Temperature Test

Concept Box standard CB752

Version 1.0

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Table of contents

1. Administrative Data

Equipment under test:	CB752 B649 proto3_CAN_WLAN
Options/accessories:	None
Serial number:	**2-A0CK-P003**
Version of EUT:	Prototype
Receipt of EUT:	2.4.2010
Date of test:	6.4.2010 – 16.4.2010
Date of report	20.4.2010
Version of test report	1.0
Tested by:	Zdenek Zahradka
Test report written by:	Zdenek Zahradka

2. Objective

To measure Temperatures of “CB752 B649 proto3_CAN_WLAN” Prototype based on IEC Standards

3. Test- and Measurement- Equipment

3.1 Test Software

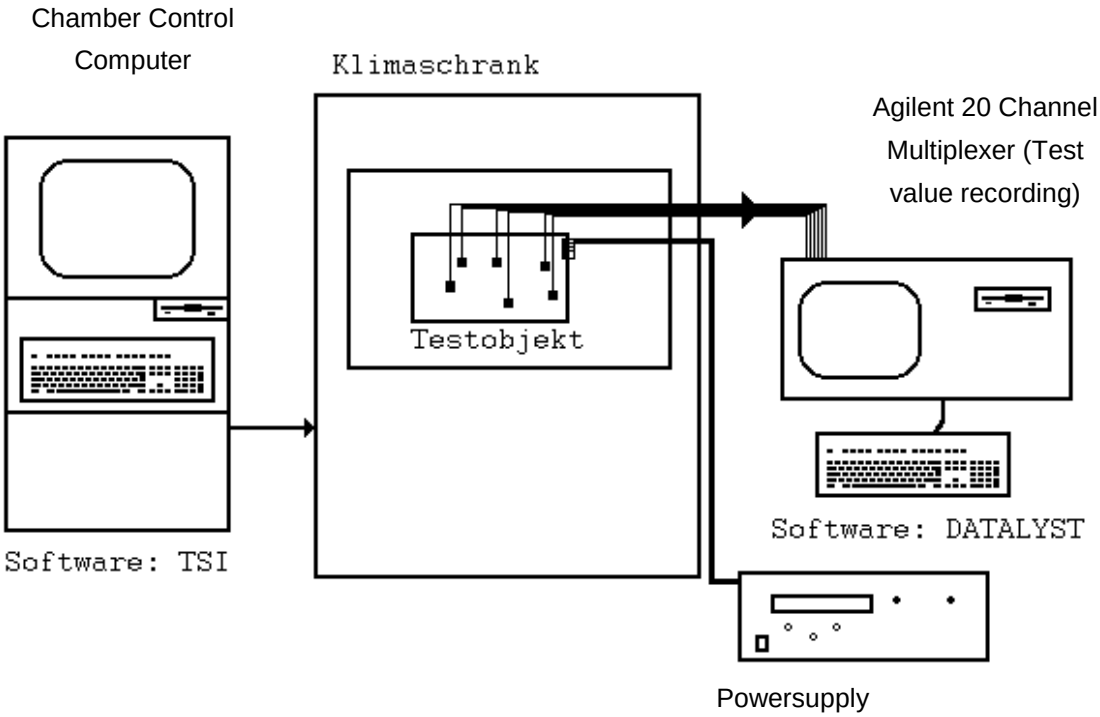
Component	*Model*	*Manufacturer*	*Ser. No.*	*Cal. until*
Testsoftware	Burnin Test Pro 5.3	Passmark Software	-	-
MonitorSoftware	SpeedFan V4.38	Kontron	-	-
MonitorSoftware	TAT V3.8	Intel	-	-

3.2 Data of Operation Mode and Configuration of EUT

3.2.1 Configuration of EUT

Art. NR	Title	Ser. NR
9-1303-3649	LF Concept Box SBC Atom N270	146467019
0-0074-3994	BGPM SO-DIMM-DDR2 2GB 533MHz	
1022-5342	BGHD SATA150 2,5" 80GB MHY2080BH ESW	K44NTA125A8N
9-1101-3686	NVKU LF LVDS-DVI-Converter 18Bit NanoC	142747001
9-1103-3657	LF LPC-CAN Adapter w. 512KB RAM	140107006
9-1304-9319	NVKU LF RS422/485-ADA no Iso 150mm	137467005
1035-6782	BGSO Intel Ultimate N WIFI Link 5300	00216A81774E
1027-5019	CF card 2GB Transcend	
	WXP Test Image, WXPe Test Image	-
	BIOS: B649B004	

3.2.2 The Test in the Climatic Chamber



3.2.3 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	Dell NTB	8743351/000	not requested	DELL

✓ (check mark in 1st column) = tested with

3.2.4 Photographs of EUT and Test Setup

Picture01: IEC Climatic Chamber

3.3 Performed Tests

3.3.1 Low Temperature Operating

Pre-test parameter

Parameter	*Values, [References]*
Checks, measurements	▪ Visual inspection ▪ Functional test

Test parameter

Parameter	*Values, [References]*
Conditions	▪ Standard: IEC 60068-2-1 ▪ Test category: Ad ▪ Temperature: -15 °C ± 3 °C HDD ▪ Temperature: -20 °C ± 3 °C CF card ▪ Duration: 2 h ▪ Gradient: 20 K / h]
Sample status	▪ Non operating and Operating (refer to Fig. 1)
Checks, measurements	▪ Functional test

Temperature Diagram

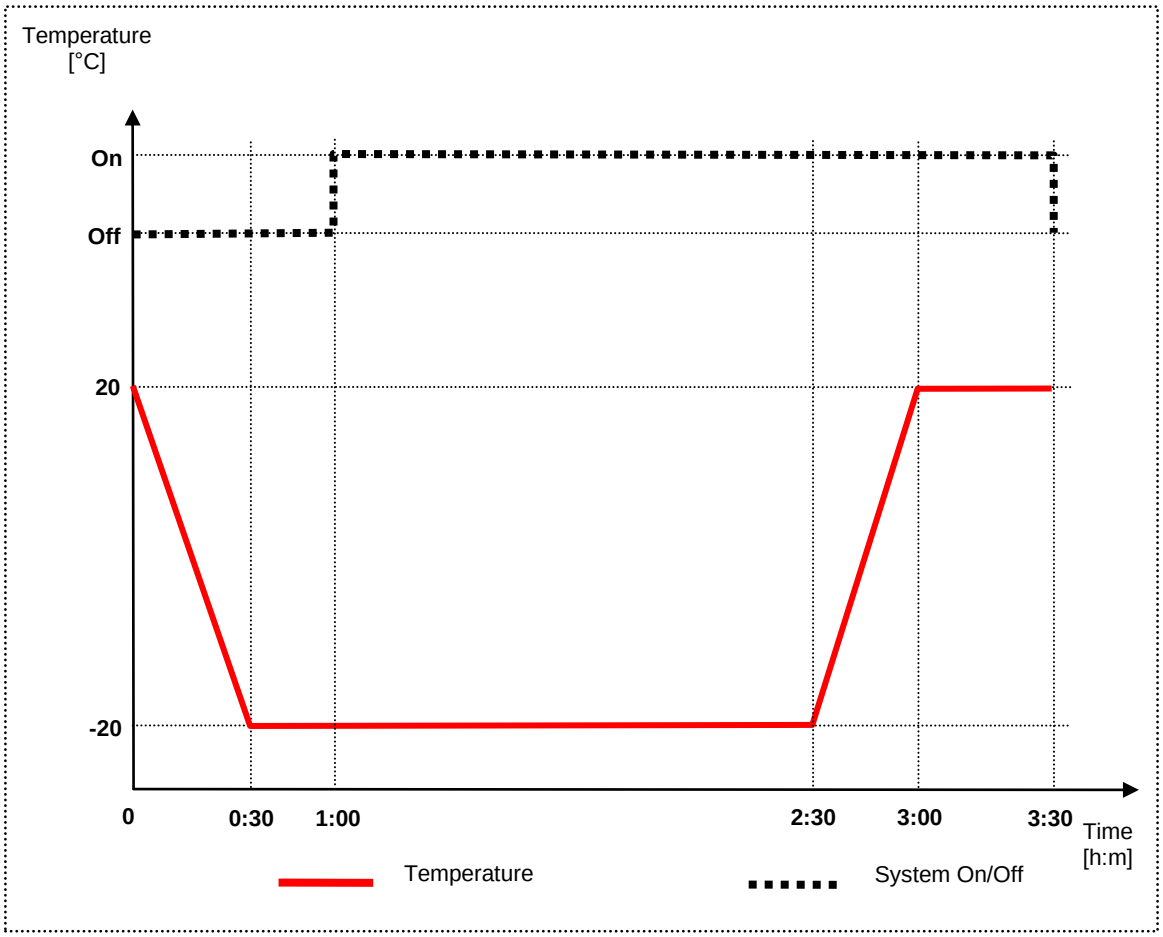


Fig 1: Temperature diagram: Low Temperature

Post-test parameter

Parameter	***Values, [References]***
Checks, measurements	▪ Visual inspection ▪ Functional test

3.3.2 High Temperature Operating

Pre-test parameter

Parameter	*Values, [References]*
Checks, measurements	▪ Visual inspection ▪ Functional test

Test parameter

Parameter	*Values, [References]*
Conditions	▪ Standard: IEC 60068-2-2 ▪ Test category: Bd ▪ Temperature: + 60 °C ± 2 °C ▪ Duration: 2 h ▪ Gradient: 20 K / h
Sample status	▪ Non operating / Operating (refer to Fig. 2)
Checks, measurements	▪ Functional test

Temperature Diagram

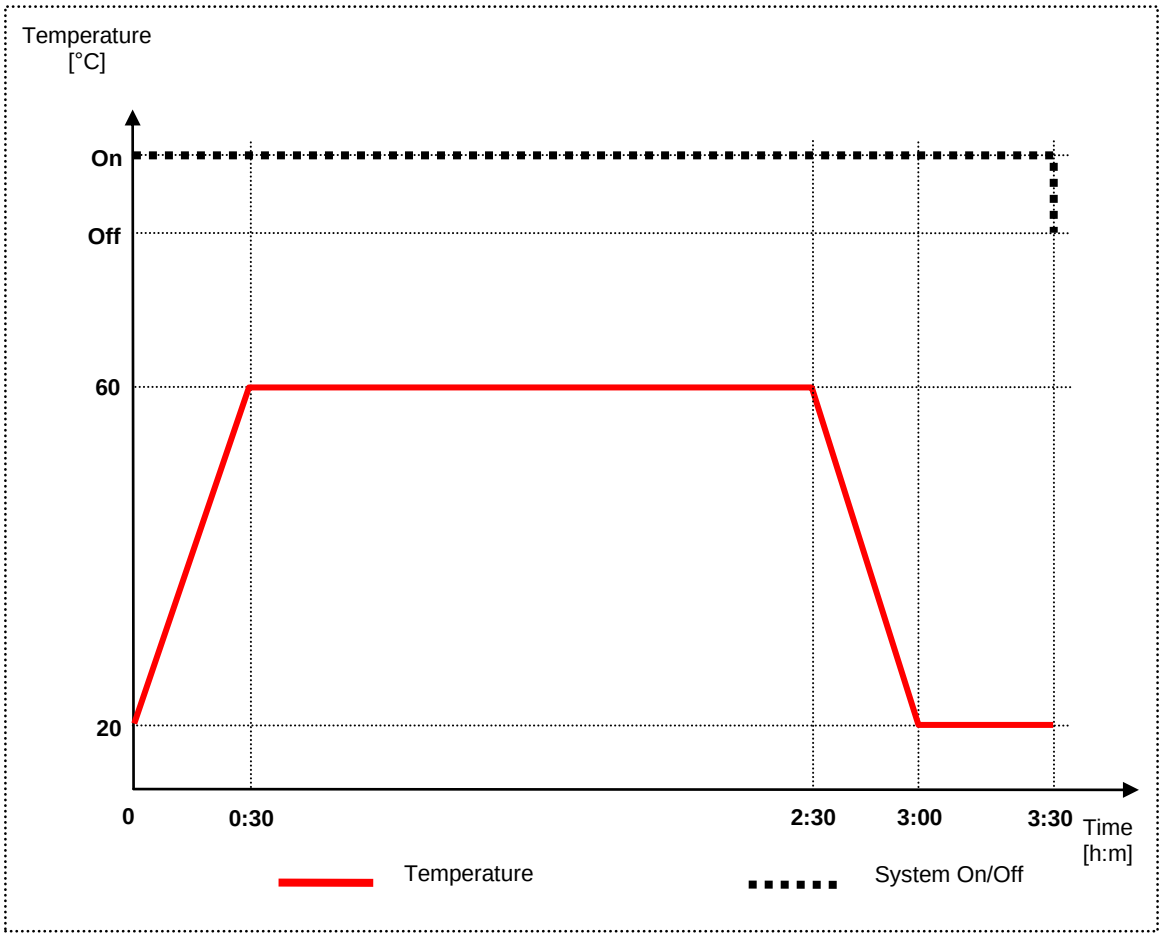


Fig 2: Temperature diagram: High Temperature

Post-test parameter

Parameter	***Values, [References]***
Checks, measurements	▪ Visual inspection ▪ Functional test

3.3.3 Temperature Cycling Operating

Pre-test parameter

Parameter	*Values, [References]*
Checks, measurements	▪ Visual inspection ▪ Functional test

Test parameter

Parameter	*Values, [References]*
Conditions	▪ Standard: IEC 60068-2-14 ▪ Test category: Nb ▪ Temperature: between 0 °C to + 60 °C ± 2 °C ▪ Duration: 2 cycles (2 h) ▪ Gradient: 20 K / h
Sample status	▪ Operating (refer to Fig. 3)
Checks, measurements	▪ Functional test

Temperature Diagram

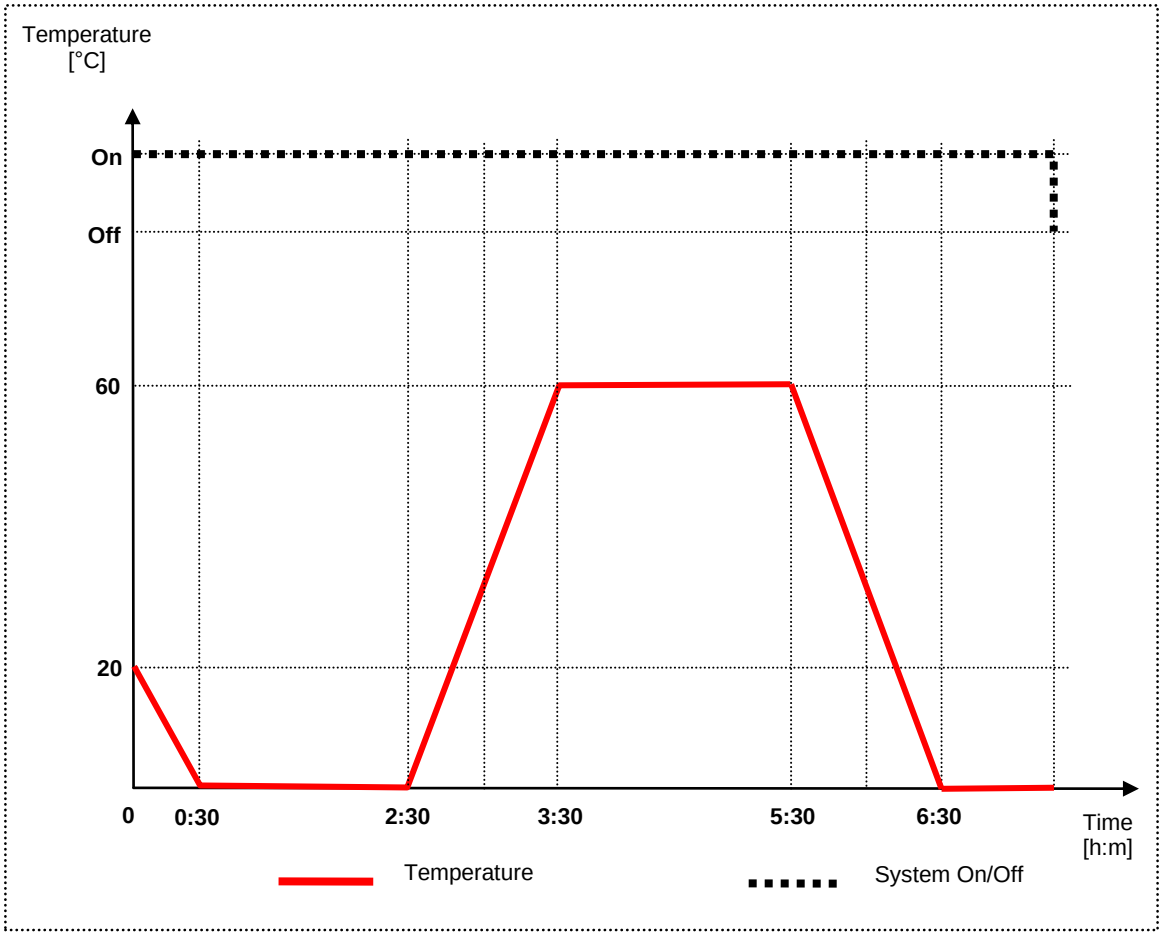


Fig 3: Temperature diagram: Thermal Cycle

Post-test parameter

Parameter	***Values, [References]***
Checks, measurements	▪ Visual inspection ▪ Functional test

3.3.4 Humidity

Pre-test parameter

Parameter	*Values, [References]*
Checks, measurements	▪ Visual inspection ▪ Functional test

Test parameter

Parameter	*Values, [References]*
Conditions	▪ Standard: IEC 60068-2-30 ▪ Test category: Db ▪ Temperature: + 40 °C ± 2 °C ▪ Humidity: 95% ▪ Duration: 12+12 h ▪ Gradient: 20 K / h
Sample status	▪ Operating (refer to Fig. 3)
Checks, measurements	▪ Functional test

Temperature Diagram

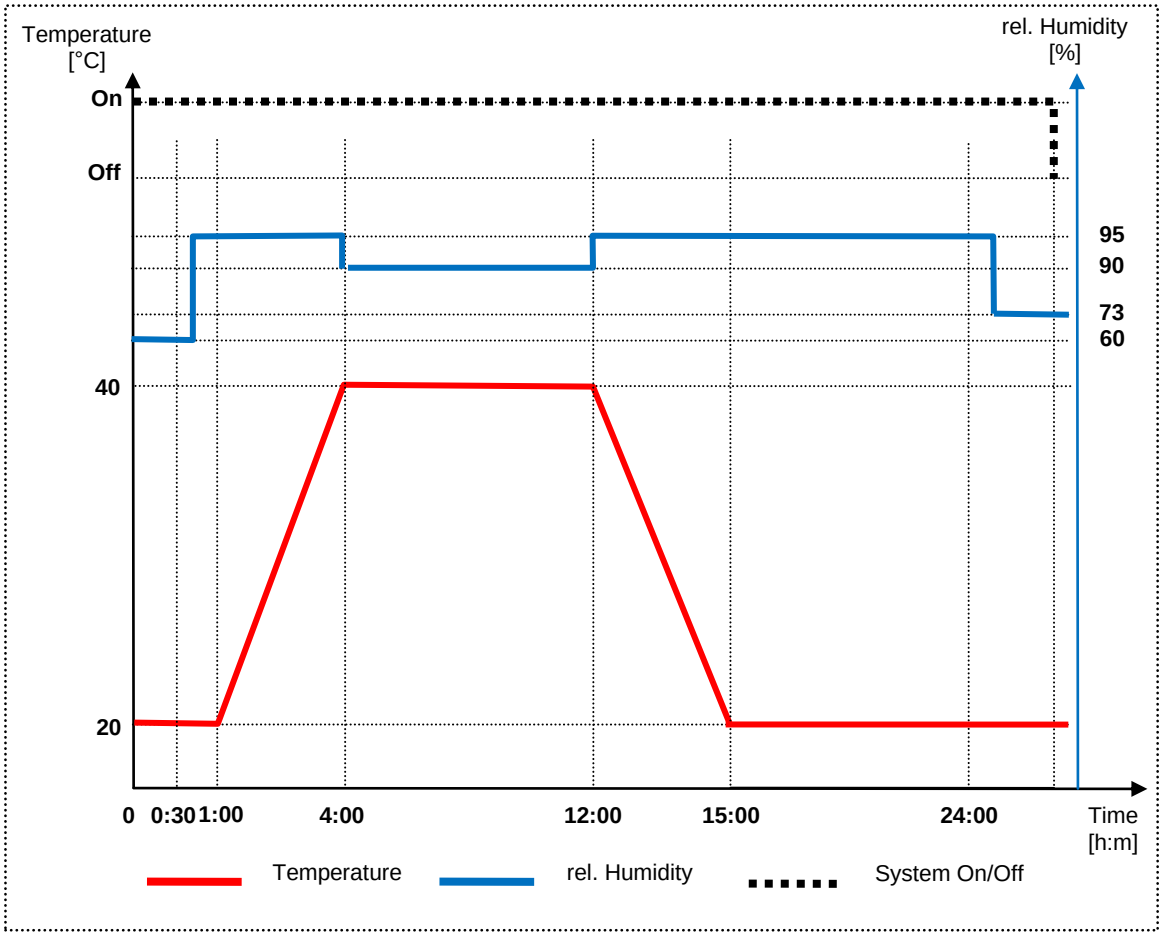


Fig 3: Temperature diagram: Humidity

Post-test parameter

Parameter	***Values, [References]***
Checks, measurements	▪ Visual inspection ▪ Functional test

3.3.5 Low Temperature Non-Operating

Pre-test parameter

Parameter	*Values, [References]*
Checks, measurements	▪ Visual inspection ▪ Functional test

Test parameter

Parameter	*Values, [References]*
Conditions	▪ Temperature: -25 °C ± 3 °C ▪ Duration: 16 h ▪ Gradient: 20 K / h
Sample status	▪ Non operating (refer to Fig. 4)
Checks, measurements	▪ Functional test

Temperature Diagram

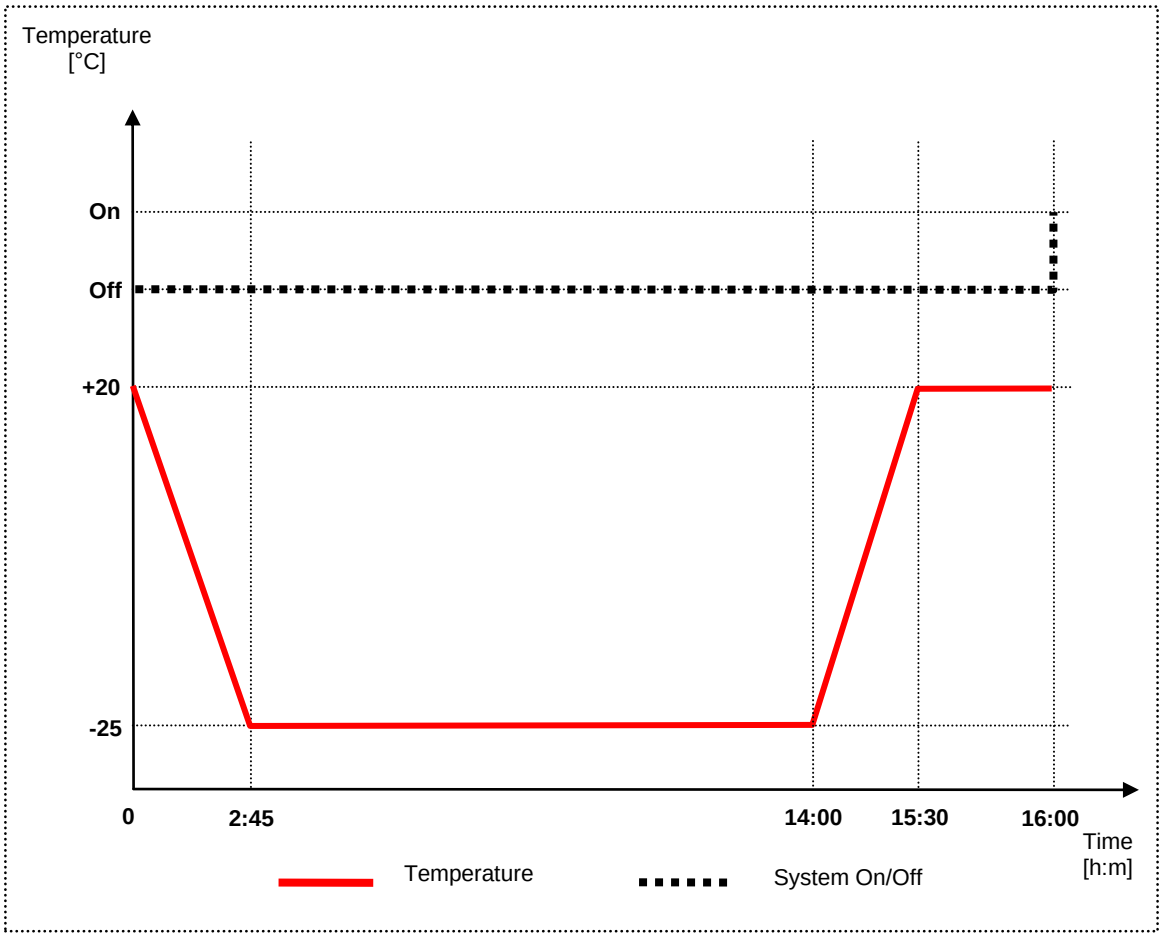


Fig 4: Temperature diagram: Low Temperature Non-Operating

Post-test parameter

Parameter	***Values, [References]***
Checks, measurements	▪ Visual inspection ▪ Functional test

3.3.6 High Temperature Non-Operating

Pre-test parameter

Parameter	*Values, [References]*
Checks, measurements	▪ Visual inspection ▪ Functional test

Test parameter

Parameter	*Values, [References]*
Conditions	▪ Temperature: + 70 °C ± 2 °C ▪ Duration: 16 h ▪ Gradient: 20 K / h
Sample status	▪ Non operating (refer to Fig. 5)
Checks, measurements	▪ Functional test

Temperature Diagram

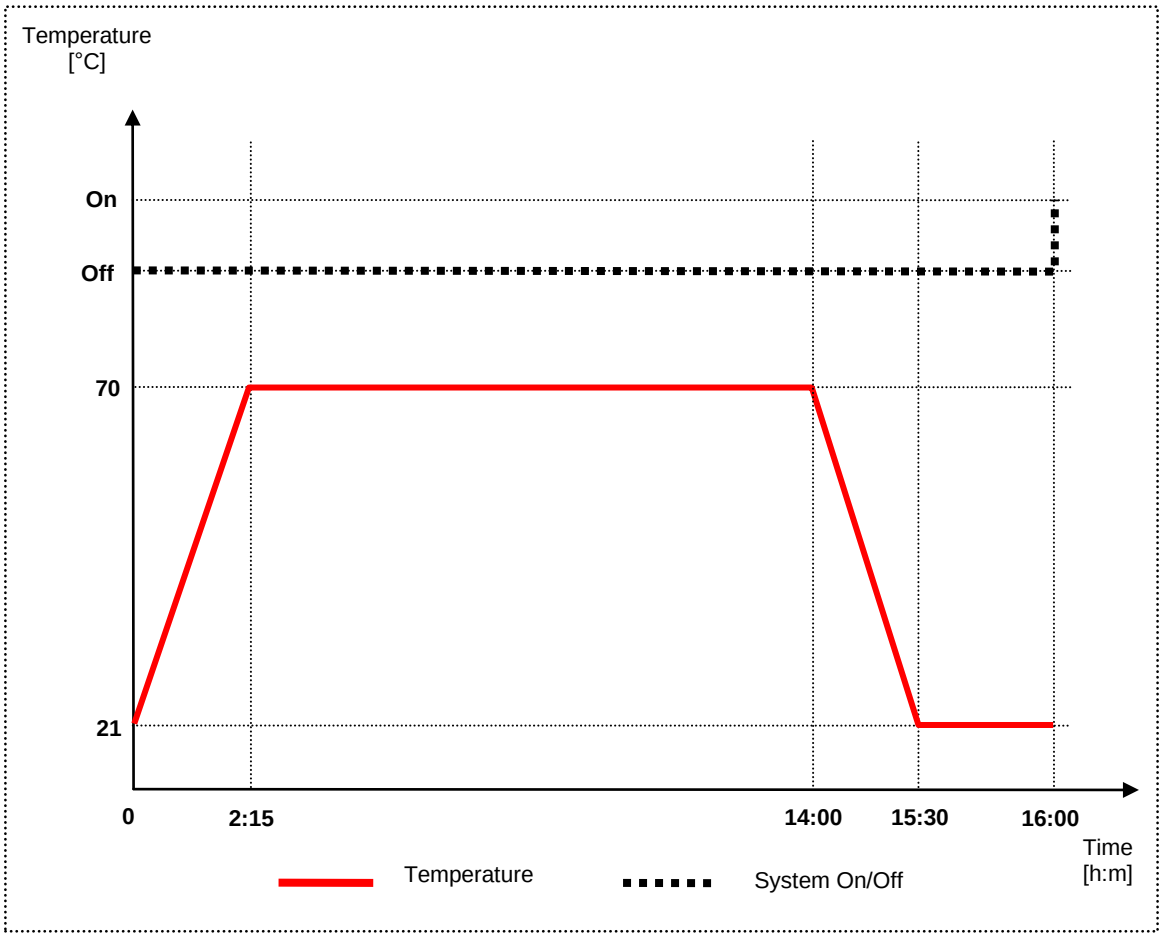


Fig 5: Temperature diagram: High Temperature Non-Operating

Post-test parameter

Parameter	***Values, [References]***
Checks, measurements	▪ Visual inspection ▪ Functional test

4. Conclusion

Test results

Nr.	*Test*	*Result*	*Comments*
1a	Low Temperature operating, HDD Temperature: -15 °C	Pass	System works without any deviation
1b	Low Temperature operating, CF card Temperature: -20 °C	Pass	System works without any deviation
2	High Temperature operating, Temperature: + 60 °C	Pass	System works without any deviation
3	Cycles, Temperature: 0 to + 60 °C	Pass	System works without any deviation
4	Humidity Temperature: 0 to + 40 °C Humidity: 95%	Pass	System works without any deviation
5	Low Temperature non-operating, Temperature: -25 °C	Pass	System works without any deviation
6	High Temperature non-operating Temperature: + 70 °C	Pass	System works without any deviation

5. Appendix