

COTS-D Environmental Qualification



CoreAVI’s Commercial-Off-The-Shelf Designs (COTS-D) rugged hardware solutions are offered in the form of Intellectual Property (IP), a cost-effective alternative to developing hardware in-house or purchasing COTS hardware. This product brief describes the environmental qualification standards used in the design and qualification of CoreAVI COTS-D Hardware IP.

RUGGEDIZATION

CoreAVI is committed to the highest design standards. COTS-D hardware IP offerings are designed as rugged conduction-cooled modules. To ensure these designs will meet and exceed the demands of the environments in which they will be deployed, CoreAVI’s products are tested and qualified to VITA 47.3-2019, MIL-STD-810G, and DO-160G standards as per the conditions outlined in Table 1. The standard used in testing and qualifying is product dependent. All CoreAVI hardware units are conformally coated to meet rugged humidity requirements, as well as ground isolation requirements at altitude. Conduction-cooled 3U and 6U VPX hardware is designed to support two-level maintenance as per VITA 48.2.

ENVIRONMENTAL CONDITION	CONDUCTION-COOLED
Temperature	
Operational Temperature	-40°C to 85°C (Note 3)
Non-Operational Temperature (Storage)	-55°C to 105°C
Altitude (ft)	
Altitude	-1,500 to 60,000 ft
Relative Humidity	
Operational	0-100% Non-Condensing (Note 4)
Non-Operational (Storage)	0-100% Condensing (Note 4)
Shock	
Shock (Note 5)	40 g peak
Vibration	
Sinusoidal (Note 6)	10 g Peak 5-2000 Hz
Random (Note 7)	0.005 @ 5 Hz 0.1 @ 15 Hz 0.1 @ 2,000 Hz

Table 1: COTS-D Environmental Qualification Conditions

NOTES

1. Card-edge temperature.
2. Ten 24-hour cycles at $95 \pm 4\%$ relative humidity (RH) throughout, except cooling descending periods when RH may drop to 85%. Performance is measured under conditions of 30°C and 95% RH. Test item is otherwise non-operational.
3. Three sawtooth shocks per axis, in both directions.
4. Sinusoidal vibration sweep along each axis for a duration of 10 minutes.
5. Random vibration along each axis for a duration of 60 minutes.

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