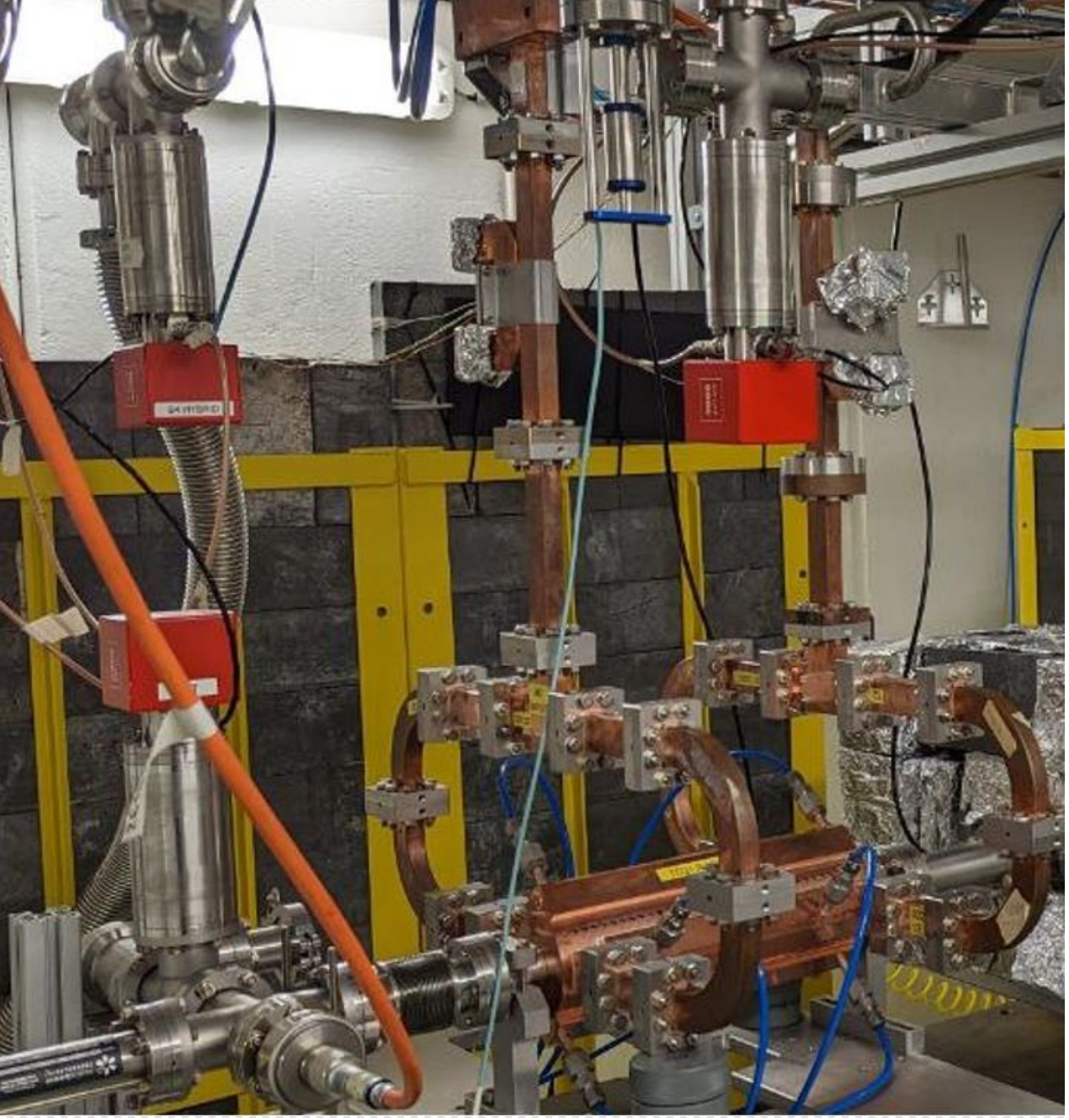
X-Box Summary

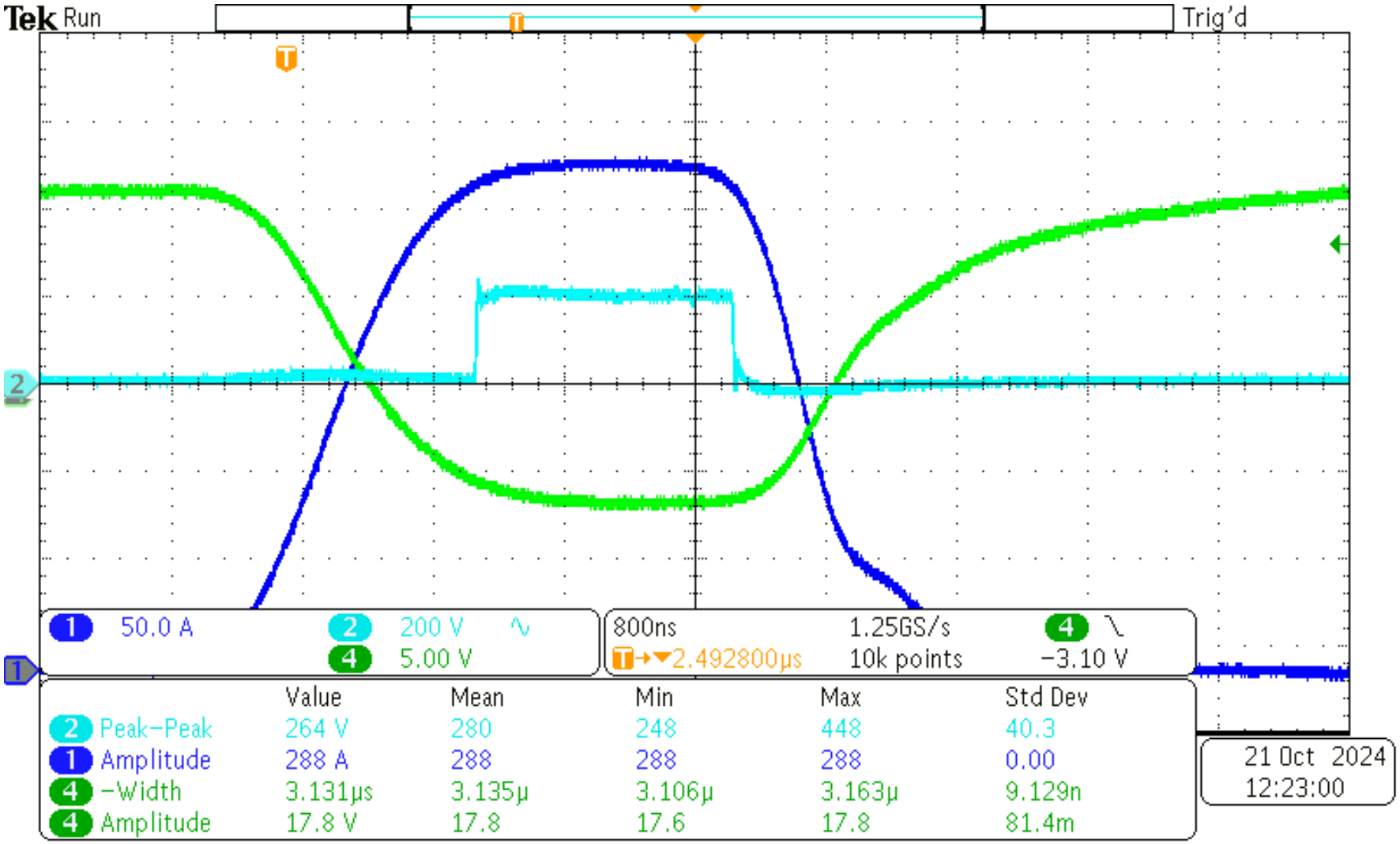
30.10.2024



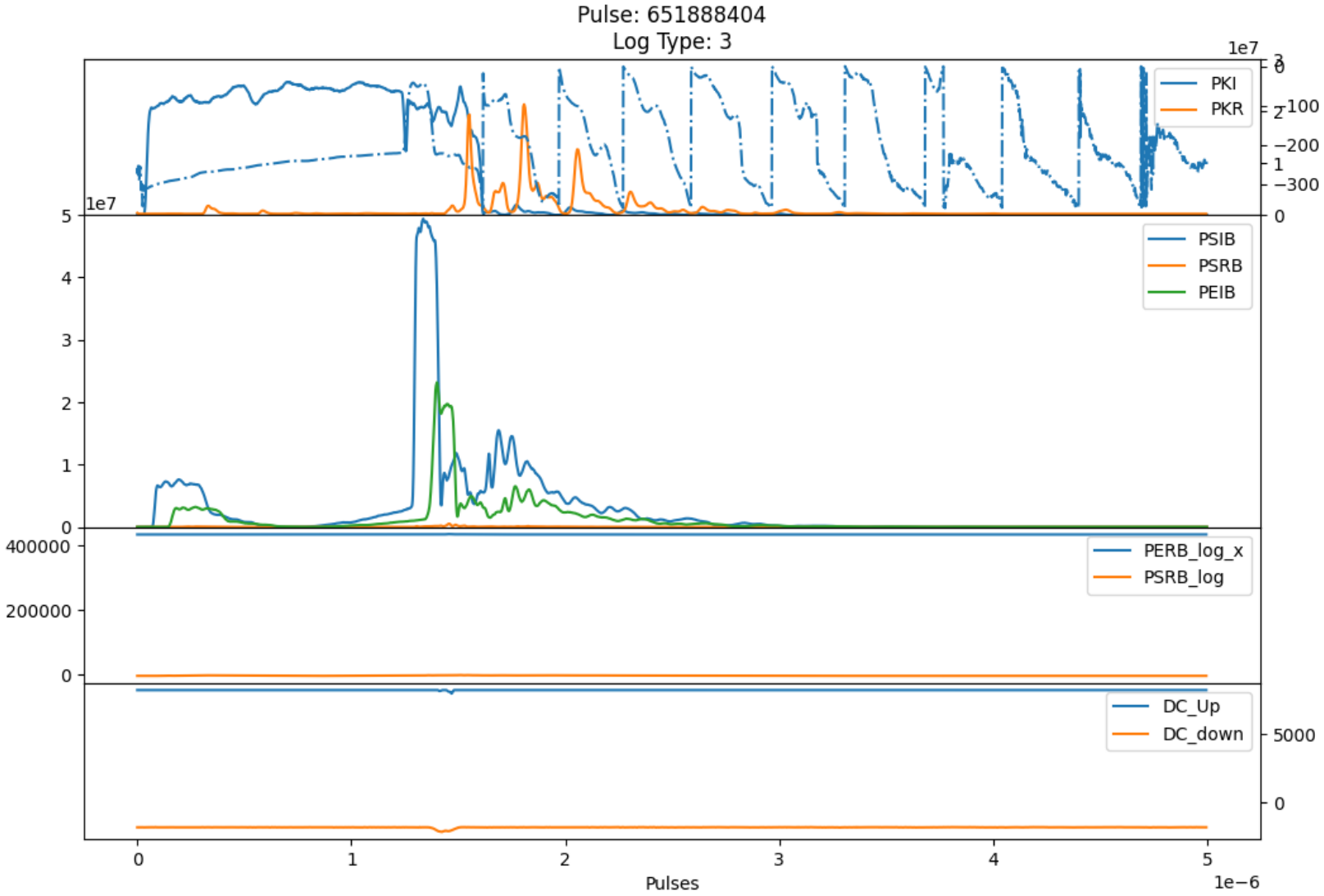
X-Box 2 TD31 N3 N4: Structure B

- **Restarted after visit 18.10.2024**
- 100:1 ratio, all power to Structure B
- Pulse width 100ns
- **Changed pulse shape (Igor‘s request)**
- **Fixed problem with pulse counter**
  - Saved old and corrected TDMS files
  - Corrected PXI Pulse count.txt too
- **Target power 60 MW**
- **Setpoint DUT 52MW (Monday 28th)**
  - BDR higher than 1e-4 -> back off to 48MW

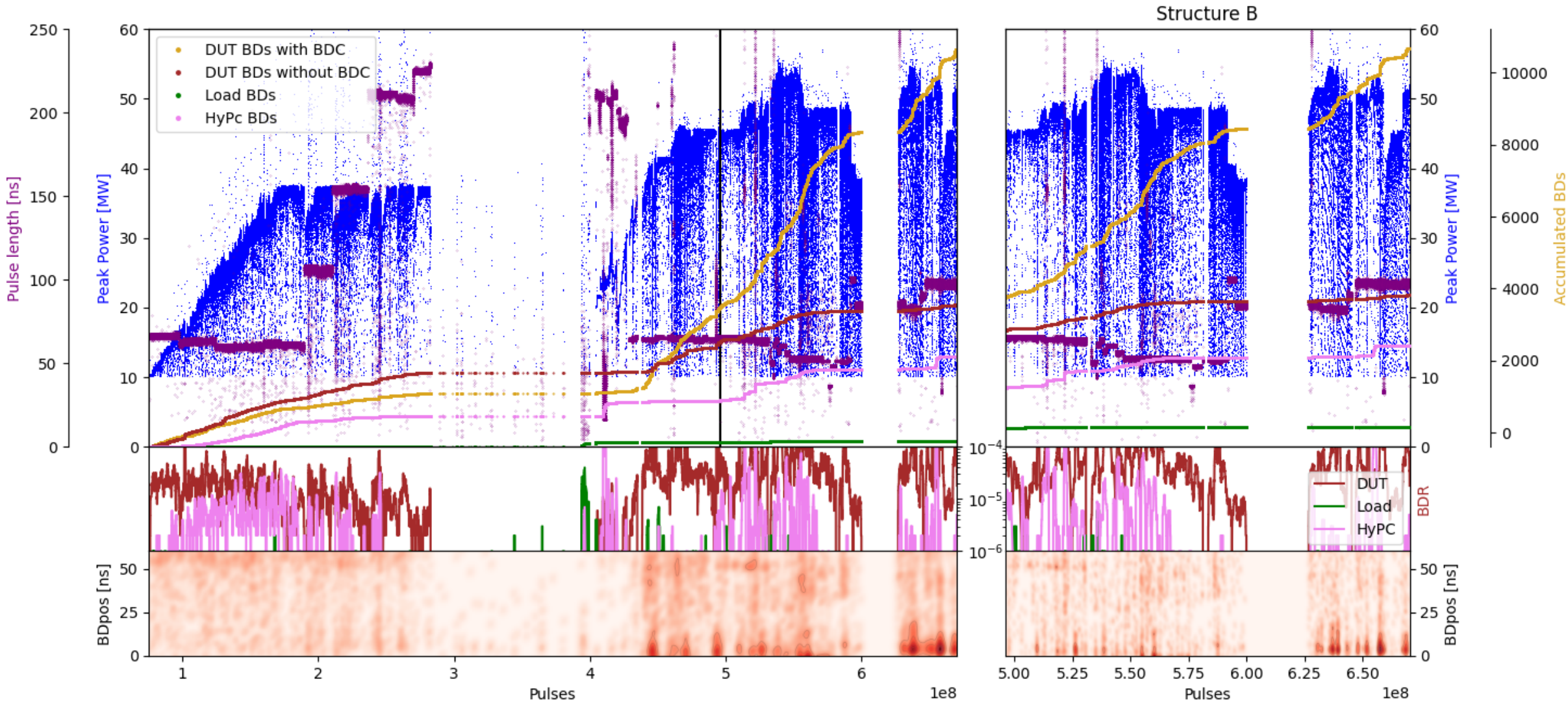
X-Box 2 Modulator – HV pulse shape



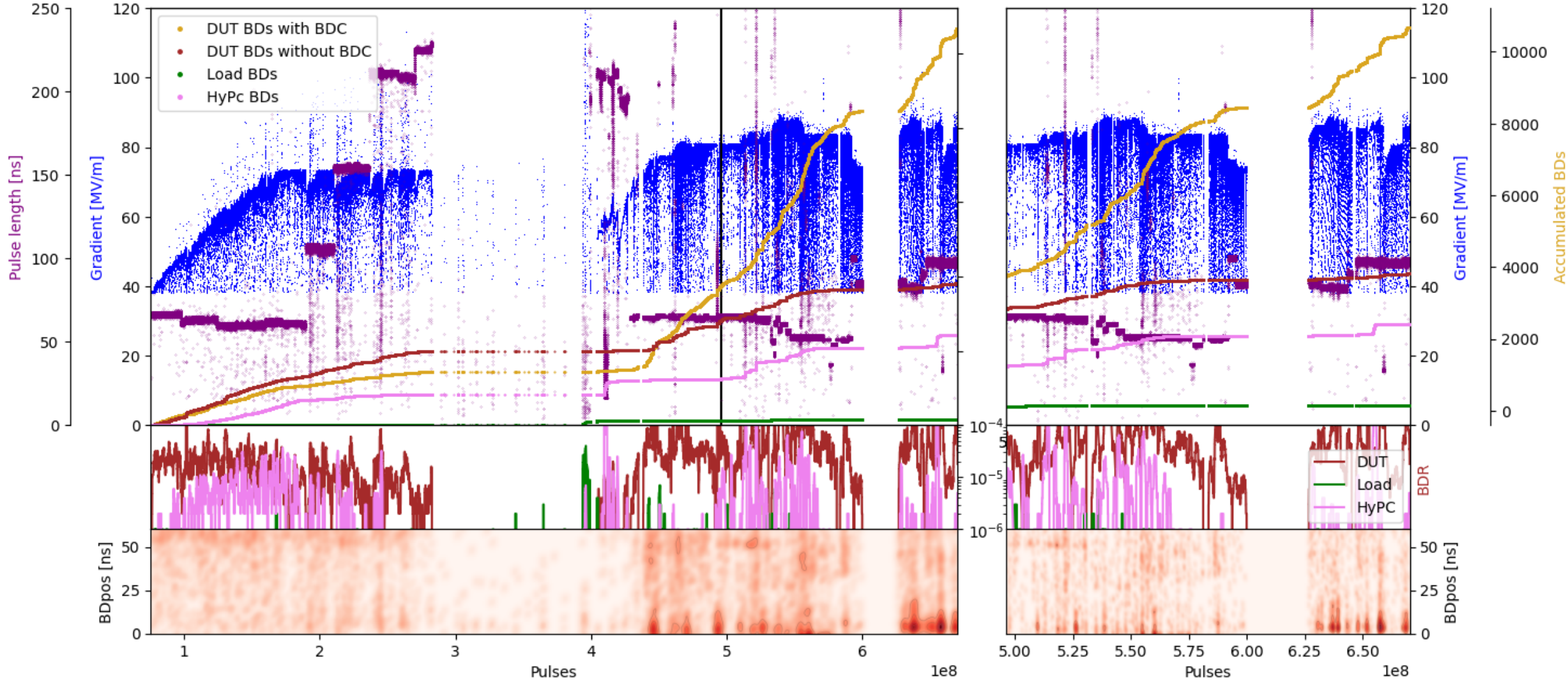
X-Box 2- RF Pulse shape



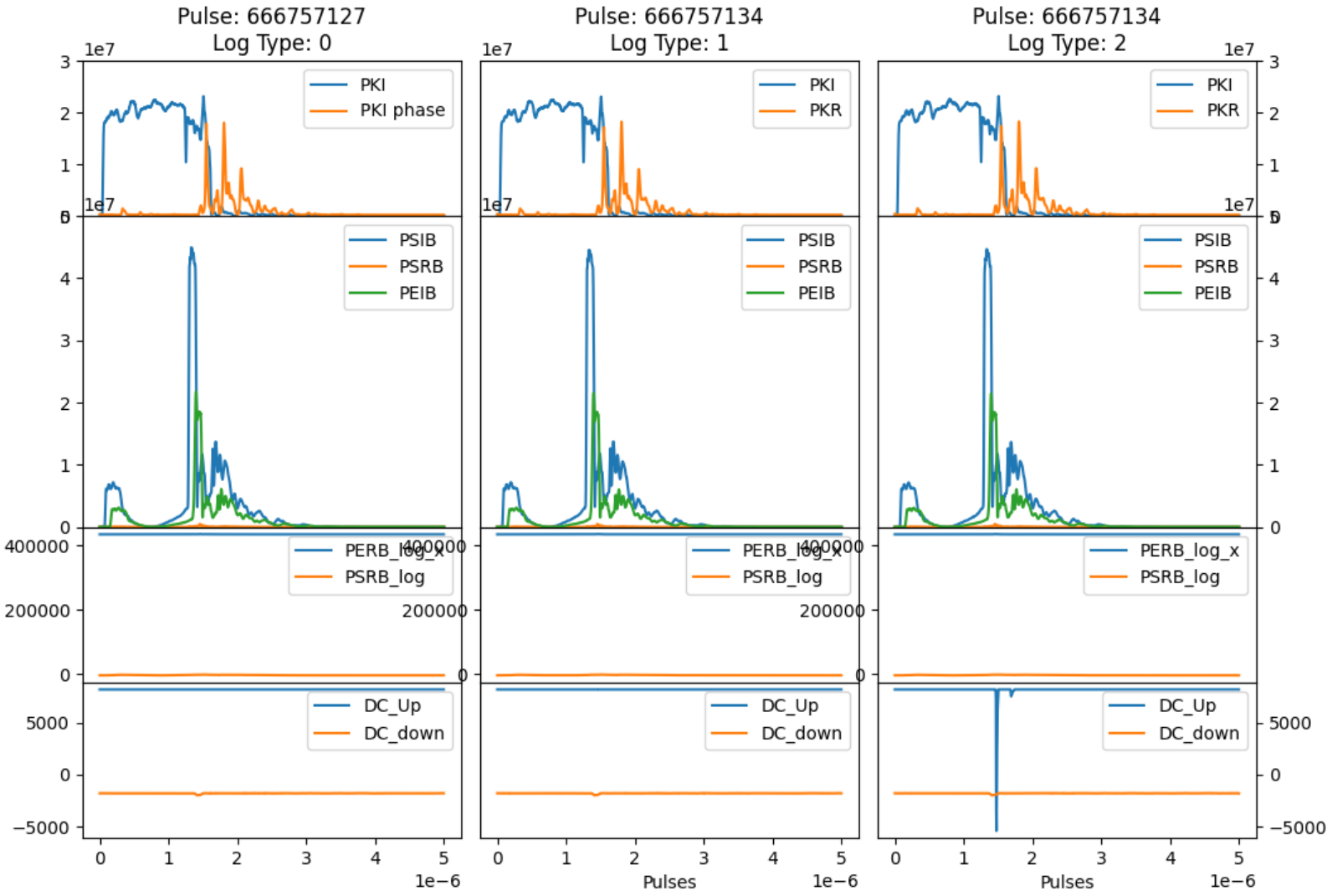
TD31 N3 N4 Structure B- Peak Power



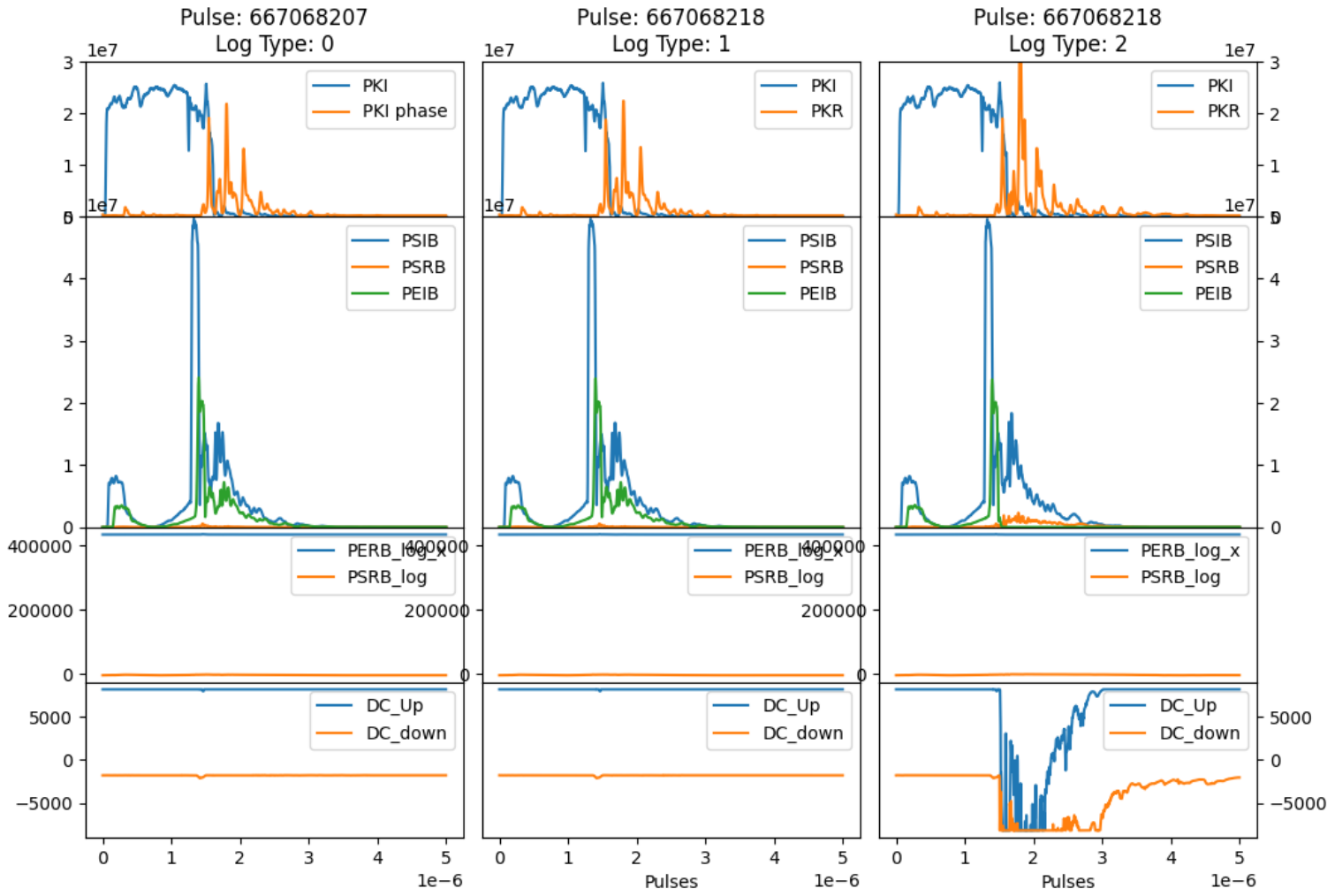
TD31 N3 N4 Structure B- Gradient



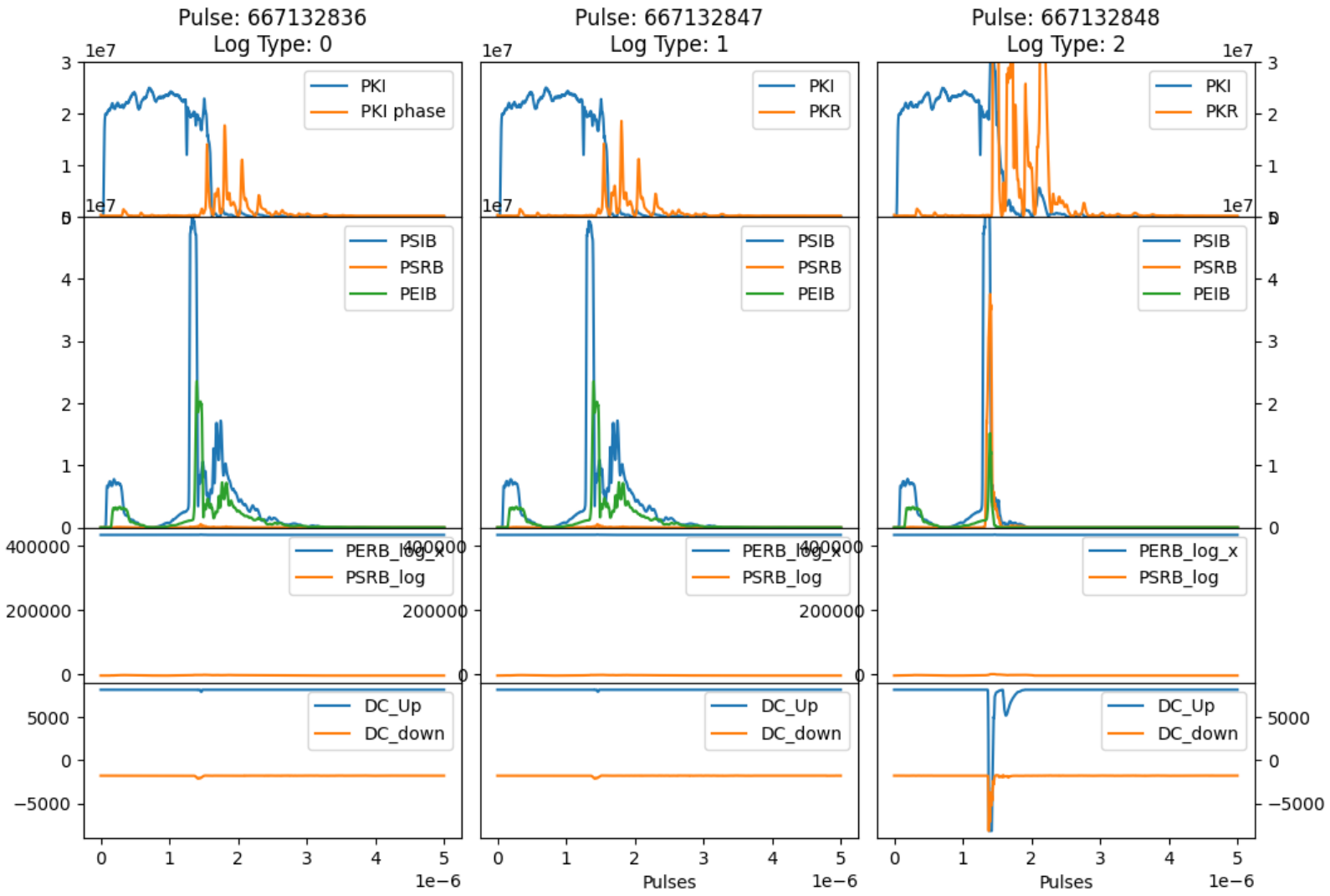
TD31 N3 N4 Structure B- Pulses 27 October



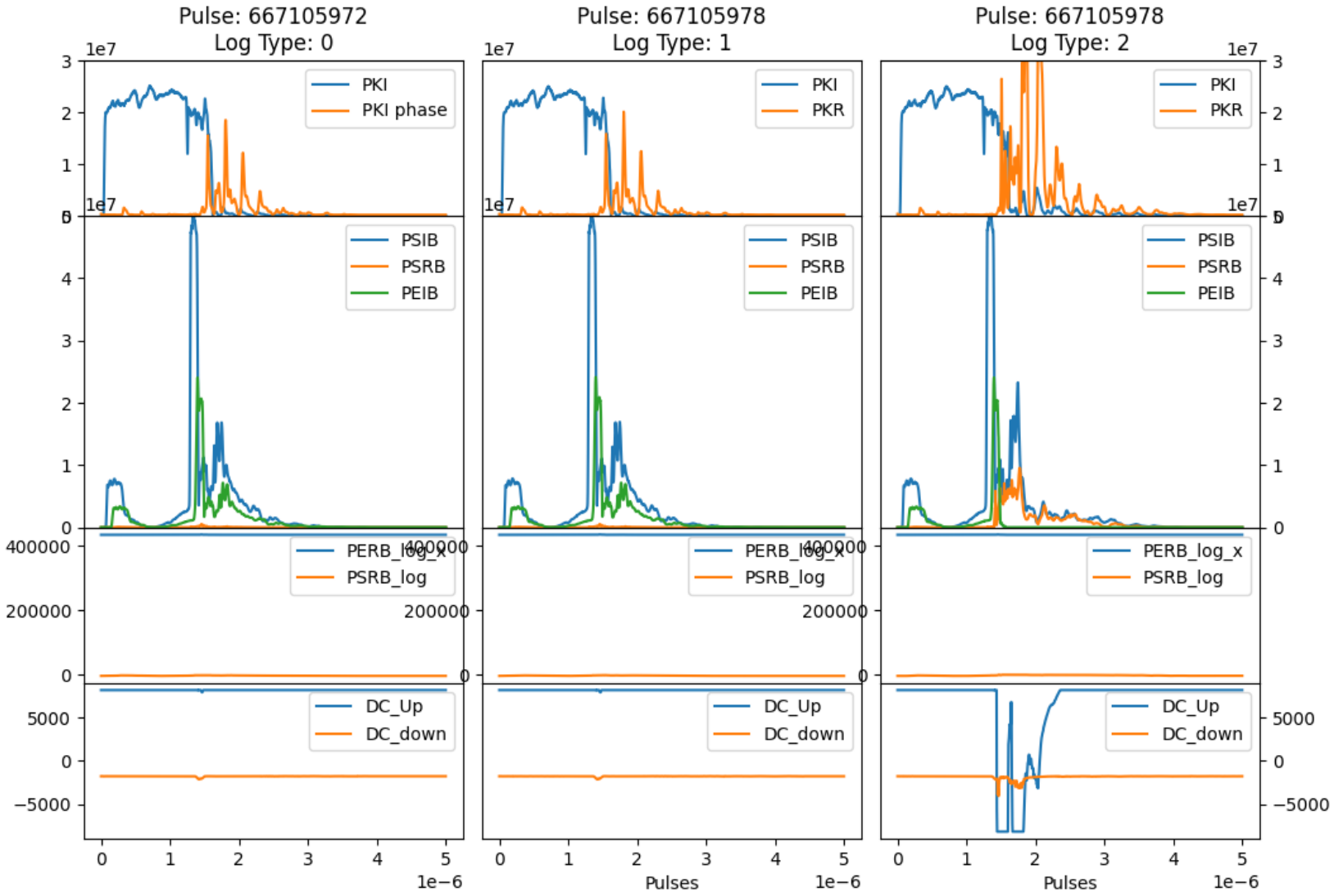
TD31 N3 N4 Structure B- Pulses 27 October



TD31 N3 N4 Structure B- Pulses 27 October

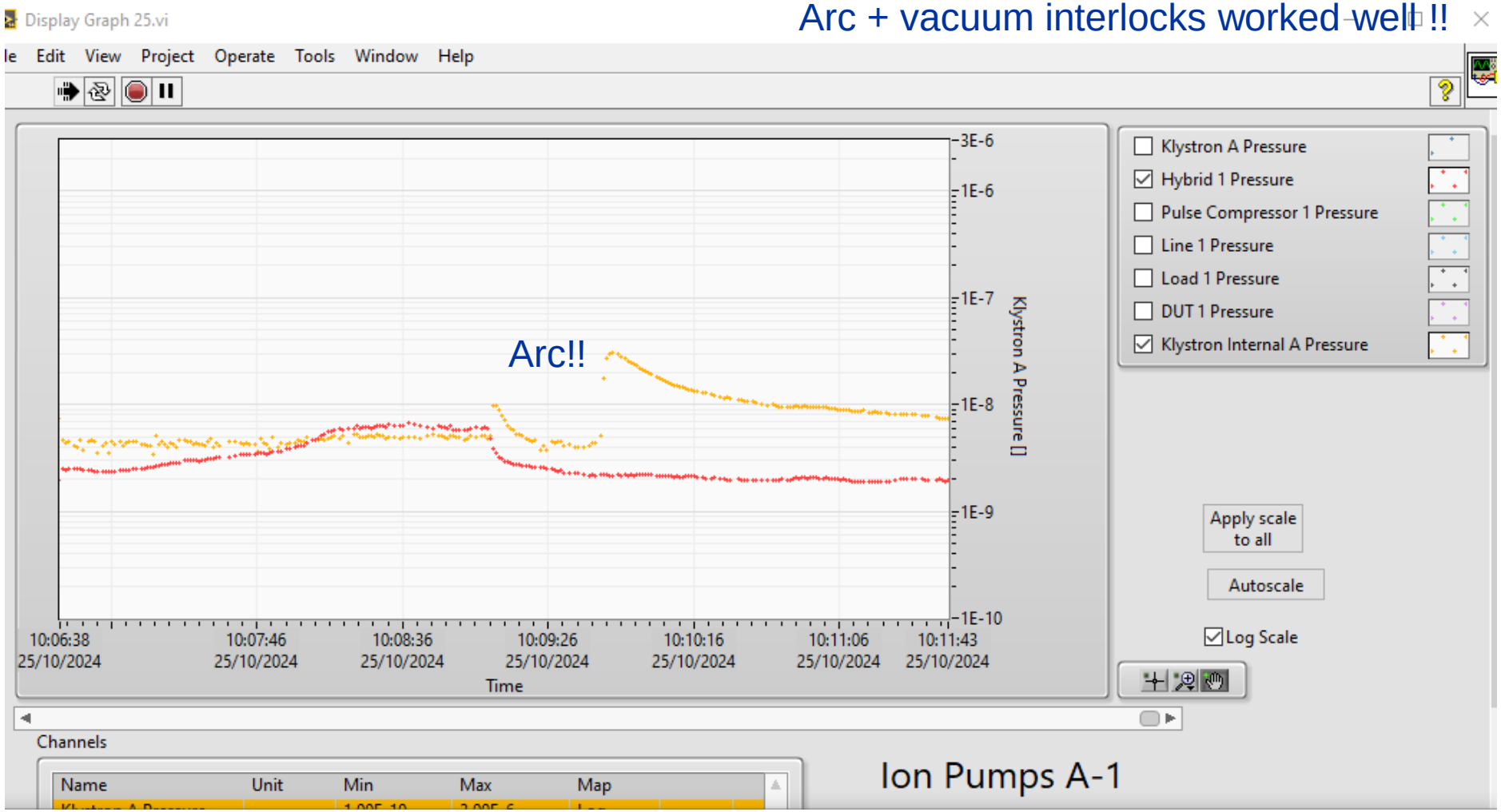


TD31 N3 N4 Structure B- Pulses 27 October



X-Box 3- Conditioning of the load

Arc + vacuum interlocks worked well !!

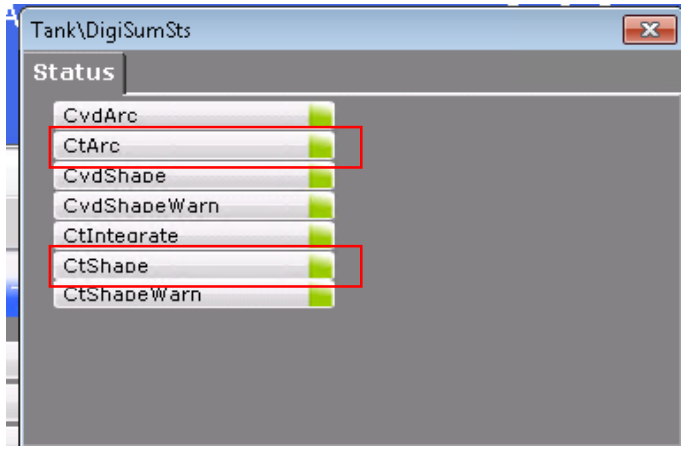


X-Box 3- Conditioning of the load

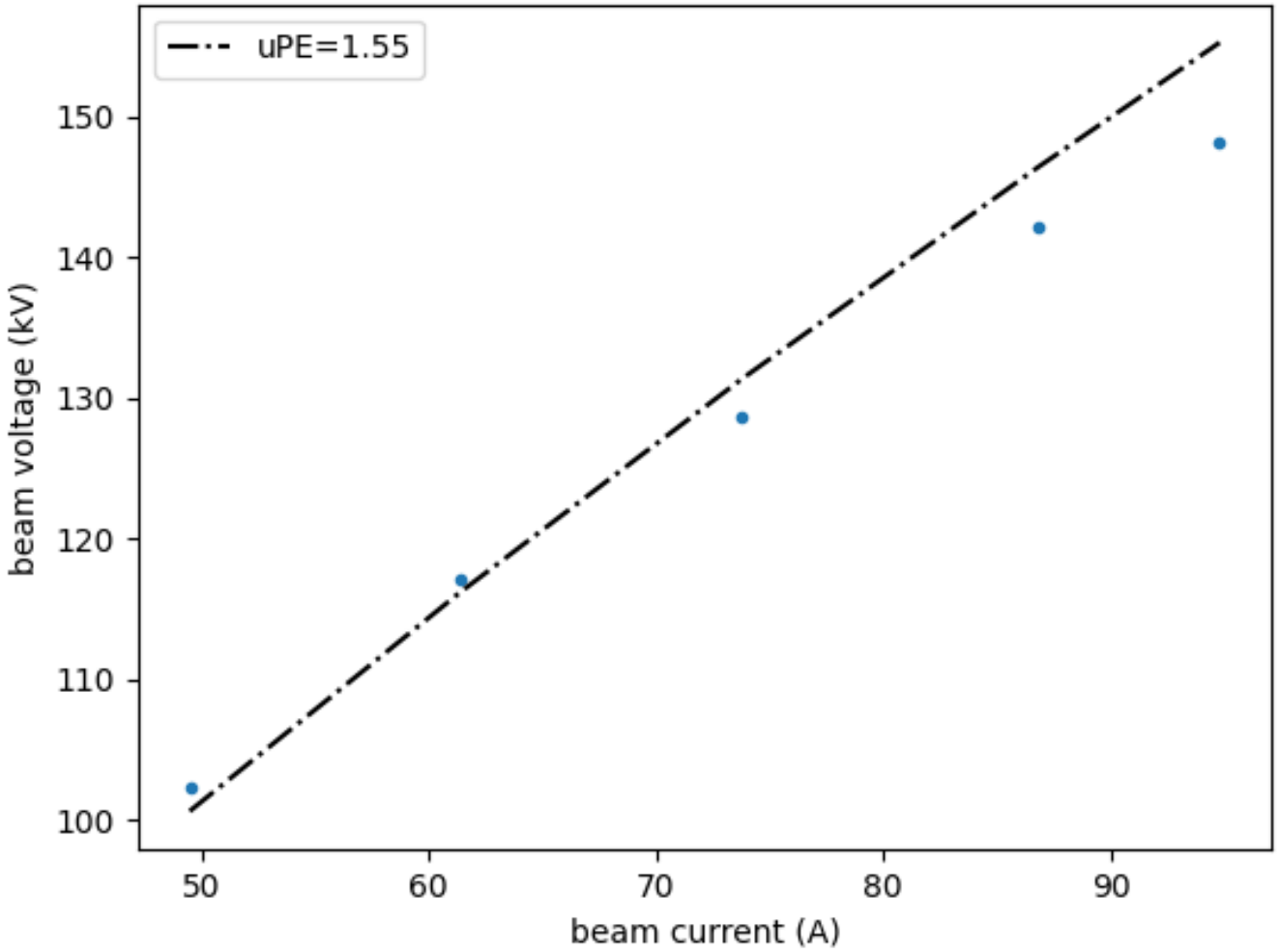
Interlock	25/10/2024	08:52:03:626	0	T&i\FiberIntSts\Input missing
Interlock	25/10/2024	08:52:03:625	0	Tank\DigiSumSts\Input missing: 1111 1111 1010 1101
Interlock	25/10/2024	08:52:03:625	0	Switch\Su3SumSts\Input missing: 1111 1111 1111 0000
Interlock	25/10/2024	08:52:03:625	0	Switch\Su2SumSts\Input missing: 1111 1111 1111 1000
Interlock	25/10/2024	08:52:03:625	0	Switch\Su1SumSts\Input missing: 1111 1111 1111 0111
Warning	25/10/2024	08:52:00:352	0	Kly\Ipc1VoltMonRead\WLlim exceeded: 3.180334 V
State	25/10/2024	08:51:59:993	0	Trig
State	25/10/2024	08:51:59:963	0	TrigOnRequested
State	25/10/2024	08:51:25:563	0	Hv
Interlock	25/10/2024	08:51:25:563	0	Tank\DigiSumSts\Input missing: 1111 1111 1111 1101
Warning	25/10/2024	08:50:57:666	0	Kly\Ipc1VoltMonRead\WLlim exceeded: 3.177282 V
Warning	25/10/2024	08:50:54:330	0	Kly\Ipc1VoltMonRead\WLlim exceeded: 3.182775 V

Interlocks:

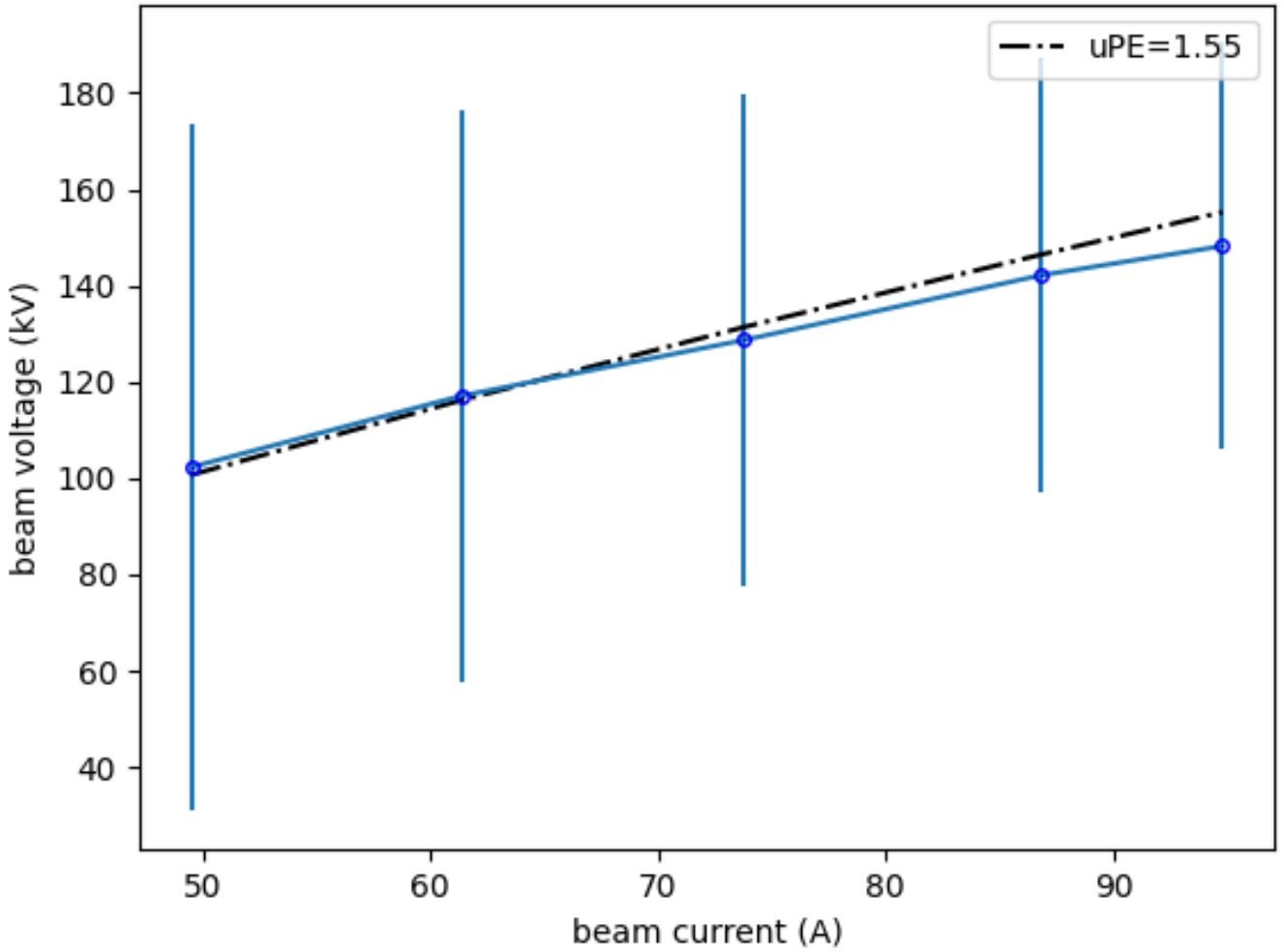
- CT Shape
- CT Arc
- IGBT Overcurrent



X-Box 3: HEK measurements



X-Box 3: HEK measurements



$$\epsilon\Delta T = 0.1 + \frac{0.17}{100}T = 0.15℃$$

$$\epsilon m = \frac{5}{100}FS = 2l/min$$

$$Pavg = cm\Delta T,\ Ppeak = \frac{Pavg}{dutycycle}$$

$$\epsilon Pavg = c\Delta T\epsilon m + 2cm\epsilon \mathrm{T}$$

$$\epsilon Ppeak = \frac{\epsilon Pavg}{\mathrm{dutycycle}},\ \epsilon\mathrm{dutycycle}=0$$

$$\mathrm{Vb}= \frac{Ppeak}{\mathrm{Ib}},\quad \epsilon\mathrm{Vb}= \frac{\epsilon Ppeak}{\mathrm{Ib}}, \epsilon Ib = 0$$

home.cern

X-Box 2: Reminder on BD classification