BRM Rack Current Measurements

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Measurement Conditions

- DC V, I and P were recorded from the front panel display of power supplies where available.
- AC line current measurements were taken with a Tenma 72-6614 AC current probe on the regular power strip and the UPS power strip.
- AC and DC Power was calculated for each load.
- Equipment in a static condition during measurements.
- 70% efficiency assumed for all power supplies.
- UPS has 16A maximum capacity.
  - Not clear on if this limit is per power strip or system.
- While measuring current on S1E09, UPS power tripped off bringing down UPS loads in S1E09 and S1E10.

S1E08

S1E08	Calculated DC Power (W)	AC I (A) REG	AC I (A) UPS	AC Power (W) (230*I)70% REG	AC Power (W) (230*I)70% UPS
Network Switch			0.42		67.62
BLM-CFC PS	11.59	0.53		85.33	
BCM2 Wiener	16.09		0.74		119.14
CFV CTXCMS PS	20.08		0.67		107.87
TOTEM_DET		0.01	0.01	1.61	1.61
TOTEM_MOV B1,B2		0.02	0.02	3.22	3.22
CMS_DET		0.02	0.02	3.22	3.22
GLOBAL INH 1-2		0.03	0.03	4.83	4.83
GLOBAL INH 2-2		0.03	0.03	4.83	4.83
Fan			0.4		64.4
TOTAL	**47.76**	**0.64**	**2.34**	**103.04**	**376.74**

IF ALL ON UPS			**2.98**		**479.78**

S1E09

S1E09	Calculated DC Power (W)	AC I (A) REG	AC I (A) UPS	AC Power (W) (230*I)70% REG	AC Power (W) (230*I)70% UPS
BCM1F/BSC	72.26		0.96		154.56
BCM1F/Interlock	60.38	1.38		222.18	
Interlock	49.9		0.66		106.26
BCM1L	52.6		0.9		144.9
CAEN PS	137.14	2.7		434.7	
TOTAL	**372.28**	**4.08**	**2.52**	**656.88**	**405.72**

IF ALL ON UPS			**6.6**		**1062.6**

S1E10

S1E10	Calculated DC Power (W)	AC I (A) REG	AC I (A) UPS	AC Power (W) (230*I)70% REG	AC Power (W) (230*I)70% UPS
BSC NIM		1.43		230.23	
BPTX NIM	85.93		1.35		217.35
BPTX DG535 delay		0.26		41.86	
DG353		0.28		45.08	
Scope 02		0.9		144.9	
Scope 03		0.93		149.73	
Scope 05		0.15		24.15	
RADMON HF+			0.02		3.22
RADMON HF-			0		
Scope 01			0.96		154.56
Button Crate 1			0.08		12.88
Button Crate 2			0.09		14.49
Computer 1			0.94		151.34
Computer 2			0.94		151.34
Computer 3			0.94		151.34
Network Switch			0.42		67.62
TOTAL	**85.93**	**3.95**	**5.74**	**635.95**	**924.14**

IF ALL ON UPS			**9.69**		**1560.09**

Totals

System Totals	Calculated DC Power (W)	AC I (A) REG	AC I (A) UPS	AC Power (W) (230*I)70% REG	AC Power (W) (230*I)70% UPS
S1E08	47.76	0.64	2.34	103.04	376.74
S1E09	372.28	4.08	2.52	656.88	405.72
S1E10	85.93	3.95	5.74	635.95	924.14
System totals		**8.67**	**10.6**	**1395.87**	**1706.6**
If all on UPS			**19.3**		**3102.47**

- Do not understand why plugging in CAEN supply in S1E09 caused UPS to trip in racks S1E10 and S1E09. Three crates in S1E09 and computers/scopes clearly lost power.

- If all equipment is to be on UPS then total I is 19.3A. If the total UPS system has 16A capability, we have a problem.

Documentation

Power documentation has been added to the web link

http://www-ppd.fnal.gov/EEDOffice-w/Projects/CMS/Silicon_TRacker/index.html

Item 1: BRM System Power Distribution Links

- Contains detailed spreadsheets of all measurements and calculations.
- Lists equipment in each BRM rack.
- Includes PS V and I front panel readings as a reference.