Gun conditioning at PITZ.

History of the Gun 4.4 operation at PITZ

Power statistics

Interlock statistics

Dark current measurements

Resonance temperature observations

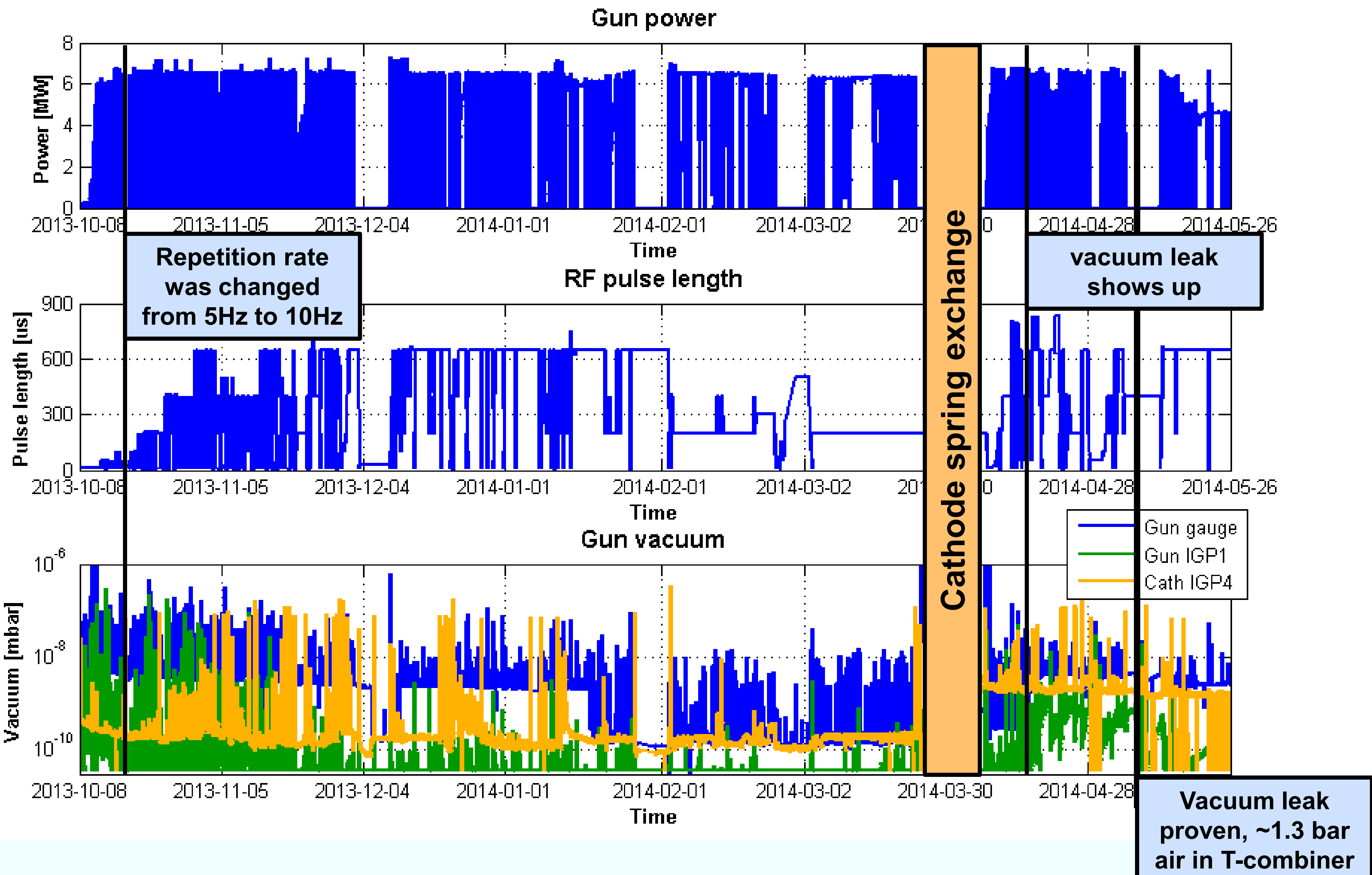
Multipacting

Igor Isaev
PITZ collaboration meeting
Zeuthen, 27.05.2014

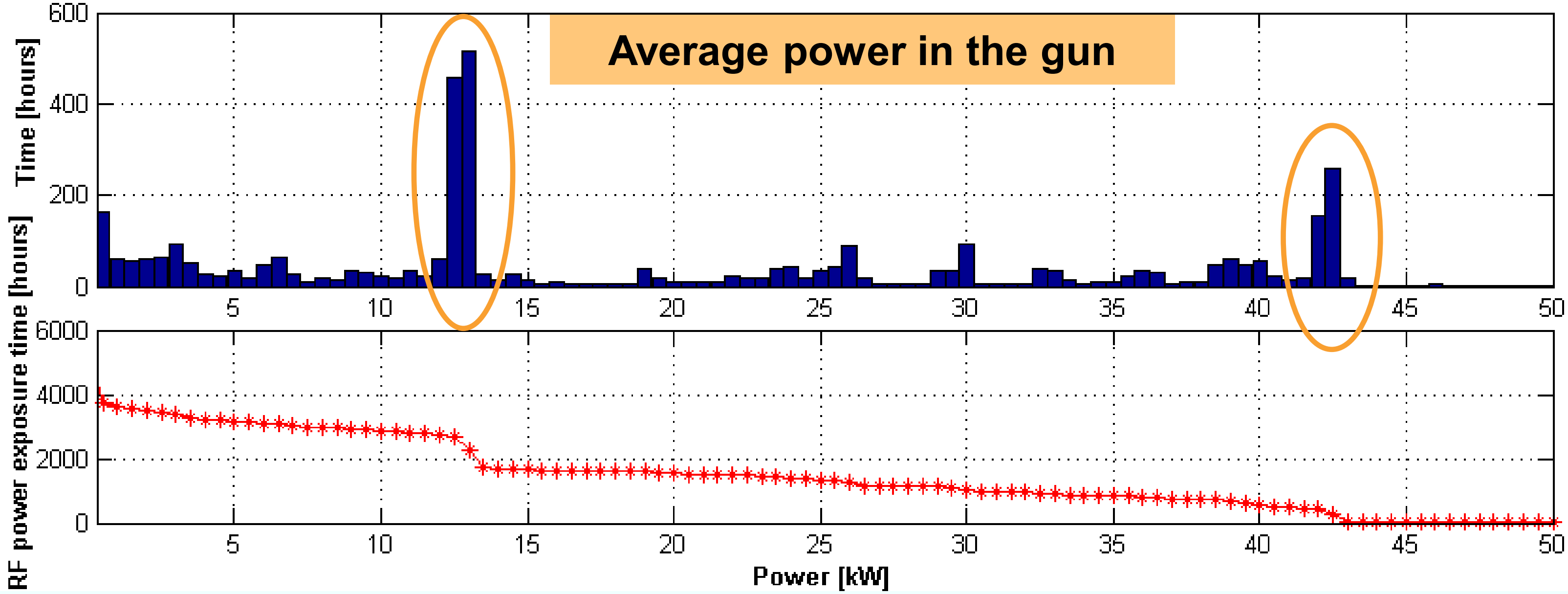
HELMHOLTZ GEMEINSCHAFT

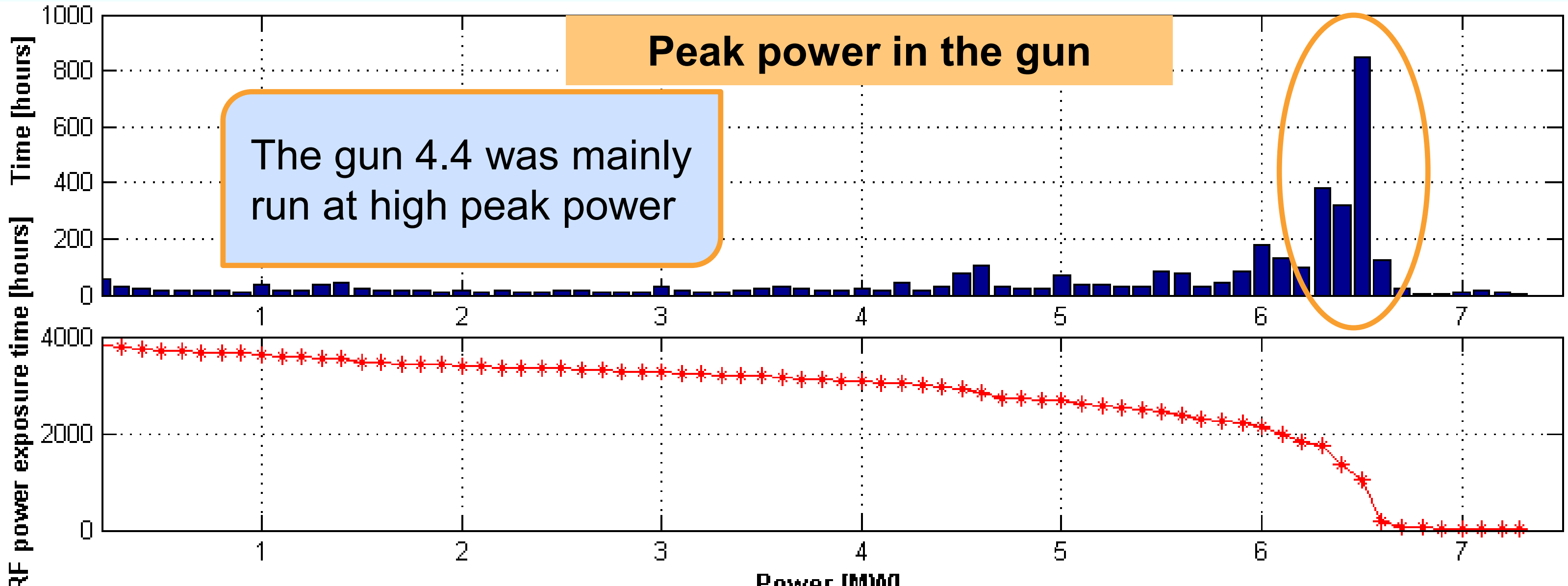
DESY

Gun 4.4 run history from 08.10.2013 until 26.05.2014

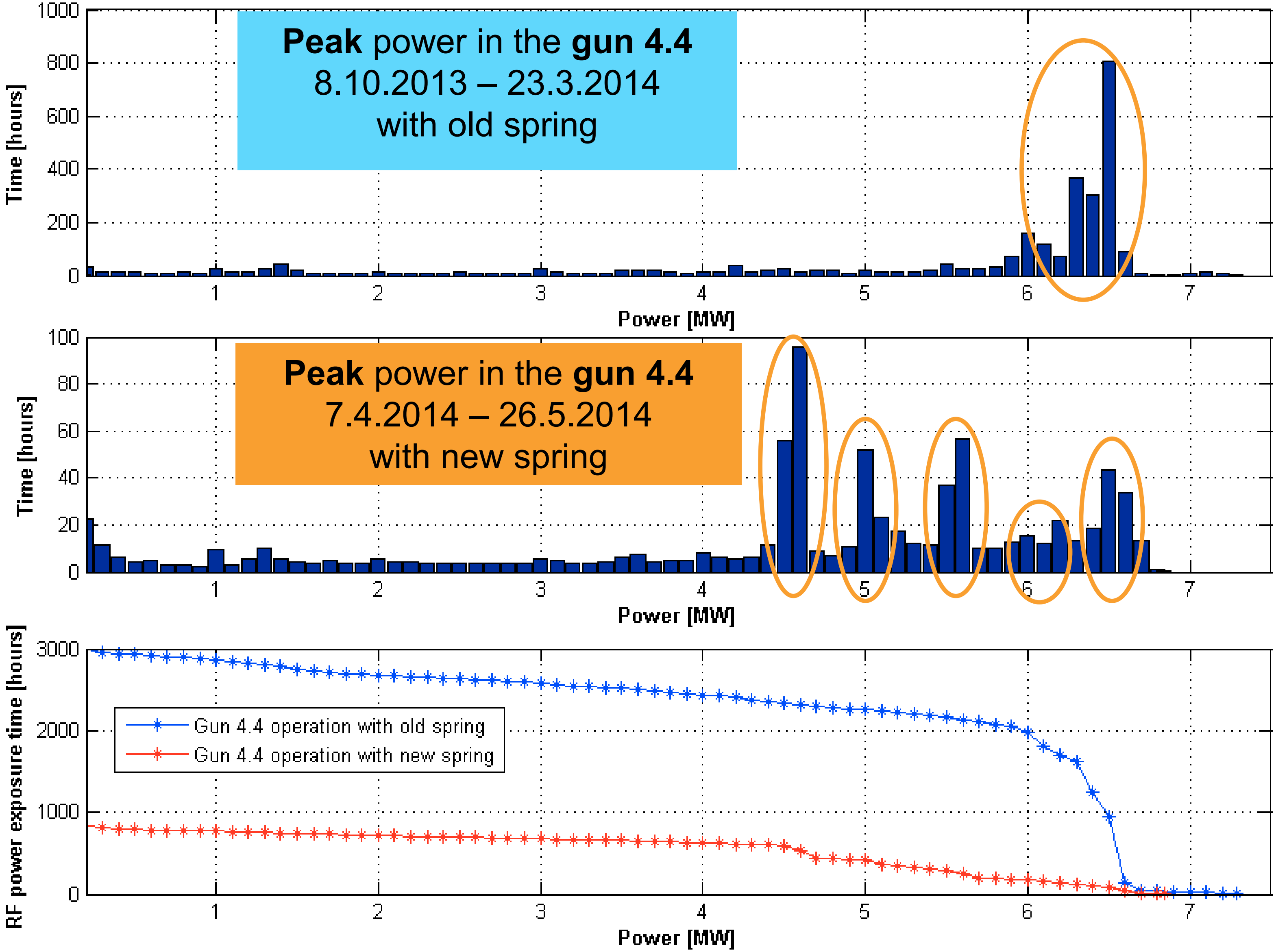


Operation statistics for the Gun 4.4

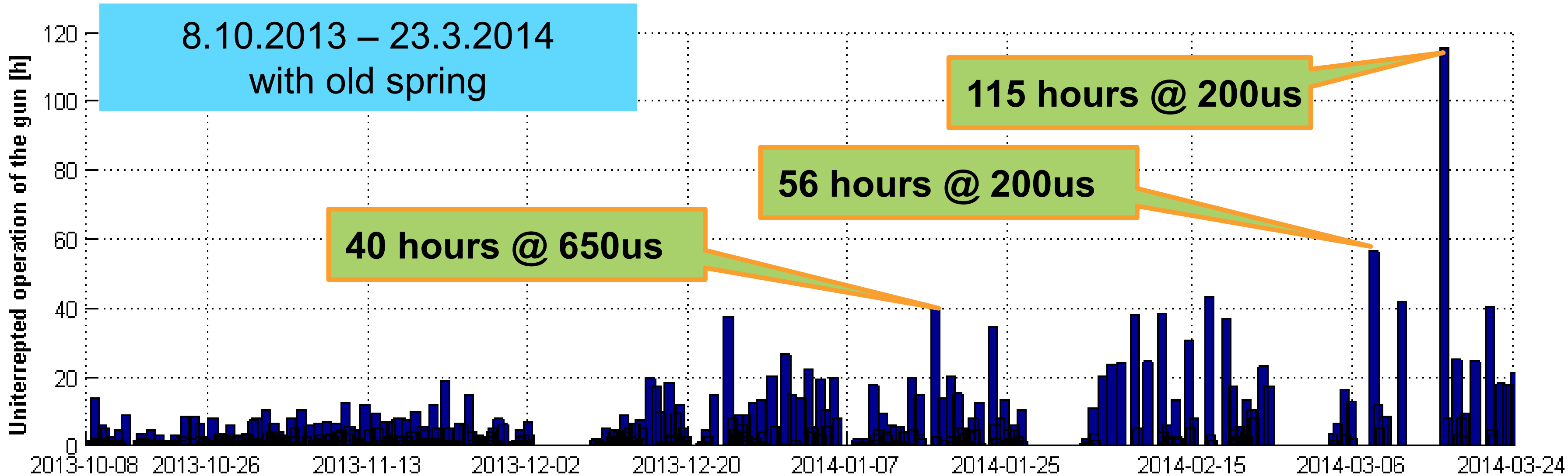


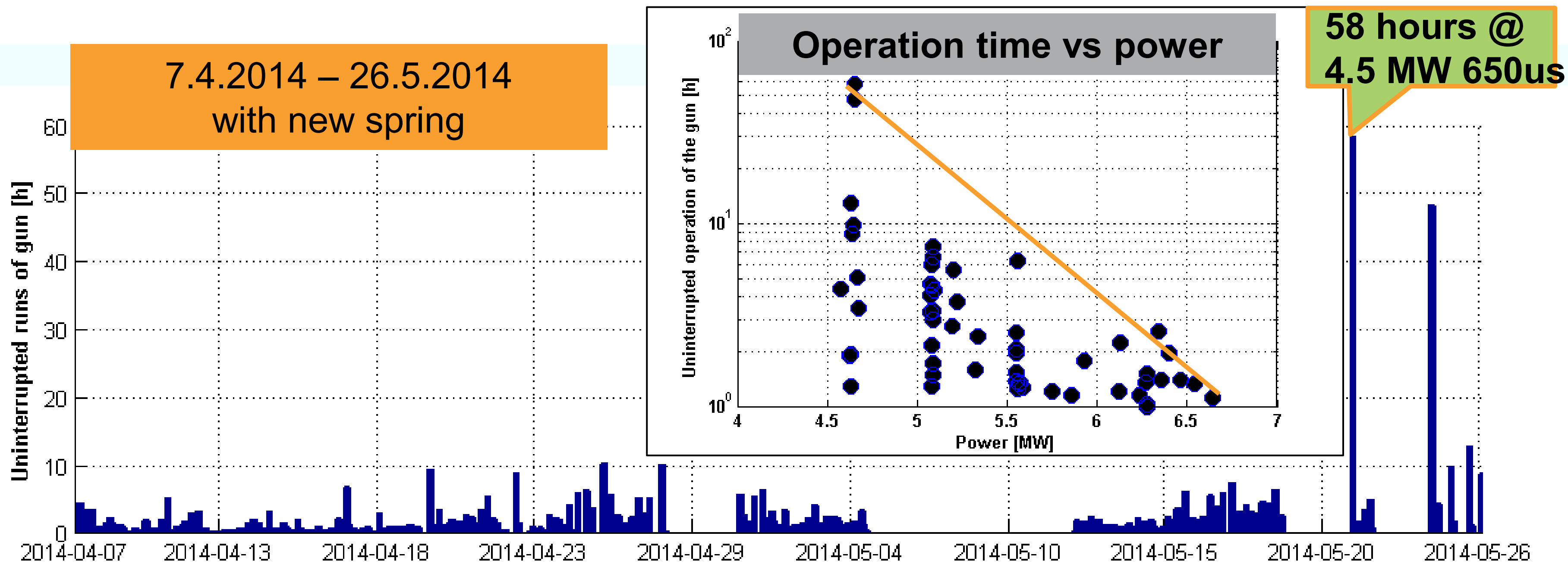


Gun 4.4 operation statistics for two periods

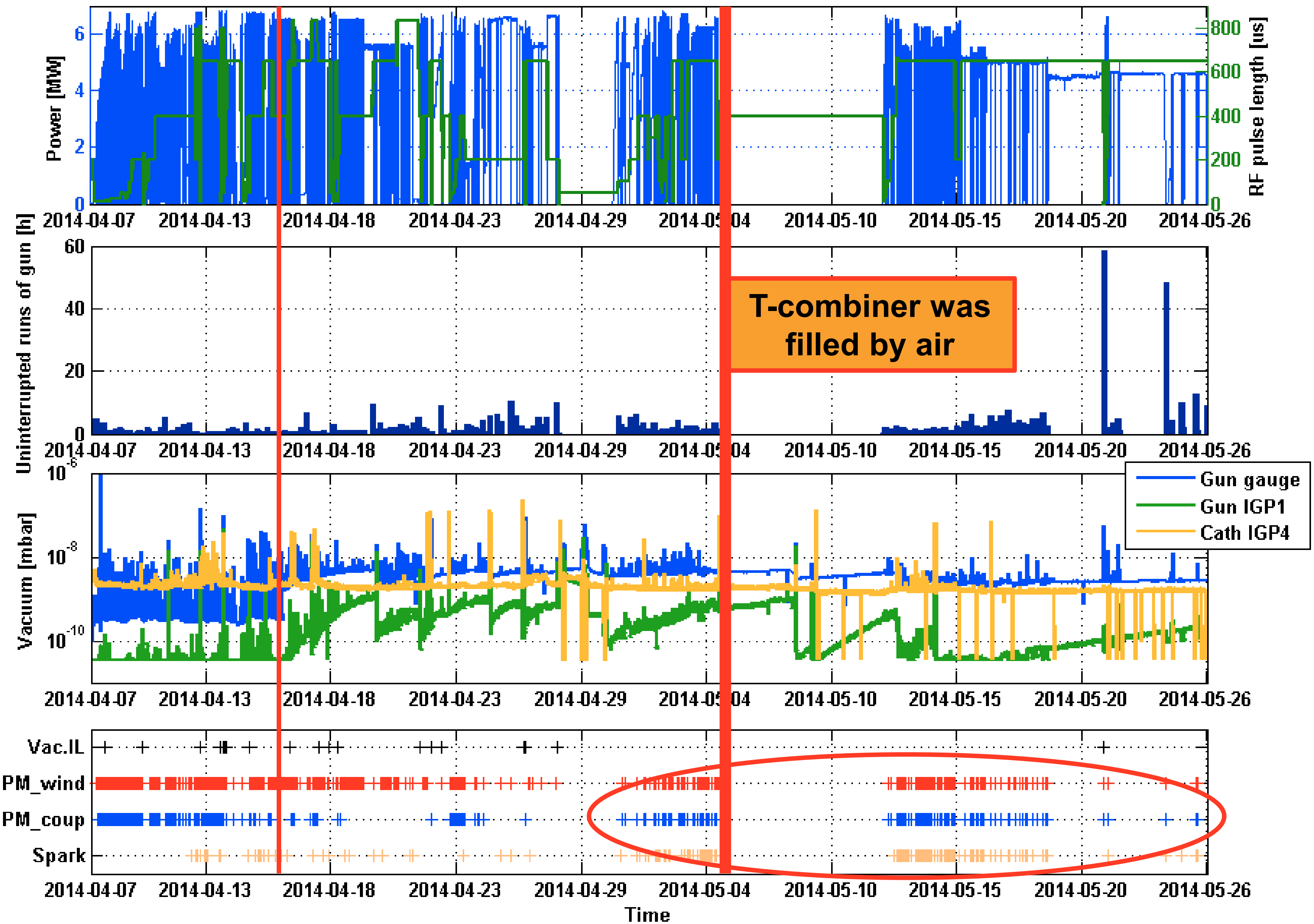


Gun uninterrupted runs.



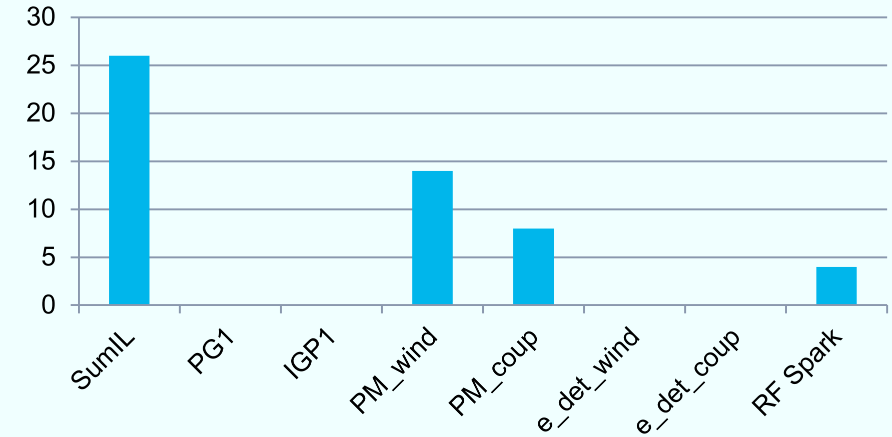


Gun4.4 restart with the modified cathode spring

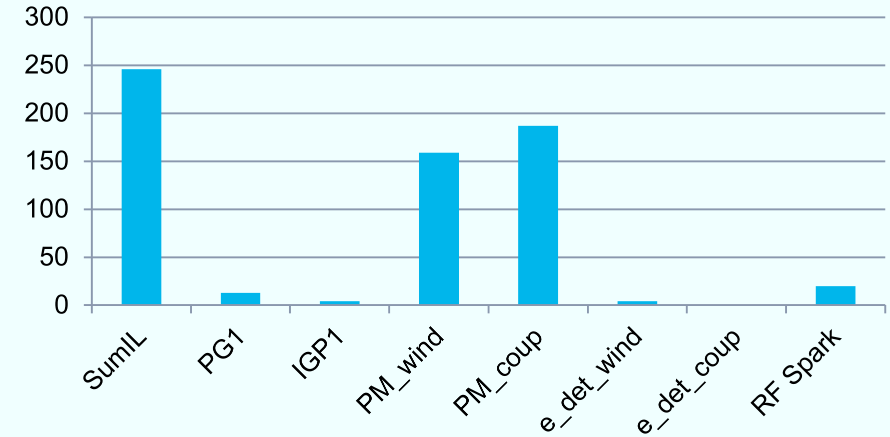


Interlock statistics for operation with different springs

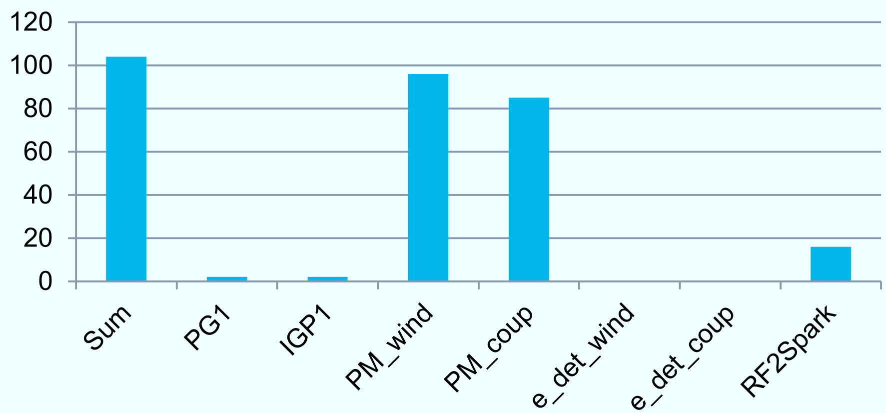
Operation at ≥6 MW 200 us with old spring



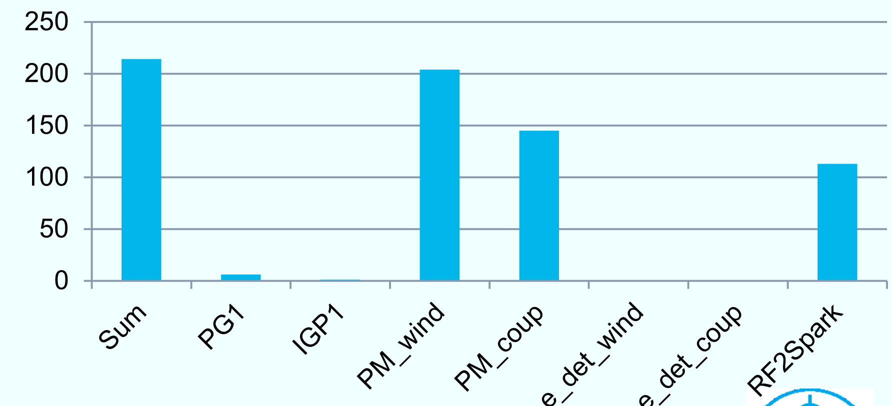
Operation at ≥6 MW 650 us with old spring



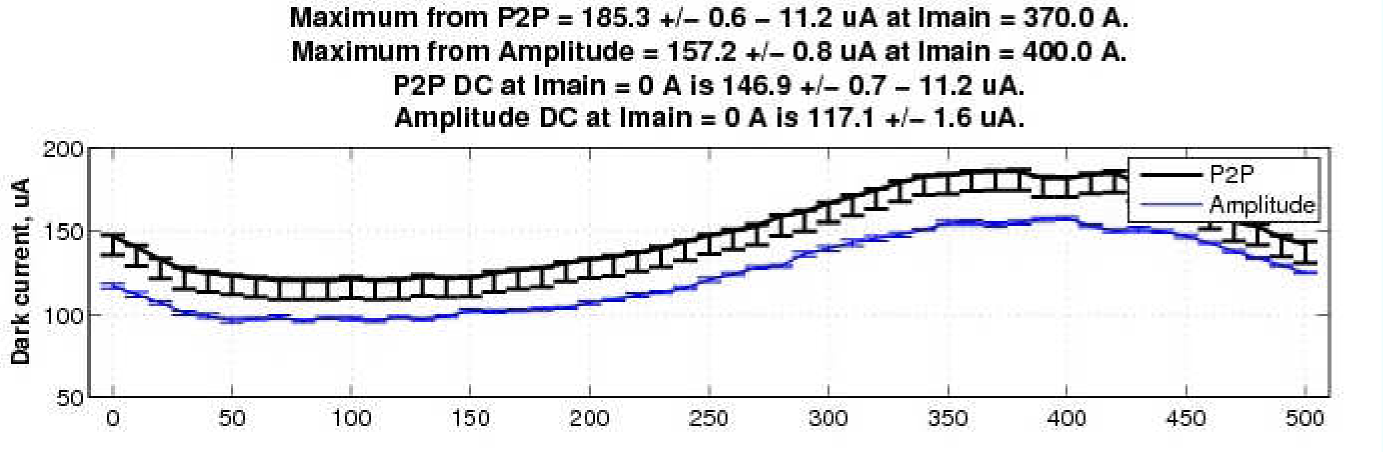
Operation at 200 us with new spring

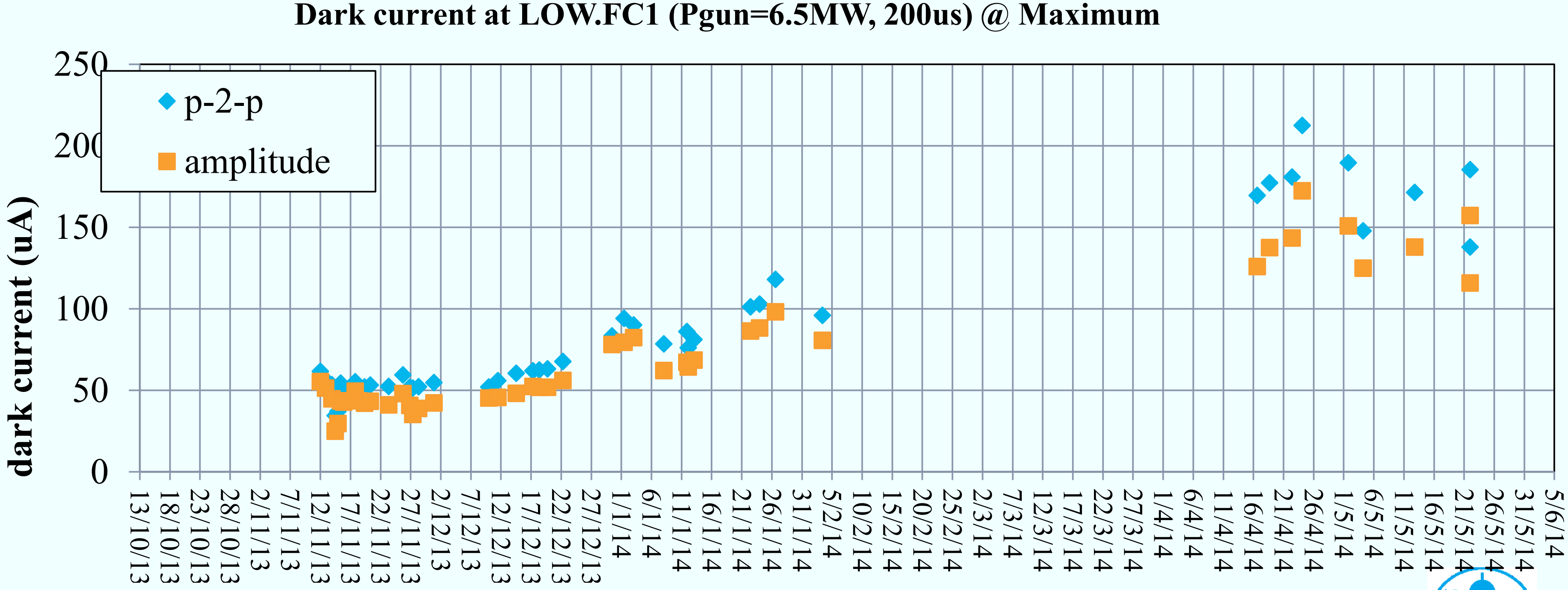


Operation at 650 us with new spring



Dark current observations

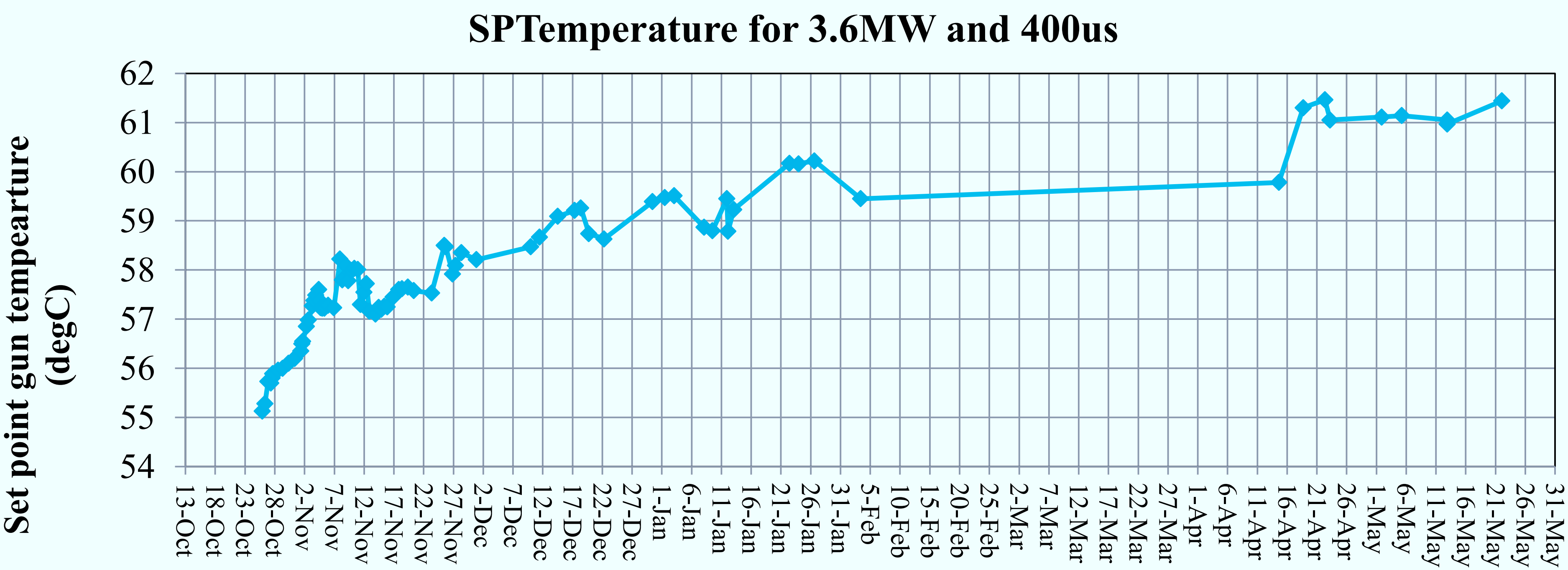




Phase stability measurements and resonance temperature observation

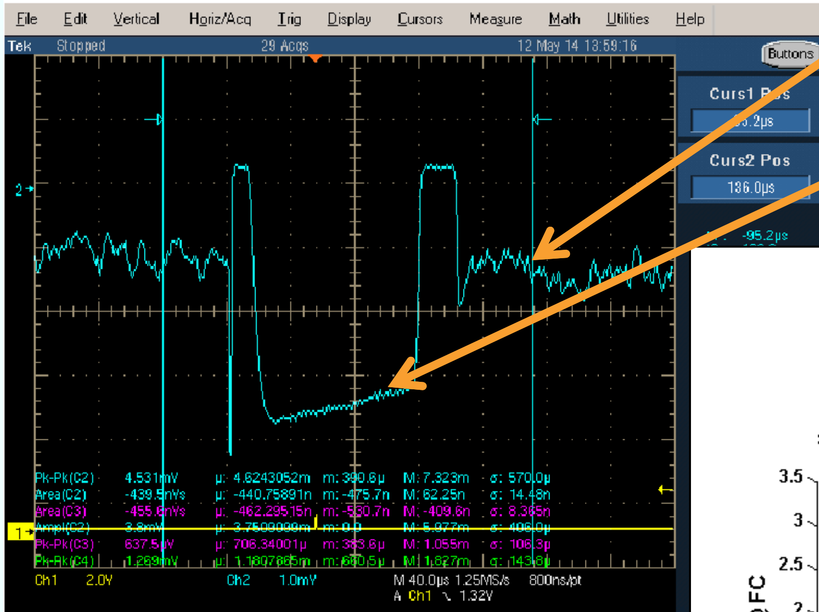
Phase stability measurements

	Old WCS (currently in use)	New WCS
FB off	0.598 deg	0.475 deg
FB on	0.211 deg	**0.140** deg

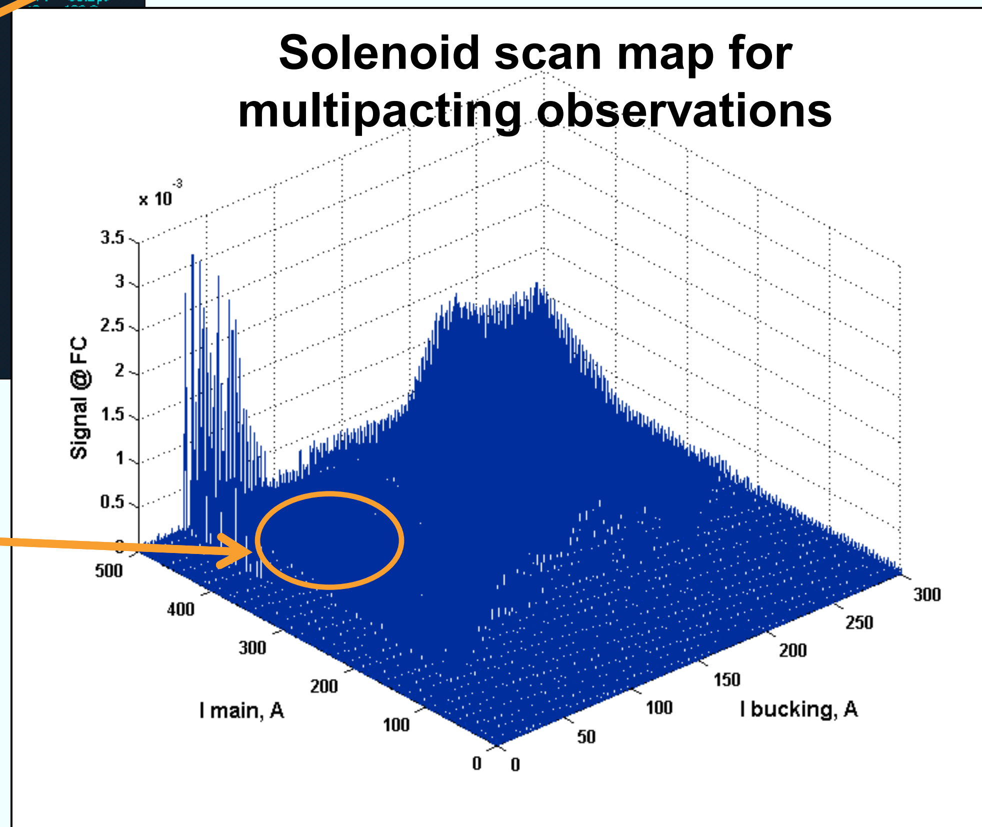


Multipactor discharge observations

Multipacting and dark current at FC



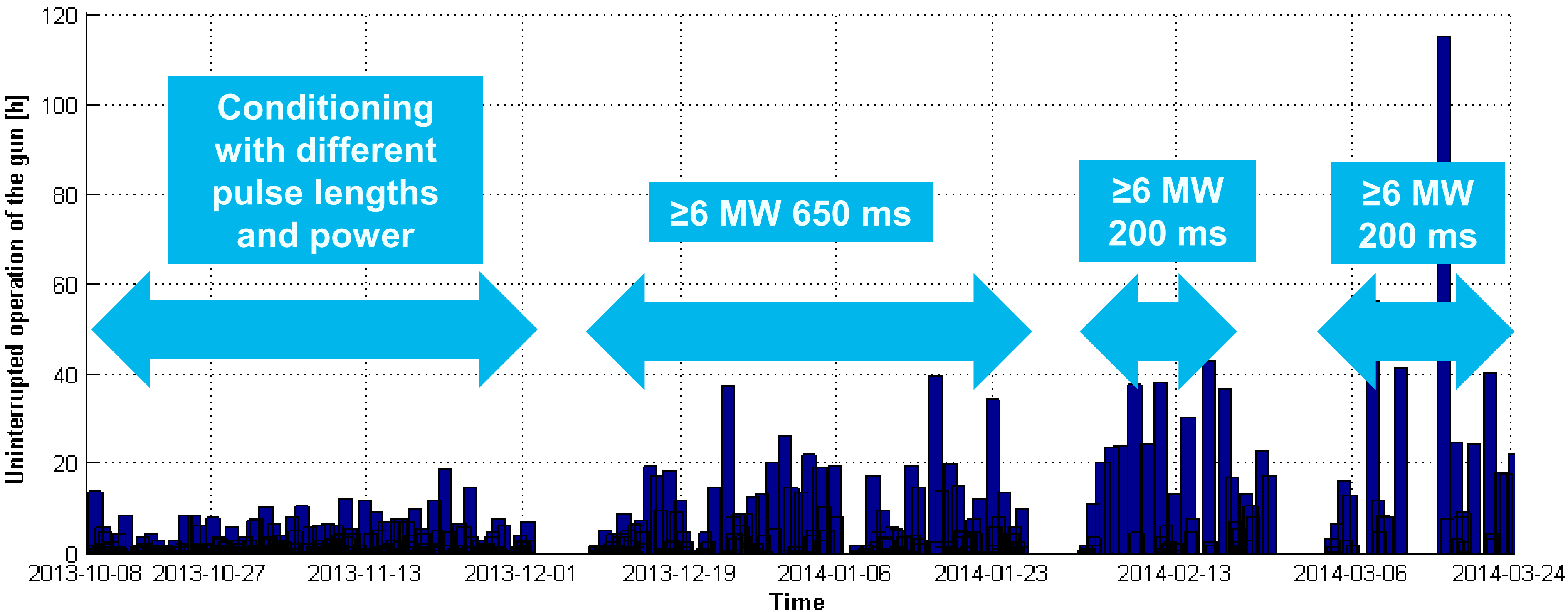
- Multipactor discharge was observed at the RF HV pulse.
- But it disappear at the RF pulse



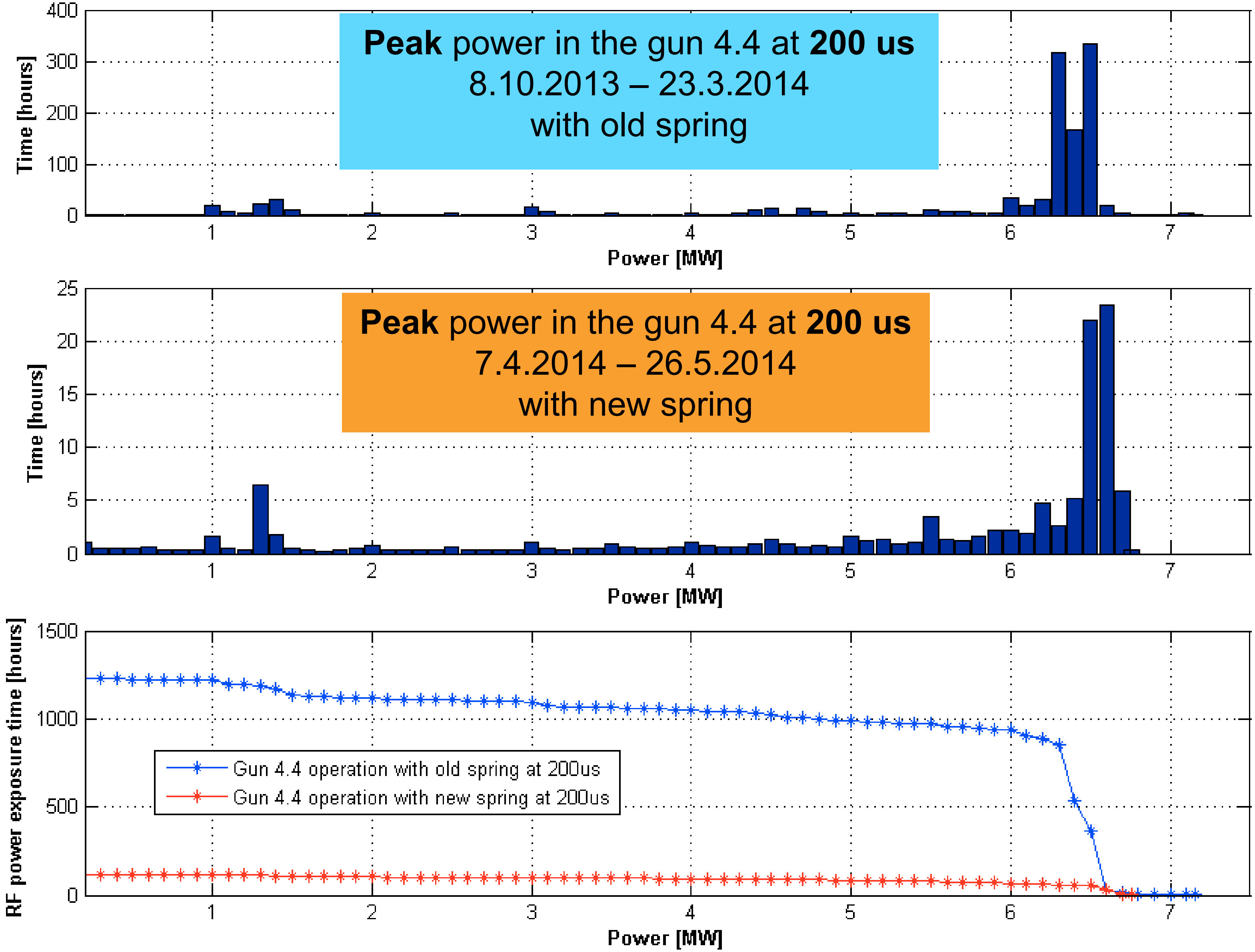
The multipactor discharge is present for the solenoid current which is used for emittace measurements

Thank you for your attention.

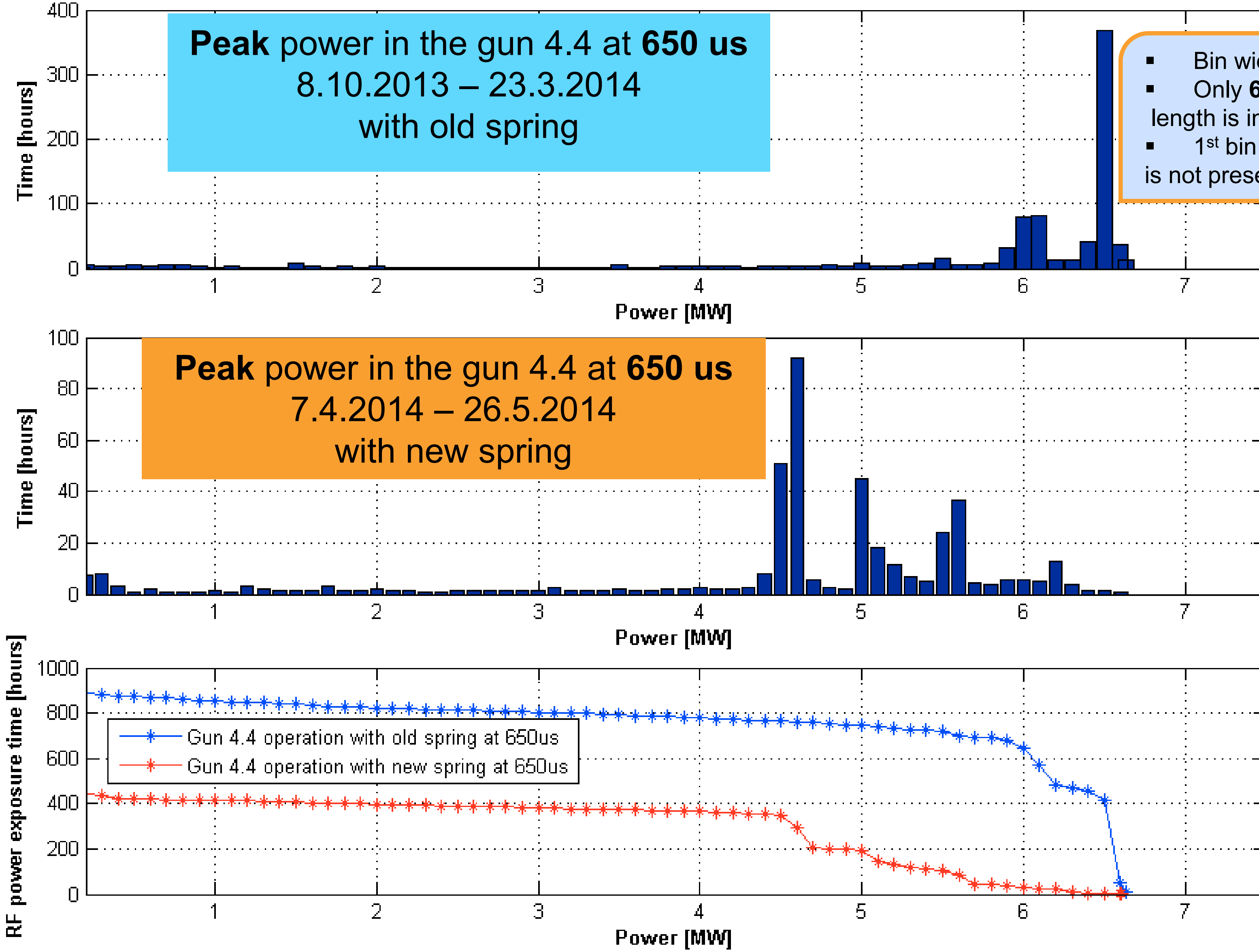
Uninterrupted runs of the Gun 4.4



Gun4.4 restart with modified contact stripe and holder

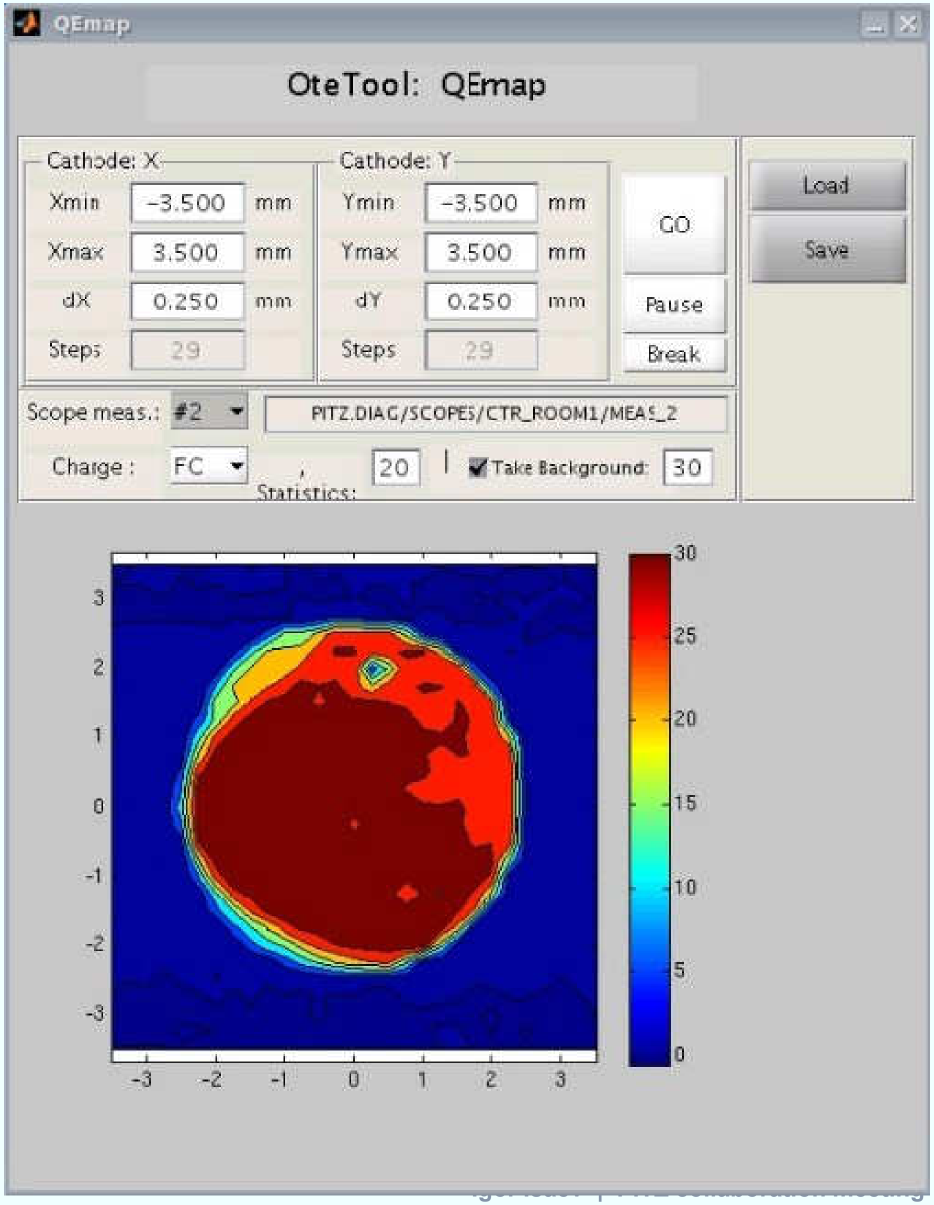


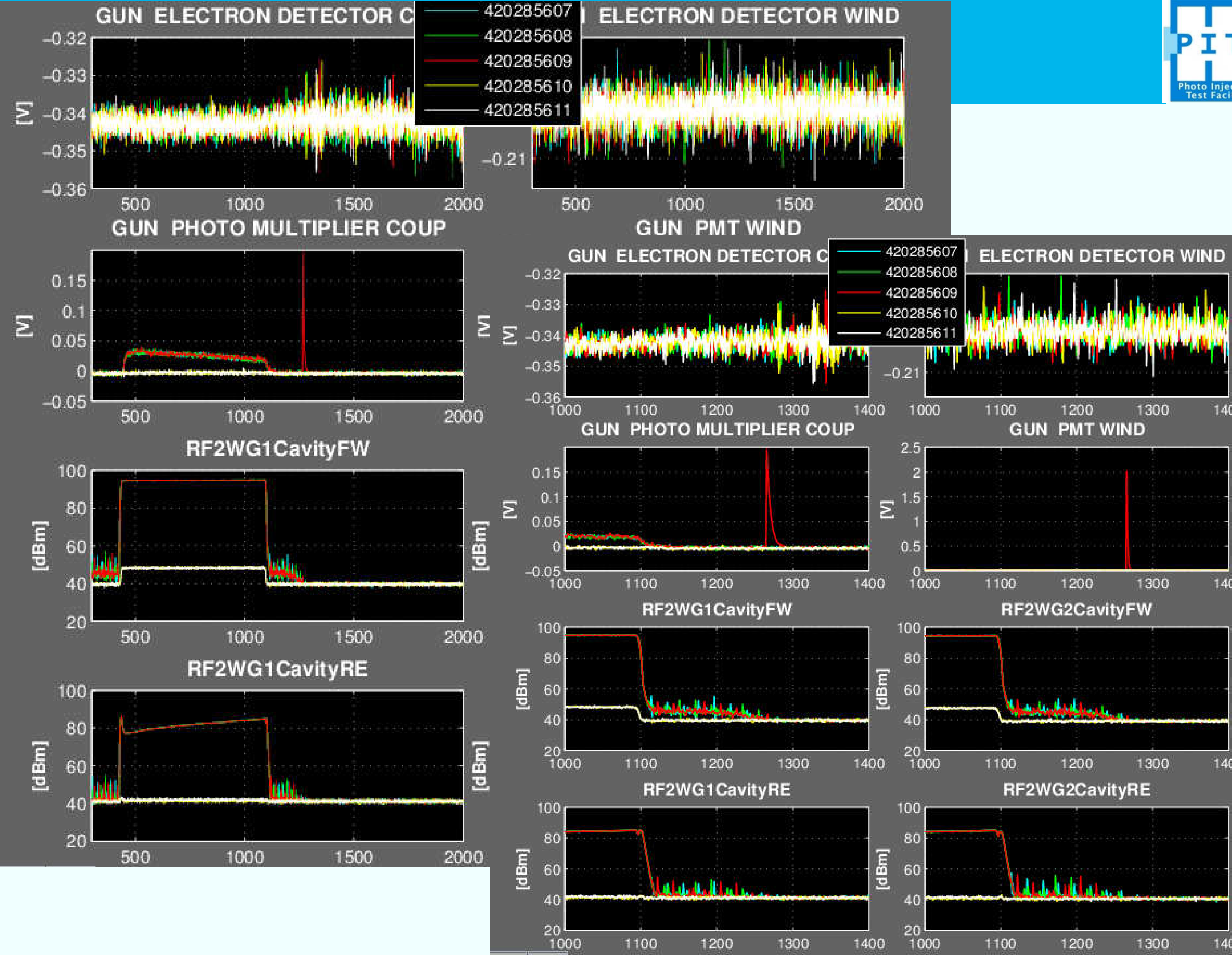
Gun4.4 restart with modified contact stripe and holder



- Bin width **0.1** MW
- Only **650us** RF pulse length is included
- 1st bin (0 – 0.1 MW) is not presented

QE-map of Cs2Te cathode #642.1




GUN ELECTRON DETECTOR C
ELECTRON DETECTOR WIND
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GUN PHOTO MULTIPLIER COUP
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RF2WG1CavityFW
RF2WG1CavityRE
RF2WG2CavityFW
RF2WG2CavityRE
[dBm]
PITZ
Photo Injector Test Facility
Zeuthen

Cs2Te cathode #642.1