

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 offerings are available in two ruggedization levels: air-cooled and conduction-cooled. 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.

Note that air-cooled hardware units are intended for lab development and are not extensively environmentally qualified beyond that environment; additional qualification is available on demand and is fully supported by the COTS-D hardware IP.

ENVIRONMENTAL CONDITION	AIR-COOLED	CONDUCTION-COOLED
Temperature		
Operational Temperature	15°C to 25°C (Notes 1,2)	-40°C to 85°C (Note 3)
Non-Operational Temperature (Storage)	N/A	-55°C to 105°C
Altitude (ft)		
Altitude	N/A	-1,500 to 60,000 ft
Relative Humidity		
Operational	N/A	0-100% Non-Condensing (Note 4)
Non-Operational (Storage)	N/A	0-100% Condensing (Note 4)
Shock		
Shock (Note 5)	N/A	40 g peak
Vibration		
Sinusoidal (Note 6)	N/A	10 g Peak 5-2000 Hz
Random (Note 7)	N/A	0.005 @ 5 Hz 0.1 @ 15 Hz 0.1 @ 2,000 Hz

Table 1: COTS-D Environmental Qualification Conditions

NOTES

1. Ambient air temperature.
2. Refer to the specific hardware product brief for air flow requirements.
3. Card-edge temperature.
4. 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.
5. Three sawtooth shocks per axis, in both directions.
6. Sinusoidal vibration sweep along each axis for a duration of 10 minutes.
7. Random vibration along each axis for a duration of 60 minutes.

Contact CoreAVI for more information: sales@coreavi.com