



Latitude 5340, 5440, 5540



Summary of Independent Environmental Testing.

| Test name | Test procedure |
|--------------------------------|---|
| Tests performed | MIL-STD-810H testing |
| Equipment tested | Latitude 5340, 5440, 5540 |
| Independent testing facilities | Latitude 5340 and Latitude 5540: SGS Reliability Laboratory No. 31 Wu Chyuan Road New Taipei Industrial Park, Wuku District New Taipei City, Taiwan Tel. (886-2) 2299-3279 / Fax (886-2) 2200-9558 www.sgs.com.tw |
| | Latitude 5440: DEKRA iST Reliability Services Inc., Reliability Testing Laboratory 1F, No.22, Puding Road, Hsinchu City, Taiwan, R.O.C. Tel: 886-3-579-5766, Fax: 886-3-579-5756 http://www.dekra-ist.com |

Notes

All environmental testing listed in the accompanying tables was performed and reported independently by accredited testing companies.

Documented MIL-STD-810H, testing guidelines were followed. All tests were performed with I/O and expansion doors closed, unless otherwise noted. A summary listing of tests appear in the tables included in this document.

For more information visit: dell.com

MIL-STD-810H environmental testing

| MILSTD Test Spec | Test Name | Key Parameters | 5340/5440/5540 Test Result |
|---|--|---|----------------------------|
| MIL-STD-810H, Method 500.6, Procedure I | Altitude - Storage / Air Transport | Test Pressure: Equivalent to cabin altitude of 15,000' Temperature: 21°C Altitude Change Rate: <10 m/s Duration: 1 hour | Passed |
| MIL-STD-810H, Method 500.6, Procedure II | Altitude - Operational / Air Carriage | Test Pressure: Equivalent to cabin altitude of 15,000' Temperature: 21°C Altitude Change Rate: <10 m/s Duration: 1 hour | Passed |
| MIL-STD-810H, Method 501.7, Procedure I | High temperature - Induced (Storage and Transition) Conditions | Duration: 7 X 24 hr. cycles Temperature: 33 - 71°C (non-operational / storage) Table 501.7 - III High Temperature cycles, climate category A1 -Hot Dry/ Basic Hot | Passed |
| MIL-STD-810H, Method 501.7, Procedure II | High temperature - Operation Cycling temperature exposure | Operational State: Idle in Windows Duration: 5 X 24. hr. cycles Temperature: 32 - 49°C (Ambient Air) Table 501.7 - III High Temperature cycles Climate category A1 - Hot Dry | Passed |
| MIL-STD-810H, Method 502.7, Procedure I | Low temperature - Storage | Duration: 24 hrs. Temperature: -51°C | Passed |
| MIL-STD-810H, Method 502.7, Procedure II | Low temperature - Operational | Duration: 24 hrs. Temperature: -29°C | Passed |
| MIL-STD-810H, Method 503.7, Procedure I-A | Temperature Shock - One-Way Shock(s) from Constant Extreme Temperature | Non-operational. - High Temperature: 96°C (205°F) - Low Temperature: -51°C (-60°F) - 3 high-to-low cycles - Dwell Time shall be 15min | Passed |
| MIL-STD-810H, Method 507.6 Procedure II Aggravated Cycle Required | Humidity: - Induced (Storage & Transit) Cycles - Natural Cycles | - Duration: Table 507.6-II, (Hot-humid Cycle B3) - Material Category: Non-Hazardous Items Normal Test Test Criteria for Latitude Series: RH 95%; Temperature cycled between 30°C and 60°C ; Test cycle 24 hours; run 10 cycles | Passed |
| MIL-STD-810H, Method 510.7, Procedure I | Sand and dust - Blowing dust | Duration: 12 Hour Air velocity = 1.5 m/s (300 ft/min) to 8.9 m/s (1750 ft/min) Temperature: 60°C Relative Humidity: 30% | Passed |
| MIL-STD-810H, Method 514.8, Procedure I, Table 514.8C-II Category 4 | Vibration | Operational Vibration, 5-500 Hz, 1.17 Grms, random 1 hour on Bottom, Left and Back side | Passed |
| MIL-STD-810H, Method 514.8, Procedure I, Category 24 | Vibration - Minimum integrity test | Non-OP vibration, 20-2000 Hz, 7.69 Grms Test Duration: 1hr/axis Test axis: X,Y and Z. | Passed |
| MIL-STD-810H, Method 516.8, Procedure I | Shock - Functional Shock | 185g, 2ms Half Sine 1 shock/axis/direction for a total of 6 shocks Note: Dell to use Half Sine Waveform to replace Saw Tooth Waveform in accordance with MIL SPEC | Passed |

| | | | |
|--|--|--|--------|
| MIL-STD-810H, Method 516.8, Procedure II | Shock, Transportation Shock | - On-road Shock, 5.1g / 11m (Table 516-8-VII) - Off-road Shocks 15.2g / 5ms (Table 516-8-VII) - Test unit orientations at x, y and z axis for both test. - Unit is Non-Operational during both test - Saw tooth wave form can be replaced by other classical wave forms necessary to meet test equipment capability. See Durability Engineering for acceptable alternative wave forms if needed. Example: Alternate Half Sine for On-road shock 5g, 5ms. Alternate Half Sine for Off-Road shock 15g, 5ms" | Passed |
| MIL-STD-810H, Method 516.8, Procedure IV | Shock - Transit Drop | Modified - 26 X 30" drops (unless specified differently by LOB below) onto 2" of plywood over non-yielding surface. The 26-drop requirement (Table 516.6-VI) may be divided among up to five samples of the same test item in any combination. | Passed |
| MIL-STD-810H, Method 516.8, Procedure V | Shock - Crash Hazard Shock | Operational. 3 shocks/axis/direction for a total of 18 shocks; 40 Gs peak, 11 ms Note: Dell to use noted test to replace MIL-STD-8108, Method 516.8, Procedure V, Table 516.8-XIII. | Passed |
| MIL-STD-810H, Method 516.8, Procedure VI | SHOCK - Bench Handling | Angle drops onto Bench Top per MIL STD Procedure VI | Passed |
| MIL-STD-810H, Method 524.1, Procedure III | Freeze/ Thaw - Rapid Temperature Change | Non-operational Exposed to a temperature drop of -10°C (14°F) for two hours. Unit is removed and checked for operation. | Passed |

Pass criteria and test scope information

For operational tests, a pass indicates that the unit remained operational during the entirety of the test. For non-operational tests, a pass indicates that a functional verification was performed immediately after the test exposure, in which the unit was powered on and booted to the primary operating system. Cosmetic damage does not constitute a failure unless there is a safety concern. Sample sizes tested are not statistically significant.

¹ Based on testing and certification to MIL-STD-810H, IEC 60529 (IP-65), MIL-STD-461F and ANSI/ISA.12.12.01 standards, performed and reported independently by accredited testing companies.

² Salt Fog (MIL-STD-810H, Method 509.5, Procedure I) requires a model configured with a rubberized keyboard

³ ANSI/ISA.12.12.01 must be specified at time of order for certification. Contact your sales representative for more information.