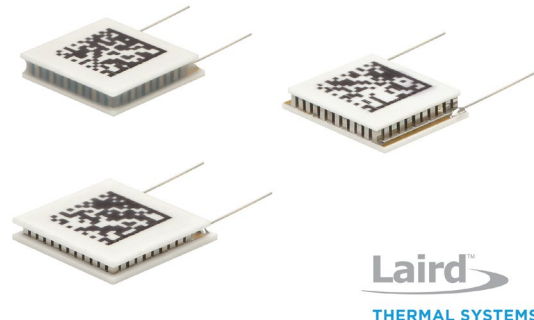


## OptoTEC<sup>™</sup> OTX/HTX Series Test Protocol

The OptoTEC Series is a high-performance, miniature thermoelectric cooler that utilizes next-generation thermoelectric materials to boost cooling performance over standard product offerings. Process controls have been enhanced to assure repeatability and long-life operation in temperature stabilization applications for optoelectronics used within telecom and industrial laser markets. The product line has been qualified to withstand harsh mechanical and environmental testing according to recognized specifications accepted in military and telecommunications with minimal degradation in performance.



Military standards were originally developed for defense and aerospace related organizations, but these standards have been adopted by leading OEM's ranging from those using thermoelectrics for telecommunications infrastructure to those using them for optoelectronics, autonomous systems, and machine vision applications. Telcordia (previously Bellcore) is a company that provides technical analysis, testing, and consulting services to product suppliers and service providers in the communications market.

Laird Thermal Systems uses state-of-the-art proprietary testing equipment and methodologies to ensure our products meet and/or exceed industry standards. Qualifying representative samples of the OTX/HTX Series were subjected to the following tests. All TECs met or exceeded the suggested passing criterion for each test.

- Qualification - used to qualify TECs for testing; includes Visual Inspection, AC Resistance Test, and IR Testing.
- Mechanical Shock - determines the suitability of thermoelectric modules for use in equipment which may be subject to moderately severe shocks as a result of suddenly applied forces or abrupt changes in motion.
- Vibration - determines the effect of vibration frequency in the specified frequency range on component parts.
- High Temperature Storage - determines the effect of prolonged exposure at a high temperature on the TECs.
- Thermal Cycling - determines the integrity of the TECs to alternate exposure to extremes of high and low temperatures.

- High Temperature & Humidity - determines the effect of prolonged exposure at a constant high temperature and high humidity on the TECs.
- Power Cycling - determines the AC resistance change of TEMs induced by electrical and thermal stresses generated by sudden cycling between “powered-on” and “powered-off” conditions.

### **Reliability Report**

A detailed reliability report is available. The report provides details on each test conducted, testing methodology, equipment used, test conditions, and results. This report and all its contents are to be treated as confidential information. The report may not be reproduced, nor may the information contained within be divulged to third parties, without the prior written consent of Laird Thermal Systems.

Use this [form](#) to request a copy of the report.