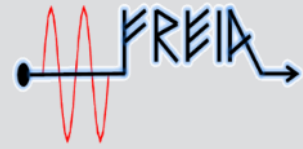
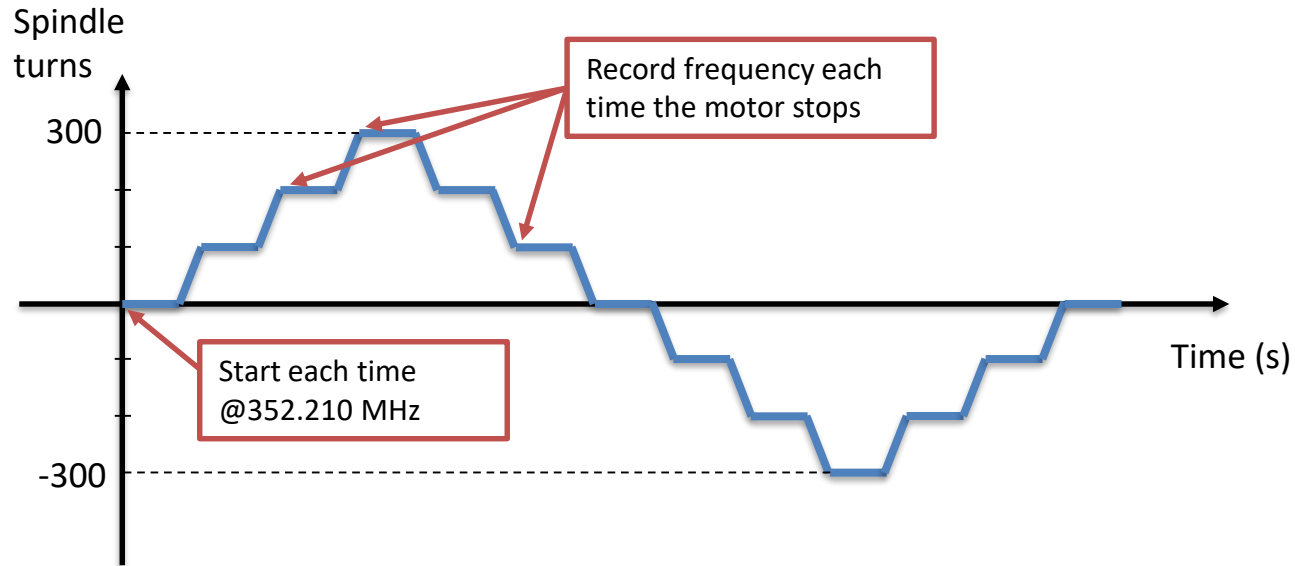


ESS spoke CM04
weekly meeting
20210211
Han Li



- CTS test
- CM thermal cycle
- CM leak test
- CM cool down
- CM conditioning
- Test plan



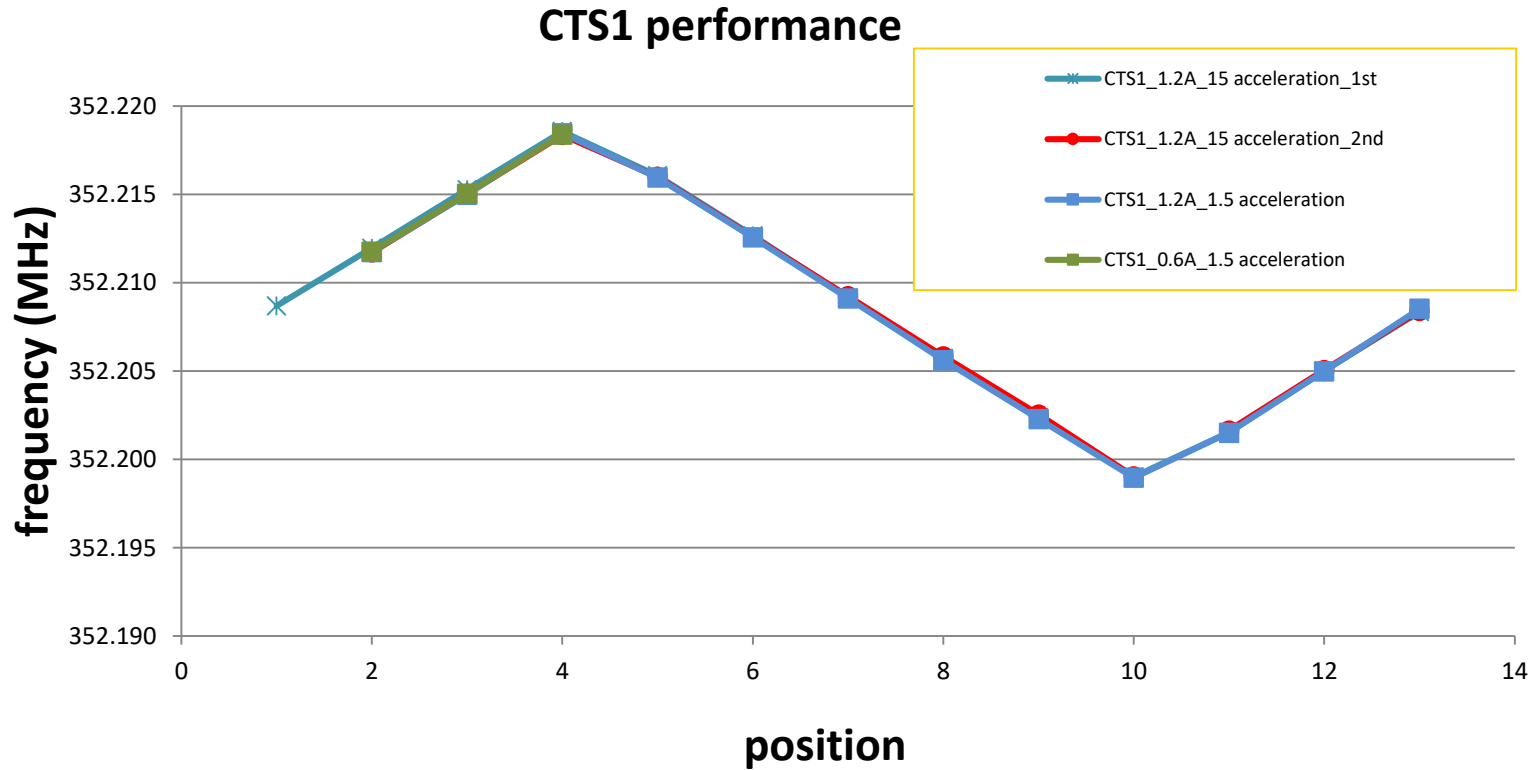
Test routine :

- Start
 - Adjust cavity frequency 352.210 MHz
 - Do 3 times +100 spindle turns (=motor shaft turns), record frequency each time the motor stops
- - Repeat with 6 times -100 spindle turns
- Repeat with 3 times +100 spindle turns

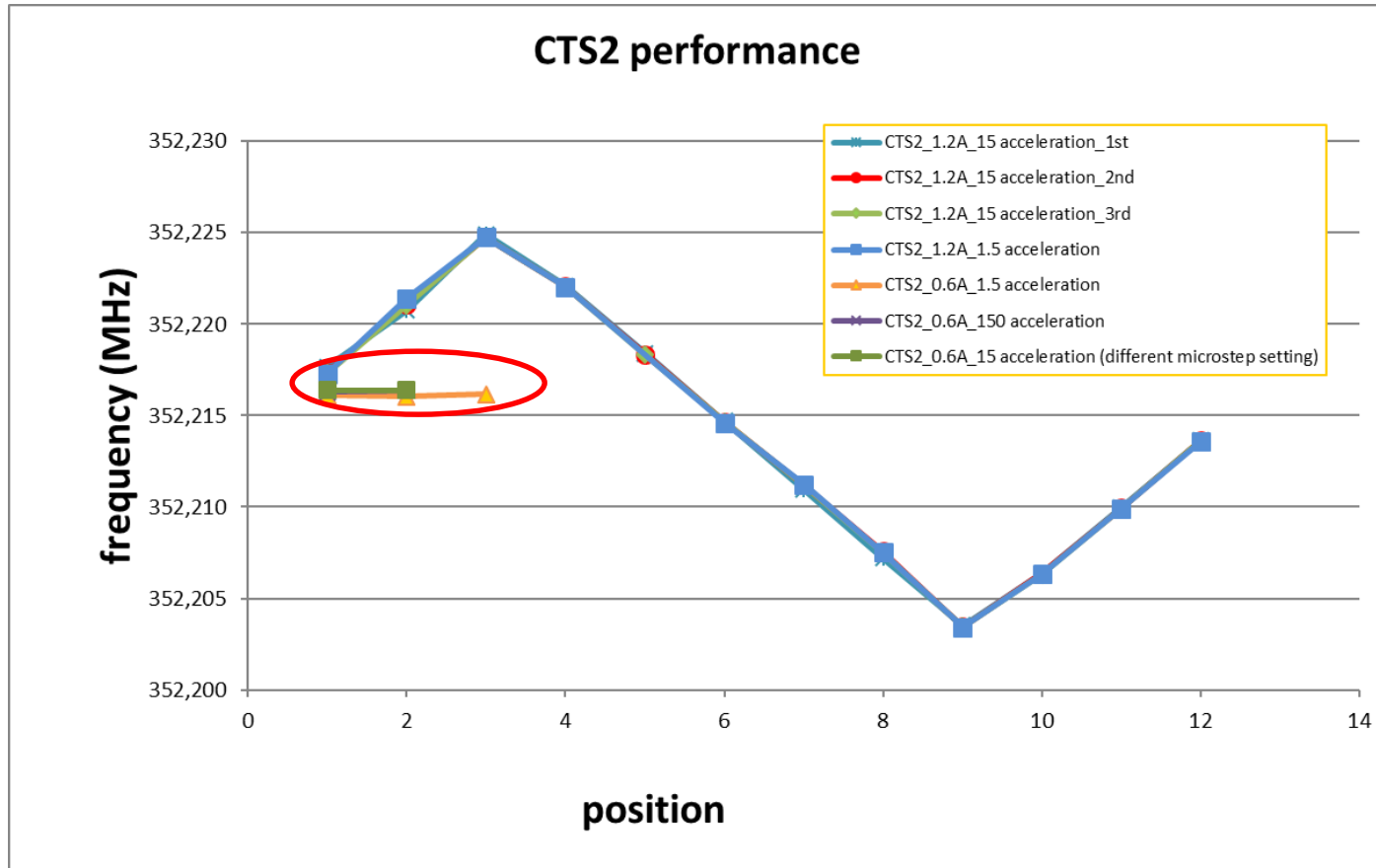
End

Test run:

- 1.2 A, acceleration 15
- 0.6 A, No acceleration (acceleration 1.5)
- 0.6 A, different acceleration, microstep setting



➤ Conclusion: CTS1 works well with both 1.2A or 0.6A configuration



- Conclusion: CTS2 works well only with 1.2A configuration
- Driving current is the key factor instead of acceleration, microstep setting 1.2A driving current will be the setting for CTS for CM04

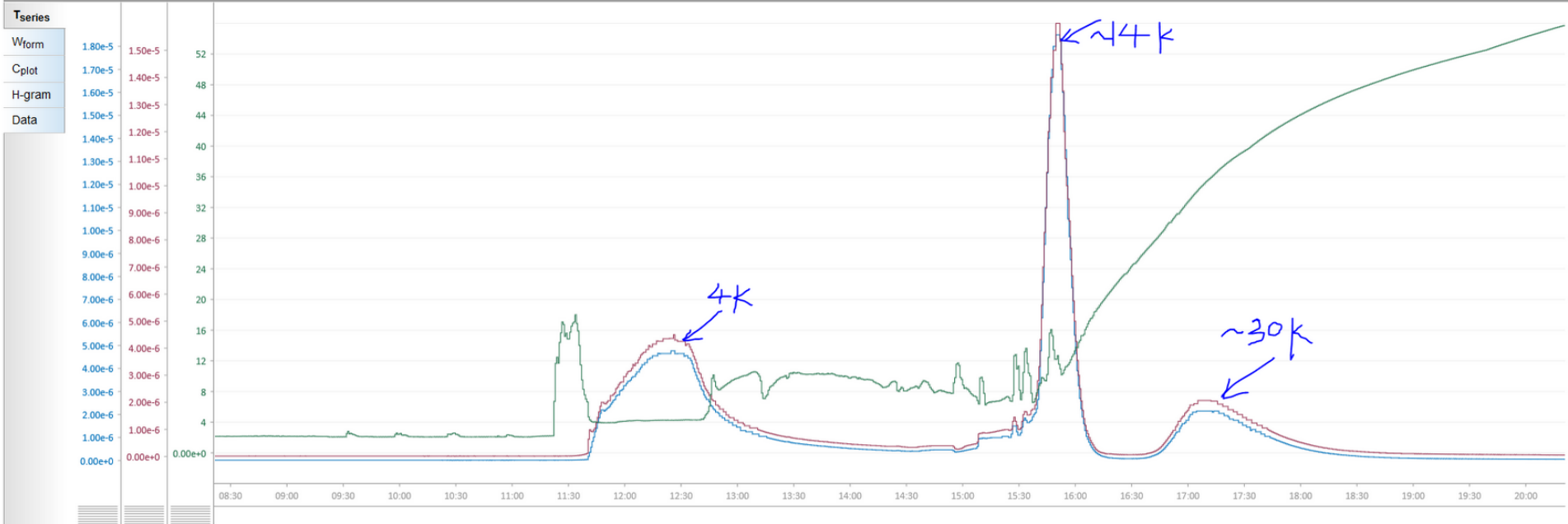


Thermal cycle



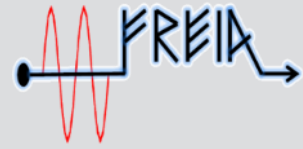
Del	Plot	Name	DBRType	Units	Processing	Scale	Time (local)	Value	Notes
<input type="checkbox"/>	<input checked="" type="checkbox"/>	CM-Vac:PT10:sRdV	DBR_SCALAR_DOUBLE			linear	2021-02-08 18:31:21	1.85e-7	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	CM-Vac:PT20:sRdV	DBR_SCALAR_DOUBLE			linear	2021-02-08 18:31:21	1.85e-7	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	CM-CM:TT06:sRdV	DBR_SCALAR_DOUBLE	K		linear	2021-02-08 18:31:21	47.56080170878171	

WINDOW SIZE: 1 year 1 month 2 w 1 w 2.5 d 1 d 18 h 12 h 8 h 4 h 2 h 1 h 30 m 10 m 5 m 1 m 30 s END: 2021-02-08 20 :20 :59 NOW < >



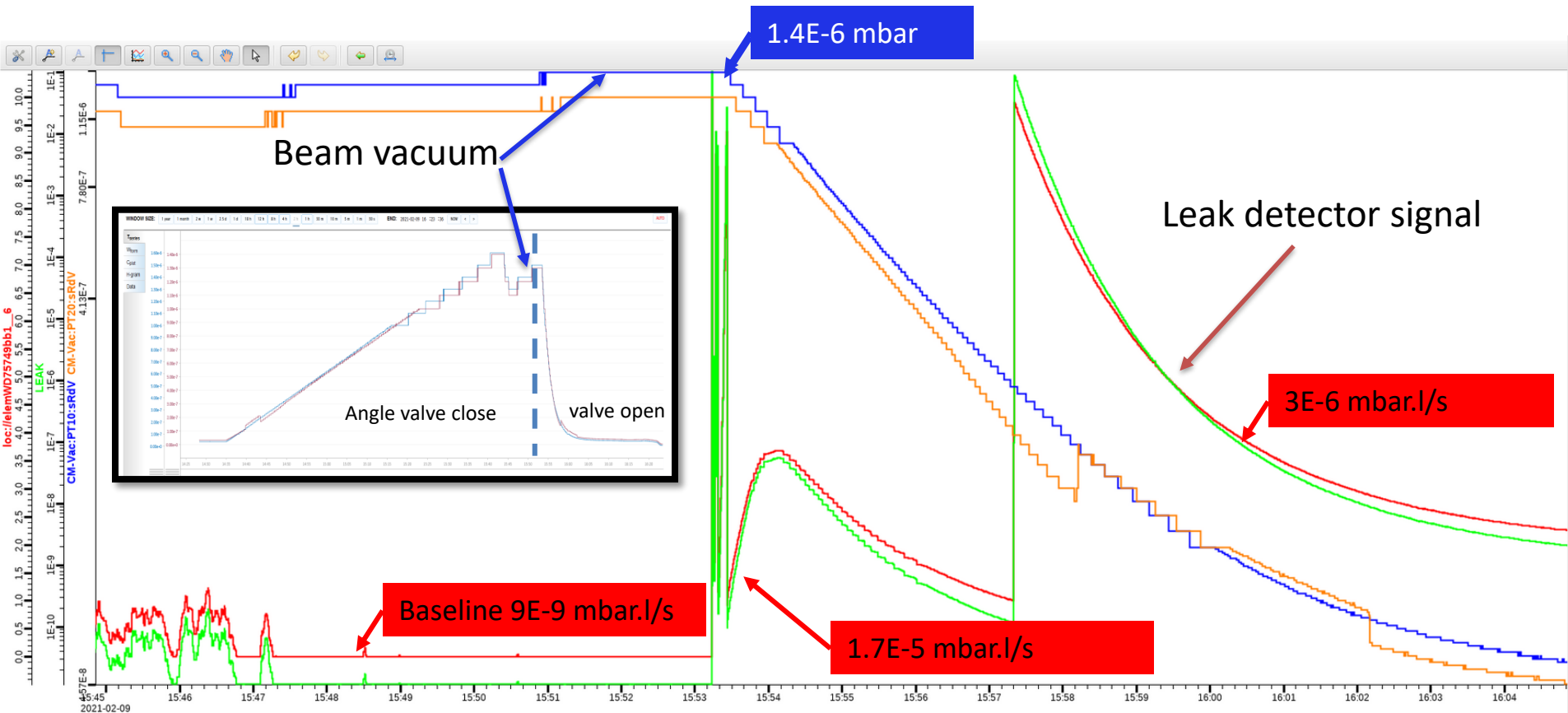
Temperature	4K	~10K	~30K
outgassing	5e-6 mbar	2e-5 mbar	2e-6 mbar
suspecting gas component	Hydrogen	Neon	Nitrogen? carbon monoxide? oxygen?

Leak test at 60 K

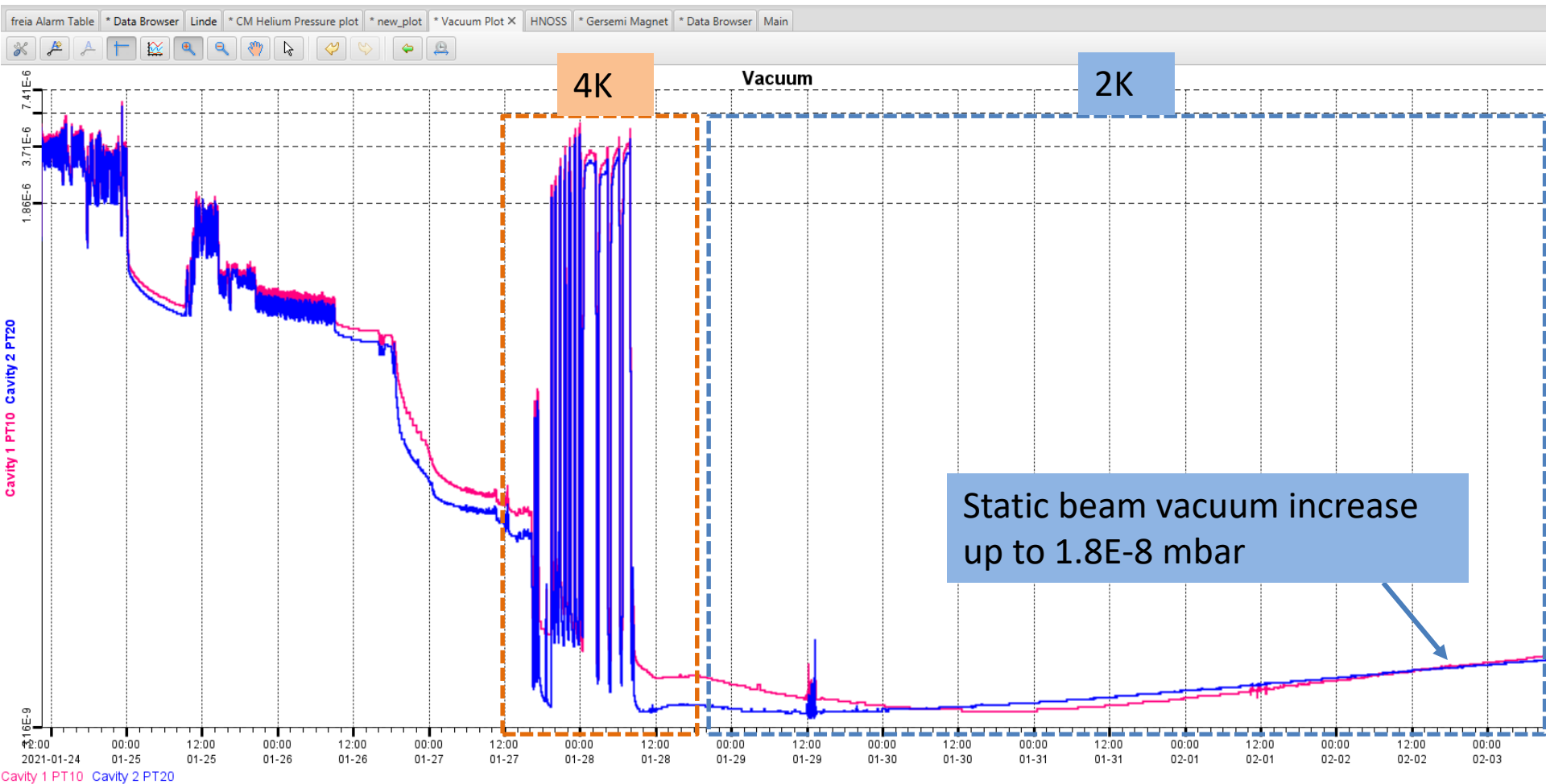
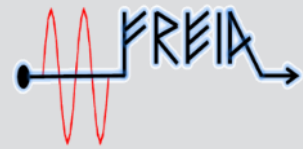


- Close the angle valve
- Connect a leak detector between TP and primary pump
- Leak test for the piping
- Calibrate the leak detector
- Prepare data acquisition of the leak detector through the control system

What does it indicate?!
Cold leak check has become
the first priority of CM04



Beam vacuum 1st run



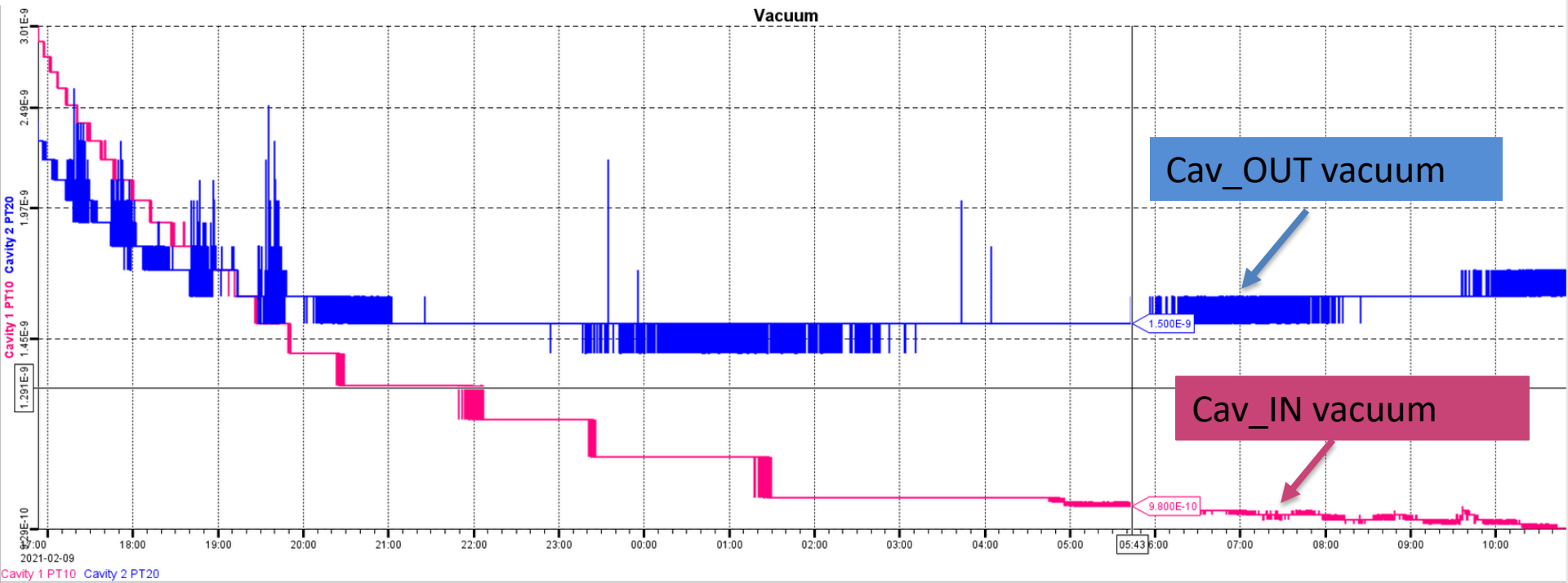
Static beam vacuum increase up to 1.8E-8 mbar

Properties X

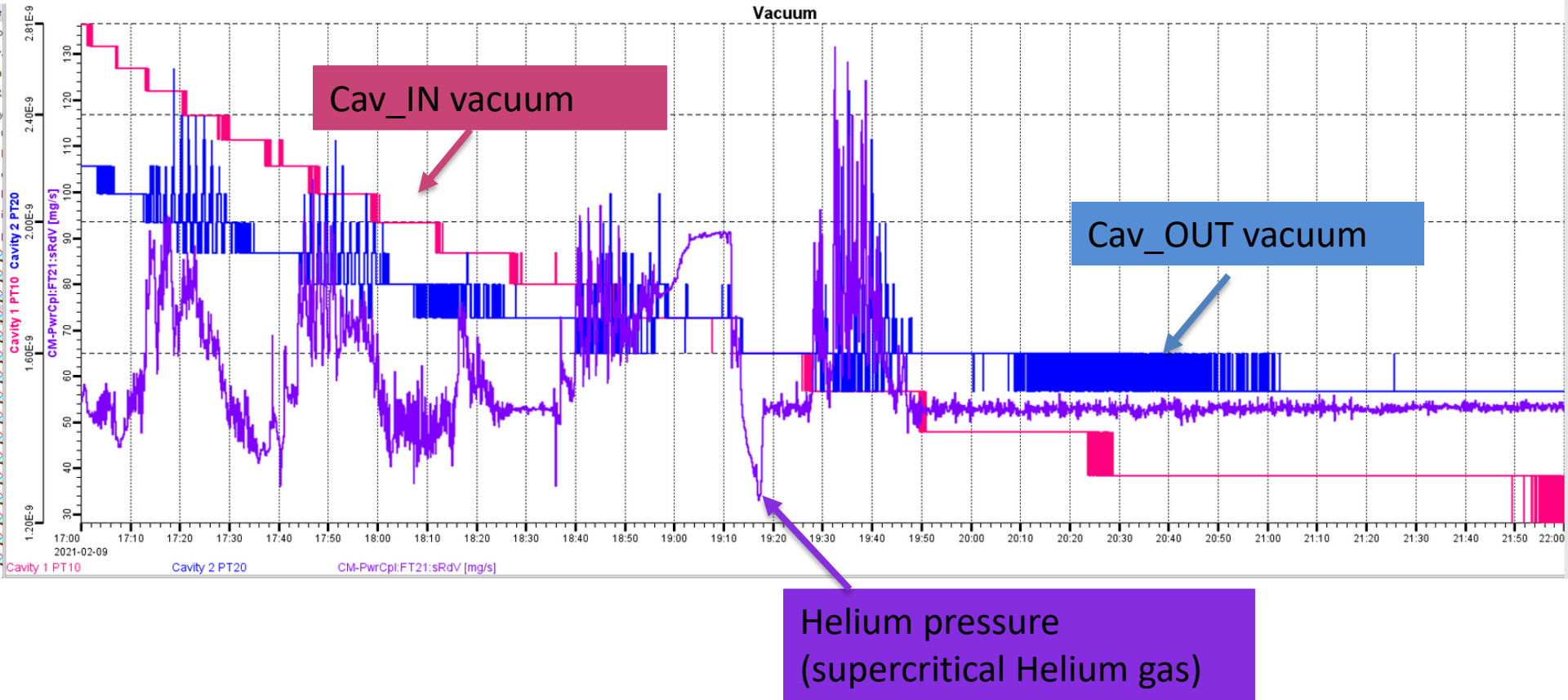
Traces Time Axis Value Axes Misc. Statistics

Show	Item (PV, Formula)	Display Name	Color	Cursor Value	Scan Period	Buffer Size	Axis	Trace Type	Width	Style	Point	Size	Request	Index
<input type="checkbox"/>	CM-Vac:PT71:sRdV	CM PT71	■	-	0.0	5000	mbar	Single	2	Solid	None	2	<input checked="" type="checkbox"/> Optimiz...	0
<input type="checkbox"/>	CM-Vac:PT73:sRdV	CM PT73	■	-	0.0	5000	mbar	Single	2	Solid	None	2	<input checked="" type="checkbox"/> Optimiz...	0
<input type="checkbox"/>	CM-Vac:PT77:sRdV	CM PT77	■	-	0.0	5000	mbar	Single	2	Solid	None	2	<input checked="" type="checkbox"/> Optimiz...	0

Cooldown to 4 K, no strange outgassing was observed at second run



➤ Suspected correlation between CAV_OUT vacuum and Helium pressure





Preliminary time plan



Test item	time	comment
Arrival, unpacking, initial inspection	11 th -12 th Jan.	
CM installation	13 th -15 th Jan.	
CM alignment measurement	18 th -21 th Jan.	
FPC warm conditioning	22 th -25 th Jan.	
Insulation vacuum		CM alignment measurement
CM cooldown to 4 K	27 th Jan.	
CM cooldown to 2 K	28 th Jan.	
FPC cold conditioning	29 th Jan.	Simultaneously
CTS test	1 st -2 nd Feb.	CTS measurement
Cavity conditioning (on resonance) Heat load/Q measurement	3 rd -4 th Feb.	Open loop
CTS test (2 nd run)	5 th Feb..	
Thermal cycle	8 th Feb.	
CM cooldown to 4 K	9 th Feb.	
CM cooldown to 2 K	10 th Feb.	
Cavity conditioning Heat load/Q measurement	11 th -12 th Feb.	
Warm up	13 th -16 th Feb.	
Disconnect, packing, shipment	17 th -23 th Feb.	