Success Story: Commercial Broadband Satellite Program (CBSP)

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. The 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.

Figure 1 Rugged cabinet for CBSP program

Solution: Optima Stantron's answer was a **rugged M1-Series cabinet with integrated shock isolation**, purpose-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 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.

- **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.

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.