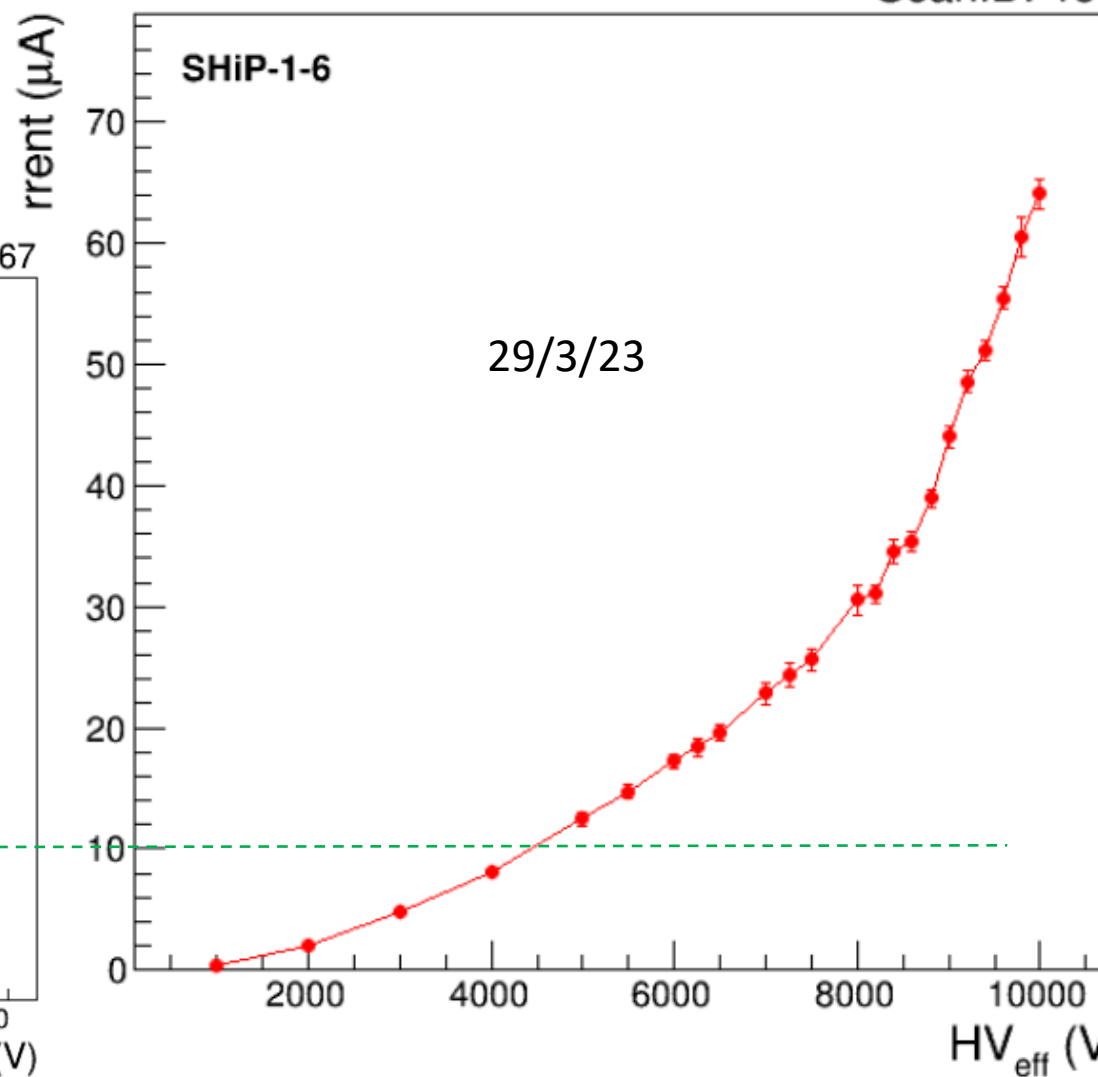
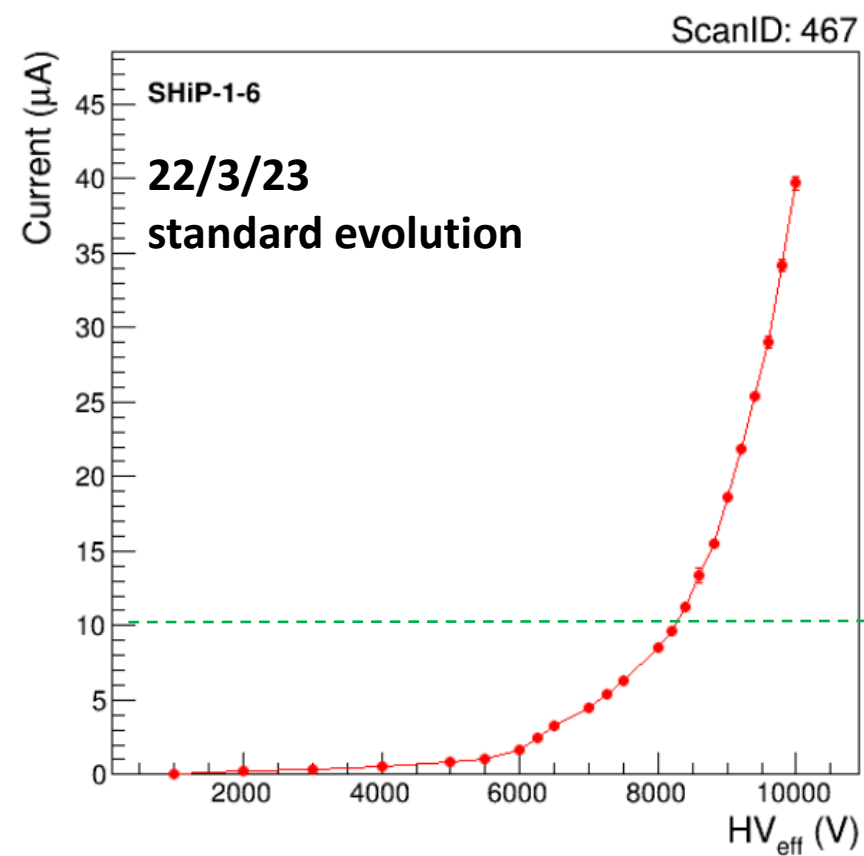


Report on hardware interventions on the LHCb/SHiP chamber

A. Pastore
on behalf of the SHiP/LHCb Bari group

Prequel..

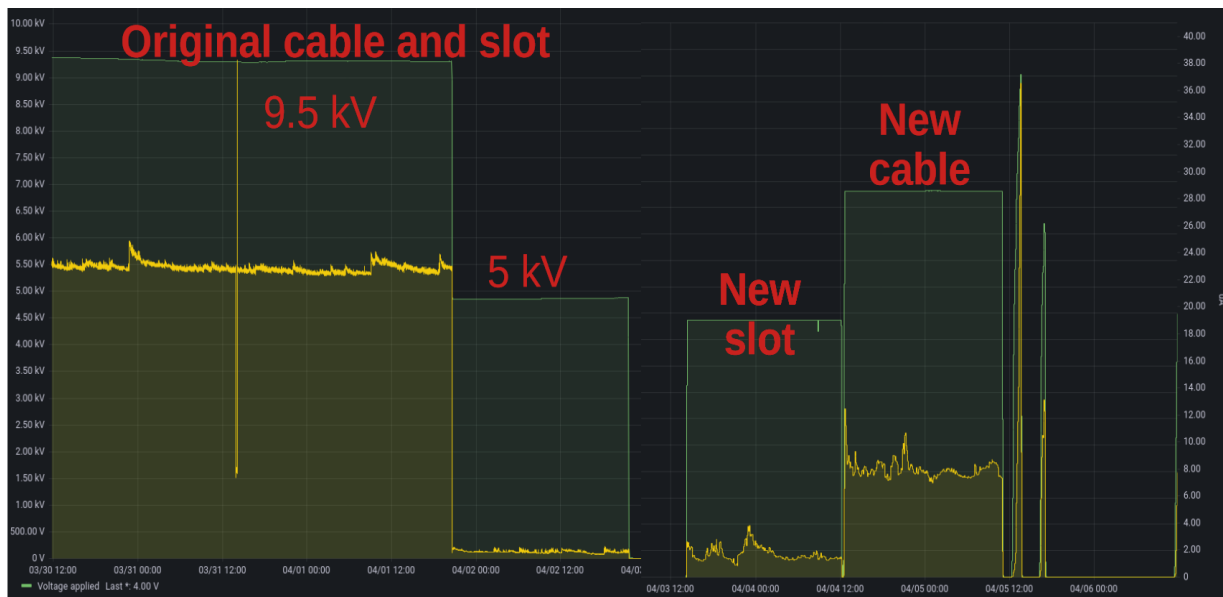


Reference scans, source off @GIF++, **ECO2**
alert from Amrutha & Davide on 30/3/23

Issues with SHiP chamber



- During the stability scan a few “bumps” where current increased and then went down were observed
 - Not correlated with source change or other parameters
 - Occurrence frequency was monitored and it was decided to lower the HV to 5 kV to observe if those bumps still appeared
 - Change of HV slot and cable to see if they were correlated with the cable

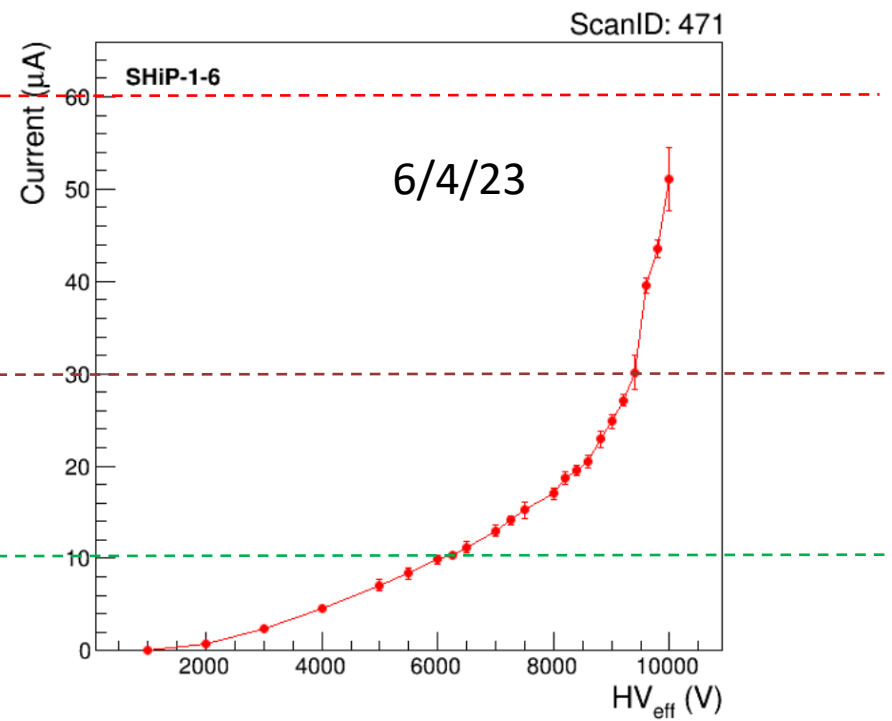
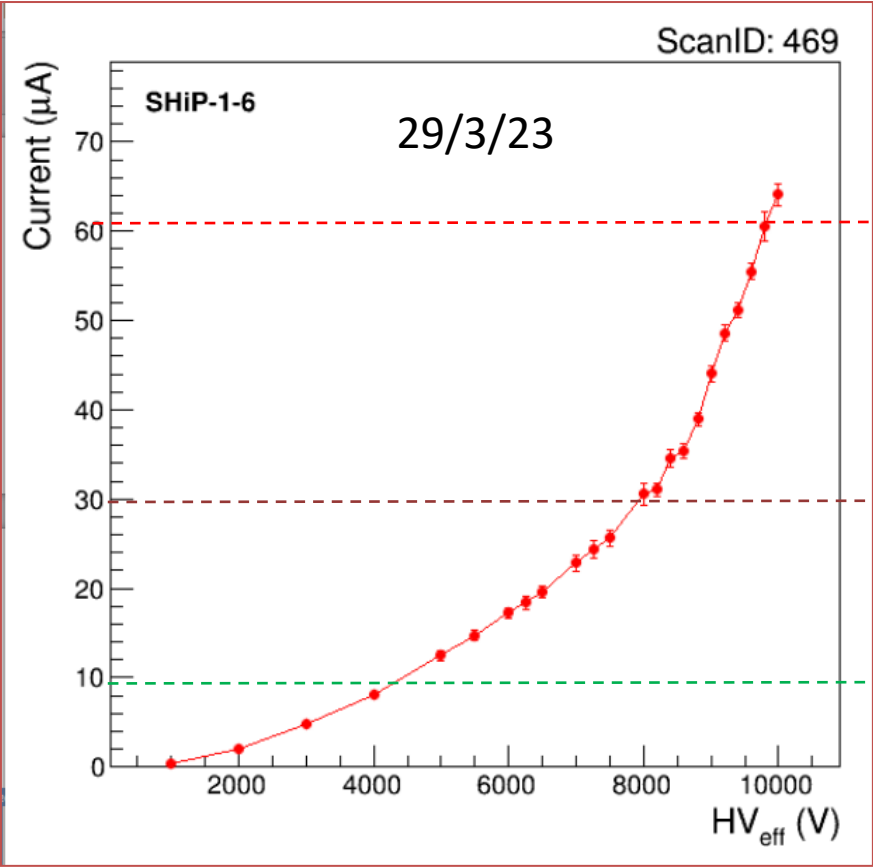


- Bumps are still there, now source off HV scan has been performed with the old cable but in the new slot
- On Grafana, “ShiP-temp” panel to monitor the behavior of SHiP chamber

Luca, shift report, 6th April

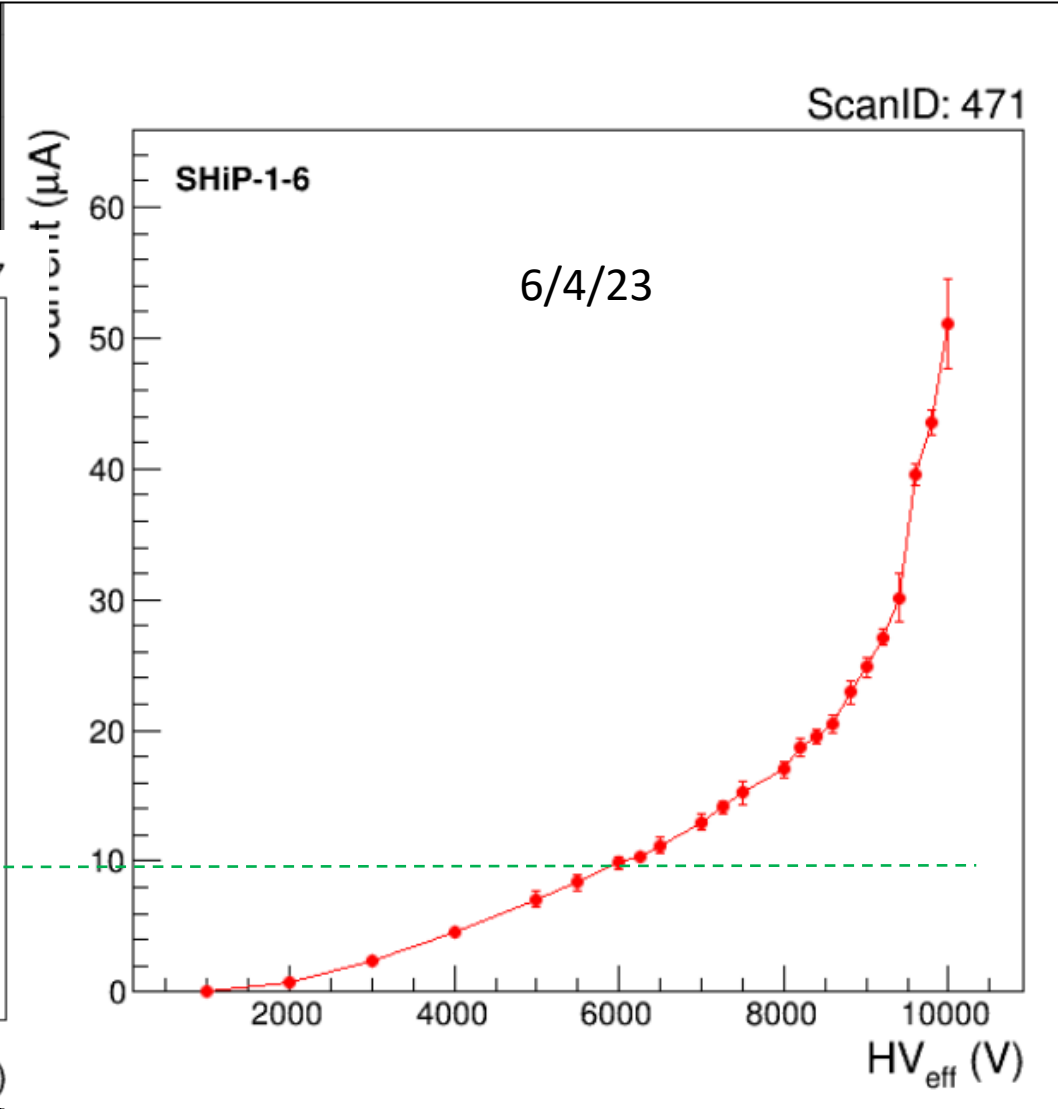
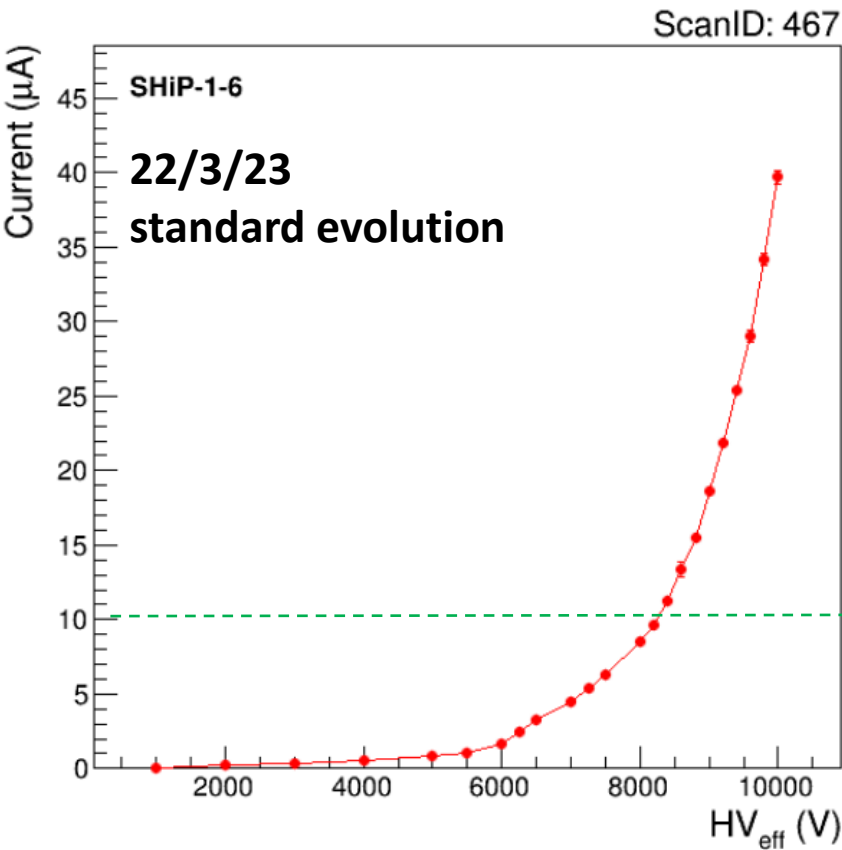
<https://agenda.infn.it/event/35424/contributions/195731/attachments/103765/145356/meeting6thApril2023.pdf>

Prequel..



Reference scans, source off @GIF++, **ECO2**

Prequel..

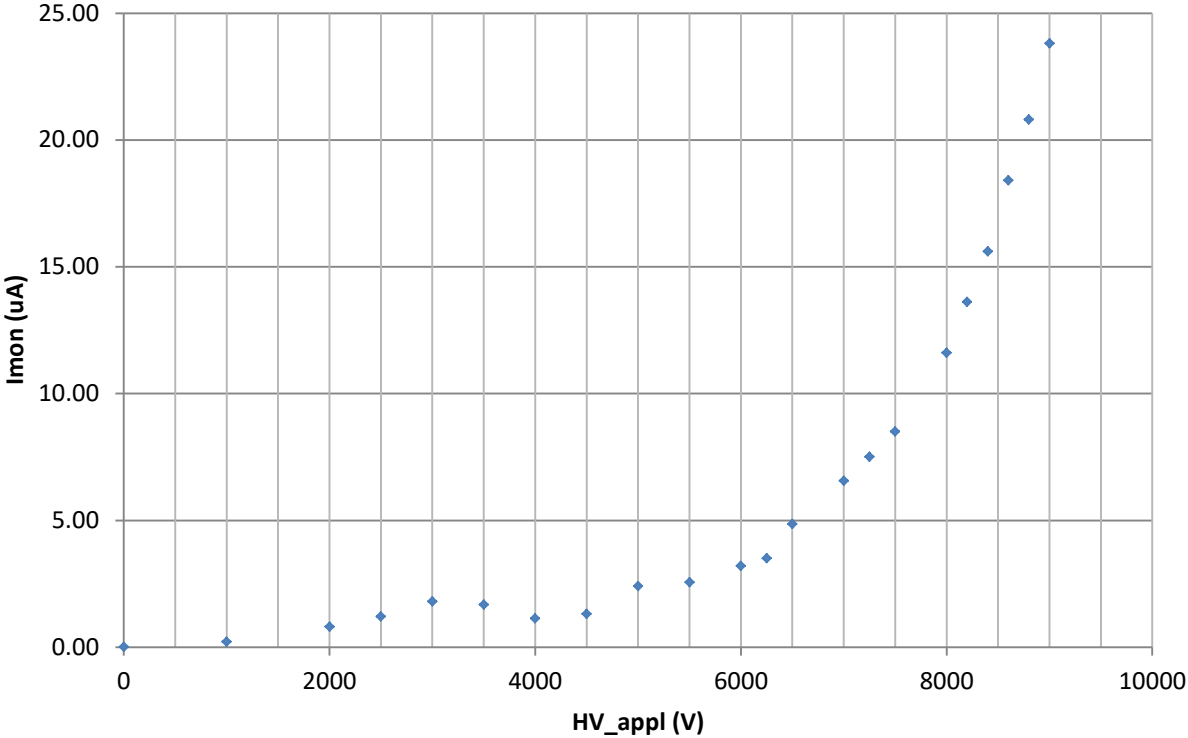


Reference scans, source off @GIF++, **ECO2**

Check SHiP chamber at 904 – April 2023

- Chamber OFF since **6/4/23**, flushing ECO2 at around 1.2 vol/h
- **Moved** from GIF to 904 on 12/4/23
- Flushed at 904, **STD** mix, HV off, since **12/4/23** 9:40 morning (about 1.5 vol/h)
- **Manual** HV-I current on **15/4/23** started around 16:00

Reference scan (cosmics) @904, STD mix, 15/4/23



WP std mix ~ 8.2 kV (Hveff!)

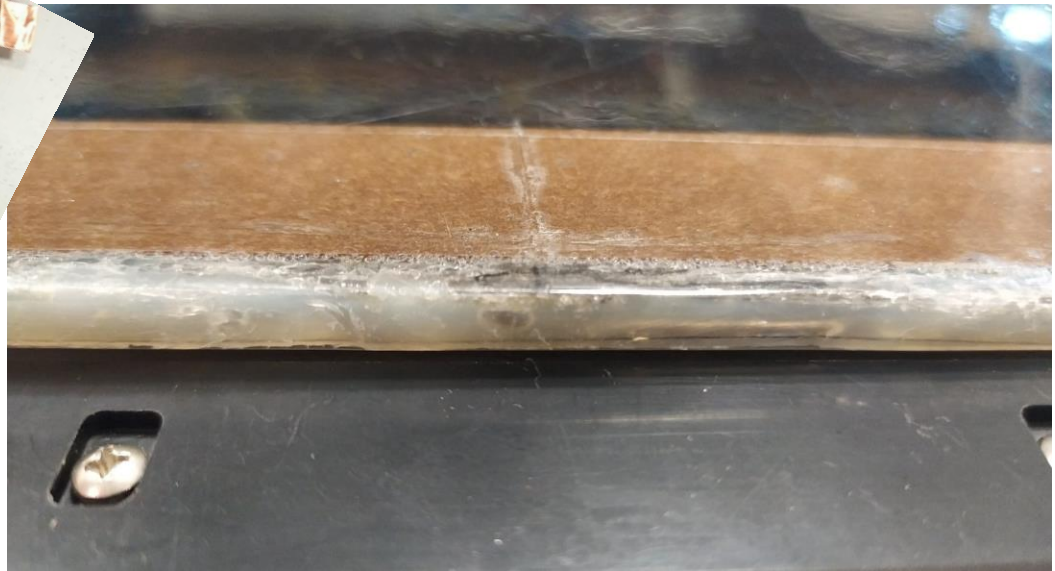
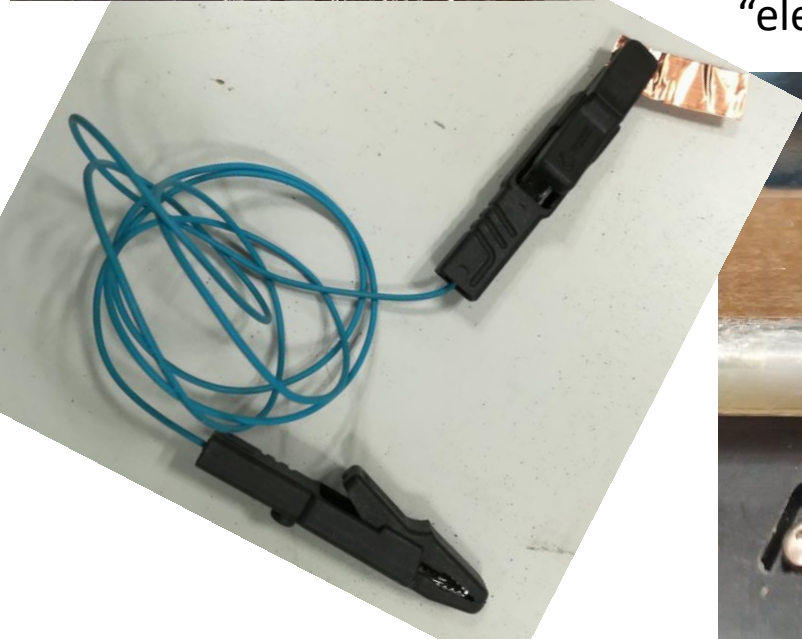
Hvapp (V)	I (uA)	range (uA)
0	0.00	
1000	0.20	
2000	0.80	tra 0.7 e 1 uA
2500	1.20	tra 1.4 a 1
3000	1.80	1.6->2
3500	1.67	1.57->1.77
4000	1.12	stabile (1.11-1.12)
4500	1.30	stabile (1.29-1.3)
5000	2.40	2.1->2.75
5500	2.55	2.45->2.65
6000	3.20	3.1->3.3
6250	3.50	3.3->3.7
6500	4.85	4.8->4.9
7000	6.55	6.4->6.7
7250	7.50	7.1->8
7500	8.50	8.2->8.8
8000	11.60	11.45->11.75
8200	13.60	13.4->13.8
8400	15.60	15.38->15.82
8600	18.40	18.2->18.6
8800	20.80	20.6->21.0
9000	23.80	23.4->24.2

16/4/23 – box opened



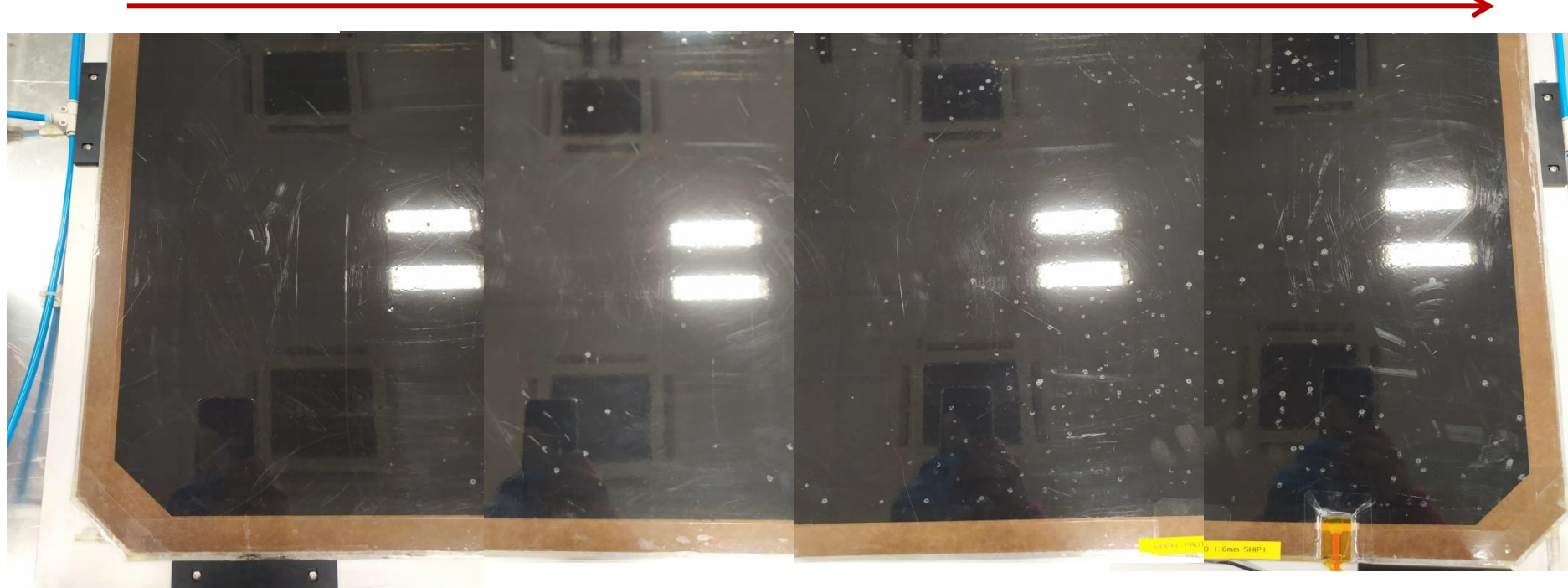
16/4/23 – box opened

- Plastic film removed from the HV side (not present on the other gap face)
- In and out tygon pipes replaced (in-bot side & out-top side were a little bit oiled inside)
- Gas leaks check -> no leak found
- HV connector check → OK, working well
- Visual inspection lateral holes/breaks → none found
- Inspection looking for lateral holes/breaks with “electrical” probe → none found



16/4/23 – surface spots

spot density



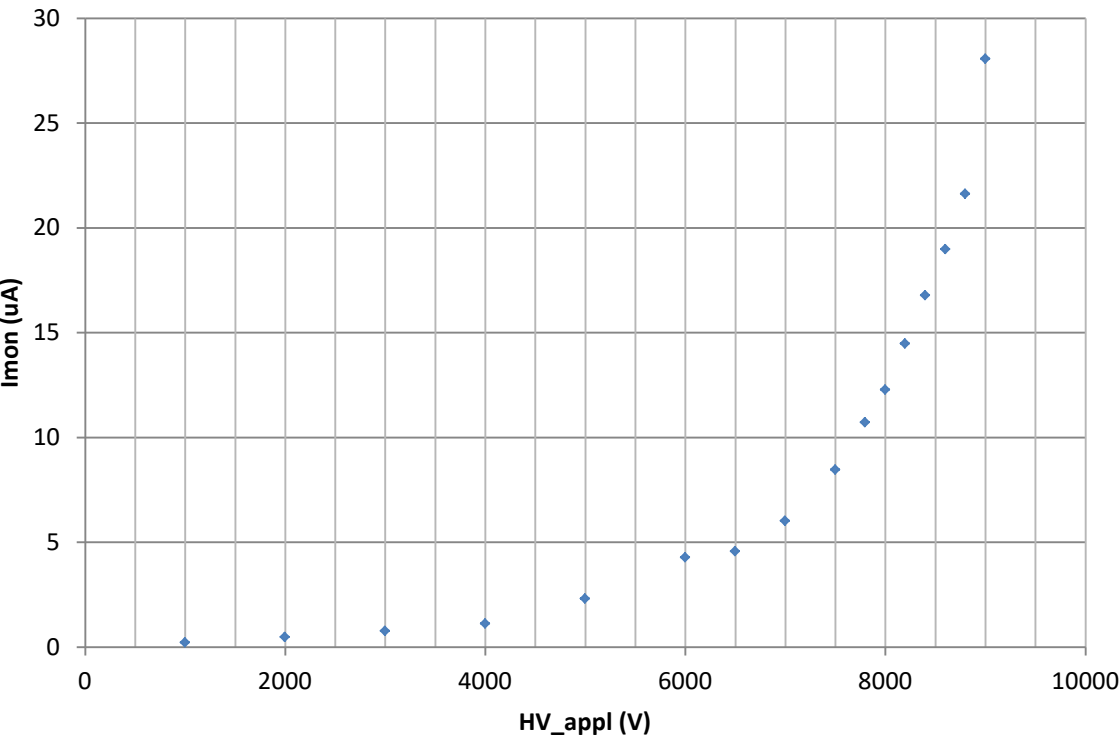
16/4/23 – surface spots – a few zooms



16/4/23 – surface spots – a few zooms

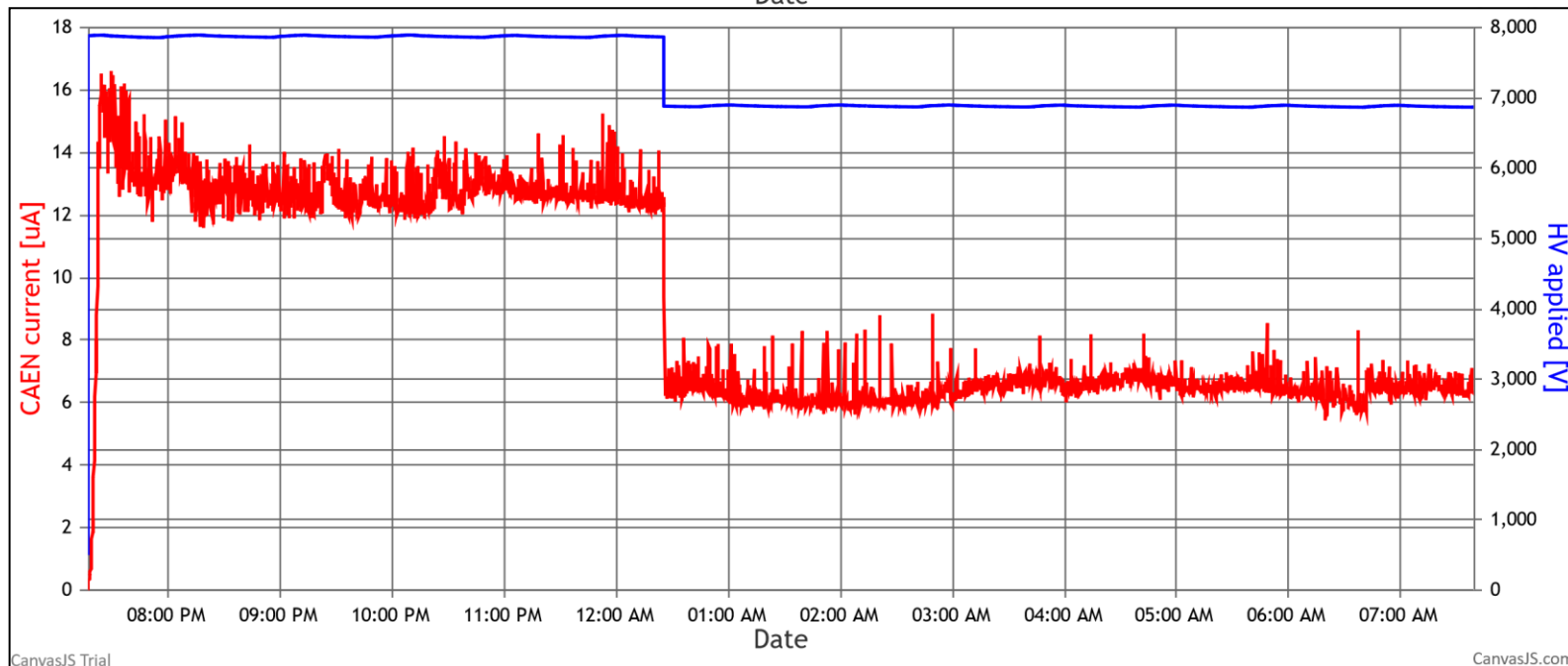
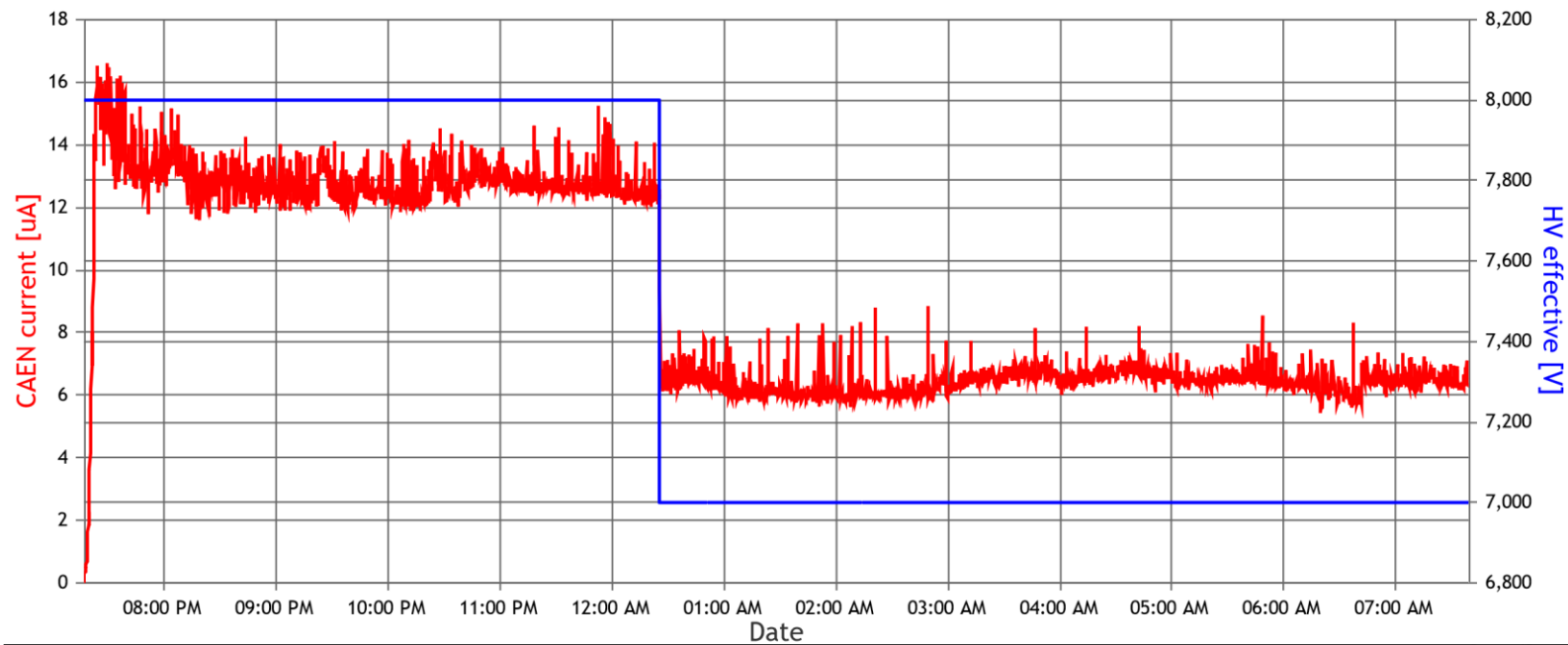


HV-I scan (cosmics) @904, STD mix and box opened (no top side), 16/4/23



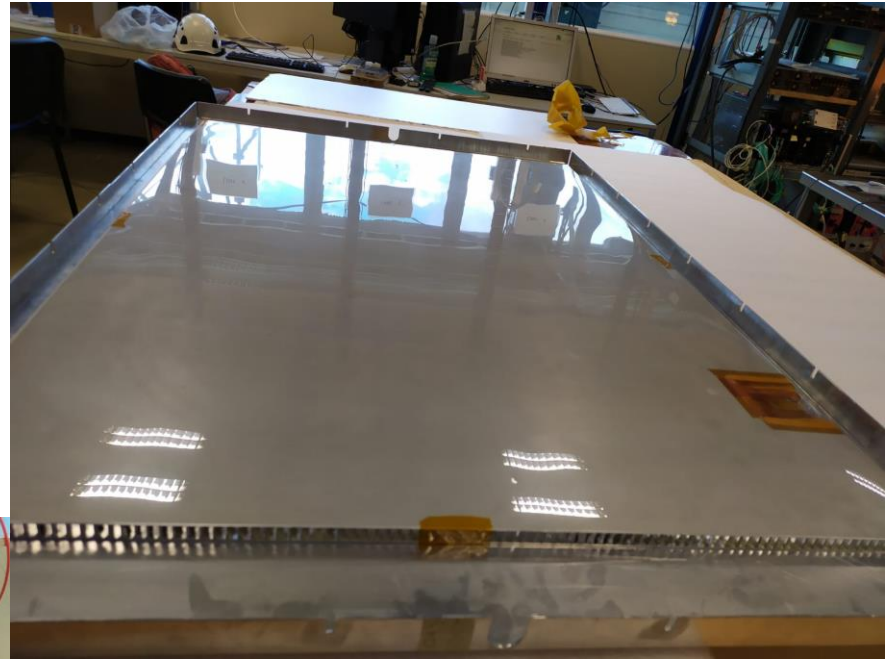
WP std mix ~ 8.2 kV (Hveff!)

Hvapp (V)	I (uA)	range (uA)
1000	0.22	
2000	0.47	
3000	0.76	
4000	1.12	
5000	2.32	2.0->2.6
6000	4.27	3.98->4.56
6500	4.57	4.21->4.93
7000	6.02	5.79->6.23
7500	8.47	7.35->8.57
7800	10.72	10.31->11.14
8000	12.28	12.18->12.38
8200	14.48	14.33->14.64
8400	16.78	16.67->16.90
8600	18.98	18.88->19.07
8800	21.62	21.47->21.77
9000	28.06	27.77->28.36



17/4/23 – intervention

- Mylar foil (175 micron) added between gap (HV side) and box
- addition of Kapton tape along the sides



WebDCS guided HV scan 17/4/23 – std mix

- Gas leakage check → none found
- Box closed

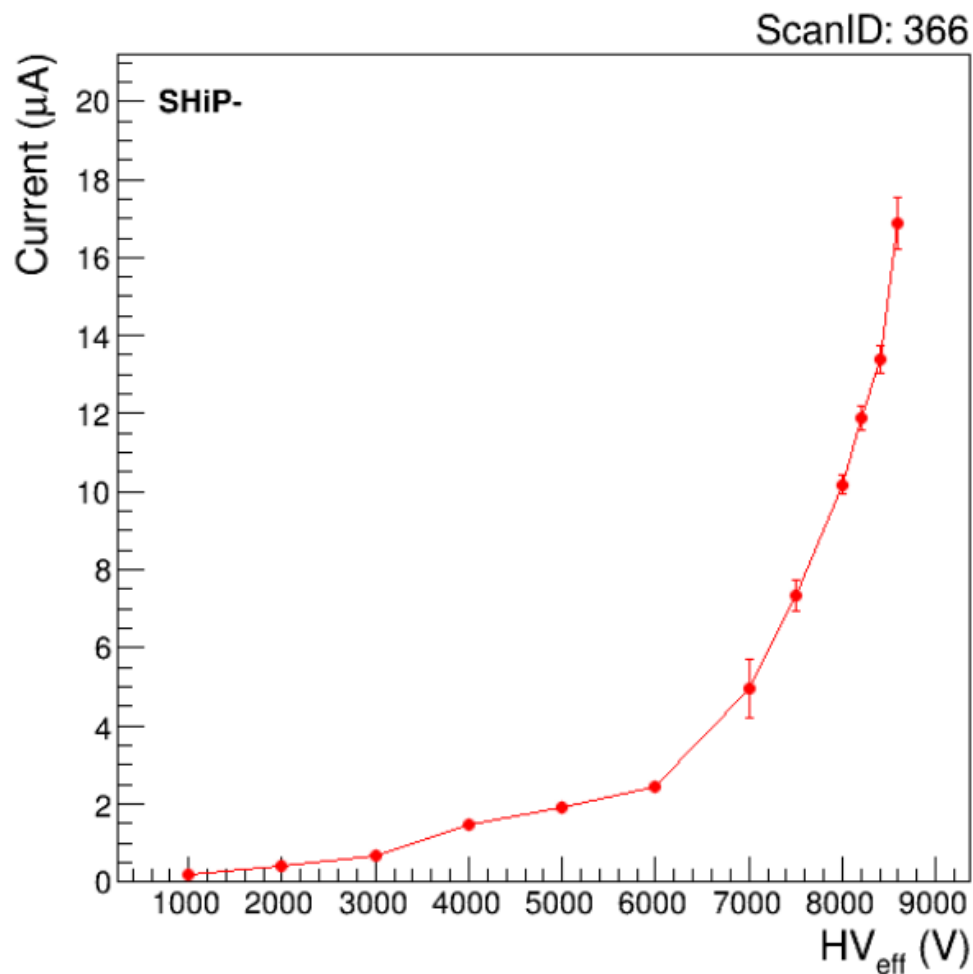
Scan start time: 2023-04-17 18:42:33

Scan end time: -

Waiting time (min): 3

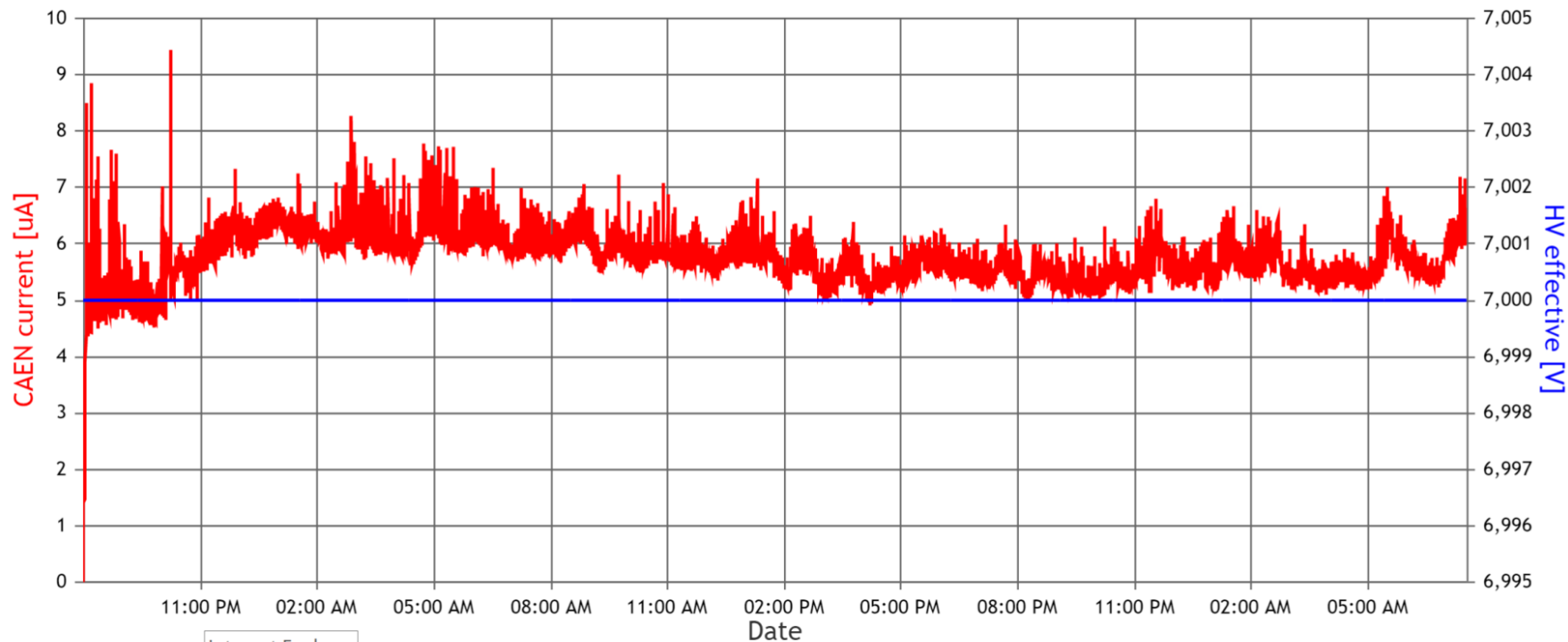
Measuring time (min): 1

Measure interval every 2 seconds



Stability - Run ID 0028

Summary	Run config	Log file	Monitoring	Plots
Run start:	2023-04-17 20:00:08		Status:	FINISHED
Run end/last action:	2023-04-19 07:32:46		Duration:	1 days, 11 hours, 32 minutes
Comments:	Stability test - SHiP std mix			



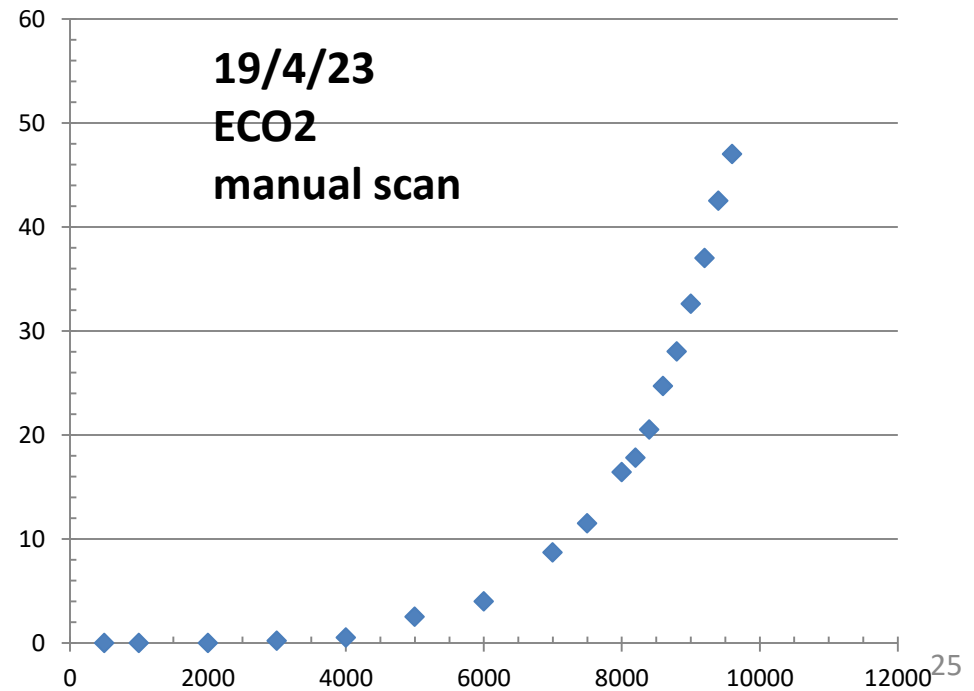
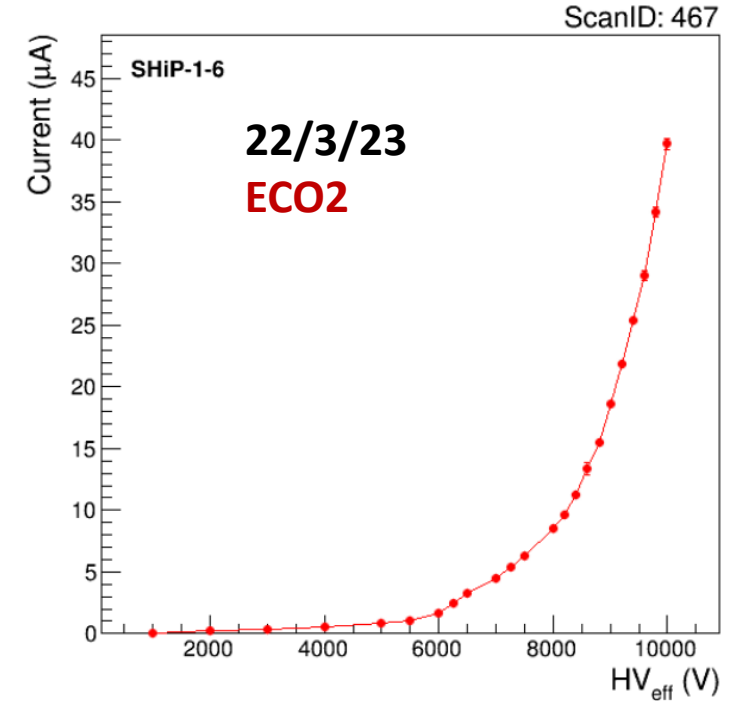
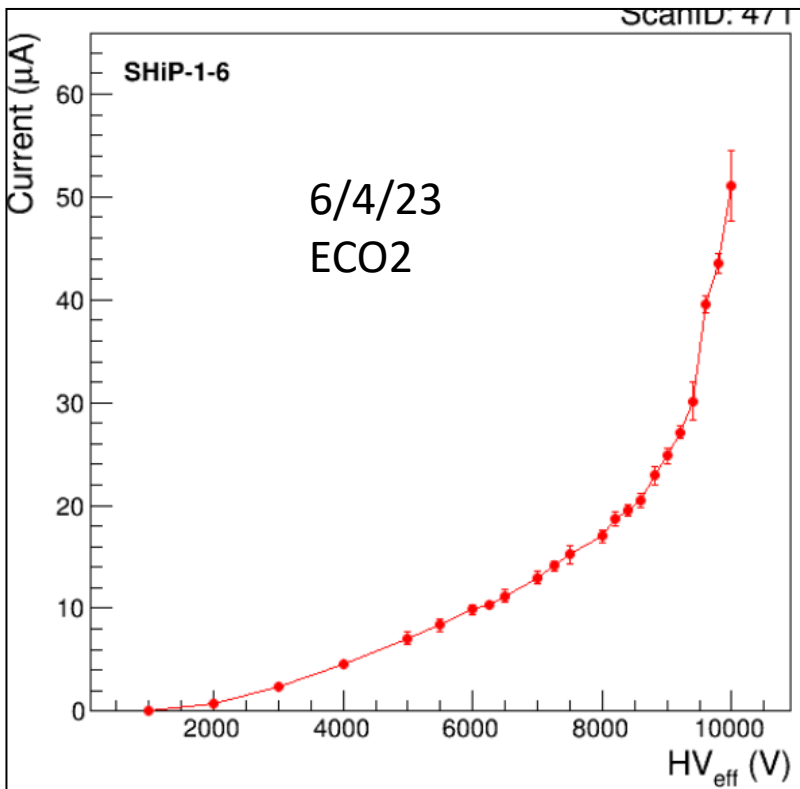
CanvasJS Trial

Internet Explorer

CanvasJS.com

Reference scan, source off @GIF++

SHiP chamber re-installed on wed 19/04



**Weekly reference scan, source off @GIF++
and new stability @20/4/23**

