

Weekly meeting on Xboxes

15.04.2026

XBOX2 - Summary

XBOX2 (Not operative)

Plan for the week:

- Open main water supply (it was shut down for trying to identify the water leak)
- Heating up again the filament
- Trying to get HV

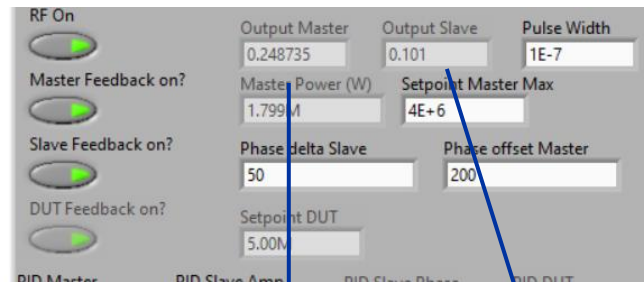
XBOX3 - Power Line 1 - RECAP

Installed:

- New PC w/o tuning plungers
 - New TD26CIEMAT DUT
 - New long load (2nd one)
-
- 100 Hz rep. rate
 - Uncompressed 100ns pulse

- Power not raising above 5 MW
- RF stopping for reaching saturation level.

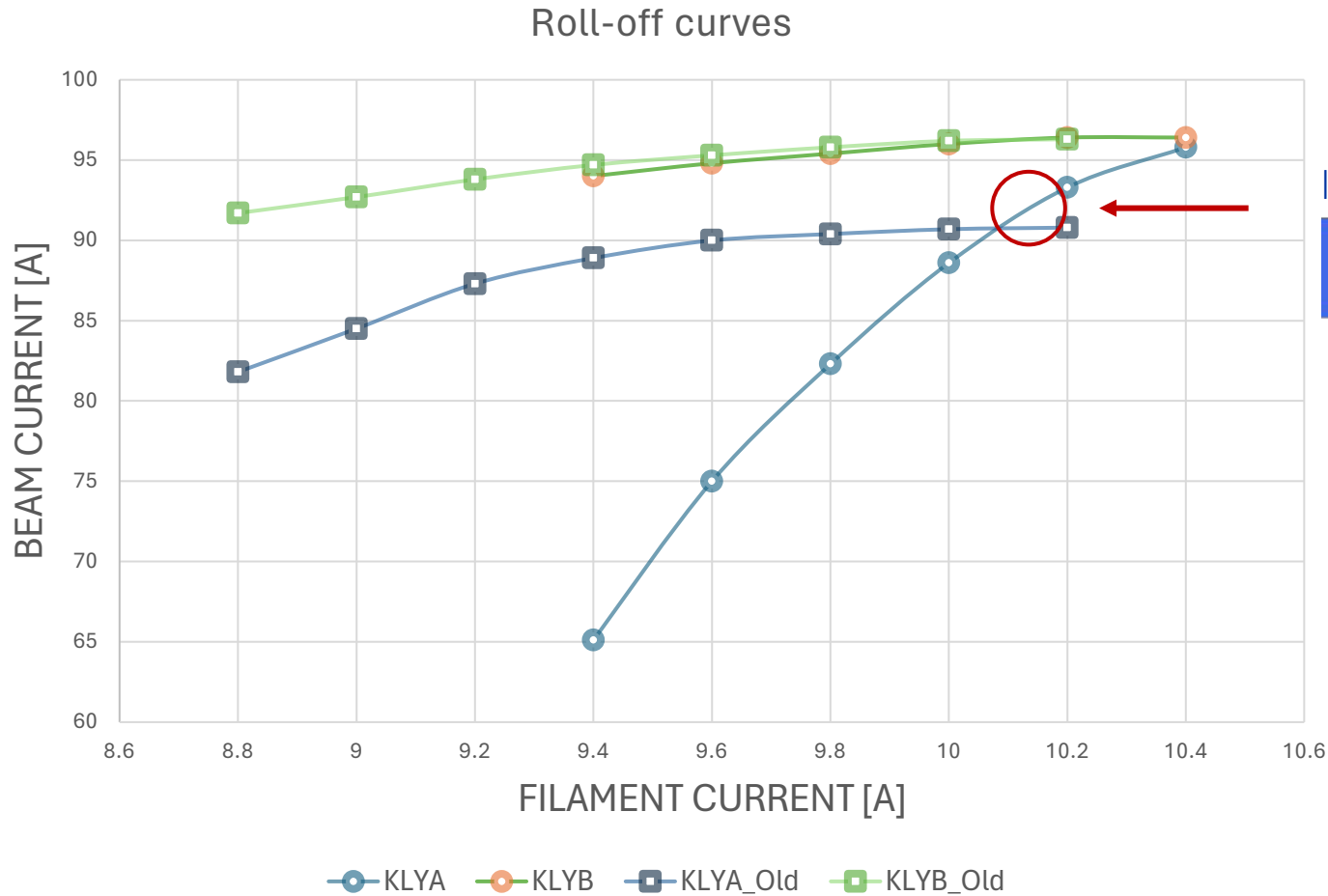
Klystron A was saturating at about 2.5 MW peak power



This keeps increasing until saturation (1.00)

This stops at 0.101

XBOX3 - Roll off curves



I changed setpoint.



Still same issue.

Setpoint DUT 6 MW, but the system does not manage to go above 5 MW, it saturates and shut automatically off the RF

XBOX3 – New Calibration

Performed:

- Calibration of the RF coax. line attenuation
- Calibration of the ADC count number / Power meter reading

Main difference with
previous calibration →

Attenuation PKIA (Old) → 39.7 dB

Attenuation PKIA (New) → 29.18 dB

Attenuation PKIB (Old) → 42.83 dB

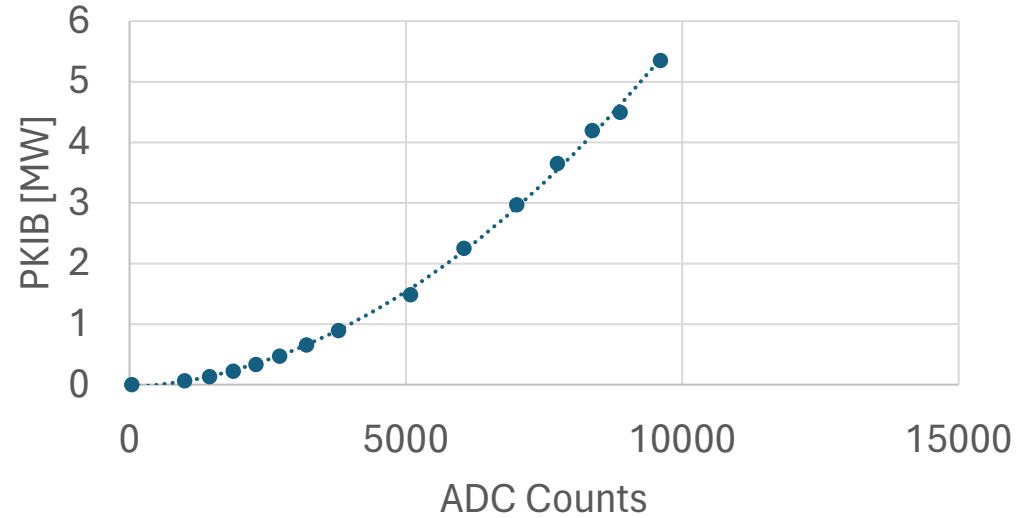
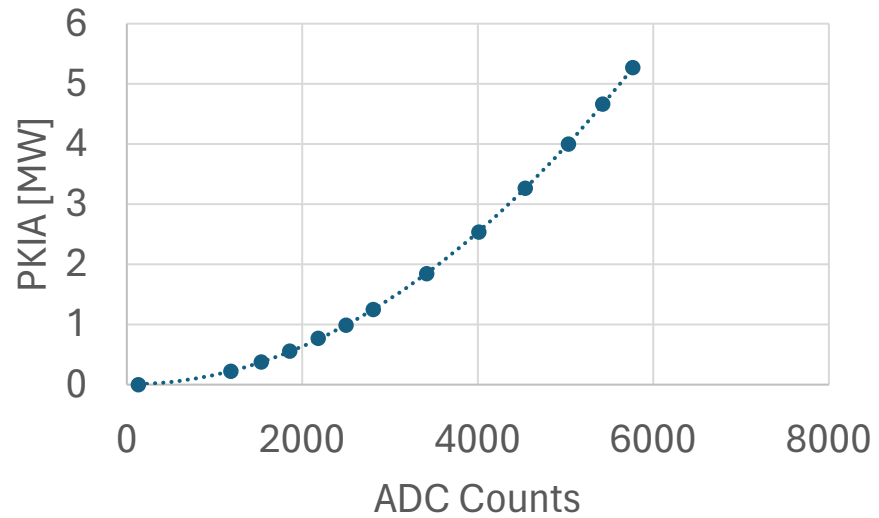
Attenuation PKIB (New) → 27.08 dB

		ax ²	bx	c
PKIA	Paz Cal Coefficients	0.0521	-3.4779	2322.1
	Leo Cal Coefficients	0.1583	-0.8839	6726.3
PSIA	Paz Cal Coefficients	2.70778	-66.7141	14983.8
	Leo Cal Coefficients	2.8	-88.135	19412
PLIA	Paz Cal Coefficients	0.102334	-18.7728	13227.2
	Leo Cal Coefficients	0.1045	-19.365	21506
PKIB	Paz Cal Coefficients	0.0501754	-5.10171	5133.06
	Leo Cal Coefficients	0.0541	44.439	-37496
PSIB	Paz Cal Coefficients	4.83347	-95.3754	19094.5
	Leo Cal Coefficients	3.5198	76.434	-13140
PLIB	Paz Cal Coefficients	0.108973	2.75701	-6642.11
	Leo Cal Coefficients	0.1244	43.335	-26453

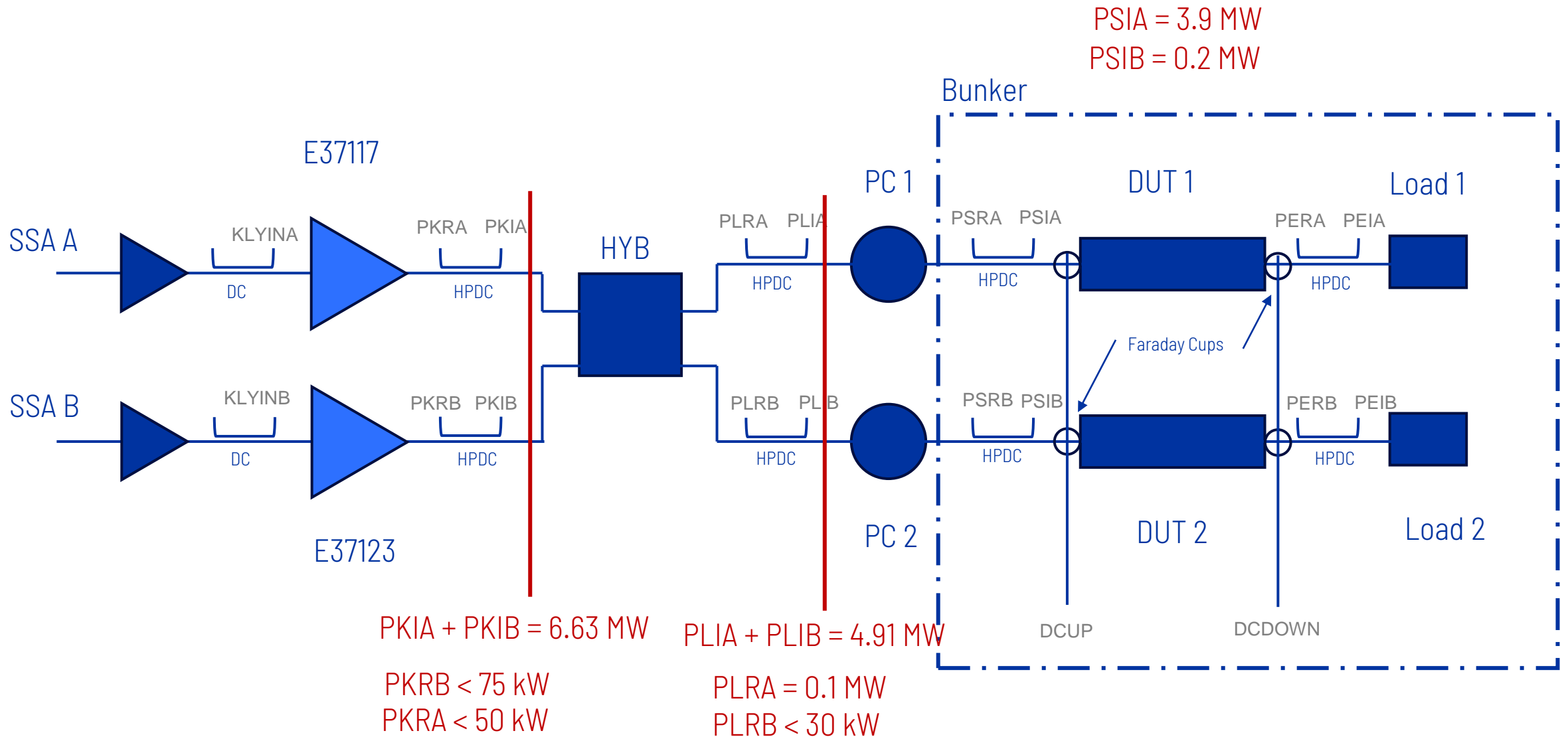
- Is it possible that cable attenuation has changed so significantly?
- Need to check attenuators on the lines.

XBOX3 - New Calibration

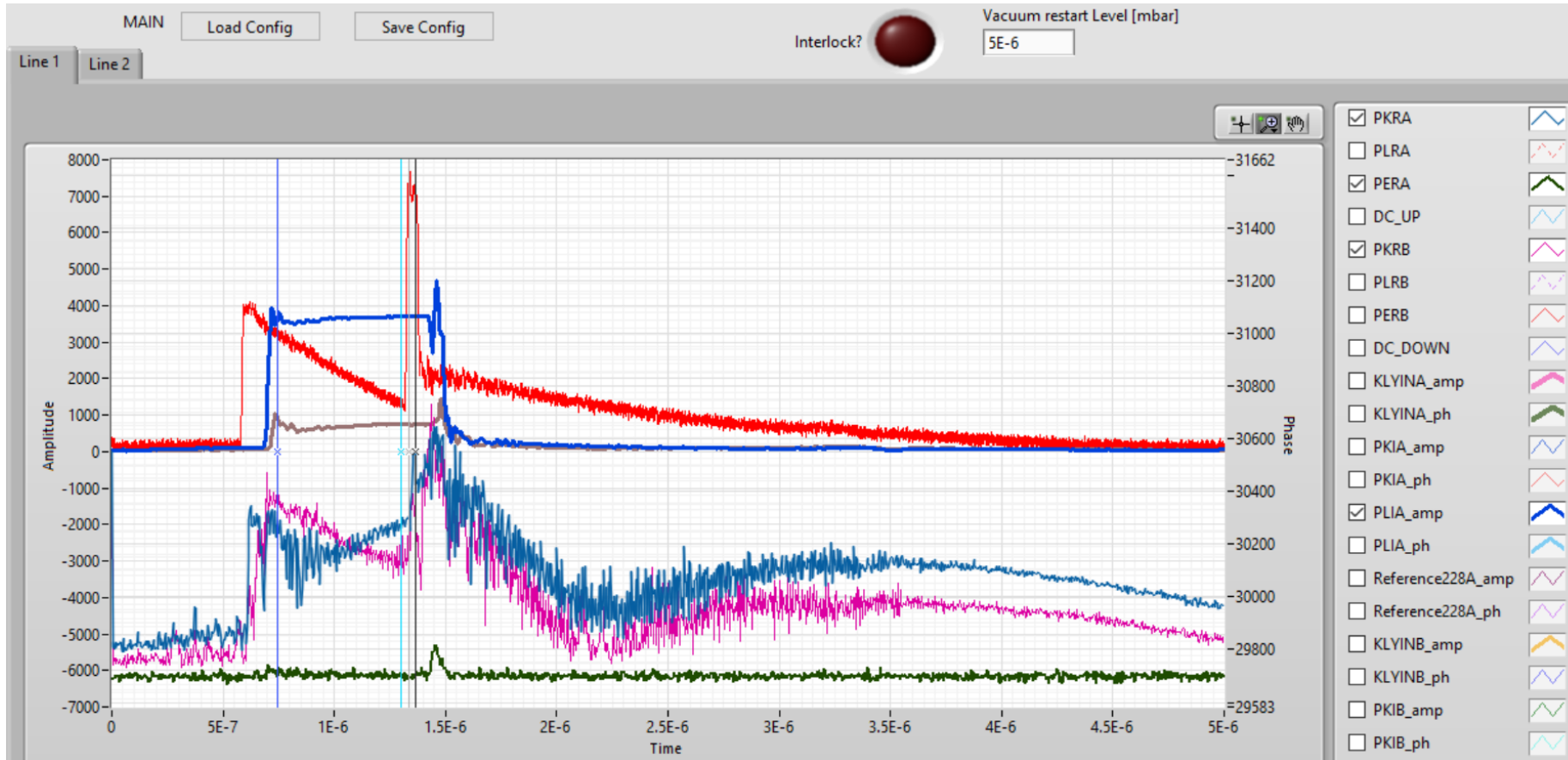
Tried to calibrate PKIA and PKIB to maximum power (around 5 MW)



XBOX3 - Power Balance

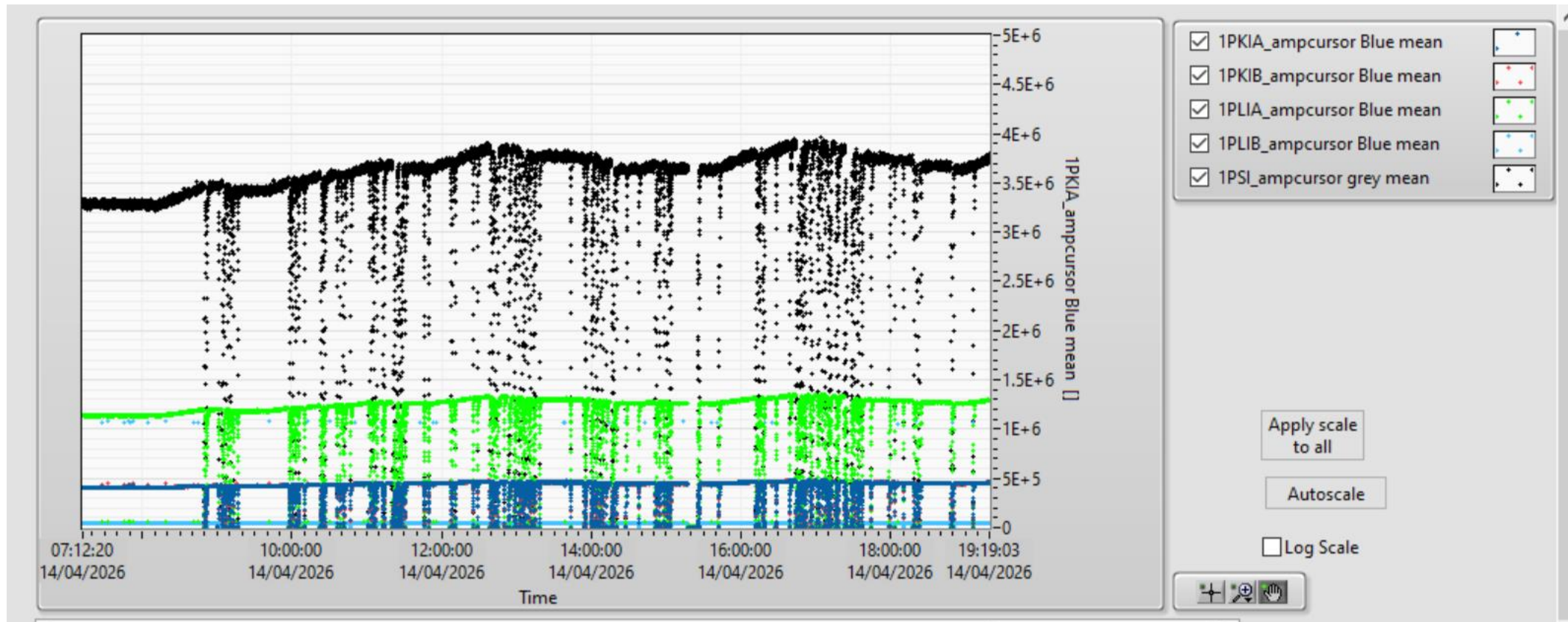


XBOX3 - Line 1

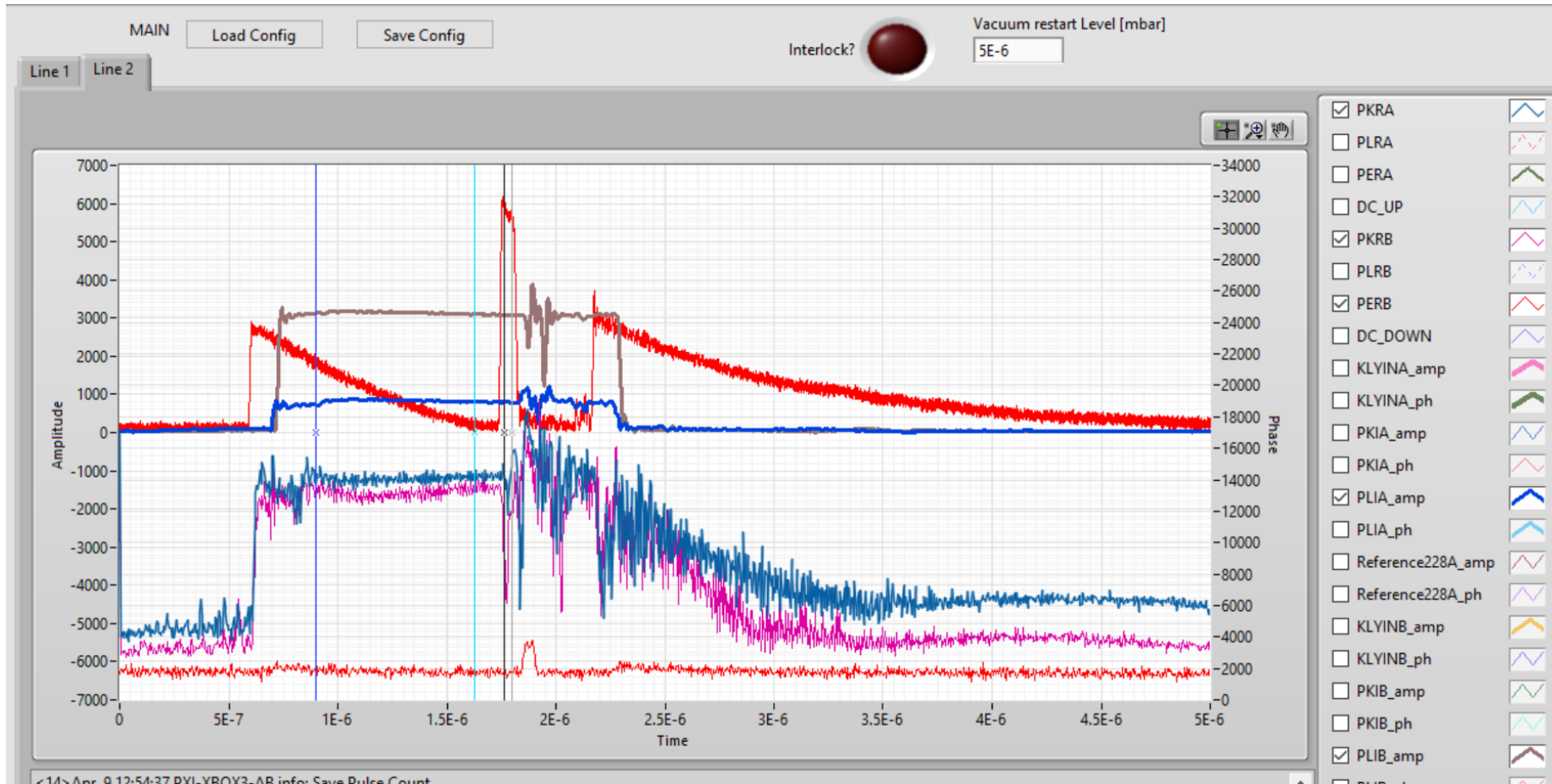


- 100 Hz rep. rate
- Compressed 50ns pulse from 0.8 us pulse

XBOX3 - Line 1

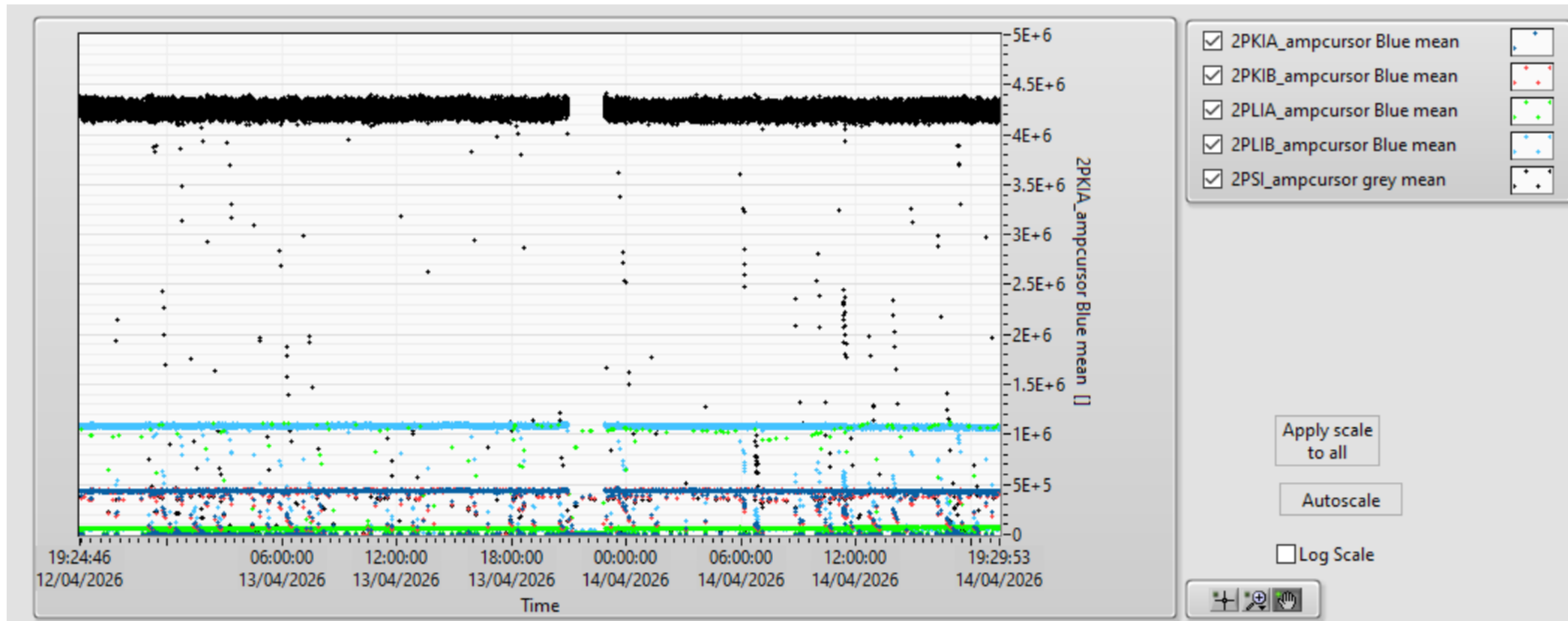


XBOX3 - Line 2

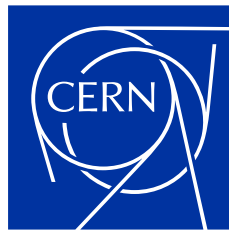


- 100 Hz rep. rate
- Compressed 50ns pulse from 1.58 us pulse

XBOX3 - Line 2



Thank you!



home.cern

XBOX3 Configuration - HEK klystron

192.168.1.150 - Remote Desktop Connection
 14/10/2025 12:32:57
 AccessLevel: ScandiNova
 ScandiNova
 XBOX 3A
 CVD: 161.4 kV
 CT: 90.0 A
 F1: Toggle help

Config
 Press here to enter the Config tab
 On this tab you can log in or see the configuration of internal components of the modulator.

TRIG&INT

PrfRead 299.9 T&I IO
 TrigGenPrfSet 50.0 Hz

CCPS

VoltSet 969.0 V
 Ps1VoltRead 969.3 V
 Ps2VoltRead 1009.1 V
 Ps3VoltRead 1014.6 V
 Ps IO

SWITCH

PlswthSet 4.0 us
 Su IO
 Su mode 3

PDU

Pdu IO

COOL

Ccps&SuFlow1 7.1 l/m
 Ccps&SuFlow2 6.6 l/m
 Ccps&SuFlow3 6.2 l/m
 WindowFlow 1.0 l/m
 BodyFlow 16.2 l/m
 CollectorFlow 39.8 l/m
 SolenoidFlow 15.3 l/m
 Cool IO

TANK

CvdRead 161.4 kV
 CtRead 90.0 A
 FwhmRead 4.1 us
 Digi IO
 OilTempRead 34.6 C
 OilLevRead -15.9 mrr
 Pump IO
 BpsVoltSet 1.7 V
 Bps IO

KLY

FpsCurrSet 9.8 A
 FpsCurrRead 9.7 A
 FpsVoltRead 14.4 V
 HeaterDelay1 0 Sec
 CounterCoilCurrSet 7.0 A
 CounterCoilCurrRead 7.0 A
 CounterCoilVoltRead 0.2 V
 MainCoilCurrSet 32.0 A
 MainCoilCurrRead 31.8 A
 MainCoilVoltRead 145.9 V
 Sps IO
 Ipc1CurrRead 399.9 nA
 Ipc1VoltRead 3.4 V
 Ipc IO

RESET

CommSts

LOC REM

TRIG

HV

STANDBY

OFF

Browse manuals

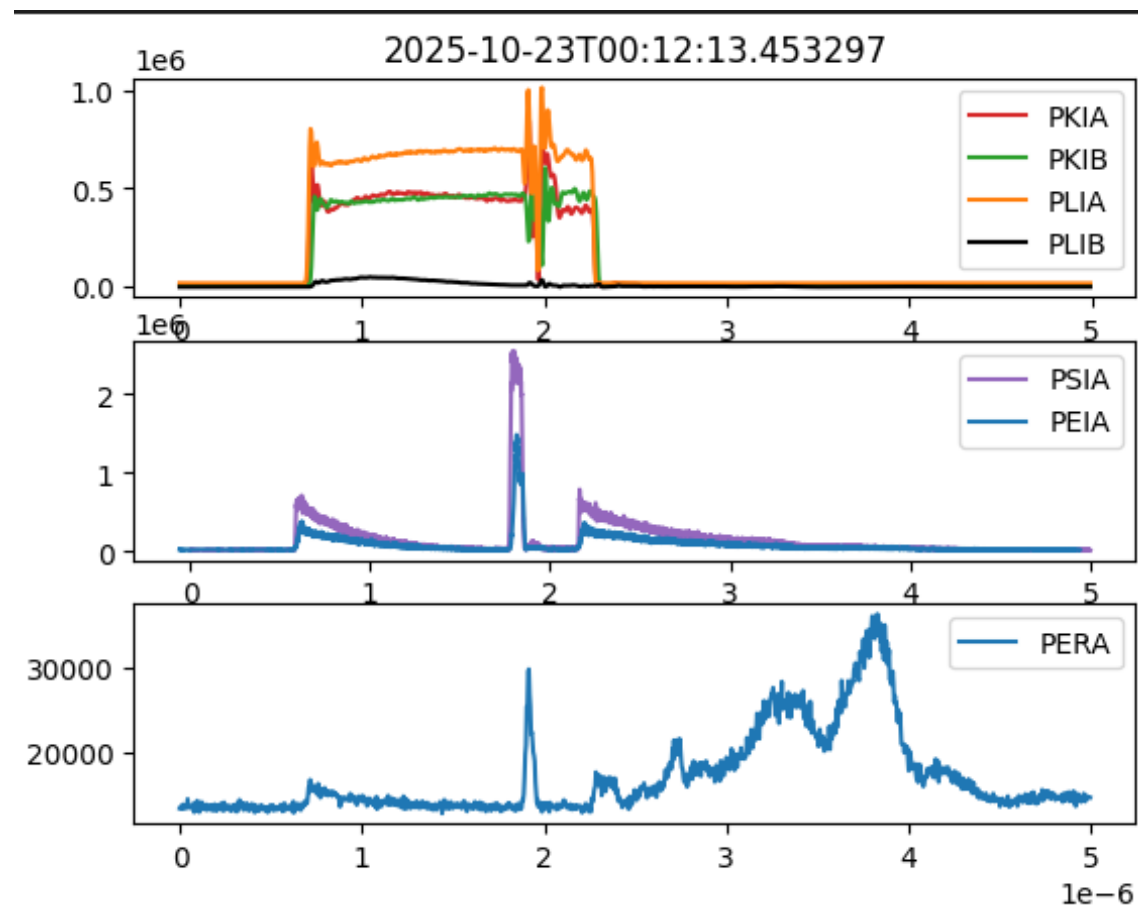
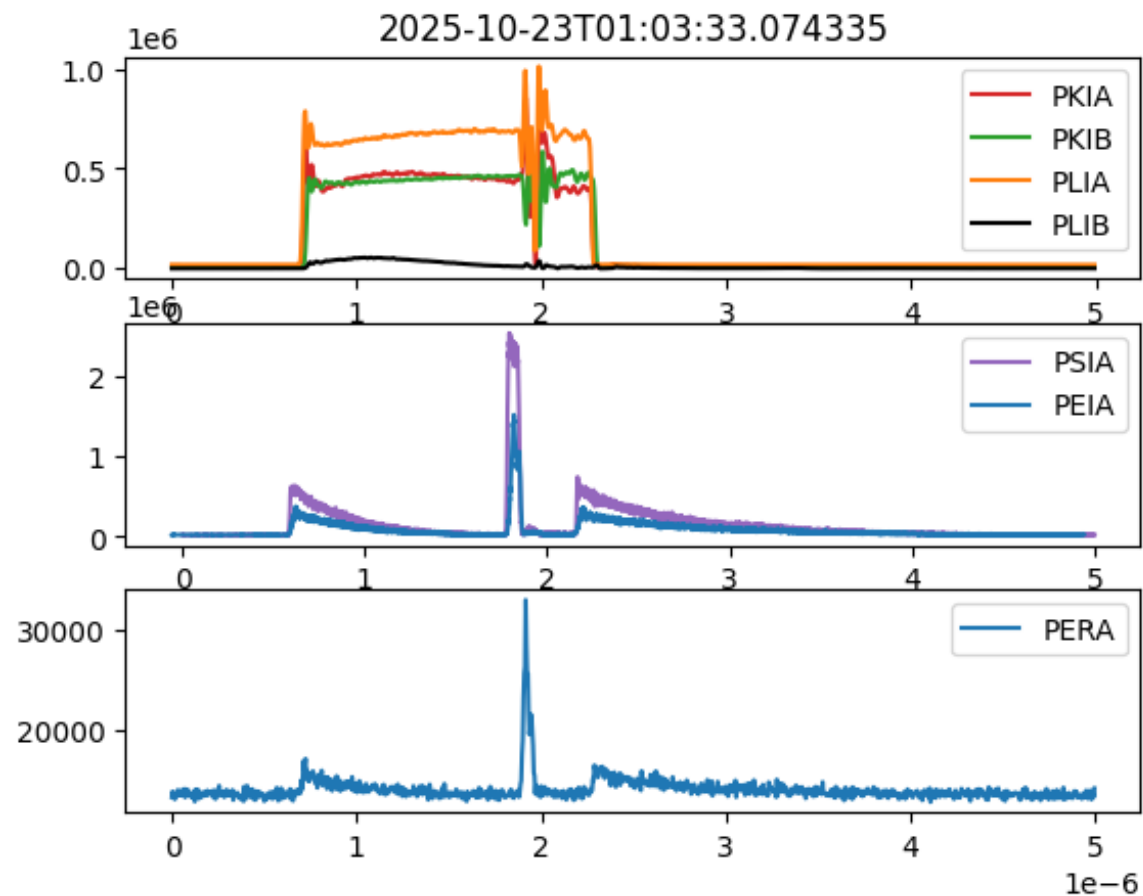
Main Digitizer Event Config Matrix

Emission fluctuating while pulsing

- Filament current recalibrated
- New roll-off curves to set filament heating
- Scandate cathode?
- High vacuum levels but stable now

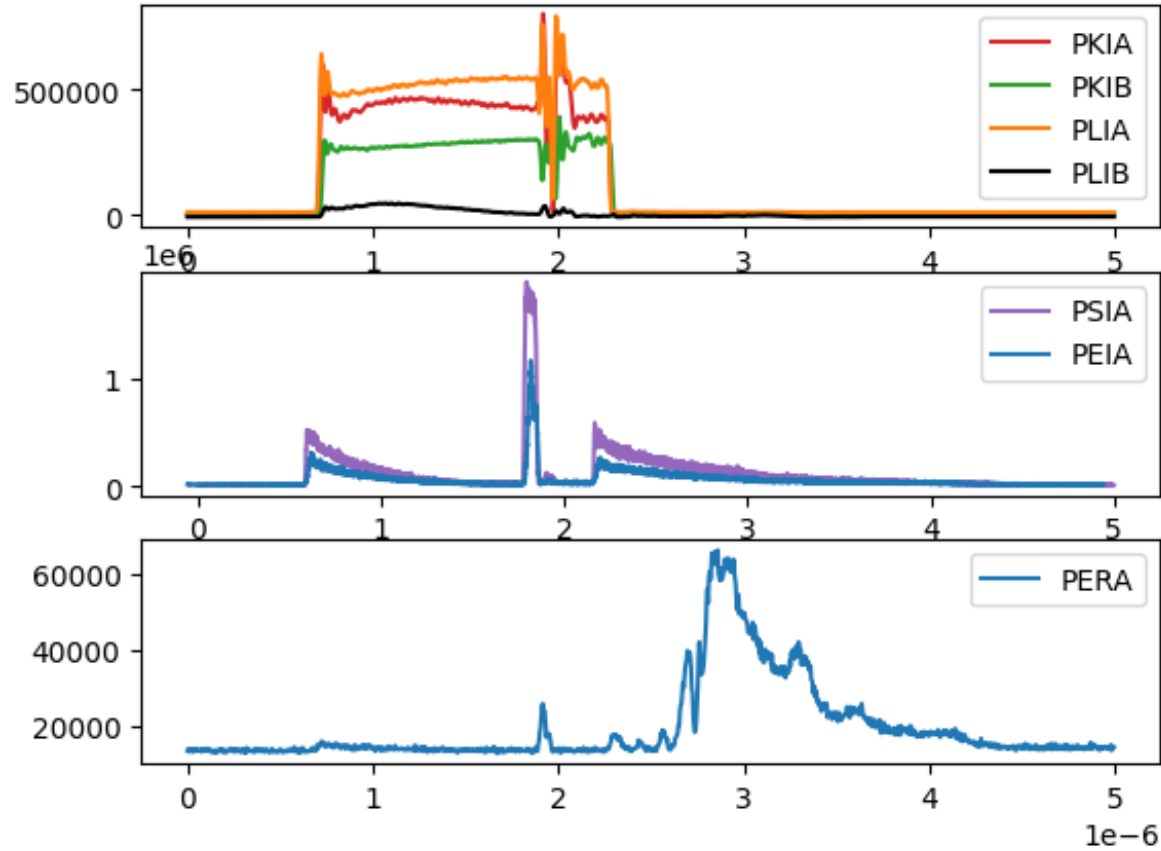
CVD,kV	162.4	162.7	163.2
CT,A	87.4	86.7	86.6
ipc,nA	411	398	429.2
Prfavg,MW	1.8	2.2	2.5

XBOX3 Line1 - BDs in load

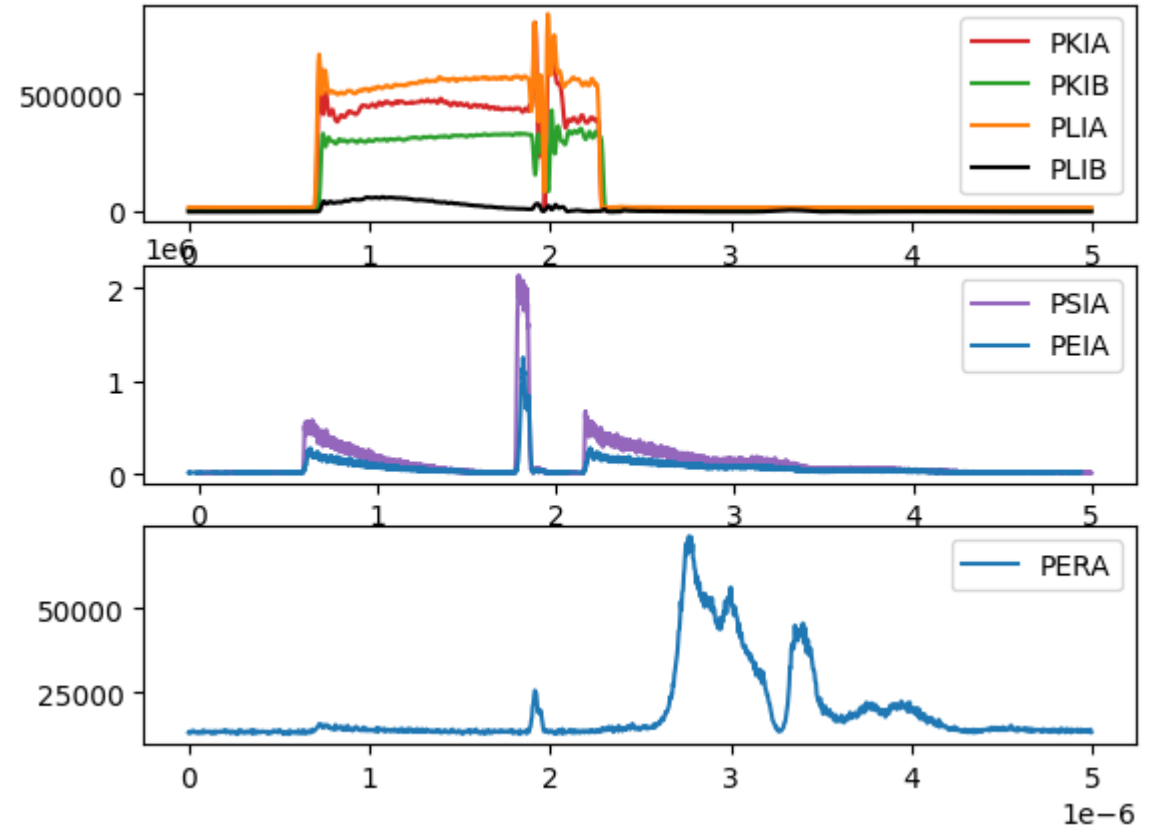


XBOX3 Line1 - BDs in load

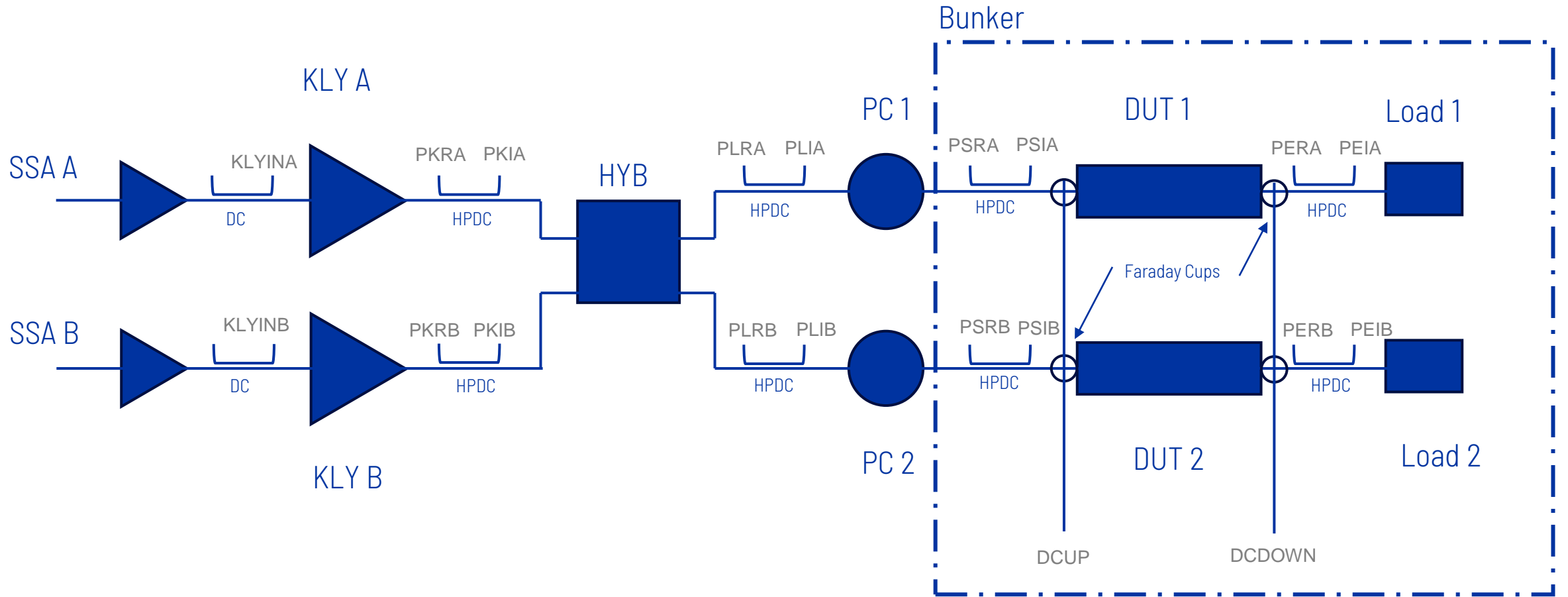
2025-10-23T00:31:01.812523



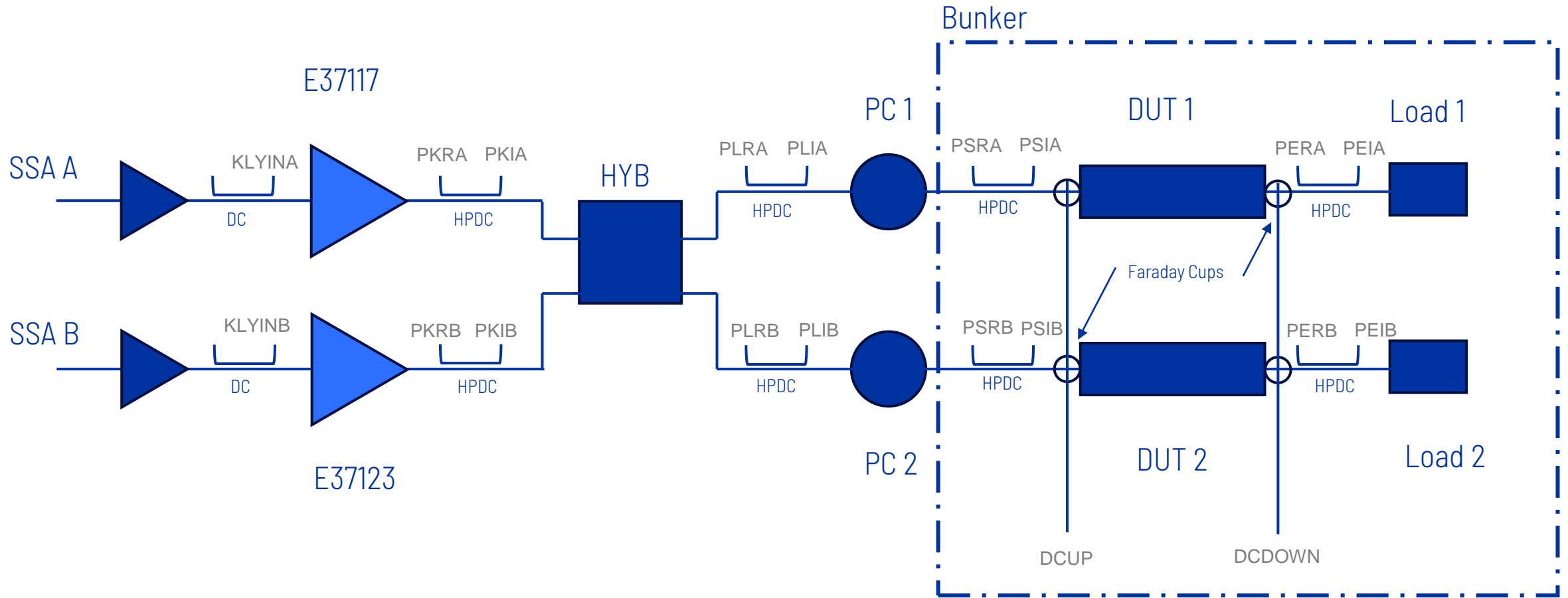
2025-10-23T08:03:37.749362



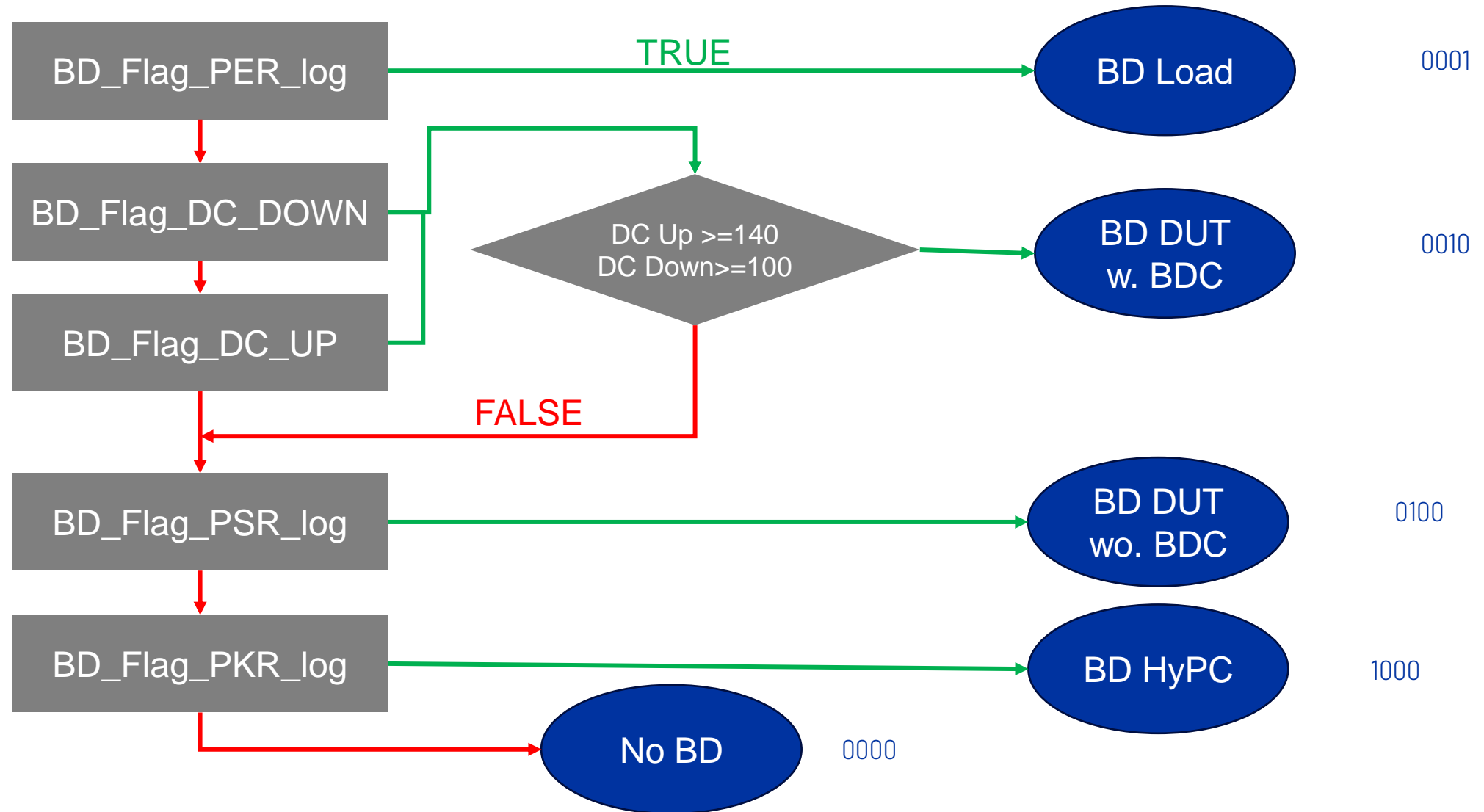
XBOX3 Configuration



XBOX3 Configuration



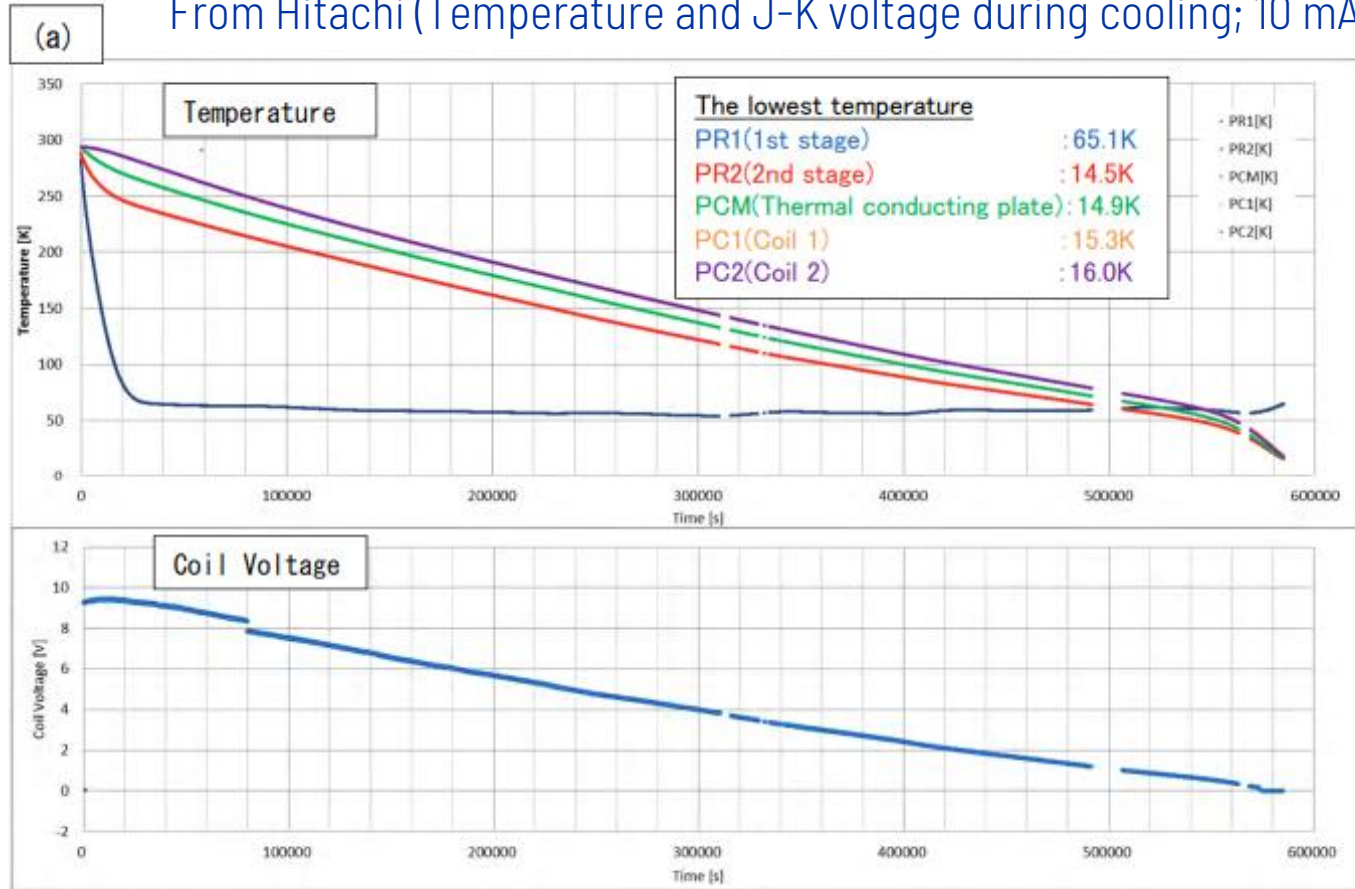
X-Box 2: Reminder on BD classification



XBOXES Summary

XBOX2 (Not operative)

From Hitachi (Temperature and J-K voltage during cooling; 10 mA current)



The power source for measurement can inject 10mA with an applied voltage of 2.1 V...