Todd Moore		Vicor Power Supply Noise Test Summary Report					5/25/2006		
Version:	4								
Environment:									
	1	Vicor is mounted in the same rack as Monsoon.							
		The analog gnds of both linear & Vicor supplies are grounded at the rack.							
		The rack which has the Vicor power supply & Monsoon is at earth ground.							
		Power cables for Vicor supplies are 4-4-1/2 feet long, 16awg, not shielded & are twisted pairs.							
		Sense cables for Vicor supplies are 4-4-1/2 feet long, 20awg, not shielded, & are twisted pairs.							
		Cables going to external loads are 3-5 feet, 12awg, not shielded, & are twisted pairs.							
		External binding posts (+/-15van…) which are part of the video cable have their inputs shorted together & left floating.							
	2	For short exposures: Monsoon is running Fermilab focalplane on cyclone:/home/monsoon/cfg/_fnalShort/.							
		# of pixels for short exposure is 400 rows X 300 columns							
		For long exposures: Monsoon is running Fermilab focalplane on cyclone:/home/monsoon/cfg/_fnal/.							
		# of pixels for long exposure is 4096 rows X 2048 columns.							
		Sequencer is ReadType1d.ucd							
		Readout time is at 11uS/pixel.							
		All Offsets are set to 1.0v. Channel 0 & 2 video inputs are connected to CCD sim board through Fermilab supplied video cable.							
		All datasets are located on cyclone.hep.uiuc.edu:/home/monsoon/data/vicor_noisetest/….							
		In /home/monsoon/data/vicor_noisetest/ are folders which are named by the date the data was taken.							
			Channel 0		Channel 2				
Test#	Date	Conditions	Mean	RMS	Mean	RMS	Notes	FITS Filename	Postscript Filename
Test27	23-May-06	All Vicor supplies (+/-15va, +/-5va, +5vdc, +3.3v), are attached to Monsoon and unloaded. This will be a short exposure.	80,980	9.05	83,240	8.359	Can we repeat the noise measurement values from test26?	all_vicor_wo3_3_5vd+15-15-5+5unloaded_May23_test27.fits	all_vicor_wo3_3_5vd+15-15-5+5unloaded_May23_test27.ps
Test28	23-May-06	Same as test 27, except we are taking a long exposure.	80,970	8.951	83,210	8.303	Can we repeat the unloaded noise measurement values with a long run?	all_vicor_wo3_3_5vd+15-15-5+5unloaded_May23_test28.fits	all_vicor_wo3_3_5vd+15-15-5+5unloaded_May23_test28.ps
Test29	23-May-06	All Vicor supplies (+/-15va, +/-5va, +5vdc, +3.3v), are attached to Monsoon and loaded. This will be a long exposure.	80,890	14.78	83,130	12.64	Can we repeat the loaded noise measurement values with a long run? Either video cable moved or Vicor power supply connections caused the increase in Sigma. Moving video cable caused Sigma to vary.	all_vicor_wo3_3_5vd+15-15-5+5loaded_May23_test29.fits	all_vicor_wo3_3_5vd+15-15-5+5loaded_May23_test29.ps
Test30	24-May-06	Same as test29	80,910	11.95	83,140	10.64	Will we repeat the large sigma from test29? Sigma is still a little high but closer to baseline values from test20 (around 10.5).	all_vicor_wo3_3_5vd+15-15-5+5loaded_May24_test29.fits	all_vicor_wo3_3_5vd+15-15-5+5loaded_May24_test29.ps
Test31	24-May-06	Same as test28	80,930	8.723	83,160	8.192	Can we repeat the unloaded noise measurement values with a long run?	all_vicor_wo3_3_5vd+15-15-5+5unloaded_May24_test31.fits	all_vicor_wo3_3_5vd+15-15-5+5loaded_May24_test31.ps
Preliminary Conclusion:		Vicor power supplies have shown to operate quietly while being loaded to at lest 85%. The video cable and Vicor power supply still can cause the sigma to vary. The sigma can be lower with the Vicor supplies unloaded, but there is still concern that grounding and/or power supply connections are the cause. Measurements are the same with either long or short exposure.							
Next Steps:		1) Move the Vicor supplies into the DES mountaintop prototype system and continue noise testing. The connections should be cleaner and thus help eliminate potential power supply connection problems. This will allow us to model the noise characteristics in the real system.							
		2) Design load boards which will replace the power consumption of the missing Monsoon CBB & CCD Acq. boards. These boards will be installed into the system in place of the missing CBB and CCD Acq. boards.							