

Outer Tracker Upgrade Group Meeting

15 Sep 2026

IP2I

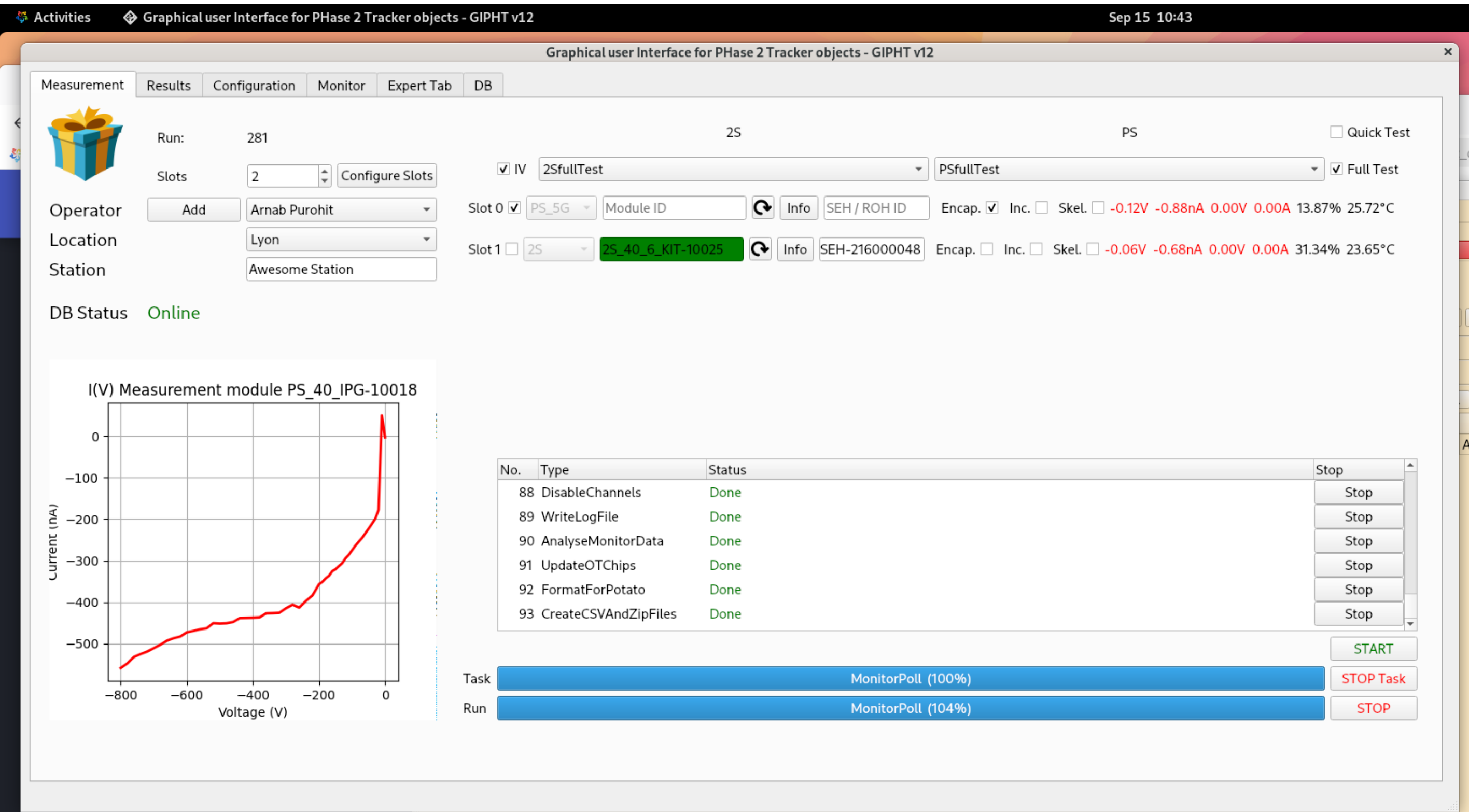
Arnab Purohit

News

1. New versions of Ph2_ACF, GIPHT and POTATO are installed.
 - GIPHT runs smoothly but ~~POTATO~~ is broken.
 - Latest version of POTATO is running.
 - Problem with Occupancy above 50% at 0 MIP

Reception test

If we want to go upto 800 V we should checkout Encap



Reception test Grading

Now we can have the Analysis and Grading of the Quick/Full tests.

Selector

Analysis

Grading

Visualizer

Plugins

Review

Upload All

Download All

☐ Test DB

Modules: 1/10

Files: 1/55

Default

Extra

Module Test selector

☐ Use Extra

Module Name

Valid

*

*

*

*

Prod.

Range

Val

Range

Last

Test Date

01/01/25

01/01/30

Test Temp C

-50

40

Calibration

*

Test Version

All

Last

Clear

Analysis Version

All

Last

Clear

Grade Version

All

Last

Clear

Grade

All

Clear

Test

☐ Yes

☐ No

Y/N

Anl

☐ Yes

☐ No

Y/N

Grade

☐ Yes

☐ No

Y/N

File

☐ DB

☐ F/DB

☐ DBox

Add

Remove

Del Sel

Clear

Module Name

Grade

Test Date

Temp

Calibration

Test

Analyzer

Grader

R DB

A DB

G DB

Local Output File

PS_40_IPG-10018

C

2025-10-17_11h49m18s

+22

PSquickTest

v6-19

v0-22

v0-24

PS_40_IPG-10018_2025-10-17_11h49m18s_+22C_PSquickTest_v6-19.root

A

2025-10-19_10h40m14s

+22

PSquickTest

v6-19

v0-22

v0-24

PS_40_IPG-10018_2025-10-19_10h40m14s_+22C_PSquickTest_v6-19.root

D

2026-03-10_10h23m12s

+23

PSquickTest

v6-25

v0-22

v0-24

PS_40_IPG-10018_2026-03-10_10h23m12s_+23C_PSquickTest_v6-25.root

D

2026-03-10_11h55m06s

+23

PSquickTest

v6-25

v0-22

v0-24

PS_40_IPG-10018_2026-03-10_11h55m06s_+23C_PSquickTest_v6-25.root

D

2026-04-16_10h34m11s

+24

PSquickTest

v6-25

v0-22

v0-24

PS_40_IPG-10018_2026-04-16_10h34m11s_+24C_PSquickTest_v6-25.root

A

2026-09-03_11h07m35s

+22

PSquickTest

v6-29

v0-22

v0-24

PS_40_IPG-10018_2026-09-03_11h07m35s_+22C_PSquickTest_v6-29.root

A

2026-09-09_17h15m04s

+23

PSquickTest

v6-32

v0-22

v0-24

PS_40_IPG-10018_2026-09-09_17h15m04s_+23C_PSquickTest_v6-32.root

D

2026-09-09_17h31m58s

+24

PSfullTest

v6-32

v0-22

v0-24

PS_40_IPG-10018_2026-09-09_17h31m58s_+24C_PSfullTest_v6-32.root

PS_40_IPG-10017

PS_40_IPG-10015

PS_40_IPG-10014

PS_40_IPG-10008

2S_40_6_KIT-10025

D

2025-12-15_11h39m15s

+22

2SquickTest

v6-22

v0-22

v0-24

2S_40_6_KIT-10025_2025-12-15_11h39m15s_+22C_2SquickTest_v6-22.root

D

2026-03-10_12h46m23s

+24

2SquickTest

v6-25

v0-22

v0-24

2S_40_6_KIT-10025_2026-03-10_12h46m23s_+24C_2SquickTest_v6-25.root

2026-04-24_14h01m54s

+23

2SquickTest

v6-25

2S_40_6_KIT-10025_2026-04-24_14h01m54s_+23C_2SquickTest_v6-25.root

2026-06-01_11h29m39s

+22

2SquickTest

v6-25

2S_40_6_KIT-10025_2026-06-01_11h29m39s_+22C_2SquickTest_v6-25.root

2026-06-01_11h59m38s

+22

2SquickTest

v6-25

2S_40_6_KIT-10025_2026-06-01_11h59m38s_+22C_2SquickTest_v6-25.root

2026-06-03_12h57m57s

+21

2SquickTest

v6-25

2S_40_6_KIT-10025_2026-06-03_12h57m57s_+21C_2SquickTest_v6-25.root

C

2026-06-09_14h07m59s

+21

2SquickTest

v6-25

v0-22

v0-24

2S_40_6_KIT-10025_2026-06-09_14h07m59s_+21C_2SquickTest_v6-25.root

A

2026-09-03_15h25m30s

+24

2SquickTest

v6-29

v0-22

v0-24

2S_40_6_KIT-10025_2026-09-03_15h25m30s_+24C_2SquickTest_v6-29.root

F

2026-09-09_11h45m33s

+23

2SfullTest

v6-29

v0-22

v0-24

2S_40_6_KIT-10025_2026-09-09_11h45m33s_+23C_2SfullTest_v6-29.root

2026-04-24_14h14m27s

+22

2SfullTest

v6-25

2S_40_6_KIT-10025_2026-04-24_14h14m27s_+22C_2SfullTest_v6-25.root

2026-09-09_14h18m14s

+23

2SfullTest

v6-32

2S_40_6_KIT-10025_2026-09-09_14h18m14s_+23C_2SfullTest_v6-32.root

A

2026-09-09_15h12m00s

+24

2SfullTest

v6-32

v0-22

v0-24

2S_40_6_KIT-10025_2026-09-09_15h12m00s_+24C_2SfullTest_v6-32.root

2S_40_6_KIT-10024

2S_40_6_KIT-10023

2S_40_6_KIT-10022

2S_40_6_KIT-10021

tedd@lyocms36:~/gipht — /loc... x

G-10018_284.yml

4

Reception test Grading

Now we can have the Analysis and Grading of the Quick/Full tests.

Configure Slots

25fulltest

25fulltest

Full test

Potato

File About

Progress Bar

100%

Abort

DB Upload

Root UL

Analysis UL

Grade UL

Upload All

DB Download

Root DL

Analysis DL

Grade DL

Download All

DB Misc.

Sync

Force D/L

Check NR

Test DB

GUI Settings

Load

Save

Save as

Snapshot

Delete

Reset

Selector Extras

Load List

Save List

mv to...

rm files

Modules: 1/10

Files: 1/55

Login

lyondbac

@CERN.CH

Del

Analyzer and Grader

Analysis-Grade

Analysis

Grade

Force

Selector

Analysis

Grading

Visualizer

Plugins

Review

Grade Plots

Grade Of Modules

Module Grades

Table

Problems

Grade Of Modules

Set Selection

Mult

Clear

Save Col

Save Type

ROOT_FILE	ANL_VER	ANL_CUTS_VER	GRD_VER	GRD_CUTS_VER	TYPE	OVERALL	FEHR_OVERALL	FEHL_OVERALL
1 2S_40_6_KIT-10025_2026-09-09_15h12m00s_+24C_2SfullTest_v6-32.root	v0-22	v0-00	v0-24	v0-00	OK	A	A	A

IPG-10018

tedd@lyocms36:~/gipht — /loc...

G-10018_284.yml

Reception test Grading

Now we can have the Analysis and Grading of the Quick/Full tests.

re Slots

▼ IV

25fulltest

▼ PSfulltest

▼ Full test

Potato

File About

Progress Bar

100%

Abort

Login

lyondbac

@CERN.CH

Del

Analyzer and Grader

Analysis-Grade

Analysis

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mv to...

rm files

Modules: 1/10

Files: 1/55

Grade Plots

Grade Of Modules

Module Grades

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Problems

Grade Of Modules

Set Selection

▼

✓ Mult

Clear

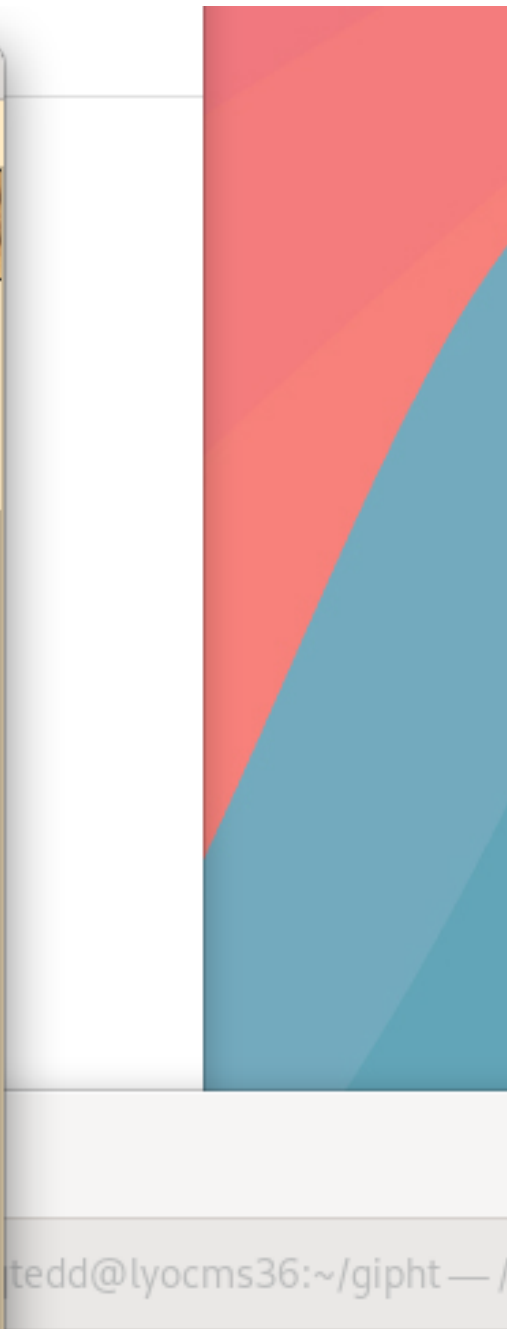
▼

Clear

Save Col

Save Type

	ROOT_FILE	ANL_VER	ANL_CUTS_VER	GRD_VER	GRD_CUTS_VER	TYPE	OVERALL	FEHR_C
1	PS_40_IPG-10018_2026-09-09_17h31m58s_+24C_PSfullTest_v6-32.root	v0-22	v0-00	v0-24	v0-00	CH_OCC_0MIP(D) , FEHL_CH_OCC_0MIP(D)	D	A

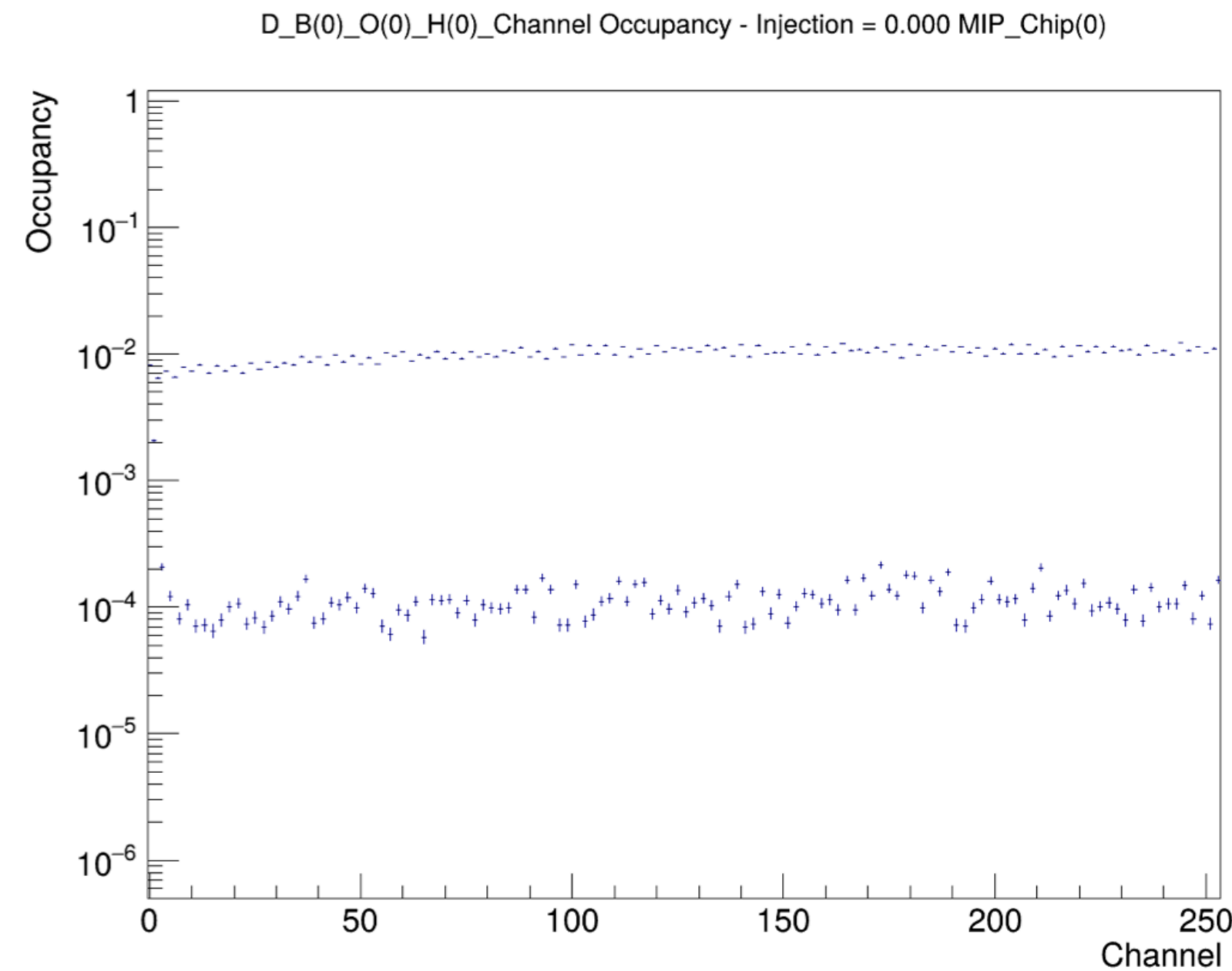


Reception test Issue

Original Setup



- LV- (module & KIRA box) and HV GND connected to GND of LV PS
- KIRA LED power unconnected
- trigger cable connected between KIRA and FC7
- observed increased 0 MIP occupancy
 - strongest in the bottom sensor

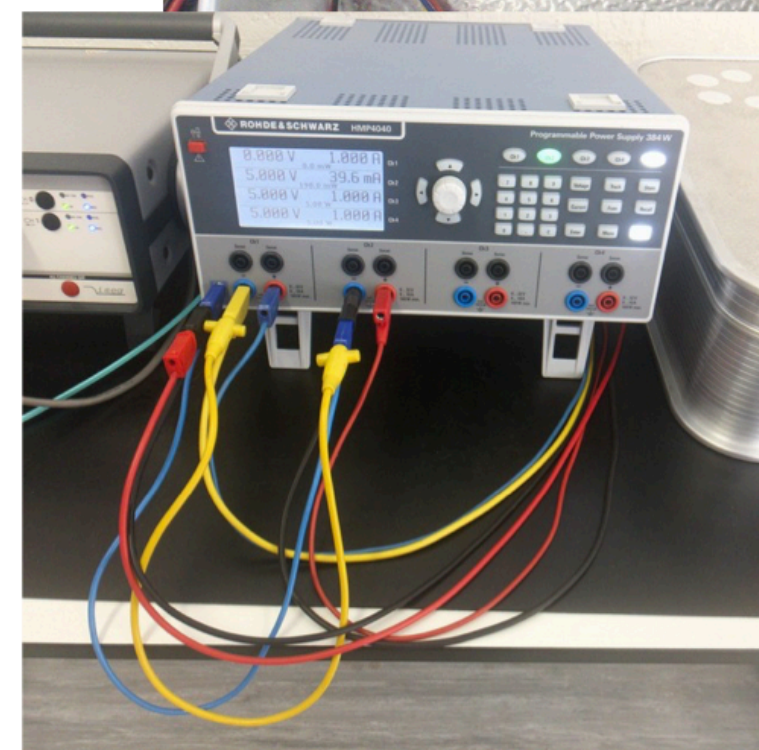
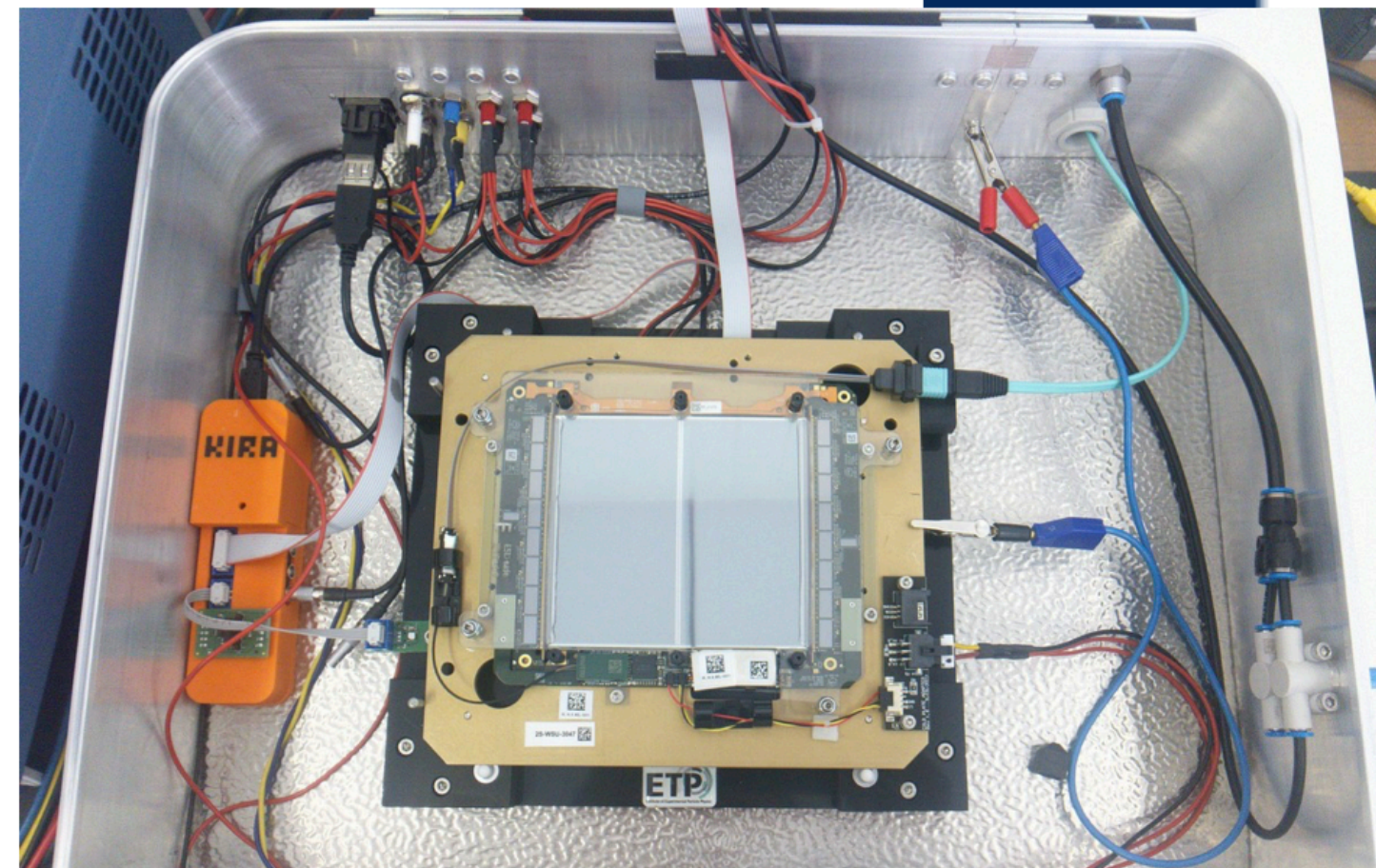


Reception test Issue

Testing & Fixes



- no improvement from:
 - connecting KIRA LED power
 - connecting carrier plate to box
- completely disconnecting the KIRA LED arrays solved the issue
 - traced back to LED power & trigger
 - remove external trigger cable
 - connect both power plugs to GND



Reception test Grading

I see the issue in KIT box 1 with KIRA! I have tested a PS module.

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☐ Test DB

Modules: 1/10

Files: 1/55

Default

Extra

Module Test selector

☐ Use Extra

Module Name

Valid

*

*

*

*

0

0001

Prod.

Range

Val

Range

Last

Test Date

01/01/25

01/01/30

Test Temp C

-50

40

Calibration

*

Test Version

All

Last

Clear

Analysis Version

All

Last

Clear

Grade Version

All

Last

Clear

Grade

All

Clear

Test

Yes

No

Y/N

Anl

Yes

No

Y/N

Grade

Yes

No

Y/N

File

DB

F/DB

DBox

Add

Remove

Del Sel

Clear

GO

Ask me

Module Name	Grade	Test Date	Temp	Calibration	Test	Analyzer	Grader	R DB	A DB	G DB	Local Output File
PS_40_IPG-10018	C	2025-10-17_11h49m18s	+22	PSquickTest	v6-19	v0-22	v0-24				PS_40_IPG-10018_2025-10-17_11h49m18s_+22C_PSquickTest_v6-19.root
	A	2025-10-19_10h40m14s	+22	PSquickTest	v6-19	v0-22	v0-24				PS_40_IPG-10018_2025-10-19_10h40m14s_+22C_PSquickTest_v6-19.root
	D	2026-03-10_10h23m12s	+23	PSquickTest	v6-25	v0-22	v0-24				PS_40_IPG-10018_2026-03-10_10h23m12s_+23C_PSquickTest_v6-25.root
	D	2026-03-10_11h55m06s	+23	PSquickTest	v6-25	v0-22	v0-24				PS_40_IPG-10018_2026-03-10_11h55m06s_+23C_PSquickTest_v6-25.root
	D	2026-04-16_10h34m11s	+24	PSquickTest	v6-25	v0-22	v0-24				PS_40_IPG-10018_2026-04-16_10h34m11s_+24C_PSquickTest_v6-25.root
	A	2026-09-03_11h07m35s	+22	PSquickTest	v6-29	v0-22	v0-24				PS_40_IPG-10018_2026-09-03_11h07m35s_+22C_PSquickTest_v6-29.root
	A	2026-09-09_17h15m04s	+23	PSquickTest	v6-32	v0-22	v0-24				PS_40_IPG-10018_2026-09-09_17h15m04s_+23C_PSquickTest_v6-32.root
	D	2026-09-09_17h31m58s	+24	PSfullTest	v6-32	v0-22	v0-24				PS_40_IPG-10018_2026-09-09_17h31m58s_+24C_PSfullTest_v6-32.root
PS_40_IPG-10017											
PS_40_IPG-10015											
PS_40_IPG-10014											
PS_40_IPG-10008											
2S_40_6_KIT-10025	D	2025-12-15_11h39m15s	+22	2SquickTest	v6-22	v0-22	v0-24				2S_40_6_KIT-10025_2025-12-15_11h39m15s_+22C_2SquickTest_v6-22.root
	D	2026-03-10_12h46m23s	+24	2SquickTest	v6-25	v0-22	v0-24				2S_40_6_KIT-10025_2026-03-10_12h46m23s_+24C_2SquickTest_v6-25.root
		2026-04-24_14h01m54s	+23	2SquickTest	v6-25						2S_40_6_KIT-10025_2026-04-24_14h01m54s_+23C_2SquickTest_v6-25.root
		2026-06-01_11h29m39s	+22	2SquickTest	v6-25						2S_40_6_KIT-10025_2026-06-01_11h29m39s_+22C_2SquickTest_v6-25.root
		2026-06-01_11h59m38s	+22	2SquickTest	v6-25						2S_40_6_KIT-10025_2026-06-01_11h59m38s_+22C_2SquickTest_v6-25.root
		2026-06-03_12h57m57s	+21	2SquickTest	v6-25						2S_40_6_KIT-10025_2026-06-03_12h57m57s_+21C_2SquickTest_v6-25.root
	C	2026-06-09_14h07m59s	+21	2SquickTest	v6-25	v0-22	v0-24				2S_40_6_KIT-10025_2026-06-09_14h07m59s_+21C_2SquickTest_v6-25.root
	A	2026-09-03_15h25m30s	+24	2SquickTest	v6-29	v0-22	v0-24				2S_40_6_KIT-10025_2026-09-03_15h25m30s_+24C_2SquickTest_v6-29.root
	F	2026-09-09_11h45m33s	+23	2SfullTest	v6-29	v0-22	v0-24				2S_40_6_KIT-10025_2026-09-09_11h45m33s_+23C_2SfullTest_v6-29.root
		2026-04-24_14h14m27s	+22	2SfullTest	v6-25						2S_40_6_KIT-10025_2026-04-24_14h14m27s_+22C_2SfullTest_v6-25.root
		2026-09-09_14h18m14s	+23	2SfullTest	v6-32						2S_40_6_KIT-10025_2026-09-09_14h18m14s_+23C_2SfullTest_v6-32.root
	A	2026-09-09_15h12m00s	+24	2SfullTest	v6-32	v0-22	v0-24				2S_40_6_KIT-10025_2026-09-09_15h12m00s_+24C_2SfullTest_v6-32.root
2S_40_6_KIT-10024											
2S_40_6_KIT-10023											
2S_40_6_KIT-10022											
2S_40_6_KIT-10021											

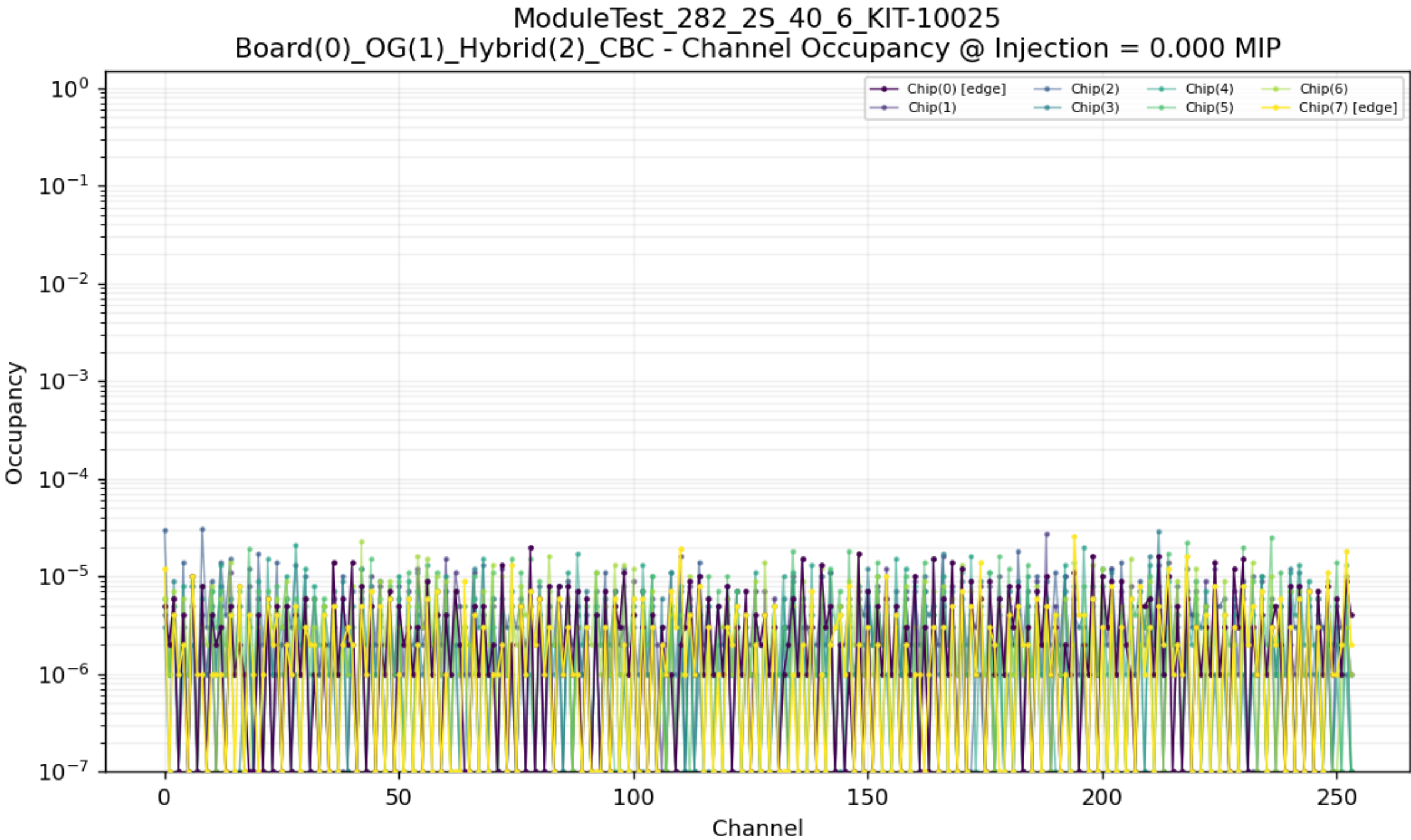
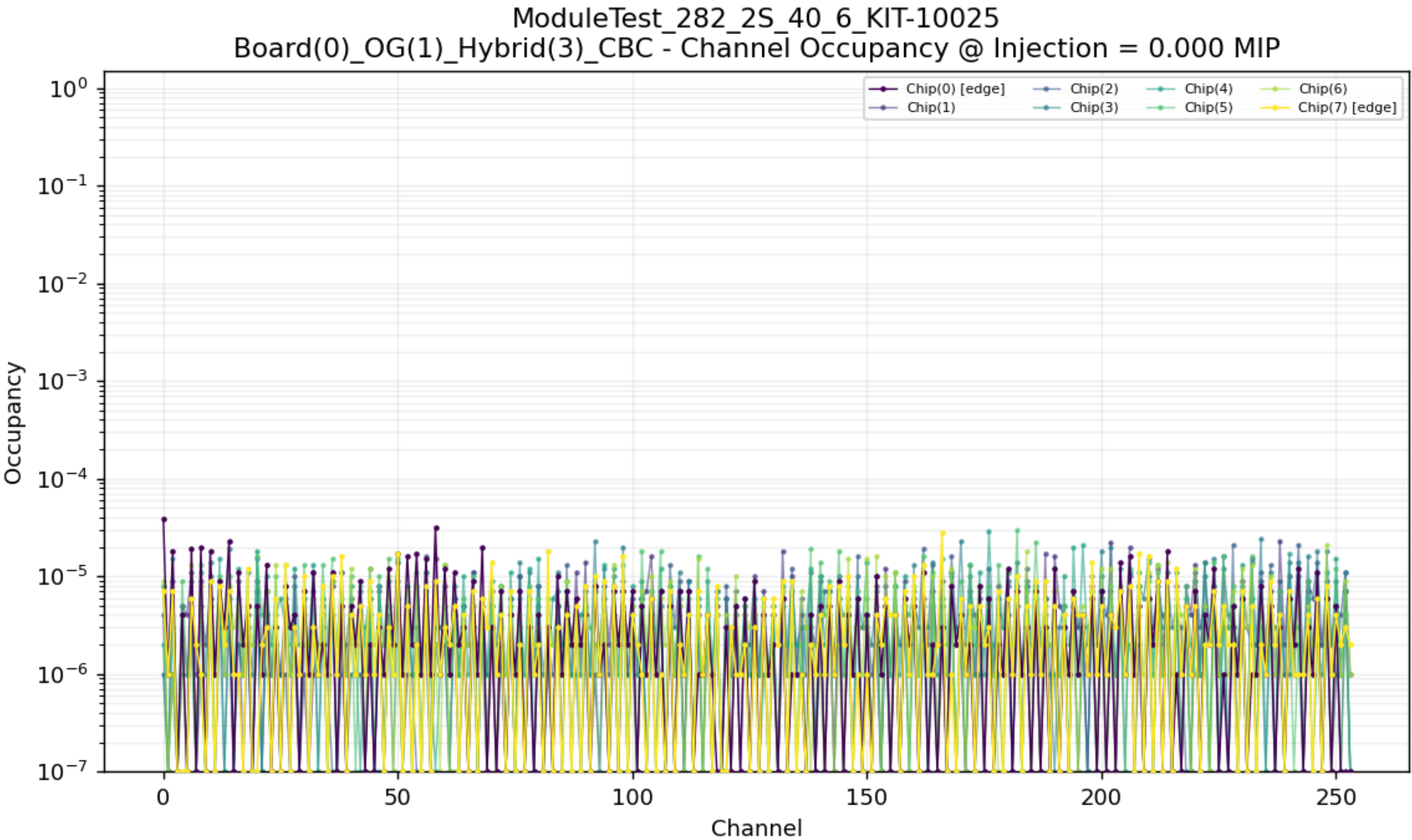
tedd@lyocms36:~/gipht — /loc... x

G-10018_284.yml

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Reception test Grading

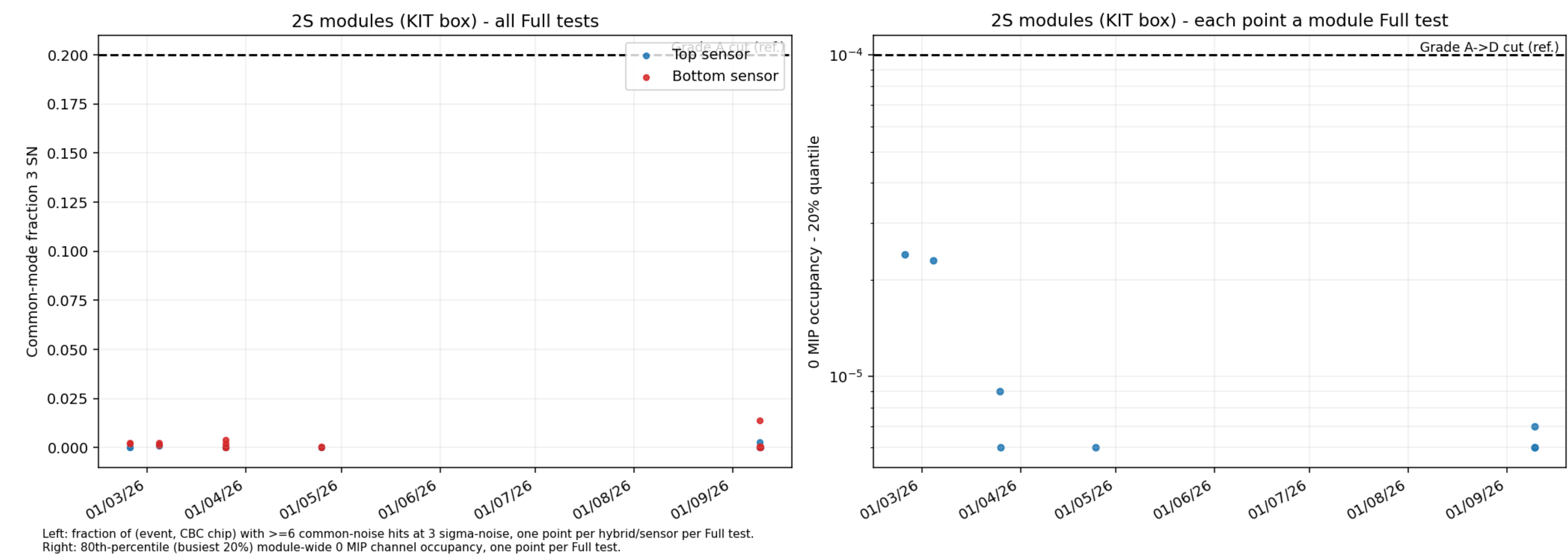
No problem with 2S module



Reception test Grading

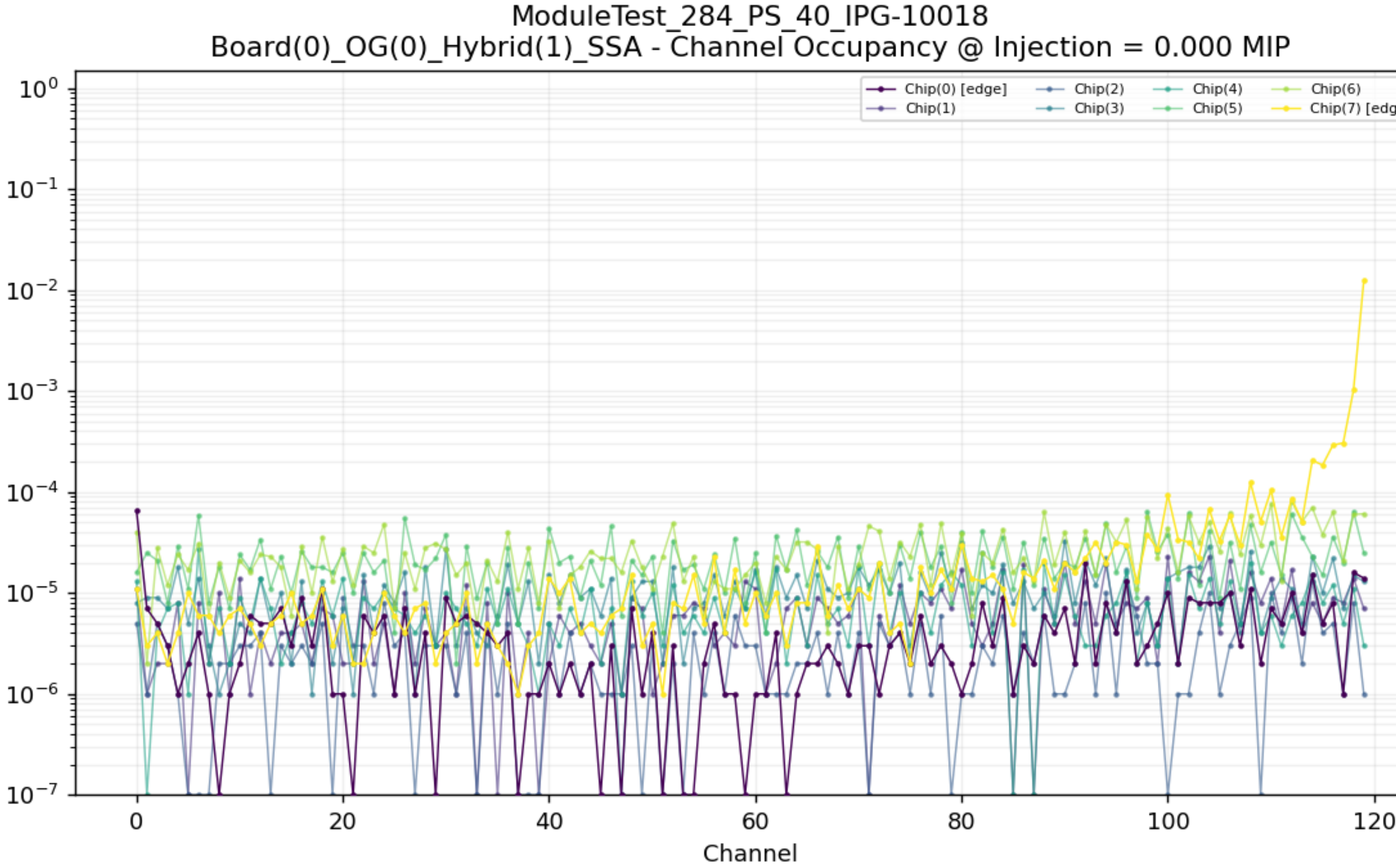
No problem observed with 2S modules.

Extent of the issue - gipht KIT box (2S modules)



Reception test Grading

I see the issue in KIT box 1 with KIRA! I have tested a PS module.

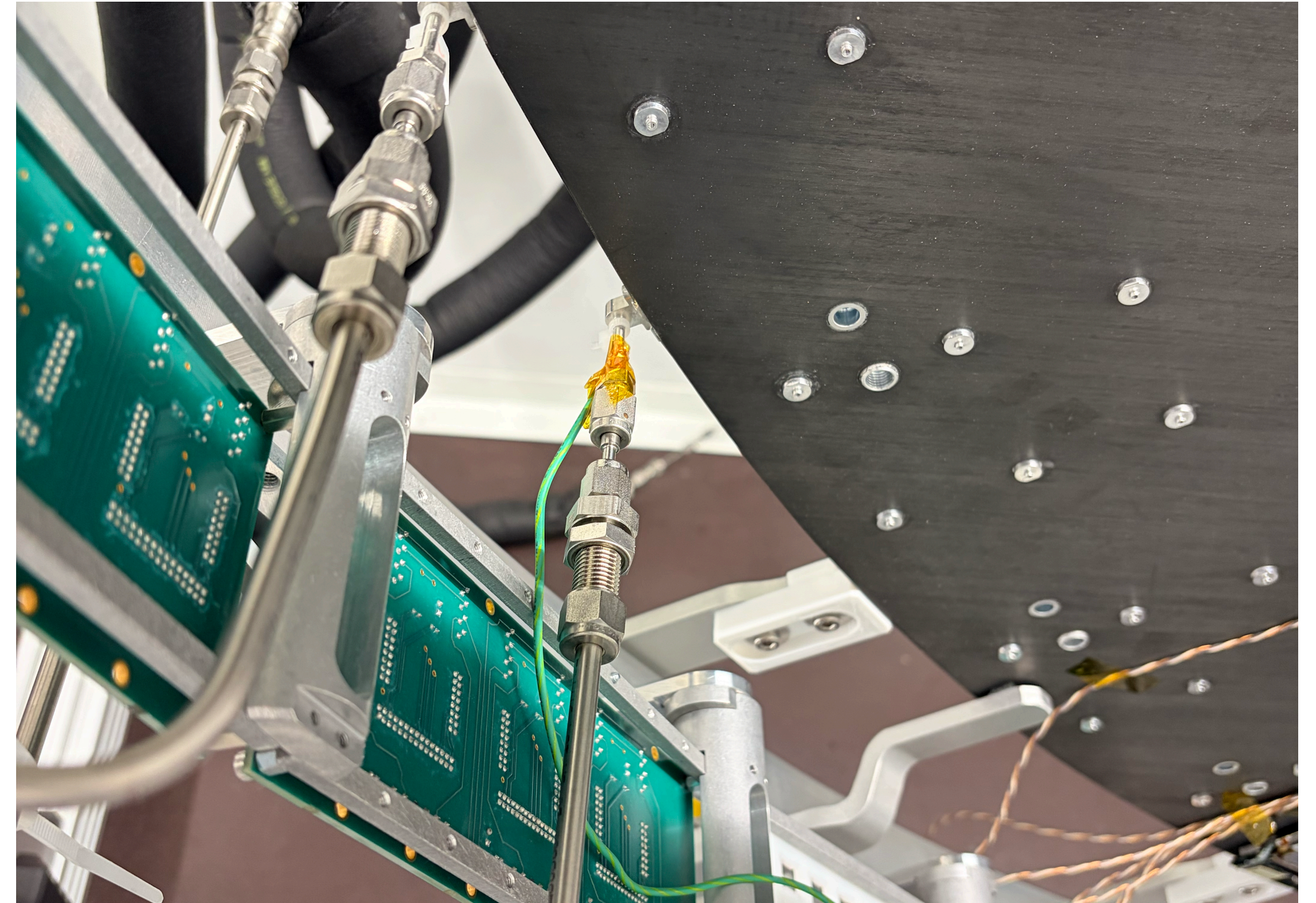


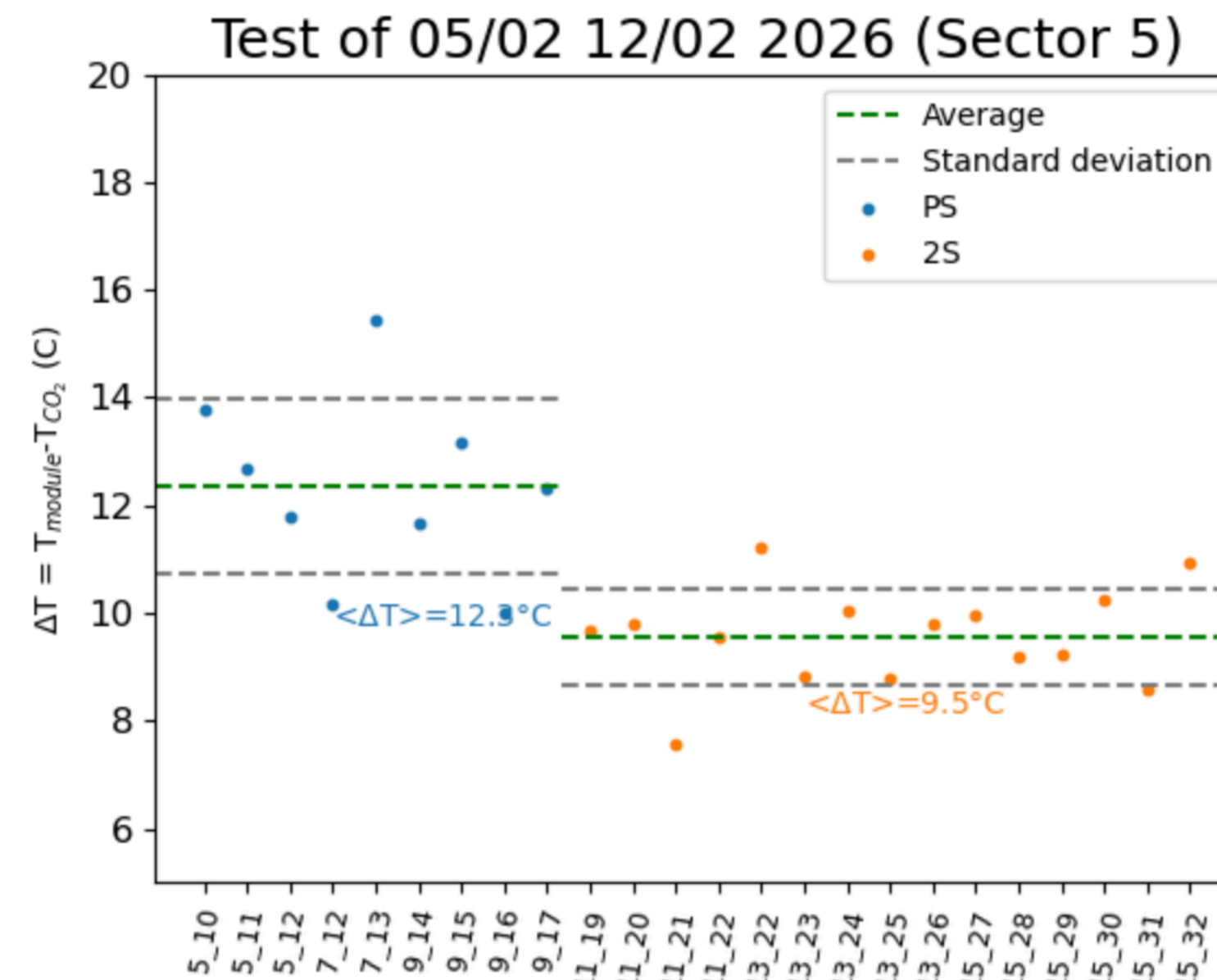
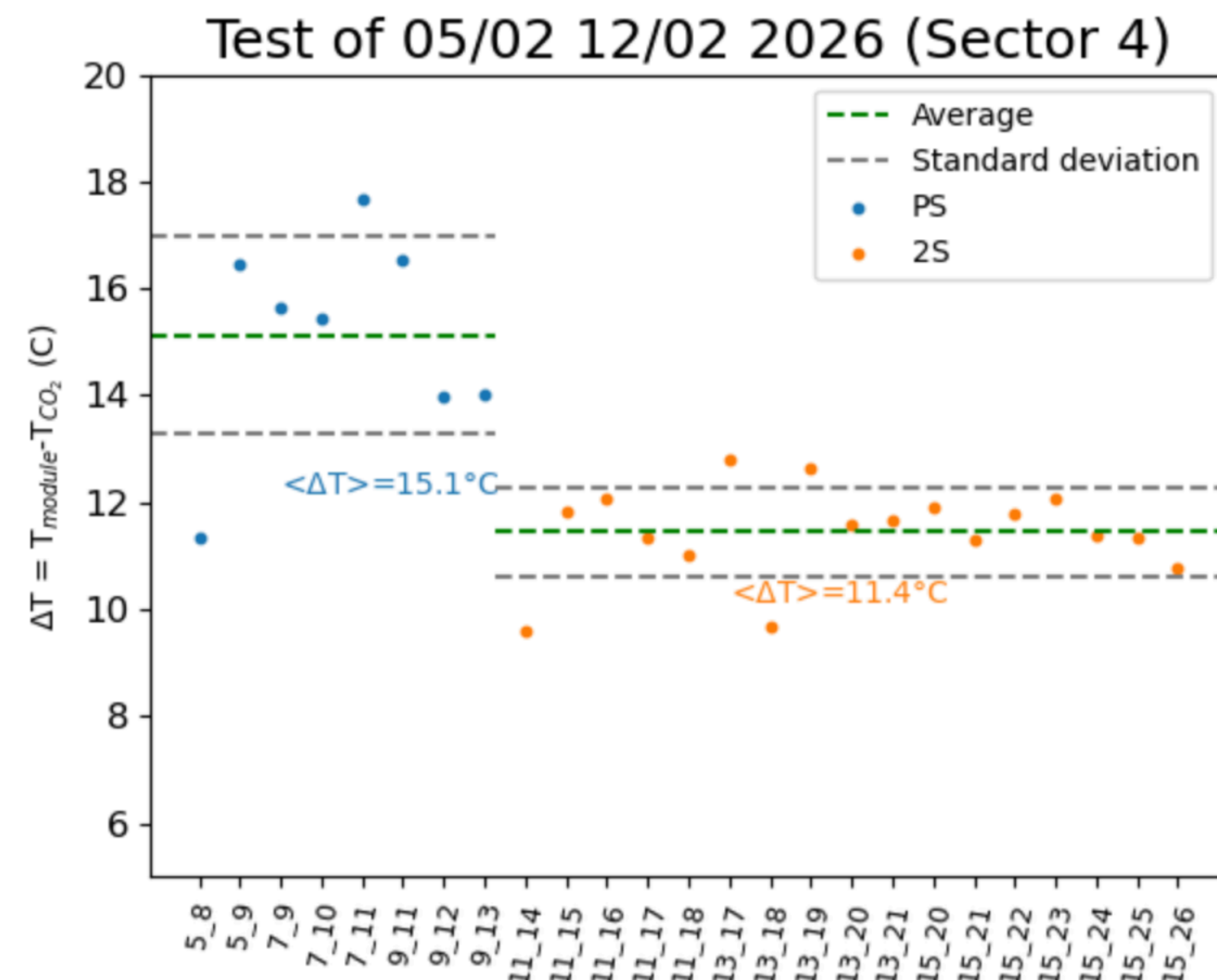
Cold Test

News

1. After summer vacation we started testing the integrated modules in Cold.
2. Analysing the results from the latest cold tests of the 4 2S.
3. As before we could run optical communication test for all 2S modules.
4. The quickest is not yet possible yet for PS modules.
 1. It seems we are using latest recommended (v6-32) version of Ph2_ACF.
 2. We should also investigate the last successful tests to see if we can find what has changed. Removed the monitoring.
5. Updated the DCS.

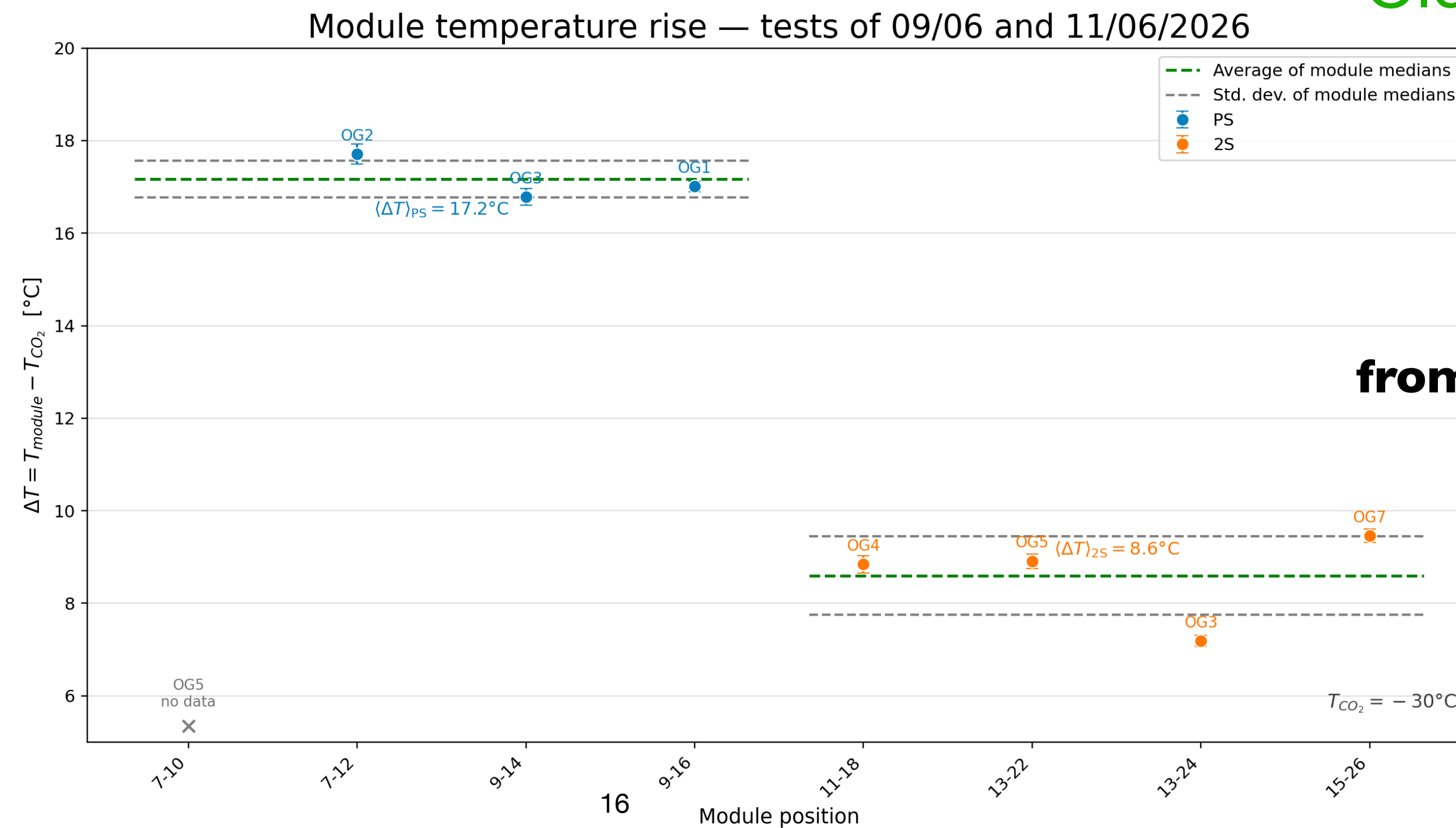
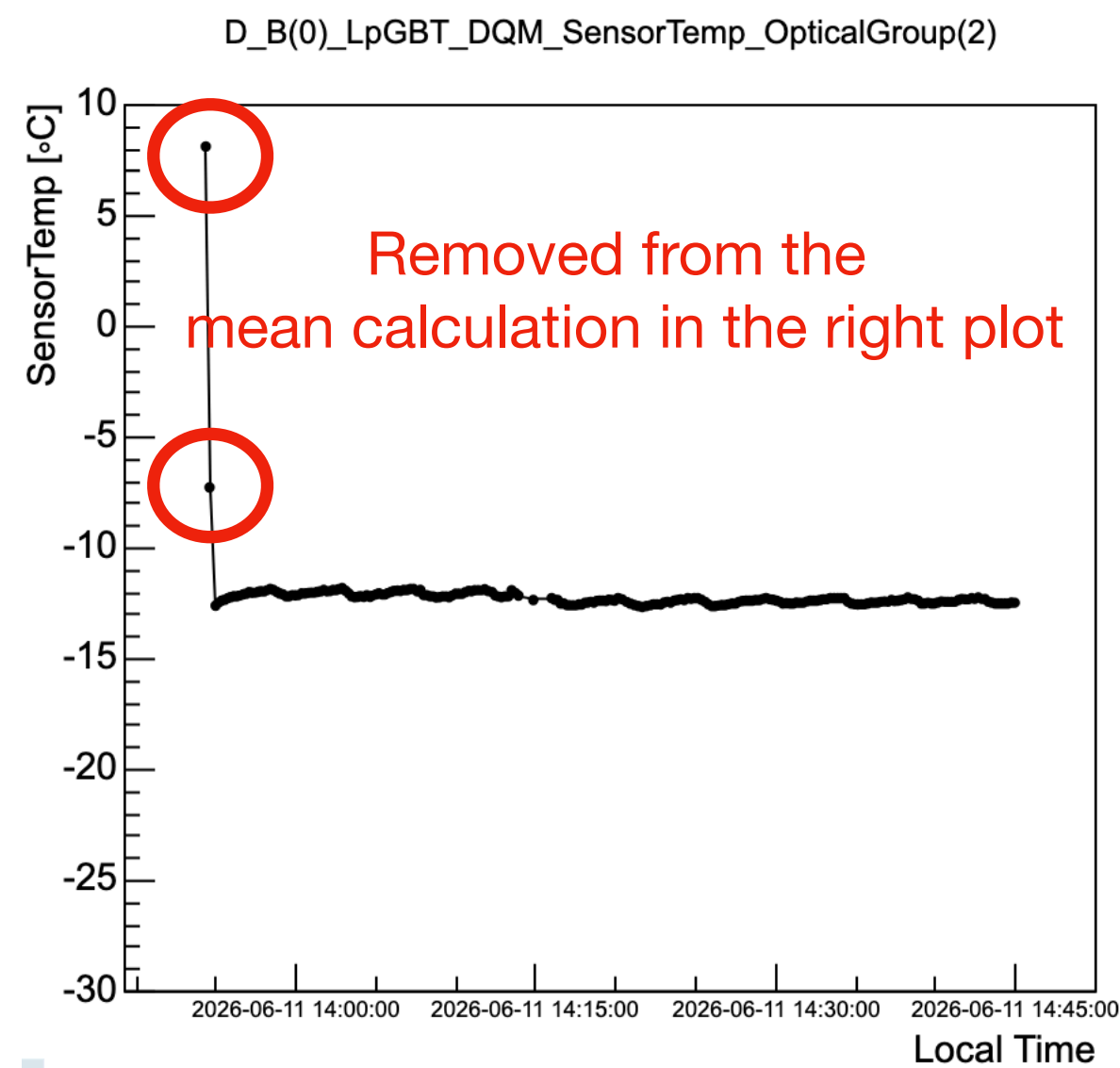
New configuration



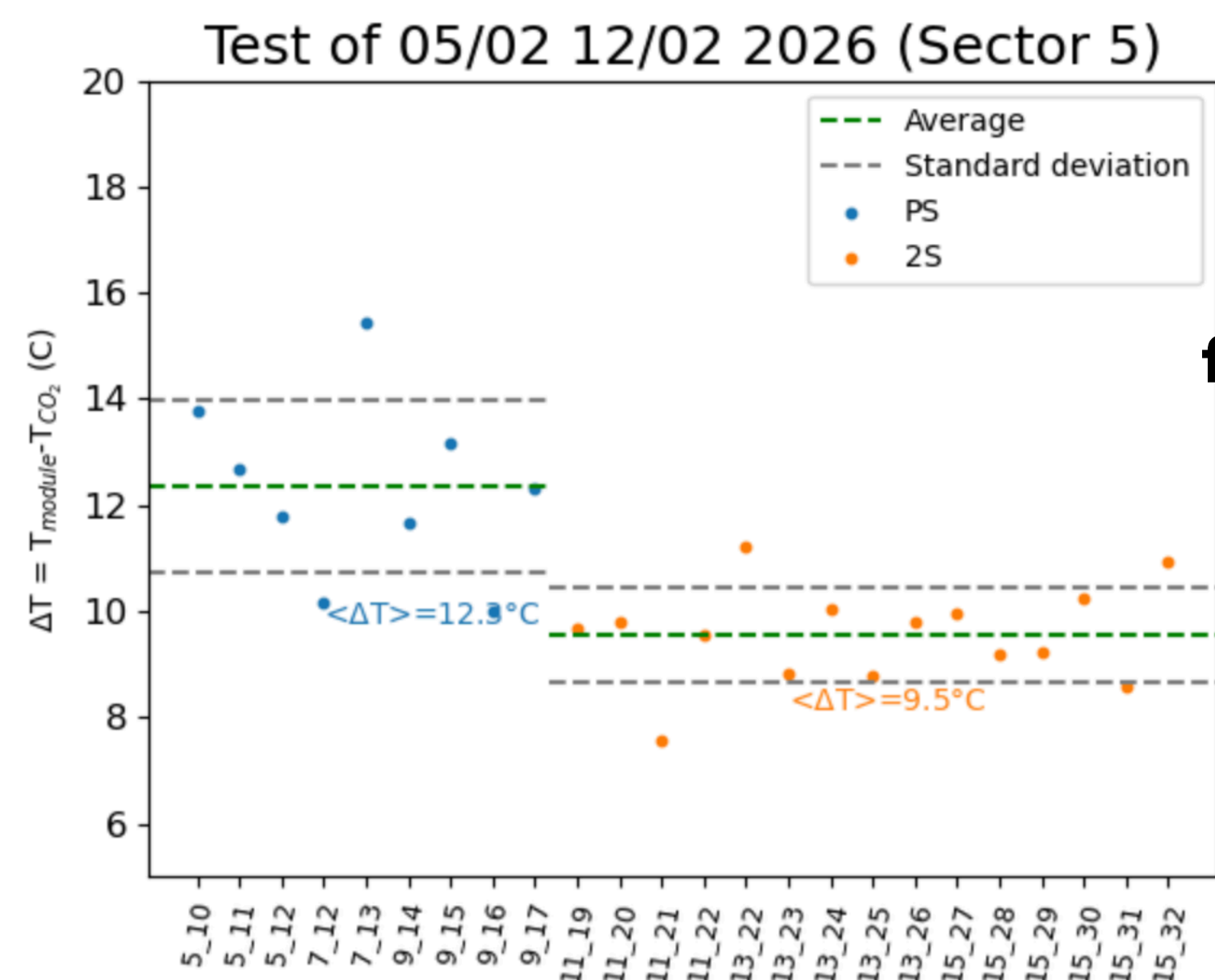
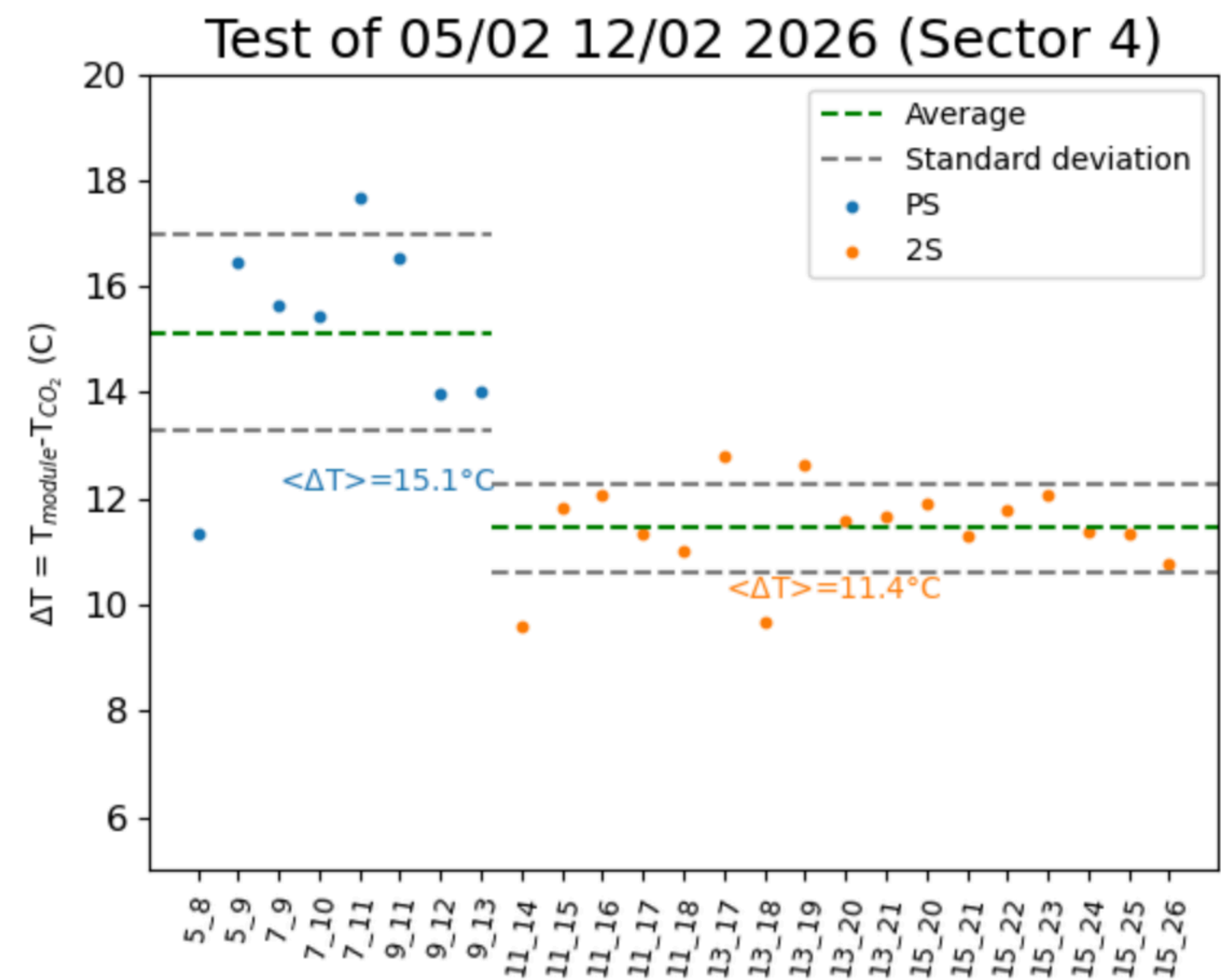


from Dummy module test
credit: Muriel

Old test results in July

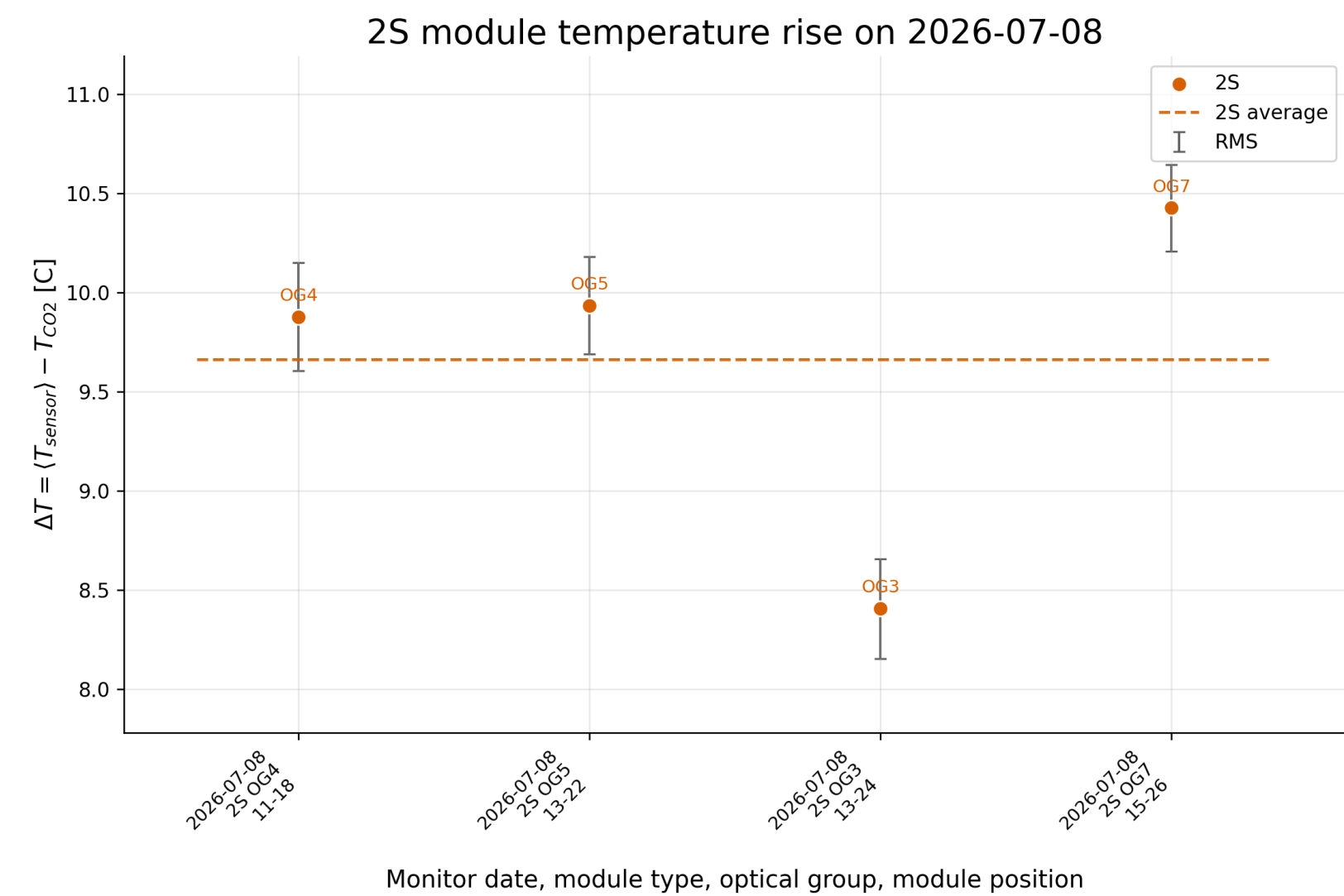
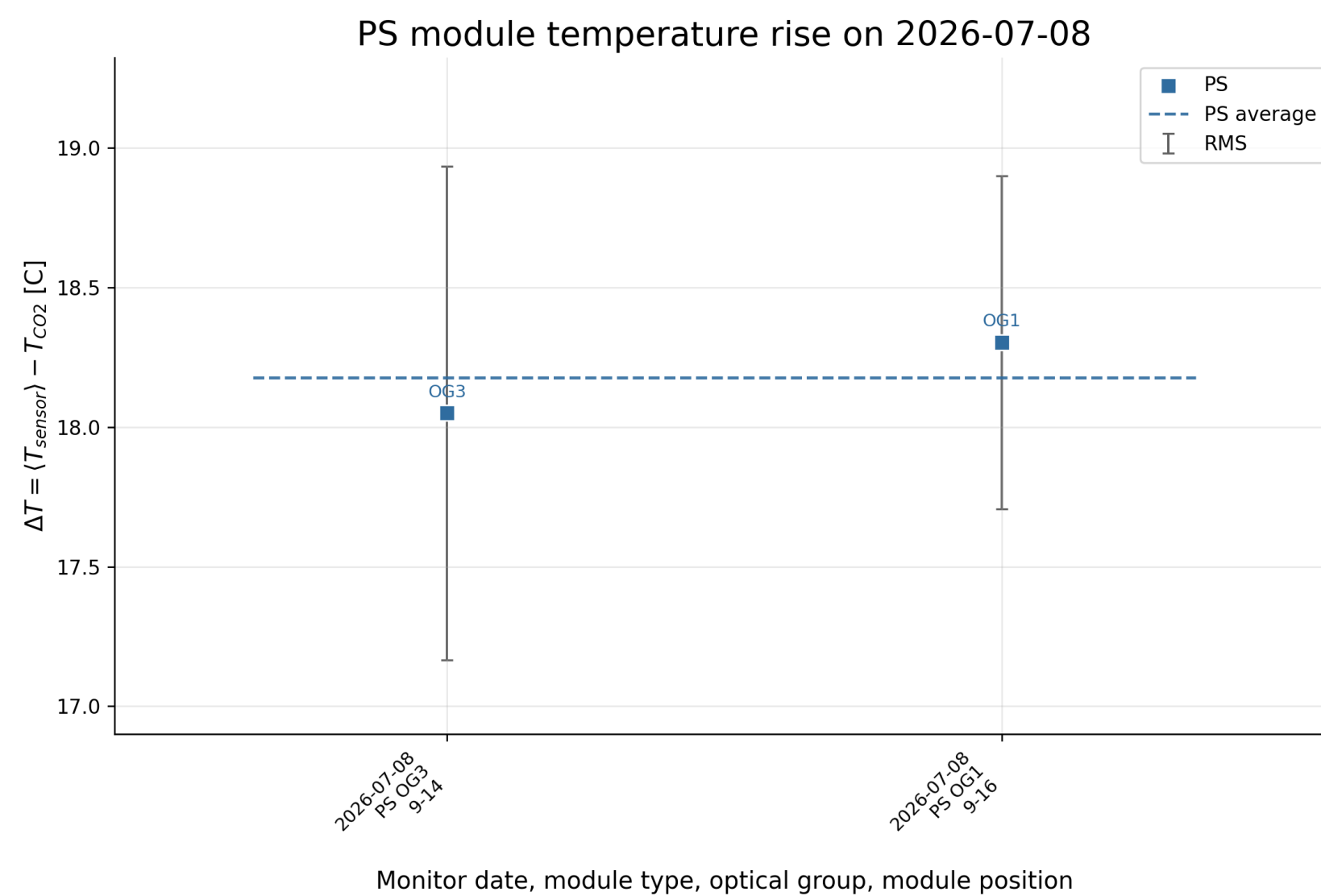
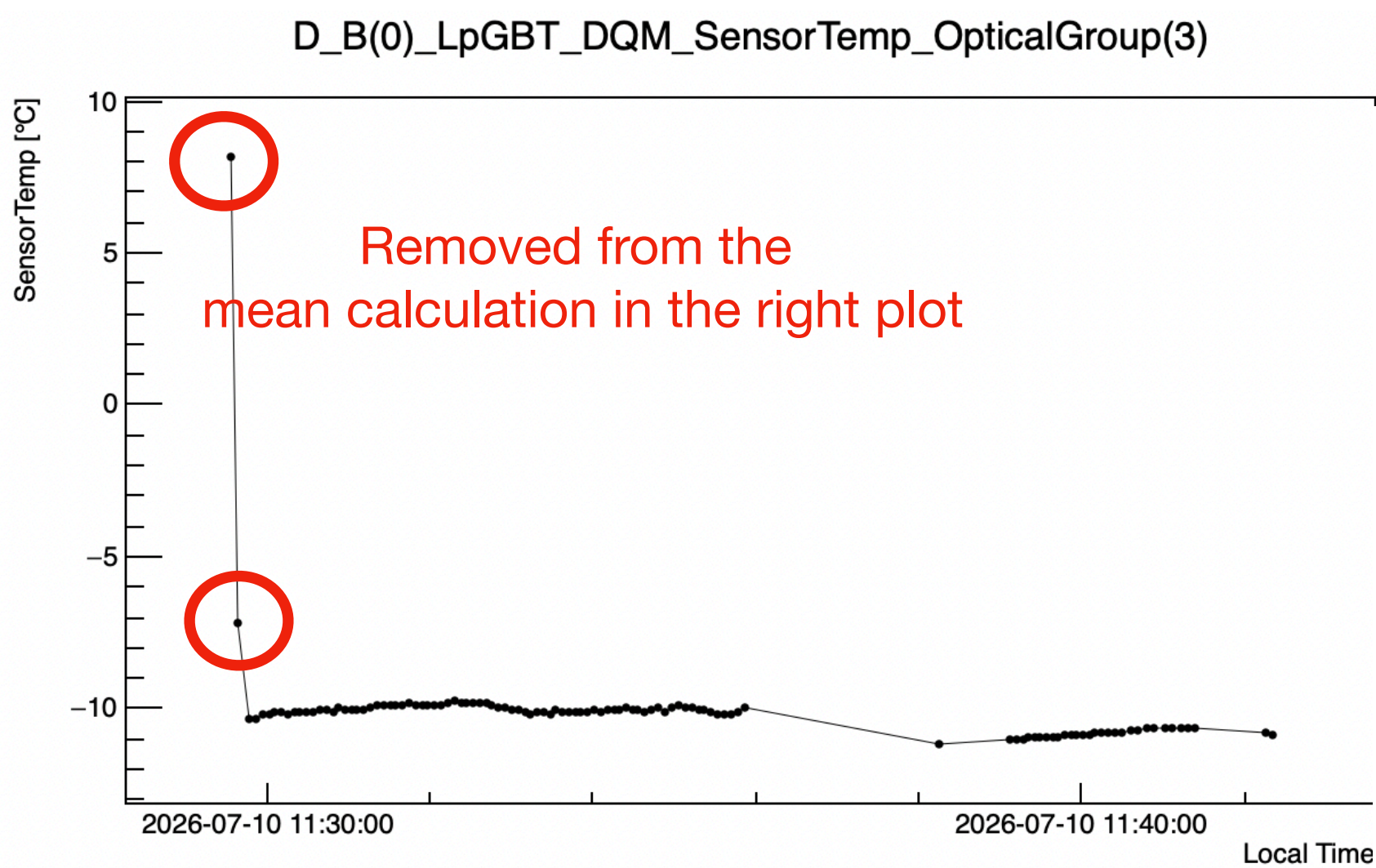


from Real module test

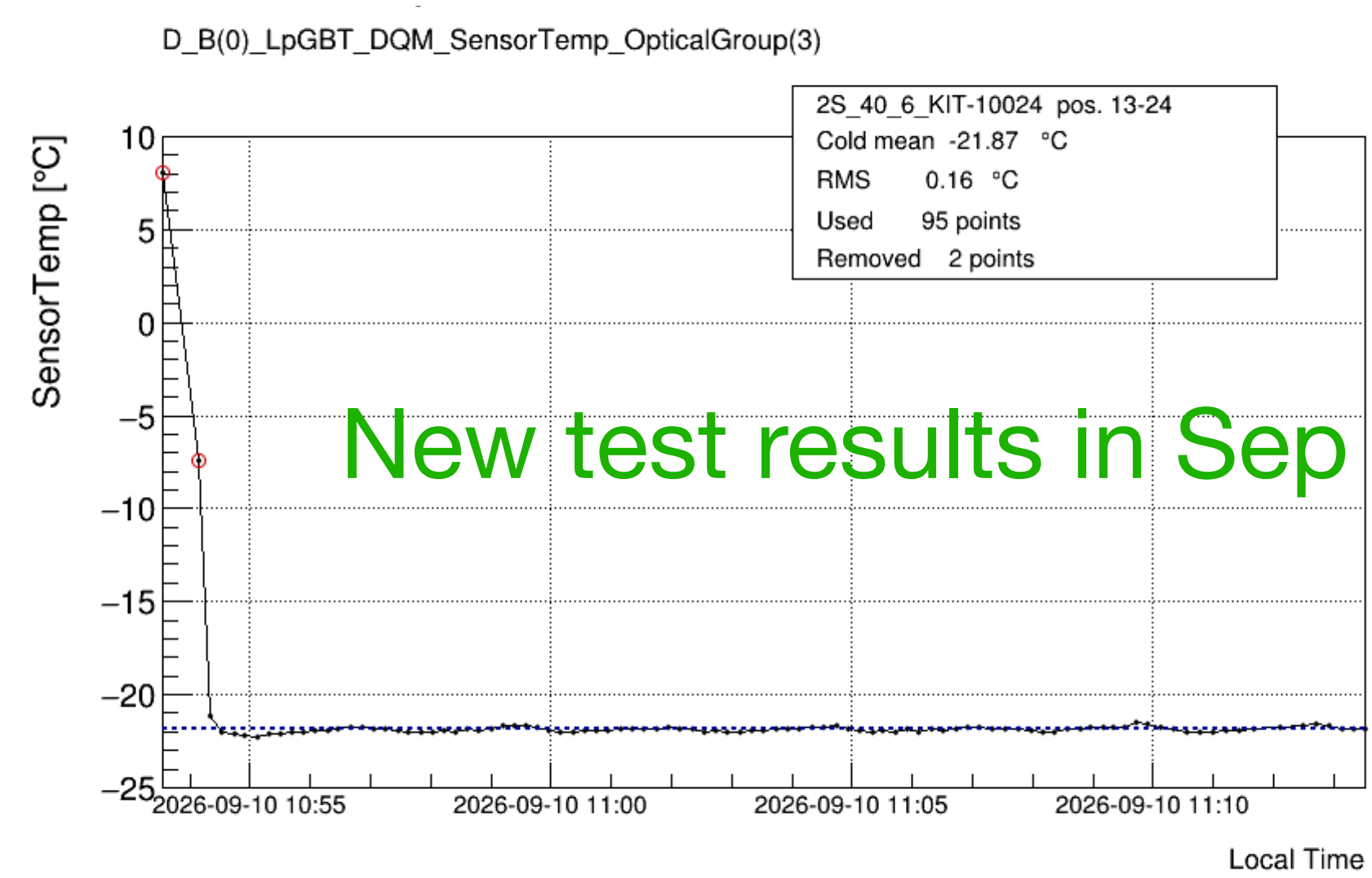
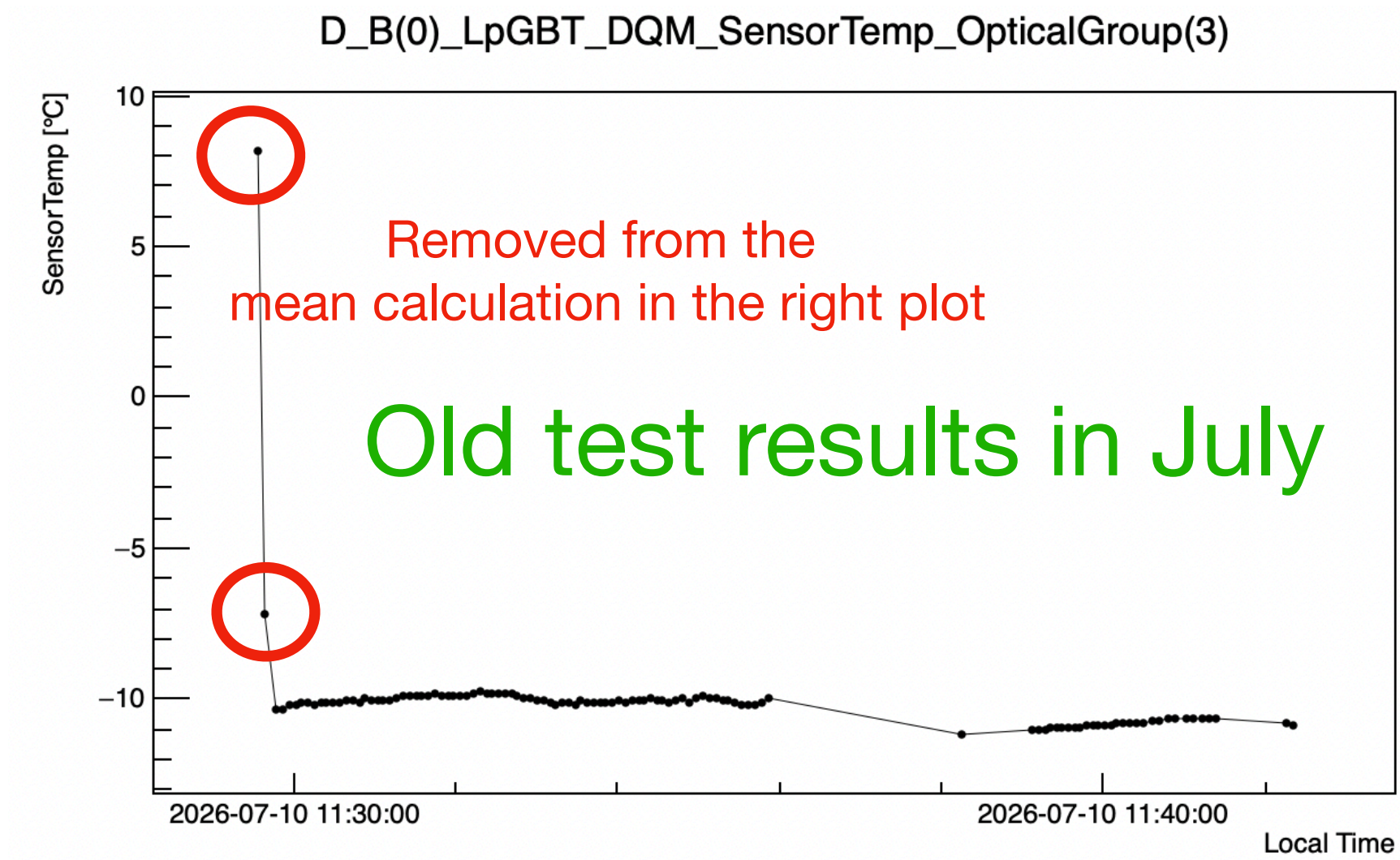
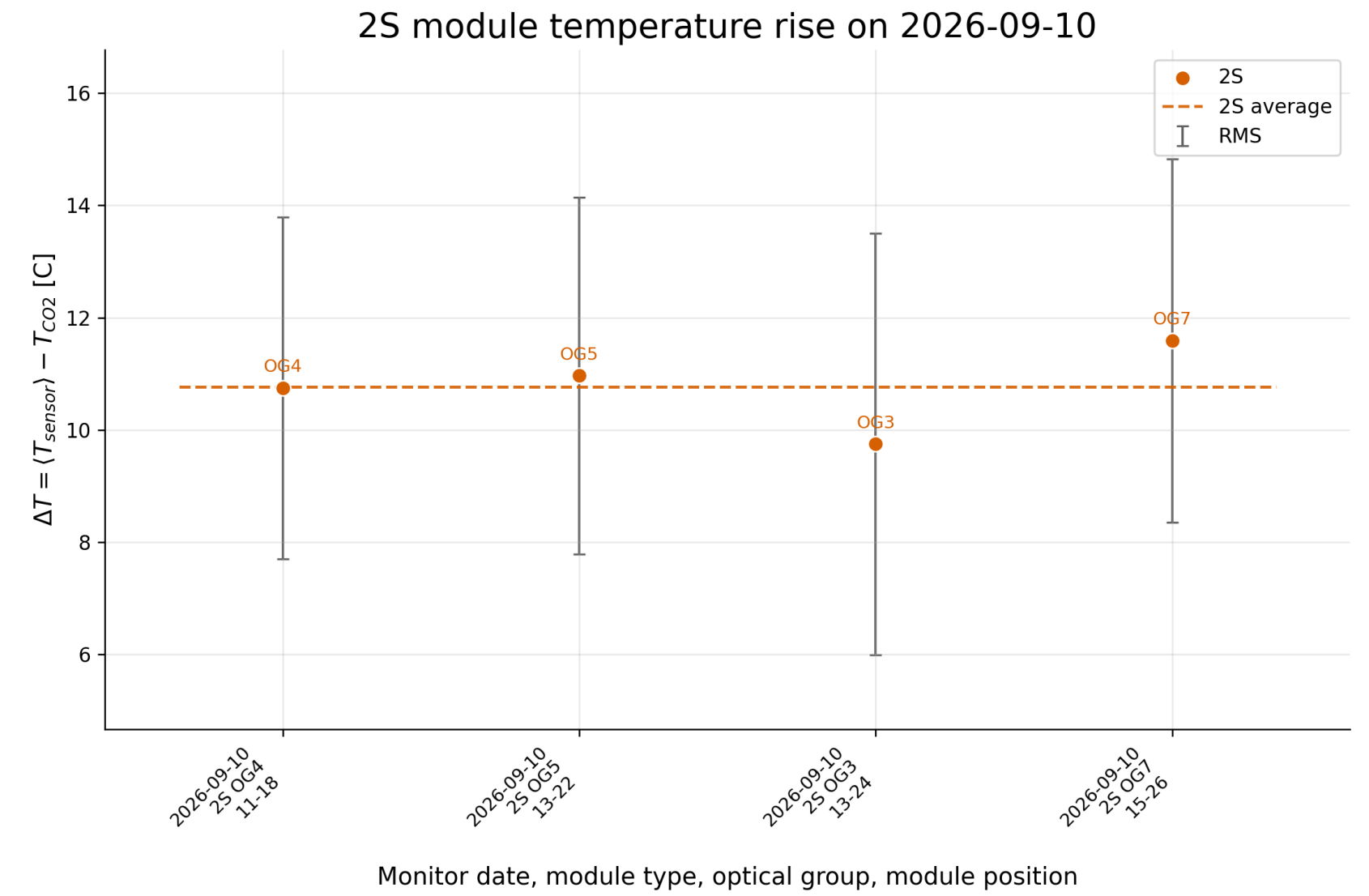
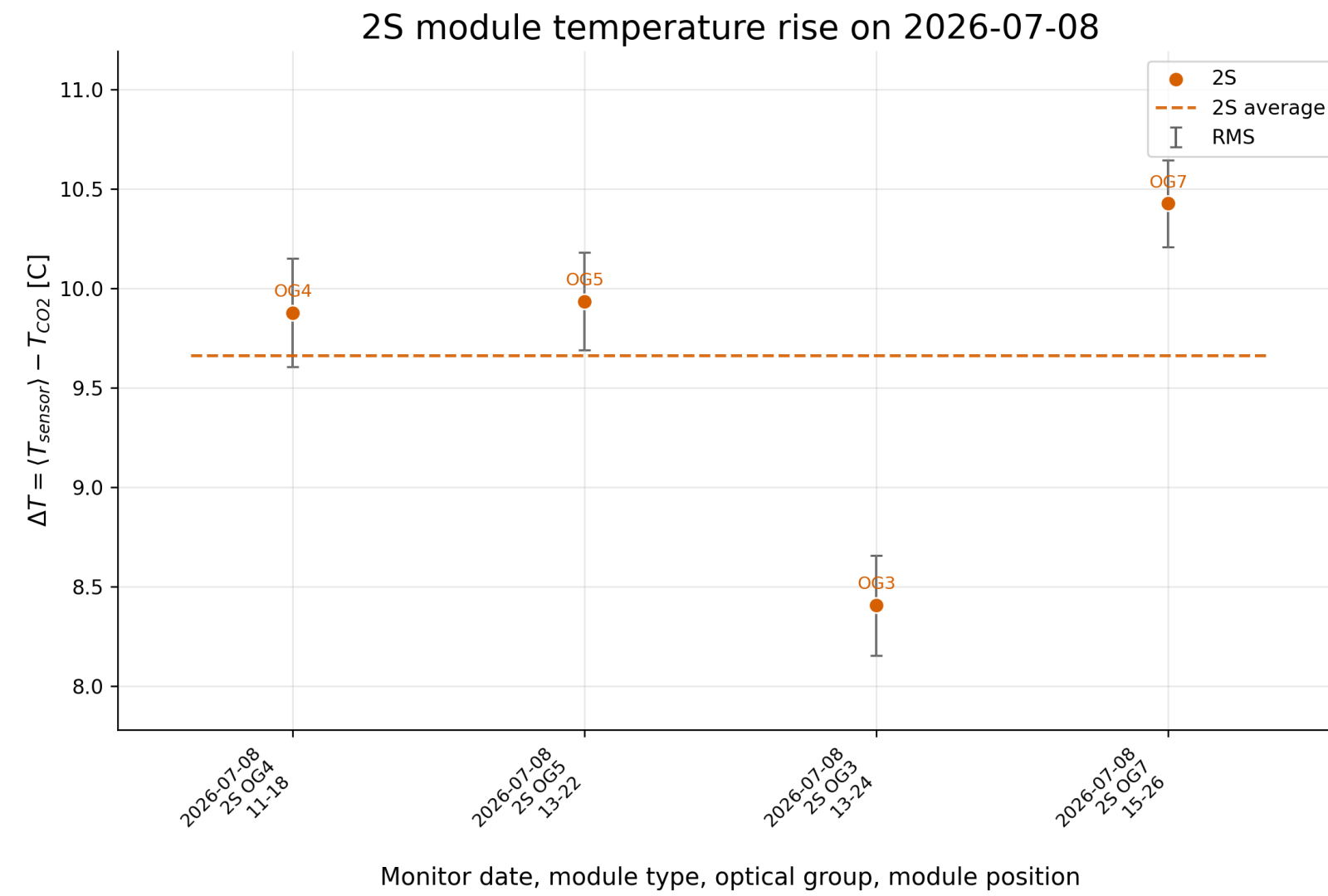


**from Dummy module test
credit: Muriel**

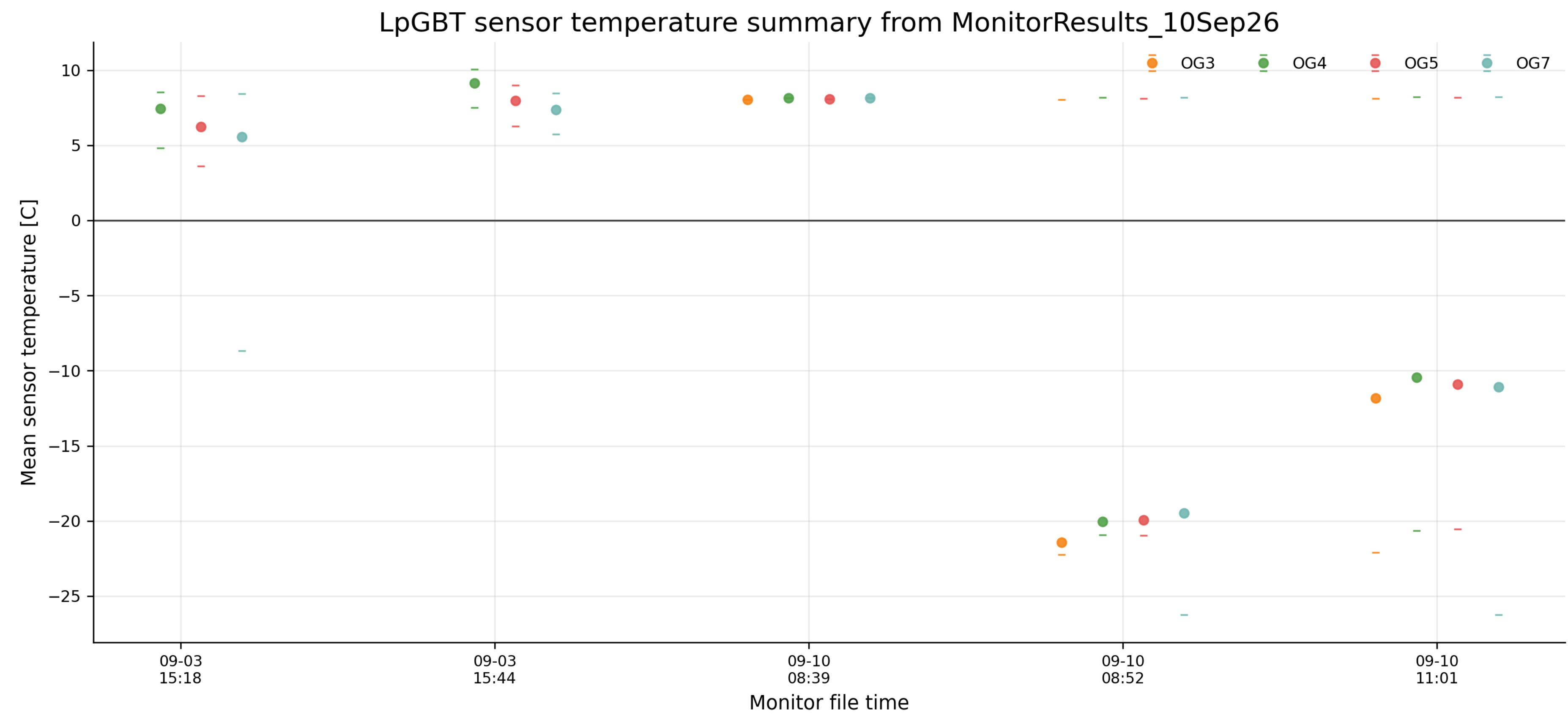
Old test results in July



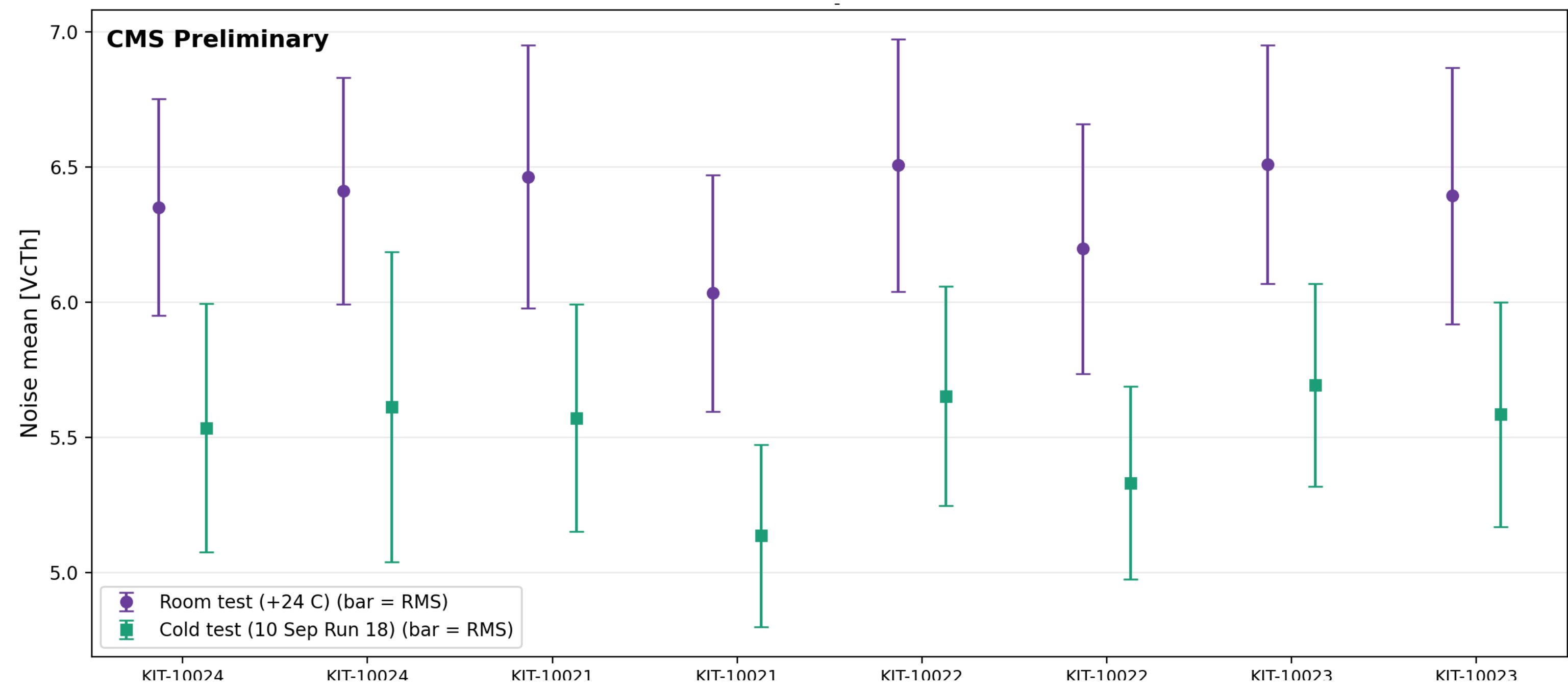
from Real module test



Temperatures at Cold and Warm



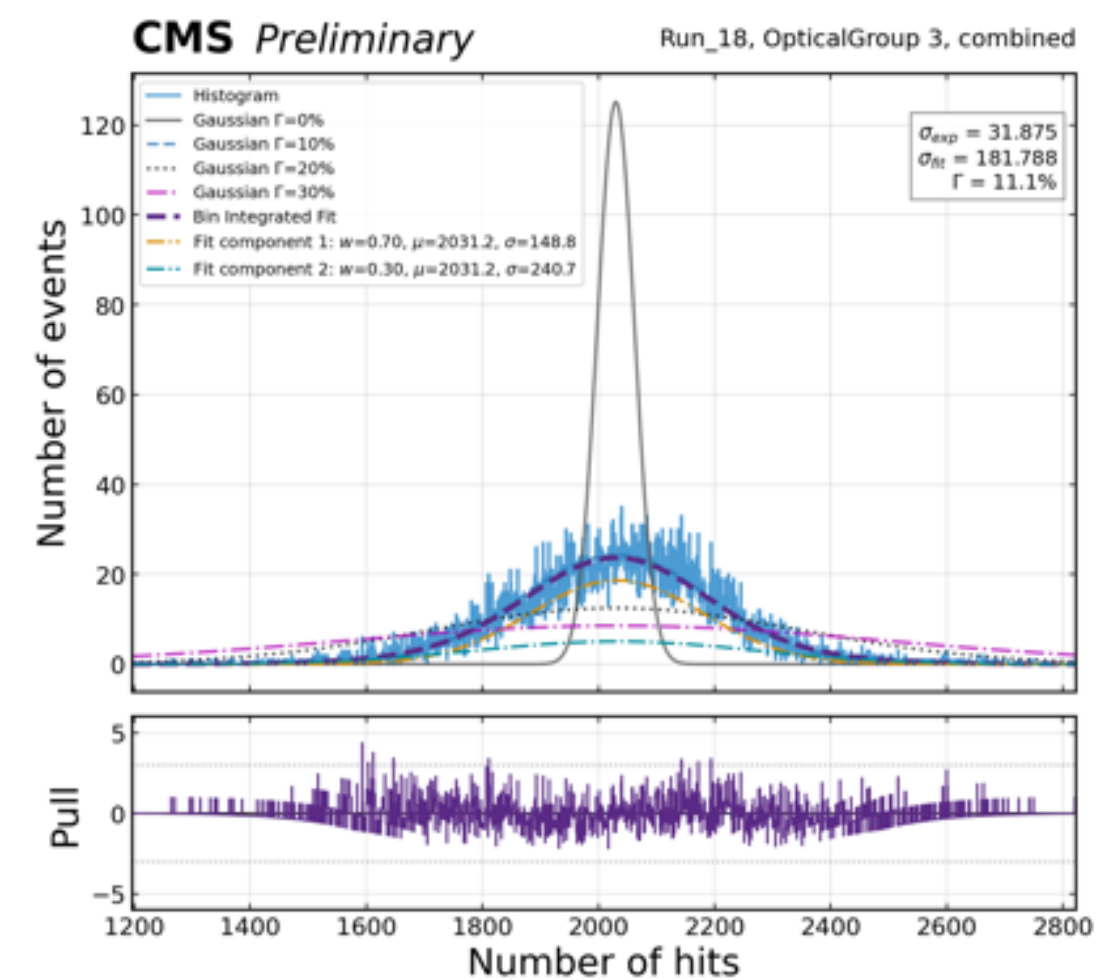
For 2S modules



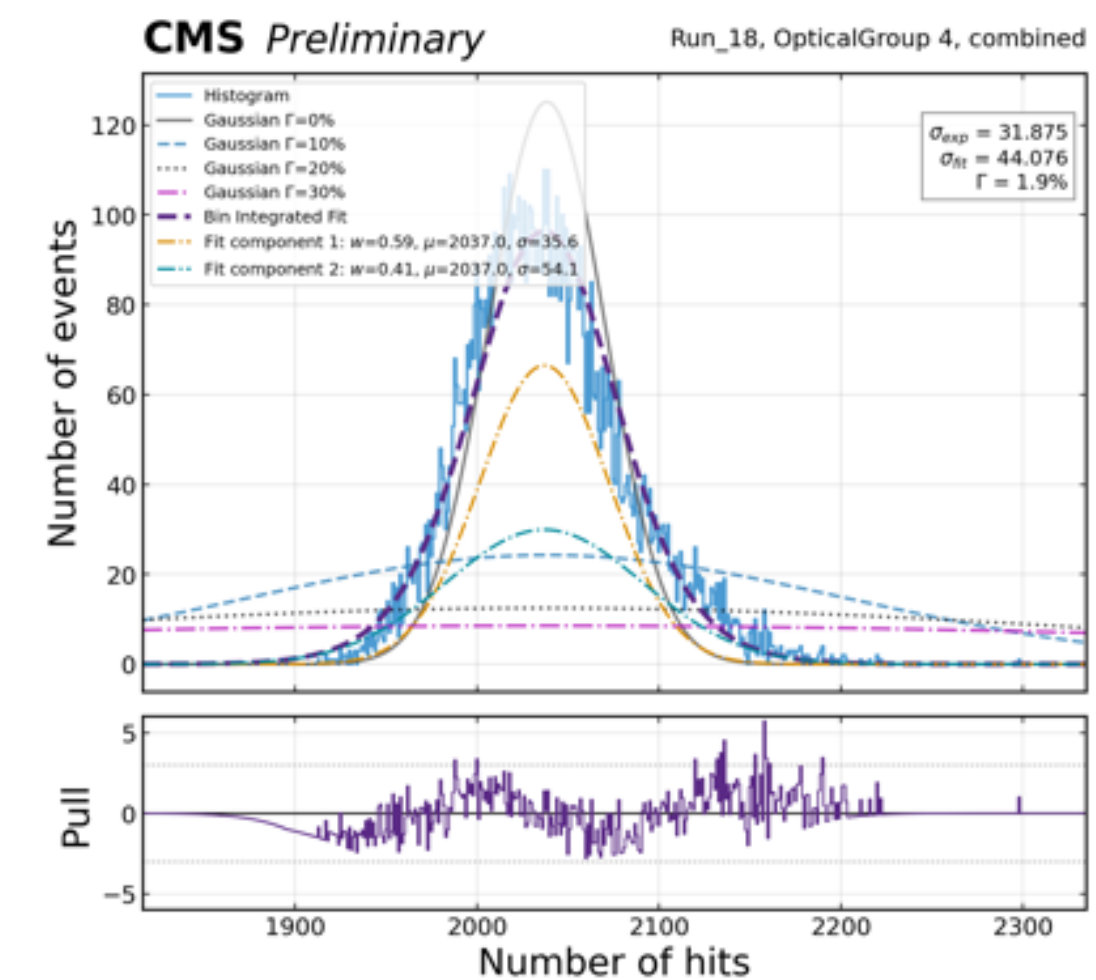
For 2S modules (OLD from July)

Optical group	Combined	FEH0	FEH1
OG 3	22.0%	29.6%	28.6%
OG 4	13.4%	23.3%	23.5%
OG 5	8.9%	20.7%	21.8%
OG 7	9.6%	29.7%	30.1%

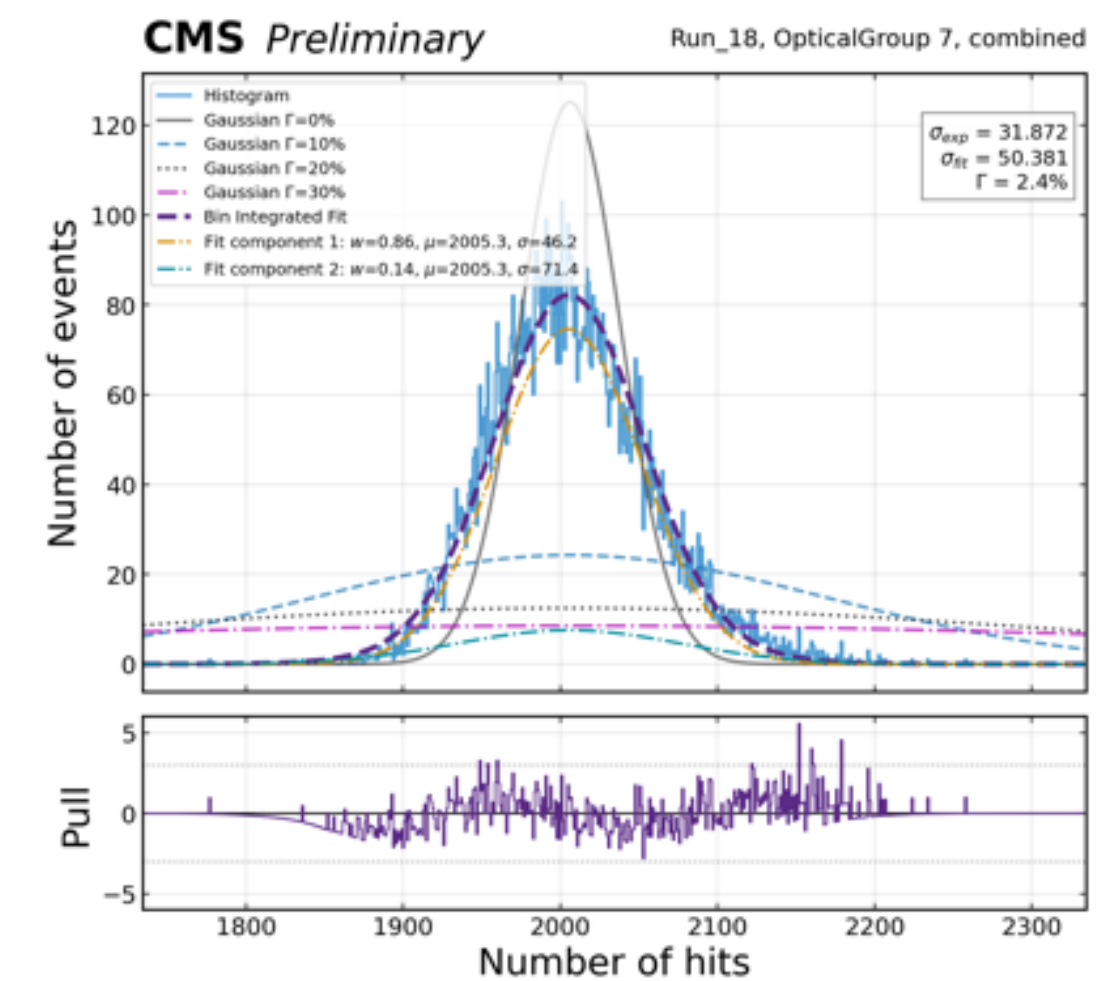
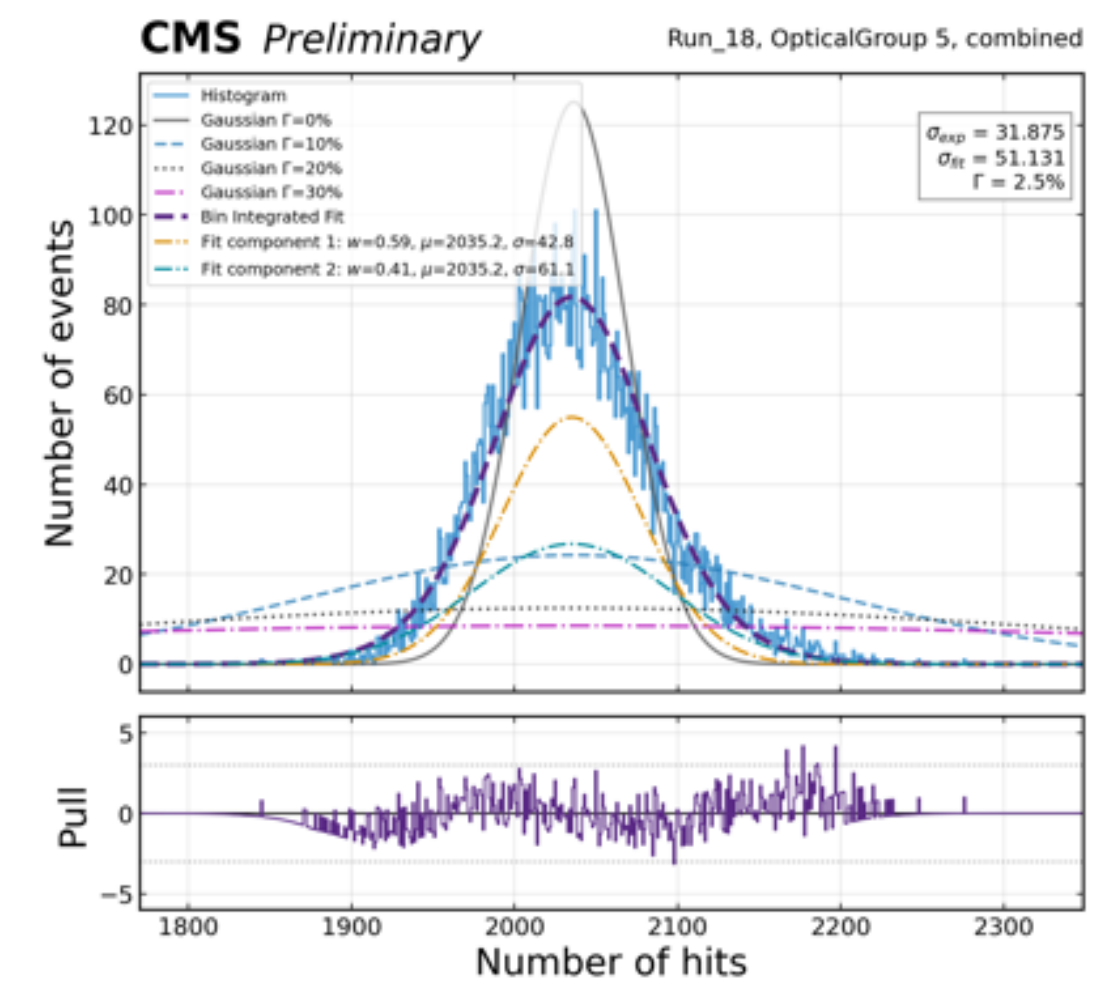
For 2S modules



OpticalGroup_3_combined.png



OpticalGroup_4_combined.png



For 2S modules

Optical group	Combined	FEH0	FEH1
OG 3	22.0%	29.6%	28.6%
OG 4	13.4%	23.3%	23.5%
OG 5	8.9%	20.7%	21.8%
OG 7	9.6%	29.7%	30.1%

For 2S modules

