

SATELLITE POWER SWITCHING BOX (PSB)

\$5.0M

Aerospace

*Project
Management*



*Mechanical
Engineering*



*Electrical
Engineering*



*Systems
Engineering*



*Quality
Assurance*



DEVELOPED ELECTRONICS AND PACKAGING OF A SATELLITE POWER-SWITCHING BOX

APPROACH

- Map customer requirements to system requirements
- Perform electronics design, integration, analysis
- Complete an architecture phase, design/analysis phase, and final build/test phase
- Perform structural design and analysis
- Product to be incorporated into five satellite systems currently in development
 - > Likely more in the future because architecture is designed with scalability

RESULTS

- Completed electronics design and analysis, including derating to IEEE-INST-002, WCCA, space claims, and power requirements to optimize SWaP
- Created design that is compact with heatsinking and a mechanical card locking system despite challenging size and weight constraints
- Designed seven PCBs featuring
 - > Up to 16 layers
 - > Blind and buried vias
 - > High-speed differential routing
 - > Up to 120 A electrical current
 - > Rigid flex design
- Completed structural design and analysis
- Created and updated traceable system requirements
- Tightly coupled electrical and mechanical design to ensure thermal compatibility with mission requirements, including design of eight custom conduction heat sinks for high power system in space environment

KEY TOOLS & TECHNOLOGIES

- Altium
- SolidWorks
- Simcenter Femap with NX Nastran

ALTEN TECHNOLOGY