HERMON LABORATORIES

839.01
Electrical

Hermon Laboratories Ltd.
Harakevet Industrial Zone, Binyamina 30500,
Israel
Tel. +972-4-6288001
Fax. +972-4-6288277
E-mail: mail@hermonlabs.com

# ENVIRONMENTAL TEST REPORT

**ACCORDING TO: MIL-STD-810C**

**FOR:**

## ON TRACK INNOVATIONS Ltd.

## Smart Card Reader

## Model: Saturn 6500





**Report ID: OTIENV_MIL.20072.doc**
**Date of Issue: 10/12/2009**

# Table of contents

## 1 Applicant information

| | |
|---|---|
| **Client name:** | On Track Innovations Ltd. |
| **Address:** | P.O.B. 32, ZHR Industrial Zone, Rosh Pina 12000, Israel |
| **Telephone:** | +972 4686 8000 |
| **Fax:** | +972 4693 8887 |
| **E-mail:** | george@otiglobal.com |
| **Contact name:** | Mr. Kaplun Georgy |

## 2 Equipment under test attributes

| | |
|---|---|
| **Product name:** | Smart Card Reader |
| **Model(s):** | Saturn 6500 |
| **Part number:** | 10066100 |
| **Serial number:** | 98100F7778 |
| **Condition of equipment:** | New |
| **Receipt date** | 10/5/2009 |

## 3 Manufacturer information

| | |
|---|---|
| **Manufacturer name:** | On Track Innovations Ltd. |
| **Address:** | P.O.B. 32, ZHR Industrial Zone, Rosh Pina 12000, Israel |
| **Telephone:** | +972 4686 8000 |
| **Fax:** | +972 4693 8887 |
| **E-Mail:** | george@otiglobal.com |
| **Contact name:** | Mr. Kaplun Georgy |

## 4 Test details

| | |
|---|---|
| **Project ID:** | 20072 |
| **Location:** | Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel |
| **Test started:** | 10/5/2009 |
| **Test completed:** | 10/12/2009 |
| **Test specification(s):** | MIL-STD-810C |
| **Test suite:** | MIL-STD-810C |

# 5 EUT description

## 5.1 General information

The Equipment Under Test (EUT) is Smart Card Reader, Model: Saturn 6500, P/N: 10066100; S/N: 98100F7778.

## 5.2 EUT acceptance criteria

The EUT shall not sustain any physical damage or deterioration when subjected to Sinusoidal vibration, Low temperature, High Temperature and Transit drop conditions expected in its application environment.
During and after each test the EUT shall function properly.

## 5.3 EUT visual inspection and functional check

The functional check is performed to verify that the EUT operates properly or within acceptable performance degradation if any.

Before, during/ after each test, the EUT was visually inspected by the HL engineers and functionally checked by the customer. The functional check result represents the customer sole responsibility.

# 6 EUT Tests summary

| Test | Status |
|---|---|
| **MIL-STD-810C** | |
| Sinusoidal vibration test | Pass |
| Low temperature test | Pass |
| High temperature test | Pass |
| Transit drop test | Pass |

| | | | |
|---|---|---|---|
| **Tested by:** | Mr. Igor Prigolany, Environmental Test Engineer<br><br>Mr. Oleg Goverman, Environmental Test Engineer | October 14, 2009 |  <br>  |
| **Reviewed by:** | Mrs. Aneta Feldmann, Environmental Certification Engineer | October 14, 2009 |  |
| **Approved by:** | Mr. Vladimir Kogan, Environmental Group Manager | October 14, 2009 |  |

| Test specification: | Sinusoidal vibration test | | |
|---|---|---|---|
| Test procedure: | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| Test mode: | | Verdict: | PASS |
| Date: 10/5/2009 | | | |
| Temperature: 24 ºC | Air Pressure: 1015 hPa | Relative Humidity: 47% | |
| Remarks: | | | |

## 6.1 Sinusoidal vibration test procedure and results

### 6.1.1 Test purpose

The test was performed to determine the EUT ability to withstand specified severities of the sinusoidal vibration in operational mode.

### 6.1.2 Test procedure

**6.1.2.1** The EUT in operational mode and the control accelerometer were installed on the vibration test system, as shown in Figure 6.1.1 and Photograph 6.1.1.

**6.1.2.2** The required vibration level was applied to the operational EUT according to the MIL-STD–810C standard requirements presented in Table 6.1.2.

**6.1.2.3** The Paragraphs 6.1.2.1 and 6.1.2.2 were repeated for two other excitation axes, as presented in Figure 6.1.2, Photograph 6.1.2 and Photograph 6.1.3.

**6.1.2.4** The control accelerometer signal was monitored and results are presented in Plot 6.1.1 to Plot 6.1.3.

**6.1.2.5** The visual inspection was performed after the random vibration test.

### 6.1.3 Test results

**Table 6.1.1 Test results**

| Observation | Verdict |
|---|---|
| No structural or mechanical damages were registered during the visual inspection.<br>According to customer criteria, no deterioration in functional performance was noticed. | Pass |

**Reference numbers of test equipment used:**

| | | | | | | |
|---|---|---|---|---|---|---|
| HL 3249 | HL 2190 | HL 2365 | HL 2137 | HL 2916 | HL 2449 | HL 3599 |

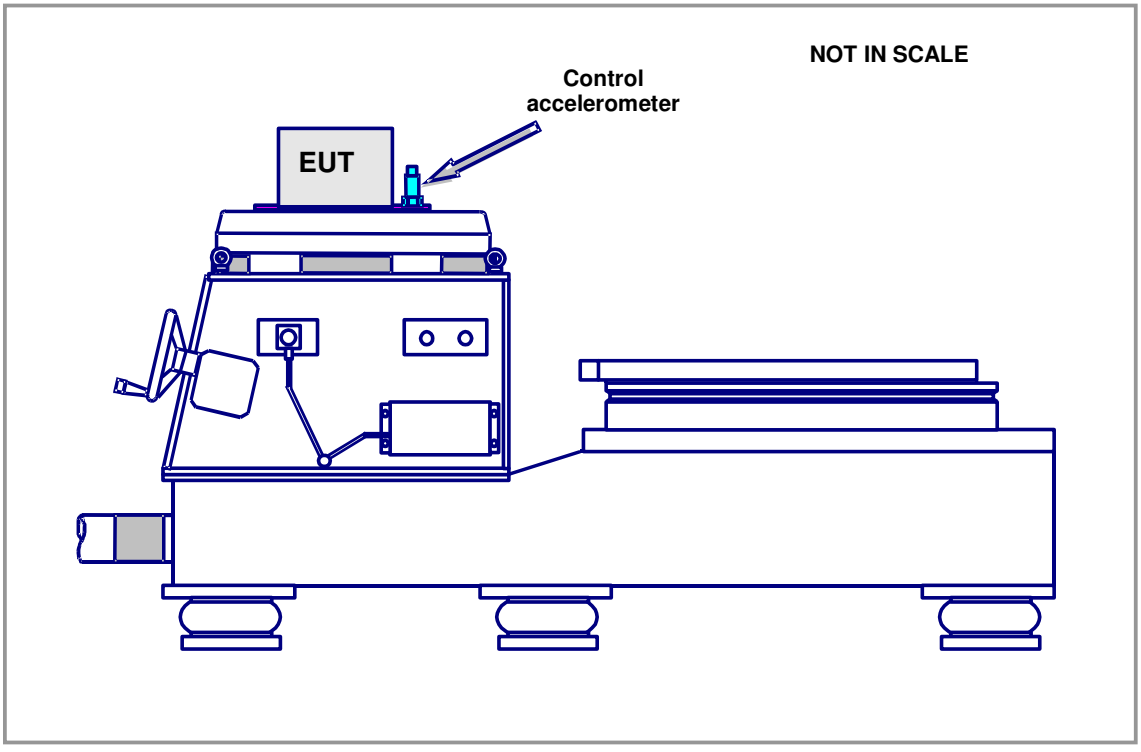
Full description is given in Appendix A.

| **Test specification:** | **Sinusoidal vibration test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/5/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1015 hPa | **Relative Humidity:** 47% | |
| **Remarks:** | | | |

**Table 6.1.2 Sinusoidal vibration (operational) test profile**

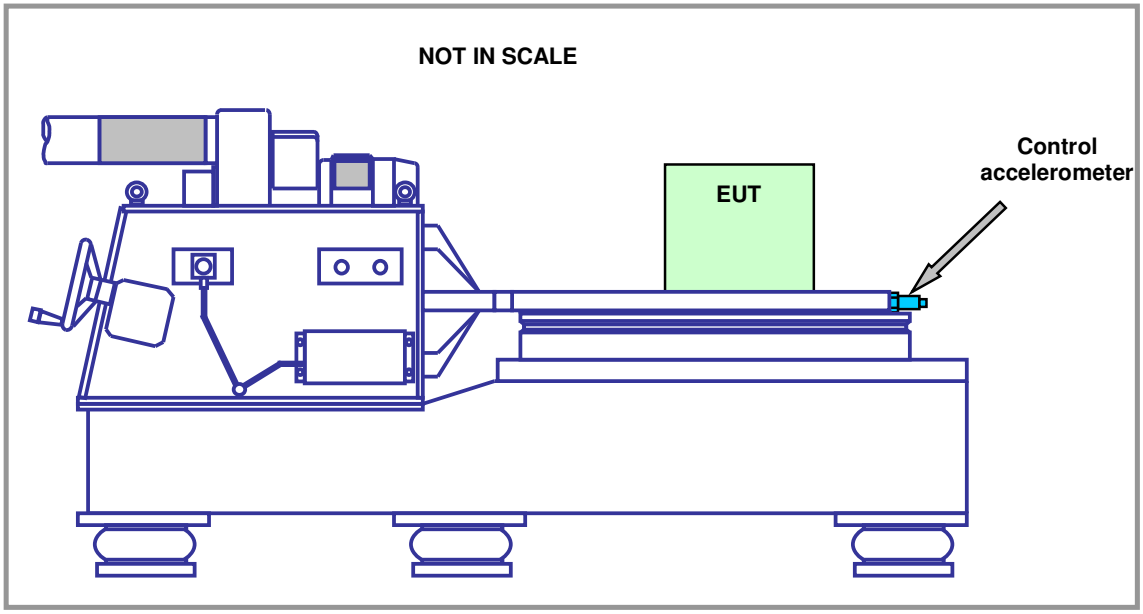
| Frequency, Hz | Left slope, dB/Oct | Acceleration, $g_n$(peak) | Right slope, dB/Oct | Demand RMS, $g_n$ | Duration (per each axis), min |
|---|---|---|---|---|---|
| 5.0 | - | 1.27815 | Const. Disp | 1.278153 | 90 |
| 5.5 | Const. Disp. | 1.54656 | -10109.5 | | |
| 5.5 | -10109.5 | 1.5 | Const. Acce | | |
| 200.0 | Const. Acce. | 1.5 | - | | |

**Figure 6.1.1 Sinusoidal vibration test setup (Vertical axis)**

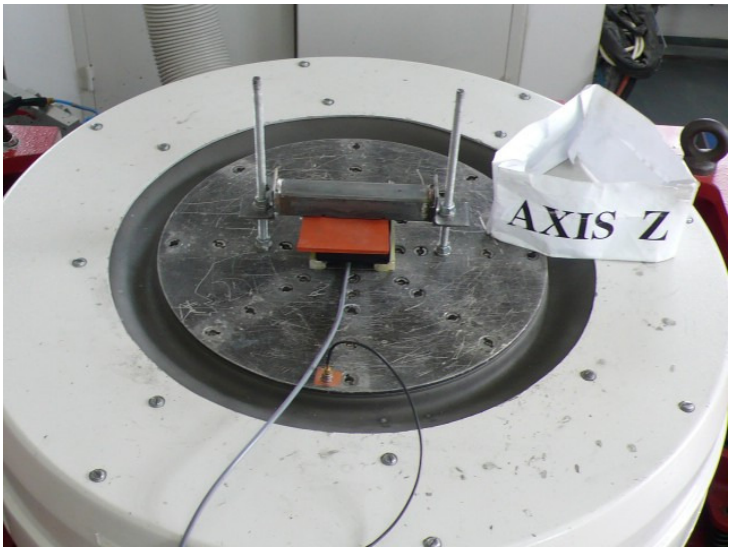


| **Test specification:** | **Sinusoidal vibration test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/5/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1015 hPa | **Relative Humidity:** 47% | |
| **Remarks:** | | | |

**Figure 6.1.2 Sinusoidal vibration test setup (Transverse and longitudinal axes)**

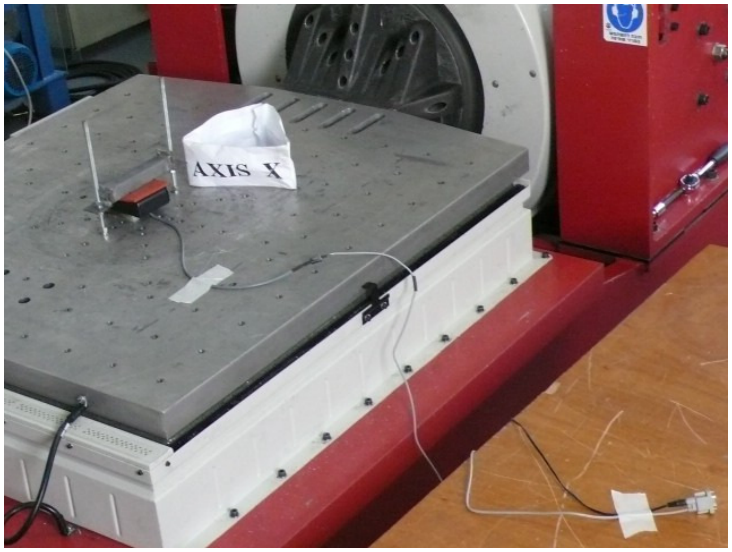



**Photograph 6.1.1 Sinusoidal vibration test setup (vertical axis)**

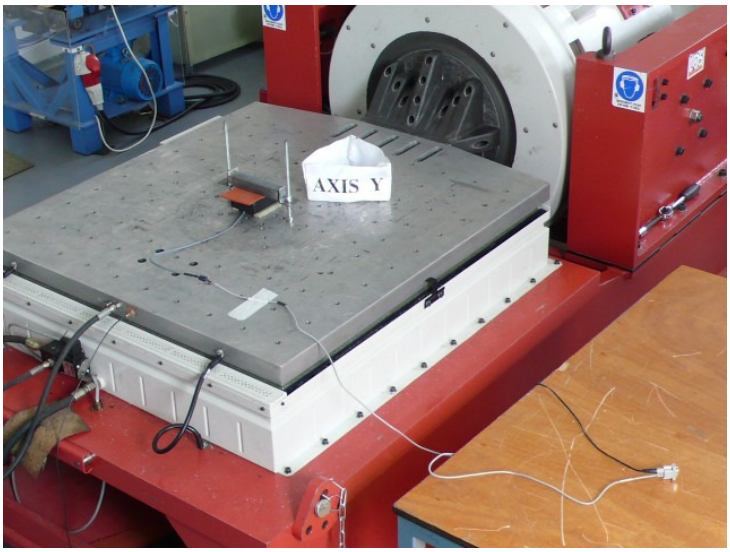


| Test specification: | Sinusoidal vibration test | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/5/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1015 hPa | **Relative Humidity:** 47% | |
| **Remarks:** | | | |

**Photograph 6.1.2 Sinusoidal vibration test setup (transverse axis)**



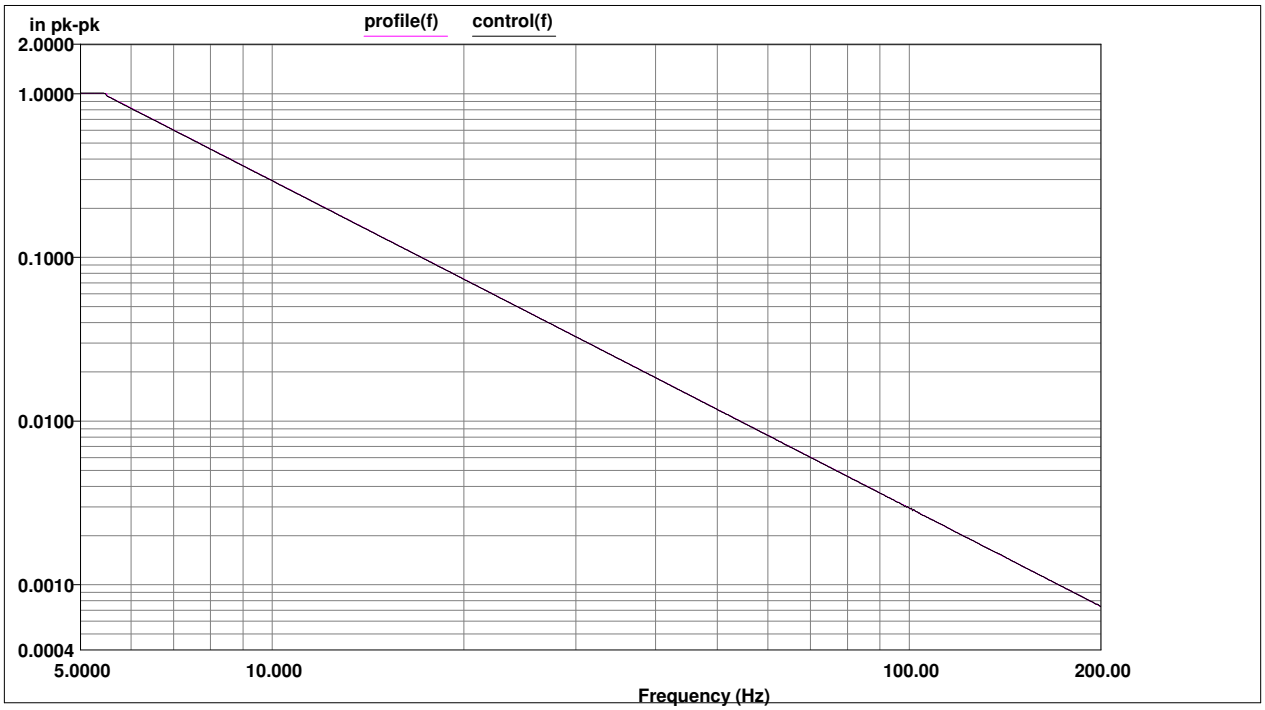

**Photograph 6.1.3 Sinusoidal vibration test setup (longitudinal axis)**



| **Test specification:** | **Sinusoidal vibration test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/5/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1015 hPa | **Relative Humidity:** 47% | |
| **Remarks:** | | | |

**Plot 6.1.1 Sinusoidal vibration along vertical axis**

Smart Card Reader, Model: Saturn 6500, P/N: 10066100; S/N: 98100F7778
Project File Name: On Track Innovations 20072 Sine_Z Curve_V.prj
Profile Name: MIL-STD-810C; Figure 514.2-6; Curve V; Oper.; Test Type: Swept Sine
Run Folder: .\On Track Innovations 20072 Sine_Z Curve_V Oper Oct 05,2009 10-34-07



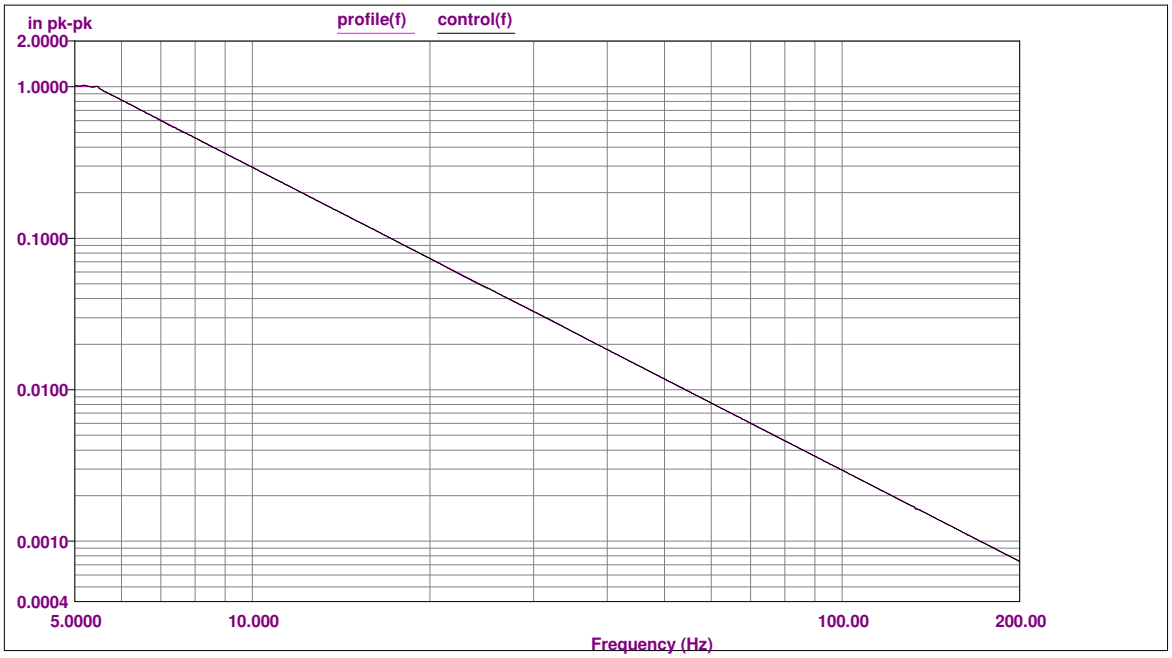

| | | | | | | |
|---|---|---|---|---|---|---|
| Level: | 100 % | Control Peak: | 1.287181 gn | Full Level Time: | 01:30:00 | Sweep Type: Logarithmic |
| Frequency: | 5.000989 Hz | Demand Peak: | 1.278153 gn | Time Remaining: | 00:00:01 | Sweep Rate: 0.71 Oct/Min |

Data saved at 12:04:17 PM, Monday, October 05, 2009 Report created at 12:04:25 PM, Monday, October 5, 2009

| **Test specification:** | **Sinusoidal vibration test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/5/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1015 hPa | **Relative Humidity:** 47% | |
| **Remarks:** | | | |

**Plot 6.1.2 Sinusoidal vibration along transverse axis**

Smart Card Reader, Model: Saturn 6500, P/N: 10066100; S/N: 98100F7778
Project File Name: On Track Innovations 20072 Sine_X Curve_V.prj
Profile Name: MIL-STD-810C; Figure 514.2-6; Curve V; Oper.; Test Type: Swept Sine
Run Folder: .\On Track Innovations 20072 Sine_X Curve_V Oper Oct 05,2009 14-07-19



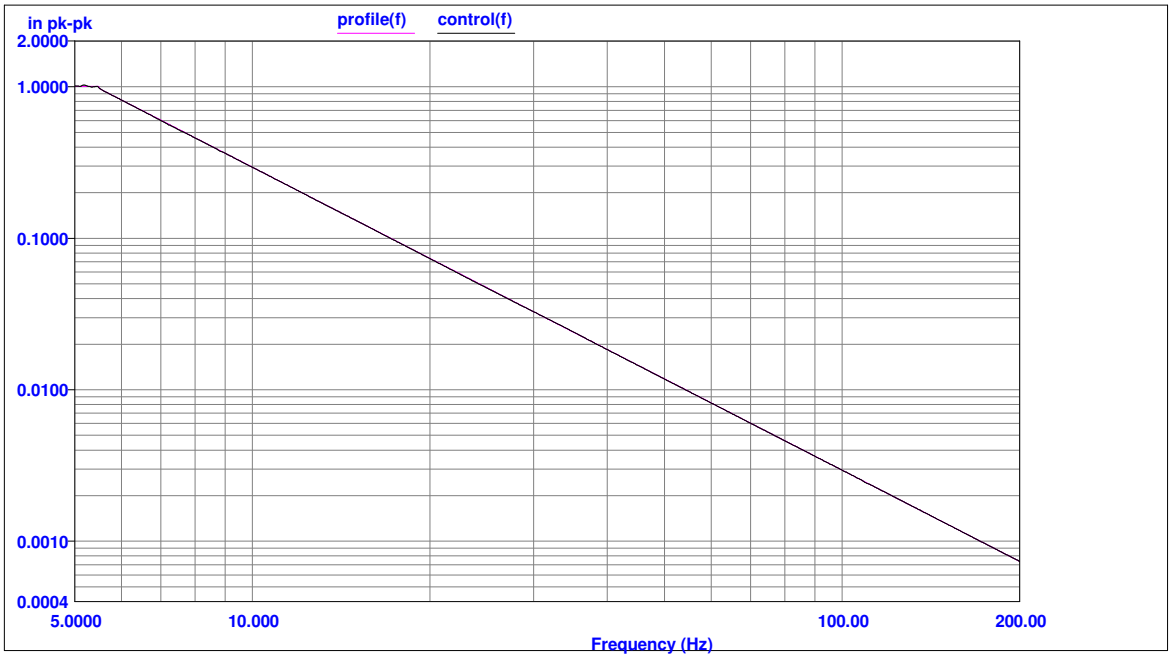

| | | | | | | |
|---|---|---|---|---|---|---|
| Level: | 100 % | Control Peak: | 1.294366 gn | Full Level Time: | 01:30:00 | Sweep Type: Logarithmic |
| Frequency: | 5.001427 Hz | Demand Peak: | 1.278153 gn | Time Remaining: | 00:00:01 | Sweep Rate: 0.71 Oct/Min |

Data saved at 03:37:29 PM, Monday, October 05, 2009 Report created at 03:37:30 PM, Monday, October 5, 2009

| **Test specification:** | **Sinusoidal vibration test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 514.2 Vibration<br>PROCEDURE: VIII<br>Figure 514.2-6<br>CURVE: V | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/5/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1015 hPa | **Relative Humidity:** 47% | |
| **Remarks:** | | | |

**Plot 6.1.3 Sinusoidal vibration along longitudinal axis**

Smart Card Reader, Model: Saturn 6500, P/N: 10066100; S/N: 98100F7778
Project File Name: On Track Innovations 20072 Sine_Y Curve_V.prj
Profile Name: MIL-STD-810C; Figure 514.2-6; Curve V; Oper.; Test Type: Swept Sine
Run Folder: .\On Track Innovations 20072 Sine_Y Curve_V Oper Oct 05,2009 12-28-28




| | | | | | | |
|---|---|---|---|---|---|---|
| Level: | 100 % | Control Peak: | 1.288960 gn | Full Level Time: | 01:30:00 | Sweep Type: Logarithmic |
| Frequency: | 5.000989 Hz | Demand Peak: | 1.278153 gn | Time Remaining: | 00:00:01 | Sweep Rate: 0.71 Oct/Min |

Data saved at 01:58:38 PM, Monday, October 05, 2009 Report created at 01:58:40 PM, Monday, October 5, 2009

| **Test specification:** | **Low temperature test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 502.1 Low temperature<br>PROCEDURE: I | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/6/2009 | | | |
| **Temperature:** 25 ºC | **Air Pressure:** 1013 hPa | **Relative Humidity:** 42% | |
| **Remarks:** | | | |

## 6.2 Low temperature test procedure and results

### 6.2.1 Test purpose

The test was performed to determine the EUT ability to withstand low temperature conditions in the operational mode.

### 6.2.2 Test procedure

**6.2.2.1** The EUT was placed in the testing chamber, see Photograph 6.2.1.

**6.2.2.2** The chamber temperature was adjusted to +25°C.

**6.2.2.3** The temperature in the testing chamber was lowered to -20°C at 1°C/min cooling rate. The EUT was subjected to this temperature for 26. 5 hours after EUT temperature stabilization.

**6.2.2.4** The EUT was switched on for operating continously during the entire test.

**6.2.2.5** The EUT was switched off, the chamber temperature was raised to +25°C at 1°C/min heating rate.

**6.2.2.6** The EUT was removed from the testing chamber.

**6.2.2.7** The air chamber temperature monitoring is presented in Plot 6.2.1.

**6.2.2.8** The EUT was operated and a visual inspection was performed.

### 6.2.3 Test results

**Table 6.2.1 Test results**

| Observation | Verdict |
|---|---|
| No structural or mechanical damages were registered during the visual inspection.<br>According to customer criteria, no deterioration in functional performance was noticed. | **Pass** |

**Reference numbers of test equipment used:**

| | | |
|---|---|---|
| HL 3599 | HL 2906 | HL 0679 |

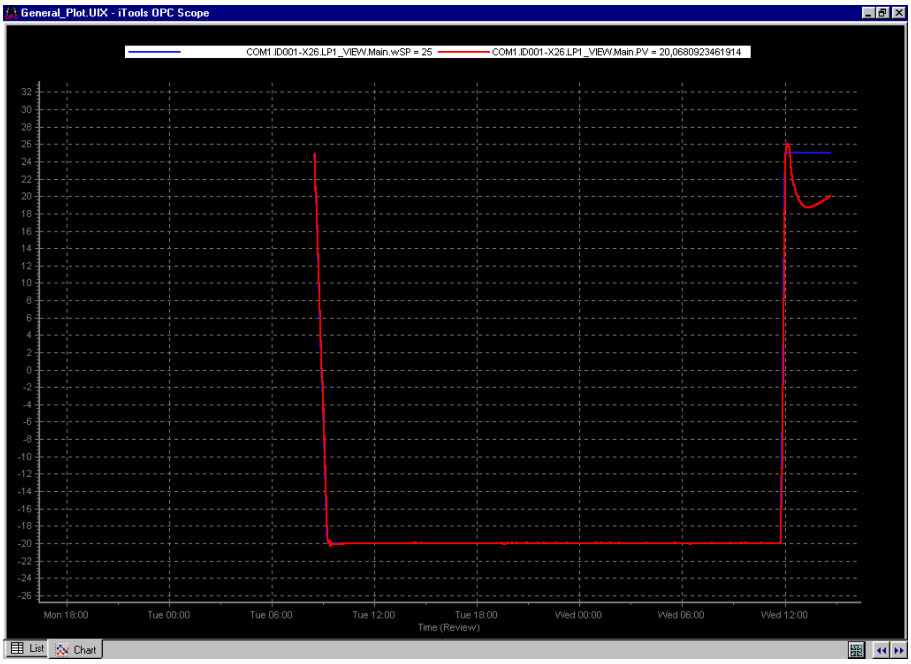
Full description is given in Appendix A.

| **Test specification:** | **Low temperature test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 502.1 Low temperature<br>PROCEDURE: I | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/6/2009 | | | |
| **Temperature:** 25 ºC | **Air Pressure:** 1013 hPa | **Relative Humidity:** 42% | |
| **Remarks:** | | | |

**Photograph 6.2.1 The EUT in the low temperature chamber**

| Test specification: | Low temperature test | | |
|---|---|---|---|
| Test procedure: | MIL-STD-810C<br>METHOD: 502.1 Low temperature<br>PROCEDURE: I | | |
| Test mode: | | Verdict: | PASS |
| Date: 10/6/2009 | | | |
| Temperature: 25 ºC | Air Pressure: 1013 hPa | Relative Humidity: 42% | |
| Remarks: | | | |

**Plot 6.2.1 Temperature monitoring during the low temperature test**



| Test specification: | High temperature test | | |
|---|---|---|---|
| Test procedure: | MIL-STD-810C<br>METHOD: 501.1 High temperature<br>PROCEDURE: I | | |
| Test mode:<br>Date: 10/7/2009 | | Verdict: | PASS |
| Temperature: 26 ºC | Air Pressure: 1012 hPa | Relative Humidity: 45% | |
| Remarks: | | | |

## 6.3 High temperature test procedure and results

### 6.3.1 Test purpose

The test was performed to determine the EUT ability to withstand high temperature conditions in the operational mode.

### 6.3.2 Test procedure

**6.3.2.1** The EUT was placed in the testing chamber, see Photogtaph 6.3.1.

**6.3.2.2** The chamber temperature was adjusted to +25°C.

**6.3.2.3** The temperature in the testing chamber was raised to +70°C at 1°C/min heating rate.

**6.3.2.4** The EUT was subjected to +70°C temperature for 48 hours after EUT temperature stabilization.

**6.3.2.5** The EUT was switched on for operating continously during the entire test.

**6.3.2.6** The EUT was switched off, the chamber temperature was lowered to +25°C at 1°C/min cooling rate.

**6.3.2.7** The EUT was removed from the testing chamber.

**6.3.2.8** The air chamber temperature monitoring is presented in Plot 6.3.1.

**6.3.2.9** The EUT was operated and a visual inspection was performed.

### 6.3.3 Test results

**Table 6.3.1 Test results**

| Observation | Verdict |
|---|---|
| No structural or mechanical damages were registered during the visual inspection.<br>According to customer criteria, no deterioration in functional performance was noticed. | **Pass** |

**Reference numbers of test equipment used:**

| | | |
|---|---|---|
| HL 3599 | HL 2906 | HL 0679 |

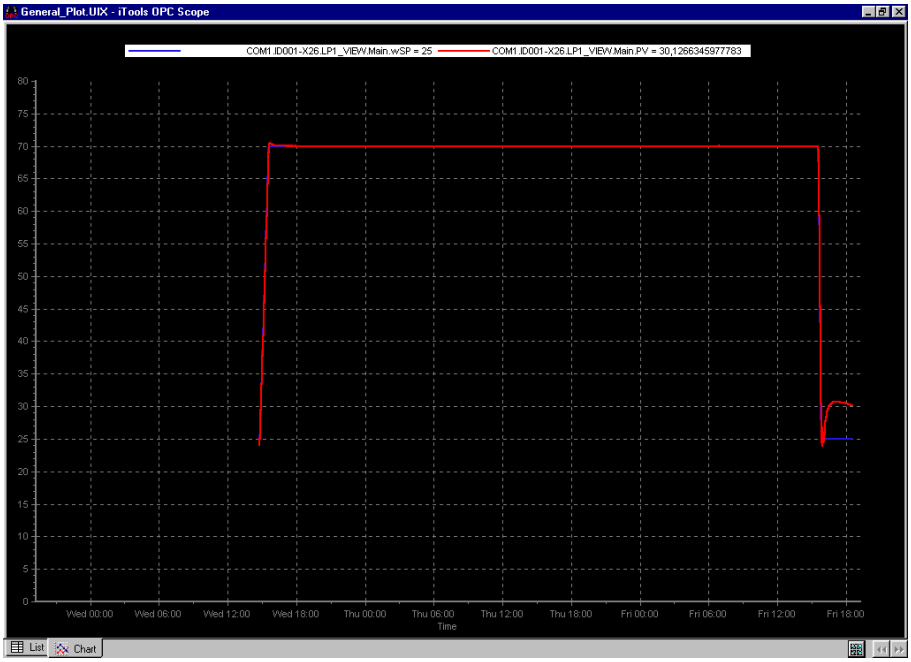
Full description is given in Appendix A.

| Test specification: | High temperature test | | |
|---|---|---|---|
| Test procedure: | MIL-STD-810C<br>METHOD: 501.1 High temperature<br>PROCEDURE: I | | |
| Test mode:<br>Date: 10/7/2009 | | Verdict: | PASS |
| Temperature: 26 ºC | Air Pressure: 1012 hPa | Relative Humidity: 45% | |
| Remarks: | | | |

**Photograph 6.3.1 The EUT in the temperature chamber**

| **Test specification:** | **High temperature test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 501.1 High temperature<br>PROCEDURE: I | | |
| **Test mode:**<br>**Date:** 10/7/2009 | | **Verdict:** | PASS |
| **Temperature:** 26 ºC | **Air Pressure:** 1012 hPa | **Relative Humidity:** 45% | |
| **Remarks:** | | | |

**Plot 6.3.1 Temperature monitoring during the high temperature test**



| Test specification: | Tarnsit drop test | | |
|---|---|---|---|
| Test procedure: | MIL-STD-810C<br>METHOD: 516.2 Shock<br>PROCEDURE: II-Transit drop test<br>TABLE: 516.2 Transit drop test (Procedure II) | | |
| Test mode: | | Verdict: | PASS |
| Date: 10/13/2009 | | | |
| Temperature: 24 ºC | Air Pressure: 1013 hPa | Relative Humidity: 45% | |
| Remarks: | | | |

## 6.4 Transit drop test procedure and results

### 6.4.1 Test purpose

The test was performed to determine the EUT ability to withstand a free fall drops associated with transportation and using.

### 6.4.2 Test procedure

**6.4.2.1** The EUT packaged in its transportation case (see Photograph 6.4.1) was raised at 1.22 m (48 inch) height and subjected to free falls onto a 10 mm steel impact surface.

**6.4.2.2** The box was dropped once on each surface, edge and corner as can be seen in Photograph 6.4.1. The EUT orientation and free fall sequence are shown in Table 6.4.2.

**6.4.2.3** The visual inspection was performed immediately after each of the drop tests.

### 6.4.3 Test results

**Table 6.4.1 Test results**

| Observation | Verdict |
|---|---|
| No structural or mechanical damages were registered during the visual inspection.<br>According to customer criteria, no deterioration in functional performance was noticed. | Pass |

**Reference numbers of test equipment used:**

| |
|---|
| HL 3220 |

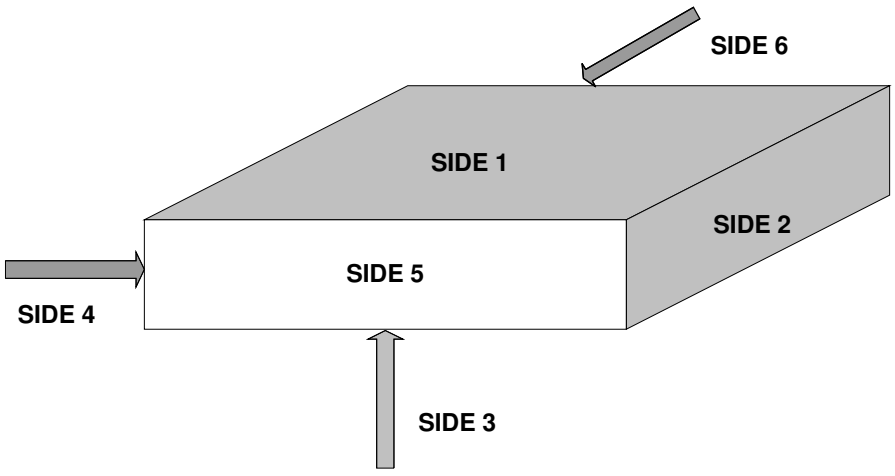
Full description is given in Appendix A.

| **Test specification:** | **Tarnsit drop test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 516.2 Shock<br>PROCEDURE: II-Transit drop test<br>TABLE: 516.2 Transit drop test (Procedure II) | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/13/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1013 hPa | **Relative Humidity:** 45% | |
| **Remarks:** | | | |

**Table 6.4.2 Package orientation for free fall test**

| Drop number | High of the drop 48in. (1.22 m) | | |
|---|---|---|---|
| | Number of surfaces/ edges/ corners | Number of drops | Total Number of drops |
| 1 | 6 sides | 1 | 6 |
| 2 | 12 edges | 1 | 12 |
| 3 | 8 corners | 1 | 8 |
| Drop on each face, edge and corner- Total of 26 drops | | | |

**Figure 6.4.1 Surface designation**



| **Test specification:** | **Tarnsit drop test** | | |
|---|---|---|---|
| **Test procedure:** | MIL-STD-810C<br>METHOD: 516.2 Shock<br>PROCEDURE: II-Transit drop test<br>TABLE: 516.2 Transit drop test (Procedure II) | | |
| **Test mode:** | | **Verdict:** | PASS |
| **Date:** 10/13/2009 | | | |
| **Temperature:** 24 ºC | **Air Pressure:** 1013 hPa | **Relative Humidity:** 45% | |
| **Remarks:** | | | |

**Photograph 6.4.1 Free fall test setup for dropping on face**

# 7 APPENDIX A Test equipment and ancillaries used for tests

| HL No | Description | Manufacturer | Model | Ser. No. | Last Cal. | Due Cal. |
|---|---|---|---|---|---|---|
| 3249 | PC computer PD 3.2 RAM 512 MB, HD 160 GB | Intel - supplier | PD 3.2 | NA | 13-Aug-09 | 13-Aug-10 |
| 2190 | Vibration Test System (Amplifier #SP6893-011/1, Remote Control Panel #SP6963-008/1, Vibrator #SP6893-005/1, Slip Table, Driver Bar, Pomp, Fan, Head Expander) | Ling Dynamic Systems | V875 | SP6963-005/1-011/1 | 22-Apr-09 | 22-Apr-10 |
| 2365 | Laser Shaker Control System | DACTRON | LASER | 7078038 | 17-Aug-09 | 17-Aug-10 |
| 2137 | Isotron Accelerometer 100 mV/g | Endevco | 256-100 | 12747 | 13-Mar-08 | 13-Sep-09 |
| 2916 | ICP Accelerometer, 104 mV/g, 50 g pk | PCB PIEZOTRONICS INC. | 353B34 | 108478 | 20-Mar-09 | 20-Mar-10 |
| 2449 | Precision Barometer, 910 - 1060 hPa | LUFFT Mess- und Regeltechnik GmbH | 2039.70392 | 100087 | 23-Mar-09 | 23-Mar-10 |
| 3599 | Thermo-Hygrometer, (0 - +50) deg. Internal sensor, (-50 to -70)deg. External sensor | DeltaTRAK | 13307 | NA | 28-Oct-08 | 28-Oct-09 |
| 2906 | Temperature / Humidity Test Chamber, -60°C to +180°C, 15-95% RH | Thermotron | S-8C | 557/12808 RF | 10-Jun-09 | 10-Jun-10 |
| 679 | Humidity and Temperature Controller with Adaptor RS 232/RS 485 | Hermon Laboratories | HTCL-1 | 130 | 19-Apr-09 | 19-Apr-10 |
| 3220 | Drop Tester | ETS Solutions | ETS-S315 | SH10706039 | 14-Dec-08 | 14-Dec-09 |

# 8 APPENDIX B Test laboratory description

The tests were performed at Hermon Laboratories Ltd., which is a fully independent, private environmental, EMC, safety and telecommunication testing facility recognized through all the world. The Laboratory is accredited by American Association for Laboratory Accreditation (A2LA, USA) for environmental testing (Certificate No. 839.01), including shock and vibration, limited to capabilities of V875-440 vibration test system of 56 kW, 680 kg (vertical) and 6800 kg (horizontal) load.

Address: P.O. Box 23, Binyamina 30500, Israel.
Telephone: +972 4628 8001
Fax: +972 4628 8277
e-mail: mail@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, CEO.

# 9 APPENDIX C Abbreviations and acronyms

| | |
|---|---|
| °C | degree Celsius |
| cm | centimeter |
| dB | decibel |
| EUT | equipment under test |
| $g_n$ | acceleration due to gravity |
| HL | Hermon Laboratories |
| hPa | hectopascal |
| Hz | Hertz |
| kg | kilogram |
| m | meter |
| min | minute |
| ms | millisecond |
| oct | octave |
| pH | acidity scale |
| RH | relative humidity |
| s | second |

# 10 APPENDIX D Tests specifications

| | | |
|---|---|---|
| 1. | MIL-STD-810C<br>March 10, 1975 | Military Standard<br>Environmental test method |
| 2. | HL test procedure,<br>2009 | Vibration and shock test procedure-rev1 |
| 3. | HL test procedure,<br>2009 | Temperature and humidity procedure-rev1 |

# 11 APPENDIX E Measurement uncertainties

| Parameter | Uncertainty estimation at 95% confidence | |
|---|---|---|
| | Calculated | Limit |
| Low temperature | ± 1.2℃ | ± 3℃ |
| High temperature | ± 1.2℃ | ± 2℃ |
| Sine acceleration | +14.8/-13.8 % | +41/-30 % |

**END OF TEST REPORT**