

ENVIRONMENTAL TEST REPORT

ACCORDING TO: EN 50130-5:2011

FOR:

**Paradox Security Systems
(Bahamas) Ltd**

EUTs:

- 1) MG5050/MG5000 (433/868)**
- 2) K32LCD+/K641+**
- 3) DCTXP2 (433/868)**

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1 Applicant information

Client name: Paradox Security Systems Ltd.
Address: 780 Industrial Blvd., Saint-Eustache, Quebec, J7R5V3, Canada
Telephone: 04-8500499
Fax: (242) 352-7771
E-mail: alexc@paradox.com
Contact name: Mr. Alex Chaplik

2 Equipment under test attributes

Description	Model Name	HW Version	SW Version	Remark
Control panel	MG5050** (433/868)	910-2002-070	V6.94	-
Control panel	MG5000*(433/868)	910-2002-070	V6.94	-
Keypad	K32LCD+	641-5006-991	V2.00	-
Keypad	K641+*	641-5006-991	V2.00	-
Wireless Door Contact	DCTXP2** (433/868)	312-7007-070	V5.00	-

Condition of the equipment Sample

Receipt date: 19-Aug-18

Notes: *The variant was added per manufacturer declaration of similarity (see Appendix F).

**433 MHz option was the tested one

3 Manufacturer information

Manufacturer name: Paradox Security Systems Ltd.
Address: 780 Industrial Blvd., Saint-Eustache, Quebec, J7R5V3, Canada
Telephone: 04-8500499
Fax: (242) 352-7771
E-Mail: alexc@paradox.com
Contact name: Mr. Alex Chaplik

4 Test details

Project ID: 31387
Location: Hermon Laboratories Ltd. P.O. Box 23, Binyamina 3055001, Israel
Test started: 19-Aug-18
Test completed: 02-Jan-19
Test specification: EN 50130-5:2011

5 EUT description

5.1 General information

The Equipment Under Test (EUT) are as follows:

- 1) Control Panel, Model: MG5050 (MG5000).
- 2) Keypad, Model: K32LCD+ (K641+)
- 3) Wireless Door Contact, Model: DCTXP2.

The EUTs are classified as CIE, **fixed equipment Environmental Class II** (see Photographs 5.5.1 to 5.5.6).

Both models MG5050 and MG5000 are electronically/electrically/mechanically identical and differ only by number of terminal block outputs for PGM and Zones connections: MG5000 include 2 PGM and 2 Zones while MG5050 include 4 PGM and 5 Zones. (MG5050 model was tested as representative of the worst-case option)

The models K32LCD+, K641+ are electronically/electrically/mechanically identical and differ only by their scorched SW which provides each keypad to work with different control panels

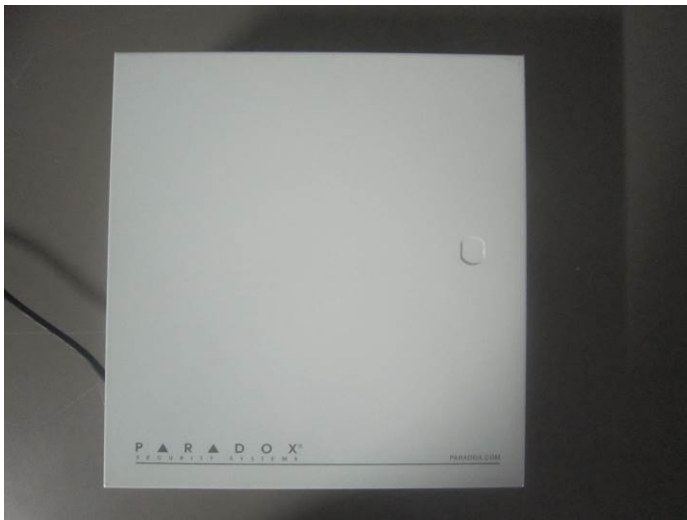
Photograph 5.5.1 General View - K32LCD+



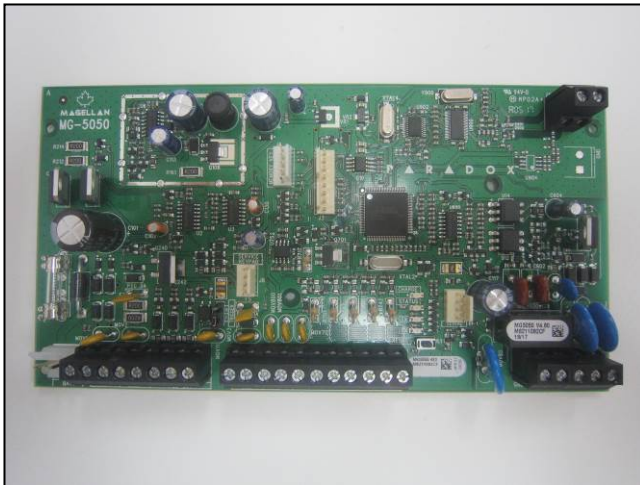
Photograph 5.5.2 PCB View - K32LCD+



Photograph 5.5.3 General View - MG5050



Photograph 5.5.4 PCB View - MG5050



Photograph 5.5.5 General View - DCTXP2



Photograph 5.5.6 PCB View - DCTXP2



5.2 Acceptance criteria

The EUTs shall not sustain any physical damage or deterioration when subjected to Dry heat (Operational), Cold (Operational), Sinusoidal vibration (Operational), Sinusoidal Vibration (Endurance), Damp heat, steady state (Endurance), Impact and Damp heat cyclic (Operational) conditions expected in its application environment. During/after each operational test the EUT shall function properly.

The operational tests were performed in Set status, no change in status no unintentional signals and messages accepted.

The CIE (control and indicating equipment) shall pass the reduced functional test before and after operational endurance tests also during operational tests.

The performed reduced functional tests are the tests required by EN 50131-3 for CIE products. In addition the RFT required by EN50136-2:2013, EN50131-6:2008, EN50131-10:2014 was performed for Control Panel.

Wherever specified by the EN50131-2-6 standard, the EUT shall pass the Basic Detection Tests. The EUT should comply with standard tamper requirements.

No any un-intentional signals or messages accepted during operational tests (performed in set condition).

In this Test Report the functional tests referred above are abbreviated as follows:
RFT= Reduced functional test EN50131-3, EN50131-6, EN50136-2, EN50131-10.
BDT= Basic detection test EN50131-2-6.






5.3 EUT visual inspection and functional check

The reduced functional test as described in 5.2 represent the functional checks performed before/during after ENV tests as per product specification requirements..

Before, after each test, the EUT was visually inspected by the HL engineers.

6 Tests summary

Test	Status
EN 50130-5:2011	
Cold (Operational) test	Pass
Dry heat (Operational) test	Pass
Damp heat, cyclic (Operational) test	Pass
Damp heat, steady state (Endurance) test	Pass
Sinusoidal vibration (Operational) test	Pass
Sinusoidal Vibration (Endurance) test	Pass
Shock (Operational) test – only for Keypad and Wireless Door Contact	Pass
Impact (Operational) test	Pass

	Name and Title	Date	Signatures
Tested by:	Mr. Alexey Kasprov, Environmental Test Engineer	03-Jan-19	
	Mr. Sergey Prud, Environmental Test Engineer		
	Mr. Roman Khananaev, Environmental Test Engineer		
Reviewed by:	Ms. Anna Gorovoy, Environmental Certification Engineer	03-Jan-19	
Approved by:	Mr. Mihaeli Feldmann, Environmental Group Manager	03-Jan-19	



Test specification:		Cold (Operational) test	
Test procedure:		TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 3 ENVIRONMENTAL CLASS II TEST METHOD: IEC 60068-2-1 Test Ad: Cold heat-dissipating specimen with gradual change of temperature	
Test mode:		Compliance	
Test Date:		20-Aug-18 - 21-Aug-18	
Atmospheric conditions during the test:		Temperature: 24 °C	Air Pressure: 1006 hPa
Remarks:		Verdict:	PASS
		Relative Humidity: 44 %	

6.1 Cold (Operational) test procedure and results

6.1.1 Test purpose

The test was performed to demonstrate the EUT ability to function correctly at low ambient temperatures appropriate to the anticipated service environment.

6.1.2 Test procedure

- 6.1.2.1 After BDT and RFT, the operational EUTs were placed in the testing chamber, as presented in Photograph 6.1.1.
- 6.1.2.2 The chamber temperature was adjusted to +25°C.
- 6.1.2.3 The temperature in the testing chamber was lowered to -10°C at a 1°C/min cooling rate.
- 6.1.2.4 The operational EUTs were subjected to a temperature of -10°C for 16 hours. RFT was performed in the last half hour.
- 6.1.2.5 At the end of exposure period, the chamber temperature was raised to +25°C at a 1°C/min heating rate.
- 6.1.2.6 The air chamber temperature monitoring is presented in Plot 6.1.1.
- 6.1.2.7 The EUTs were removed from the testing chamber. BDT, RFT and a visual inspection were performed.

6.1.3 Test results

Table 6.1.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. No deterioration in functional performance was noticed. All RFT, BDT passed. No change in system status (armed). The EUT passed the cold (operational) test.	Pass

Reference numbers of test equipment used:

HL 5381	HL 4755
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Full description is given in Appendix A.



Test specification:	Cold (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 3 ENVIRONMENTAL CLASS II TEST METHOD: IEC 60068-2-1 Test Ad: Cold heat-dissipating specimen with gradual change of temperature		
Test mode:	Compliance	Verdict:	PASS
Test Date:	20-Aug-18 - 21-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

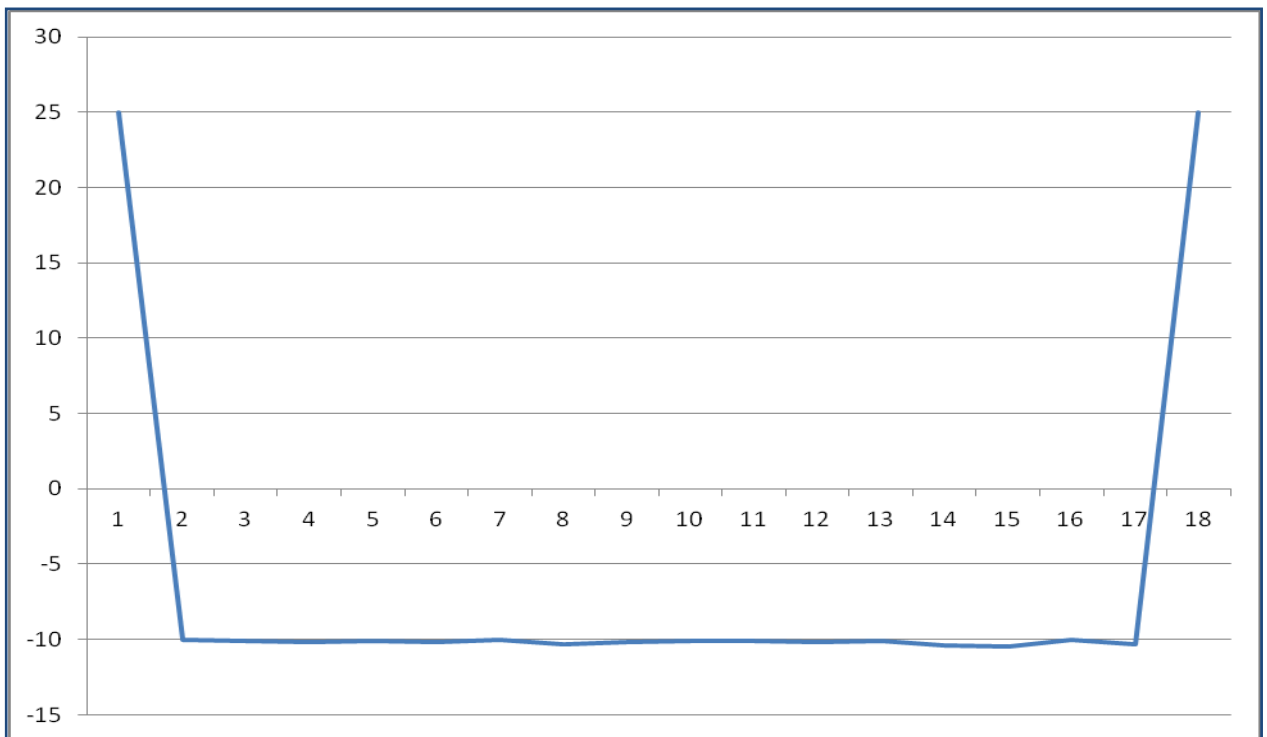
Photograph 6.1.1 The operational EUTs in the testing chamber





Test specification:	Cold (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 3 ENVIRONMENTAL CLASS II TEST METHOD: IEC 60068-2-1 Test Ad: Cold heat-dissipating specimen with gradual change of temperature		
Test mode:	Compliance	Verdict: PASS	
Test Date:	20-Aug-18 - 21-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.1.1 Temperature monitoring during the cold (operational) test





Test specification:	Dry heat (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 1 ENVIRONMENTAL CLASS II TEST METHOD: IEC 60068-2-2 Test Bd: Dry heat for heat-dissipating specimens with gradual change of temperature		
Test mode:	Compliance	Verdict:	PASS
Test Date:	19-Aug-18 - 20-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

6.2 Dry heat (Operational) test procedure and results

6.2.1 Test purpose

The test was performed to demonstrate the EUT ability to function correctly at high ambient temperatures, which may occur for short periods in the anticipated service environment.

6.2.2 Test procedure

6.2.2.1 After BDT and RFT, the operational EUTs were placed in the testing chamber, as presented in 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 raised to +55°C at a 1°C/min heating rate.

6.2.2.4 The operational EUTs were subjected to a temperature of +55°C for 16 hours. RFT was performed in the last half hour.

6.2.2.5 At the end of exposure period, the chamber temperature was lowered to +25°C at a 1°C/min cooling rate.

6.2.2.6 The air chamber temperature monitoring is presented in Plot 6.2.1.

6.2.2.7 The EUTs were removed from the testing chamber. BDT, RFT and a visual inspection were 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. No deterioration in functional performance was noticed. No change in system status (armed). RFT, BDT passed by all units. The EUTs passed the dry heat (operational) test.	Pass

Reference numbers of test equipment used:

HL 5381	HL 4755
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Full description is given in Appendix A.



Test specification:	Dry heat (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 1 ENVIRONMENTAL CLASS II TEST METHOD: IEC 60068-2-2 Test Bd: Dry heat for heat-dissipating specimens with gradual change of temperature		
Test mode:	Compliance	Verdict:	PASS
Test Date:	19-Aug-18 - 20-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

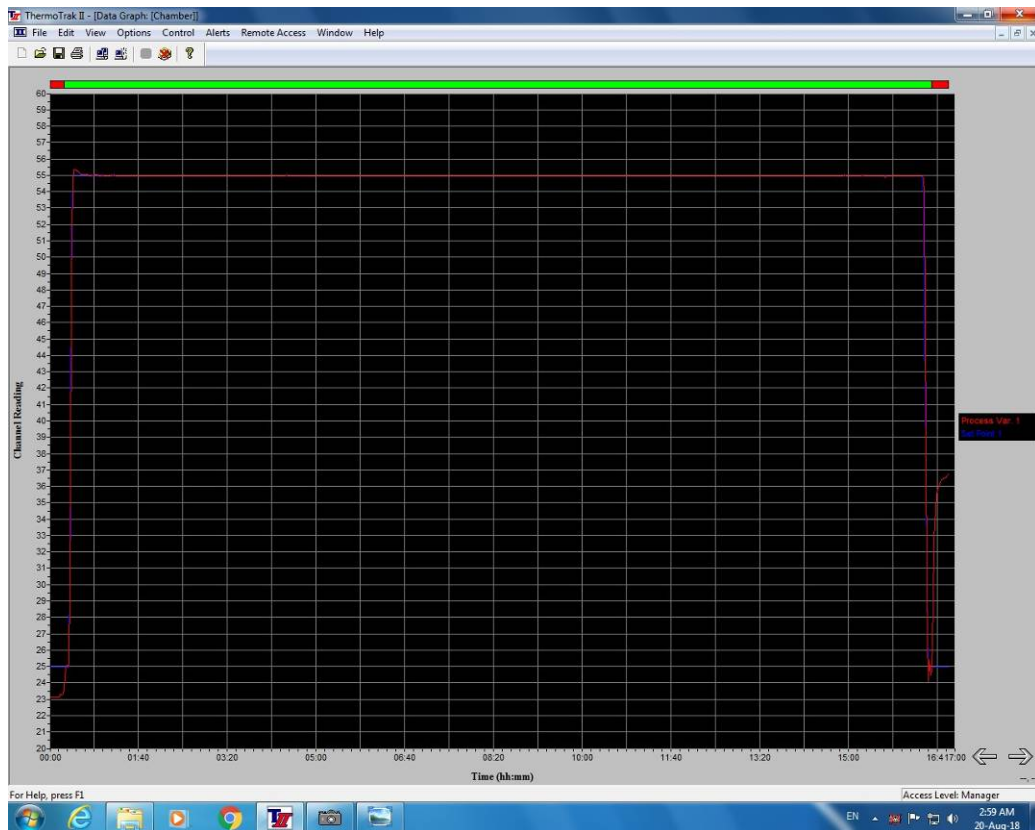
Photograph 6.2.1 The operational EUTs in the testing chamber





Test specification:	Dry heat (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 1 ENVIRONMENTAL CLASS II TEST METHOD: IEC 60068-2-2 Test Bd: Dry heat for heat-dissipating specimens with gradual change of temperature		
Test mode:	Compliance	Verdict: PASS	
Test Date:	19-Aug-18 - 20-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.2.1 Temperature monitoring during the dry heat (operational) test





Test specification:		Damp heat cyclic (Operational) test	
Test procedure:		TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 7 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-30 Test Db and guidance: Damp heat cyclic (12+12 hour cycle)	
Test mode:		Compliance	
Test Date:		23-Aug-18 - 26-Aug-18	
Atmospheric conditions during the test:		Temperature: 24 °C	Air Pressure: 1008 hPa
Remarks:		Relative Humidity: 44 %	Verdict: PASS

6.3 Damp heat, cyclic (Operational) test procedure and results

6.3.1 Test purpose

The test was performed to demonstrate the EUT immunity to an environment with high relative humidity, where condensation occurs on the equipment.

6.3.2 Test procedure

6.3.2.1 After BDT and RFT, the operational EUTs were placed into the testing chamber, as presented in Photograph 6.3.1.

6.3.2.2 The chamber temperature was adjusted to +25°C and relative humidity was increased to 95%.

6.3.2.3 The chamber temperature was raised to +40°C within a period of 3 hours. During this period relative humidity was maintained at 93%.

6.3.2.4 These conditions (+40°C and 93% RH) were maintained for 9 hours.

6.3.2.5 The chamber temperature was lowered to +25°C within 3 hours. During this period relative humidity was maintained at 93%.

6.3.2.6 These conditions (+25°C and 93% RH) were maintained for 9 hours.

6.3.2.7 The steps of Paragraphs 6.3.2.3 to 6.3.2.6 were repeated once more. RFT was performed in last half hour of second cycle.

6.3.2.8 At the end of exposed period, the relative humidity was reduced to ambient.

6.3.2.9 The EUTs were removed from the chamber. BDT, RFT and a visual inspection were performed.

6.3.2.10 The humidity and temperature measuring results are presented in Plot 6.3.1.

6.3.3 Test results

Table 6.3.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. All RFT and BDT passed. No change in system status (armed). The EUT passed the damp heat cyclic (operational) test.	Pass

Reference numbers of test equipment used:

HL 5202	HL 4755
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Full description is given in Appendix A.



Test specification:	Damp heat cyclic (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 7 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-30 Test Db and guidance: Damp heat cyclic (12+12 hour cycle)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	23-Aug-18 - 26-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1008 hPa	Relative Humidity: 44 %
Remarks:			

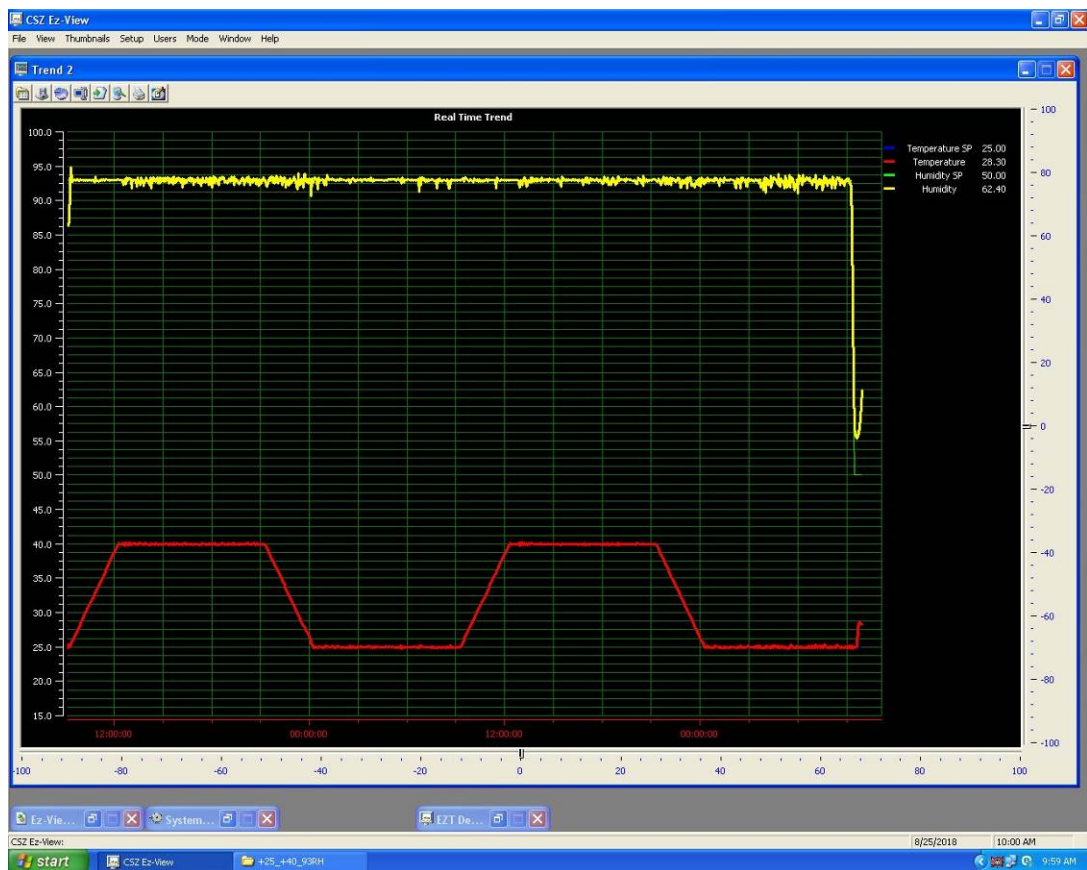
Photograph 6.3.1 The operational EUTs in the testing chamber





Test specification:	Damp heat cyclic (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 7 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-30 Test Db and guidance: Damp heat cyclic (12+12 hour cycle)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	23-Aug-18 - 26-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1008 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.3.1 Temperature and relative humidity monitoring during the damp heat cyclic (operational) test





Test specification:		Damp heat, steady state (Endurance) test	
Test procedure:		STEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 6 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-56 Test Cb: Damp heat, steady state, primarily for equipment	
Test mode:		Compliance	
Test Date:		29-Aug-18 - 19-Sep-18	
Atmospheric conditions during the test:		Temperature: 24 °C	Air Pressure: 1006 hPa
Remarks:		Verdict:	PASS
		Relative Humidity: 44 %	

6.4 Damp heat, steady state (Endurance) test procedure and results

6.4.1 Test purpose

The test was performed to demonstrate the EUT ability to withstand the long term effects of humidity in the service environment (changes in electrical properties due to absorption, chemical reactions involving moisture, galvanic corrosion etc.)

6.4.2 Test procedure

- 6.4.2.1 After BDT and RFT, the non-operational EUT was placed into the testing chamber, as presented in Photograph 6.4.1, and subjected to high humidity.
- 6.4.2.2 The chamber temperature was raised to +40°C and relative humidity to 93%.
- 6.4.2.3 The conditions of Paragraph 6.4.2.2 were maintained during 504 hours (21 days).
- 6.4.2.4 At the end of exposure period, the chamber temperature and humidity were lowered to ambient.
- 6.4.2.5 The temperature and humidity test profile is presented in Figure 6.4.1.
- 6.4.2.6 The EUTs were removed from the testing chamber. BDT, RFT and a visual inspection were performed.

6.4.3 Test results

Table 6.4.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. No deterioration in functional performance was noticed. RFT, BDT passed The EUT passed the damp heat, steady state (endurance) test.	Pass

Reference numbers of test equipment used:

HL 4725	HL 4755
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Full description is given in Appendix A.



Test specification:	Damp heat, steady state (Endurance) test		
Test procedure:	STEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 6 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-56 Test Cb: Damp heat, steady state, primarily for equipment		
Test mode:	Compliance	Verdict:	PASS
Test Date:	29-Aug-18 - 19-Sep-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

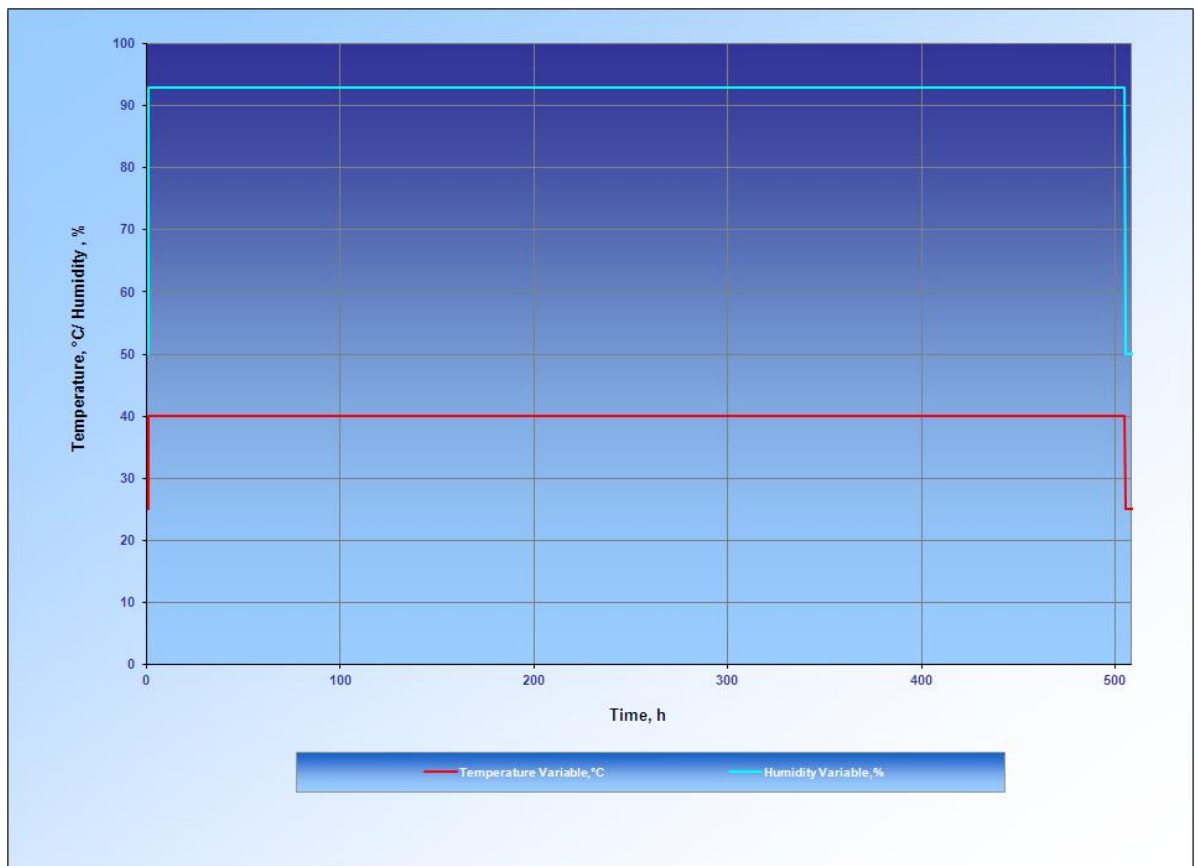
Photograph 6.4.1 The EUTs in the testing chamber





Test specification:	Damp heat, steady state (Endurance) test		
Test procedure:	STEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 6 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-56 Test Cb: Damp heat, steady state, primarily for equipment		
Test mode:	Compliance	Verdict:	PASS
Test Date:	29-Aug-18 - 19-Sep-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Figure 6.4.1 Damp heat, steady state test profile





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

6.5 Sinusoidal vibration (Operational) test procedure and results

6.5.1 Test purpose

The test was performed to demonstrate the EUT ability to withstand the long-term effects of vibration at levels appropriate to the service environment.

6.5.2 Test procedure

6.5.2.1 After BDT and RFT, the EUTs in operational mode and the control accelerometer were installed on the vibration test system, as presented in Figure 6.5.1 and Photograph 6.5.1.

6.5.2.2 The required vibration level was applied to the operational EUTs along the vertical axis, according to EN 50130-5 standard requirements, as presented in Table 6.5.2.

6.5.2.3 The Paragraphs 6.5.2.1 and 6.5.2.2 were repeated along the transverse and longitudinal axes, as presented in Figure 6.5.1, Photograph 6.5.2 and Photograph 6.5.3.

6.5.2.4 The control accelerometer signal is presented in Plots from 6.5.1 to 6.5.3.

6.5.2.5 BDT, RFT and a visual inspection were performed after the sinusoidal vibration test.

6.5.3 Test results

Table 6.5.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. All RFT and BDT passed. No change in system status (armed). The EUT passed the sinusoidal vibration test (operational).	Pass

Reference numbers of test equipment used:

HL 2190	HL 3460	HL 4020	HL 4888	HL 3951
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Full description is given in Appendix A.



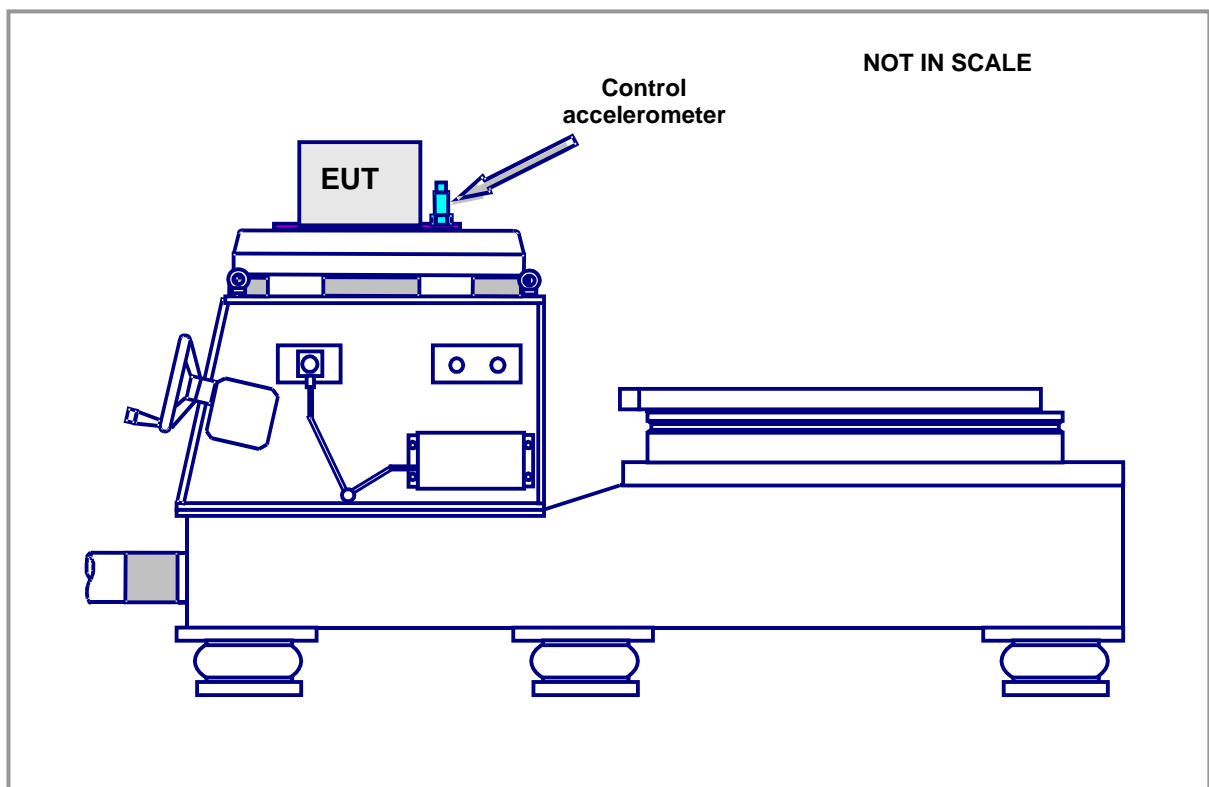
Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Table 6.5.2 Sinusoidal vibration test profile (operational)

Frequency range [Hz]	Frequency [Hz]	Displacement [mm] Peak-Peak	Velocity [m/s] Peak	Acceleration [m/s ²]/Peak	Duration (per each axis) [min]
10-150	10	2.533	0.080	5.000	07:49
	150	0.011	0.005	5.000	

Note: Number of sweep cycles / axis / functional mode =1 cycle (1 Octave / min)

Figure 6.5.1 Sinusoidal vibration test setup





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Photograph 6.5.1 Sinusoidal vibration test setup (vertical axis)





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

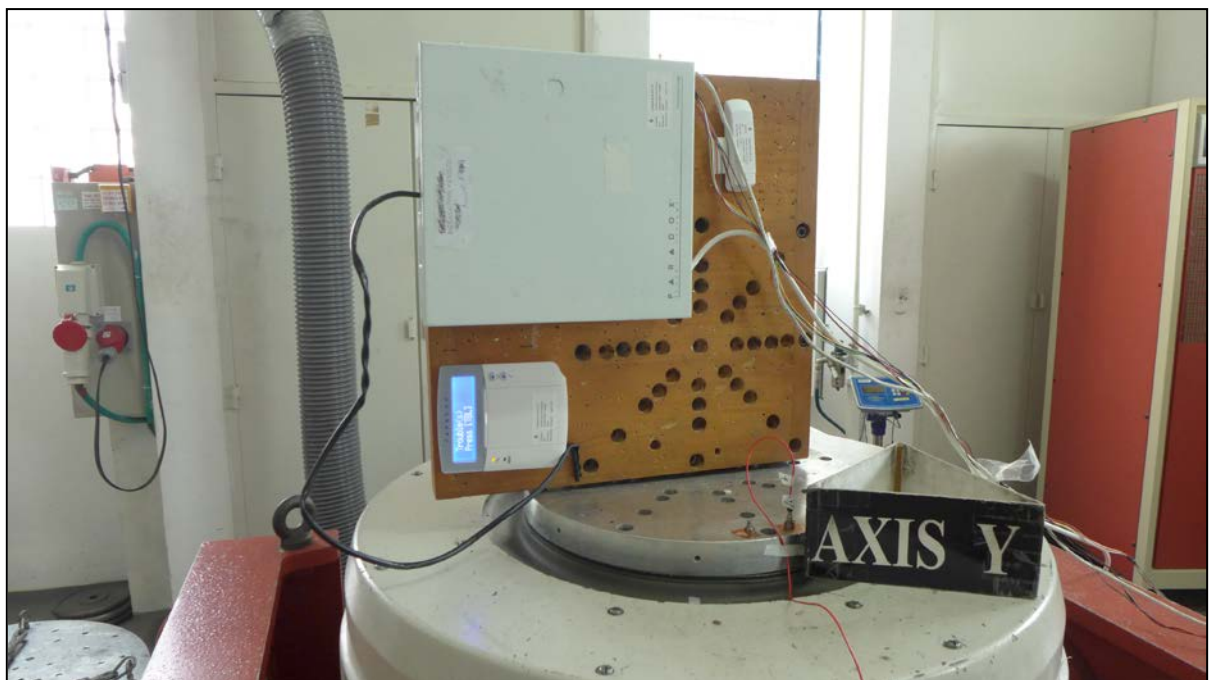
Photograph 6.5.2 Sinusoidal vibration test setup (transverse axis)





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

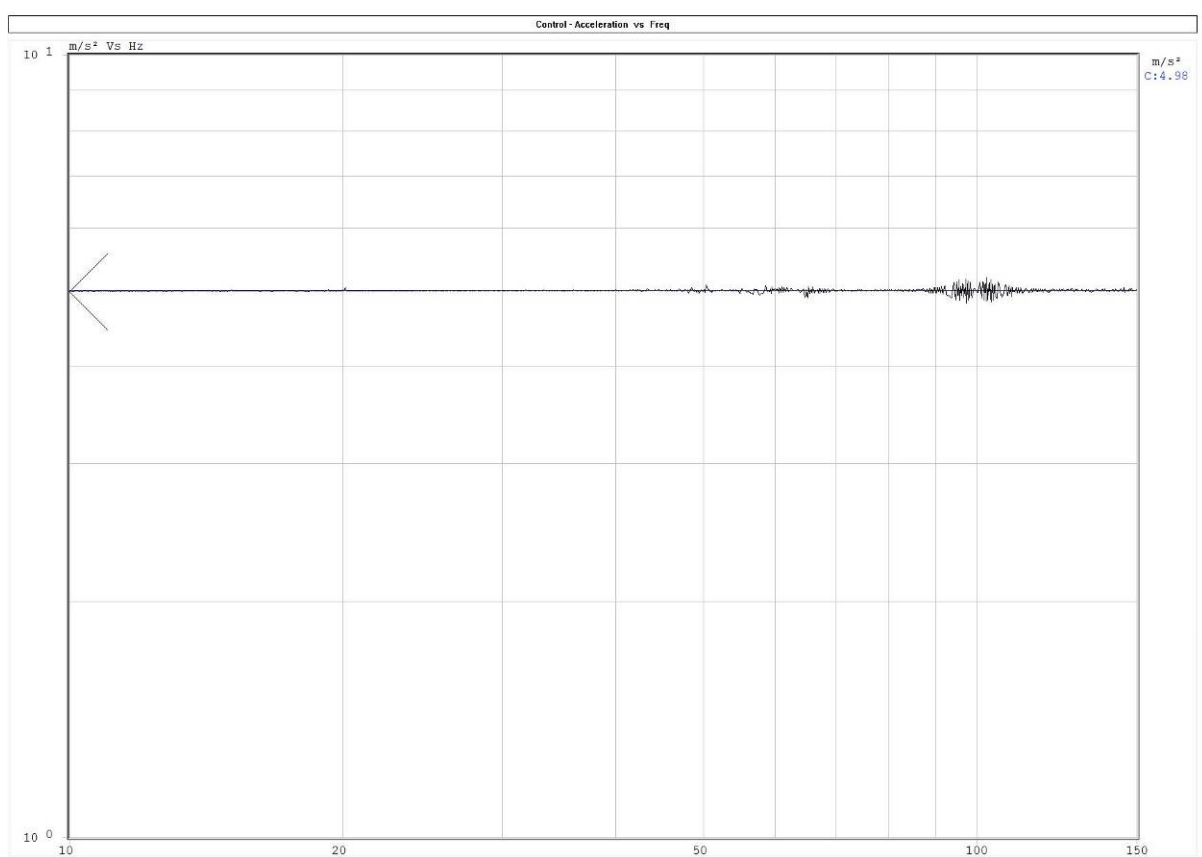
Photograph 6.5.3 Sinusoidal vibration test setup (longitudinal axis)





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

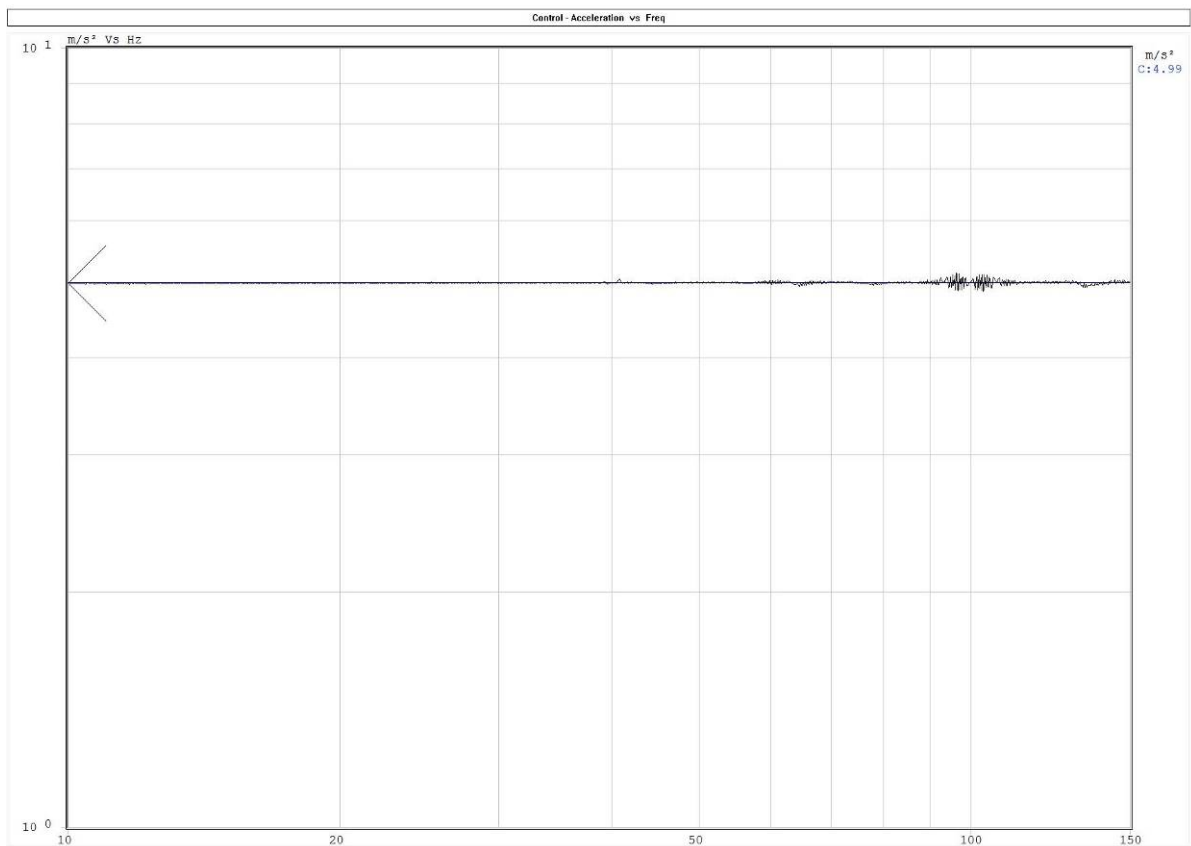
Plot 6.5.1 Sinusoidal vibration along vertical axis (operational)





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

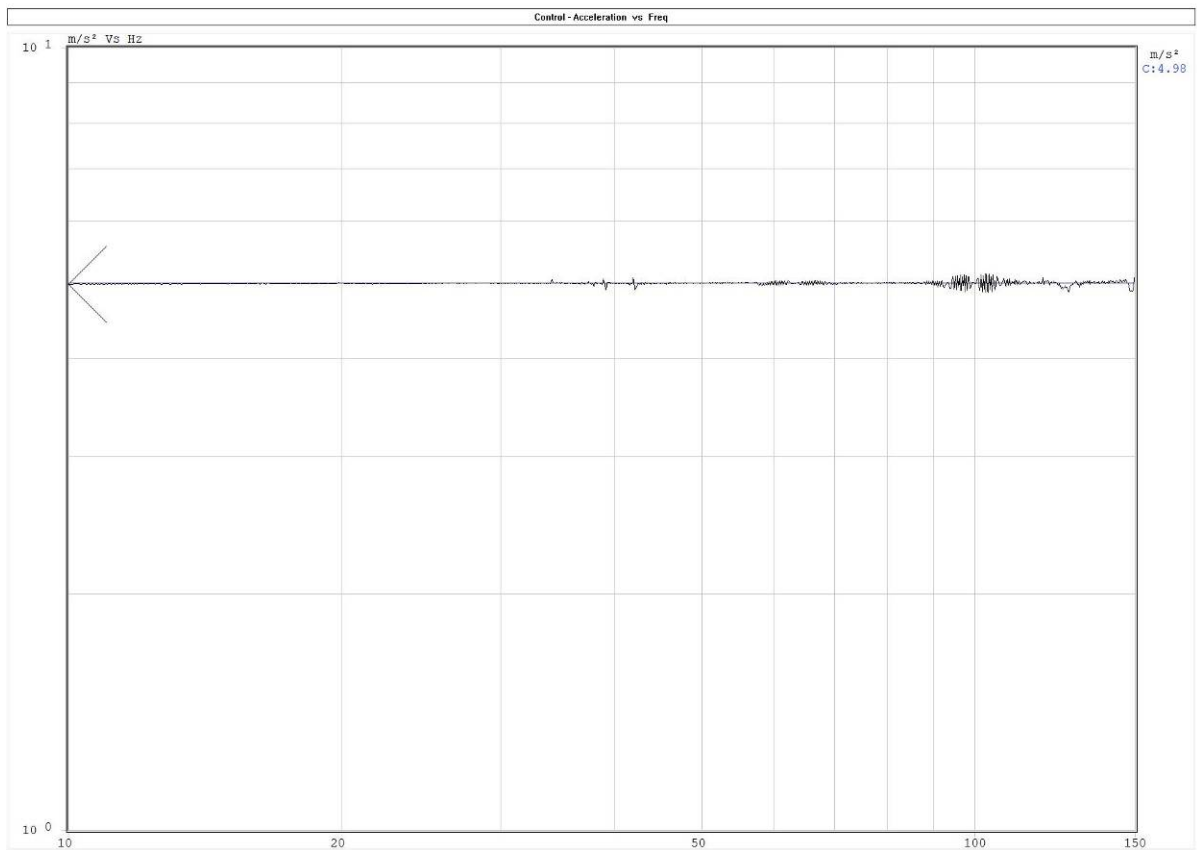
Plot 6.5.2 Sinusoidal vibration along transverse axis (operational)





Test specification:	Sinusoidal vibration (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 16 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.5.3 Sinusoidal vibration along longitudinal axis (operational)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

6.6 Sinusoidal vibration (Endurance) test procedure and results

6.6.1 Test purpose

The test was performed to demonstrate the EUT ability to withstand the long-term effects of vibration at levels appropriate to the environment.

6.6.2 Test procedure

6.6.2.1 After BDT and RFT, the EUTs in non-operational mode and the control accelerometer were installed on the vibration test system, as presented in Photograph 6.6.1.

6.6.2.2 The required vibration level was applied to the EUTs along vertical axis, according to EN 50130-5 standard Class II requirements, as presented in Table 6.6.2.

6.6.2.3 The Paragraphs 6.6.2.1 and 6.6.2.2 were repeated along the transverse and longitudinal axes, as presented in Figure 6.6.1, Photograph 6.6.2 and Photograph 6.6.3.

6.6.2.4 The control accelerometer signal is presented in Plots from 6.6.1 to 6.6.6.

6.6.2.5 A BDT and RFT were performed. A visual inspection was performed after the sinusoidal vibration test.

6.6.3 Test results

Table 6.6.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. The EUT passed the basic functional test. The EUT passed the sinusoidal vibration test (endurance).	Pass

Reference numbers of test equipment used:

HL 2190	HL 3460	HL 4020	HL 4888	HL 3951
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Full description is given in Appendix A.



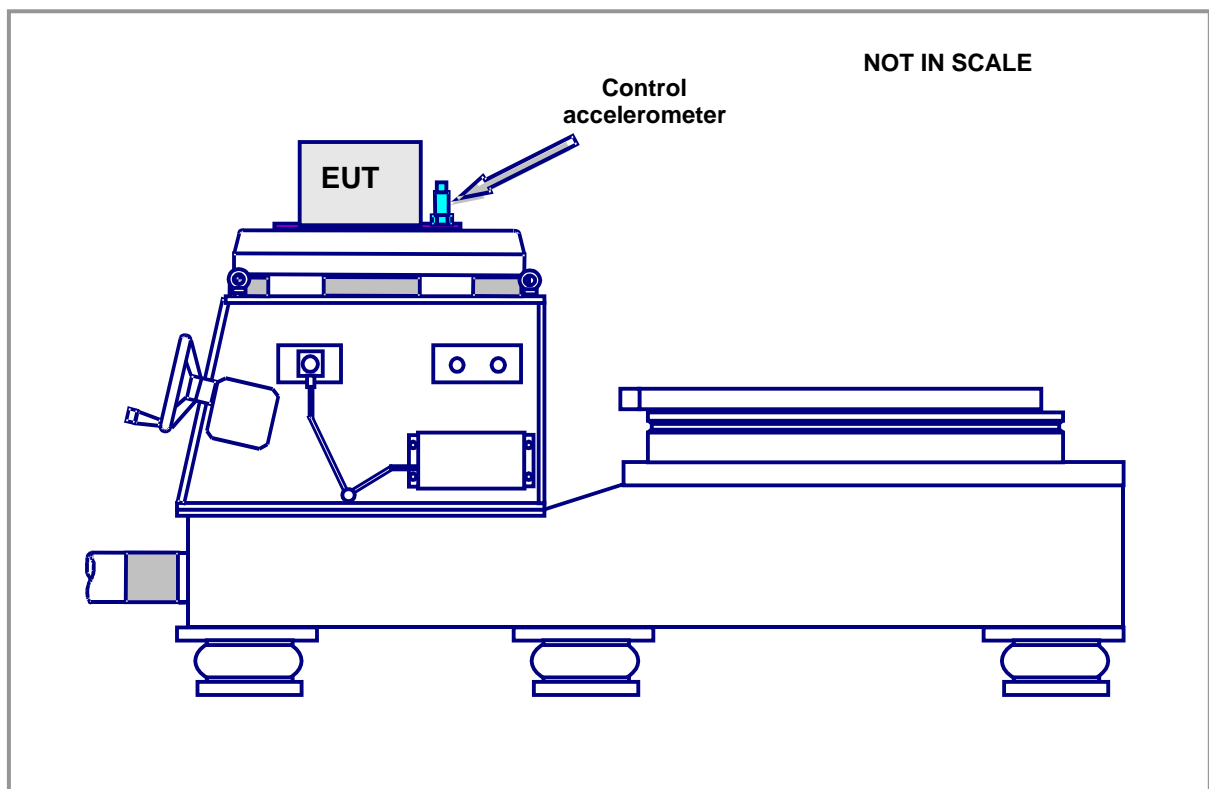
Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Table 6.6.2 Sinusoidal vibration test profile (Endurance)

Frequency range [Hz]	Frequency [Hz]	Displacement [mm] Peak-Peak	Velocity [m/s] Peak	Acceleration, [m/s ²] Peak	Duration (per each axis) [min]
10-150	10	5.066	0.159	10	157
	150	0.023	0.011	10	

Note: Number of sweep cycles / axis / functional mode =20 cycles (1 Octave / min).

Figure 6.6.1 Sinusoidal vibration test setup (Vertical axis)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Photograph 6.6.1 Sinusoidal vibration test setup (vertical axis)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

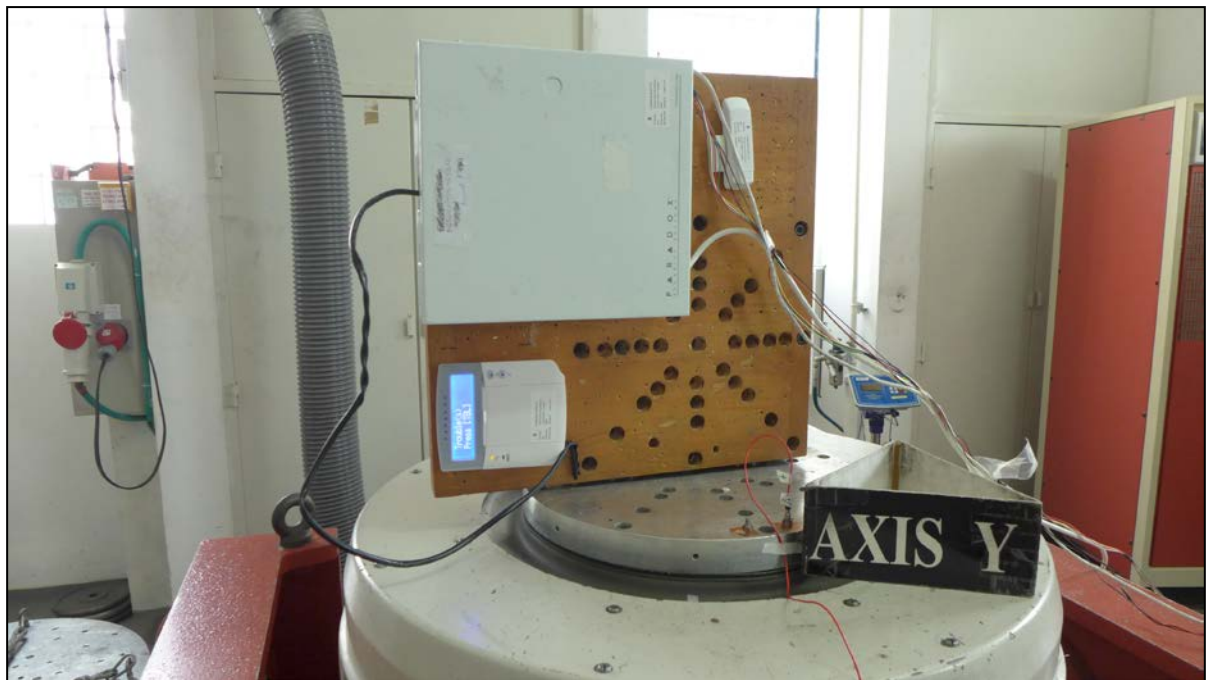
Photograph 6.6.2 Sinusoidal vibration test setup (transverse axis)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

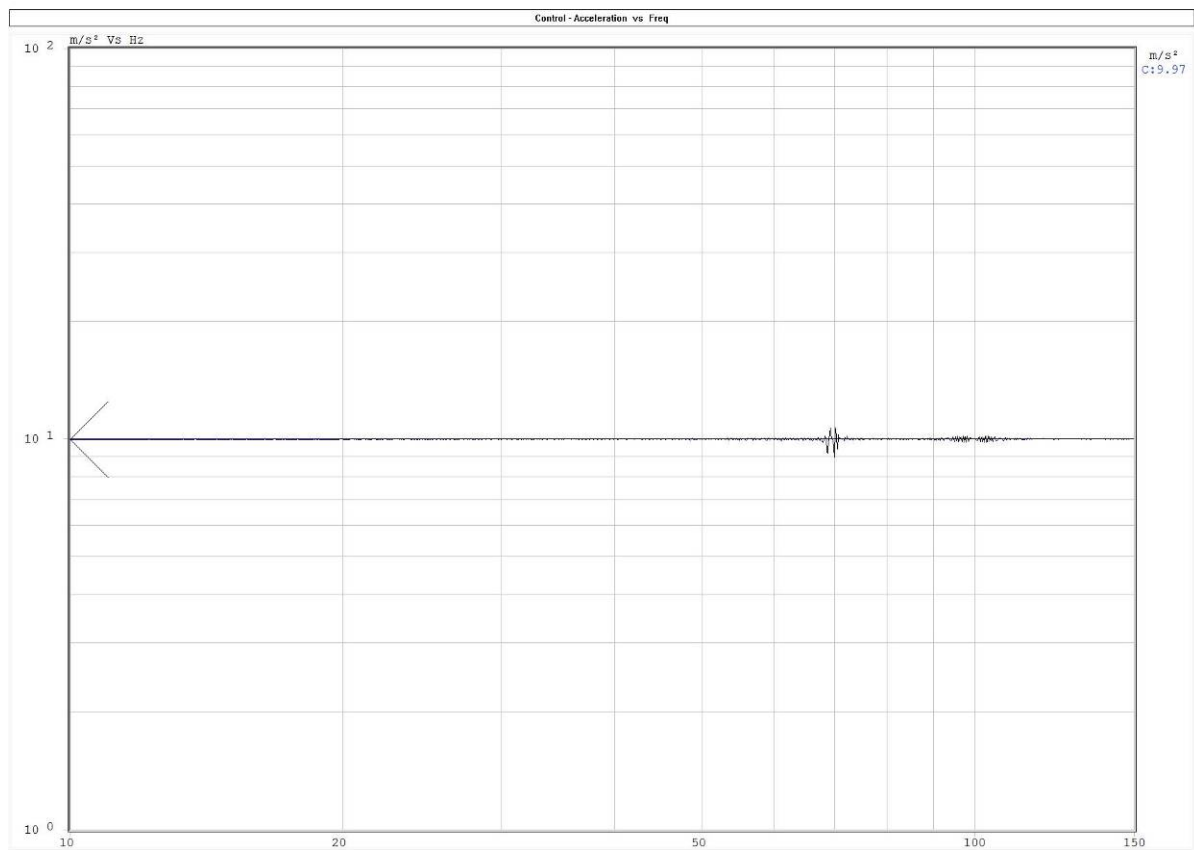
Photograph 6.6.3 Sinusoidal vibration test setup (longitudinal axis)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

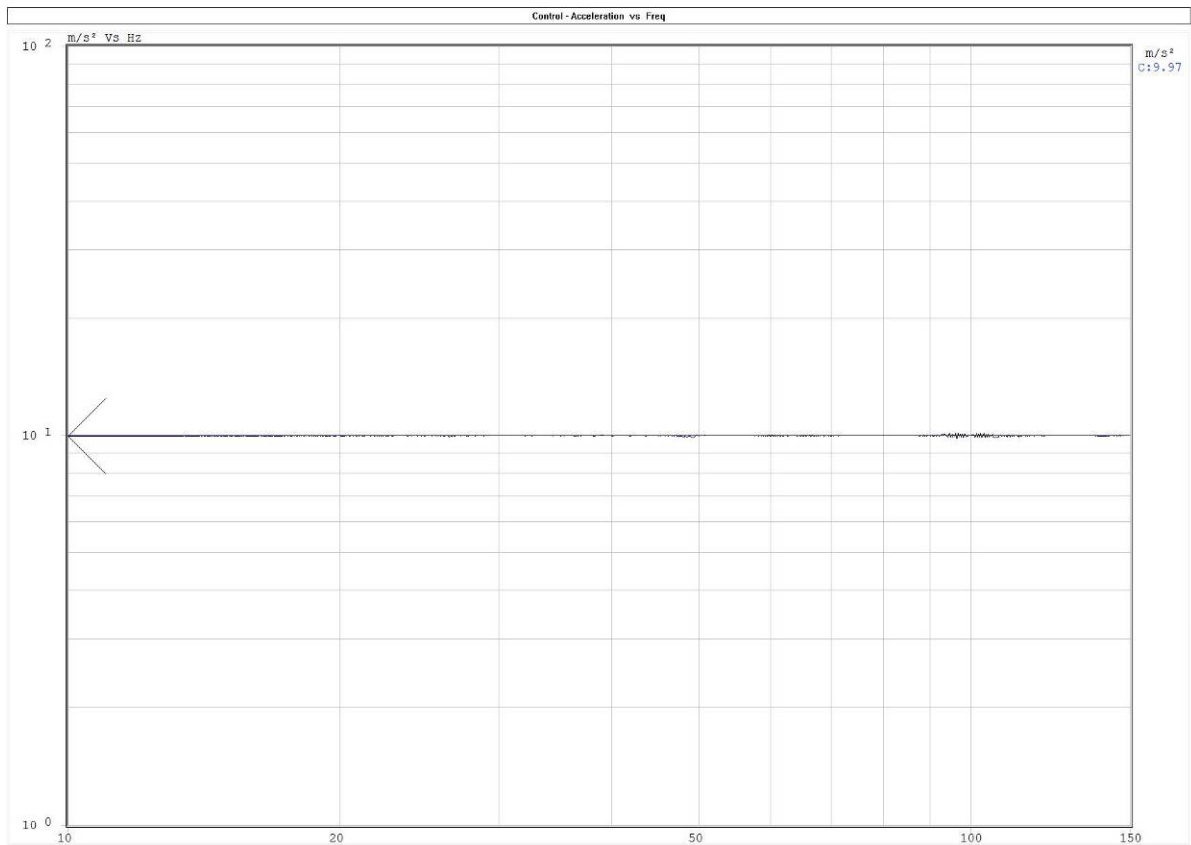
Plot 6.6.1 Sinusoidal vibration along vertical axis (endurance)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.6.2 Sinusoidal vibration along transverse axis (endurance)





Test specification:	Sinusoidal Vibration (Endurance) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 17 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-6 Test Fc: Vibration (sinusoidal)		
Test mode:	Compliance	Verdict:	PASS
Test Date:	26-Aug-18 - 27-Aug-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.6.3 Sinusoidal vibration along longitudinal axis (endurance)





Test specification:		Shock (Operational) test	
Test procedure:		TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock	
Test mode:		Compliance	
Test Date:		27-Aug-18, 14-Oct-18	
Atmospheric conditions during the test:		Temperature: 24 °C	Air Pressure: 1006 hPa
Remarks:		Verdict:	PASS
		Relative Humidity: 44 %	

6.7 Shock (Operational) test procedure and results

6.7.1 Test purpose

This test was performed to demonstrate the EUT immunity to mechanical shocks, which are likely to occur, in the service environment.

6.7.2 Test procedure

6.7.2.1 After BDT, the EUT in operational mode were fastened to the shaker's armature as presented in Figure 6.7.1 and Photograph 6.7.1.

6.7.2.2 The shocks were applied to the operational EUT along the vertical axis, according to EN 50130-5 standard Class II, as presented in Table 6.7.2.

6.7.2.3 The Paragraphs 6.7.2.1 and 6.7.2.2 were repeated along the transverse and longitudinal axes, as presented in Photographs 6.7.2 and 6.7.3.

6.7.2.4 The control accelerometer is presented in Plots from 6.7.1 to 6.7.6.

6.7.2.5 A visual inspection followed by a BDT was performed

6.7.3 Test results

Table 6.7.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. All RFT and BDT passed. No change in system status (armed). The EUT passed the shock test (operational).	Pass

Reference numbers of test equipment used:

HL 2190	HL 3460	HL 4020	HL 4888	HL 3951
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Full description is given in Appendix A.



Test specification:		Shock (Operational) test	
Test procedure:		TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock	
Test mode:		Compliance	
Test Date:		27-Aug-18, 14-Oct-18	
Atmospheric conditions during the test:		Temperature: 24 °C	Air Pressure: 1006 hPa
Remarks:		Verdict:	PASS
		Relative Humidity: 44 %	

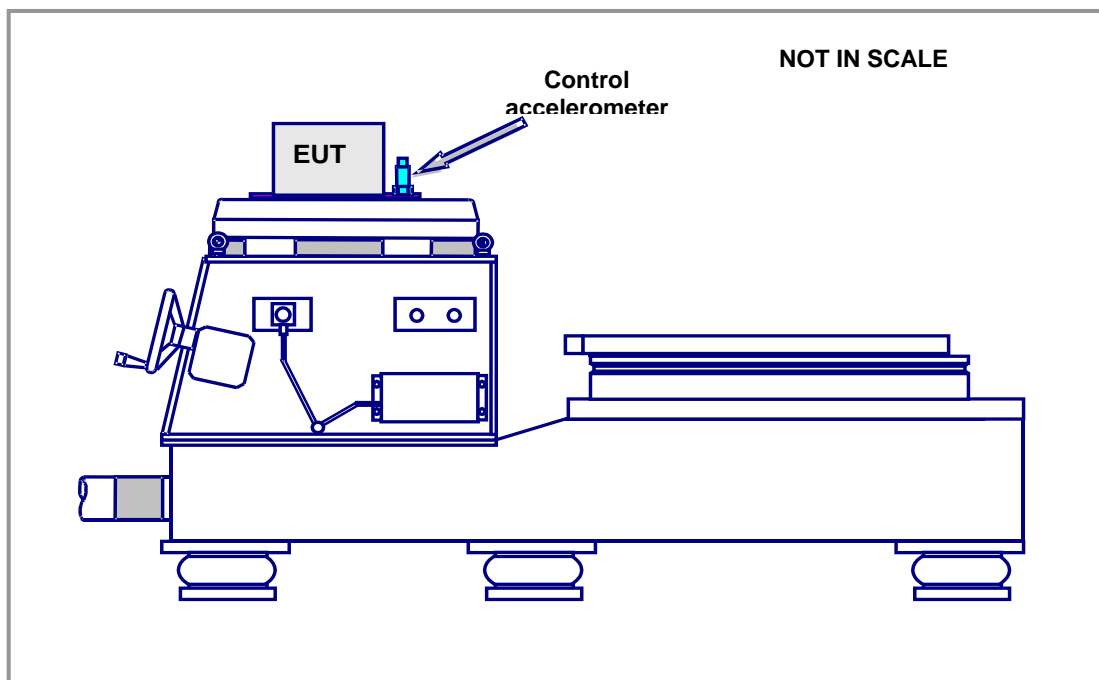
Table 6.7.2 Shock test specification (Operational)

Parameter	Unit	Severity
Amplitude	m/s ²	986
Pulse type	N/A	Half sine
Pulse width	ms	6
Direction of shocks	±Z, ±X, ±Y	6
Number of pulses per direction	N/A	3
Total number of pulses	N/A	18

*Note: Per EN50130-5 formula $A [m/s^2] = 1000 - 200 \times M [kg]$.

Two units were tested together per the weight of slightest unit, the magnet 0,07 kg (worst case)
The Control panel is exempted from this test as it weighs more than 4.75 kg.

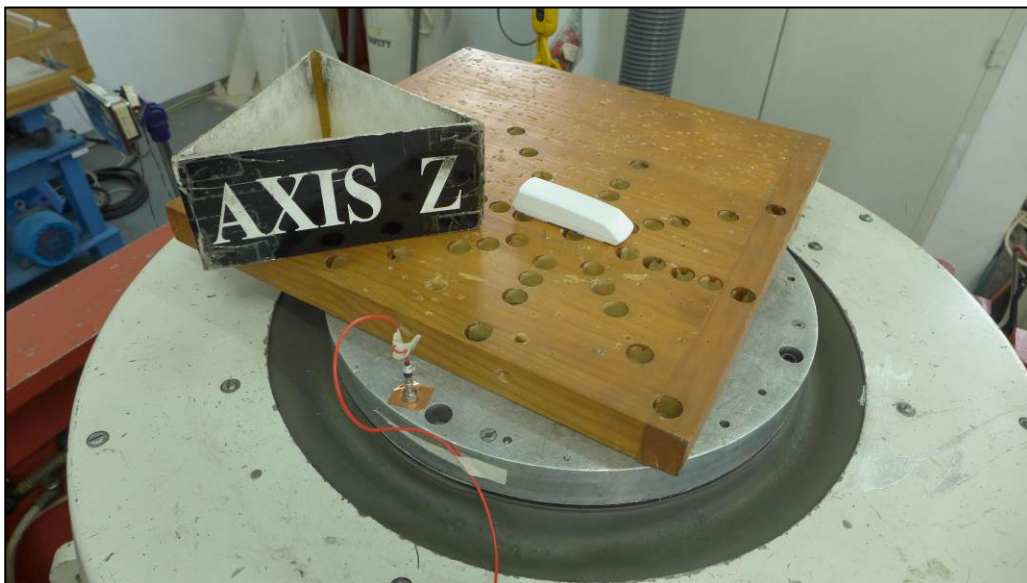
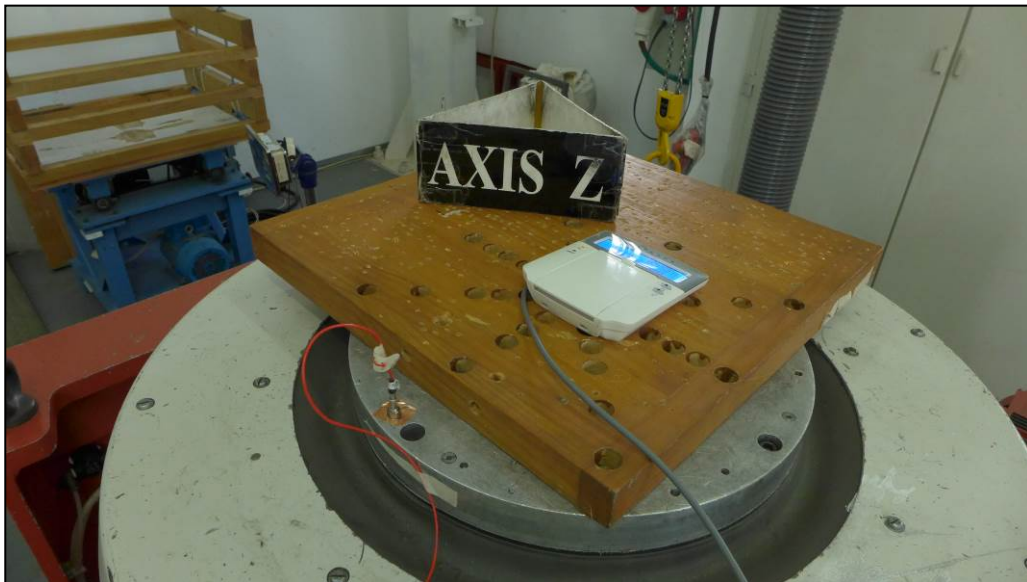
Figure 6.7.1 Shock test setup





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

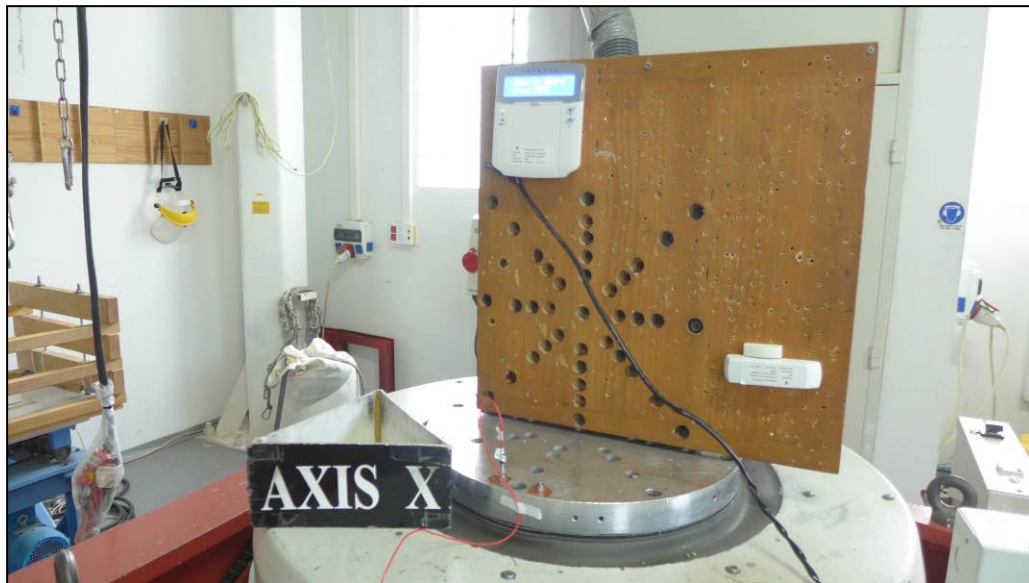
Photographs 6.7.1 Shock test setup (vertical axis)





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

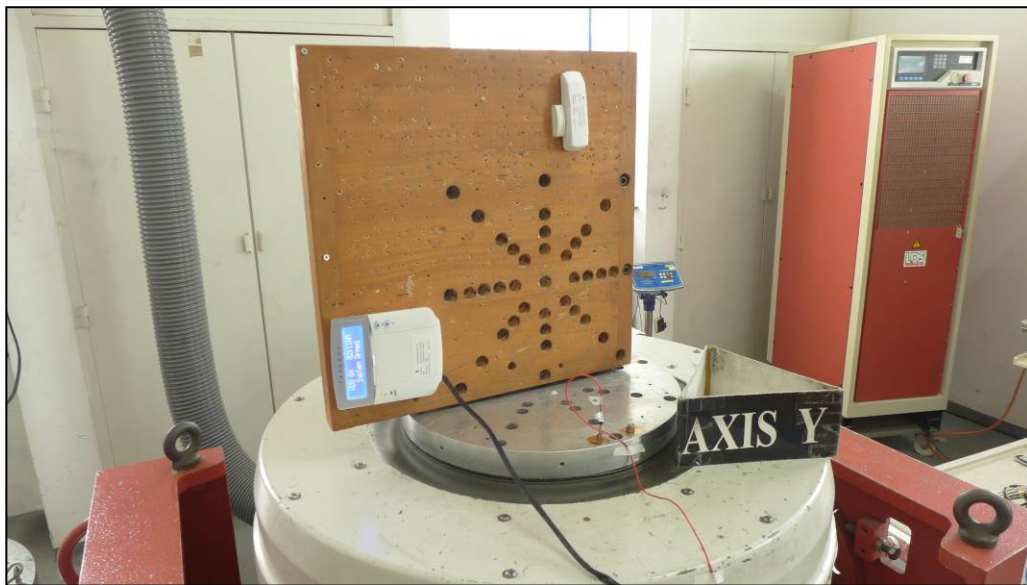
Photograph 6.7.2 Shock test setup (transverse axis)





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Photograph 6.7.3 Shock test setup (longitudinal axis)





HERMON LABORATORIES

Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.7.1 The positive shock pulse along transverse axis (operational) - Keypad





HERMON LABORATORIES

Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

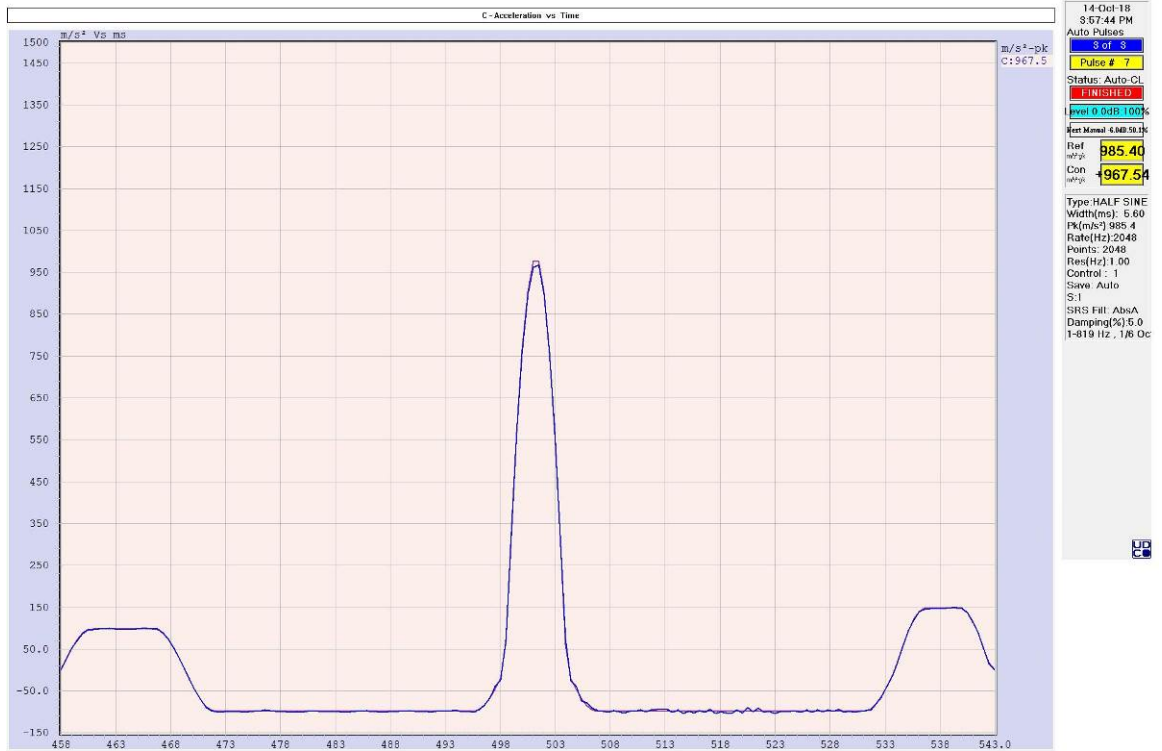
Plot 6.7.2 The negative shock pulse along transverse axis (operational) - Keypad





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.7.3 The positive shock pulse along transverse axis (operational) - Wireless Door Contact

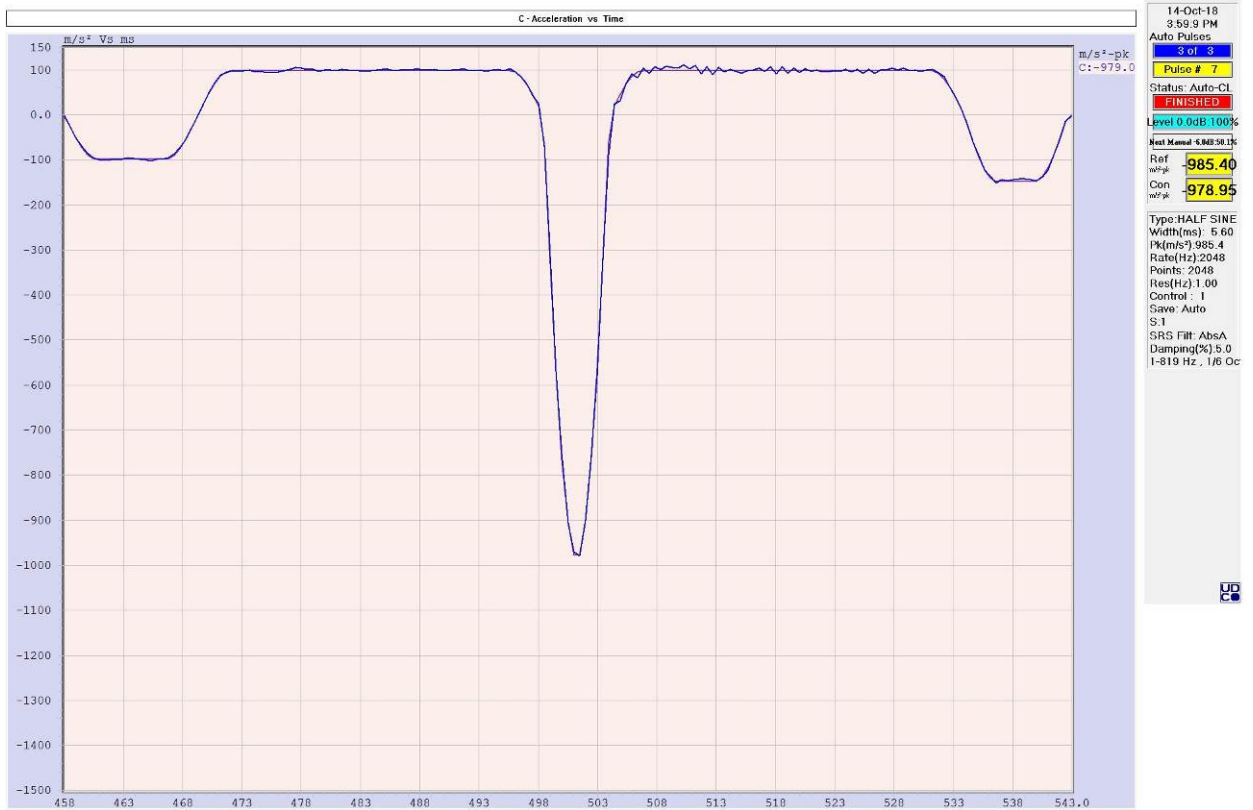




HERMON LABORATORIES

Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

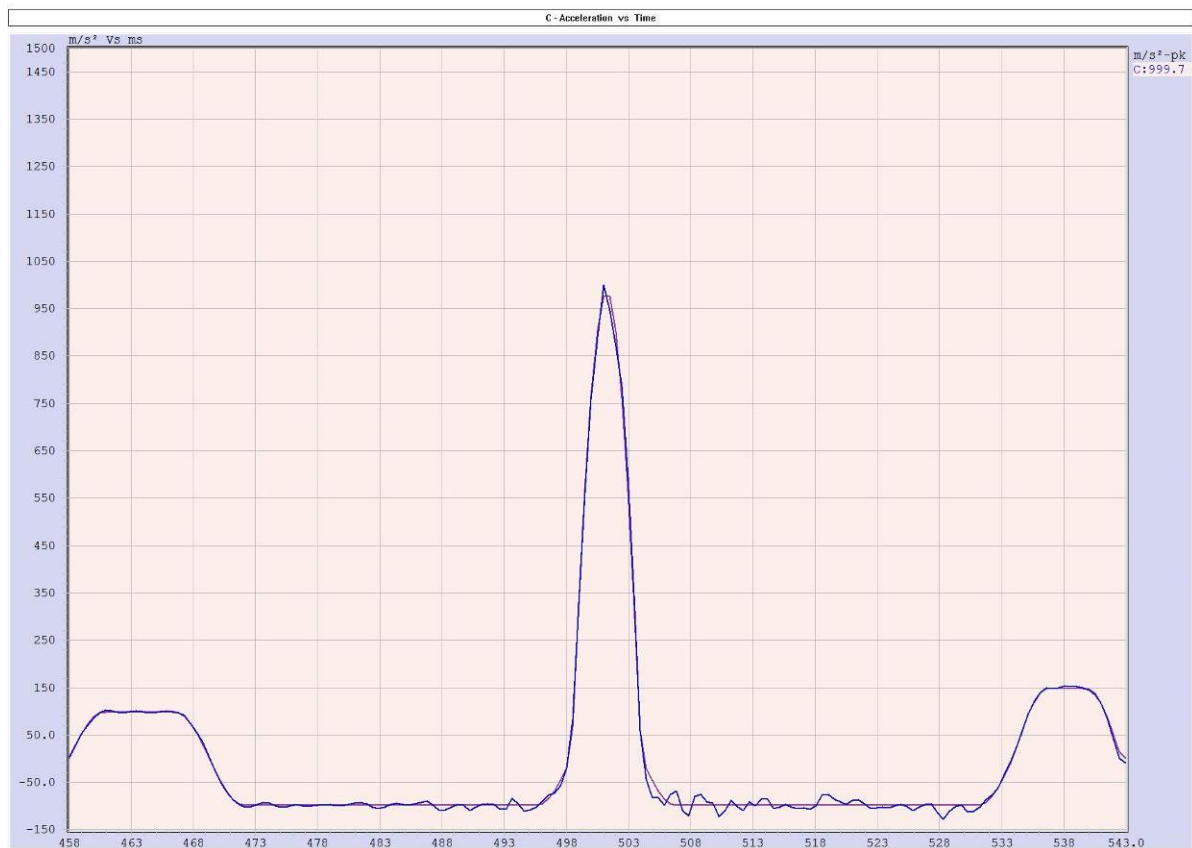
Plot 6.7.4 The negative shock pulse along transverse axis (operational) - Wireless Door Contact





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.7.5 The positive shock pulse along transverse axis (operational)





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

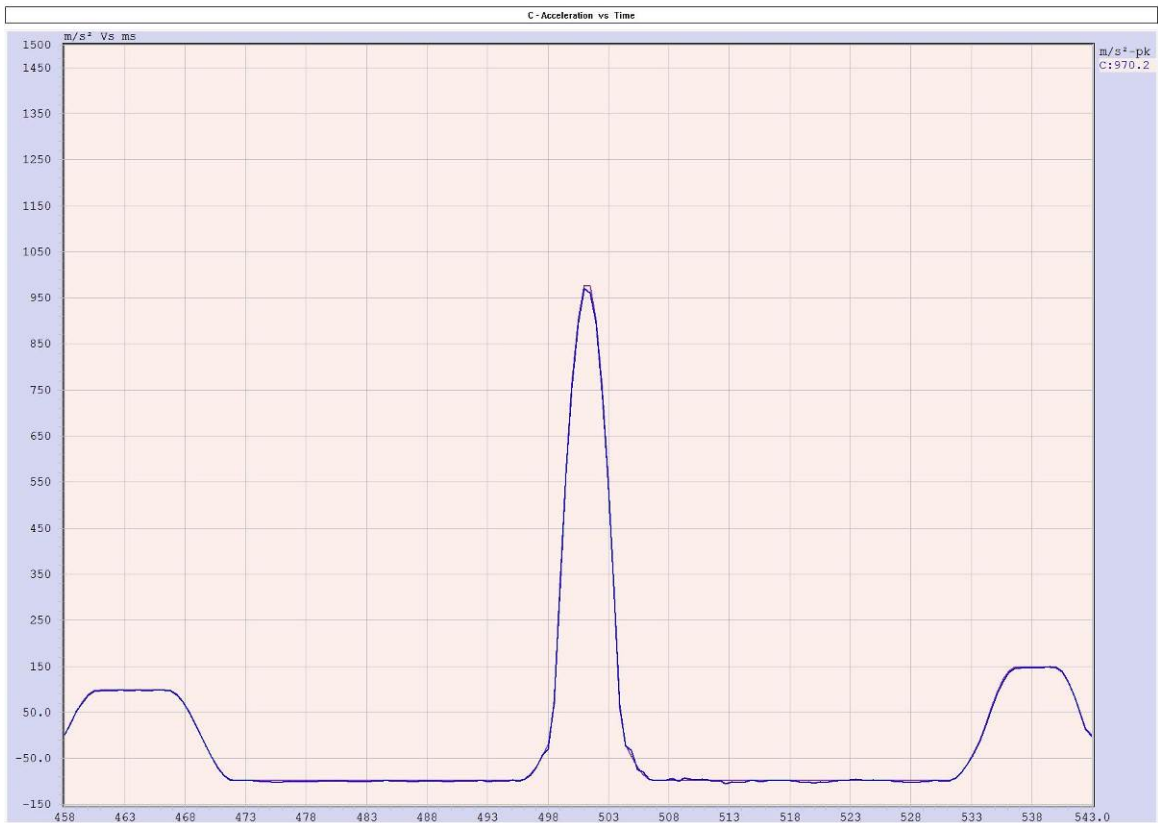
Plot 6.7.6 The negative shock pulse along transverse axis (operational)





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.7.7 The positive shock pulse along longitudinal axis (operational)





Test specification:	Shock (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 13 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-27 Test Ea and guidance: Shock		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 14-Oct-18		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Plot 6.7.8 The negative shock pulse along longitudinal axis (operational)





Test specification:		Impact (Operational) test	
Test procedure:		TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 14 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-75 Test Eh: Hammer tests	
Test mode:		Compliance	
Test Date:		27-Aug-18, 02-Jan-19	
Atmospheric conditions during the test:		Temperature: 24 °C	Air Pressure: 1006 hPa
Remarks:		Verdict:	PASS
		Relative Humidity: 44 %	

6.8 Impact (Operational) test procedure and results

6.8.1 Test purpose

The impact test was performed to demonstrate EUT immunity to mechanical impacts upon the surface, which it may sustain in the normal service environment.

6.8.2 Test procedure

6.8.2.1 After BDT and RFT, the EUTs were installed in its operational position, as presented in Photographs from 6.8.1 to 6.8.3.

6.8.2.2 The EUTs were subjected to impacts (according to Table 6.8.2) from a small hemispherical hammer-head on any exposed surfaces of the each EUT.

6.8.2.3 BDT, RFT and a visual inspection were performed.

6.8.3 Test results

Table 6.8.1 Test results

Observation	Verdict
No structural or mechanical damages were registered during the visual inspection. RFT and BDT passed. No un-intentional signal or messages noticed. The EUT passed the impact test.	Pass

Reference numbers of test equipment used:

HL 3013

Full description is given in Appendix A.



Test specification:	Impact (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 14 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-75 Test Eh: Hammer tests		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 02-Jan-19		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Table 6.8.2 Impact test configuration

EUT name	Impact energy [J]	Number of points	Number of impacts per point	Number of exposed surfaces
MG5050	1	5	3	5
K32LCD+	1	5	3	5
DCTXP2	0.5	5	3	5

Photograph 6.8.1 Impact test setup

MG5050





Test specification:	Impact (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 14 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-75 Test Eh: Hammer tests		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 02-Jan-19		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Photograph 6.8.2 Impact test setup

K32LCD+





Test specification:	Impact (Operational) test		
Test procedure:	TEST SPECIFICATION: EN 50130-5:2011 TABLE: Table 14 ENVIRONMENTAL CLASS: II TEST METHOD: IEC 60068-2-75 Test Eh: Hammer tests		
Test mode:	Compliance	Verdict:	PASS
Test Date:	27-Aug-18, 02-Jan-19		
Atmospheric conditions during the test:	Temperature: 24 °C	Air Pressure: 1006 hPa	Relative Humidity: 44 %
Remarks:			

Photograph 6.8.3 Impact test setup

DCTXP2



**7 APPENDIX A Test equipment and ancillaries used for tests**

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal./Check	Due Cal./Check
5381	Temperature test chamber, (-73 - +177) deg.	Thermotron	S-16C	30291	14-Jun-18	14-Jun-19
4725	Temperature & Humidity chamber, -73°C to +177°C, 50% to 95% RH	Votsch Industrietechnik GmbH]	VC 7060	56601452	19-Nov-17	19-Dec-18
4755	Digital Hygrometer / Thermometer, (0 to +50) deg., (20 to 99) %RH	WESTERN Humidor Corporation	Caliber 4	NA	29-Oct-18	29-Oct-19
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	09-May-18	09-May-19
3460	Precision Barometer, 870 - 1050 hPa	LUFFT Mess- und Regeltechnik GmbH	DKD-K-26701	100469	05-Jun-18	05-Jun-20
4020	Temp. & Humidity Meter, (-50 - +70) deg, (20 - 99)% RH	Mad Electronics	HTC-1	NA	06-Aug-18	06-Aug-19
4888	APEX SL VIBRATION CONTROLLER	Unholtz-Dickie	Apex SL	1244	31-Jul-18	31-Aug-19
3951	Isotron Accelerometer 101.2 mV/g	Dytran Instruments Inc.	3256A2	10370	23-Feb-18	23-Jan-20
3013	ED&D Universal Spring Hammer	Educated Design & development, Inc.	F 22.50	I1145127	17-Jan-17	17-Jan-19



8 APPENDIX B Test laboratory description

The tests were performed at Hermon Laboratories Ltd., which is a fully independent, private Environmental, EMC, Radio, Product safety and telecommunication testing facility recognized through the entire world. The Laboratory is accredited by American Association for Laboratory Accreditation (A2LA, USA) for Environmental testing (Certificate No. 0839.04, Mechanical testing).

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. Mihaeli Feldmann, Environmental Group Manager.

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
RMS	root mean square
RH	relative humidity
s	second
RFT	reduced functional test
BDT	basic detection test

10 APPENDIX D Tests specifications

- | | | |
|-----|-------------------------------------|--|
| 1. | EN 50130-5:2011 | Alarm systems -
Part 5: Environmental test methods |
| 2. | IEC 60068-2-1:07 | Environmental Testing - Part 2: Tests – Tests A: Cold |
| 3. | IEC 60068-2-2:07 | Environmental Testing - Part 2: Tests - Tests B:
Dry Heat |
| 4. | IEC 60068-2-6:07 | Environmental testing - Part 2: Tests - Test Fc: Vibration
(Sinusoidal) |
| 5. | IEC 60068-2-27:08 | Environmental Testing - Part 2:
Tests - Test Ea and Guidance: Shock |
| 6. | IEC 60068-2-30:05 | Environmental Testing - Part 2-30: Tests - Test Db:
Damp Heat, Cyclic (12 h + 12 h cycle) |
| 7. | IEC 60068-2-75:97 | Environmental testing - Part 2: Tests - Test Eh:
Hammer Tests |
| 8. | IEC 60068-2-78:01 | Environmental Testing - Part 2-78: Tests - Test 2-78: Body Cab:
Damp Heat, Steady State |
| 9. | Impact_TP-2_2011 | Impact Test Procedure according to EN 50130-5 and
IEC 60068-2-75 Test Ehb |
| 10. | Temperature and humidity TP-10_2017 | Temperature And Humidity Test Procedure according to
ETSI EN 300 019-2-0,-1,-2,-3,-4,-5,-6,-7,-8, IEC 60721-4-1,-2,-3,-4,
MIL-STD- 810 B, C, D, E, F, G, RTCA DO-160D, E, F, G,
IEC 60068-2-1, -2, -14, -30, - 38, -56, -78, ASTM D4332, ASTM
F1980, DEF STAN 00-35, IEEE 1613, IEC 61850-3, GR-63-CORE,
ISO 11608-1, ISO 1608-4 and IEC 60601-1-11 STANDARDS |
| 11. | Vibration and shock TP-8_2017 | Vibration And Shock Test Procedure according to MIL-STD – 810 B,
C, D, E, F, G, MIL-STD-167 -1A, GR-63-CORE, IEC 60068-2-6, -27,
-29, -55, -64, -75, RTCA DO-160D, E, F, G, ASTM D999, ASTM
D4169, ASTM D4728, DEF STAN 00-35, IEC 61373, IEC 60601-1-
11, ISO 11608-1, ISO 11608-4, IEC 61850-3, IEEE Std 1613 and
ISTA 2A STANDARDS |



11 APPENDIX E Measurement uncertainties

Parameter	Uncertainty estimation at 95% confidence	
	Calculated	Limit
Air pressure	± 1.16 mBar	± 4.1 mBar
High (Low) temperature	± 1.8 °C	± 2 (3)°C
Relative humidity	± 2.86 %	± 5.0 %
Sine acceleration	+14.8/-13.8 %	+41/-30 %
Shock acceleration	+7.2/-8.2 %	± 20.0 %

12 APPENDIX F Customer Declaration of Similarity

To: Hermon Labs

Declaration of Similarity

It is hereby declared that Keypad K641+ and Keypad K32LCD+ have the same Electronic Hardware and Mechanical Enclosure.

The only difference between K641+ and K32LCD+ is in Firmware, which provides each keypad to work with different type of control panels.

The setup includes K32LCD+ Keypad (K641+ similar product and will not be tested).

Nov-18-2018

Alex Chaplik

Certification Manager



To: Hermon Labs

Declaration of Similarity

It is hereby declared that Wireless Control Panel MG5000 operates on 433/868 MHz is a variant of MG5050 Wireless Control Panel.

Both Control Panel models have the same Layout, Electronic Hardware, Firmware and Metal Enclosure.

The only difference between MG5050 and MG5000 is in number of terminal blocks (on-board zones and PGMs):

MG5050 (5 zones, 4 PGMs) vs MG5000 (2 zones, 2 PGMs)

The setup includes MG5050 Control Panel (MG5000 similar product and will not be tested).

Nov-18-2018

Alex Chaplik

Certification Manager

