

CASE STUDY

Commercial Broadband Satellite Program (CBSP)

SUMMARY:

Shock-Isolated Enclosures Enhance Naval SATCOM System

To keep naval forces connected, the U.S. Navy's Commercial Broadband Satellite Program (CBSP) delivers high-bandwidth SATCOM links to ships at sea. A recent upgrade under CBSP's Unit Level Variant (ULV) aimed to equip smaller warships with robust satellite communication terminals, providing an internet-like data pipeline for mission and welfare use militaryaerospace.com.

CHALLENGE:

The below-deck terminal equipment – including modems, networking hardware, and power supplies – needed to be housed in an enclosure that could survive shipboard shock and vibration while shielding delicate RF components from electromagnetic interference. With small combatants like patrol ships in mind, the enclosure also had to be compact and securely mounted in tight spaces.

SOLUTION:

Optima Stantron's answer was a rugged M1-Series cabinet with integrated shock isolation, purpose from RF interference militaryaerospace.com. The design meets MIL-S-901D ship shock standards, meaning it can endure the impact of a blast or collision that might otherwise disrupt communications. It also complies with MIL-STD-461 for EMI, ensuring the powerful satellite radios do not interfere with the ship's sensors and that the enclosure blocks external electromagnetic noise.–built for naval communication gear. This enclosure platform combined a seismic-rated steel frame with vibration isolators, creating a stable environment for the CBSP ULV electronics. In Navy qualification tests, the cabinet's performance was proven: the entire below-deck SATCOM system is contained in a shock- and vibration-isolated cabinet shielded

- **Floating shock mount design:** Internal components are mounted on a frame isolated by spring-damper or elastomer isolators, so the cabinet absorbs hull shocks and vibrations, protecting sensitive modems and servers militaryaerospace.com.
- **EMI-hardened enclosure:** Conductive coating and RF gaskets on doors and panels create a Faraday cage effect, containing electromagnetic emissions and meeting MIL-STD-461 naval EMI criteria.
- **Compact footprint:** The cabinet's layout is optimized to hold an entire SATCOM suite (radio units, control processor, power conditioning) in a minimal volume, ideal for smaller vessels. It includes cable management features to keep connections secure in rough seas.
- **Cooling and power integration:** Built-in fan trays and filtered air intakes maintain safe operating temperatures for communications electronics, and the cabinet accommodates shipboard power distribution units for an all-in-one solution.



Figure 1 Shock Isolated Rugged Cabinet

Outcome:

The shock-isolated ULV SATCOM cabinets have dramatically improved fleet communications reliability. Even when smaller ships encounter heavy weather or high-speed maneuvers, the SATCOM system remains online, providing sailors with broadband connectivity for operations and morale. This success story underscores how Optima Stantron's enclosure engineering enabled a C4I (Command, Control, Communications, Computers & Intelligence) upgrade that is both high-performing and naval-tough. By ensuring compliance with military standards and prioritizing ruggedness, the solution delivered uninterrupted connectivity and a clear value proposition: robust communications gear, protected by design, that keeps warfighters connected when it matters most militaryaerospace.com.



Elma Electronic

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