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To: Distribution

From: Reid Gurnee

Subject: EPI-Hi LVPS Board Peer Review Action Items

Description: On May 22nd, 2013 the EPI-Hi team held a peer review for the LVPS Board. This memo lists the attendees and all recorded action items with responsible actionee and due date.

Attendees:

Branislav Kecman
David Do
Jim Johnson
John Dickinson
Nigel Angold
Rick Cook
Samuel Kerem
Steve Jaskulek
Uno Carlsson

Action Item List:

Identification Number	Reviewer	Actionee	Area of Concern	Concern	Recommended Action	Date Opened	Due Date
1	Steve Jaskulek	John Dickinson	Redundancies	Can the redundant primary side power signals from the spacecraft be tied together on the LVPS? Where is the isolation protection between side A and B maintained: S/C or instrument?		5/22/2013	7/4/2013
2	Steve Jaskulek	John Dickinson	Op Heater Power	Is Op heater power along with instr. primary power, or is it a separate service?	Work with Project to determine how Op Heater power is received by instrument	5/22/2013	7/4/2013
3	Jim Johnson	David Do	EMI		Look into freewheeling diodes around the normal mode inductors; Can reduce conducted emissions in EMI	5/22/2013	7/4/2013
4	Samuel Kerem	David Do	SPF		Consider fuses or series diodes across D8/D9 diodes to reduce single point failures	5/22/2013	7/4/2013
5	Jim Johnson	David Do	Thermal	TO-205 might not conduct heat adequately compared to the amount dissipated in the component	Consider thermal analysis and part packaging for Q20.	5/22/2013	7/4/2013
6	Jim Johnson	David Do	Switching FET		Suggestion: fast-and-soft Shotkey across the switching FET (Q20). An RC is another option, but is lossy	5/22/2013	7/4/2013
7	Jim Johnson	David Do			Suggestion: Ferrite bead/small inductor for differential mode noise rejection on low voltage outputs. Differential inductance for the LC filter on the output. Add a freewheeling diode across the ferrite bead.	5/22/2013	7/4/2013
8	Uno Carlsson	David Do	Safety		Safety -Perform a short-circuit analysis for safety purposes on low-voltage outputs. Based on analysis results, possible design implications may be appropriate	5/22/2013	7/4/2013
9	Steve Jaskulek	David Do	EMI		Verify that the resistance/capacitance between primary to secondary is within SPP EMI Spec	5/22/2013	7/4/2013

Identification Number	Reviewer	Actionee	Area of Concern	Concern	Recommended Action	Date Opened	Due Date
10	Samuel Kerem	David Do	Notes		Fix note "GNDP is tied to GND at U1-18"	5/22/2013	7/4/2013
11	Samuel Kerem/ Branislav Kecman	David Do	Grounding		Add a page/key that indicates how grounds are connected	5/22/2013	7/4/2013
12	All	David Do			Linear Regulator (U4) is positive feedback; should be negative	5/22/2013	7/4/2013
13	Steve Jaskulek	David Do	Safety		Safety -what happens to other voltages when the a voltage rail is shorted? Part of short-circuit analysis	5/22/2013	7/4/2013
14	Jim Johnson	David Do	Linear Regulators		Consider Active current limiting on the output of the linear regulators to prevent going to cycle-by-cycle limiting on the switcher	5/22/2013	7/4/2013
15	John Dickinson	David Do	Output Loads		Refine the output loads and provide capability table to EPI-Hi for review	5/22/2013	7/4/2013
16	Rich Cook	EPI-Hi	Voltages		Review min/max voltage and determine where error budget is bookept. Shouldn't all be kept at the LVPS	5/22/2013	7/4/2013
17	Steve Jaskulek	David Do	Heater power		If operational heater is added to primary power bus, do not include heater power in primary current sense circuit	5/22/2013	7/4/2013
18	Branislav Kecman	David Do	Thermistors		EPI-Hi will supply the a thermistor (made to GSFC spec)	5/22/2013	7/4/2013
19		EPI-Hi	Thermistors		Send thermistor datasheet/spec; Do will test the thermistor in board checkout. EPI-Hi will provide the component; Do will fabricate it (install on board)	5/22/2013	7/4/2013
20	EPI-Hi	David Do	EMI		Requests to do a quick EMI test on EM board. Conducted emissions is the only practical test. To be determined whether this is done at APL's or Caltech's facility	5/22/2013	7/4/2013
21	Steve Jaskulek	EPI-Hi	Mechanical		Provide mechanical information on LVPS EMI shield	5/22/2013	7/4/2013

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22	Steve Jaskulek	John Dickinson	Thermal		Ensure Do has a contact for the thermal analysis.	5/22/2013	7/4/2013
23	EPI-Hi	David Do	Reviews		Perform a follow-up layout review. Layout will be done in Expedition.	5/22/2013	7/4/2013
24		John Dickinson	Schedule		When does EPI-Hi need the LVPS in the schedule?	5/22/2013	7/4/2013
25	EPI-Hi	David Do	Parts placement		Indicate on schematic which portions should have primary vs. secondary side EMI shielding to leave room on parts placement for gold-plated footprint (to be incorporated by EPI-Hi mechanical engineering)	5/22/2013	7/4/2013
26	EPI-Hi/ Dean	David Do	Ripple		Suggestion: put electrostatic isolation between the primary and secondary transformer windings. Determine how/if it should be done. Meant to clean-up switching noise. Otherwise, you'll have a hard time meeting the spec for ripple.	5/22/2013	7/4/2013
27	Jim Johnson	David Do			Look at using a reset winding	5/22/2013	7/4/2013

Distribution:

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