

System Requirements

R/W	Requirement	BLM
R	Radiation tolerance	1kGy / 20 years
R	Chassis MTTF calculated with handbook 217plus at 40°C	> 1 E+07 h
R	Power supply MTTF calculated with handbook 217plus at 40°C	> 1 E+06 h
R	Component derating	< 50%
R	Global Power requirement	≥ 50W
R	Mini-crate height	< 400mm
R	Chassis height	3U
R	Chassis depth	220mm
R	Connector Pins pitch	≥2.54mm
R	Connector mating cycles	500
W	Preferred BLECF2 backplane connector P.N.	09 03 264 2825
R	Backplane PCB thickness	2.2mm
R	PCBAs quality	* See note below
R	Required voltage 1	+1.5VDC (5W)
R	Required voltage 2	+2.5VDC (10W)
R	Max ripple for digital voltages	50mVpp
R	Required voltage 3 (With linear voltage regulator)	+5VDC (5W)
R	Required voltage 4 (With linear voltage regulator)	-5VDC (5W)
R	Max ripple for analog voltages	10mVpp
R	Ventilation air flow	500m ³ /h
R	FAN MTTF calculated with handbook 217plus at 40°C	> 4 E+05 h
W	Component quality	Automotive

PCB Requirements

* For the manufacturing of PCBs:

- Standard (IPC) documents: IPC-4552, IPC-4101/94, IPC-4562/3 CU-E3 class 2, IPC-TM-650, IPC-DR-572, IPC-4761, IPC SM 840 class H, J-STD-609, IPC-2221 and IPC-2222 type 3 class2, IPC-A-600 class 3, IPC-6011 and IPC-6012 class 3, IPC-TM-650.

For the assembly of PCBs:

- IPC Standard IPC-A-610 (Class 2); Acceptability of electronic assemblies;
- IPC Standard IPC/JEDEC J-STD-001 (Class 2); Requirements for soldered electrical and electronic assemblies;
- ANSI/ASQ Z1.4-2003: Sampling procedures and tables for inspection by attributes;
- IPC/JEDEC J-STD-609: Marking and labeling of components, PCBs and PCBAs, to identify lead (Pb);
- ANSI/ESD-S-20.20: Protection of electrical and electronic parts, assemblies and equipment;
- IPC/JEDEC J-STD-033: Handling, packing, shipping and use of moisture/reflow;
- Cleanliness Designator C-22 (both sides of assembly to be cleaned; test for ionic residues required) as described in the IPC/EIA J-STD-001C in § 8.3.2.

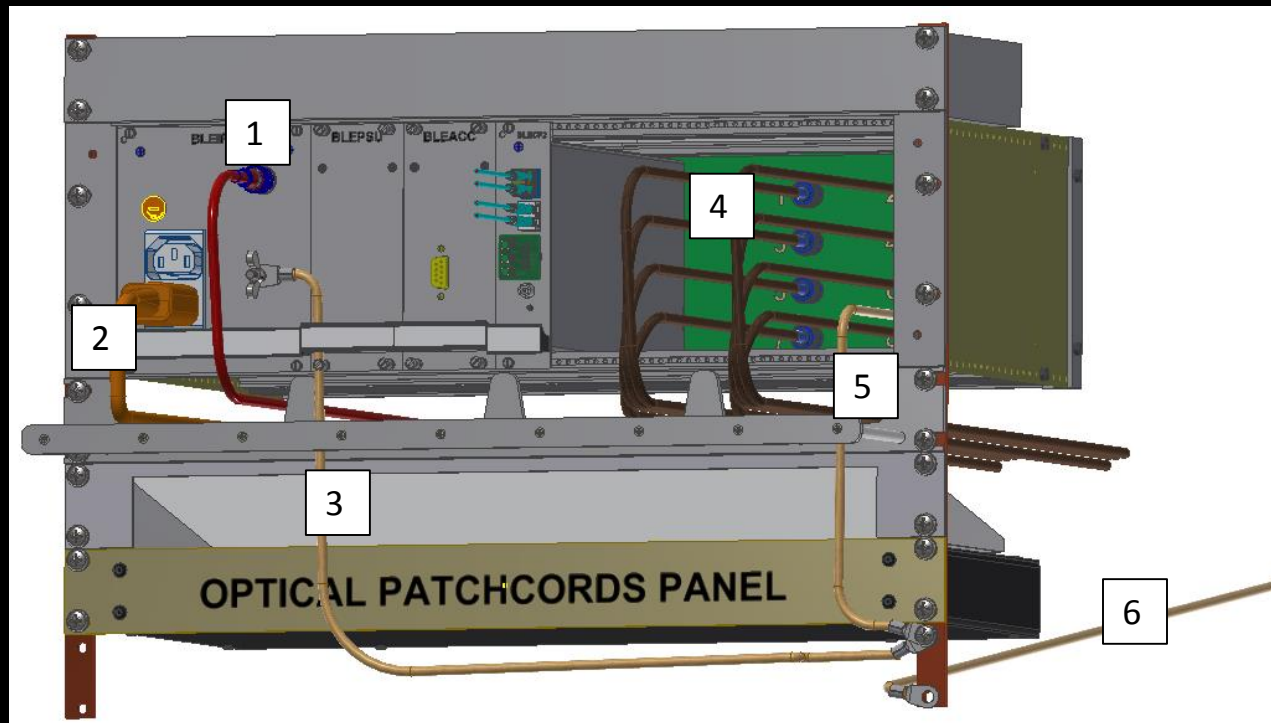
In case of conflict, IPC-A-610, in the very latest revision class 3, takes precedence over IPC/EIA-J-STD-001.

The modules shall be soldered using lead-free solder and shall be RoHS compliant. Both sides of the assembly shall be cleaned in an industrial cleaning machine and a test for ionic residues is required (IPC/EIA J-STD-001, Cleanliness Designator C-22). Also after rework or repair, modules shall be cleaned to meet the Cleanliness Designator C-22.

The insertion and soldering of the through hole shall be performed with an angle tilt $<2^\circ$

Two additional PCBs shall be assembled to qualify the thermal profile of all the BGA components.

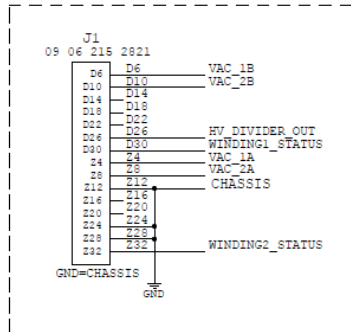
BLEACT – Grounding fault tolerance



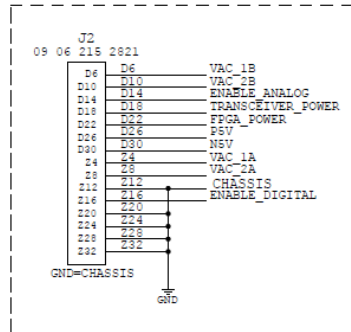
- If #1 is unplugged, the grounding is guaranteed by #4 (through the ionization chamber).
- If #2 is unplugged, the grounding is guaranteed by #3 & #5 (through the backplane).
- If #3 is unplugged, the grounding is guaranteed by #2 & #5 (through the backplane).
- If #4 is unplugged, the grounding is guaranteed by #1 (through the ionization chamber).
- If #5 is unplugged, the grounding is guaranteed by #2 & #3 (through the backplane).
- If #6 is unplugged, the grounding is guaranteed by #2.

BLEBPT - Backplane Schematics

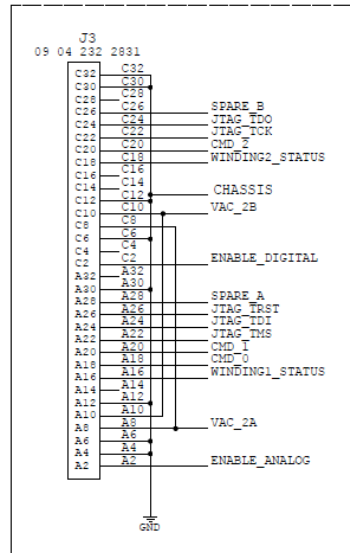
BLEIPU



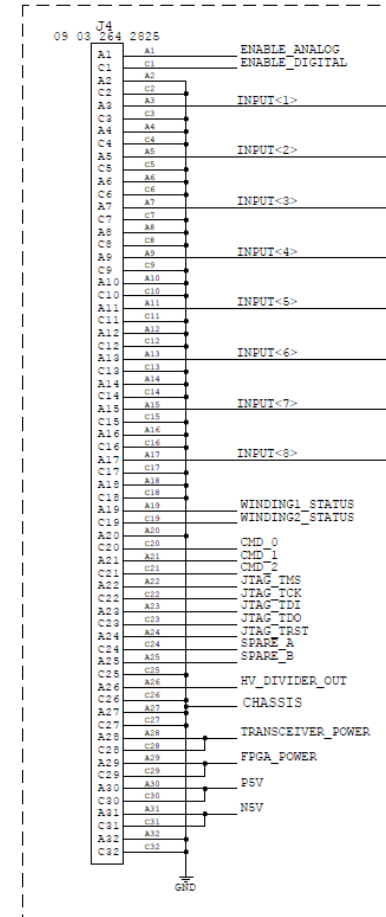
BLEPSU



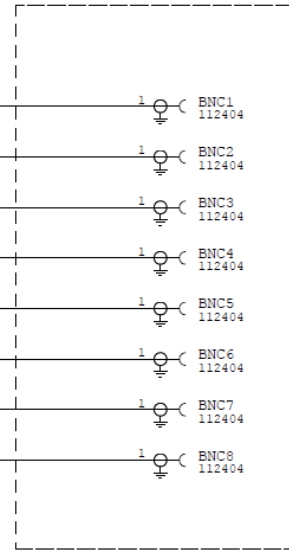
BLEACC



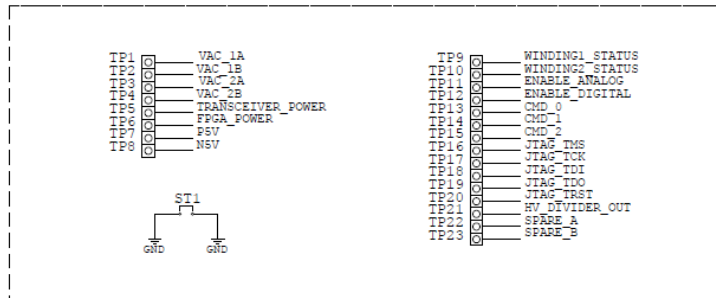
BLECF2



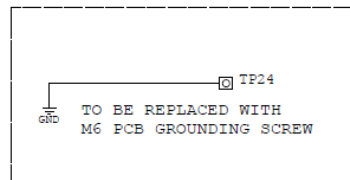
INPUT CONNECTORS



TEST POINTS

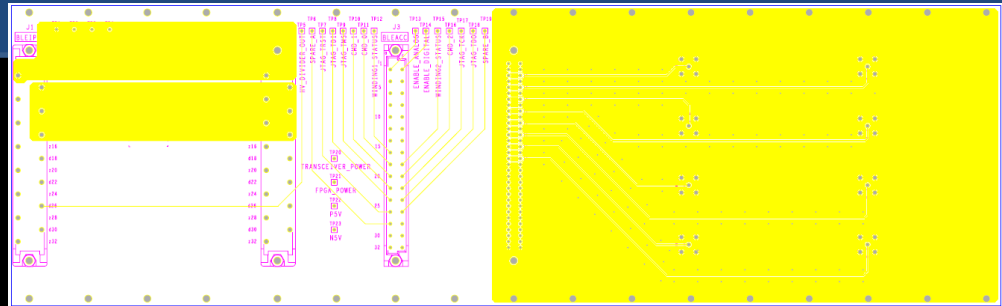


GROUNDING

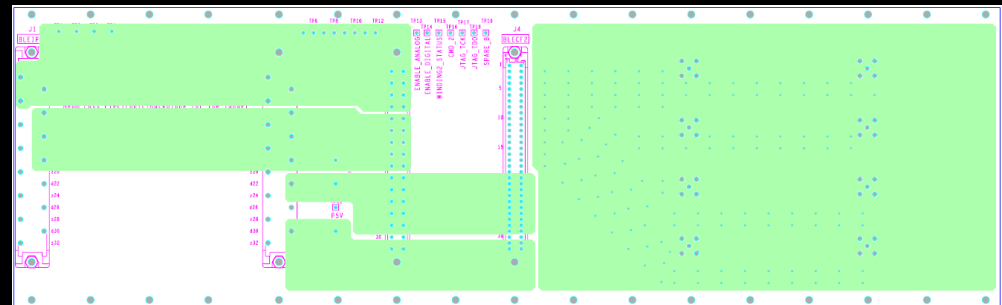


Backplane design status - Layout

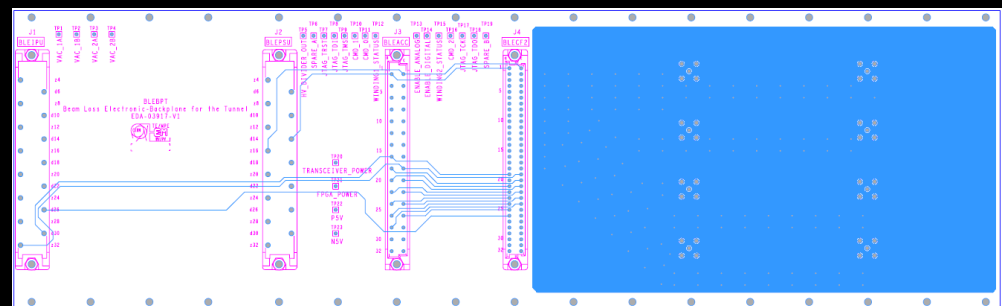
Layer	Assignment
Top	GND
L2	BNC input
L3	GND
L4	Power
L5	Signals
L6	GND
L7	Power
Bottom	GND



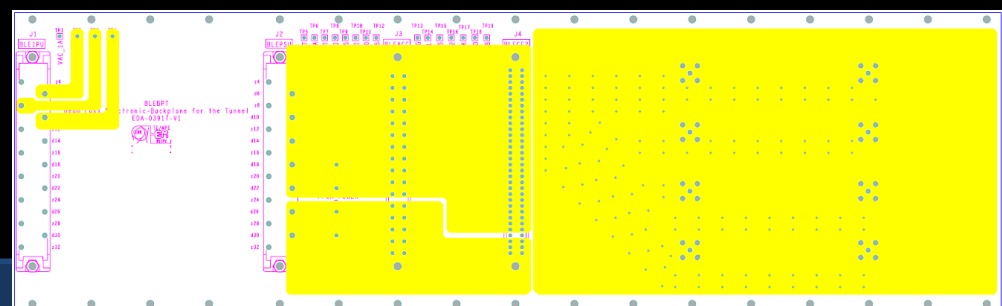
L2



L4



L5



L6