

Status meeting

Bogna Blaszczyk

28-10-2013

Configuration

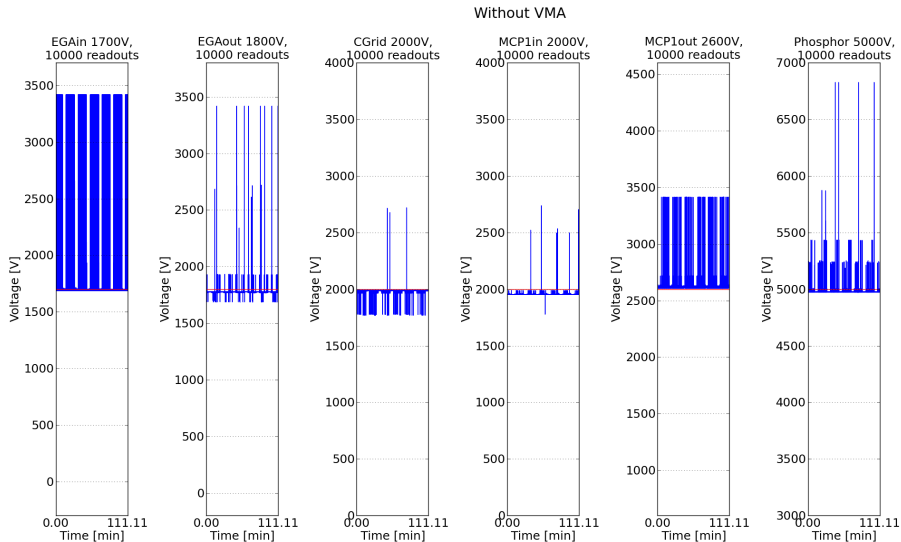
HV control card:

- 6 voltage and current ports read with frequency 1.5 Hz
- Values set: *EGAIN* : 1700V, *EGAOout* : 1800V, *CGrid* : 2000V, *MCPin* : 2000V, *MCP1out* : 2600V, *Phosphor* : 5000V
- Ports connected to the BGI-placeholder device.

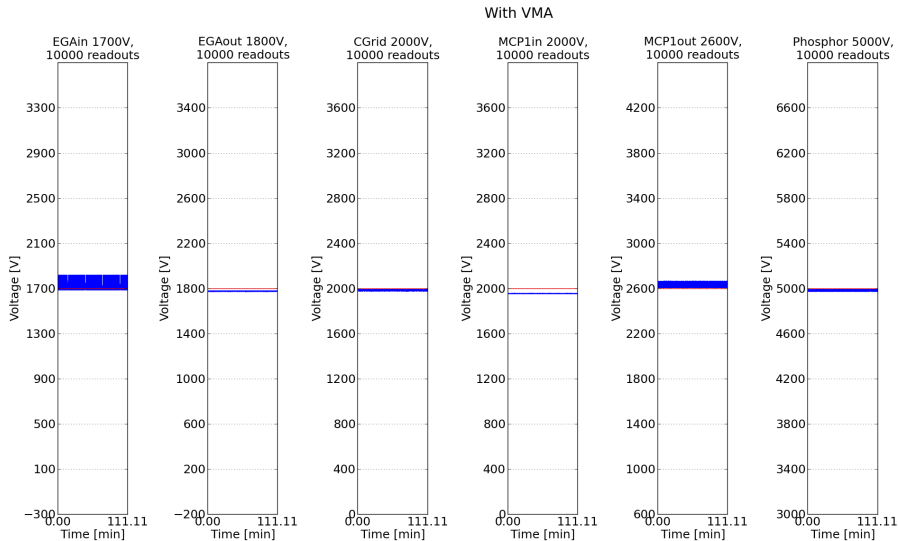
BTVI with connected camera:

- Image size: 400x300 pixels
- DMA access
- Readout frequency 12 Hz with one card, 6Hz with two BTVI cards

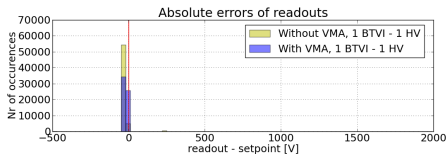
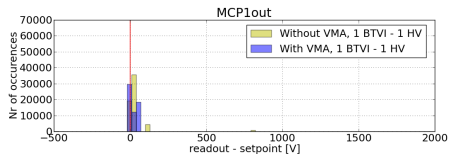
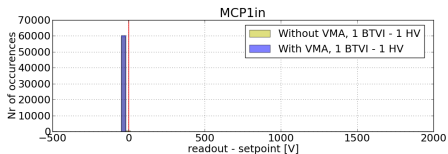
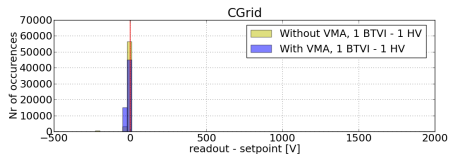
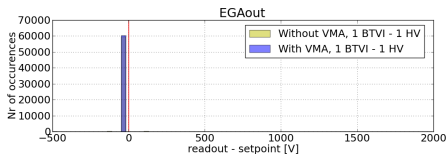
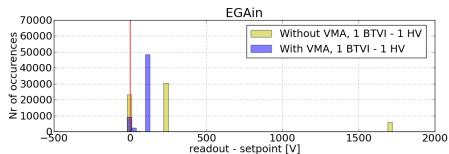
Without VMA; 1 HV card and 1 BVTI card



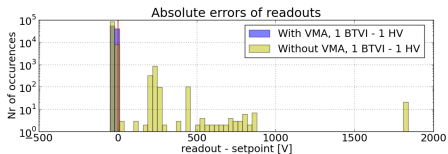
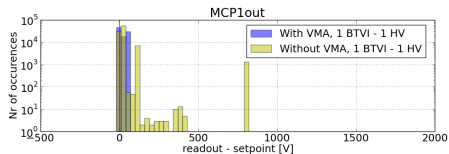
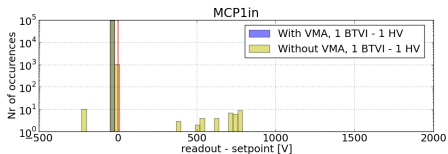
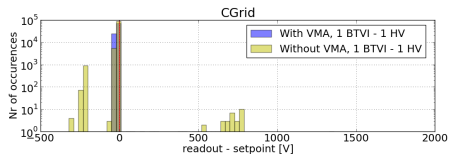
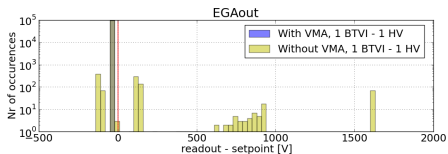
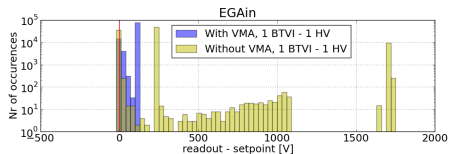
With VMA; 1 HV card and 1 BVTI card



$$U_{read} - U_{set}$$



$$U_{read} - U_{set}$$



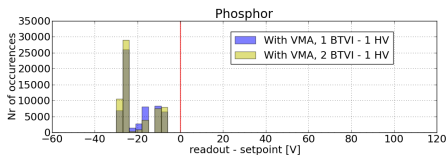
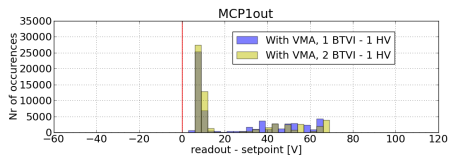
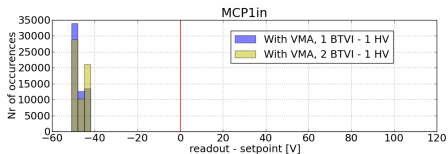
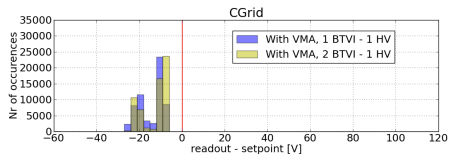
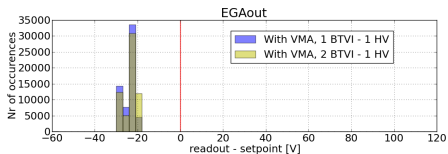
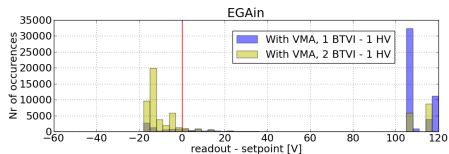
Magnitude of errors

Port		Max abs error [V]	Min abs error [V]	diff [V]	% of setpoint
EGAIN	–	1720.43	-15.02	1735.45	102.09
	VMA	123.36	-19.9	143.26	8.43
EGAout	–	1620.43	-115.02	1735.45	96.41
	VMA	-20.6	-30.36	9.76	0.54
CGrid	–	1334.14	-313.39	1647.53	82.38
	VMA	-7.33	-25.24	17.91	0.90
MCPin	–	1334.14	-223.85	1557.99	77.90
	VMA	-43.14	-49.66	6.52	0.33
MCPout	–	815.54	4.8	810.74	31.18
	VMA	65.05	-0.08	65.12	2.50
Phosphor	–	1827.83	-31.34	1859.17	38.18
	VMA	-5.3	-31.34	26.04	0.52

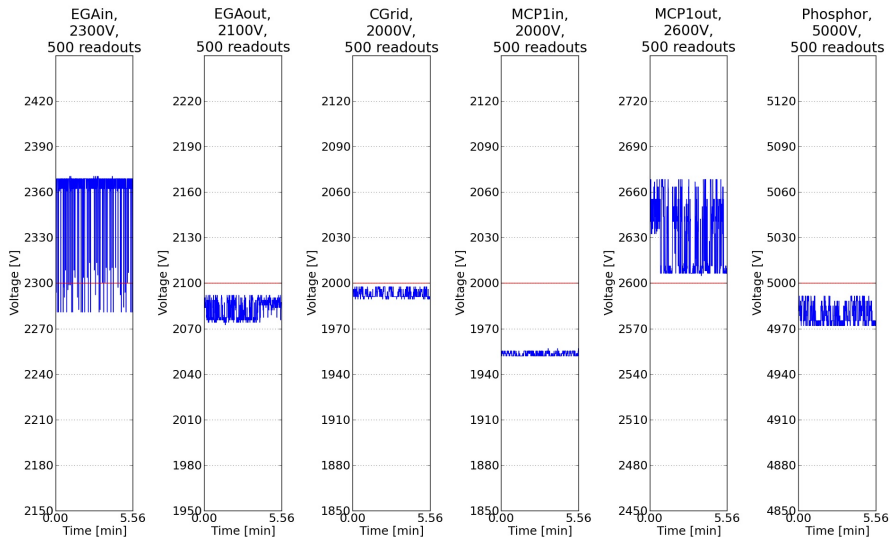
Image acquisition

- Readout of one image 400x300 takes $\sim 77ms \Rightarrow f < 12.9Hz$
- Two images (simultaneously) $\sim 142ms \Rightarrow f < 7.04Hz$
- But the effective frequency is lower - 12 Hz per image
- It is bounded by VME transfer time (bottleneck) and with digitalisation will be even lower.
- Digitalisation takes $\sim 40ms$ but can be performed in parallel with readout.
- HV readout itself does not affect notably image acquisition as it is mostly sleep while waiting for ADC.
- Higher frequency can be obtained with smaller image, eg:
300x200 $\sim 39ms$
250x150 $\sim 25ms$

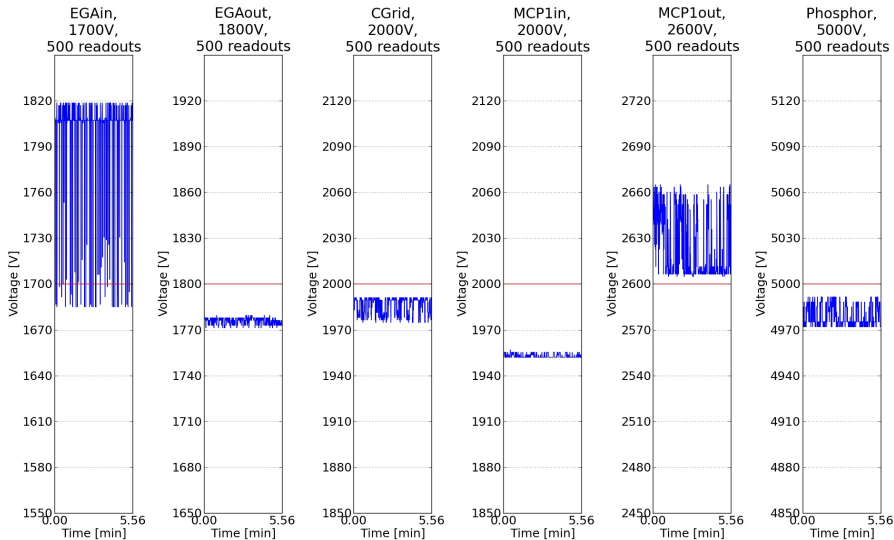
Different distribution of errors



Altering polarity on EGA effects readouts



Normal polarity



Altering polarity on EGA effects readouts

Errors

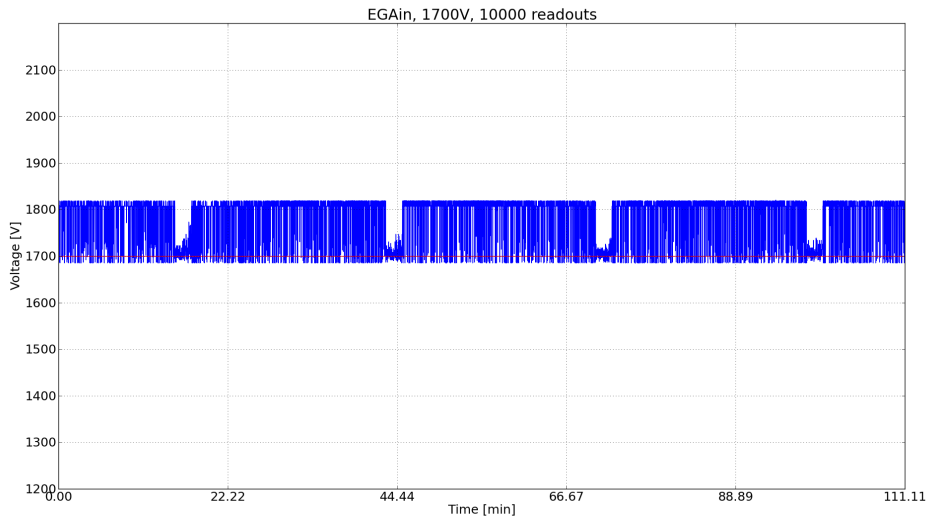
EGAI_n: - 50 V

EGA out: + 14 V

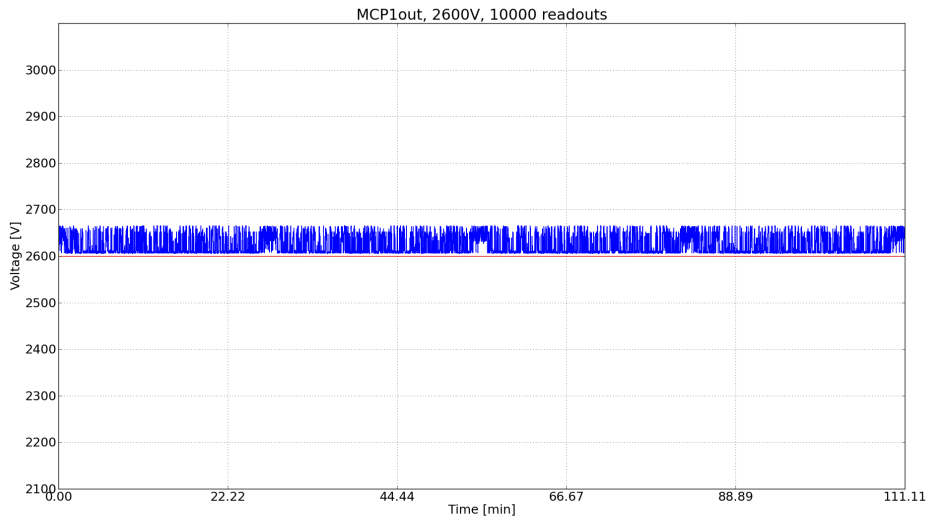
CGrid - 6 V

other ports remain unchanged

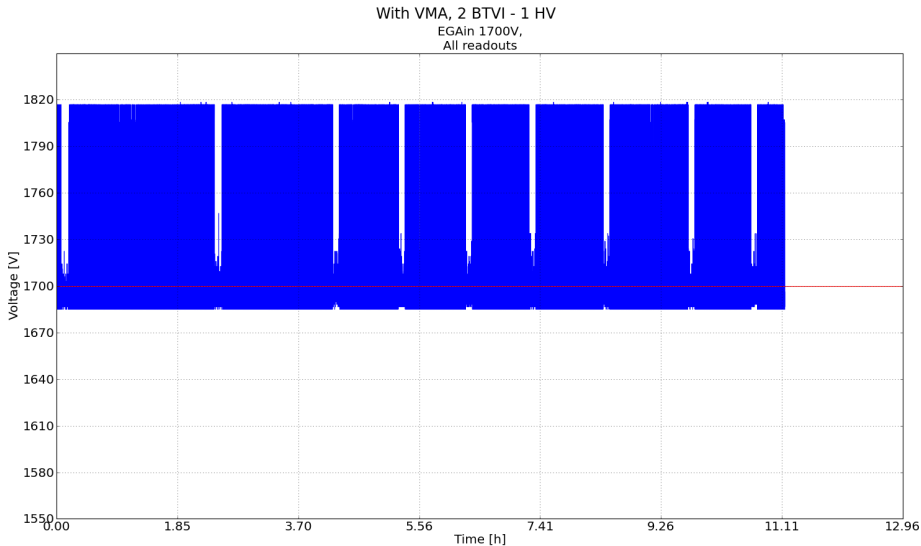
Observable on all ports - e.g. EGAin; VMA, 1 BTVI



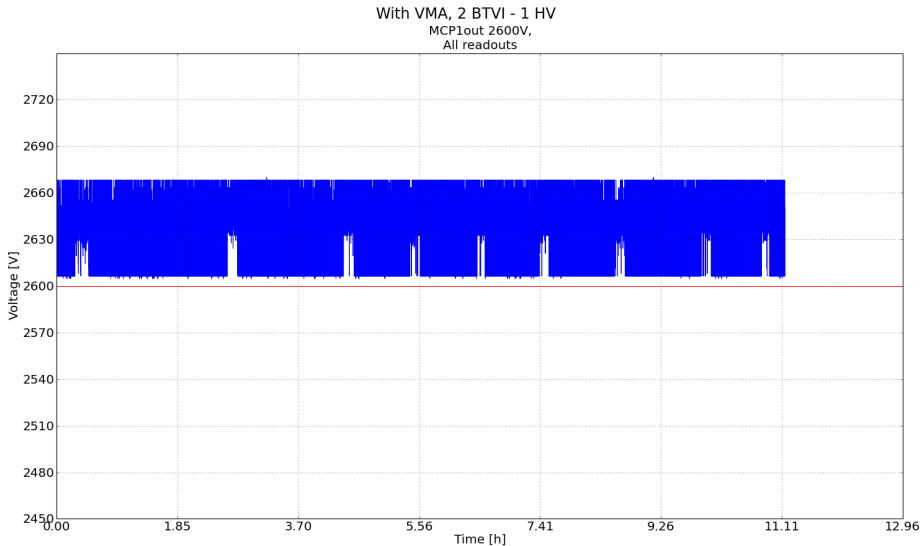
MCP1out; VMA, 1 BTVI



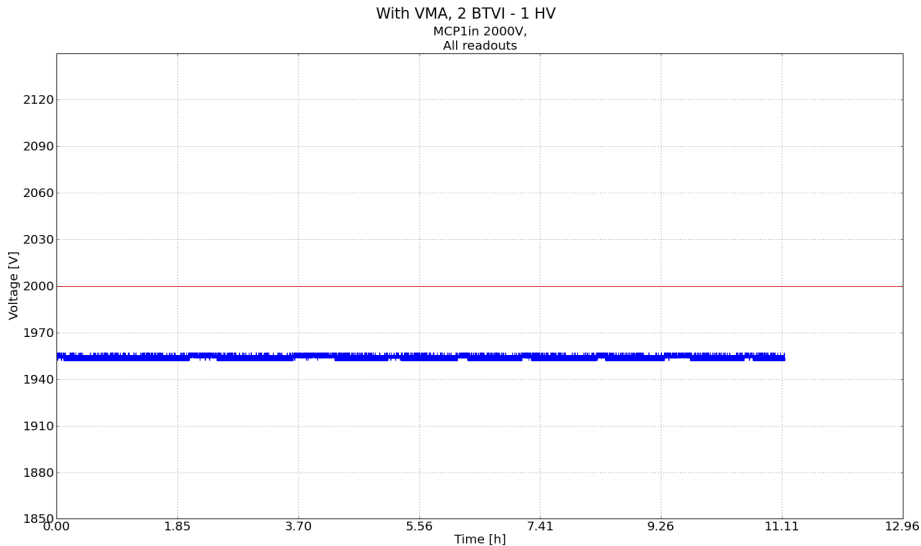
EGain; VMA, 2 BTVI



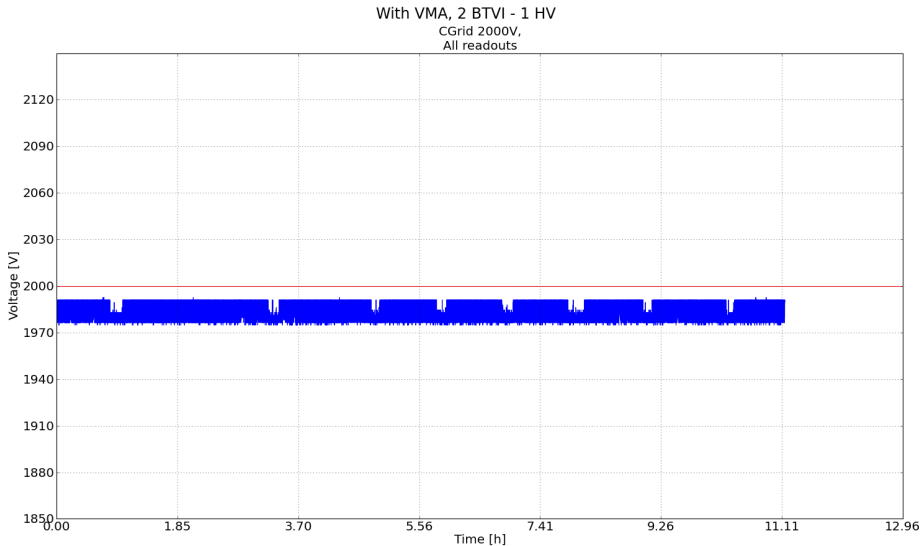
MCPout; VMA, 2 BTVI



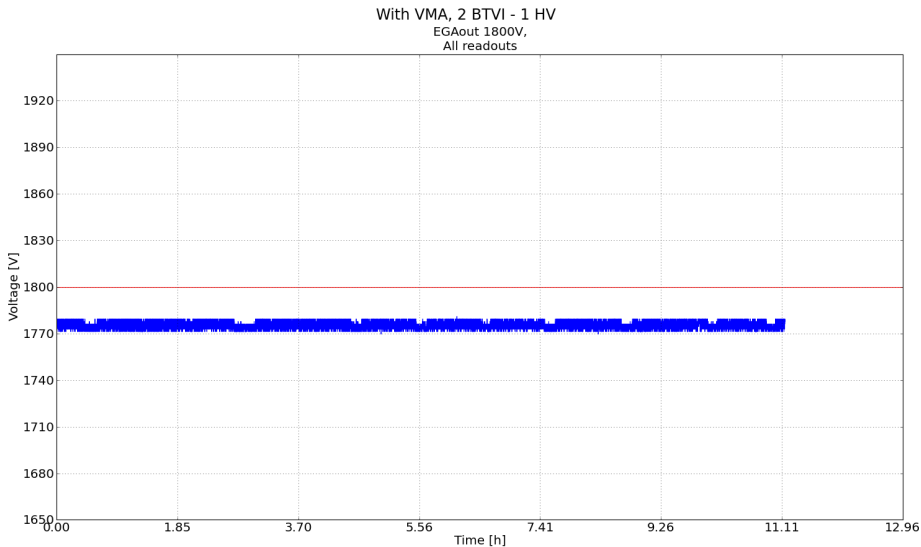
MCPin; VMA, 2 BTVI



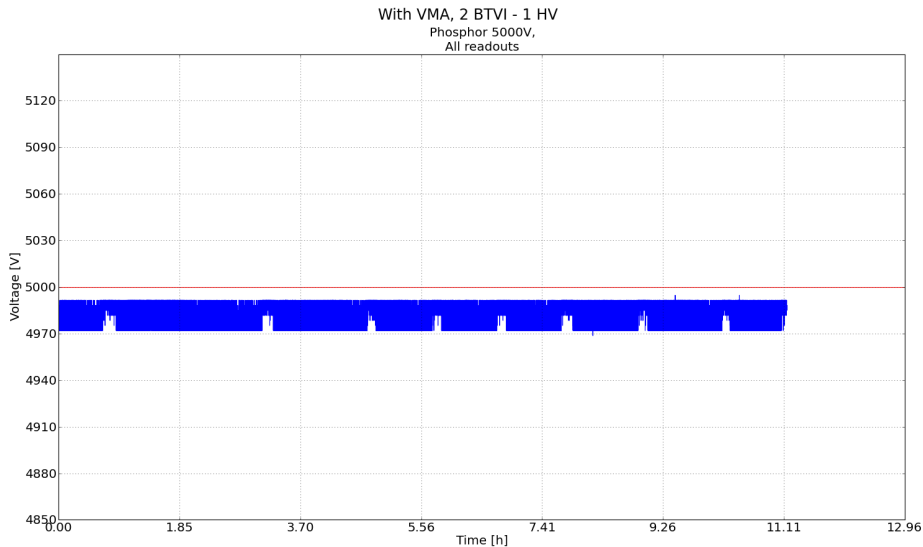
CGrid; VMA, 2 BTVI



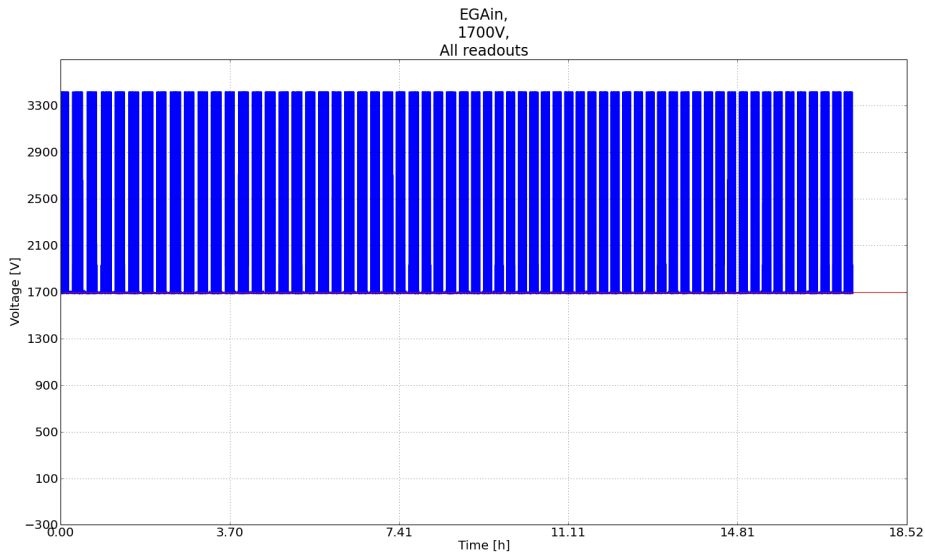
EGAout; VMA, 2 BTVI



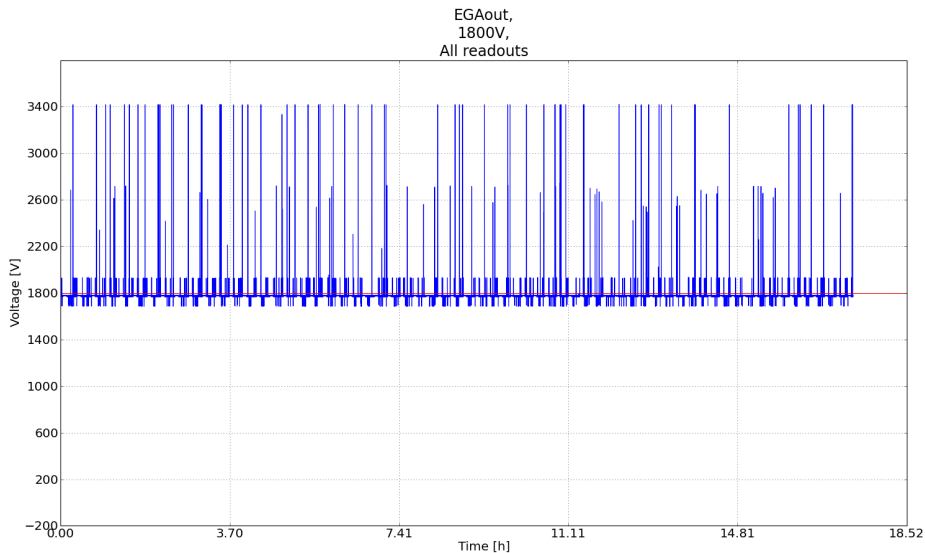
Phosphor; VMA, 2 BTVI



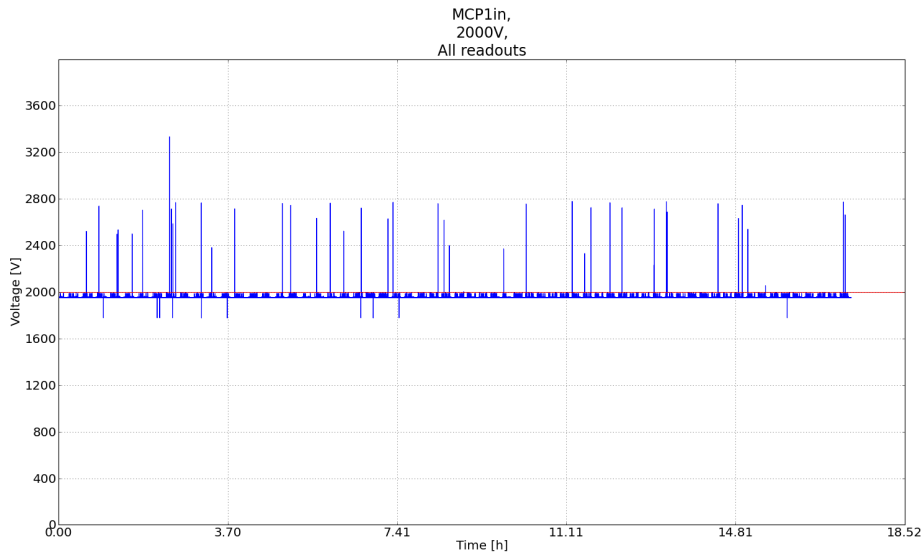
EGain; No VMA, 1 BTVI



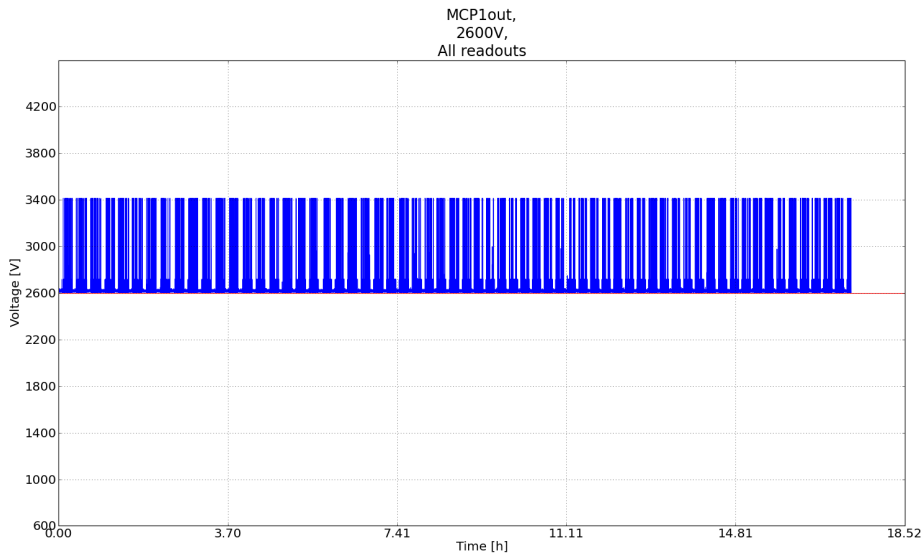
EGAout; No VMA, 1 BTVI



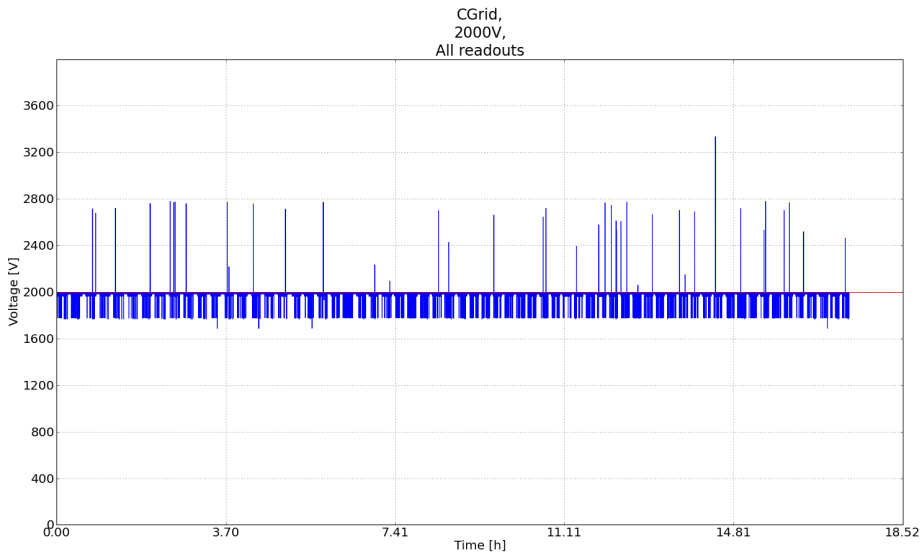
MCPin; No VMA, 1 BTVI



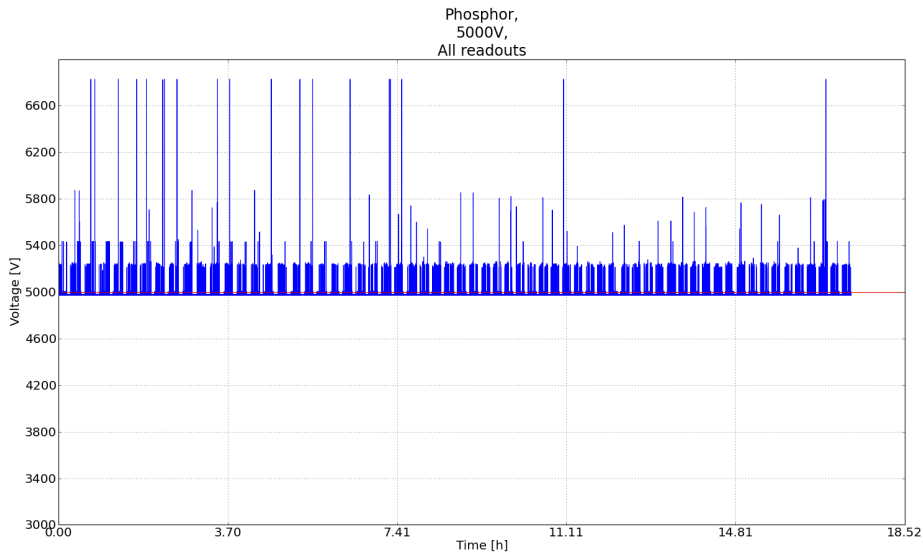
MCPout; No VMA, 1 BTVI



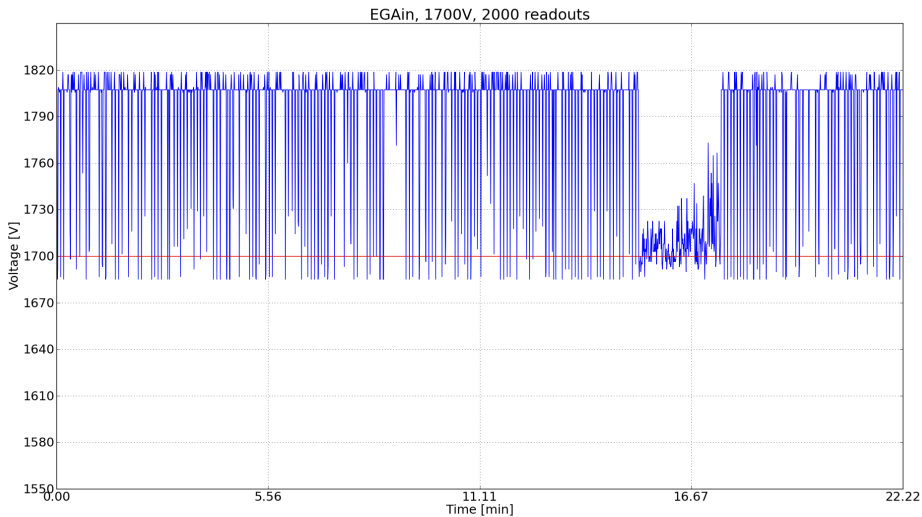
CGrid; No VMA, 1 BTVI



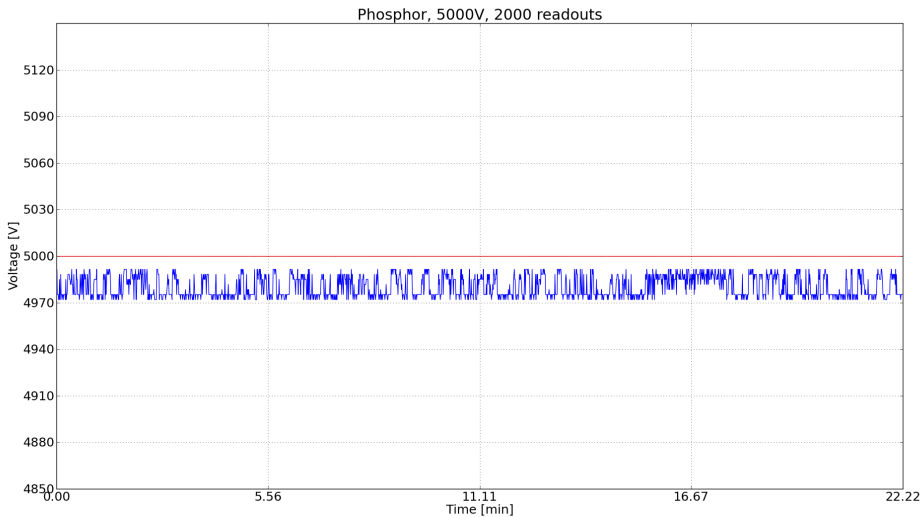
Phosphor; No VMA, 1 BTVI



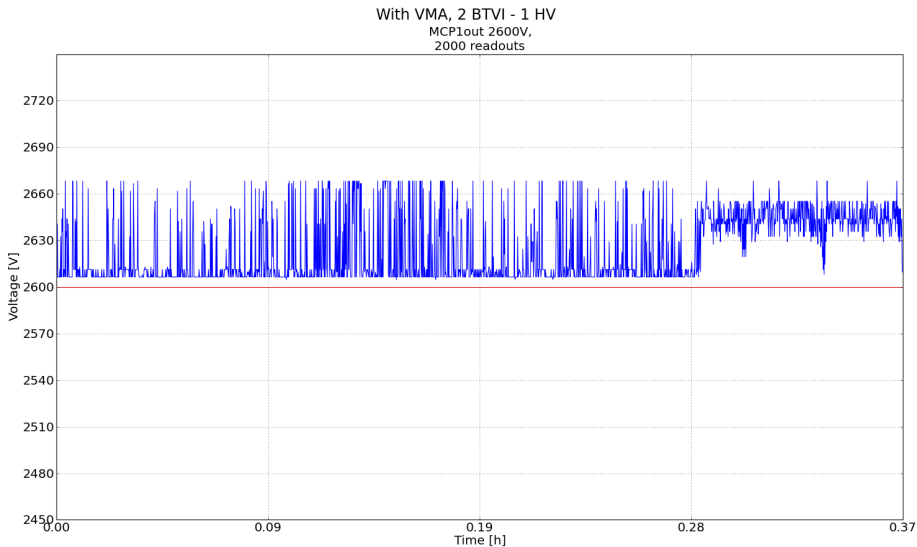
EGain, VMA, 1BTVI; Close-up



Phosphor, VMA, 1BTVI; Close-up



MCPout; VMA, 2 BTVI; Close-up



- On each test frequency was different:
 - 1 BTVI, No VMA: approx. every 15 min
 - 1 BTVI, VMA: approx every 22 min
 - 2 BTVI, VMA: approx every 1h 7min
- Shift also appears to vary between ports

BGI's Ports

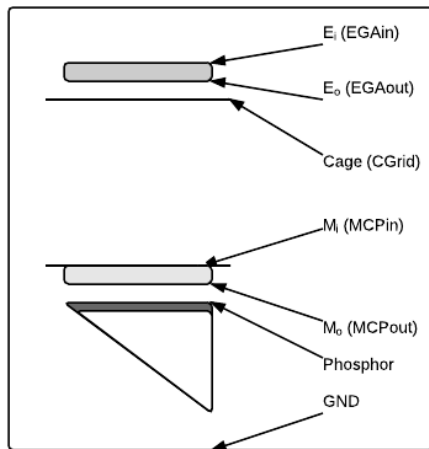
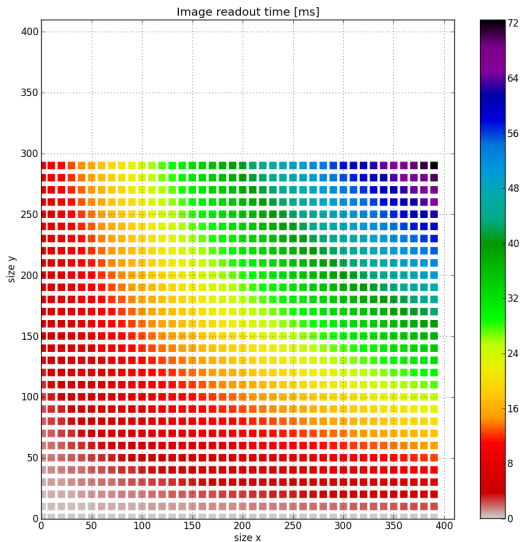
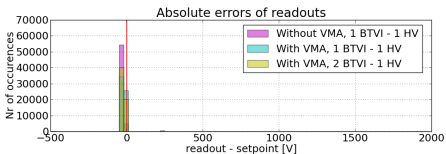
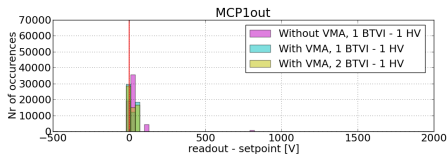
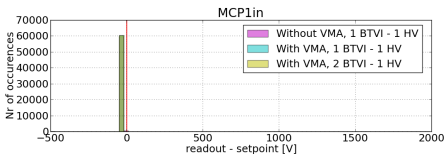
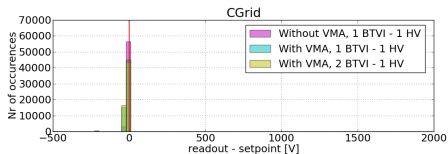
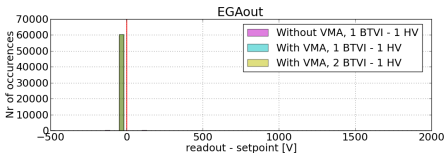
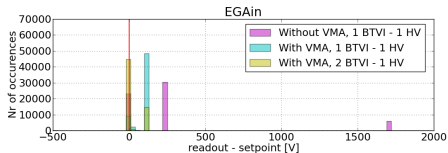


Image acquisition time



$$U_{read} - U_{set}$$



$$U_{read} - U_{set}$$

