

CLIMATIC Test Report

No. 010409.001internal
for KISS 1U short 986LCD/mITX

Test Laboratory: Kontron Embedded Computers GmbH
Oskar von Miller Straße 1
85386 Eching
Germany

Applicant: Kontron Embedded Computers AG

Purpose of Testing: To show compliance with
IEC 60068 PT2-1
IEC 60068 PT2-2
IEC 60068 PT2-14
IEC 60068 PT2-30

Special Measurement: none
(see section "Reference Standards"
for identical national standards)

Note:
The test data of this report relate only to the individual item tested.
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Computers AG.

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2. Administrative Data

| | |
|---------------------------------------|---------------------------------|
| Equipment under test: | K.I.S.S 1U short |
| <u>optional Equipment under test:</u> | |
| Options/accessories: | None |
| Serial number: | None |
| Version of EUT: | KISS 1U MB short 986LCD-M/mitX |
| Applicant : | Kontron Embedded Computers GmbH |
| Contract identification: | none |
| Contact person: | none |
| Manufacturer: | Kontron Embedded Computers GmbH |

| | |
|-----------------|---------------------|
| Receipt of EUT: | 16.03.09 |
| Date of test: | 16.03.09 – 31.03.09 |
| Date of report | 01.04.09 |

| | |
|-----------------|--------------|
| Tested by: | Robert Hölzl |
| Test report by: | Robert Hölzl |

3. Summary of Test Results

The tested sample fully complies with the requirements set forth in

IEC 60068 PT2-1

IEC 60068 PT2-2

IEC 60068 PT2-14

IEC 60068 PT2-30

(see section "Reference Standards" for identical national standards)

Karlheinz Schiege

Robert Hölzl

Technical Manager

Test Engineer

4. Data of Operation Mode and Configuration of EUT

Operation Mode

Special Susceptibility tests: BurnIN TestPro 5.3

Susceptibility tests: none

Configuration of Cables of EUT

Configuration of EUT

| | |
|------------------|--|
| CPU-Board | MB 986LCD-M/mITX (1016-6776) |
| CPU: | Intel Core2Duo T7400 (0-0044-1829) |
| Hard disk drive: | 1x 160GB IDE SATA 2,5" (1027-1851) |
| Hard disk drive | 1x KISS Stor 1 Slim 160 GB (9-3345-2000) |
| RAM | 1GB DDR2 (1016-7919) |
| DVD-ROM: | DVD-ROM TEAC DV-W28E-R |
| VGA | on Board |
| Network card | on board |
| Power supply: | FSP270-60LE |
| Operating-System | WIN XP |
| Loadboard | 1x25 Watt |

Configuration of Peripherals of EUT

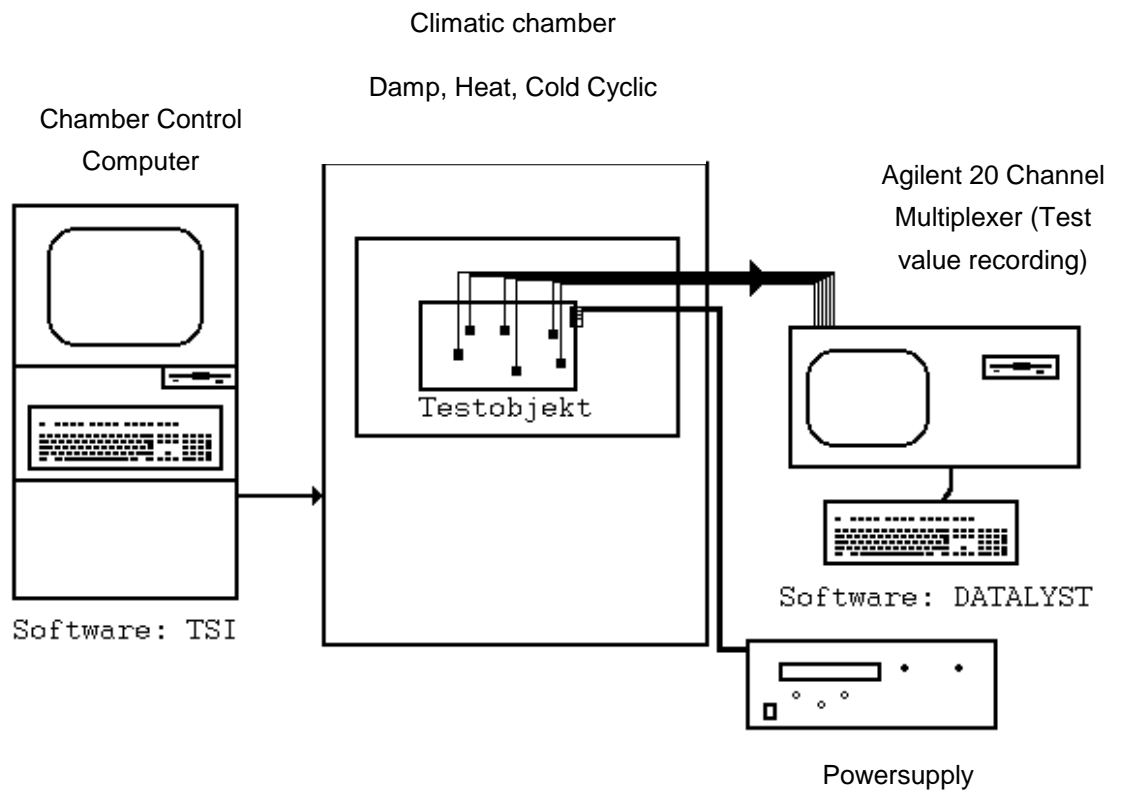
| | |
|-------------------------------|-------------------|
| Channel Multiplexer | 8 Channel |
| Keyboard: | Cherry |
| Mouse: | none |
| Monitor: | PM – EM – 9598.01 |
| <u>Configuration optional</u> | none |

5. Performed Tests and Results

| Test | Classification/Result | Note |
|------------------|--------------------------------|--|
| IEC 60068 PT2-1 | The requirements are fulfilled | No degradation or loss of function or performance. |
| IEC 60068 PT2-2 | The requirements are fulfilled | No degradation or loss of function or performance. |
| IEC 60068 PT2-14 | The requirements are fulfilled | No degradation or loss of function or performance. |
| IEC 60068 PT2-30 | The requirements are fulfilled | No degradation or loss of function or performance. |
| | | |
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| | | |

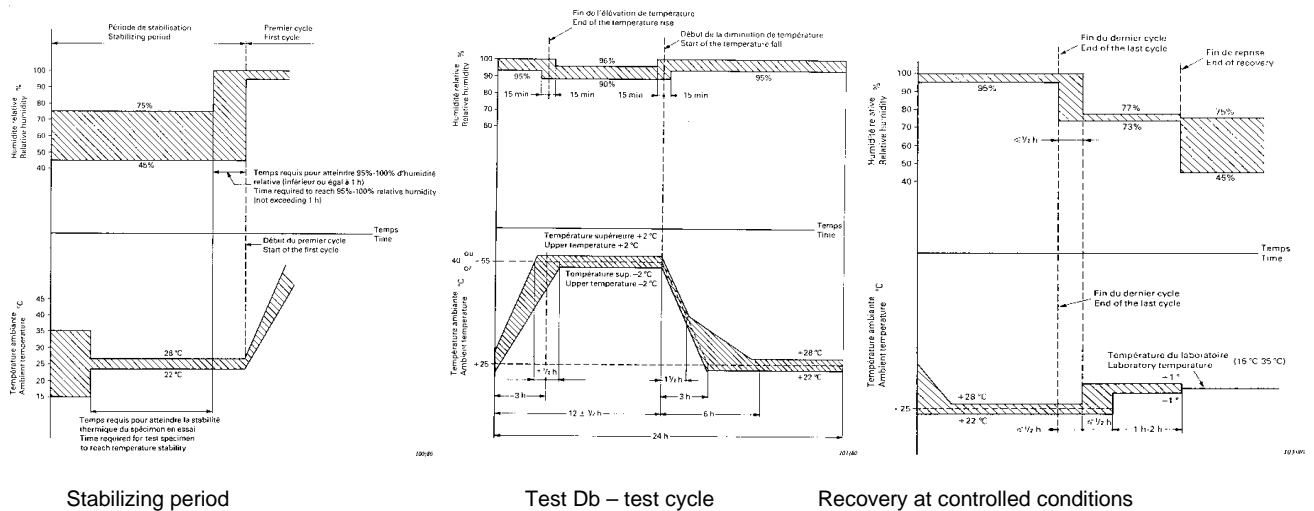
6. Annotations to Performed Tests and to CE certification

6.1 The Test in the Climatic Chamber



6.2 Basic environmental testing procedures - Test Db and guidance - damp heat, cyclic 12+12 HOUR CYCLE (IEC 60068 PT2-30)

The object of the test is to determine the suitability of components, equipment or other articles for use and/or storage under conditions of high humidity when combined with cyclic temperature changes. This test replaces the original Test D in the Publication 68-2-4 for future applications (the parameters takes from the page 14).



7. Referenced Regulations

(see section "Reference Standards" for identical national standards)

| Regulation | Comment |
|---|--|
| IEC 60068 PT2-1 :1994 | ENVIRONMENTAL TESTING - TESTS A: COLD Concerns cold tests on both non-heat-dissipating and heat-dissipating specimens. |
| IEC 60068 PT2-2 :1994 EN 60068 PT2-2 :1993 | ENVIRONMENTAL TESTING - TESTS B: DRY HEAT Contains Test Ba: Dry heat for non-heat-dissipating specimen with sudden change of temperature; Test Bb: Dry heat for non-heat-dissipating specimen with gradual change of temperature; Test Bc: Dry heat for heat-dissipating specimen with sudden change of temperature; Test Bd: Dry heat for heat-dissipating specimen with gradual change of temperature. The 1987 reprint includes IEC No. 62-2-2A. |
| IEC 60068 PT2-14 :1984 EN 60068-2-14 :1999 | ENVIRONMENTAL TESTING - PART 2-14 - TESTS - TEST N - CHANGE OF TEMPERATURE Determines the ability of components, equipment and other articles to withstand rapid changes of ambient temperature. The exposure times to accomplish this depend upon the nature of the specimen. |
| IEC 60068 PT2-30 :1980 EN 60068-2-30 :1999 | BASIC ENVIRONMENTAL TESTING PROCEDURES - TEST DB AND GUIDANCE - DAMP HEAT, CYCLIC (12+12 HOUR CYCLE) Determines the suitability of components, equipment and other articles for use and/or storage under conditions of high humidity when combined with cyclic temperature changes. |
| | |
| | |
| | |
| | |
| Special standard | |

8. List of Test Equipment

| | Equipment Type | Model | Equipment No. | Calibration valid until | Manufacturer |
|---|------------------|--------------|---------------|-------------------------|-----------------|
| ✓ | Climatic Chamber | VUK 04-500 | PM-EM-6160-1 | 08.99 | Heraus-Vötsch |
| ✓ | Control computer | IPLite Color | PM-EM-9599.01 | not requested | KONTRON Elektr. |
| ✓ | Measuring system | 34970A | PM-EM-9519.01 | not requested | HP/Agilent |
| ✓ | Control computer | Laptop PP05L | 8743067/000 | not requested | DELL |
| | | | | | |
| | | | | | |
| | | | | | |

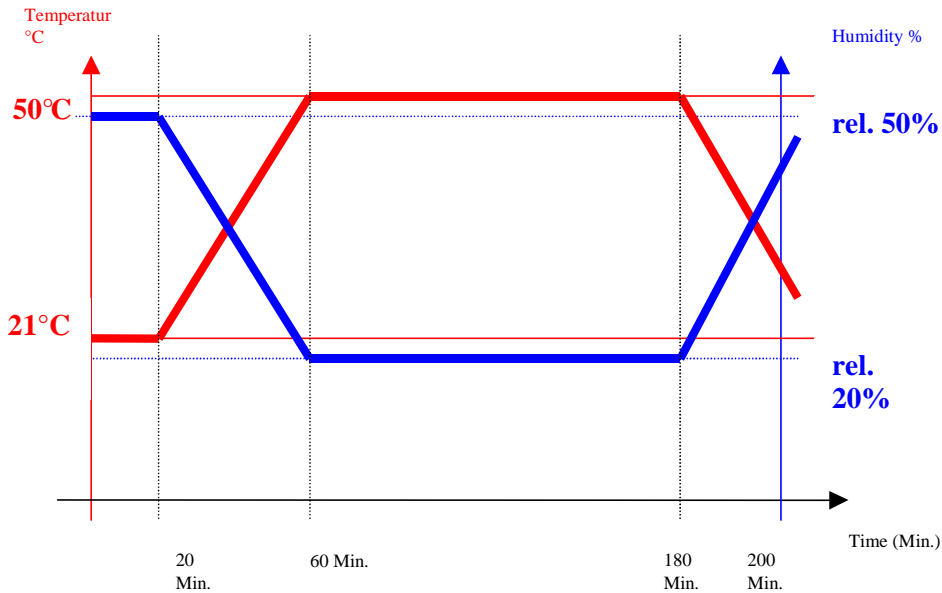
(check mark in 1st column) = tested with

9. Photographs of EUT and Test Setup

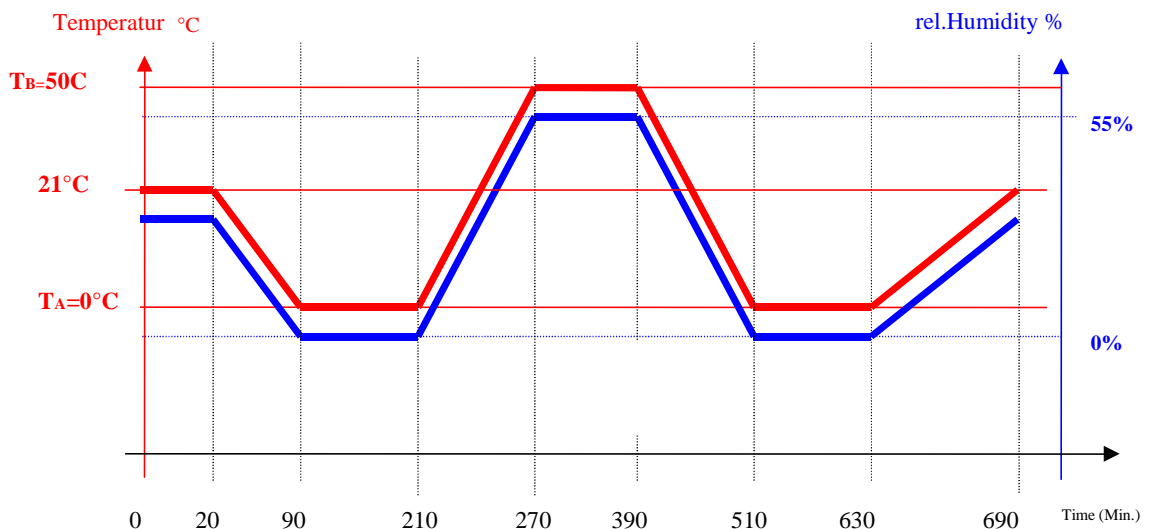


Picture01: IEC Climatic Chamber

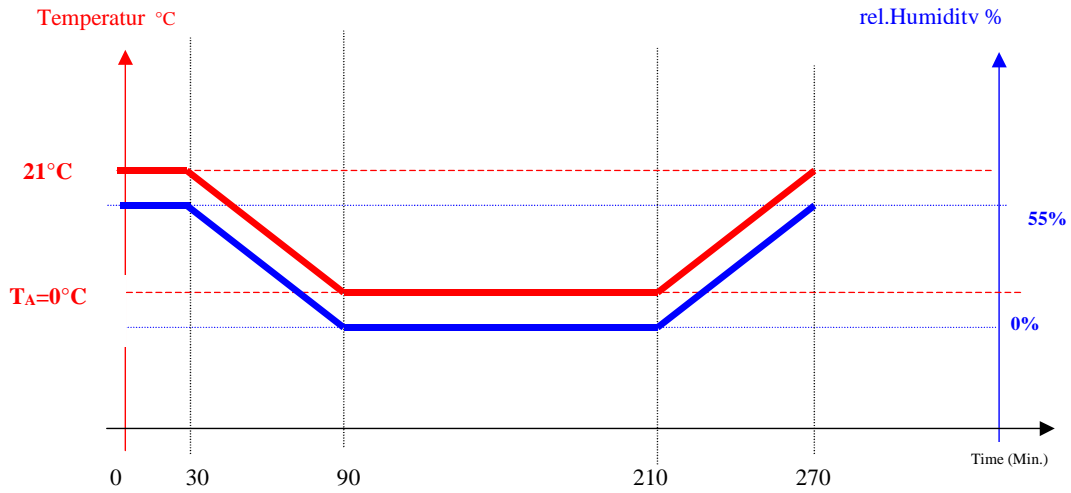
10. Climatic conditions to IEC 60068



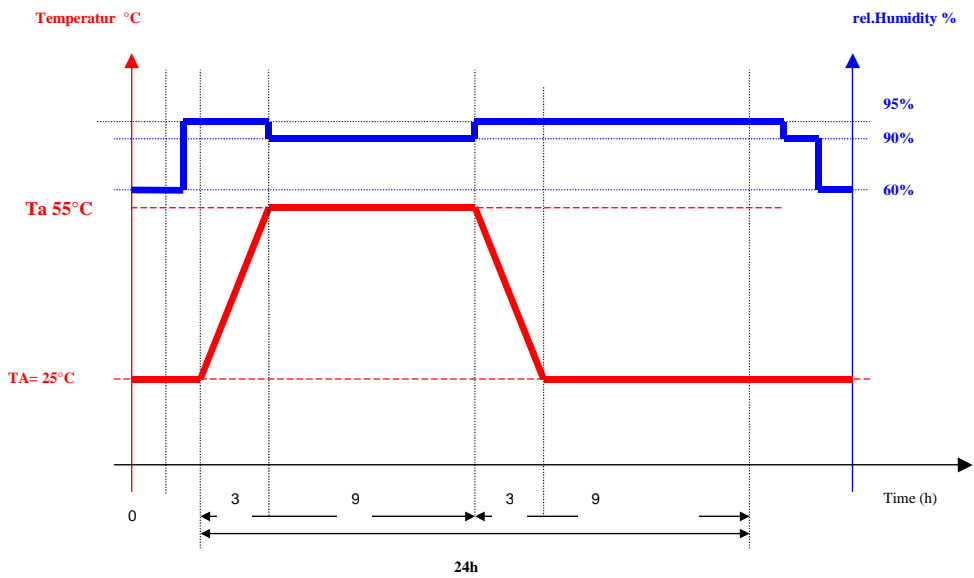
IEC 60068 PT2-2 Test Bb: Dry heat for non-heat-dissipating specimen with gradual change of temperature



IEC 60068 PT2-14 Test Nb: Change of temperature with specified rate of change



IEC 60068 PT2-1 Test Ab: Cold for non heat-dissipating specimen with gradual change of temperature



IEC 60068 PT2-30, Test Db: 12+12 Hour Cycle

11. Temperature measurements

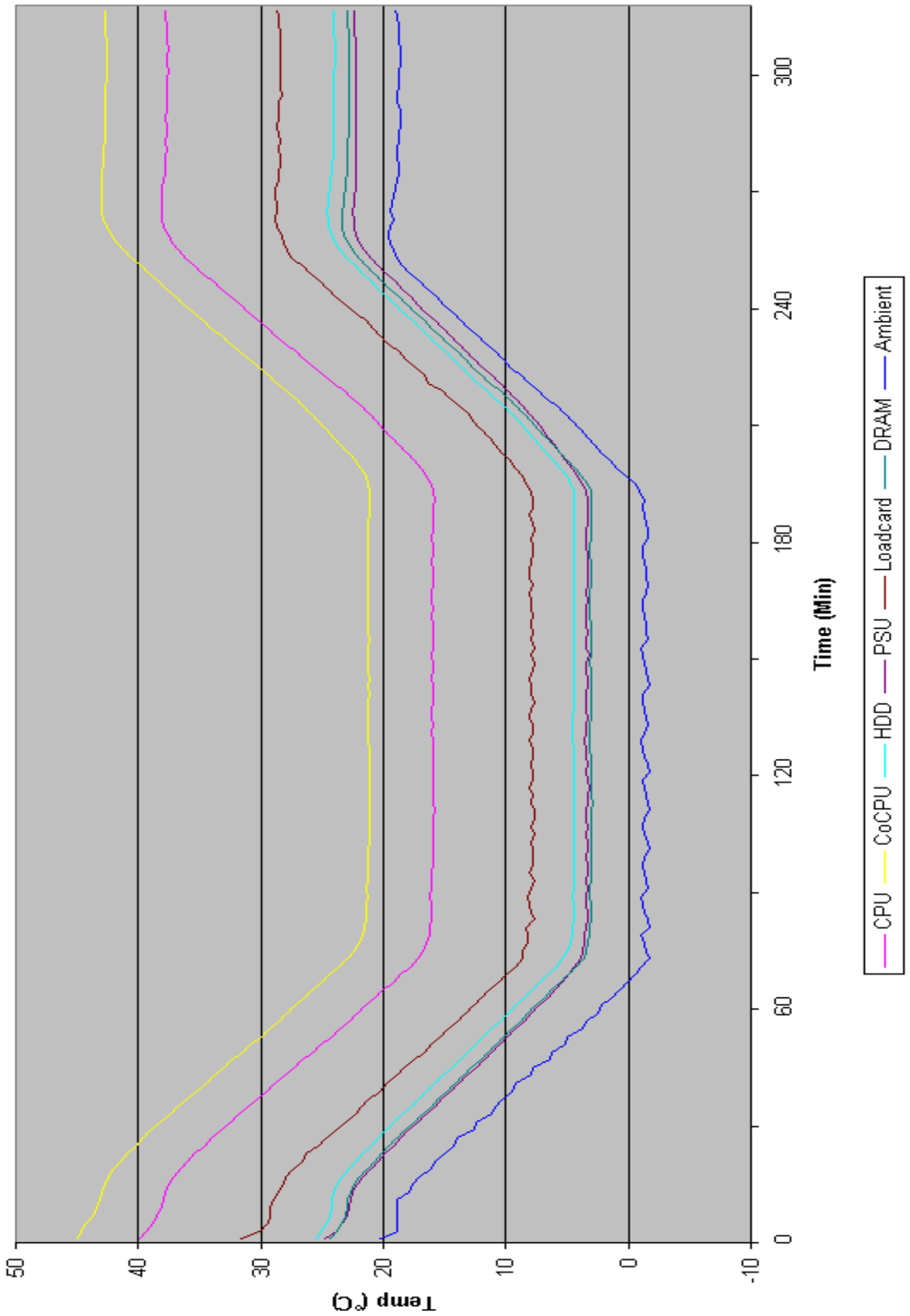
Inquiry of the temperature limits at temperature critical components.

Chosen critical components:

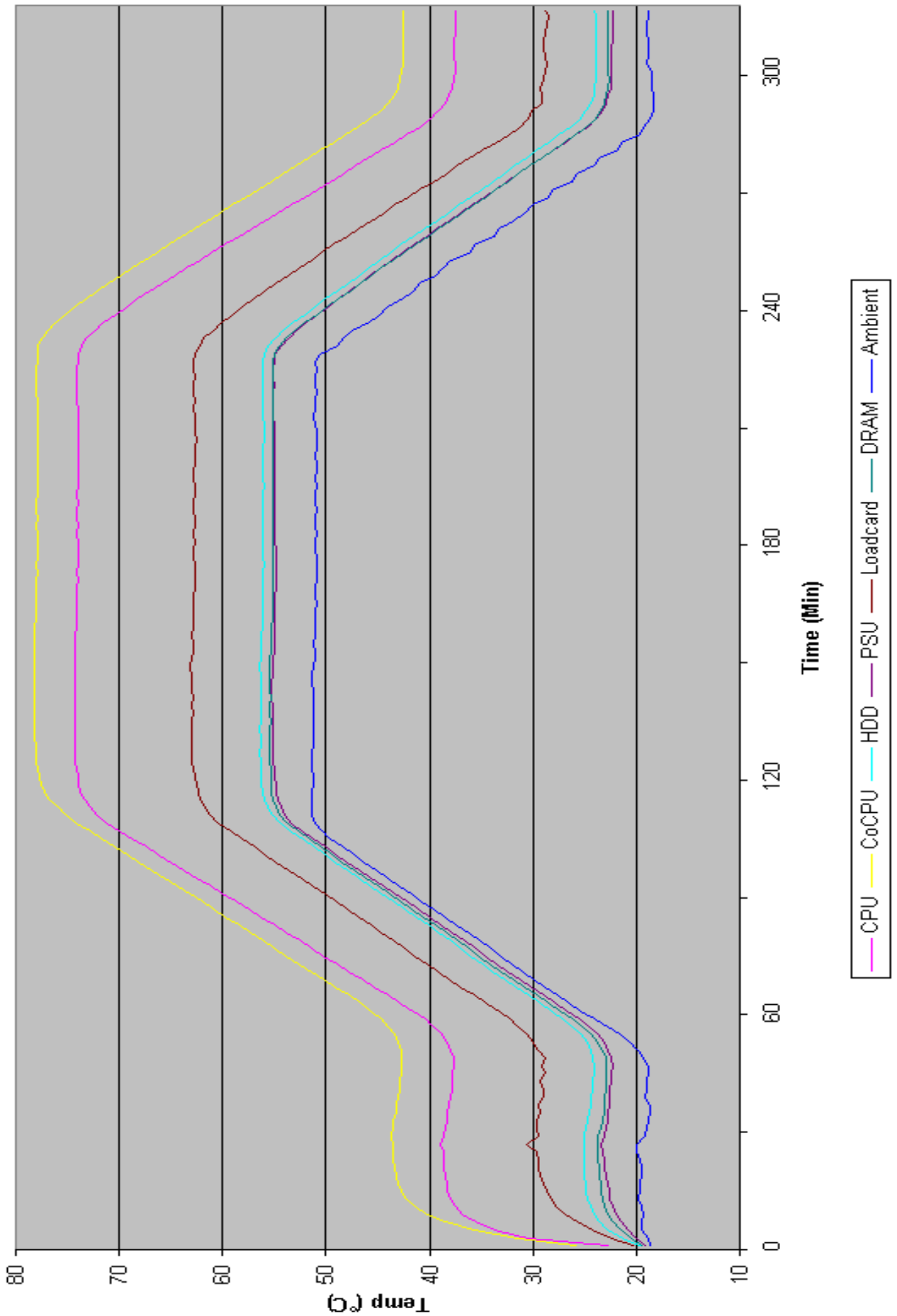
- CPU
- CoCPU
- HDD
- PSU
- Loadcard
- DRAM
- Inside Air

11.1 Temperature diagrams into dependence of the surroundings to IEC 60068 (temperature, atmospheric humidity)

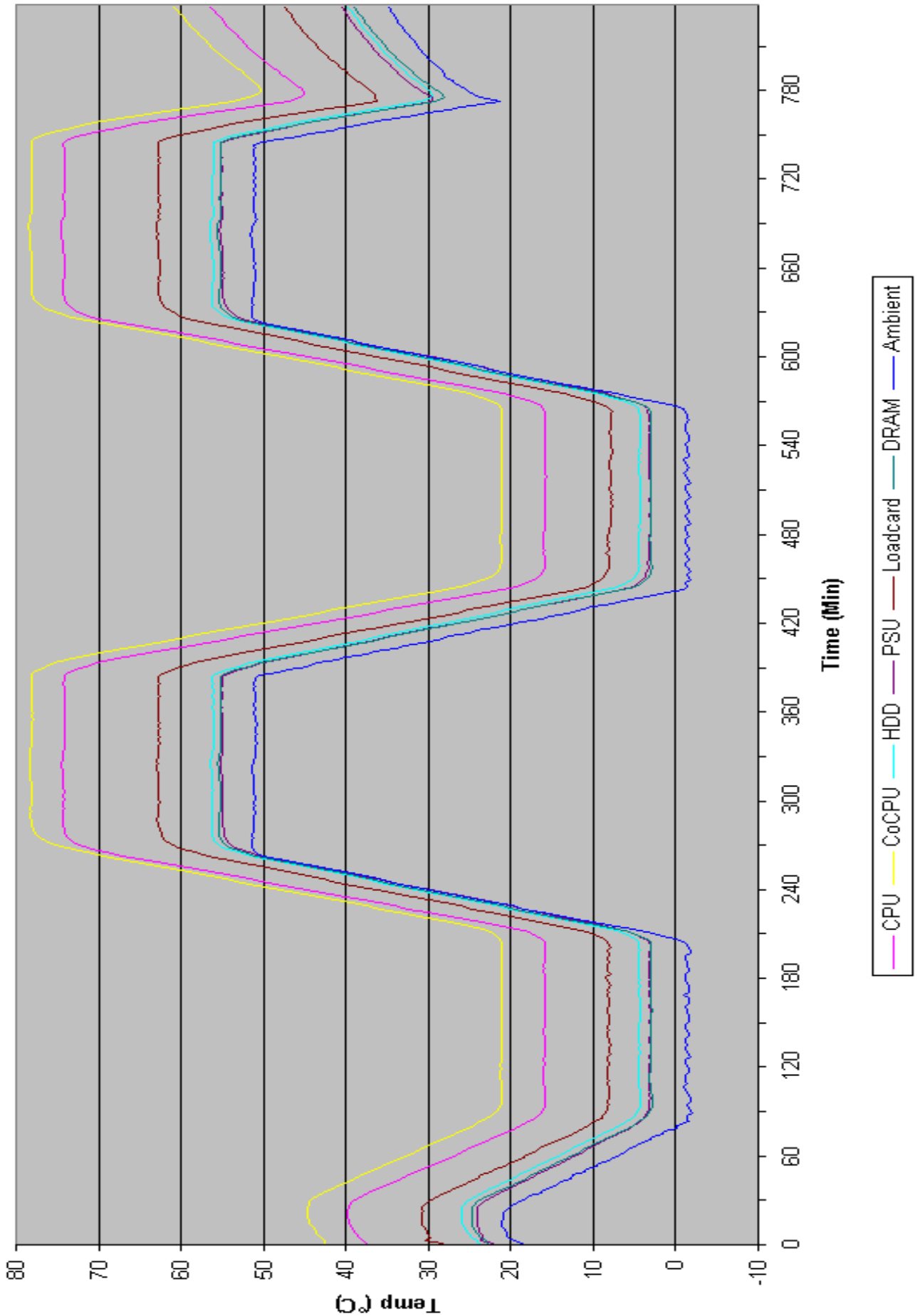
PT 2-1 KISS 1U short 986LCD/mitX T7400



PT 2-2 KISS 1U short 986LCD/mitX T7400



PT 2-14 KISS 1U short 986LCD/mitX T7400



12. View done tests

| | Cycles | Operating | Non Operating | Recording | failure | Remark |
|--------|--------|-----------|---------------|-----------|---------|--|
| PT 2-1 | 1 | x | | yes | no | |
| PT2-2 | 1 | x | | yes | no | |
| PT2-14 | 2 | x | | yes | no | |
| PT2-30 | 6 | | x | no | no | No Recording, because all curves are identical |

13. Reference Standards

| Tested standard | Reference Standard (identical/similar to) |
|-----------------|--|
| IEC 60068 PT2-1 | Identical with: BS EN 60068 PT2-1 DIN EN 60068 PT2-1 DIN IEC 68 PT2-1 EN 60068 PT2-1 HD 323.2.1 JIS-C0020 NEN 10068-2-1 NFC 20-701 NF EN 60068-2-1 SEN 43 16 01 SS EN 60068 |
| IEC 60068 PT2-2 | Technical Equivalent to: AS 1099:PT2BA AS 1099:PT2BB AS 1099:PT2BC AS 1099:PT2BD JIS-C8938 Identical with: BS EN 60068 PT2-2 DIN EN 60068 PT2-2 DIN IEC 68 PT2-2 EN 60068 PT2-2 HD 323.2.2 JIS-C0021 JIS C0039 NEN 10068-2-2 NFC 20-702 NF EN 60068-2-2 SEN 43 16 02 SS EN 60068 |
| | |

| | |
|------------------|--|
| IEC 60068 PT2-14 | <p>Technical Equivalent to: AS 1099:PT2N</p> <p>AS 1099:PT2NA</p> <p>AS 1099:PT2NB</p> <p>AS 1099:PT2NC</p> <p>DIN EN 60068-2-14</p> <p>JIS-C0025</p> <p>Identical with: BS 2011:PT2.1N(1985)</p> <p>BS EN 60068-2-14</p> <p>DIN IEC 60068-2-14</p> <p>DIN IEC 68 PT2-14</p> <p>EN 60068-2-14</p> <p>HD 323.2.14</p> <p>NEN 10068-2-14</p> <p>NEN EN IEC 60068-2-14</p> <p>NFC 20-714</p> <p>NF EN 60068-2-14</p> <p>SEN 43 16 13</p> <p>SS EN 60068</p> |
| IEC 60068 PT2-30 | <p>Technical Equivalent to: AS 1099:PT2DB</p> <p>JIS-C0027</p> <p>Identical with: BS 2011:PT2.1DB(1981)</p> <p>BS EN 60068-2-30</p> <p>DIN EN 60068-2-30</p> <p>DIN IEC 60068-2-30</p> <p>DIN IEC 68 PT2-30</p> <p>EN 60068-2-30</p> <p>HD 323.2.30</p> <p>NEN 10068-2-30</p> <p>NEN EN IEC 60068-2-30</p> <p>NFC 20-730</p> <p>SS EN 60068</p> |