TOPTESTER LTD

TEST REPORT

CUSTOMER: **HANDSHAKE FINLAND**

TEST NAME: **MIL-STD-810G METHOD 507.5 HUMIDITY, PROCEDURE II AGGRAVATED**

EQUIPMENT UNDER TEST

DEVICE NAME: **LUMONITE COMPASS R MULTIFUNCTIONAL HIGH POWER HEADLAMP**

VERSION NR:

DEVICE ID:

TEST DATE: **JULY 20. – 30. 2020**

Test id: ENV_Handshake_200720

Report version: 1.0

Persons in charge of the test

Customer: Niko Peltoniemi

Toptester: Kati Mansikkasalo-Jurvelin

Test ordered by: Niko Peltoniemi

Test order date: July 2020

REPORT HISTORY

Version	Date	Change description	Changes made by
1.0	3.8.2020	First version of the report is 1.0. If no changes are necessary, it will be also the final version.	Kati Mansikkasalo-Jurvelin

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1. TEST SUMMARY

Used standard or test method summary

Test was performed according to MIL-STD-810G (31. October 2008), Method 505.7 Humidity Procedure II (Aggravated)

Description of equipment under test

1 pc Lumonite Compass R Multifunctional High Power Headlamp

Test result summary

The test was Humidity test. The goal of the test was to see if the EUT passes or fails the acceptance criteria named in the test method.

After the test he EUT was functional and no evidence of physical damage of the device. The EUT pass the acceptance criteria after test. Test result is Pass.

Signatures

Test performed and reported by:

Date: 3.8.2020 Kati Mansikkasalo-Jurvelin

2. Introduction

2.1. Background

Test was ordered by Handshake Finland as a part of product testing program.

2.2. Equipment under test

1 pc Lumonite Compass R Multifunctional High Power Headlamp

Figure 1. EUT in environmental chamber

2.3. Goals of the test

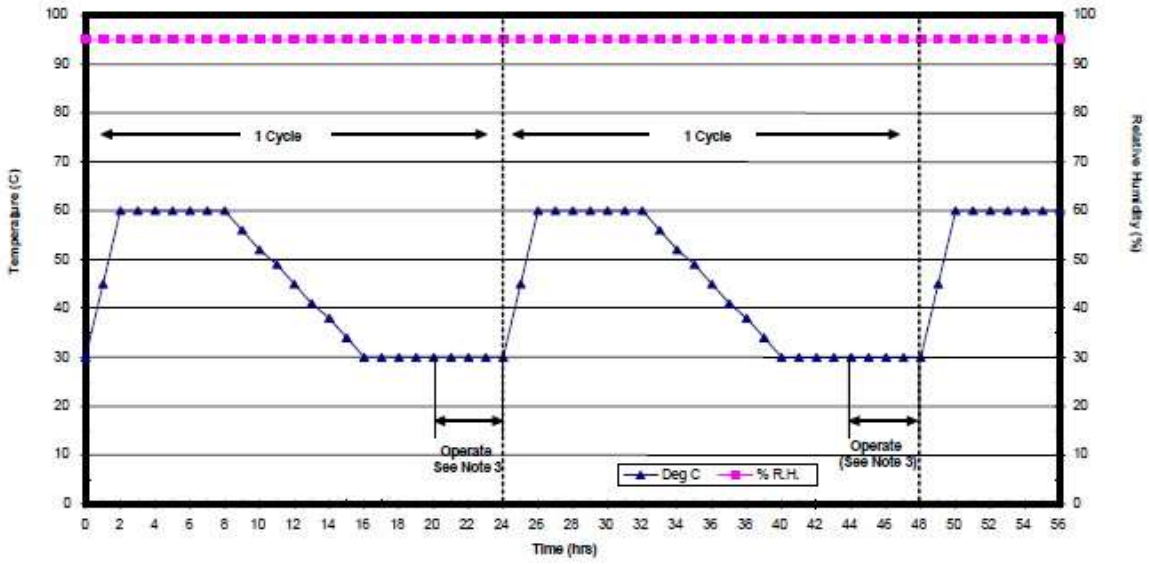
The goal of the test was to check the EUT against warm, humid conditions

3. Test method and measurement description

3.1. Test Method

Test was performed according to MIL-STD-810G (31. October 2008), Method 505.7 Humidity Procedure II (Aggravated)

From standard Figure 507.5.-7. Aggravated temperature-humidity cycle:



From standard Table 507.5.-IX. Aggravated cycle:

Time	Temp. °F	Temp. °C	RH %
0000	86	30	
0200	140	60	
0800	140	60	
1600	86	30	
2400	86	30	
0200	140	60	
0800	140	60	
1600	86	30	
2400	86	30	

Constant at 95%

- Test temperature on cycle was 30 °C – 60 °C
- Constant relative humidity on cycle was 95 %
- One cycle duration was 24 hours
- Test duration was 10 days (10 cycles)

3.2. Analyses

Before and after test was done

- Visual check
- Inspection to verify the electrical functionality of the device

3.3. Acceptance criteria

After testing, the EUT was inspected. Test result was passed if all the following points was met:

- There were no signs of corrosion
- Device was fully functional
- There was no evidence of physical damage of the device
- There was no visual deviation

3.4. Test Reliability Control and Measurement

The Weiss environmental chamber was controlled, and the temperature data was recorded by SIMPATI chamber control software, version 3.0

3.5. EUT functional Control and Measurement

EUT was non-functional during the test. Functionality was tested before and after test.

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4. Test and measurement time and resources

Test date	20. - 30.7.2020
Test personnel	Kati Mansikkasalo-Jurvelin
Test sites	Toptester, Rovaniemi

laboratory condition before test:
Humidity 52,5 %
Temperature 23,7 °C

Test and measurement equipment

Enviromental chamber WK-340/40/5 Weiss 4, S/N: 58226188090010, calibration valid until 23.9.2020

5. Test results

Before test EUT was inspected visually and functionality was checked. EUT was functional. Then EUT was placed into programmable environmental chamber.

During end of 5 and 10 cycles EUT was booted and functionality was checked.
After the test, the EUT was booted and functionality was checked.

In visual check no change was found from EUT.
In attachment part mark of corrosion was found. This probably was caused from test place. Attachment part touched to environmental chamber aluminum grid.

Figures 2. – 5. The light after test.

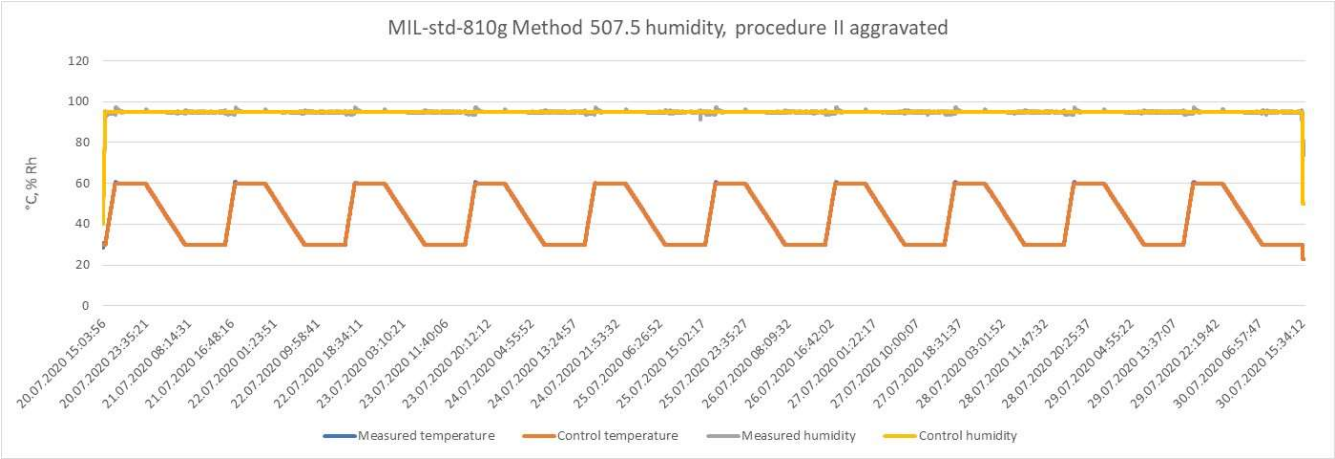
Figure 6. Corrosion marks after test from attachment part.

6. Conclusions and recommendations

The test was Humidity test. The goal of the test was to see if the EUT passes or fails the acceptance criteria named in the test method.

After the test he EUT was functional and no evidence of physical damage of the device. The EUT pass the acceptance criteria after test. Test result is Pass.

7. Attachments



Graph. 1. Test temperature and humidity curves from environmental chamber

8. Quality control

ORGANISATION CERTIFIED BY Inspecta ISO 9001

Toptester is an ISO 9001 certified organisation

FINAS Finnish Accreditation Service

This test method conforms to the requirement of the following standard: SFS-EN ISO/IEC 17025:2017

Toptester accreditation certificate:

https://www.finas.fi/Documents/T275%20M05%202020.pdf