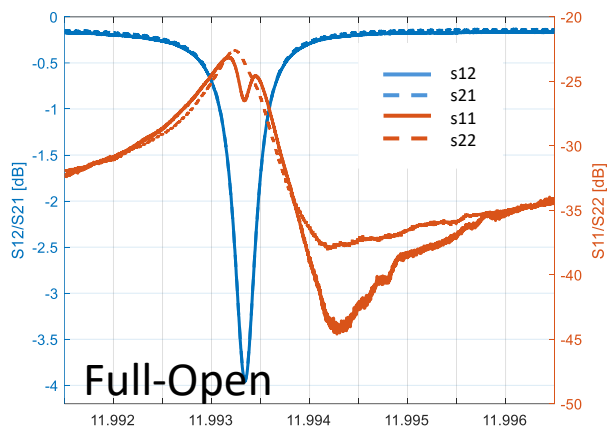
Full-Close



Open-Back

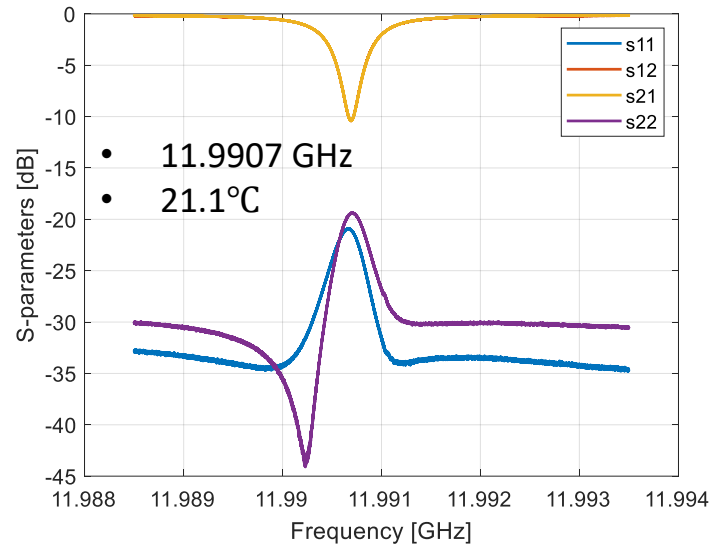
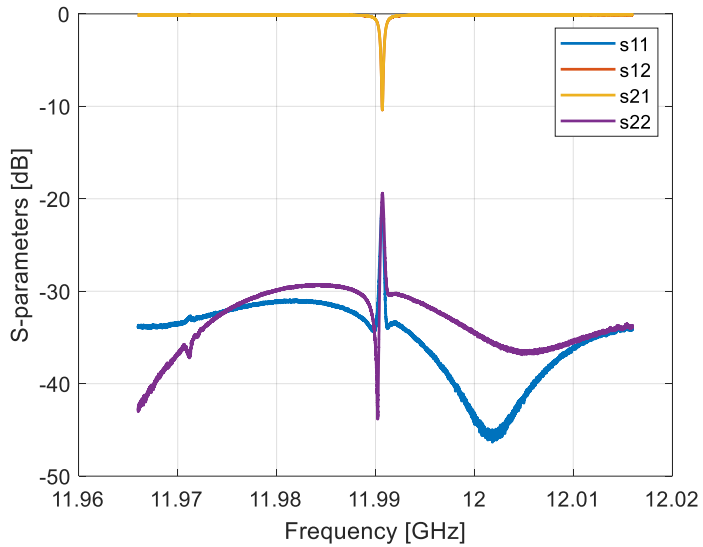
Measurement temperature: 23.0 deg

RF parameters calculation for BOC

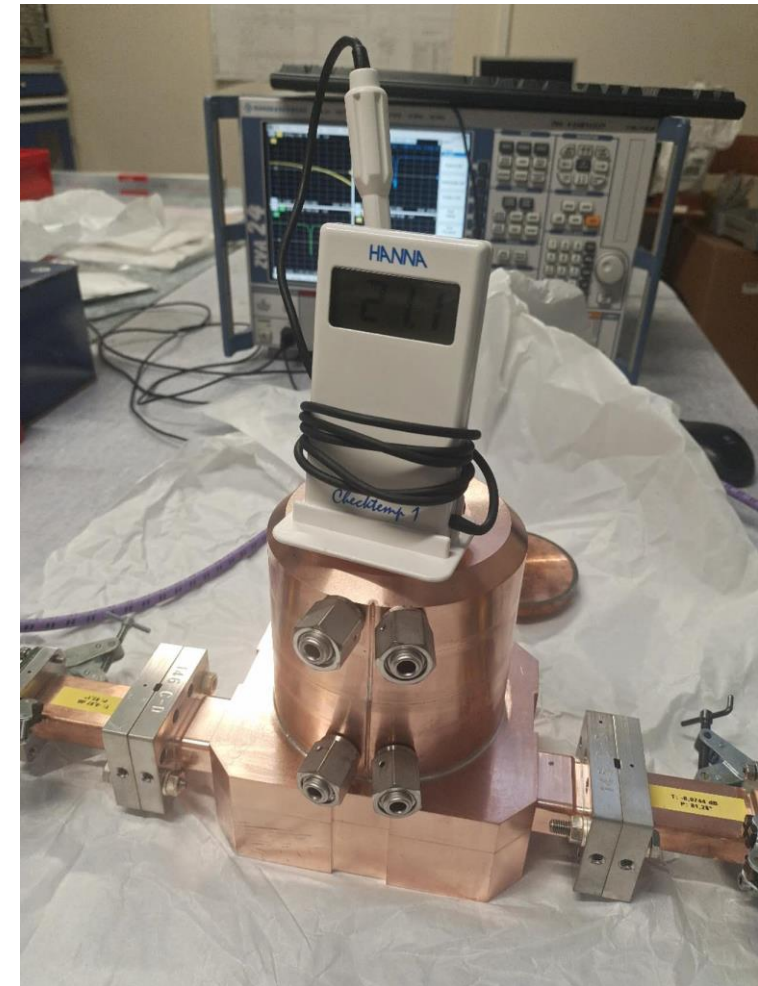


	RF design	Full Open	Open Left	Open Right	Full Closed
Measured Frequency [GHz]	11.994	11.9933	11.9933	11.9933	11.9933
Temperature °C	30	23.0	23.0	23.0	23.0
Working temp. (Vac) °C	30	35.2	35.2	35.2	35.2
Polarization separation [kHz]	0	45	59	49	57
Q0	2.35e5	1.887e5	1.831e5	1.845e5	2.057e5
Qe	3.56e4	4.370e4	4.272e4	4.291e4	4.270e4

Measurement after final brazing-Spherical cavity

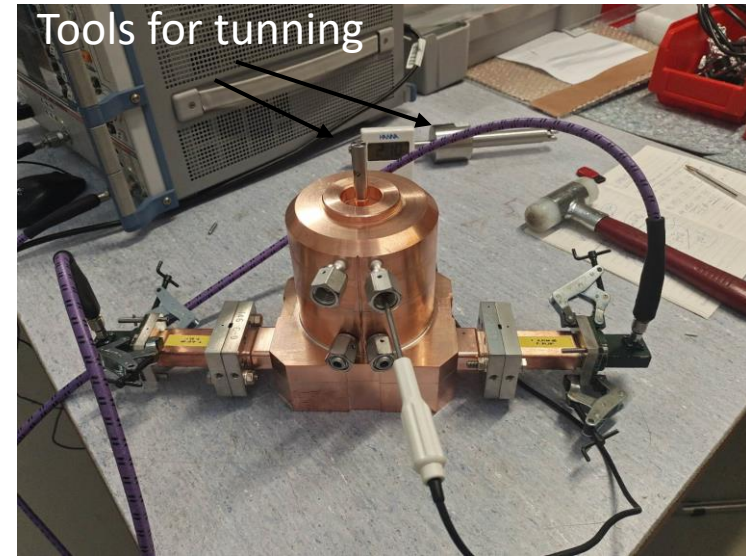
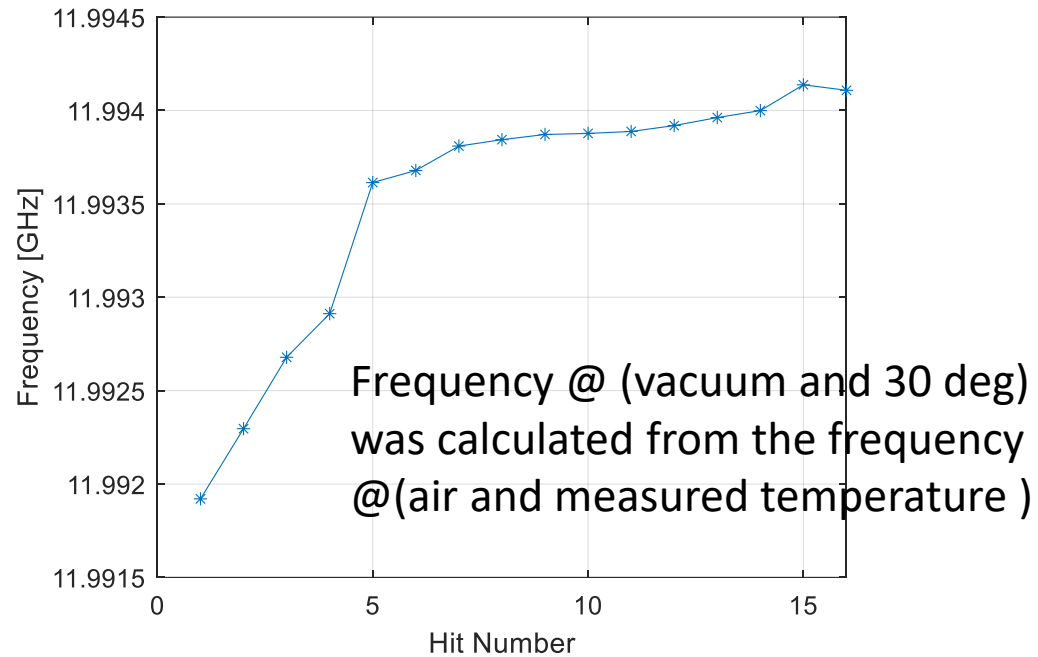


	Design	Before brazing	After brazing
Frequency [MHz]	11994	11994	11994
Temperature [°C]	-----	26.0	20.5
Q0	7.09e4	6.90e4	6.78e4
Beta	1.95	1.91	1.86
S11 @ f0 [dB]	-48.2	-23.3	-21.0
S11 @ f0+1MHz [dB]	-55	-46.0	-33.5
S11 @ f0-1MHz [dB]	-49	-43.9	-34.5



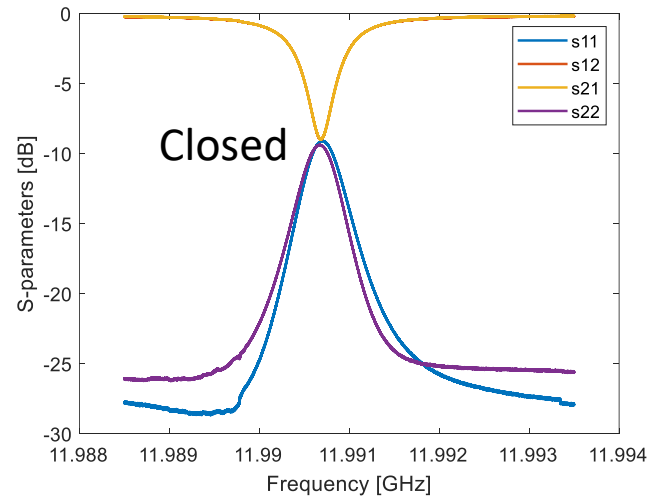
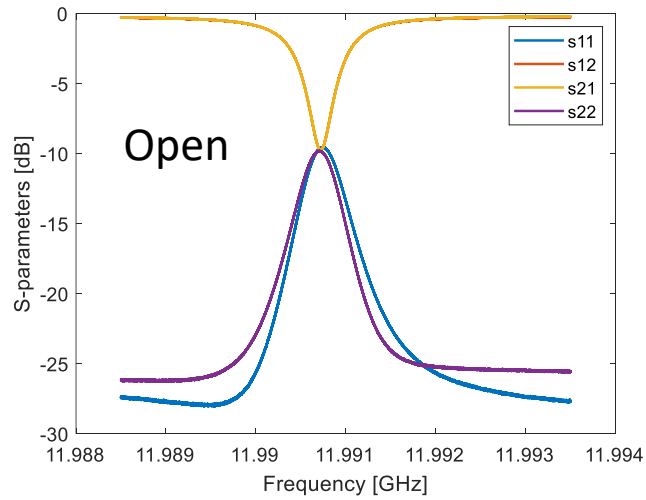
Quality factor needed to be corrected by taking into account the mode separation

Tunning of the Spherical cavity

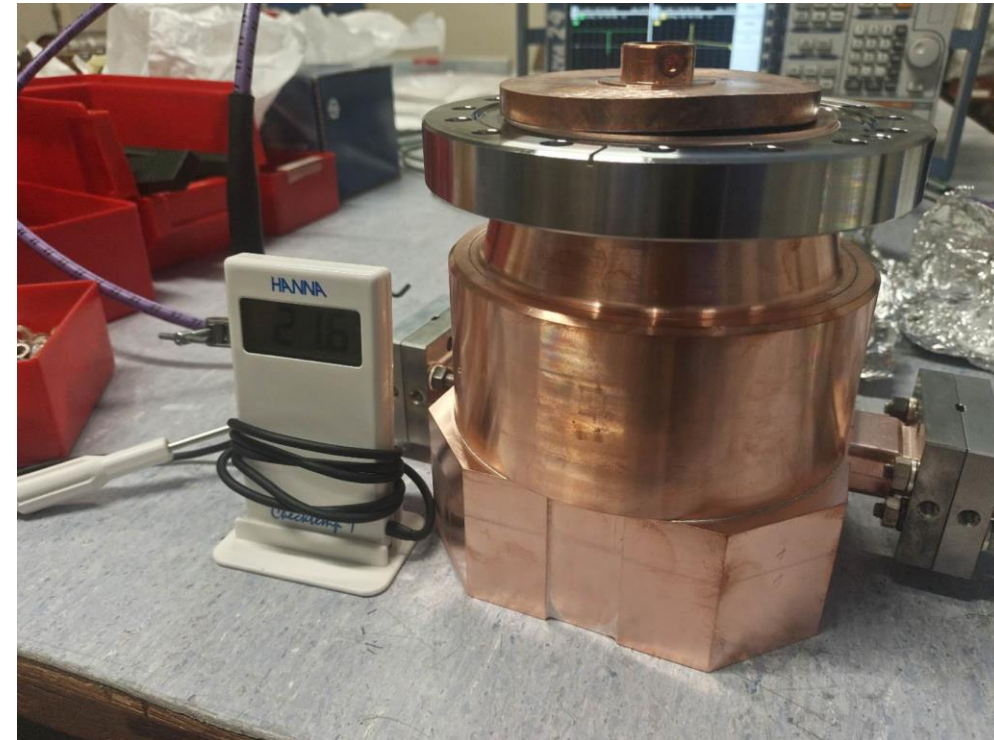


	RF design	Before tunning	After tunning
Measured Frequency [GHz]	11.994	11.9906	11.9927
Temperature °C	30	20.7	21.4
Working temp. (Vac) °C	30	19.8	30
Polarization separation [kHz]	0	44	50
Q0	7.1e4	6.970e4	6.917e4
Qe	3.64e4	3.682e4	2.979e4

Measurement after final brazing-bowl cavity



	Design	Closed Before.	Closed After.	Open Before.	Open After.
Frequency [MHz]	11994	11993.9	11994	11993.9	11994
Temperature [°C]	----	20.0	20.8	20.0	20.8
Q0	7.47e4	6.88e4	6.90e4	6.08e4	6.35e4
Beta	1.97	2.55	2.58	2.23	2.36
S11 @ f0 [dB]	-59.7	-22.6	-9.4	-22.0	-9.6
S11 @ f0+1MHz [dB]	-48.0	-38.4	-24.6	-39.2	-24.2
S11 @ f0-1MHz [dB]	-48.0	-41.1	-28.3	-40.0	-27.7



Summary

The BOC pulse compressor and spherical pulse compressor are ready for high power test