UPPSALA
UNIVERSITET

ESS weekly meeting (W23)

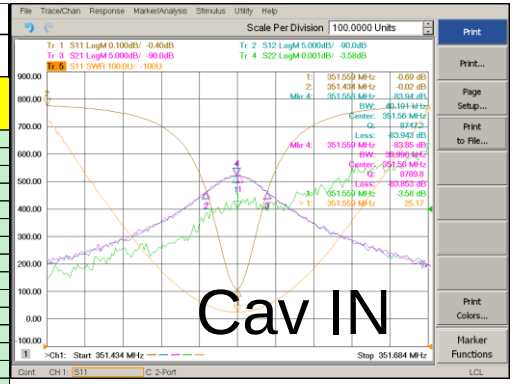
A. Miyazaki et al.

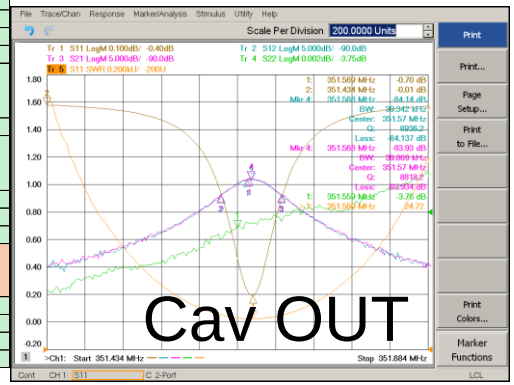
W23 progress

week	date			CM under test	next CM	next next CM
				CM03	**CM01**	**CM04**
22	THU	03-jun	m	Heat load measurements	**arrive at UU**	
			a		thermalization at UU	
	FRI	04-jun	m	LFD and decay curve		
			a	CTS1 disengage		
	SAT	05-jun		thermalize CTS1		
	SUN	06-jun				
23	MON	07-jun	m	investigate CTS1 stepper	open the box	prepration at Orsay
			a	heat load measurement	reception tests (LEMO)	
	TUE	08-jun	m	prepare motor driver	reception tests (VNA)	
			a	CTS1 test with new driver		
	WED	09-jun	m	CTS1 disengage	put on the frame	
			a	start warming up		
	THU	10-jun	m	warming up		
			a			
	FRI	11-jun	m			
			a			
	SAT	12-jun				
	SUN	13-jun				

CM01 reception test: no problem

Cables verification CM01 at UU				v1
Socket assembly			Verified by:	
Socket name	*PID name*	*Serial number*	*Electrical value (Ω) (before shipping)*	*C / NC*
LC01	TT04	X132594	*67,75*	C
	TT05	X132597	*91,85*	C
	TT06	X133036	*58*	C
	TT07	X133037	*52,45*	C
	TT08	X133045	*53,45*	C
	TT09	X133075	*52,5*	C
	TT10	PT01	*107*	C
	TT11	PT02	*107,35*	C
	TT12	X133076	*57,6*	C
	TT20	PT03	*107,3*	C
	TT21	PT04	*106,85*	C
	TT22	X133077	*51,95*	C
PT Coupler	TT120	PTC05	108,3	C
	TT220	PTC16	108,3	C
LC02	EH01	EH01	*84,1*	C
	EH02	EH02	*84,5*	C
	EH10	EH03	*83*	C
	EH20	EH04	*82,7*	C
LC03	SM10		2.4 / 2.3	C
	LS10		1,9	C
	SM20		2.3 / 2.4	C
	LS20		1,9	C
LC07	LT01	7319	365,75	C
	LT02	7320	366,75	C
Socket name	*PID name*	*Serial number*	*Electrical value (µF) (before shipment)*	*C / NC*
LC04	PZ10		13,81	C
	PZ11		13,98	C
	PZ20		13,94	C
	PZ21		14,07	C





VACUUM GAUGE OF CAVITY STRING AT UU				
Date	Time	Pfeiffer TPG2020 (mbar)	Limit	Name of controller
2021-06-07	13:48	2,80E-03	1,00E-01	Carl Svanberg
2021-06-08	09:50	2,80E-03	1,00E-01	Carl Svanberg
2021-06-09	10:45	2,90E-03	1,00E-01	Carl Svanberg

CM01

Content | Summary | Edit | Relations | History | Archive

Uploaded to Atrium

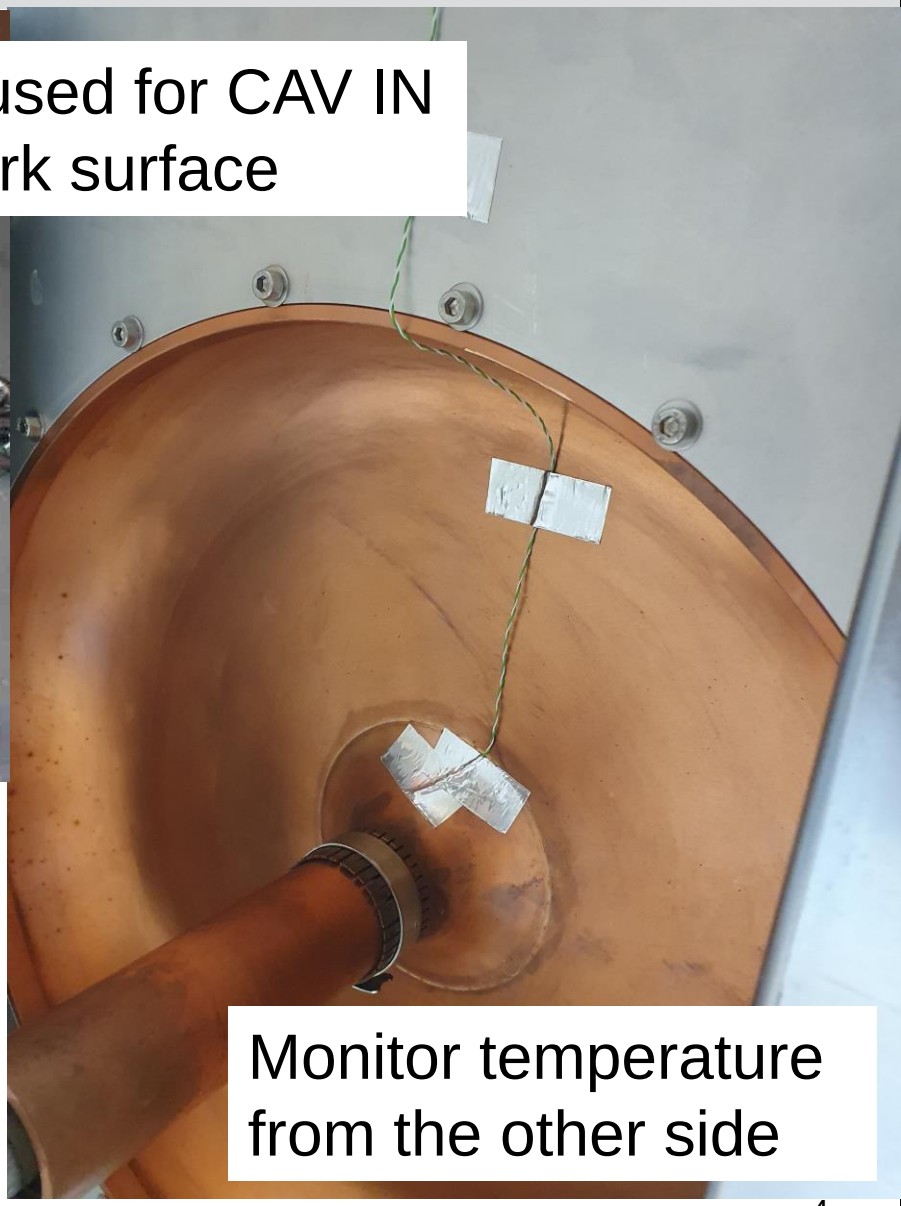
New | Filter | ...

Type	Title	Atrium ID	Created	Creator	Modified	Last contributor	Vrs	State
	CM01 reception tests at UU	ATRIUM-519387	Jun 9, 2021	Akira MIYAZAKI	Jun 9, 2021	Akira MIYAZAKI	0.1	Project
	File sent with Cryomdule CM01 - Fichier envoyé avec le Cryomodule à UU	ATRIUM-433624	Oct 20, 2020	Jean NSIMAKETO	Jun 3, 2021	Jean NSIMAKETO	0.7	Project
	Shipping bill CM01 & accessories		May 19, 2021	Sylvain BRAULT	May 19, 2021	Sylvain BRAULT		
	Cernox Calil							

From next time, the file is to be uploaded to the folder Fichier envoye

Thermocouple to monitor doorknob

The doorknob used for CAV IN CM05 has a dark surface



Monitor temperature from the other side

Anomaly in power or field for CM05 CAV IN might be due to heating?

Eacc_pk_Pt	Eacc_pk_Pf
5,98785	8,49807

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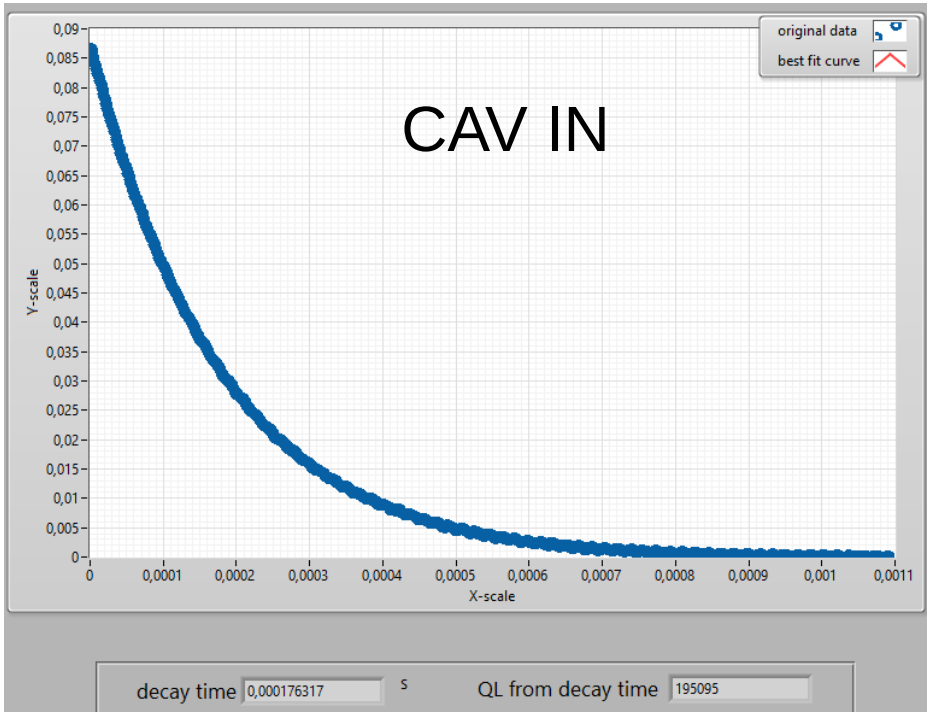
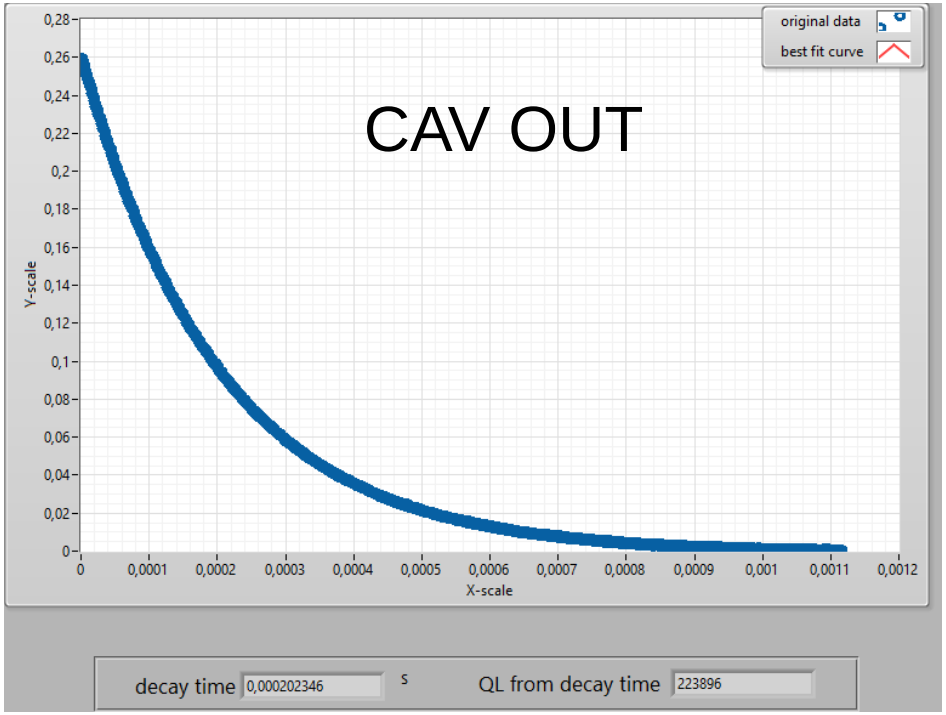
			a			
	SAT	12-jun				
	SUN	13-jun				

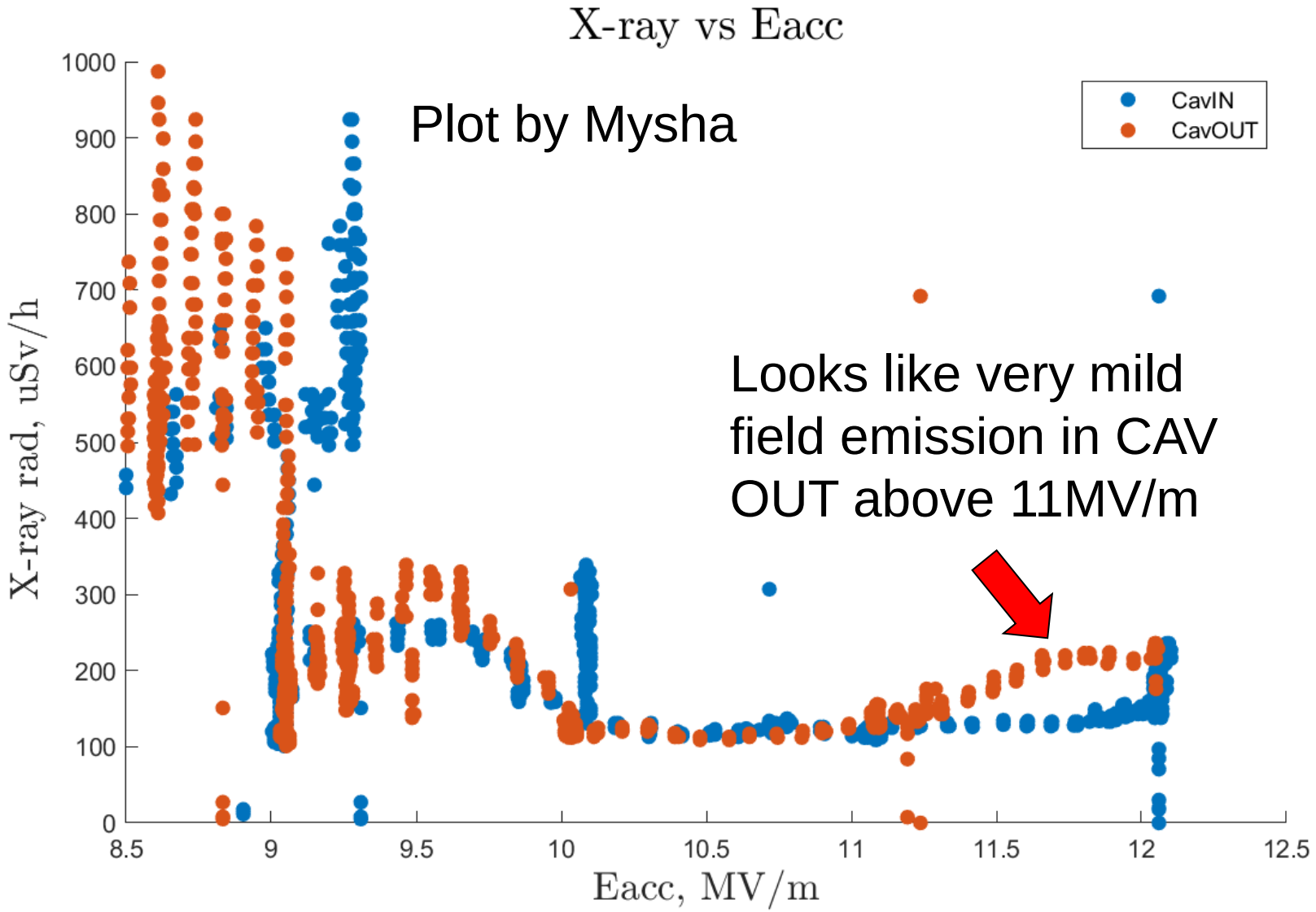
Field decay measurement (at field below MP bands)



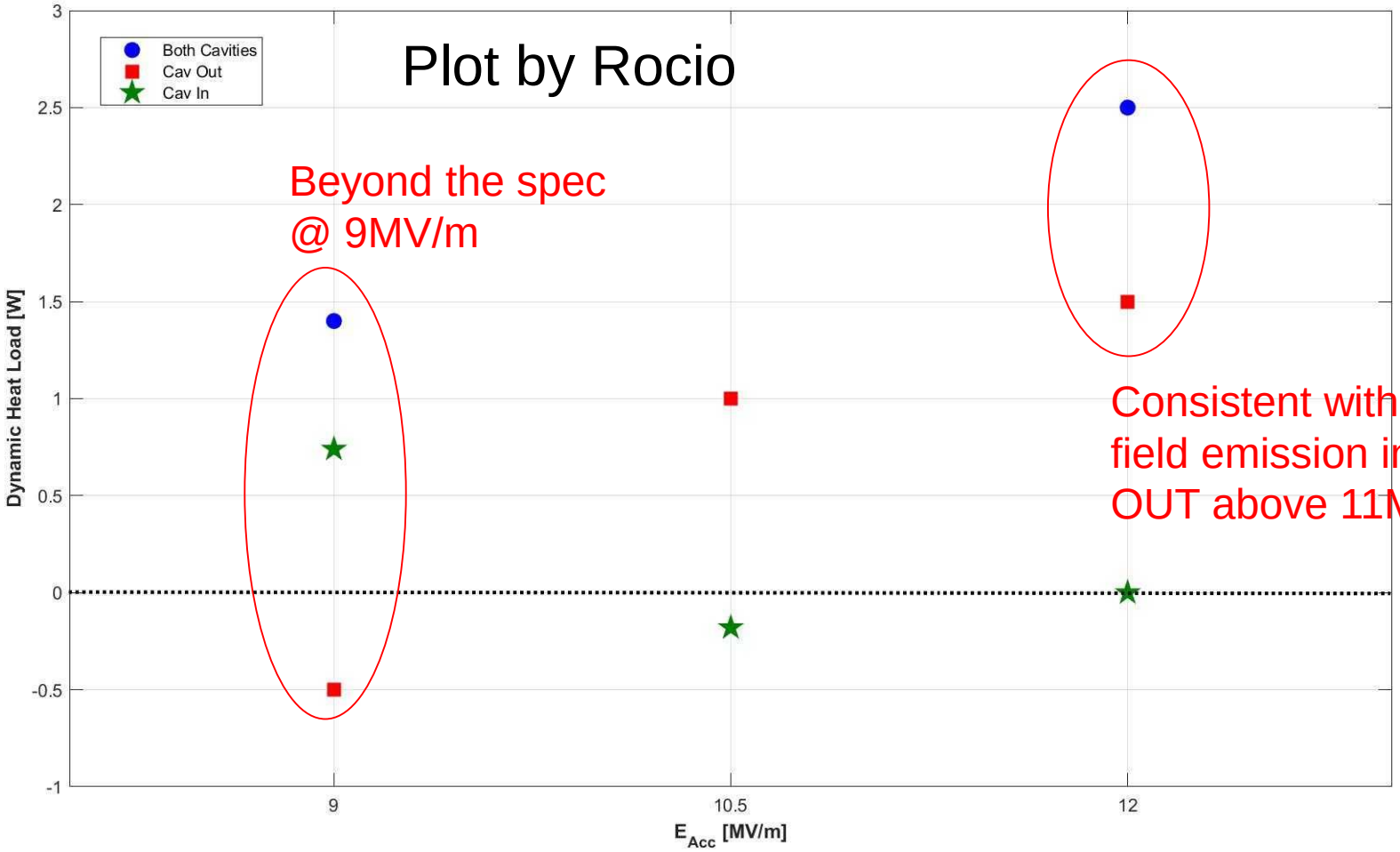


	Q_L (frequency domain)	Q_L (time domain)
CAV IN	1.91e5	1.95e5
CAV OUT	1.91e5	2.24e5

Mild field emission in CAV OUT



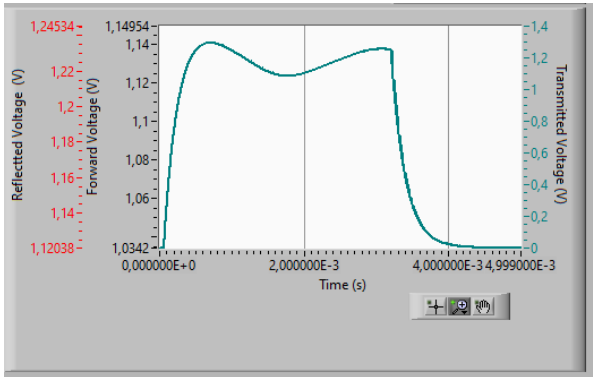
Heat load measurement updated

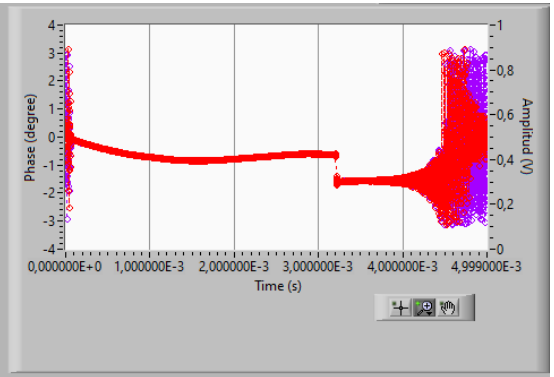


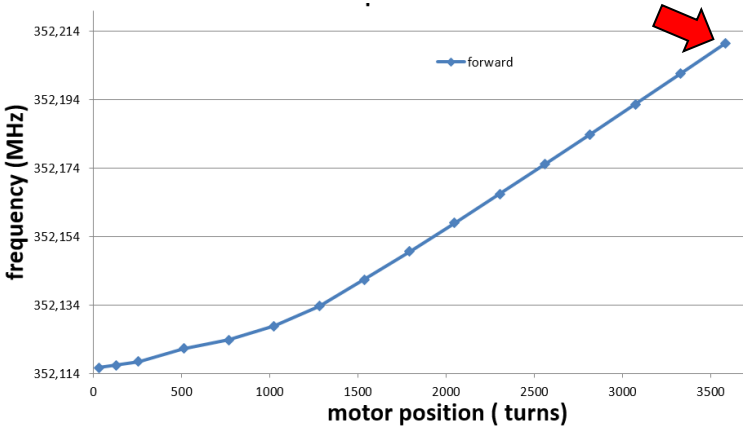
We plan to improve the measurement accuracy in coming tests.

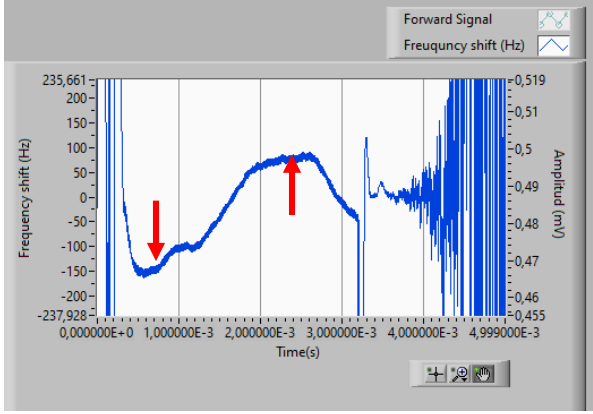
(For example, calibration and RF measurement within on pressure rise cycle)

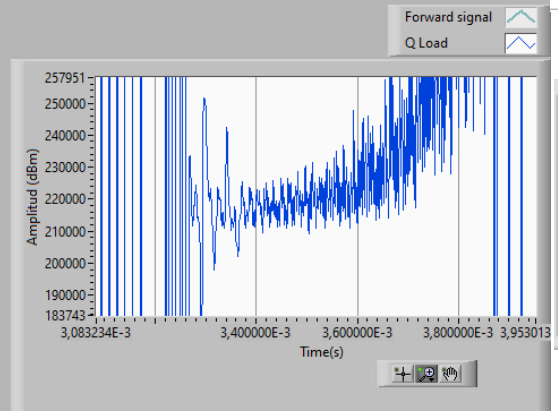
Lorentz force detuning at 9MV/m CAV OUT

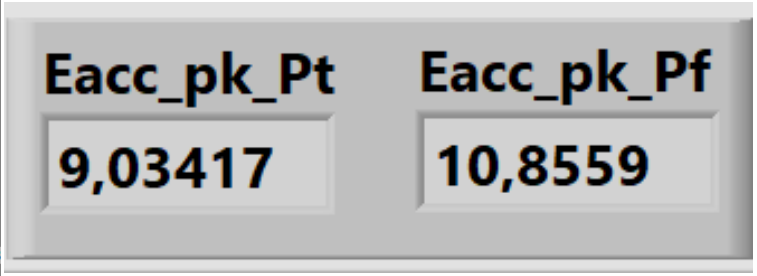








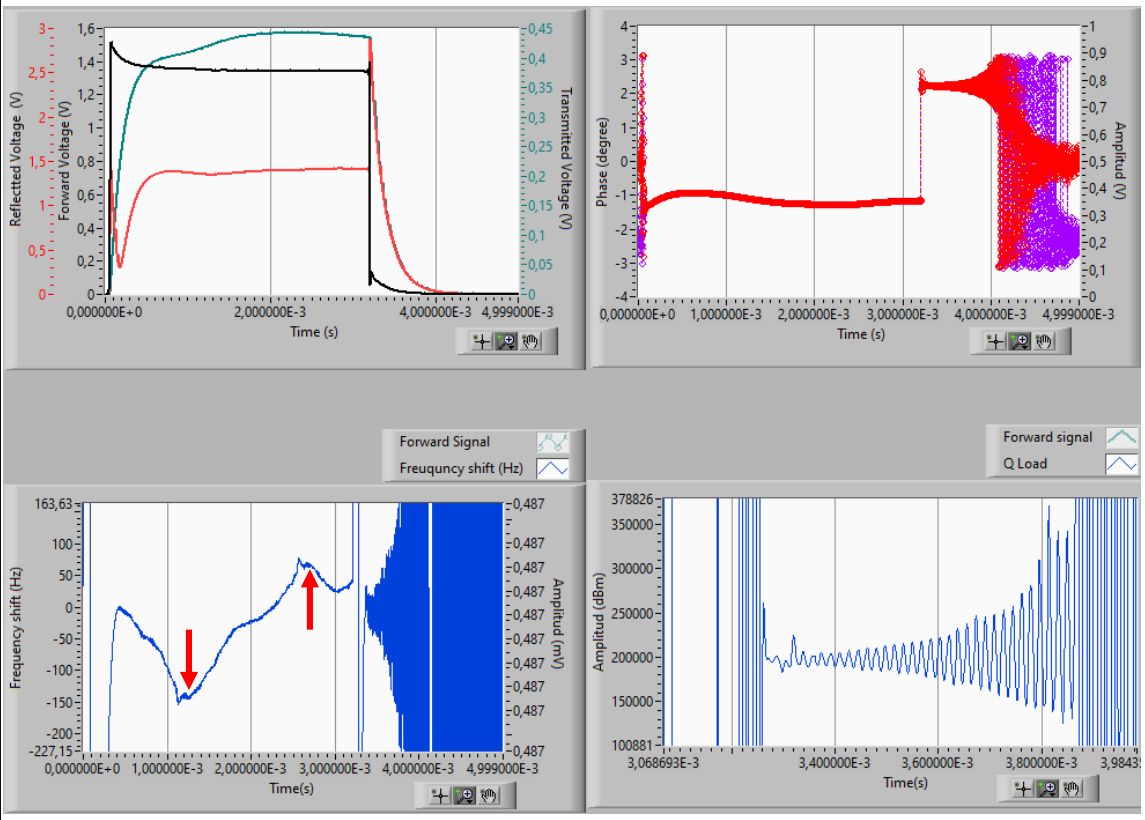


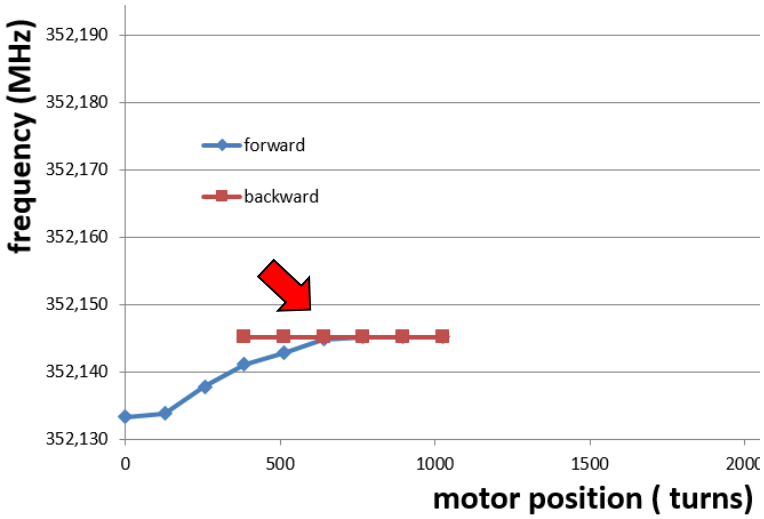


-150 Hz / + 100 Hz → 250 Hz @ 9MV/m

Relevant position of CTS2 at 352.21 MHz

Lorentz force detuning at 9MV/m CAV IN



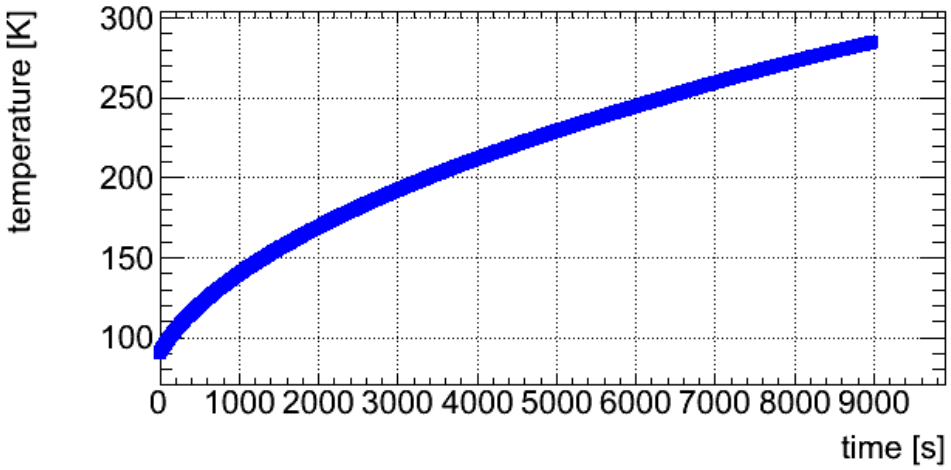


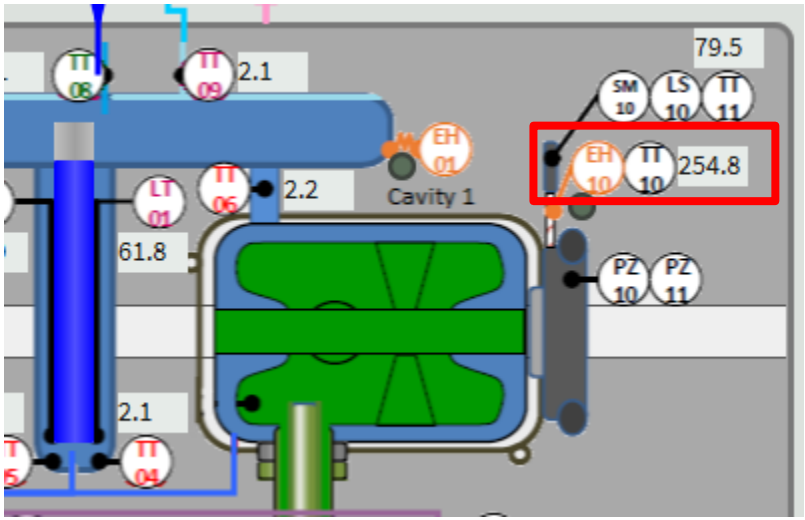
Eacc_pk_Pt	Eacc_pk_Pf
9,16034	10,6263

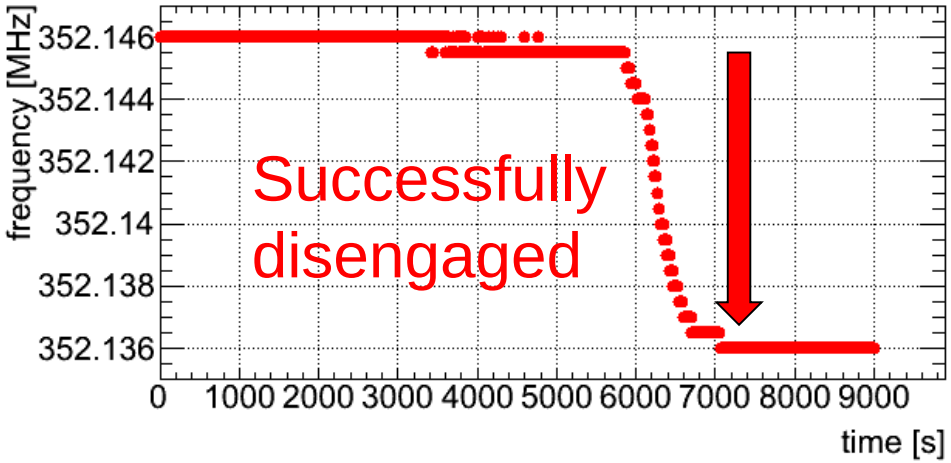
-150 Hz / + 75 Hz → 225 Hz @ 9MV/m

Irrelevant position of CTS1 at 352.145 MHz

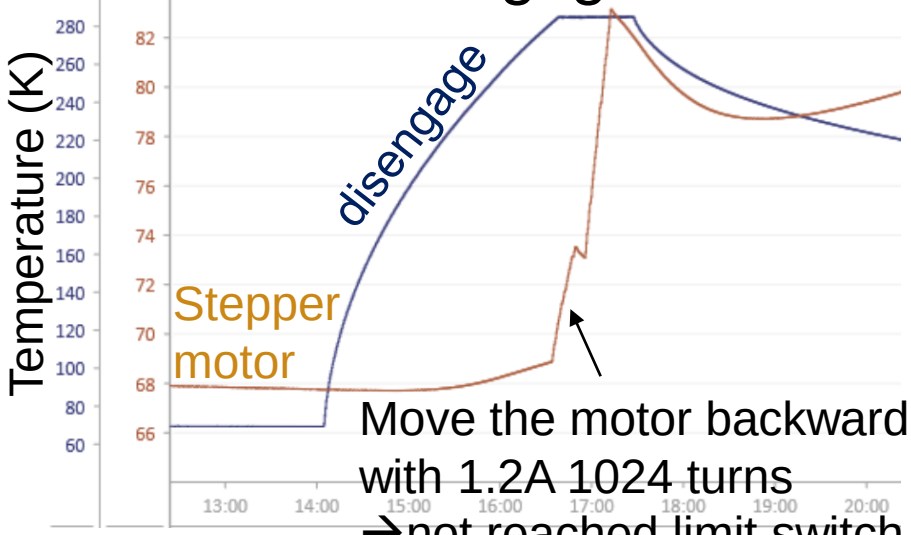
CTS1 disengage







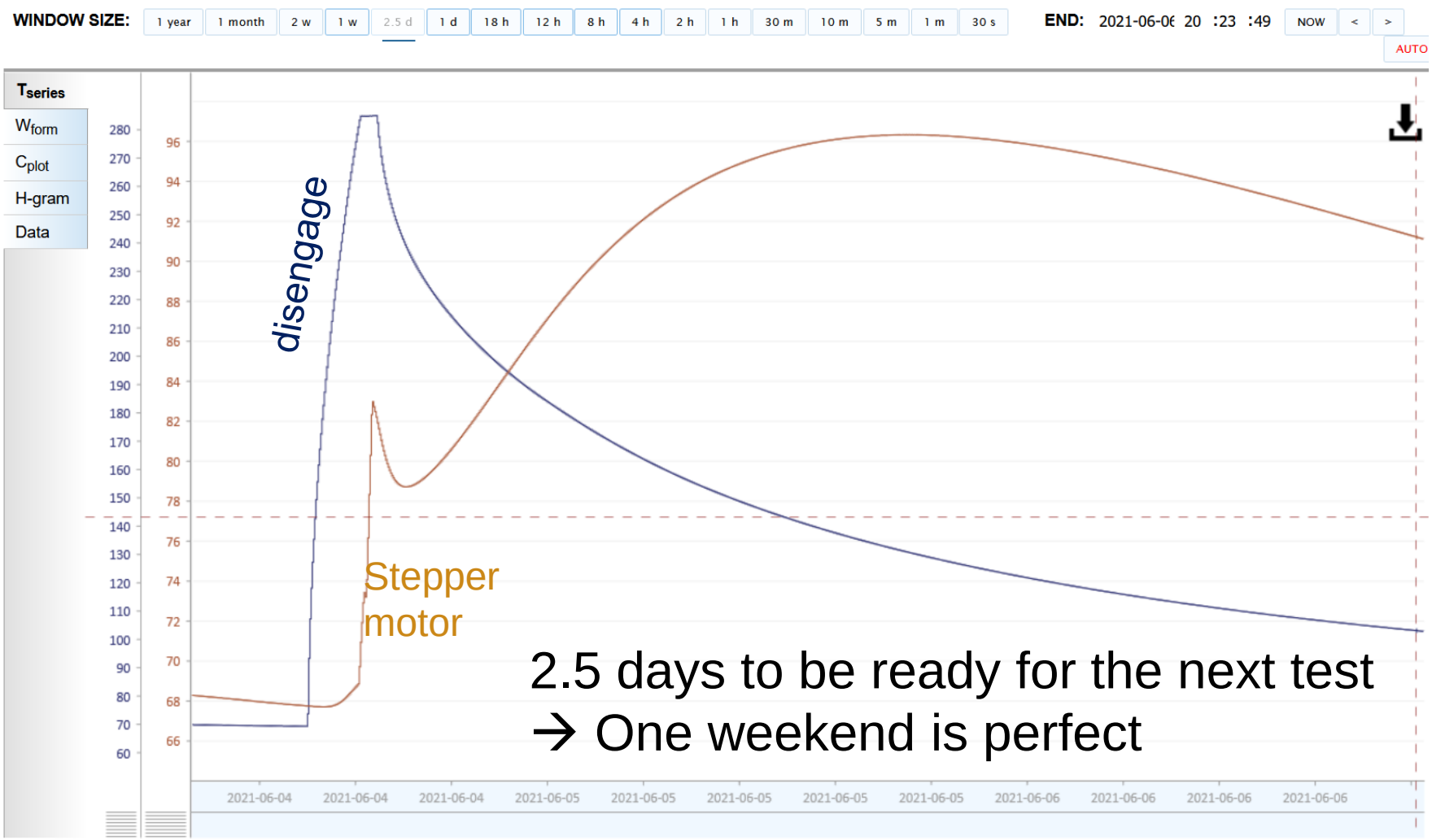
After disengagement…



Move the motor backward with 1.2A 1024 turns
→not reached limit switch

Cooling down CTS1 over the weekend

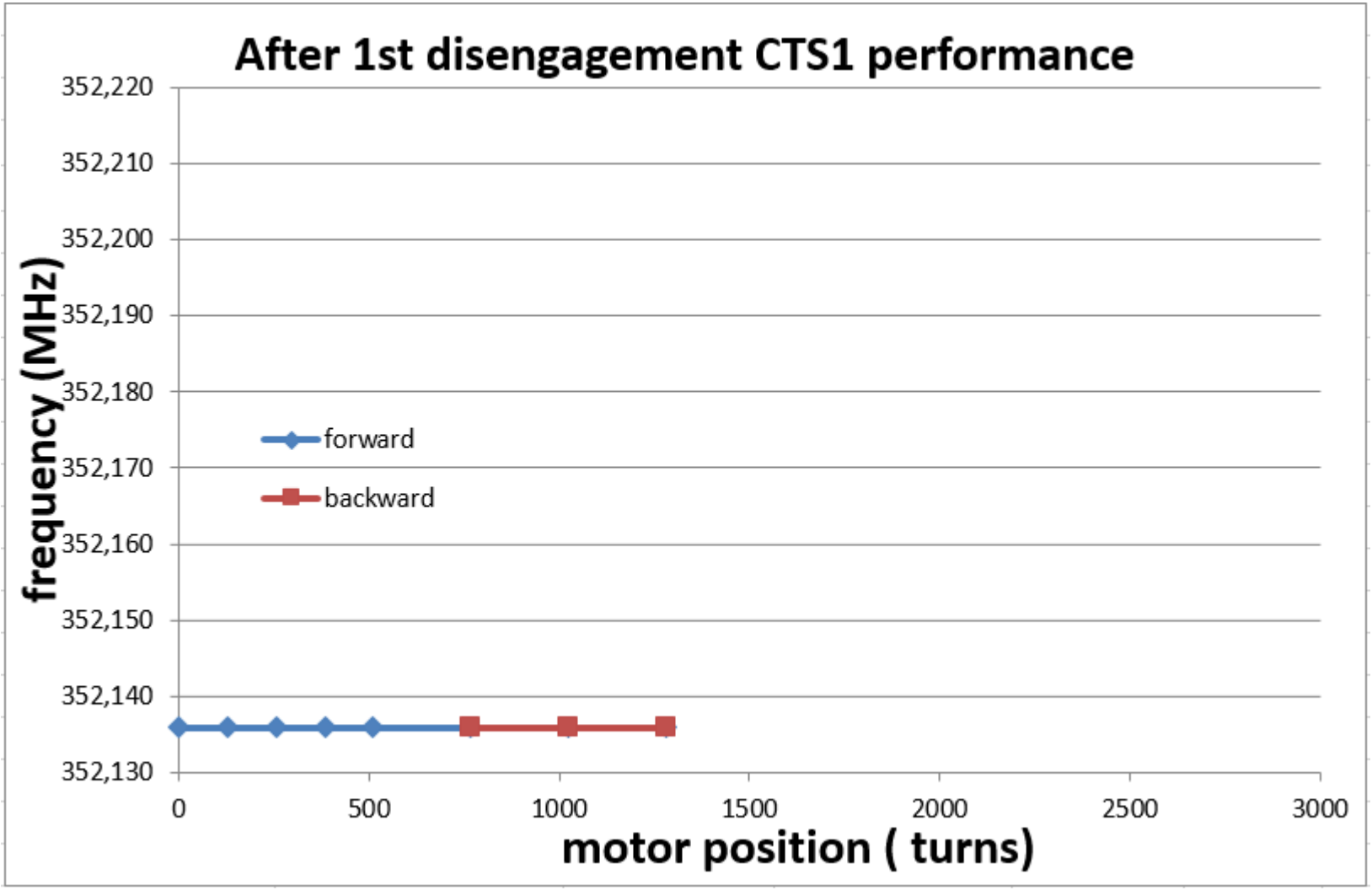
Del	Plot	Name	DBRType	Units	Processing	Scale	Time (local)	Value	Notes
x	☑	CM-CTS:TT10:sRdV	DBR_SCALAR_DOUBLE	K		linear	2021-06-06 19:59:59	103.10541883577851	
x	☑	CM-CTS:TT11:sRdV	DBR_SCALAR_DOUBLE	K		linear	2021-06-06 19:59:59	91.21682554600793	



2.5 days to be ready for the next test

→ One weekend is perfect

2nd test of CTS1 after disengagement

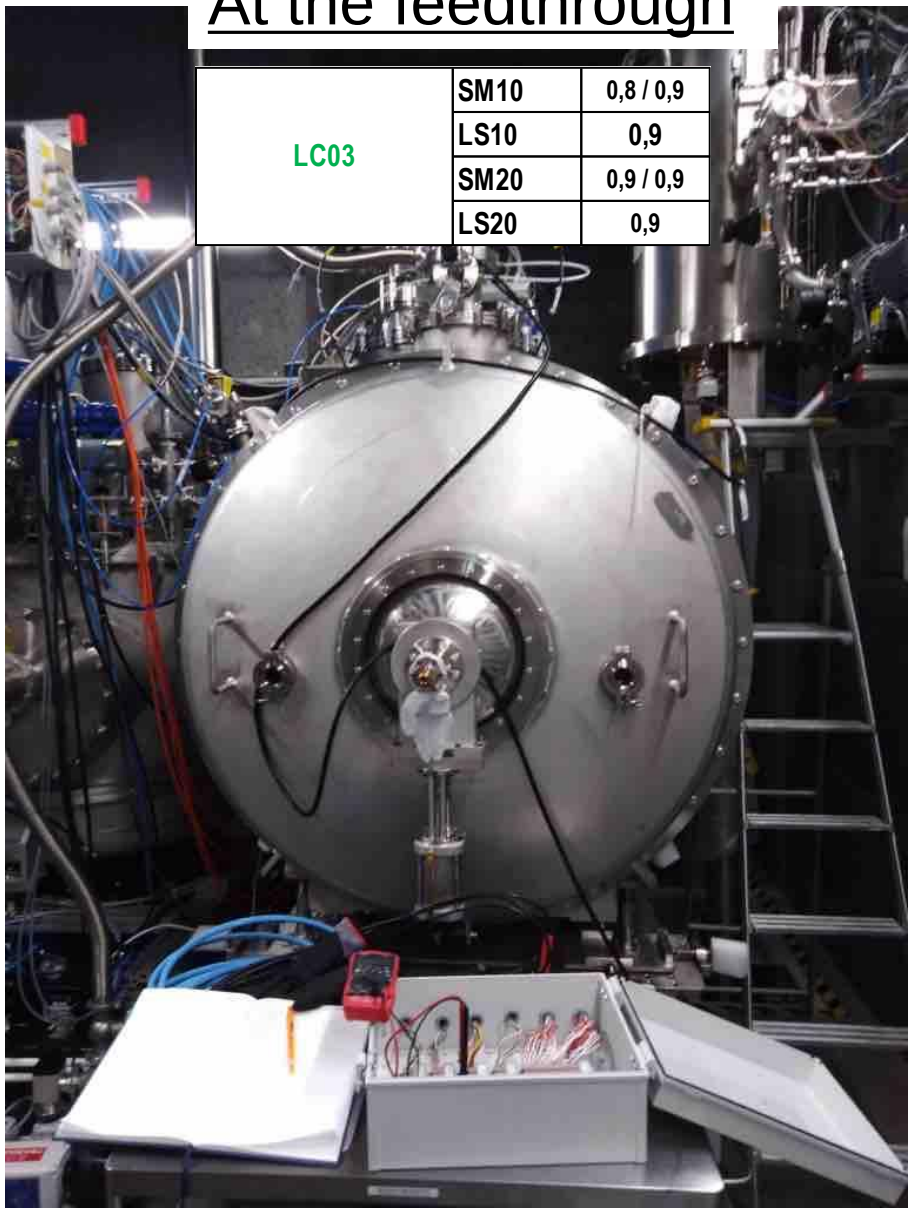


1.2A from the beginning → Did not move at all

Checked stepper motor's electrical connections

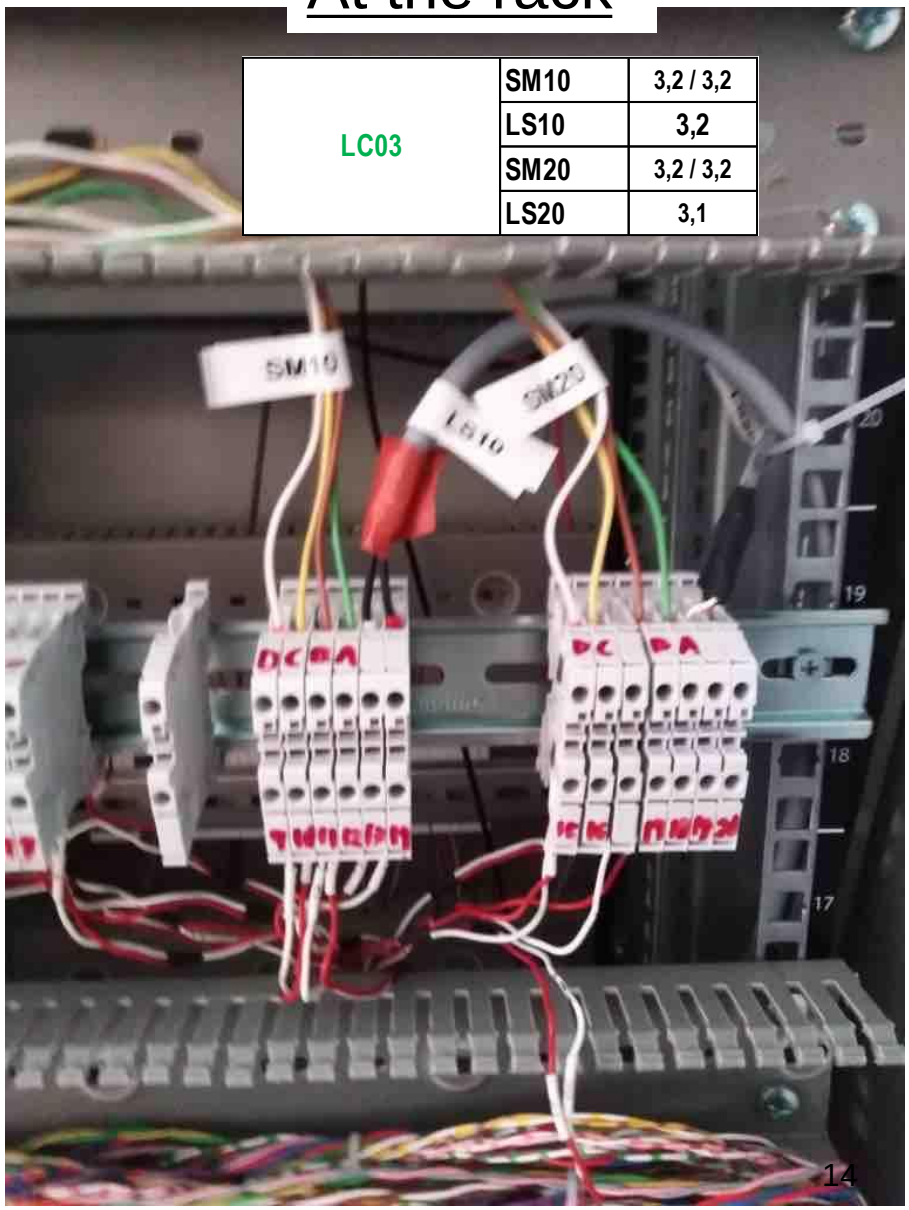
At the feedthrough

LC03	SM10	0,8 / 0,9
	LS10	0,9
	SM20	0,9 / 0,9
	LS20	0,9



At the rack

LC03	SM10	3,2 / 3,2
	LS10	3,2
	SM20	3,2 / 3,2
	LS20	3,1

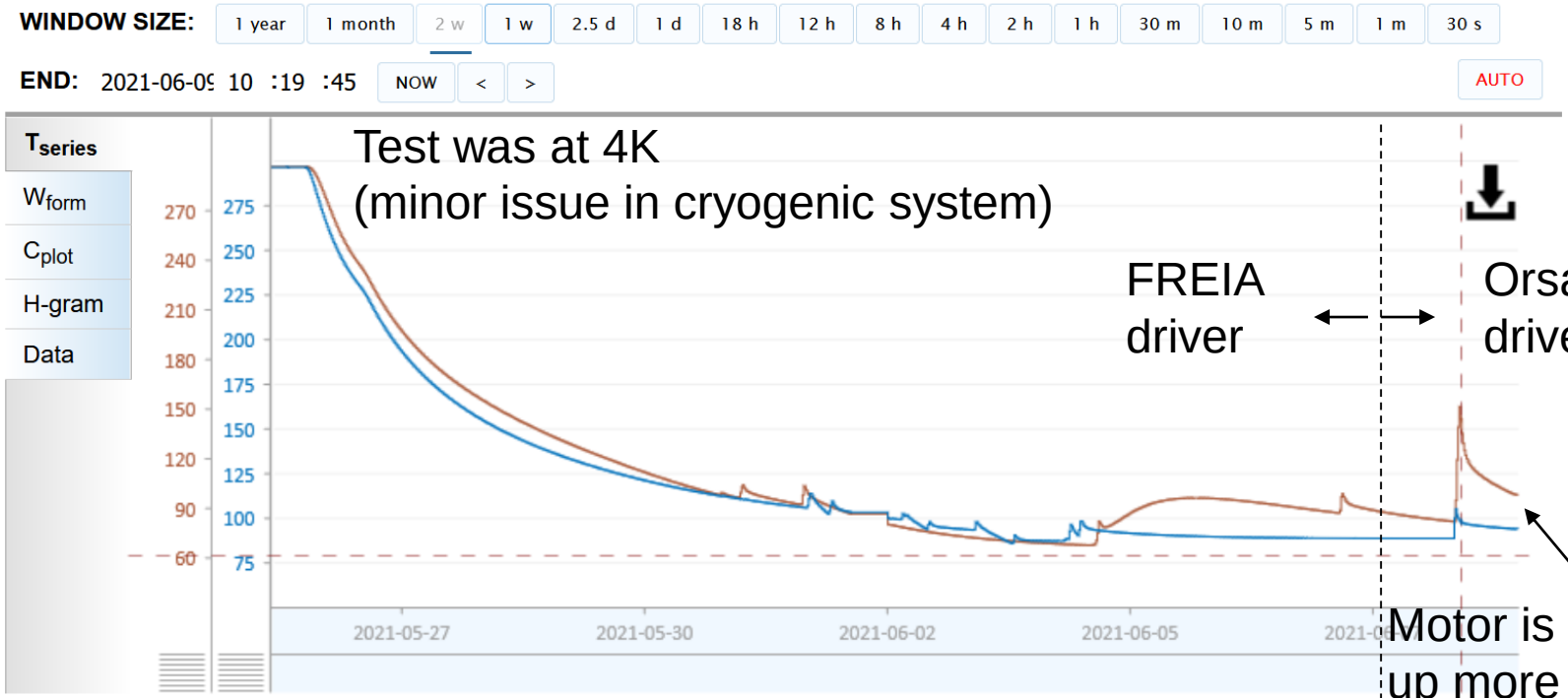


Another driver from Orsay

- This is the driver that was used to qualify the tuners at Orsay
- CTS1 was OK in the out-going test at Orsay

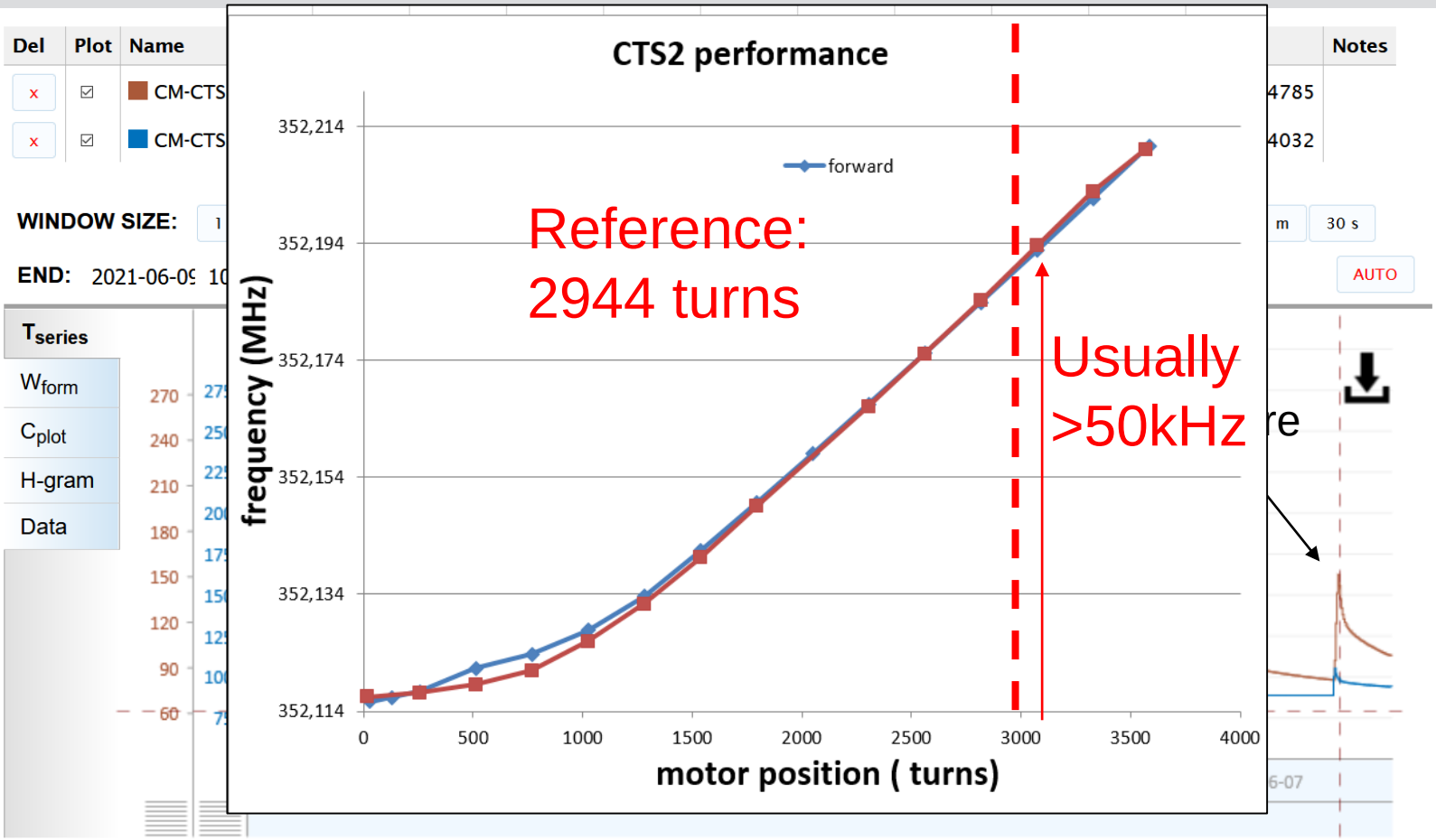
Results: new driver

Del	Plot	Name	DBRType	Units	Processing	Scale	Time (local)	Value	Notes
x	☑	CM-CTS:TT11:sRdV	DBR_SCALAR_DOUBLE	K		linear	2021-06-08 **18:42:13**	143.9725621864785	
x	☑	CM-CTS:TT21:sRdV	DBR_SCALAR_DOUBLE	K		linear	2021-06-08 **18:42:13**	98.127794514032	



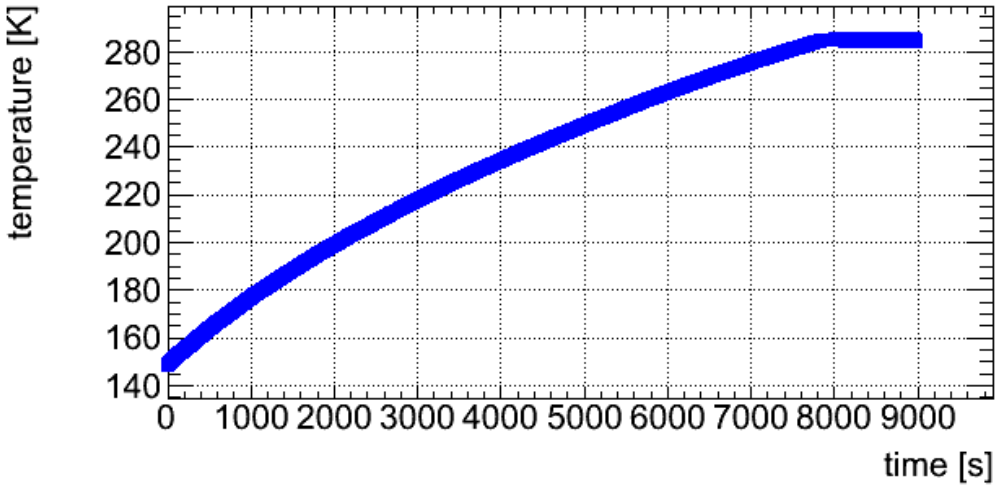
- CTS2 moved (reference)
- CTS1 did NOT move more than 2 kHz even if we sent 2944 turns (11.5 screw turns), 1.2A from the beginning

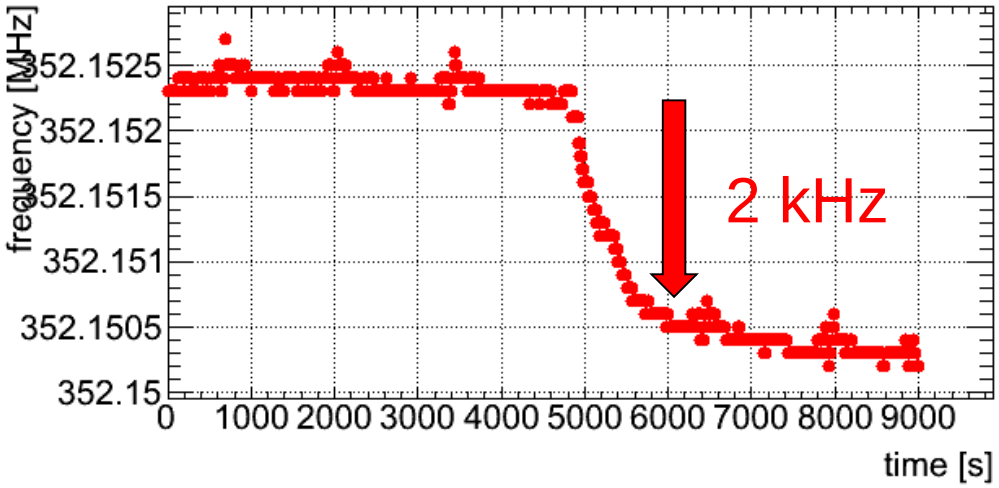
Results: monitored by cavity frequency



- CTS2 moved (reference)
- CTS1 did NOT move more than 2 kHz even if we sent 2944 turns (11.5 screw turns), 1.2A from the beginning

Disengage system again





We tried to move the stepper motor backward after disengagement

→ We could **NOT find the limit switch even at -5888 turns** (-23 turns) from the stuck position

Conclusion: CM03 CTS1

- The stepper motor seems not moving even though we release the possible mechanical stress from the cavity by using the disengage system
- The other driver from Orsay certainly sends more current than what we have now at Uppsala (→ feedback to ESS) but it still does not move CTS1

- We need to warm up the module and investigate inside the vacuum vessel
- Question: where to open the vessel?

Accessibility at the bunker

2.7 m to HNOSS from CAV OUT side

Accessibility at the bunker

Open the wall
→ >3m space from CAV IN

Open the roof (how many blocks?)
→ Crane access

W24 plan A and plan B

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	TUE	08-jun	m	prepare motor driver	reception tests (VNA)	
			a	CTS1 test with new driver		
	WED	09-jun	m	CTS1 disengage	put on the frame	
			a	start warming up		
	THU	10-jun	m			
			a			
	FRI	11-jun	m	warming up		
			a			
	SAT	12-jun				
	SUN	13-jun				
24	MON	14-jun	m	Remove concrete blocks	water cooling connection	prepration at Orsay
			a			
	TUE	15-jun	m	**possible visit from Orsay to fix CTS1**		
			a			
	WED	16-jun	m			
			a			
	THU	17-jun	m			
			a			
	FRI	18-jun	m			
			a			
	SAT	19-jun				
	SUN	20-jun				

today

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			a	start warming up		
	THU	10-jun	m			
			a			
	FRI	11-jun	m	warming up		
			a			
	SAT	12-jun				
	SUN	13-jun				
24	MON	14-jun	m	Dismounting cryogenic line	doorknob mounting	prepration at Orsay
			a			
	TUE	15-jun	m			
			a			
	WED	16-jun	m			
			a			
	THU	17-jun	m	swap modules		
			a			
	FRI	18-jun	m	**ready at docking area**	preparation for coupler conditioning	
			a			
	SAT	19-jun				
	SUN	20-jun				

Which one is better? UU prefers the left (less mechanical work)

Plan C

23	MON	07-jun	m	investigate CTS1 stepper	open the box	prepration at Orsay
			a	heat load measurement	reception tests (LEMO)	
	TUE	08-jun	m	prepare motor driver	reception tests (VNA)	
			a	CTS1 test with new driver		
	WED	09-jun	m	CTS1 disengage	put on the frame	
			a	start warming up		
	THU	10-jun	m	today		
			a			
	FRI	11-jun	m	warming up		
			a			
	SAT	12-jun				
	SUN	13-jun				
24	MON	14-jun	m	Dismounting cryogenic line	doorknob mounting	prepration at Orsay
			a			
	TUE	15-jun	m			
			a			
	WED	16-jun	m			
			a			
	THU	17-jun	m	swap modules		
			a			
	FRI	18-jun	m		preparation for coupler conditioning	
			a			
	SAT	19-jun				
	SUN	20-jun				
25	MON	21-jun	m	out going test and put in the box	moutng cryogenic line, leak test	**departure from Orsay**
			a			
	TUE	22-jun	m			over the sea
			a			
	WED	23-jun	m			
			a			
	THU	24-jun	m	**departure?**	2 turbor pump connection	**possible arrival**
			a			
	FRI	25-jun	m		RF preparation	possible thermalization
			a		Coupler warm conditioning	
	SAT	26-jun				
	SUN	27-jun				

Orsay prefers to ship CM03 back because the expected test will be rather complicated