UPPSALA
UNIVERSITET

ESS weekly meeting (2022 W41)

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CM10_2: General planning update

week		W41											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		10-Oct		11-Oct		12-Oct		13-Oct		14-Oct		15-Oct	16-Oct
		m	a	m	a	m	a	m	a	m	a		
previous CM	**CM12**	Standing in a doocking area		departure to ESS		report writing		publish report, receive Esys preamplifier		Close concrete wall. Test Esys preamp			
present CM	**CM10**	connect vacuum pumps						Start beam vacuum pumping		vacuum pumping			

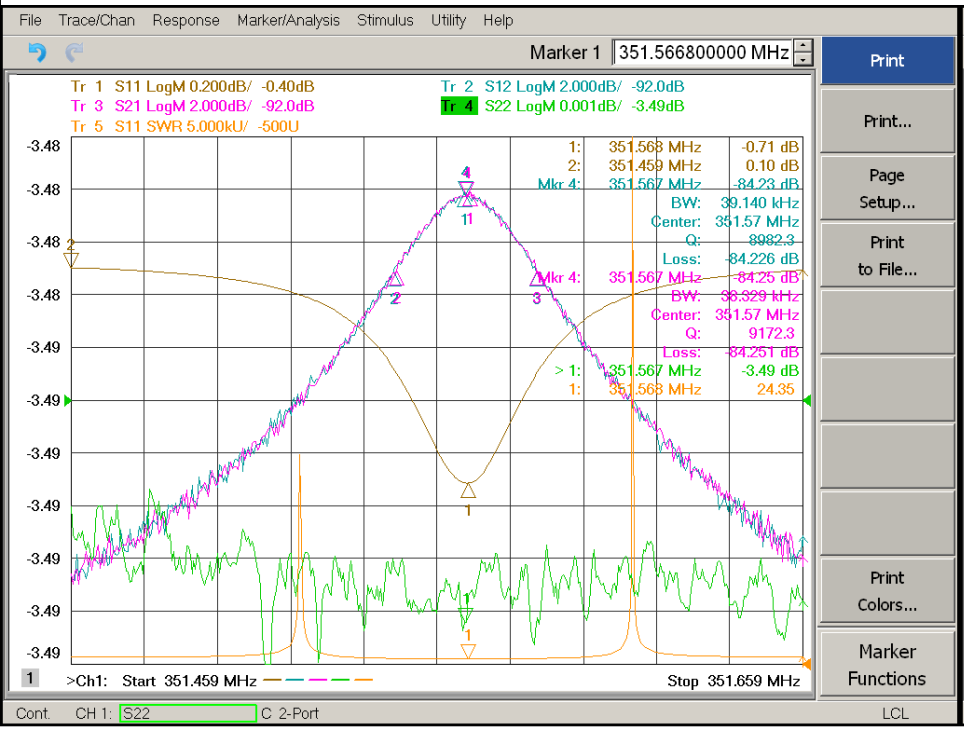
week		W42											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		17-Oct		18-Oct		19-Oct		20-Oct		21-Oct		22-Oct	23-Oct
		m	a	m	a	m	a	m	a	m	a		
present CM	**CM10**	Electrosys preamp instalation		coupler warm conditioning						start LN cooling		Thermalization	
next CM	**CM09**	departure from IJCLab		transport				arrival at FREIA	Open box, read shock loggers	thermalization			

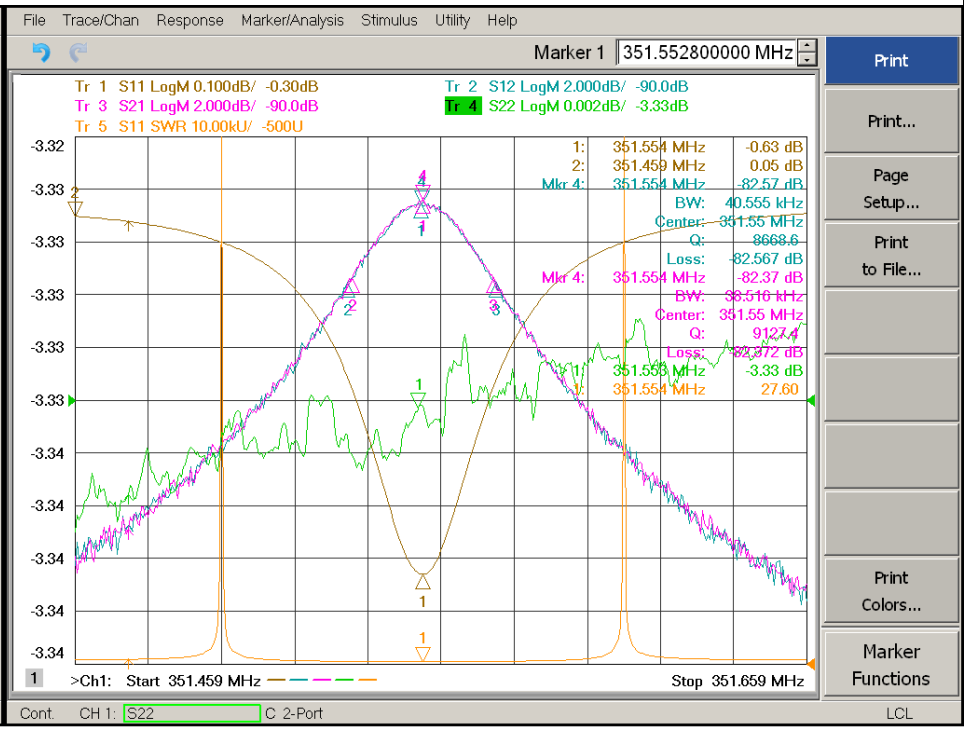
week		W43											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		24-Oct		25-Oct		26-Oct		27-Oct		28-Oct		29-Oct	30-Oct
		m	a	m	a	m	a	m	a	m	a		
present CM	**CM10**	start LHe cooling		4K filling		2K pumping		Coupler cold conditioning	RF calibration at cold	CTS			
next CM	**CM09**	Reception test				waiting in a docking area							

week		W44											
date		MON		TUE		WED		THU		FRI		SAT	SUN
		31-Oct		1-Nov		2-Nov		3-Nov		4-Nov		5-Nov	6-Nov
		m	a	m	a	m	a	m	a	m	a		
present CM	**CM10**	MP conditioning		Heat Load measurements				Start warm up		Break insulation vacuum	Official half day holliday	Warming up	
next CM	**CM09**	doornob mounting / water leak check		waiting at the docking area				Dissasemble concrete wall					

- CM12 was send to ESS.
- CM09 will arrive to FREIA October 20th.

CM12 outgoing test.





CavIN CM12_Outgoing 6OKT22 **CavOUT**

- All values look OK.
- LHe level sensors feel good. (No short to ground)

CM12 was departure to ESS

- Firstly only CM box was loaded (was only one box in transport declaration).
- ESS called the transport company and decided that the driver should come back to FREIA and pick up the pallet as well.
- Totally CM box and one pallet shipped to ESS.

CM10_2: Lab activity

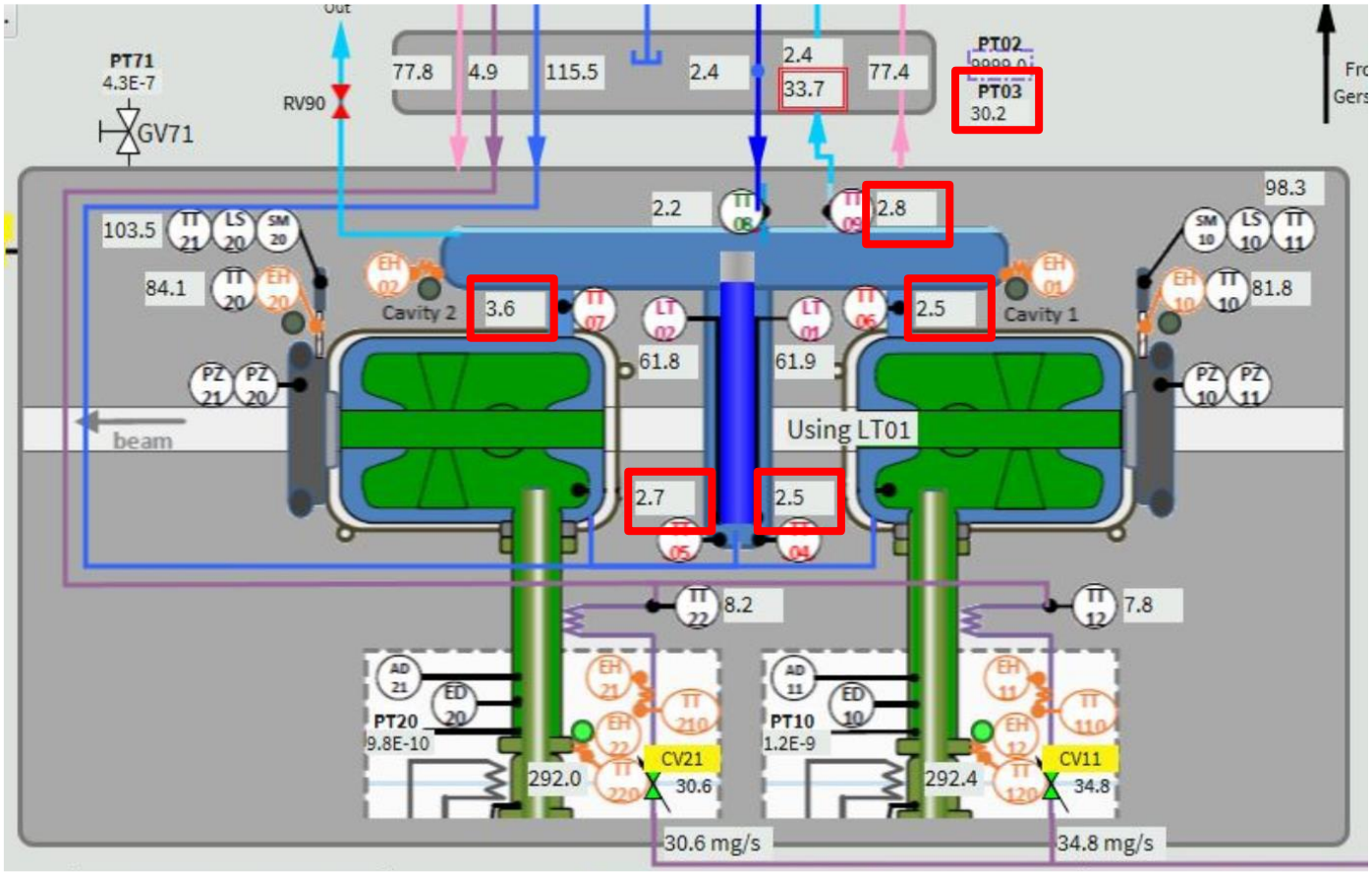
- ✓CM10 in bunker.
- ✓All lines were successfully connected.
- ✓OK with one purging cycle.
- ✓Ok with leak detector.
- ✓Torque wrench and Stepper motor was send back to France.
- ✓Received back the preamplifier from Italy.
- ✓Start beam vacuum pumping

* Additional foam was added later

Leak detector progress:

- Replaced He cylinder for internal leak calibration.
- Found small leak near masspectrometer.
- Fixed the leak in pressure sensor.

CM10_2: CERNOX issue investigation



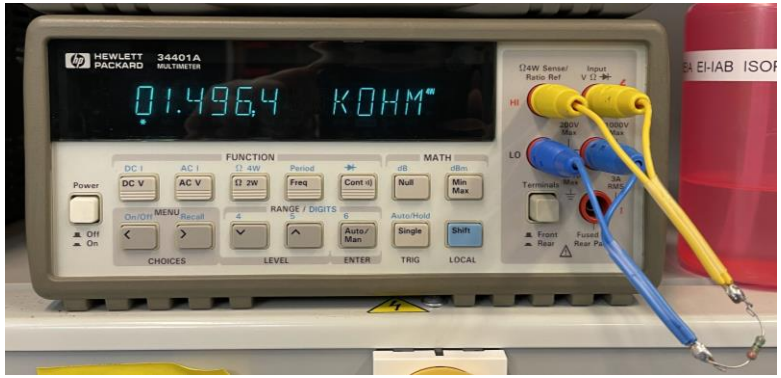
- TT04 … TT09 showed higher temperature then expected from pressure reading of He circuit.
- Was performed swapping of sensor reading channels - Same result

CM10_2: Constant resistors connected to CABTF (TT04 channel)

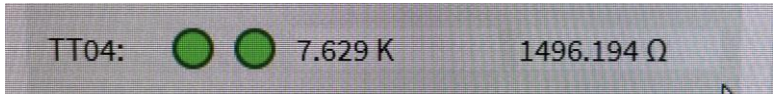
1.5 kOhm

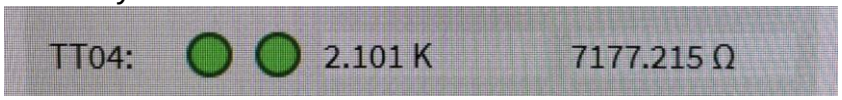
7.2 kOhm

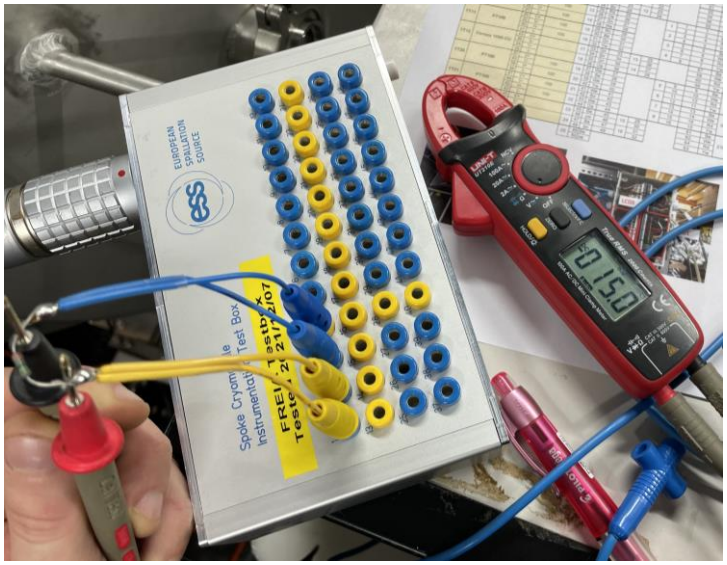
Resistance measured by 4W multimeter



Resistance measured by control system

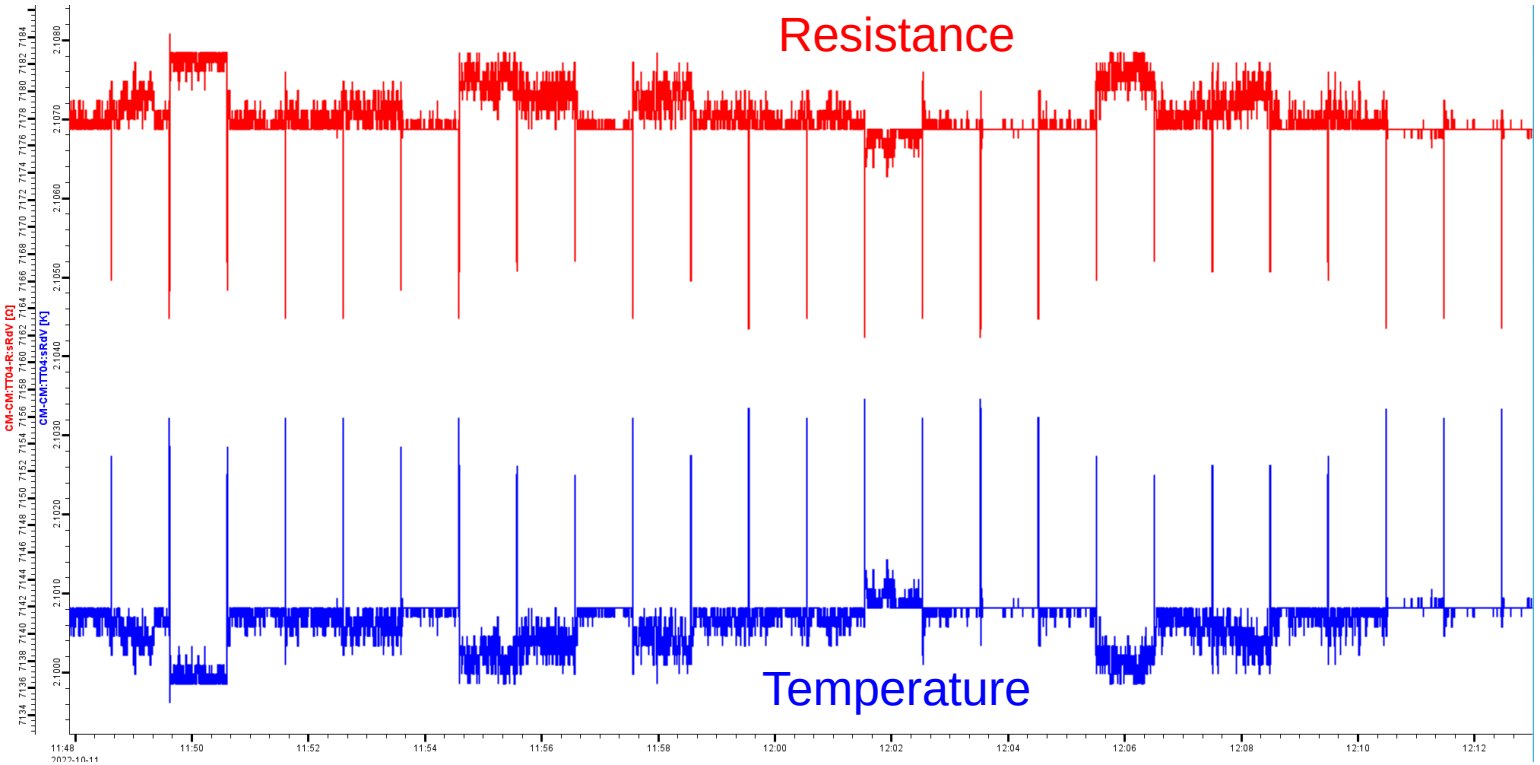






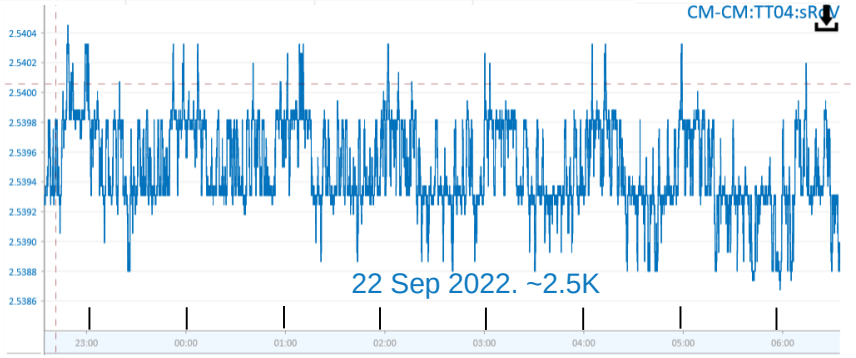
- Resistors connected to the end of signal line through ESS test box.
- Voltage drop on resistors 15 mV.
- Current through1.5 kOhm is 10 uA.

CM10_2: Constant resistors connected to CABTF (TT04 channel 7.2kOhm)



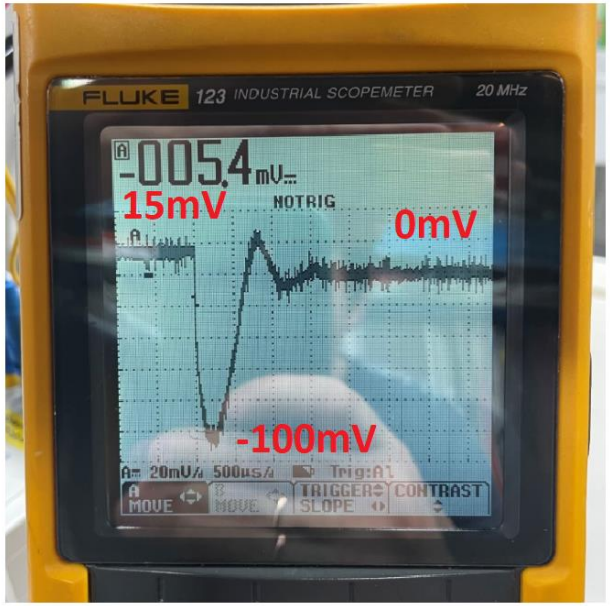
Display Name	Sample Count	Mean	Median	Standard Deviation	Min Value	Max Value	Sum
CM-CM:TT04-R:sRdV	3565	7178.681210143101	7178.61865234375	2.225961158422342	7161.81591796875	7184.23730468...	2.55919985141...
CM-CM:TT04:sRdV	3565	2.1005675583298387	2.100578295171748	3.8195129303475196...	2.09961414169862...	2.10346148983...	7488.52334544...

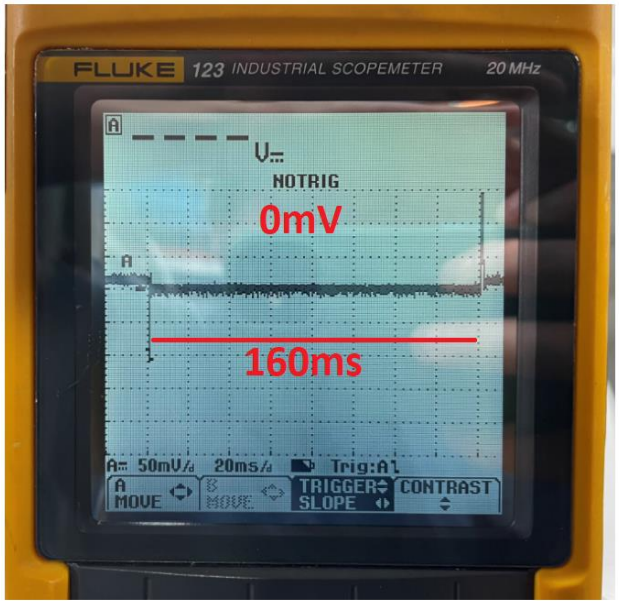
- Only one “sensor” connected to CABTF.
- Every minute the drops in resistance are visible.
- No clear visible spikes in archive data

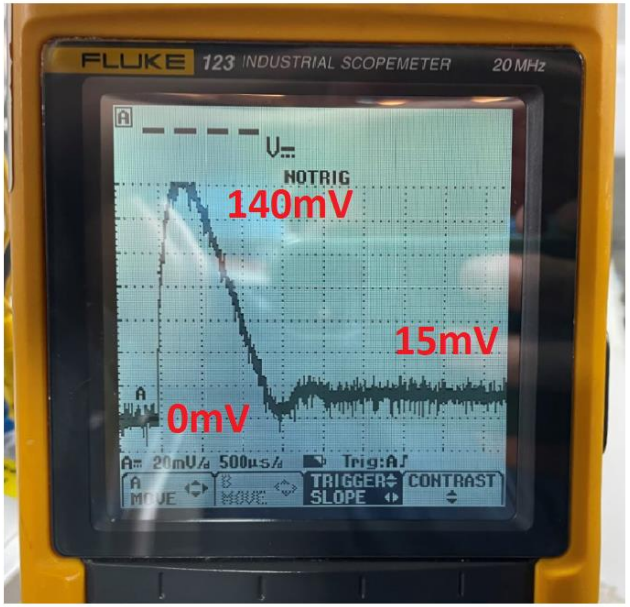


CM10_2: Constant resistors connected to CABTF (TT04 channel)

Closer looks to change of voltage across resistor





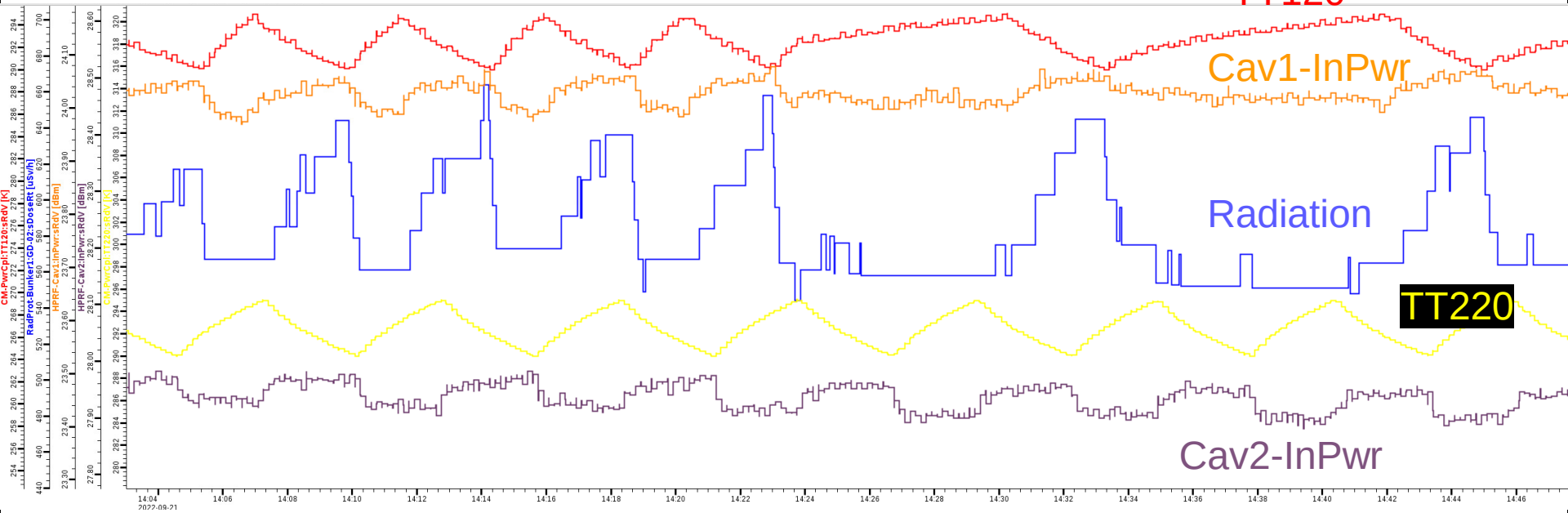


- Voltage across resistor drop drop down +15mV → 0mV for 160ms with 1Hz repetition.
- Visible transient effect: +15mV→ -100mV → 0mV; 0mV → +140mV → +15mV.

<u>Goal: Compare measurement result with another CABTF unit. More carefully look to resistance value at real operation.</u>

Cavities field modulation by DWT heater.

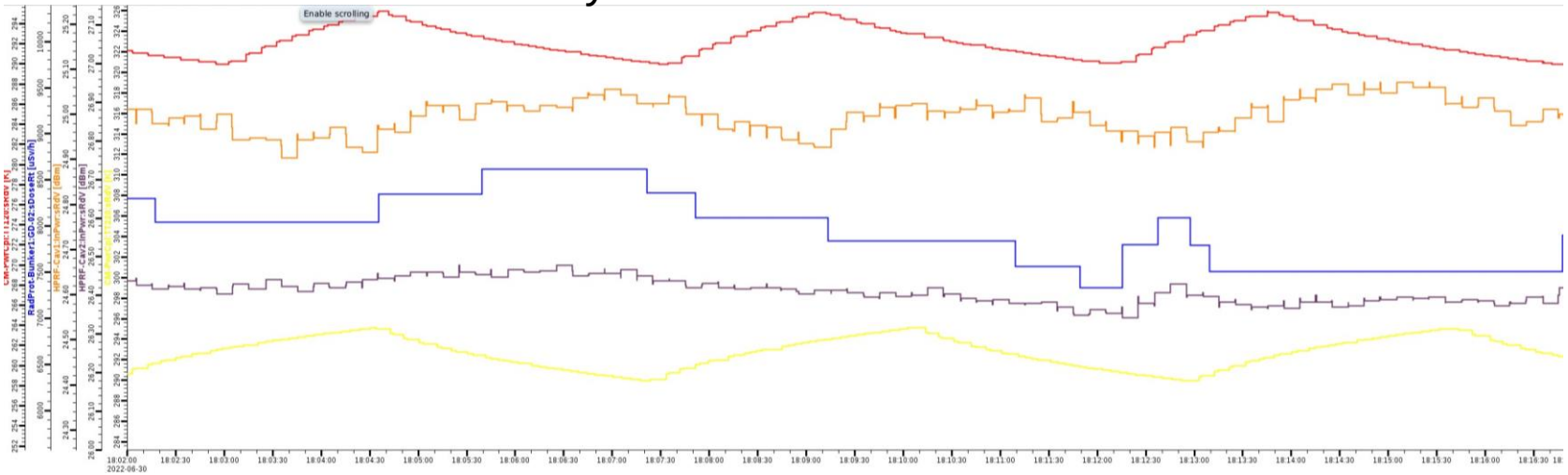
- In CM12 was found the cavities field modulation which corelate with ceramic windows temperature



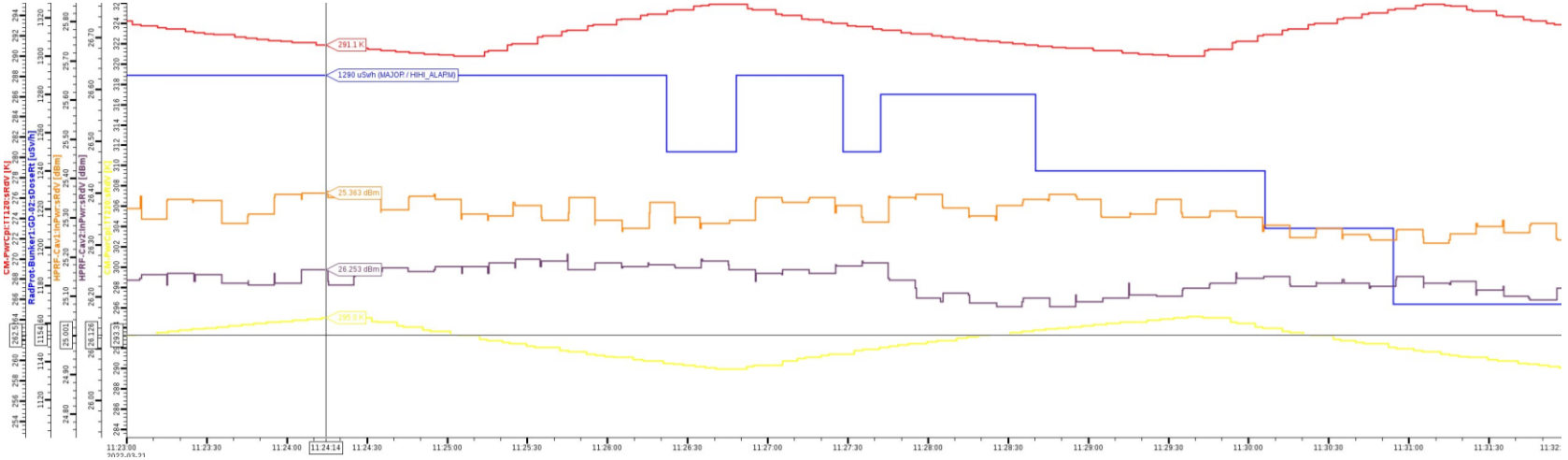
- In this plot one can see that the field variation follows when the heater PID cycle in Cav1 is changed but not in Cav2

Cavities field modulation by DWT heater.

- CM11 some correlation can maybe be seen but weaker.



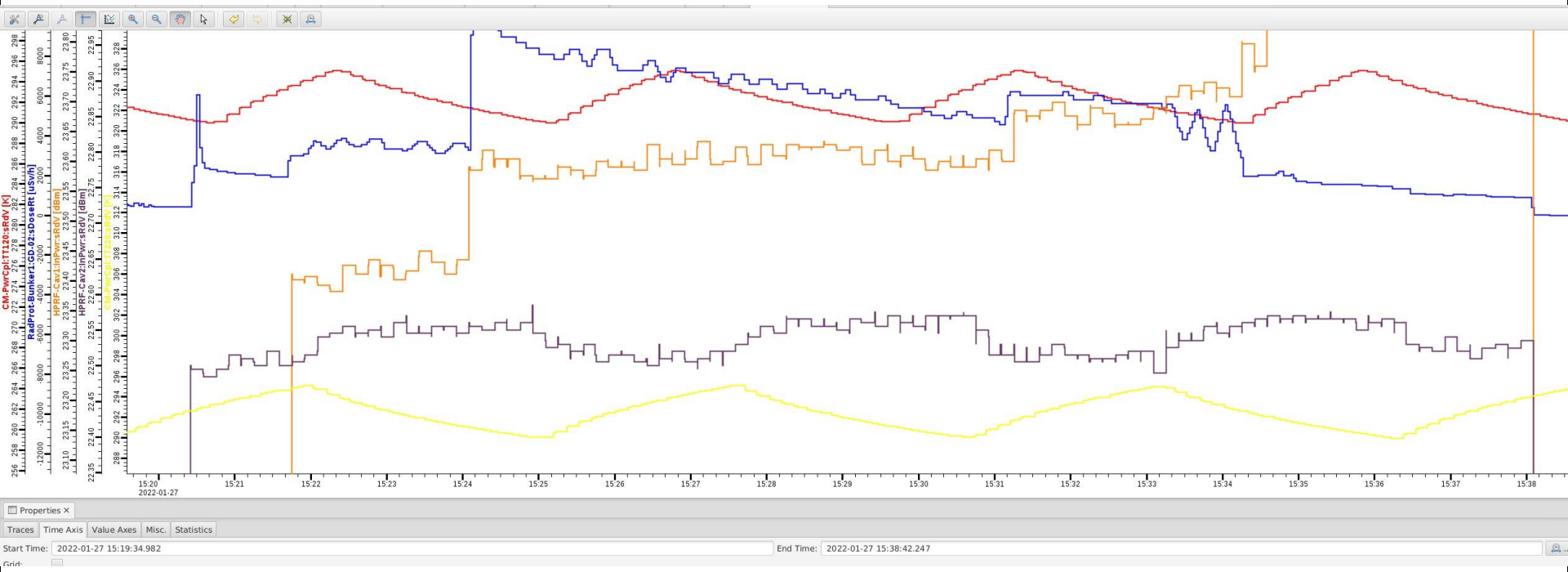
- CM09 No clear correlation.



TT120 TT220 Cav1-InPwr Cav2-InPwr Radiation

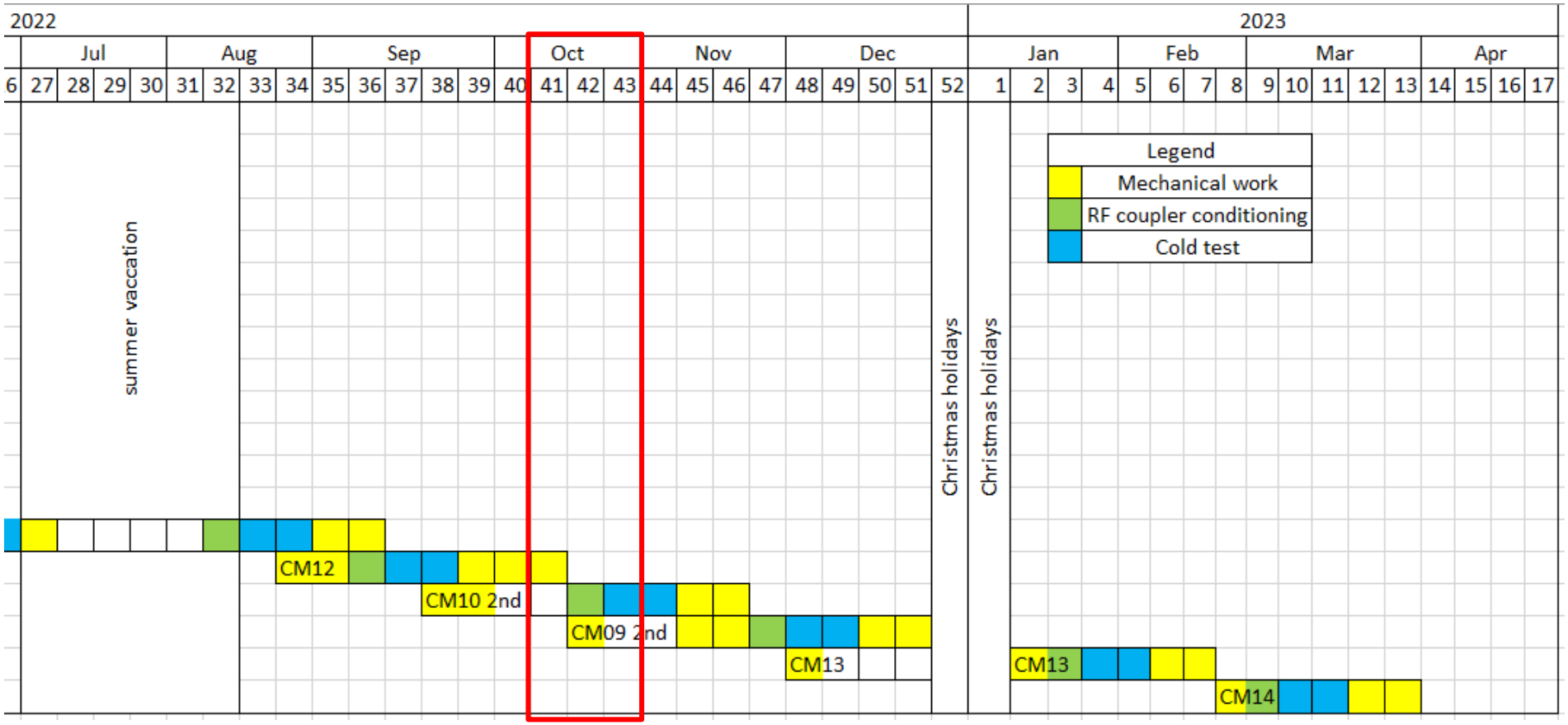
Cavities field modulation by DWT heater.

- CM07. Here one can see some correlation in CavOut but probably not in CavIn.
- Some other cavities were also checked but no good example was found.



TT120 TT220 Cav1-InPwr Cav2-InPwr Radiation

CM12, CM10, CM09 Planning



- CM12 arrived to ESS.
- CM10_2 connected. Beam vacuum is pumping. FPC conditioning will be start next week.
- CM09_2 will arrive Oct. 20th. Time will be specified later.