

Vojenský technický ústav, s.p. With the certified quality system according to ČSN EN ISO 9001		Task/Order No.: 25-19-5-93-3074/3595 Test Report No: 194300-048/2025 Copy No.: 1 Pages: 12 Annexes: -
	Testing Laboratory No. 1103 accredited by CAI according to ČSN EN ISO/IEC 17025: 2018 EMC TESTING LABORATORY	
TEST REPORT ENVIRONMENTAL TESTING		
Name and Address of Applicant: (Customer)		SEC Technologies, s.r.o. 1. Mája 4269/031, 031 01 Liptovský Mikuláš, Slovenská republika
Identification of Equipment under test: Type: Serial Number: Manufacturer:		MTU-1A2 Pan Tilt Positioner MTU-1A2 MU0109, MU0101 EVPÚ Defence a.s. Jaktáře 1781, 686 01 Uherské Hradiště, Česká republika
Technical documentation:		-
Test method: ¹⁾ MIL STD 810G, method 501, method 502, method 503, method 507		
Date of acceptance for testing: 18. 12. 2024	Tests leader: Ing. Petr Čamra test engineer	
Date of test, place of test: 09. 12. 2024 to 14. 02. 2025 EMC testing laboratory, Vyškov	Test carried out by: Ing. Petr Čamra test engineer	
Issue date: 21. 02. 2025	Authorized by technical manager: Ing. Petr Kupka technical manager	
Test Results: Test results are on next pages of the test report. <i>Present extended measuring uncertainty is product of standard measuring uncertainty and extension factor of k = 2, what is 95 % probability of covering for normal distribution.</i>		
Address: Vojenský technický ústav, s.p. Odštěpný závod VTÚPV, Equipment Testing Centre - Testing Laboratory No. 1103 Víta Nejedlého 691 682 01 Vyškov Czech Republic	Notes: This test report is a translation of the test report No.194300-048/2025. In case of differences, the Czech version applies. ¹⁾ Method used according to: MIL STD 810G Change 1:2014, method 501.6 Procedure I and II, method 502.6 Procedure I, II, III, method 503.6 Procedure I-C, method 507.6 Procedure II.	
Telephone: +420 910 105 641 Email: petr.camra@vtusp.cz		

The test results contained in this report relate to the tested item as received. This report shall not be reproduced other than in its entirety and only with written approval of the Testing Laboratory. The Testing Laboratory is not responsible for the data and information provided by the customer, which may affect the validity of the results.

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1 LIST OF TEST INSTRUMENTS

Table 1 List of test instruments

Metrological No.:	Instrument Name:	Calibration to:
32b-61621	Climatic chamber ClimeEvent C/1500/70a/5	11/2027
75f-80568	Climatic chamber ClimeEvent C/1500/70a/5	10/2026
44b-61874	Datalogger AHLBORN ALMEMO 710	06/2025
32b-61624	Temperature sensor ALMEMO FHAD36RAIC102	06/2025

2 TESTED EQUIPMENT

2.1 Name and type

Name: MTU-1A2 Pan Tilt Positioner
 Type: MTU-1A2
 Serial No.: MU0109, MU0101
 Dimensions (L x W x H): 558 x 280 x 472 mm
 Weight: 28 kg

2.2 Configuration

MTU-1A2 Pan Tilt Positioner
 Laptop lenovo ThinkPad T14 Gen 4, S/N: PF-4P3TM3
 - With program Falcon4GVT64, version: 05.07
 USB desktop joystick APEM 100350
 FIU MOXA Converter, S/N: 0208-BD_001
 PeakTech 6226 Power Supply, S/N: 591936

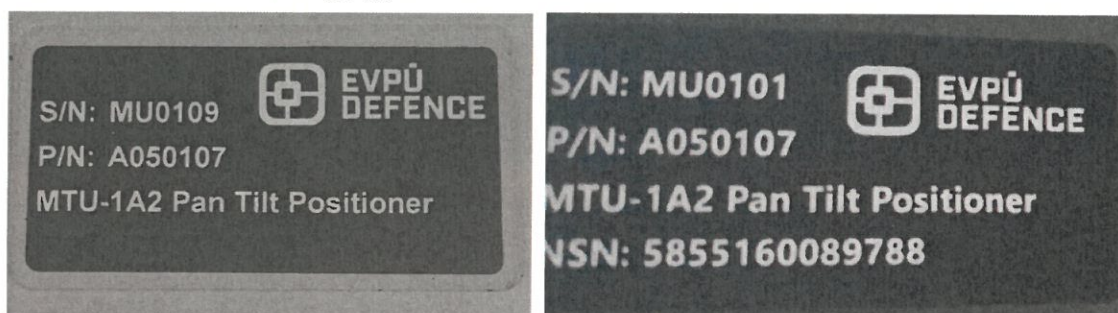


Figure 1 Production labels of the tested equipment's

2.3 Function verification method

The function of the tested device was always checked before and after the test (after acclimatization of the EUT to laboratory temperature). If the test method required a function check during the tests, this check was performed at random intervals. The test equipment performed several rotations about its axis in both directions and several tilts of the platform to the end positions during one inspection. Smoothness of turning and tilting was monitored. In the Falcon4GVT64 program, the status and color backlighting of the button labeled PLT was monitored. The button signaled the program's communication with the MTU-1A2 platform.

3 TEST RESULTS

Constant temperature exposure is used only for objects located in close proximity to heat-producing equipment, or when it is necessary to verify the operation of the object at a specified constant temperature. This procedure does not replace situations in which daily cycling is typical.

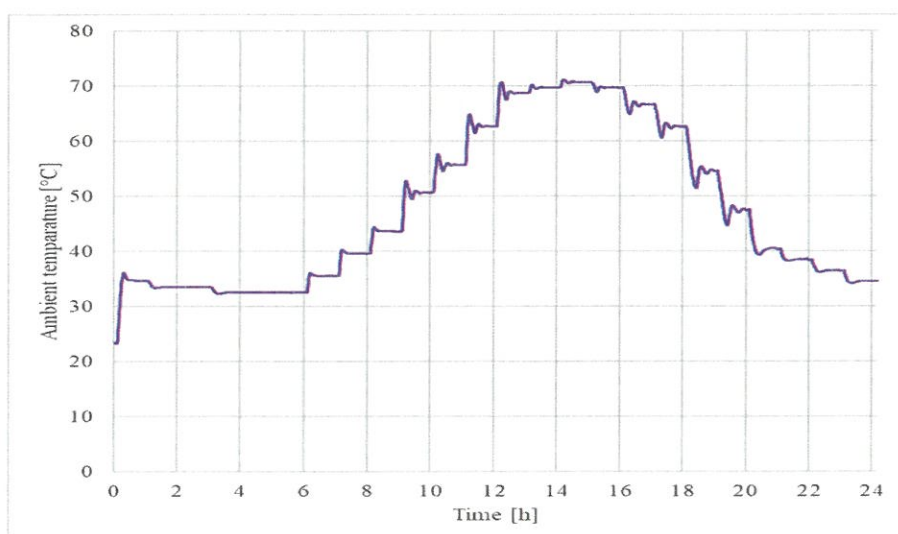
3.1 High temperature test

3.1.1 Test condition determined by the applicant – Storage (temperature class A1 – Hot Dry)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 501.6 – Proc. I,
- Test temperature in climatic chamber: $+33\pm 2\text{ }^{\circ}\text{C}$ to $+71\pm 2\text{ }^{\circ}\text{C}$,
- Exposition time after temperature balance: 24 hours,
- Tests carried out in a climatic chamber with forced air at $1\text{ m/s} \pm 0.3\text{ m/s}$,
- Equipment was switched off during the test.

3.1.1.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0101) was tested by high temperature without visual damage and the tested function (paragraph 2.3) was functional.



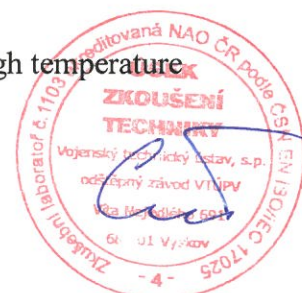
Graph 1 High temperature test procedure – Method 501.6 procedure I (A1 – Hot Dry)

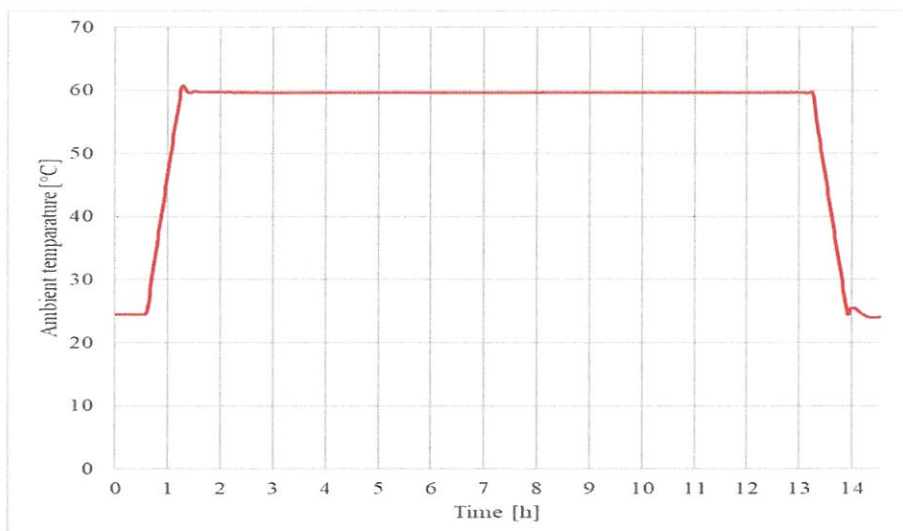
3.1.2 Test condition determined by the applicant – Storage (temperature class A2 – Basic Hot)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 501.6 – Proc. I,
- Test temperature in climatic chamber: $+60\pm 2\text{ }^{\circ}\text{C}$,
- The test was carried out at a constant temperature,
- Exposition time after temperature balance: 12 hours,
- Tests carried out in a climatic chamber with forced air at $1\text{ m/s} \pm 0.3\text{ m/s}$,
- Equipment was switched off during the test.

3.1.2.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0101) was tested by high temperature without visual damage and the tested function (paragraph 2.3) was functional.





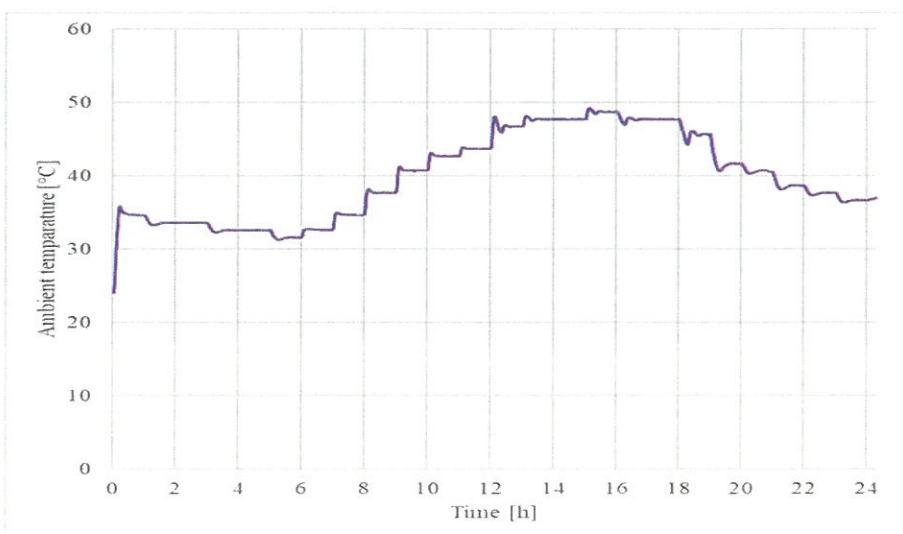
Graph 2 High temperature test procedure – Method 501.6 procedure I (A2 – Basic Hot)

3.1.3 Test condition determined by the applicant – Operation (temperature class A1 – Hot Dry)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 501.6 – Proc. II,
- Test temperature in climatic chamber: $+32 \pm 2$ °C to $+49 \pm 2$ °C,
- Exposition time after temperature balance: 24 hours,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- The device was continuously powered and kept in operation during the test.

3.1.3.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0109) was tested by high temperature without visual damage and the tested function (paragraph 2.3) was functional.



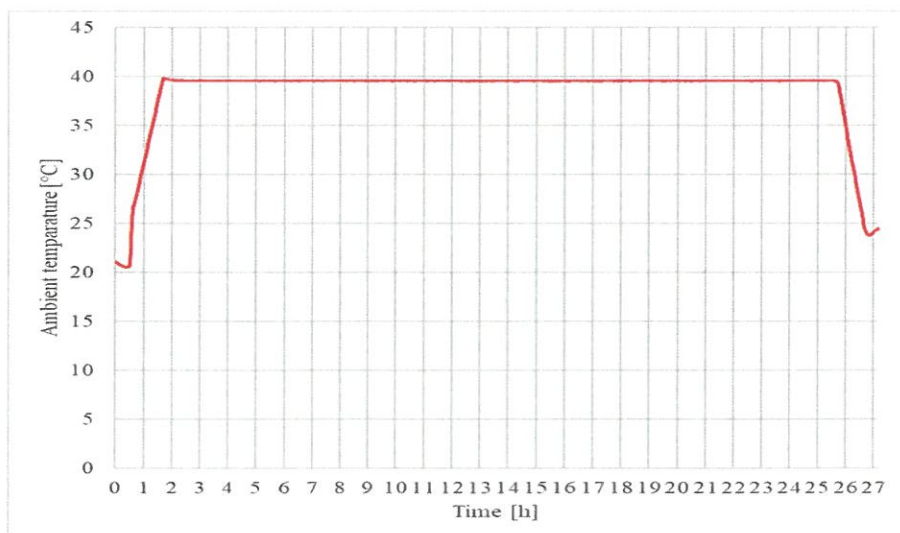
Graph 3 High temperature test procedure – Method 501.6 procedure II (A1 – Hot Dry)

3.1.4 Test condition determined by the applicant – Operation (temperature class A2 – Basic Hot)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 501.6 – Proc. II,
- Test temperature in climatic chamber: $+40 \pm 2$ °C,
- The test was carried out at a constant temperature,
- Exposition time after temperature balance: 24 hours,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- The device was continuously powered and kept in operation during the test.

3.1.4.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0109) was tested by high temperature without visual damage and the tested function (paragraph 2.3) was functional.



Graph 4 High temperature test procedure – Method 501.6 procedure II (A2 – Basic Hot)



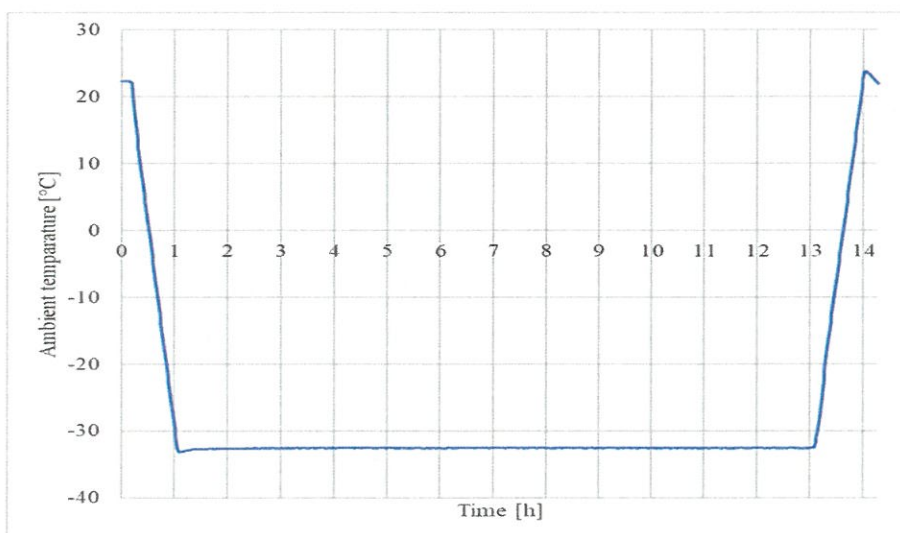
3.2 Low temperature test

3.2.1 Test condition determined by the applicant – Storage (temperature class C1 – Basic Cold)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 502.6 – Proc. I,
- Test temperature in climatic chamber: -32 ± 2 °C,
- Exposition time after temperature balance: 12 hours,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- Equipment was switched off during the test.

3.2.1.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0109) was tested by low temperature without visual damage and the tested function (paragraph 2.3) was functional.



Graph 5 Low temperature test procedure – Method 502.6 procedure I (C1 – Basic Cold)

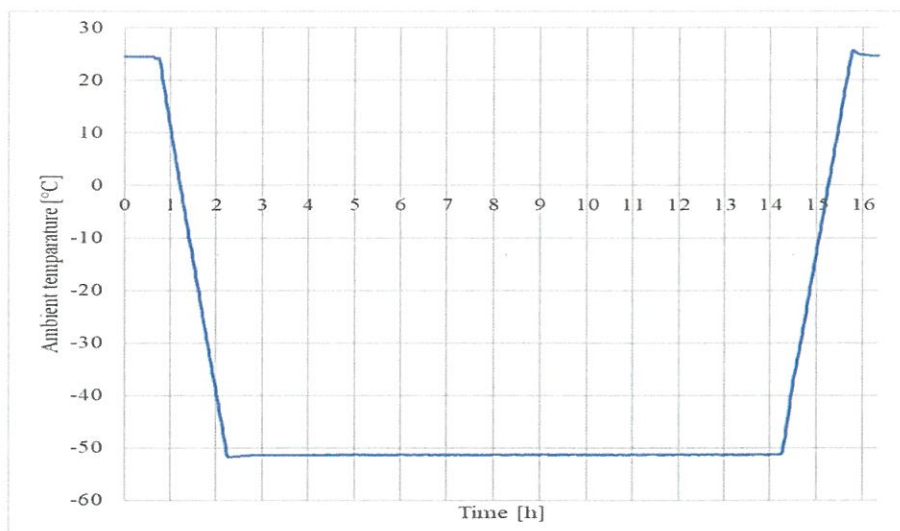
3.2.2 Test condition determined by the applicant – Storage (temperature class C3 Severe Cold)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 502.6 – Proc. I,
- Test temperature in climatic chamber: -51 ± 2 °C,
- Exposition time after temperature balance: 12 hours,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- Equipment was switched off during the test.

3.2.2.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0101) was tested by low temperature without visual damage and the tested function (paragraph 2.3) was functional.





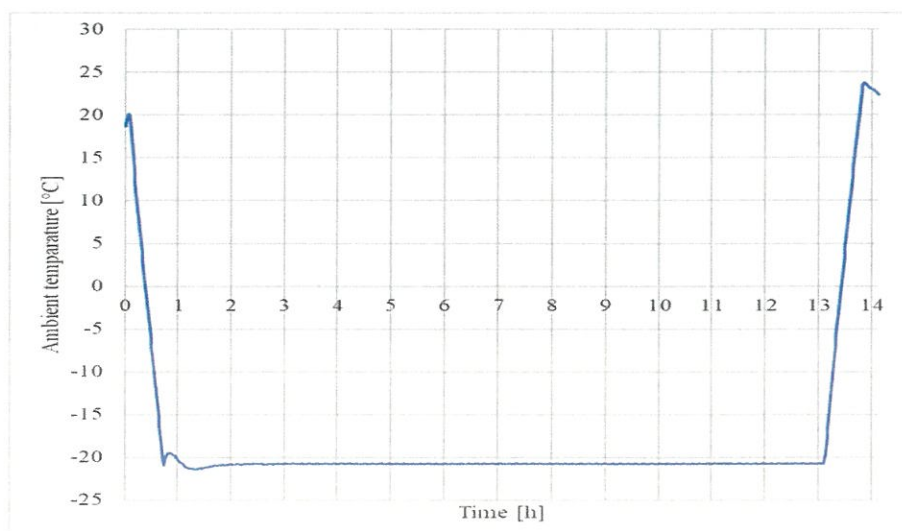
Graph 6 Low temperature test procedure – Method 502.6 procedure I (C3 – Severe Cold)

3.2.3 Test condition determined by the applicant – Operation (temperature class C1 – Basic Cold)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 502.6 – Proc. II and III,
- Test temperature in climatic chamber: -20 ± 2 °C,
- Exposition time after temperature balance: 12 hours,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- The device was continuously powered and kept in operation during the test.

3.2.3.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0109) was tested by low temperature without visual damage and the tested function (paragraph 2.3) was functional.



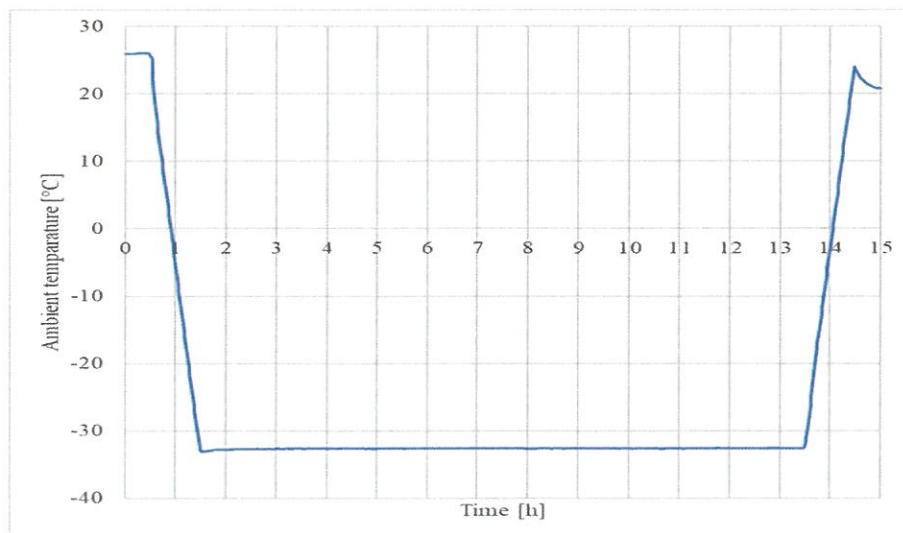
Graph 7 Low temperature test procedure – Method 502.6 procedure II and III (C1 – Basic Cold)

3.2.4 Test condition determined by the applicant – Operation (temperature class C1 – Basic Cold)

- Test was carried out according to MIL STD 810G Change 1:2014, Method 502.6 – Proc. II ,
- Test temperature in climatic chamber: -32 ± 2 °C,
- Exposition time after temperature balance: 12 hours,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- The device was continuously powered and kept in operation during the test.

3.2.4.1 Course of the tests and response of EUT

MTU-1A2 Pan Tilt Positioner (production number: MU0109) was tested by low temperature without visual damage and the tested function (paragraph 2.3) was functional.



Graph 8 Low temperature test procedure – Method 502.6 procedure II (C1 – Basic Cold)



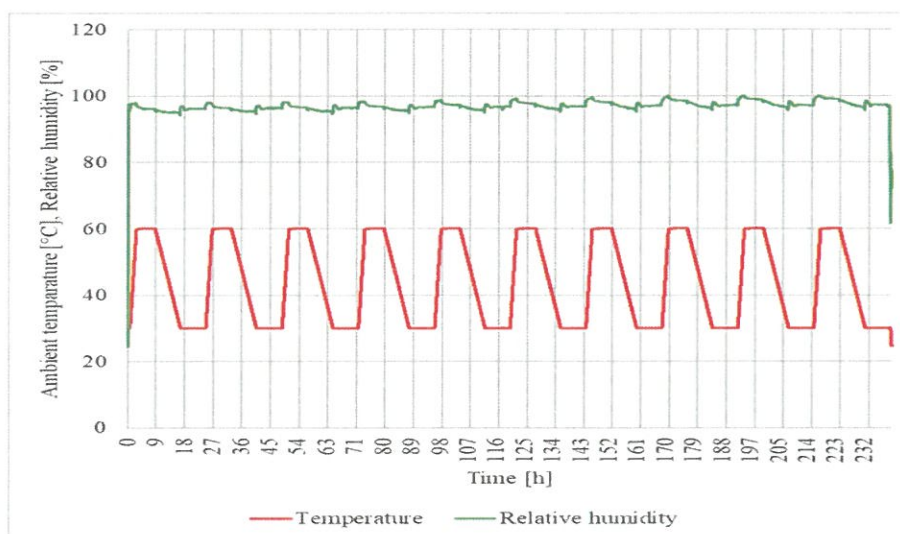
3.3 Humidity

3.3.1 Test parameters set by the applicant

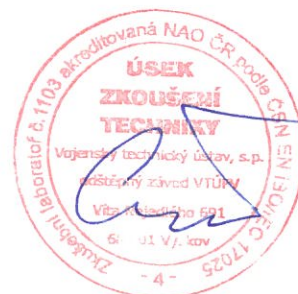
- Test was carried out according to MIL STD 810G Change 1:2014, Method 507.6 – Proc. II,
- Test temperature in climatic chamber:
 - o Temperature: $+30 \pm 2$ °C to $+60 \pm 2$,
 - o Humidity: 95 %,
- Exposition time after temperature balance: 254 hours,
- Number of consecutive cycles: 10 cycles,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- Equipment was turned on during the test.

3.3.2 Course of the tests and response of EUT

One functional test was performed after the end of the fifth cycle and the tested function (section 2.3) was functional. MTU-1A2 Pan Tilt Positioner (production number: MU0109) was without visual damage after the humidity test and the tested function (paragraph 2.3) was functional.



Graph 9 Humidity test procedure – Method 507.6 procedure II



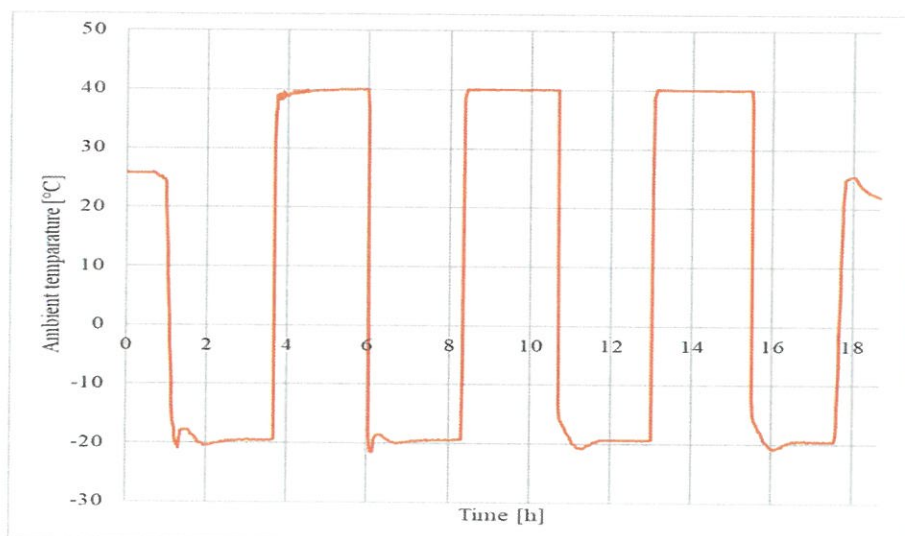
3.4 Thermal shock

3.4.1 Test condition - operation

- Test was carried out according to MIL STD 810G Change 1:2014, Method 503.6 - Proc. I-C,
- Test temperature in climatic chamber:
 - o Temperature T1: $+40 \pm 2$ °C,
 - o Temperature T2: -20 ± 2 °C,
- The exposure time was 3 hours and 20 minutes at each of the temperatures,
- Tests carried out in a climatic chamber with forced air at $1 \text{ m/s} \pm 0.3 \text{ m/s}$,
- Equipment was turned off during the test.

3.4.2 Course of the tests and response of EUT

The test was carried out using two climatic chambers with a different type of environment set. The test device was moved between chambers within 1 minute of the initiation of transmission. MTU-1A2 Pan Tilt Positioner (production number: MU0109) was without visual damage after the thermal shock test and the tested function (paragraph 2.3) was functional.



Graph 10 Thermal shock test procedure – Method 503.6 procedure I-C





Figure 2 Placement of tested devices in the climate chamber ClimeEvent C/1500/70a/5

THE END OF THE TEST REPORT

