

ADMX 2-4 GHz: Interfaces

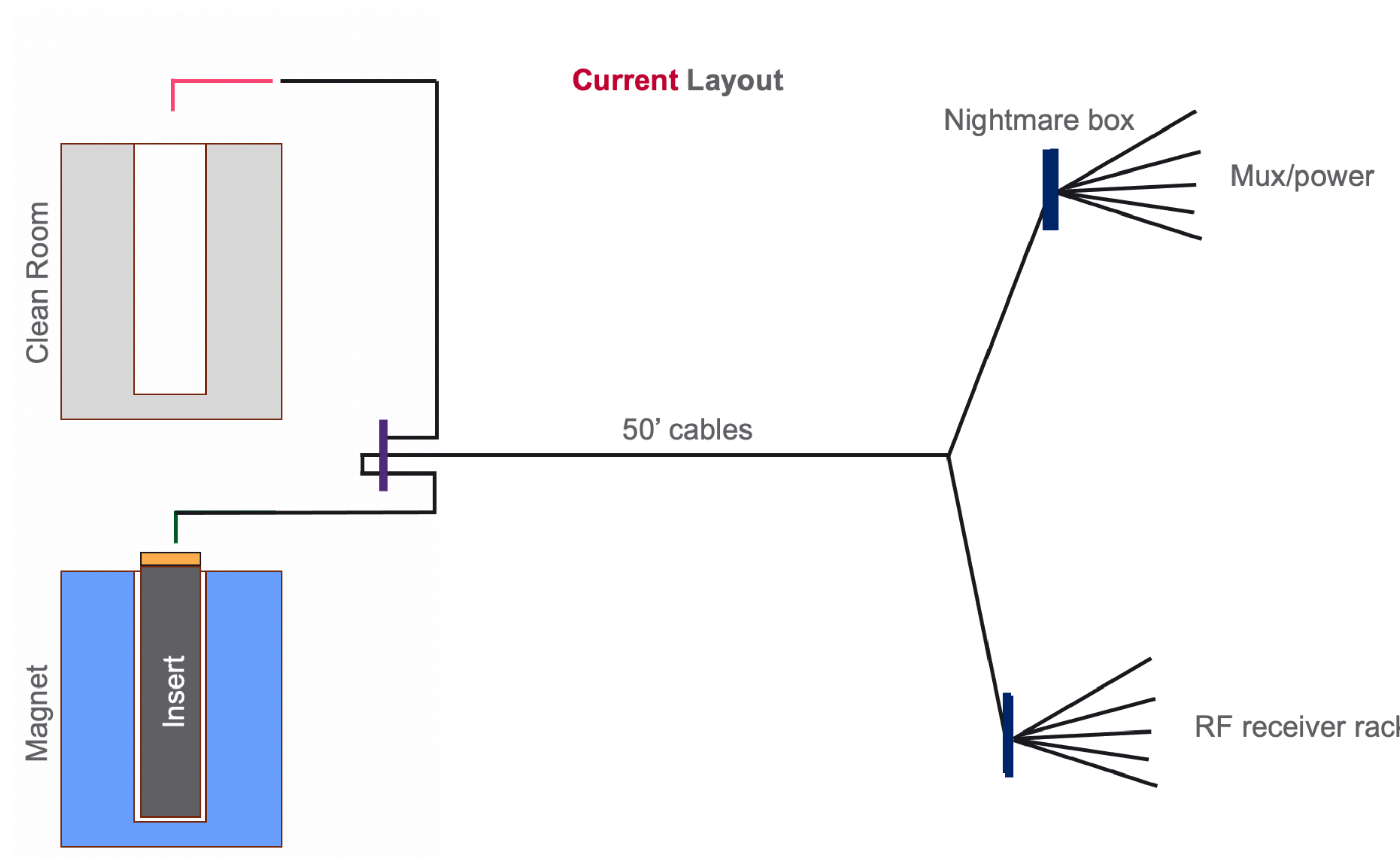
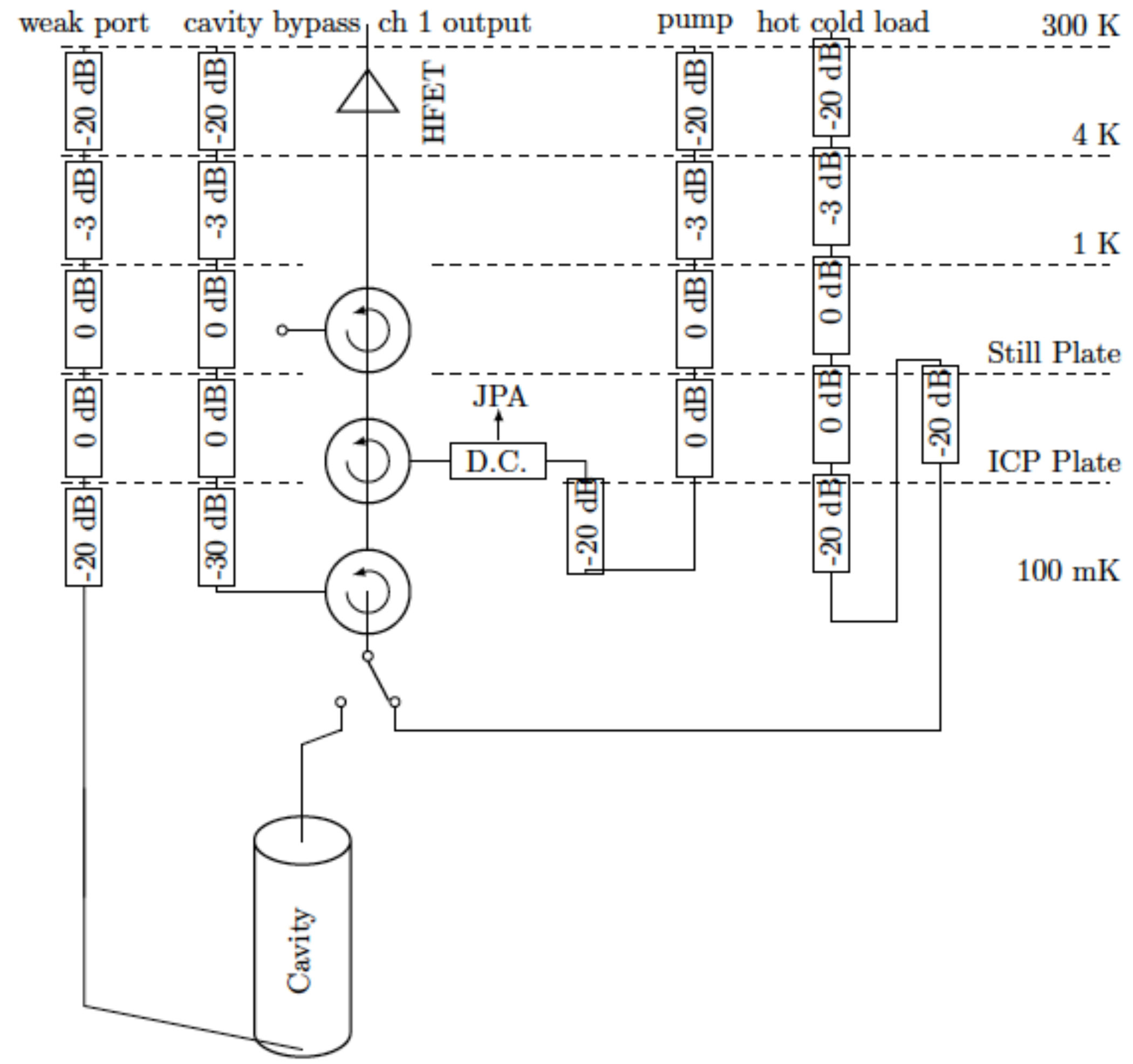
Contents taken from Andrew and Christian slides

Nov 18, 2020

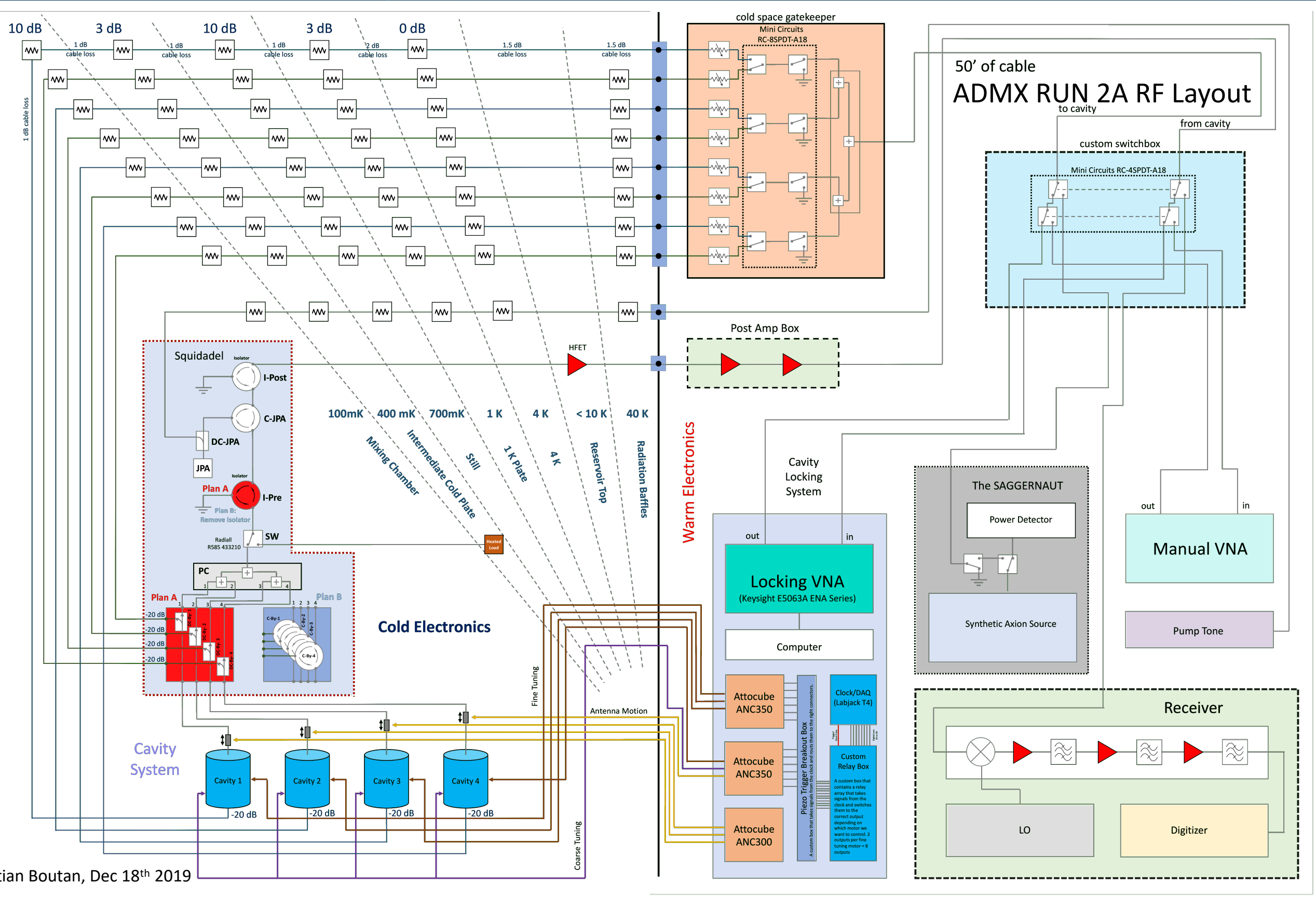
ADMX Collaboration Virtual Meeting

Tatsumi Nitta @ UW

Run1C remind



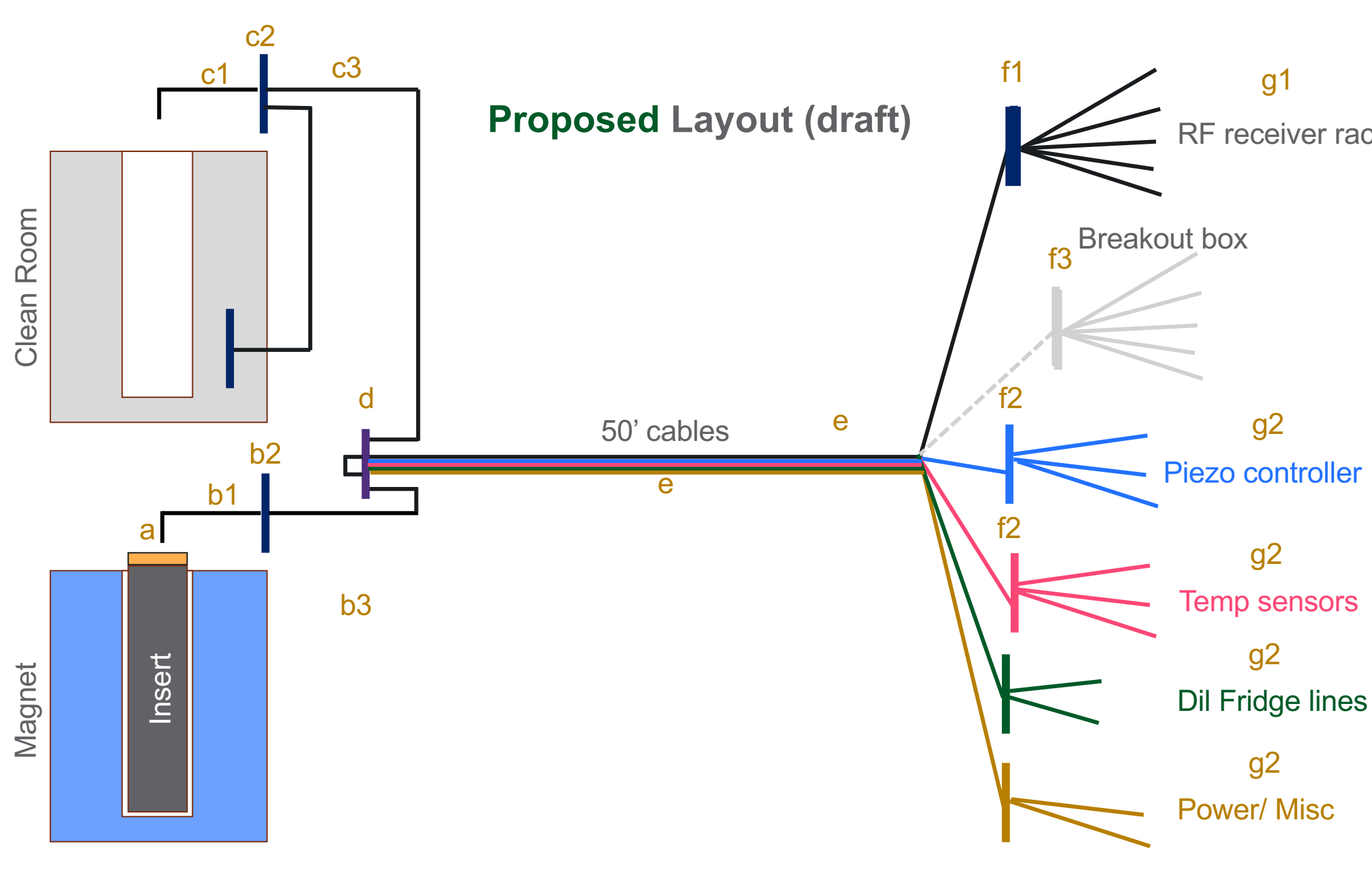
Run2A remind



Christian Boutan, Dec 18th 2019



2



Quite big update from run 1 c.

Improvement on site.

2-4 GHz

Not determined yet.

ADMX 2-4 GHz Configurations	Proposal "Baseline"	Proposal "Target"	Existing Magnet/ 12 Copper Cavities	Existing Magnet/ 12 Nb₃Sn Cavities	HZB Magnet/ 12 Copper Cavities	9.4 Tesla/ 18 Copper Cavities	9.4 Tesla/ 36 Copper Cavities
B Field [Tesla]	7.6	12	7.8	7.8	13	9.4	9.4
Number of Cavities			12	12	12	18	36
Cavity length [mm]			500	500	450	500	500
Cavity diameter [mm]			135	135	135	135	135
Total Cavity Volume [L]	80	80	86	86	77	129	258
Noise Temperature	350	325	400	400	400	450	450
Q	30000	90000	38000	164000	38000	38000	38000
Squeezing	1	1.4	1	1	1	1	1
Normalized Scan Speed FOM B^4V^2Q/T_N^2	1.0	30.3	1.2	5.3	7.7	4.6	18.6

Existing Magnet, 12 Nb₃Sn Cavities

We can use reuse some of current interfaces?

Obviously 12 times output lines?

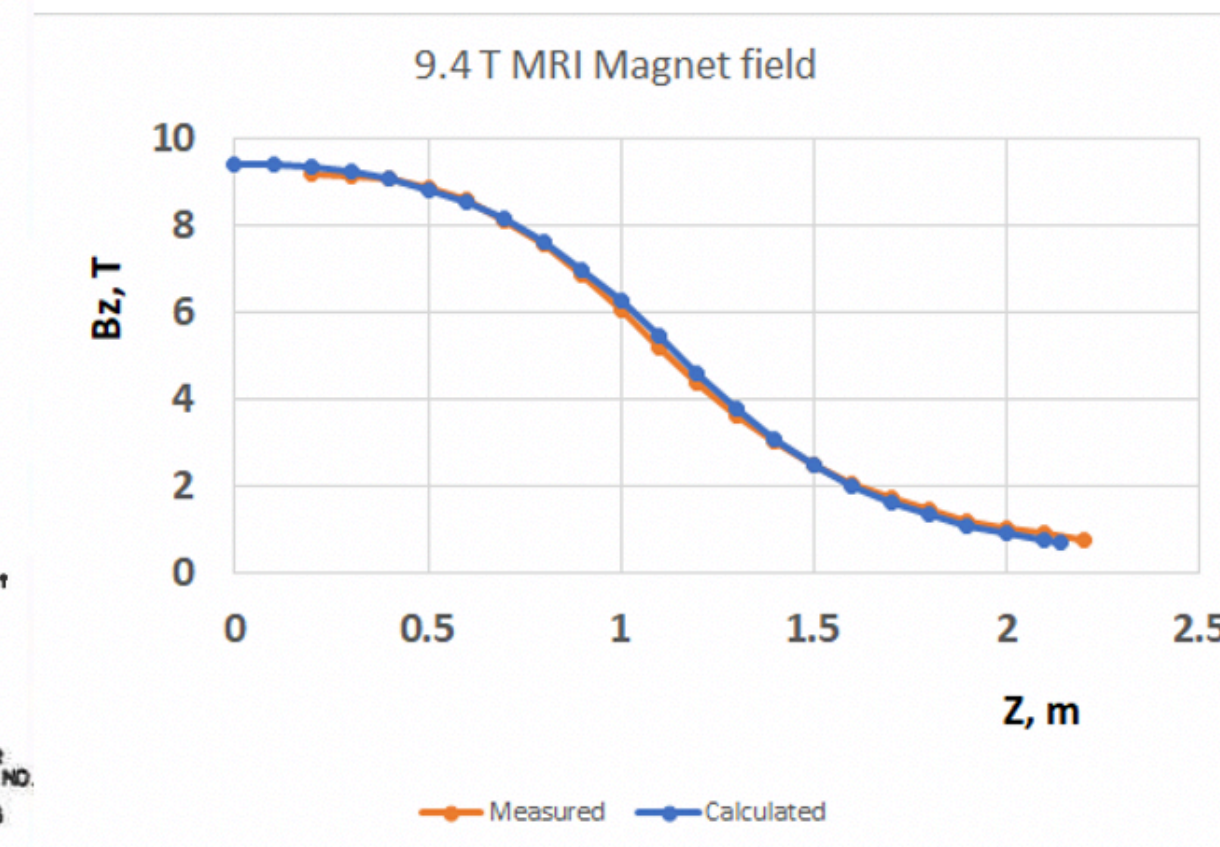
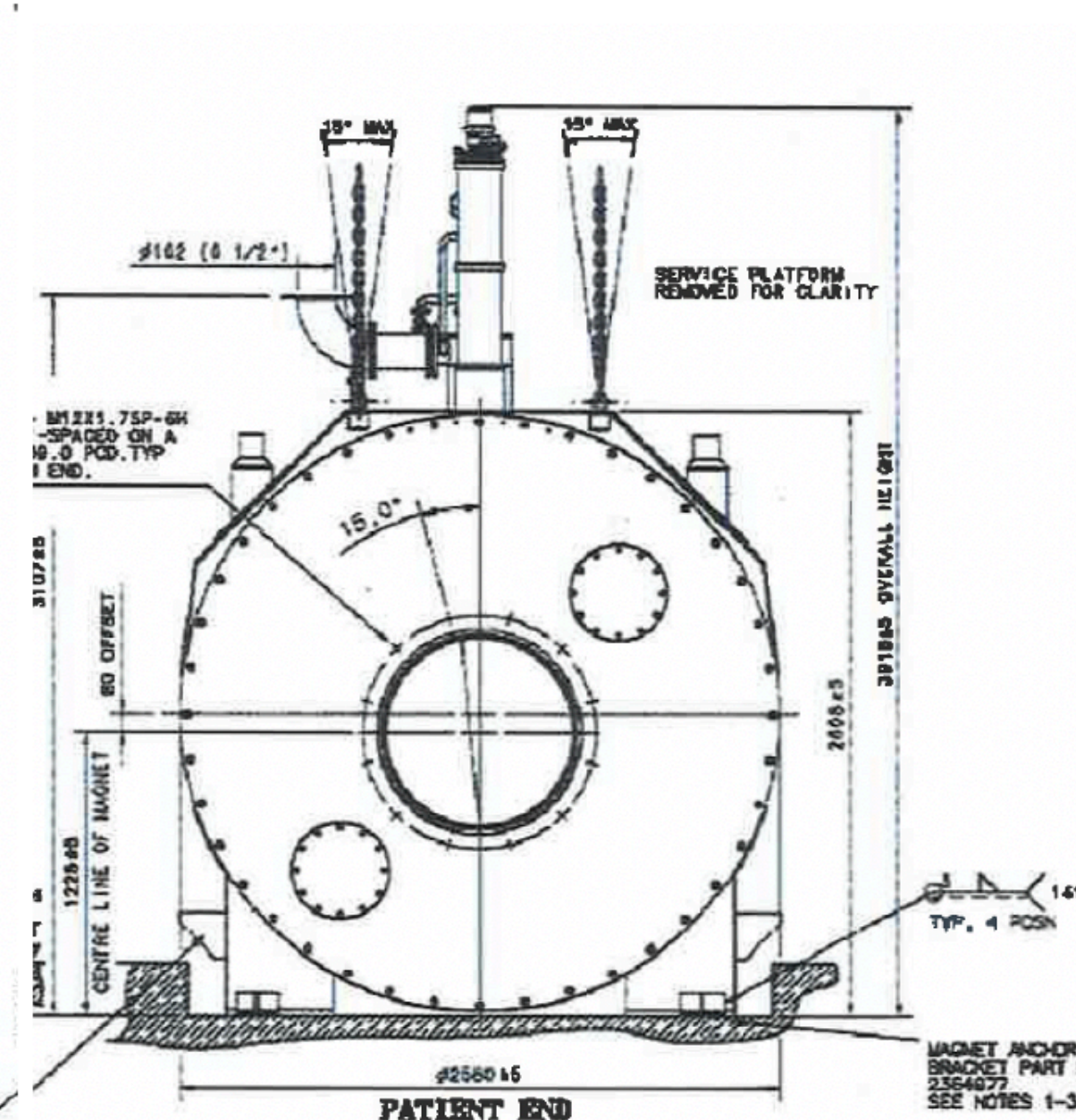
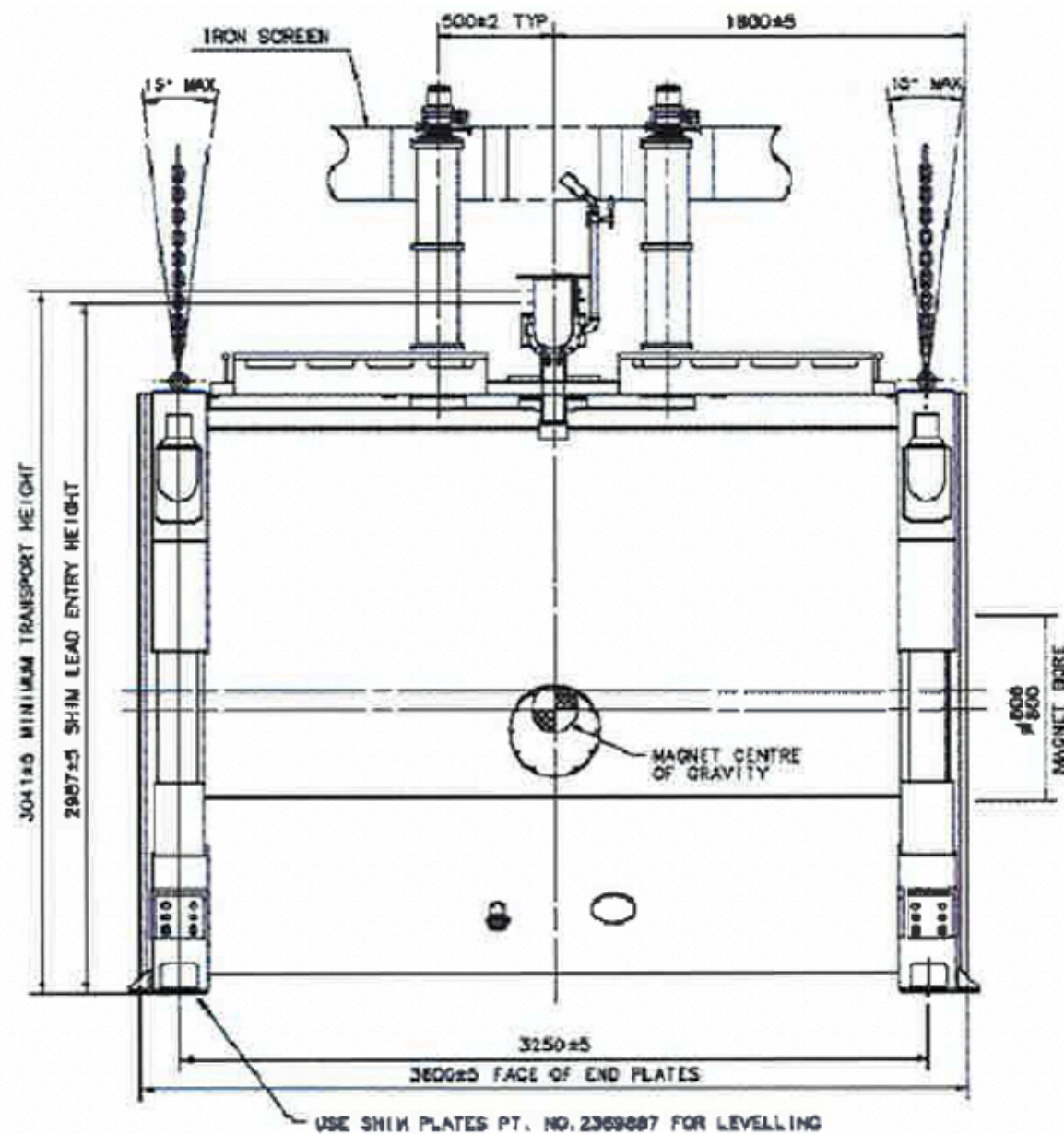
How to tune frequency?

Specific needs for super conducting magnet?

9.4 T, 36 Copper Cavities

ADMX 9.4 Tesla MRI Magnet Option

- Surplus magnet from University of Illinois, Chicago.
- Information in ADMX Docdb, document #1245
- 9.4 Tesla MRI with 800 mm warm bore.
- Manufactured by GE Healthcare in 2003.



9.4 T, 36 Copper Cavities

