# ENVIRONMENTAL − T E S T  R E P O R T

| Test Report No. : S34348-00-00MJ | 25. October 2010<br>Date of issue |
|---|---|

**Type / Model Name** : KISS 4U MIL 760-A

**Product Description** : 19'' Industrial Computer

**Applicant** : Kontron Embedded Computers GmbH

Address : Oskar-von-Miller-Straße 1

85386 Eching

Germany

**Manufacturer** : Kontron Embedded Computers GmbH

Address : Oskar-von-Miller-Straße 1

85386 Eching

Germany

| **Test Result** according to the standards listed in clause 1 test standards: | **positive** |
|---|---|

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test
results without the written permission of the test laboratory.

# Table of Contents

# 1 TEST STANDARDS

The tests were performed according to the following standards:

| | |
|---|---|
| High temperature, method 501.4, procedure I, +85°C, 36h according to MIL-STD-810F | : 1 January 2000 |
| High temperature, method 501.4, procedure II, +60°C, 36h according to MIL-STD-810F | : 1 January 2000 |
| Low temperature, method 502.4, procedure I, -25°C, 72h according to MIL-STD-810F | : 1 January 2000 |
| Low temperature, method 502.4, procedure II, -5°C, 72h according to MIL-STD-810F | : 1 January 2000 |
| Humidity, method 507.4, 24-hour conditioning followed by 5 cycles each 48h according to MIL-STD-810F | : 1 January 2000 |

# 2 SUMMARY

## 2.1 General remarks

None

## 2.2 Final assessment

The equipment under test **fulfils** the requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 06.08.2010

Testing concluded on : 19.10.2010

Checked by:

Josef Kellermeier
I confirm the correctness and integrity of this document
2010.10.26 07:32:29 +02'00'

Josef Kellermeier
(Manager: Safety Group)

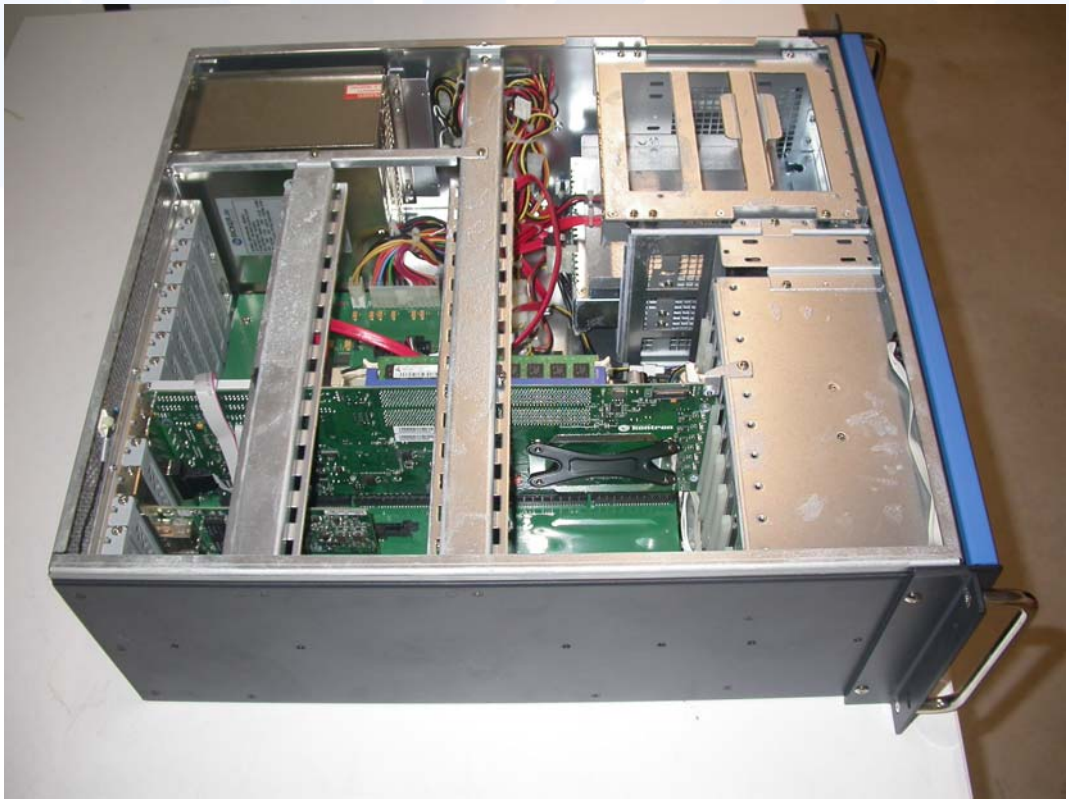
Tested by:

Michael Janker
I am the author of this document
2010.10.25 11:19:18 +02'00'

Michael Janker

# 3 EQUIPMENT UNDER TEST

## 3.1 Photo documentation of the EuT

## 3.2 Power supply system utilised

Power supply voltage : 230 V / 50 Hz / 1ϕ

## 3.3 Short description of the Equipment under Test (EuT)

PC for primarily industrial applications

| | | | |
|---|---|---|---|
| Number of test samples: | 1 | | |
| Serial number: | 123456789 | | |
| Project number Kontron: | E KS001-W | | |
| Article number: | 2-A0EK-xxxx | | |
| Dimensions: | L: 430 mm | W: 471.5 mm | H: 176.5 mm |
| Weight: | 17 kg | | |

## EuT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- idle

- Burn-in stress test

## EuT monitoring:

The equipment under test was monitored during the measurement by following method:

The performance of the EuT was monitored using an LCD display and the response of the burn-in stress test software.

## EuT configuration:

(The device passport filled by the applicant can be viewed at the test laboratory.)

**The following peripheral devices and interface cables were connected during the measurements:**

| *Components* | *Name / Manufacturer* | *Article-Number* | *Serial-Nr. / Version* |
|---|---|---|---|
| MB / Baseboard | LF PCI-760 PICMG1.3 Q35 Full Version | 9-1501-3600 | **148276024 R15B** |
| BP | LF KISS 4U PCIE Backplane xBP13E9P3 | 9-1201-3606 | **146498010 R12A** |
| CPU | ICMP Core2 Duo E6400/2,13GHz/2MB LGA775 | 0-0044-1830 | **XXXX** |
| Memory | DIMM DDR2 1GB PC2-6400 Samsung | 1031-8876 | **XXXX 2x** |

| *Components* | *Name / Manufacturer* | *Article-Number* | *Serial-Nr. / Version* |
|---|---|---|---|
| Hard disk SSD | Samsung MMCRE64G5MXP 64 Gb | xxxxxxxx | **XXXX** |
| Hard disk | HDD_SATA300_3,5"_250GB_DESKSTAR7K1000. | 1035-8459 | **XXXX** |
| Harddisk | HDD_SATA300_3,5"_500GB_WD RE3 24/7 | 1036-5378 | **WCASYA847355** |
| Swappable frame | 1-fach SATA 3,5" HDD Rack 1x 5,25" | 1037-8452 | **XXXX** |
| Power Supply | BGNT ATX, PS2 -Netzteil 400W BEA-640-B5 | 1022-9353 | **T83702029** |
| LAN | NET PCIe(x4) INTEL PRO DUAL PORT 1000PT | 0-0074-3993 | **XXXX** |
| Mechanics-Rev. | | 1035-7344 | **10063-001-00 D** |

## 3.4 Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.

### Definition related to the performance level:

☐ based on the used product standard
☒ based on the declaration of the manufacturer, requestor or purchaser

**Criterion A:**
Definition: normal performance within limits specified by the manufacturer, requestor or purchaser:

The EUT shall not exhibit any malfunction, degradation of performance, or deviation from specified indications beyond the tolerances indicated in the individual equipment or subsystem specification.

**Criterion B:**
Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

**Criterion C:**
Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

**Criterion D:**
Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data:

# 4 TEST ENVIRONMENT

## 4.1 Address of the test laboratory

**mikes-testingpartners gmbh**
**Ohmstrasse 2-4**
**94342 Strasskirchen**
**Germany**

## 4.2 Test location

**mikes-testingpartners gmbh**
**Ohmstrasse 2 - 4**
**94342 Strasskirchen**
**Germany**

## 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature: | 15°C to 35 °C |
| Humidity: | 20 to 80 % |
| Atmospheric pressure: | 86-106 kPa |

All atmospheric pressure values refer to our Laboratory altitude of 324m.

## 4.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to GUM („Guide to the Expression of Uncertainty in Measurement“) and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer does have the sole responsibility for the continued compliance of the device.

# 5 TEST CONDITIONS AND RESULTS

## 5.1 High temperature - Storage

For test instruments and accessories used see section 6 Part **S Temperature** and **S InputCurrent**.

### 5.1.1 Description of the test location

Test location: Environmental laboratory

### 5.1.2 Photo documentation of the test set-up


### 5.1.3 Test specification

| | |
|---|---|
| Tested sample: | KISS 4U 760 MIL-STD |
| Ambient conditions: | +22°C / 60%RH / 98kPa |
| Test parameters: | +85°C |
| Test duration: | 36h |
| Operating mode: | - idle |

### 5.1.4 Test result

Required Criterion: **A**

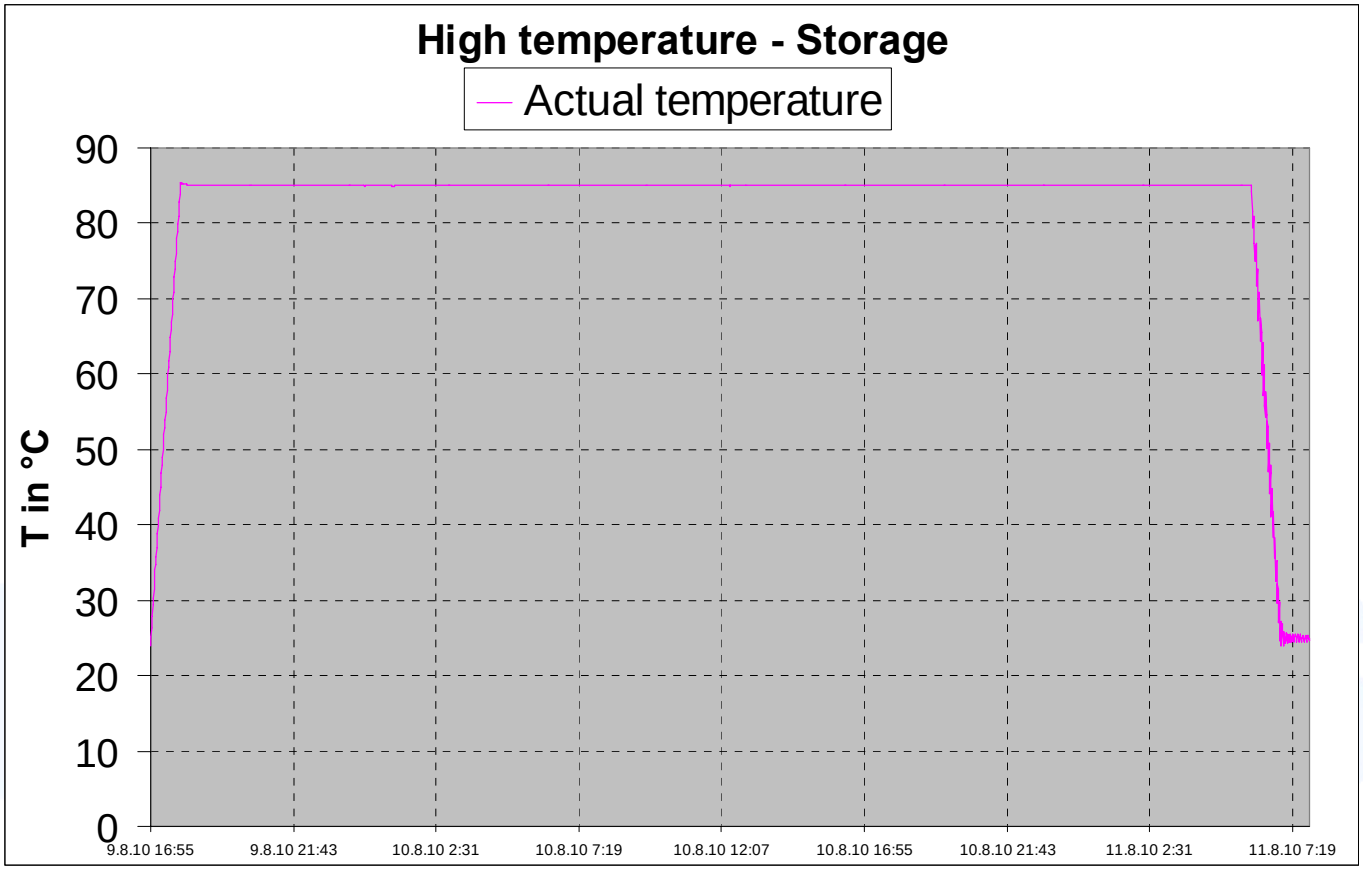
The requirements are **met**

Performance Criterion: **A**

**Remark:** Before and after the high temperature storage test a functional test with the burn-in stress test software was applied. All functions were fulfilled during these functional tests.

### 5.1.5 Test protocol

| | | |
|---|---|---|
| Operating state: | - idle | Result: **positive** |
| Date: | 2010-08-09 – 2010-08-11 | |
| Tested by: | Michael Janker | |



## 5.2 High temperature - Operation

For test instruments and accessories used see section 6 Part **S Temperature** and **S InputCurrent**.

### 5.2.1 Description of the test location

Test location: Environmental laboratory

### 5.2.2 Photo documentation of the test set-up


### 5.2.3 Test specification

| | |
|---|---|
| Tested sample: | KISS 4U 760 MIL-STD |
| Ambient conditions: | +22°C / 60%RH / 98kPa |
| Test parameters: | +60°C |
| Test duration: | 36h |
| Operating mode: | - Burn-in stress test |

### 5.2.4 Test result

Required Criterion: **A**

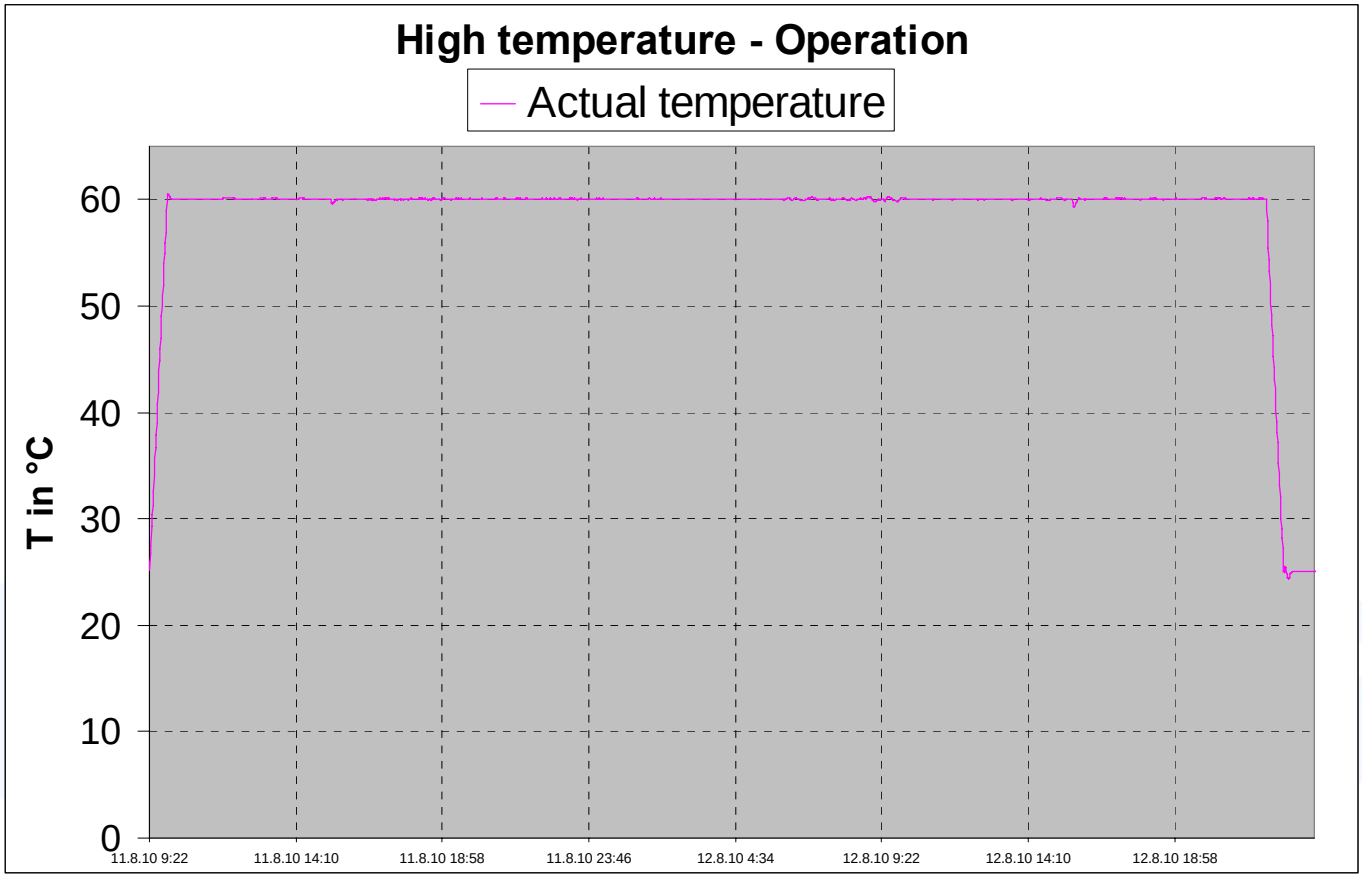
The requirements are **met**

Performance Criterion: **A**

**Remark:** During the high temperature operation test a functional test with the burn-in stress test software was applied. All functions were fulfilled during this functional test.

### 5.2.5 Test protocol

| | | |
|---|---|---|
| Operating state: | - Burn-in stress test | Result: **positive** |
| Date: | 2010-08-11 – 2010-08-12 | |
| Tested by: | Michael Janker | |



## 5.3 Low temperature - Storage

For test instruments and accessories used see section 6 Part **S Temperature** and **S InputCurrent**.

### 5.3.1 Description of the test location

Test location: Environmental laboratory

### 5.3.2 Photo documentation of the test set-up


### 5.3.3 Test specification

| | |
|---|---|
| Tested sample: | KISS 4U 760 MIL-STD |
| Ambient conditions: | +22°C / 60%RH / 98kPa |
| Test parameters: | -25°C |
| Test duration: | 72h |
| Operating mode: | - idle |

### 5.3.4 Test result

Required Criterion: **A**

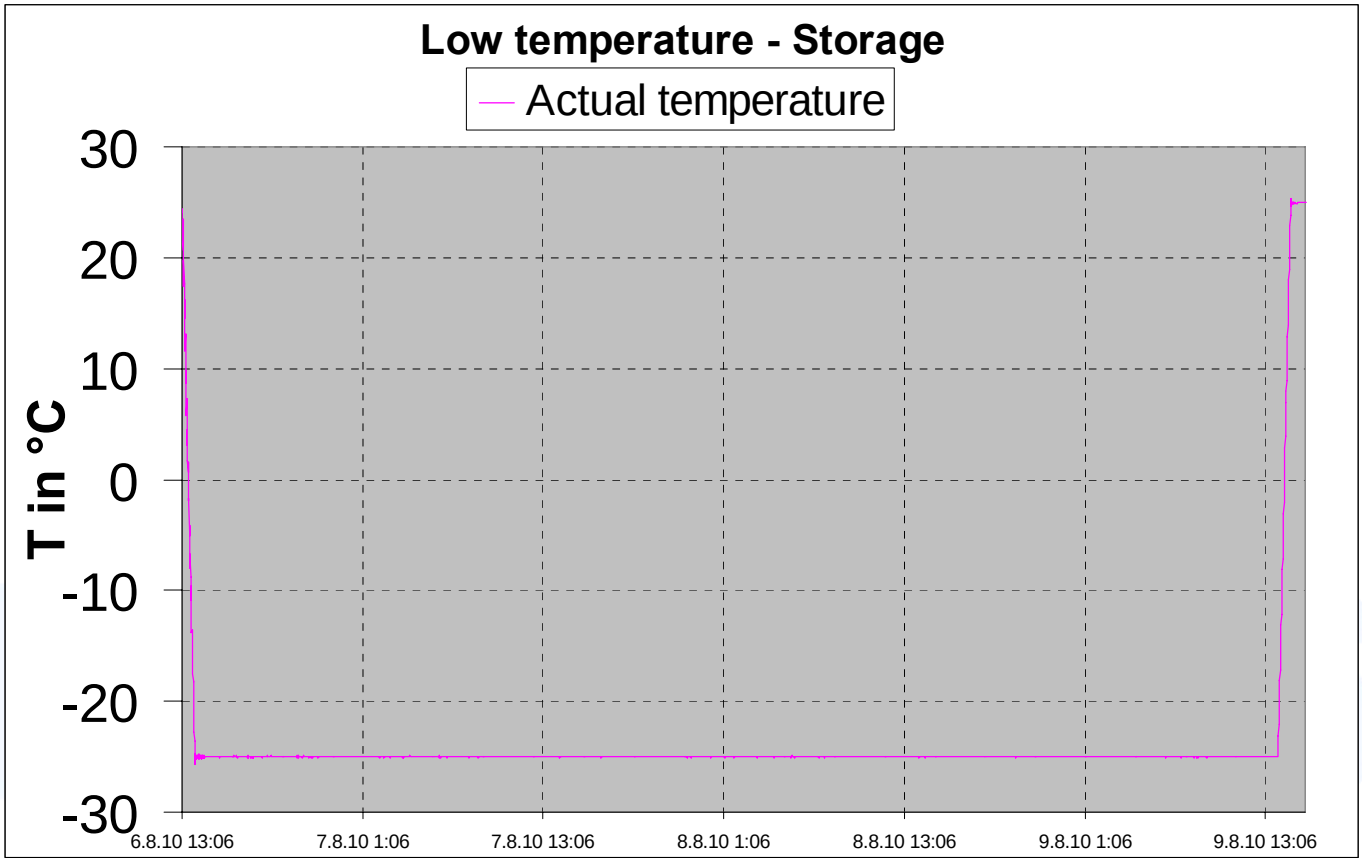
The requirements are **met**

Performance Criterion: **A**

**Remark:** Before and after the low temperature storage test a functional test with the burn-in stress test software was applied. All functions were fulfilled during these functional tests.

### 5.3.5 Test protocol

| | | |
|---|---|---|
| Operating state: | - idle | Result: **positive** |
| Date: | 2010-08-06 – 2010-08-09 | |
| Tested by: | Michael Janker | |



## 5.4 Low temperature - Operation

For test instruments and accessories used see section 6 Part **S Temperature** and **S InputCurrent**.

### 5.4.1 Description of the test location

Test location: Environmental laboratory

### 5.4.2 Photo documentation of the test set-up


### 5.4.3 Test specification

| | |
|---|---|
| Tested sample: | KISS 4U 760 MIL-STD |
| Ambient conditions: | +22°C / 60%RH / 98kPa |
| Test parameters: | -5°C |
| Test duration: | 72h |
| Operating mode: | - Burn-in stress test |

### 5.4.4 Test result

Required Criterion: **A**

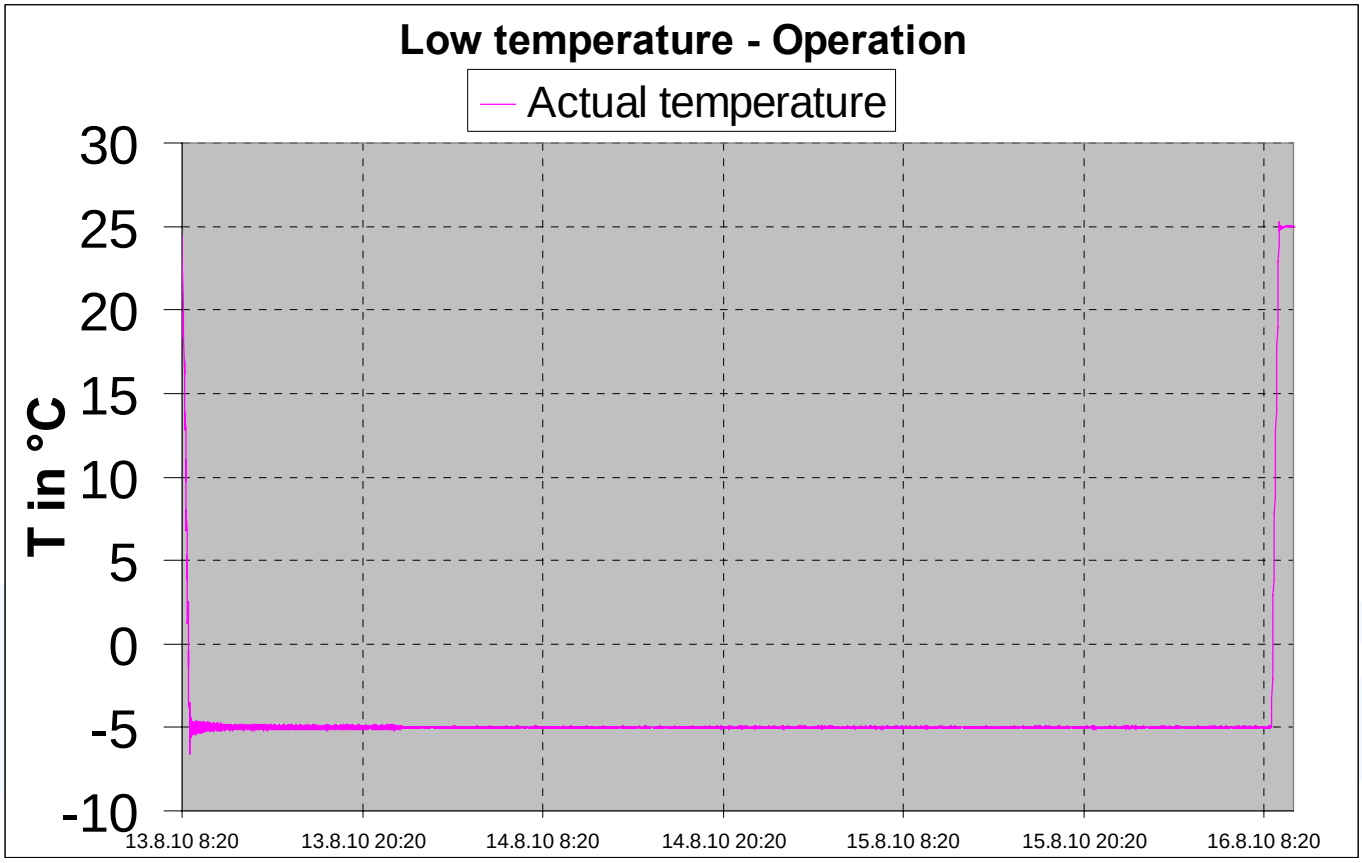
The requirements are **met**

Performance Criterion: **A**

**Remark:** During the low temperature operation test a functional test with the burn-in stress test software was applied. All functions were fulfilled during this functional test.

### 5.4.5 Test protocol

| | | |
|---|---|---|
| Operating state: | - Burn-in stress test | Result: **positive** |
| Date: | 2010-08-13 – 2010-08-16 | |
| Tested by: | Michael Janker | |



## 5.5 Humidity

For test instruments and accessories used see section 6 Part **S Temperature** and **S InputCurrent**.

### 5.5.1 Description of the test location

Test location: Environmental laboratory

### 5.5.2 Photo documentation of the test set-up


### 5.5.3 Test specification

| | |
|---|---|
| Tested sample: | KISS 4U 760 MIL-STD |
| Ambient conditions: | +22°C / 60%RH / 98kPa |
| Test parameters: | see temperature profile according to figure 507.4-1 in MIL-STD 810F |
| Test duration: | 24-hour conditioning followed by 5 cycles each 48h |
| Operating mode: | - Burn-in stress test |

### 5.5.4 Test result

Required Criterion: **A**

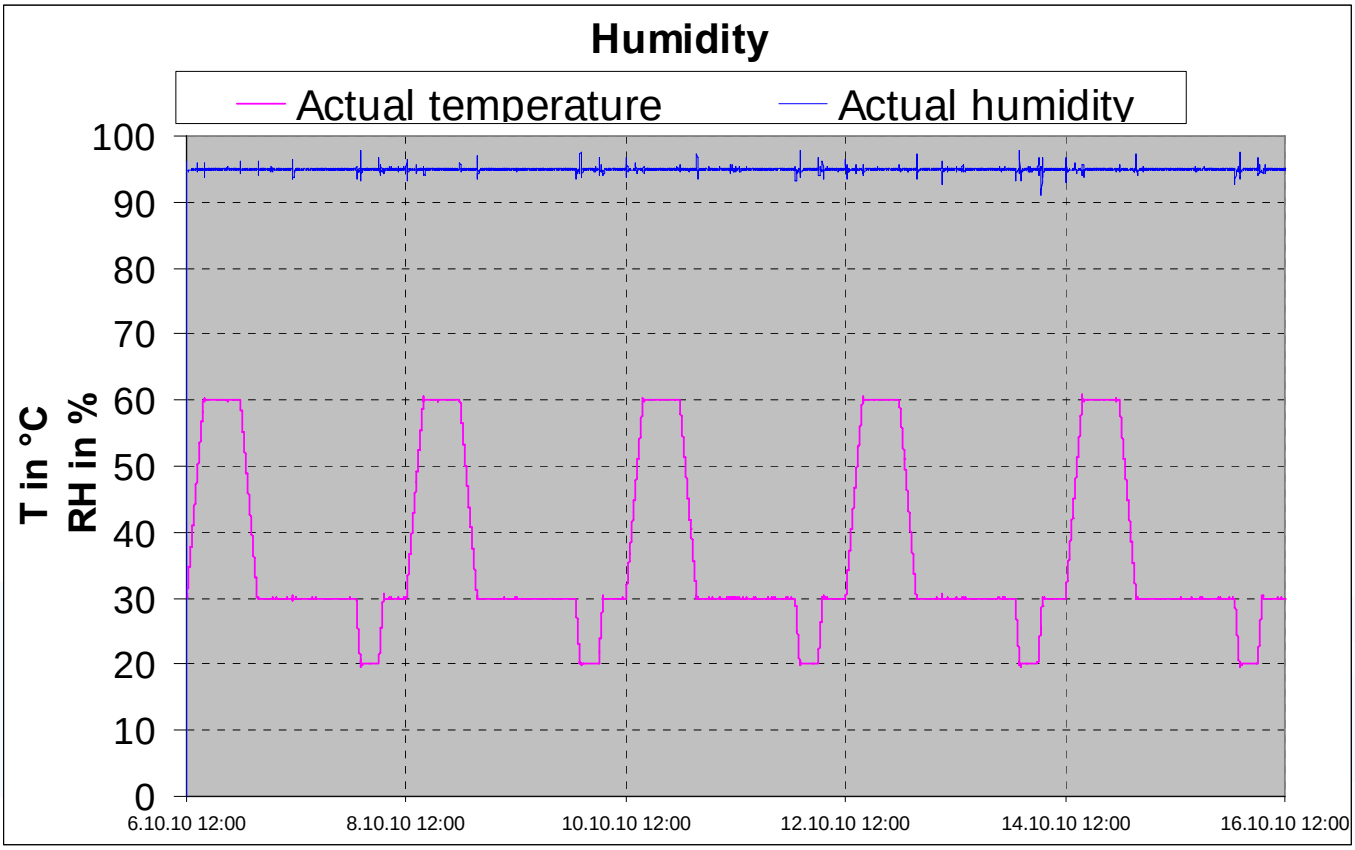
The requirements are **met**

Performance Criterion: **A**

**Remark:** During the humidity test two test measurements with the burn-in stress test software were applied each cycle. All functions were fulfilled during these test measurements.

### 5.5.5 Test protocol

| | | |
|---|---|---|
| Operating state: | - Burn-in stress test | Result: **positive** |
| Date: | 2010-10-05 – 2010-10-16 | |
| Tested by: | Michael Janker | |



# 6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

| Test ID | Model Type | Kind of Equipment | Equipment No. |
|---|---|---|---|
| S InputCurrent | MetraHit 29S | TRMS-Multimeter | 02-03/32-05-002 |
| | MetraHit 29S | TRMS-Multimeter | 02-03/32-08-002 |
| S Temperature | WK3-600/40 | Climatic Chamber | 02-02/45-09-001 |
| | Top Message | Delphin | 02-03/38-07-002 |



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