REPORT No 11546

Date of issue: *February 16, 2026*

Status: FINAL REPORT

****

IEC 60068-2-30

ENVIRONMENTAL TESTING
TEST Db: DAMP HEAT, CYCLIC (12 h + 12 h CYCLE)

Program: SQO-EV4 Round 8

****

Prepared by:	Reviewed by:	Approved by:
cn=BERENICE C. FERREL, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=tech@ptsouthquality.com, c=AR 2026.02.16 16:09:34 -03'00'	cn=ESTHER CASAS, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=ecasas@ptsouthquality.com, c=AR 2026.02.19 14:54:59 -03'00'	cn=Emiliano Medina, o=SOUTH QUALITY, ou=PT SOUTH QUALITY SAS, email=quality@ptsouthquality.com, c=ES 2026.02.20 17:29:06 -03'00'
Berenice Ferrel Assistant Technician	**Lic. Esther Casas** Physics expert	**Eng. Emiliano Medina** Quality Assurance Lead

TABLE OF CONTENTS

1. FOREWORD

This report summarizes the results of the **SQO-EV4 (Round 8)** proficiency testing program on the determination of the suitability of equipment for use under conditions of high humidity - combined with cyclic temperature changes. This program is carried out under a simultaneous participation format, according to the A.3.1 classification of the ISO 17043 standard ("Model 2 - Figure A.1").

South Quality conducted the testing program from November 2025 to January 2026. The aim of the program was to assess the ability of laboratories to competently perform the nominated tests.

2. ORGANIZATION

Program Coordinator:	Lic. Esther Casas
Assistant Technician:	Berenice Ferrel
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to visually and functionally inspect the equipment under test, using the following standard:

Standard
IEC 60068-2-30: 2005

To verify this, electronic equipment has been selected.

Participants in this program have not been informed in advance about the expected behavior of the samples they receive.

As part of the usual practice of this program, three different sample combinations may be sent to participants.

i. Sample A (PASS) + Sample B (PASS).
ii. Sample A (PASS) + Sample B (FAIL).
iii. Sample A (FAIL) + Sample B (FAIL).

4. PARTICIPANTS

In the present round, 22 companies have participated with the following details:

CODE	Country	ISO 17025 accredited	Results delivered
01	Malaysia	Yes	Yes
02	South Korea	Yes	Yes
03	Colombia	No	No
04	Portugal	Yes	Yes
05	Argentina	No	Yes
06	Belgium	Yes	Yes
07	Spain	Yes	Yes
08	Peru	Yes	No
09	Chile	Yes	Yes
10	China	Yes	Yes
11	France	Yes	Yes
12	Spain	Yes	Yes
13	South Africa	No	Yes
14	Türkiye	Yes	Yes
15	Finland	Yes	No
16	Germany	Yes	Yes
17	Brazil	Yes	Yes
18	Netherlands	Yes	Yes
19	Italy	Yes	Yes
20	Mexico	Yes	Yes
21	France	No	No
22	Italy	Yes	Yes

5. HOMOGENEITY

A homogeneity study was conducted to verify compliance of the samples with the requirements of the IEC 60068-2-30 standard, using an ISO 17025-accredited laboratory.

Six batches, each consisting of 35 units of different electronic equipment, were prepared and tested to assess the result homogeneity.

Control procedures were carried out in accordance with ISO 33405:2024, clauses 7.4.1.1 and 7.4.1.2, applying stratified random sampling. Samples were selected using random number generation software.

The results of these tests appear below:

Size of each batch: **35 units**
Tested samples from each batch: **8 units**
Test conditions: **Variant 1 / 25-40°C / Cycles: 6**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE SAMPLES ANALYZED		
	BATCH: LEV3315	BATCH: LEV3316	BATCH: LEV3317
Visual inspection	YES	YES	YES
Functional performance	NO	YES	YES

Size of each batch: **35 units**
Tested samples from each batch: **8 units**
Test conditions: **Variant 2 / 25-55°C / Cycles: 6**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE SAMPLES ANALYZED		
	BATCH: LEV3445	BATCH: LEV3446	BATCH: LEV3447
Visual inspection	YES	YES	YES
Functional performance	YES	NO	YES

Samples for this program are taken from the selected batches identified as **LEV3317**, and **LEV3445**.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following samples were sent for testing (Participant **Code 19**):

Batch:	LEV3317
Sample ID:	19
Characteristics:	ATX power supply - 220-240 V - 50/60Hz - 550W Trademark: NOGANET Model: ATX 550 P4

Batch:	LEV3445
Sample ID:	19
Characteristics:	ATX power supply - 220 V - 50Hz - 600W Trademark: ACONCAWA Model: ATX 600 X 24 P 2S

7. IMAGES

SAMPLES

SAMPLES

8. ASSIGNED RESULTS

The assigned results are obtained from the results reported by all participants (**Consensus values**).

9. STATISTICS

The results must be treated as qualitative.

For qualitative results, the comparison will be made directly against the assigned results, so any difference will be evaluated as **Unsatisfactory**.

The assessment involves assigning a compliance verdict (PASS or FAIL) to each verification parameter (Visual and functional performance) carried out by each participant.

10. PARTICIPANTS RESULTS

LABORATORY CODE	LEV3317		LEV3445	
	Test conditions: Variant 1 / 25-40°C / Cycles: 6		Test conditions: Variant 2 / 25-55°C / Cycles: 6	
	Visual inspection	Functional performance	Visual inspection	Functional performance
01	PASS	PASS	PASS	PASS
02	PASS	PASS	PASS	PASS
04	NO VERDICT	NO VERDICT	PASS	PASS
05	PASS	PASS	PASS	PASS
06	PASS	PASS	PASS	PASS
07	PASS	PASS	PASS	PASS
09	PASS	FAIL	PASS	PASS
10	PASS	PASS	PASS	PASS
11	PASS	PASS	PASS	PASS
12	PASS	PASS	PASS	PASS
13	PASS	FAIL	PASS	FAIL
14	PASS	PASS	PASS	PASS
16	PASS	PASS	PASS	PASS
17	PASS	PASS	PASS	FAIL
18	PASS	PASS	PASS	PASS
19	PASS	PASS	PASS	PASS
20	PASS	PASS	PASS	PASS
22	PASS	PASS	PASS	PASS

ASSIGNED RESULTS			
LEV3317		LEV3445	
Visual inspection	Functional performance	Visual inspection	Functional performance
PASS	PASS	PASS	PASS

11. EVALUATION OF PERFORMANCE

Laboratory **Code 01**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 02**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 03**: The laboratory did not send the results before the deadline.

Laboratory **Code 04**: The laboratory obtained **SATISFACTORY** results in the parameter verification for sample LEV3445. No results were reported for sample LEV3317.

Laboratory **Code 05**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 06**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 07**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 08**: The laboratory did not send the results before the deadline.

Laboratory **Code 09**: The laboratory obtained an **UNSATISFACTORY** result in the functional performance verification of sample LEV3317. However, **SATISFACTORY** results were obtained for the remaining parameters.

Laboratory **Code 10**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 11**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 12**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 13**: The laboratory obtained a **UNSATISFACTORY** result in the functional performance verification of both samples. However, **SATISFACTORY** results were obtained for the remaining parameters.

Laboratory **Code 14**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 15**: The laboratory did not send the results before the deadline.

Laboratory **Code 16**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 17**: The laboratory obtained an **UNSATISFACTORY** result in the functional performance verification of sample LEV3445. However, **SATISFACTORY** results were obtained for the remaining parameters.

Laboratory **Code 18**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 19**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 20**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

Laboratory **Code 21**: The laboratory did not send the results before the deadline.

Laboratory **Code 22**: The laboratory obtained **SATISFACTORY** results in the verification of all parameters.

12. CONCLUSIONS

The overall performance of the participating laboratories in the **SQO-EV4 (Round 8)** program, based on the expected results, is as follow:

- Participants Codes **01, 02, 04, 05, 06, 07, 10, 11, 12, 14, 16, 18, 19, 20** and **22** achieved **SUFFICIENT** performance in comparison with the expected results and do not require any action.;
- Participants Codes **09, 13,** and **17** achieved **INSUFFICIENT** performance in comparison with the expected results and must take corrective action for the tests in which their results differ from the expected values (see Annex B).

The criteria used for the evaluation of the overall performance are as follows:

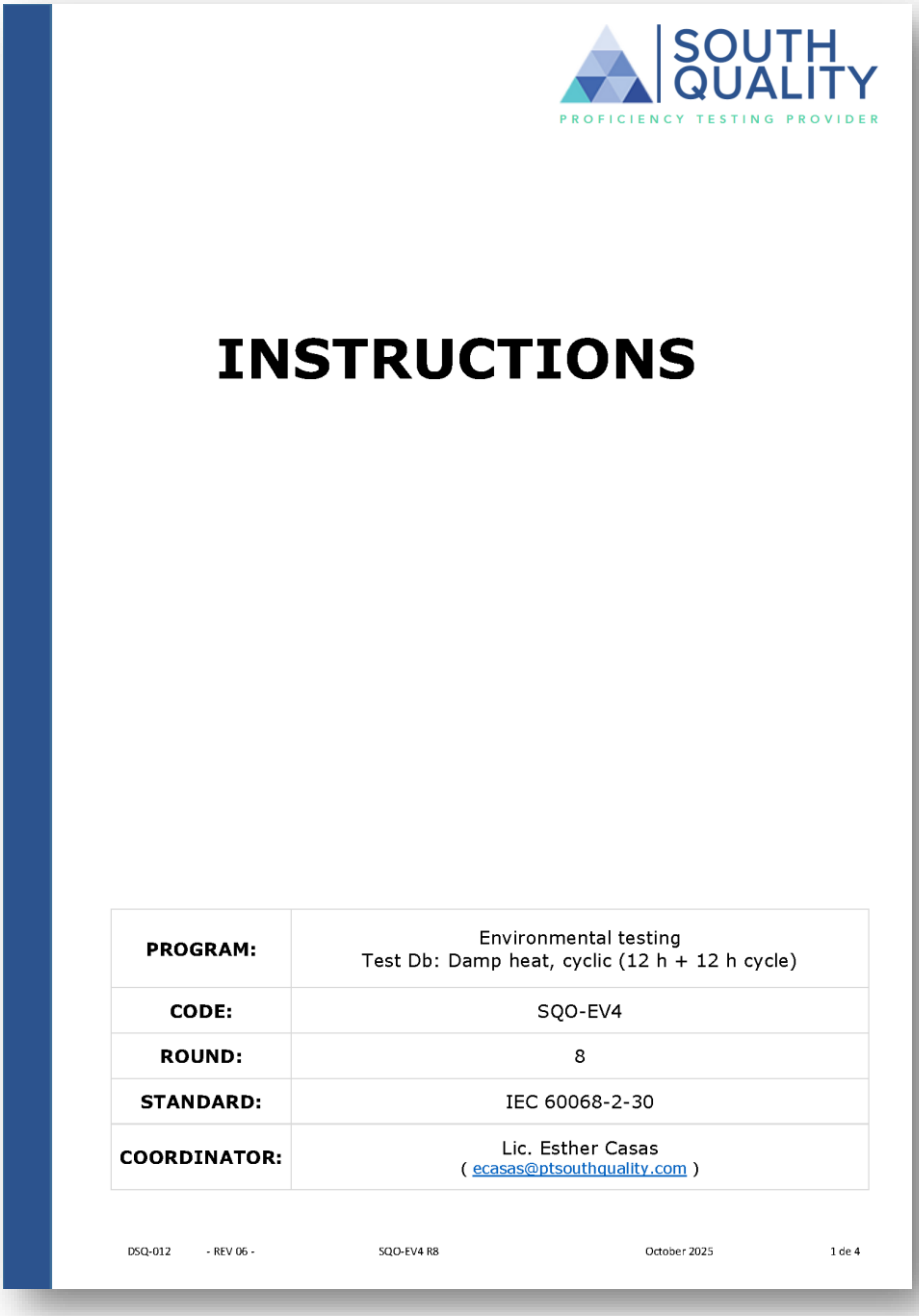
- **SUFFICIENT** performance: No unsatisfactory results were obtained.
- **INSUFFICIENT** performance: At least one unsatisfactory result was obtained.

APPENDIX A

A1 - PARTICIPANT DATA

Company:	**ABB**
Laboratory:	**ABB Sace**
Country:	Italy
Client ID:	E534
Contact person:	Dr. Andrea Balestrero (andrea.balestrero@it.abb.com)

A2 - INSTRUCTIONS



SOUTH QUALITY
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS

PROGRAM:	Environmental testing Test Db: Damp heat, cyclic (12 h + 12 h cycle)
CODE:	SQO-EV4
ROUND:	8
STANDARD:	IEC 60068-2-30
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

DSQ-012 - REV 06 - SQO-EV4 R8 October 2025 1 de 4

1 - General

This document serves as a guide for managing the results of the **SQO-EV4 (Round 8)** program.

2 - Standard

IEC 60068-2-30: 2005

3 - Participant

ABB **ABB Sace**	**CODE 19**

4 - Tests involved

TEST
Determination the suitability of equipment for use under conditions of high humidity - combined with cyclic temperature changes

5 - Samples

CODE	SAMPLE	QUANTITY
LEV3317-19	ATX power supply - 220-240 V - 50/60Hz - 550W Trademark: NOGANET Model: ATX 550 P4	1
LEV3445-19	ATX power supply - 220 V - 50Hz - 600W Trademark: ACONCAWA Model: ATX 600 X 24 P 2S	1

6 - Notes

a) The deadline for the delivery of results is **December 23, 2025**.
b) Participants must submit the results using the usual report employed by their laboratory.
c) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **IEC 60068-2-30**.
d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
e) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

7 - **Test conditions**

CODE	CONDITION	TEST SEVERITIES
LEV3317-19	Powered-on (220V/50Hz) – No load	Variant 1 / 25-40°C / Cycles: 6
LEV3445-19	Powered-on (220V/50Hz) – No load	Variant 2 / 25-55°C / Cycles: 6

8 - **Parameters to determine**

CODE	PARAMETERS (BEFORE & AFTER)
LEV3317-19	VISUAL INSPECTION VOLTAGE
LEV3445-19	VISUAL INSPECTION VOLTAGE

PHOTOGRAPHS

A3 - PARTICIPANT RESULTS (REPORT #LBRP 24692/01)

ABB S.p.A.

Bergamo Laboratory

TEST REPORT

LBRP 24692/01 Rev. 0

TESTED OBJECT:	ATX 550 P4
MANUFACTURER:	NOGANET
TESTING LABORATORY:	ABB S.p.A. Via Pescaria 6, 24123 Bergamo Italia
TESTS:	Damp Heat
TEST STANDARD:	IEC60068-2-30 ed3.0 (2005)
DATE OF TESTS:	2025/11/26 to 2025/12/04
TESTS REQUIRED BY:	SOUTH QUALITY Pareja 3981 -Villa Devoto (C1419GVG) Buenos Aires Argentina
DATE OF ISSUE:	2025/12/19
Prepared:	Davide Cornago
Verified Testing Section Manager:	Michele Zanetti
Approved Laboratory Manager:	Mario Bortoli

ABB S.p.A. - Bergamo Laboratory Via C. Pescaria, 6 - I 24123 Bergamo (ITALY) Tel.: 035 395111 - Fax: 035 395284

ABB 005E/lab-edD

RapE-ABB 000/lab-edB

CONTENTS

ABB S.p.A.

TEST REPORT

LBRP 24692/01 Rev. 0

RATINGS ASSIGNED BY THE MANUFACTURER

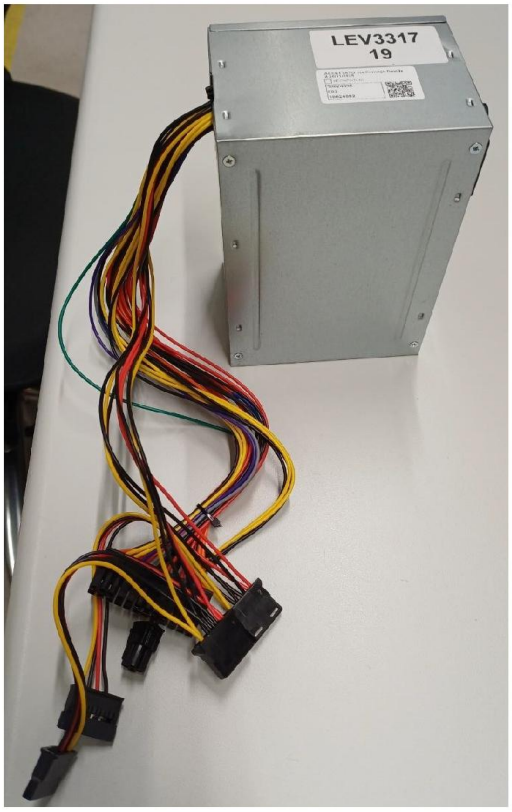
Data in this page are as provided by Customer without any laboratory responsibility

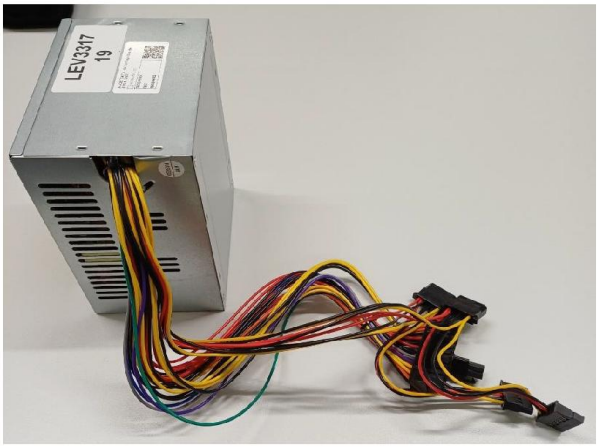
Description:	ATX power supply
Tested object:	NOGANET ATX 550 P4
Rated frequency:	50 Hz
Rated operational voltage (Ue):	220-240 V
Rated insulation voltage (Ui):	- V
Rated impulse withstand voltage (Uimp):	-V
Rated uninterrupted current (Iu):	- A
Rated short-circuit making capacity, peak value (Icm):	- kA
Rated short-circuit breaking capacity - ultimate value (Icu):	- kA
Rated short-circuit breaking capacity - service value (Ics):	-kA
Rated short-time withstand current for 1s (Icw):	-kA
Rated short-time withstand current for 1s F/N (Icw):	- kA
Conventional free air thermal current (Ith):	- A
Utilization category:	-
Selectivity limit current (Is):	- kA

NOTES: ATX power supply - 220-240 V - 50/60Hz - 550W

DESCRIPTION AND IDENTIFICATION OF THE TESTED OBJECT

Preliminary photos of the sample as received.





DESCRIPTION AND IDENTIFICATION OF THE TESTED OBJECT

Preliminary photos of the sample as received.

ABB S.p.A.

TEST REPORT

LBRP 24692/01 Rev. 0

DATE OF ACCEPTANCE ON: 2025/11/26

TESTS PERFORMED:
IN ACCORDING TO: IEC60068-2-30 ed.3.0 (2005)

TEST	CLAUSE	STANDARD
Functional verification**	-	-
Damp heat test	6÷10	IEC60068-2-30 ed.3.0 (2005)

SAMPLING: performed by the customer; sampling is not under laboratory responsibility, tests have been performed on the sample as received.

Device Type	S/N	Sample	Date of tests From	Date of tests To	Test Title	Test Result	IOP-POP used		PAGE
NOGANET ATX 550 P4	-	2	2025/11/26	2025/11/26	Preliminary Functional verification**	OK	-	-	14
			2025/11/28	2025/12/04	Damp heat	OK	-	026	16
			2025/12/04	2025/12/04	Final Functional verification**	OK[a]	-	-	15

* Test not accredited

** Test performed with deviation from the required test method and agreed with the customer

[a] No changes in measured output voltages after damp heat test

WITNESSES OF THE TESTS:

-

The uncertainties reported in this report are referred to a coverage probability of 95% with a coverage factor k = 2. The conformity decision rule applied in the Test Report is the compliance to the criteria indicated by the standard, unless otherwise explicitly specified to the criteria indicated by the customer. Measurable results are evaluated as:

- Compliant, when value complies its reference limit including the extended uncertainty
- Compliant with a level of risk lower than 50%, when value complies its reference limit only, not including the extended uncertainty.
- Non-compliant, when value does not comply its reference limit

022E/lab-edC

RapE-ABB 000/lab-edB

1 Test description

1.1 Test #01 - Functional verifications

Functional verification, according to costumer's specification, provides external visual inspection of specimen and verification of the presence of voltage outputs from it.

All voltage outputs of device under test are measured as follows:

Connector	Expected Voltage out	Voltage measured between PINs #:	
24pin power connector	+3.3Vdc	1	3
		2	17
		13	18
		12	24
	-12Vdc	14	19
	+5Vdc	4	5
		6	7
		21	7
		22	7
		23	7
	+12Vdc	10	7
		11	7
	+5Vdc Standby	9	7
Molex 4-pin peripheral connector 1.0	+12Vdc	1	2
	+5Vdc	4	3
Molex 4-pin peripheral connector 1.1	+12Vdc	1	2
	+5Vdc	4	3
Molex 4-pin peripheral connector 2.0	+12Vdc	1	2
	+5Vdc	4	3
Molex 4-pin peripheral connector 2.1	+12Vdc	1	2
	+5Vdc	4	3
4-PIN 12V power connector	+12Vdc	3	1
	+12Vdc	4	2

Connectors pinout @ page 9

With the combinations indicated in the table above, control of all the pins of all the connectors is guaranteed.

The result is positive if expected voltage is present on outputs

Date of tests: -	Operator: -

1.2 Test #02 - Damp Heat test

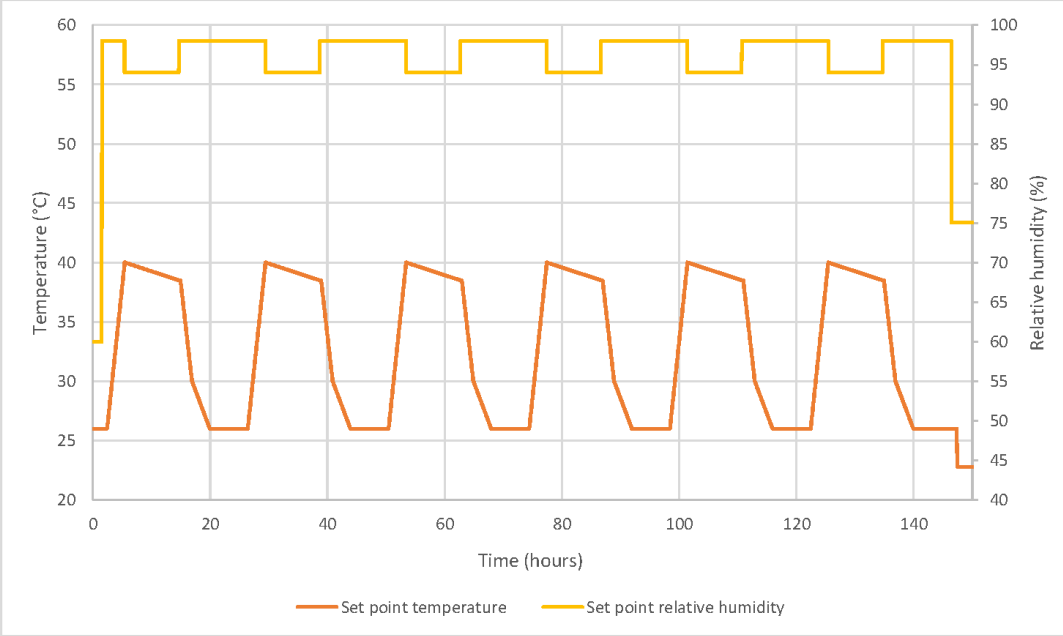
IEC60068-2-30 ed3.0 (2005) variant 1 - 6 cycles - upper temperature 40°C

Test cycle description:

Step #	Temperature[°C]	Ramp rate Temperature	Relative humidity [%]	Ramp rate HR	Step duration	Next Step	Repetition #	Notes
1	26	-	98	-	-	2	-	-
2	40	0.078°C/min	98	-	3h	3	-	-
3	40	-	94	-	-	4	-	-
4	38.5	-0.003°C/min	94	-	9h 15min	5	-	-
5	38.5	-	98	-	-	6	-	-
6	38.5	-	98	-	15min	7	-	-
7	30	-0.072°C/min	98	-	1h 58min 3s	8	-	-
8	26	-0.022°C/min	98	-	3h 1min 57s	9	-	-
9	26	-	98	-	6h 30 min	2	6	-

Notes:
During test cycle specimen is supplied with 220Vac 50Hz and Pins number 11 and 10 are short-circuited to each other to enable the outputs voltage.

Following graph shows theoretical cycle:



Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

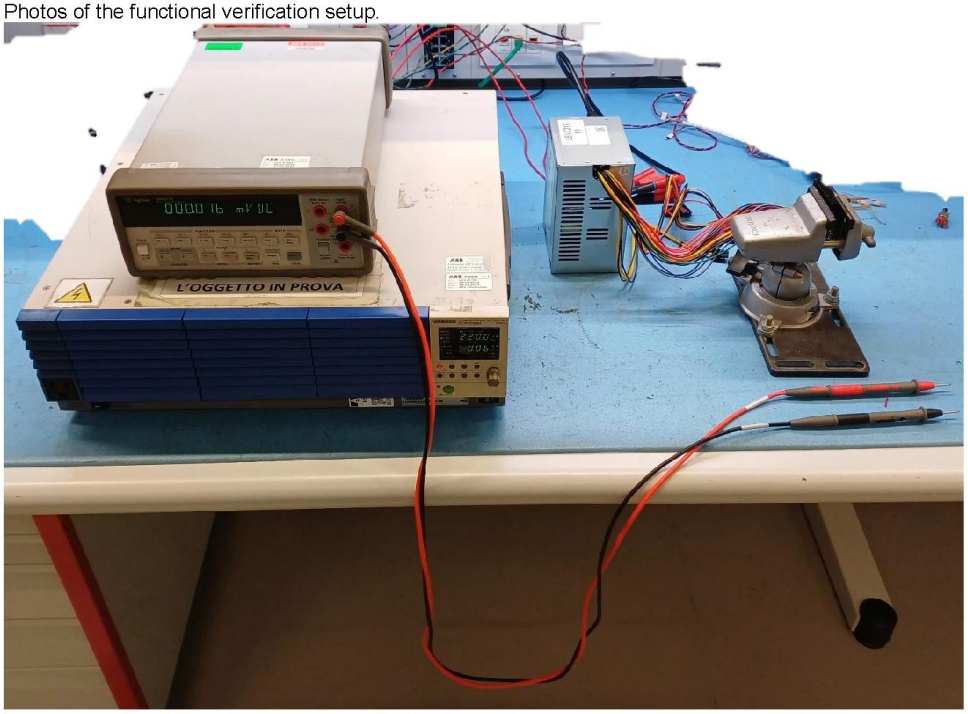
2 Setup

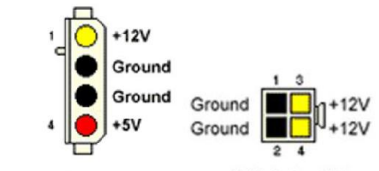
2.1 Test #01 - Functional verifications

Specimen is supplied with voltage generator @220Vac 50Hz and Pins number 11 and 10 are short-circuited to each other to enable the outputs voltage.

Voltage outputs are measured as described @ par.2.1 with a multimeter.

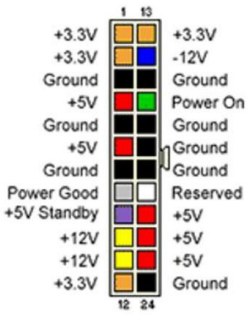
Photos of the functional verification setup.





Molex 4-pin peripheral connector

ATX 4-pin 12V power connector



ATX 24-pin power connector

Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

2.2 Test #02 – Damp heat test

Specimen is placed and fixed with one cable tie in the center of climatic chamber.
Specimen is supplied with a voltage generator @220Vac 50Hz.

Device input contact	Connected to:	
L	Voltage generator	L
N		N
G		G

Pins 10 and 11 of ATX 24-pin power connector are short-circuited to each other.
Pin out:

ATX 24-pin power connector

Two thermocouples, connected to datalogger, are placed on the left and right sides to measure the specimen temperature.

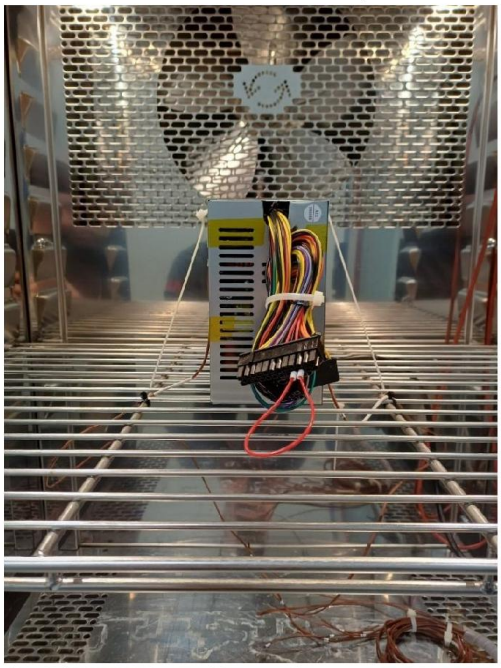
Thermocouple number	Description
1	Specimen right side
2	Specimen left side

Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

Photos of the climatic setup.



Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

Photos of the climatic setup.

Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

Photos of the climatic setup.

Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

4 Result

4.1 Test #01 – Preliminary Functional verifications

Connector	Expected Voltage output	Voltage measured between PINs #:		Measure (Vdc)
24pin power connector	+3.3Vdc	1	3	3.3
		2	17	3.3
		13	18	3.3
		12	24	3.3
	-12Vdc	14	19	-11.5
	+5Vdc	4	5	5.2
		6	7	5.2
		21	7	5.2
		22	7	5.2
		23	7	5.2
	+12Vdc	10	7	12.2
		11	7	12.2
	+5Vdc Standby	9	7	5.2
Molex 4-pin peripheral connector 1.0	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 1.1	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 2.0	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 2.1	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
4-PIN 12V power connector	+12Vdc	3	1	12.2
	+12Vdc	4	2	12.2

Measurement uncertainties: Voltage 0.2%

Date of tests: 2025/11/26 – 2025/11/26	Operator: Cornago Davide

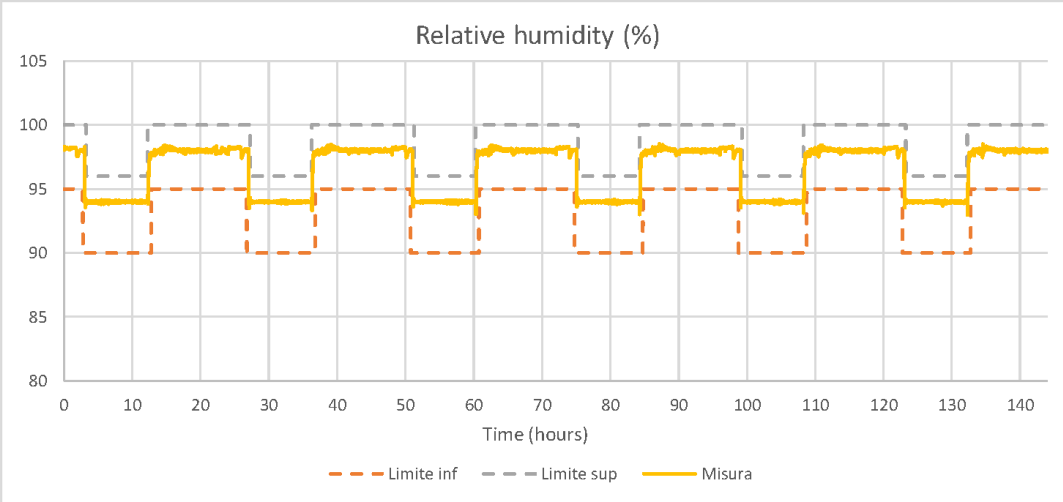
020E/lab-edA

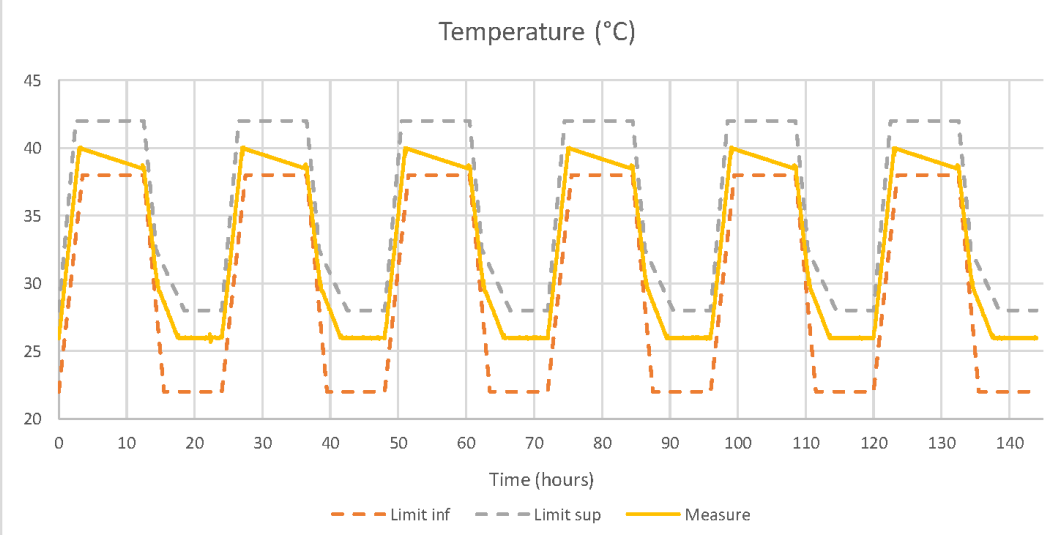
RapE-ABB 000/lab-edB

4.2 Test #02 - Damp Heat test

Evaluation of performed cycle against standard limits	Result
Temperature	OK
Relative humidity	OK

Following graph shows all performed test cycles and standard limits.





Date of tests: 2025/11/28 – 2025/12/04	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

4.2.1 Specimen final images

Date of tests: 2025/11/28 – 2025/12/04	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

Date of tests: 2025/11/28 – 2025/12/04	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

Visual inspection results: **No visible signs of deterioration were detected on the object under test at the end of the Damp Heat Test**

Date of tests: 2025/11/28 – 2025/12/04	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

4.3 Test #01 – Final Functional verifications

Connector	Expected Voltage output	Voltage measured between PINs #:		Measure (Vdc)
24pin power connector	+3.3Vdc	1	3	3.3
		2	17	3.3
		13	18	3.3
		12	24	3.3
	-12Vdc	14	19	-11.5
	+5Vdc	4	5	5.2
		6	7	5.2
		21	7	5.2
		22	7	5.2
		23	7	5.2
	+12Vdc	10	7	12.2
		11	7	12.2
	+5Vdc Standby	9	7	5.2
Molex 4-pin peripheral connector 1.0	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 1.1	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 2.0	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 2.1	+12Vdc	1	2	12.2
	+5Vdc	4	3	5.2
4-PIN 12V power connector	+12Vdc	3	1	12.2
	+12Vdc	4	2	12.2

Final functional verification results: **No changes in measured output voltages after damp heat test**

Measurement uncertainties: Voltage 0.2%

Date of tests: 2025/11/28 – 2025/12/04	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

A4 - PARTICIPANT RESULTS (REPORT #LBRP 24692/00)

ABB S.p.A.

TEST REPORT

LBRP 24692/00 Rev. 0

Bergamo Laboratory

TESTED OBJECT:	ATX 600 X 24 P 2S
MANUFACTURER:	ACONCAWA
TESTING LABORATORY:	ABB S.p.A. Via Pescaria 6, 24123 Bergamo Italia
TESTS:	Damp Heat
TEST STANDARD:	IEC60068-2-30 ed3.0 (2005)
DATE OF TESTS:	2025/11/26 to 2025/12/11
TESTS REQUIRED BY:	SOUTH QUALITY Pareja 3981 -Villa Devoto (C1419GVG) Buenos Aires Argentina
DATE OF ISSUE:	2025/12/19
Prepared:	Davide Cornago
Verified **Testing Section Manager:**	Michele Zanetti
Approved **Laboratory Manager:**	Mario Bortoli

ABB S.p.A. - Bergamo Laboratory Via C. Pescaria, 6 - I 24123 Bergamo (ITALY) Tel.: 035 395111 - Fax: 035 395284

ABB 005E/lab-edD

RapE-ABB 000/lab-edB

CONTENTS

ABB S.p.A.

TEST REPORT

LBRP 24692/00 Rev. 0

RATINGS ASSIGNED BY THE MANUFACTURER

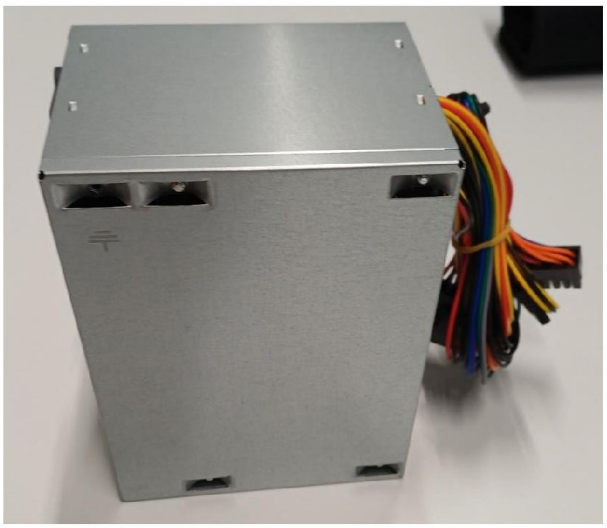
Data in this page are as provided by Customer without any laboratory responsibility

Description:	ATX power supply
Tested object:	ACONCAWA ATX 600 X 24 P 2S
Rated frequency:	50 Hz
Rated operational voltage (Ue):	220 V
Rated insulation voltage (Ui):	- V
Rated impulse withstand voltage (Uimp):	-V
Rated uninterrupted current (Iu):	- A
Rated short-circuit making capacity, peak value (Icm):	- kA
Rated short-circuit breaking capacity - ultimate value (Icu):	- kA
Rated short-circuit breaking capacity - service value (Ics):	-kA
Rated short-time withstand current for 1s (Icw):	-kA
Rated short-time withstand current for 1s F/N (Icw):	- kA
Conventional free air thermal current (Ith):	- A
Utilization category:	-
Selectivity limit current (Is):	- kA

NOTES: ATX power supply - 220 V - 50Hz - 600W

DESCRIPTION AND IDENTIFICATION OF THE TESTED OBJECT

Preliminary photos of the sample as received.



DESCRIPTION AND IDENTIFICATION OF THE TESTED OBJECT

Preliminary photos of the sample as received.

ABB S.p.A.

TEST REPORT

LBRP 24692/00 Rev. 0

DATE OF ACCEPTANCE ON: 2025/11/26

TESTS PERFORMED:
IN ACCORDING TO: IEC60068-2-30 ed.3.0 (2005)

TEST	CLAUSE	STANDARD
Functional verification**	-	-
Damp heat test	6÷10	IEC60068-2-30 ed.3.0 (2005)

SAMPLING: performed by the customer; sampling is not under laboratory responsibility, tests have been performed on the sample as received.

Device Type	S/N	Sample	Date of tests From	Date of tests To	Test Title	Test Result	IOP-POP used		PAGE
NOGANET ATX 550 P4	-	2	2025/11/26	2025/11/26	Initial Functional verification**	OK	-	-	14
			2025/12/05	2025/12/11	Damp heat	OK	-	026	16
			2025/12/11	2025/12/11	Final Functional verification**	OK[a]	-	-	19

* Test not accredited

** Test performed with deviation from the required test method and agreed with the customer

[a] No changes in measured output voltages after damp heat test

WITNESSES OF THE TESTS:

-

The uncertainties reported in this report are referred to a coverage probability of 95% with a coverage factor k = 2. The conformity decision rule applied in the Test Report is the compliance to the criteria indicated by the standard, unless otherwise explicitly specified to the criteria indicated by the customer. Measurable results are evaluated as:

- Compliant, when value complies its reference limit including the extended uncertainty
- Compliant with a level of risk lower than 50%, when value complies its reference limit only, not including the extended uncertainty.
- Non-compliant, when value does not comply its reference limit

022E/lab-edC

RapE-ABB 000/lab-edB

1 Test description

1.1 Functional verifications

Functional verification, according to costumer's specification, provides external visual inspection of specimen and verification of the presence of voltage outputs from it.

All voltage outputs of device under test are measured as follows:

Connector	Expected Voltage out	Voltage measured between PINs #:	
24pin power connector	+3.3Vdc	1	3
		2	17
		13	18
		12	24
	-12Vdc	14	19
	+5Vdc	4	5
		6	7
		21	7
		22	7
		23	7
	+12Vdc	10	7
		11	7
	+5Vdc Standby	9	7
Molex 4-pin peripheral connector 1.0	+12Vdc	1	2
	+5Vdc	4	3
SPIN SATA POWER connector 1.1	+12Vdc	1	2
	+5Vdc	4	3
Molex 4-pin peripheral connector 2.0	+12Vdc	1	2
	+5Vdc	4	3
SPIN SATA POWER connector 2.1	+12Vdc	1	2
	+5Vdc	4	3
4-PIN 12V power connector	+12Vdc	3	1
	+12Vdc	4	2

Connectors pinout @ page 9

With the combinations indicated in the table above, control of all the pins of all the connectors is guaranteed.

The result is positive if expected voltage is present on outputs

Date of tests: -	Operator: -

1.2 Damp Heat test

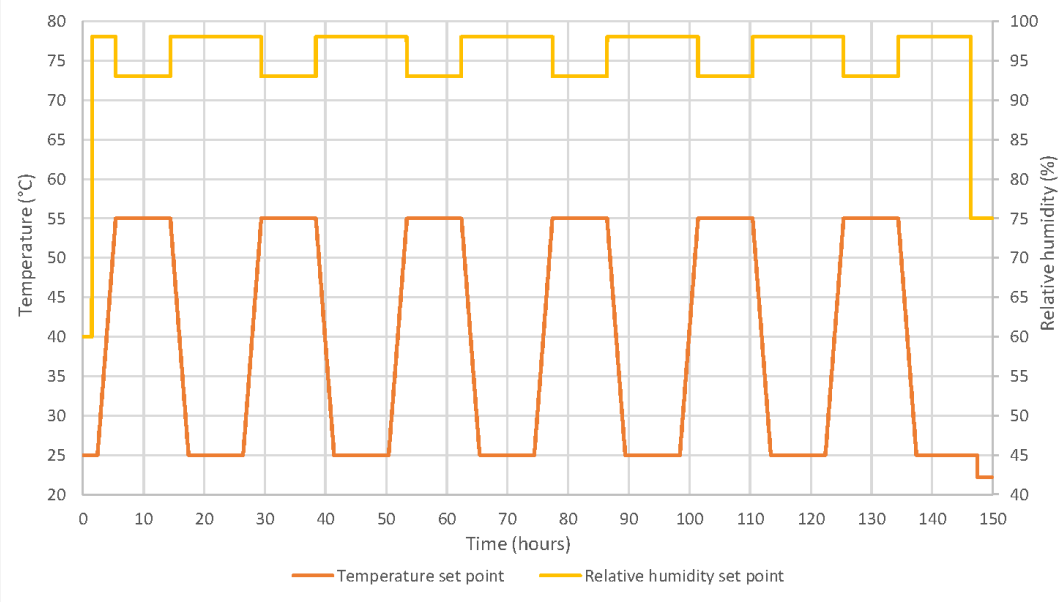
IEC60068-2-30 ed3.0 (2005) variant 2 - 6 cycles - upper temperature 55°C

Test cycle description:

Step #	Temperature [°C]	Ramp rate Temperature	Relative humidity [%]	Ramp rate HR	Step duration	Next Step	Repetition #	Notes
1	25	-	98	-	-	2	-	
2	55	0.167°C/min	98	-	3h	3	-	-
3	55	-	93	-	-	4	-	-
4	55	-	93	-	9h	5	-	-
5	55	-	98	-	-	6	-	-
6	25	-0.167°C/min	98	-	3h	7	-	-
7	25	-	98	-	9h	2	6	-

Notes:
During test cycle specimen is supplied with 220Vac 50Hz and Pins number 11 and 10 are short-circuited to each other to enable the outputs voltage.

Following graph shows theoretical cycle:



Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

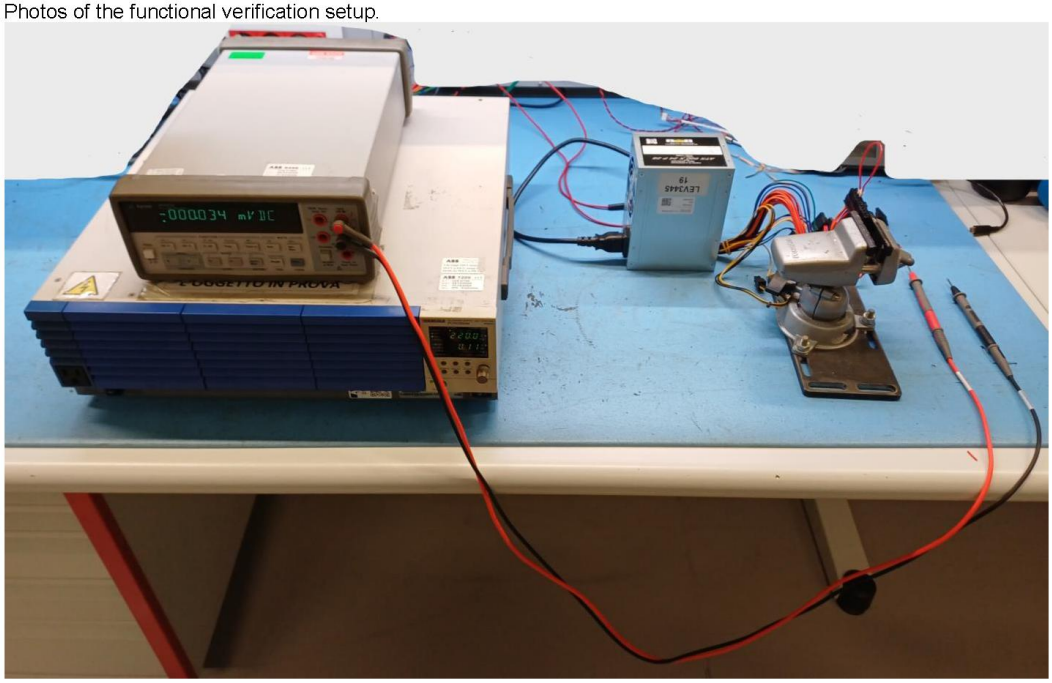
2 Setup

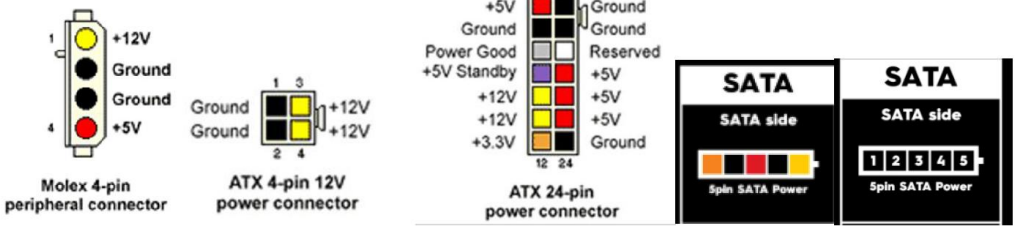
2.1 Functional verifications

Specimen is supplied with voltage generator @220Vac 50Hz and Pins number 11 and 10 are short-circuited to each other to enable the outputs voltage.

Voltage outputs are measured as described @ par.1.1 with a multimeter.

Photos of the functional verification setup.





Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

2.2 Damp heat test

Specimen is placed and fixed with one cable tie in the center of climatic chamber.
Specimen is supplied with a voltage generator @220Vac 50Hz.

Device input contact	Connected to:	
L	Voltage generator	L
N		N
G		G

Pins 10 and 11 of ATX 24-pin power connector are short-circuited to each other.
Pin out:

ATX 24-pin power connector

Two thermocouples, connected to datalogger, are placed on the left and right sides to measure the specimen temperature.

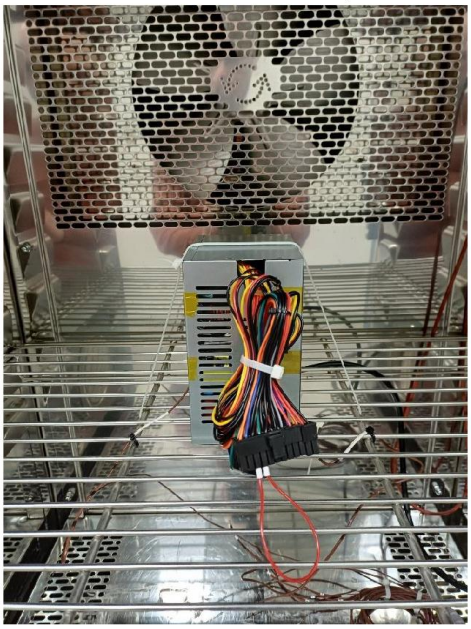
Thermocouple number	Description
1	Specimen right side
2	Specimen left side

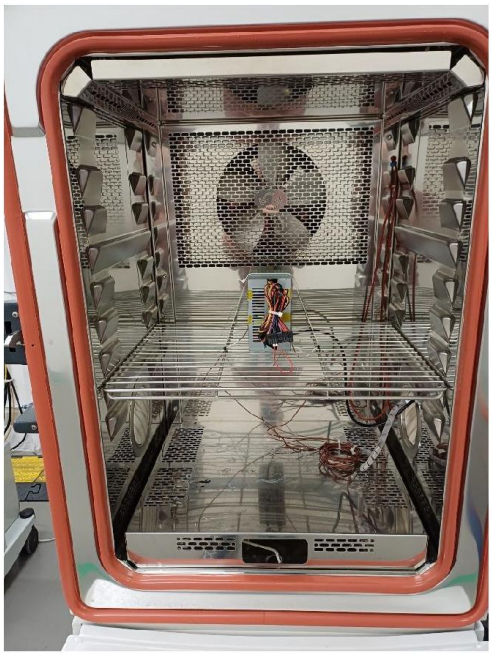
Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

Photos of the climatic setup.



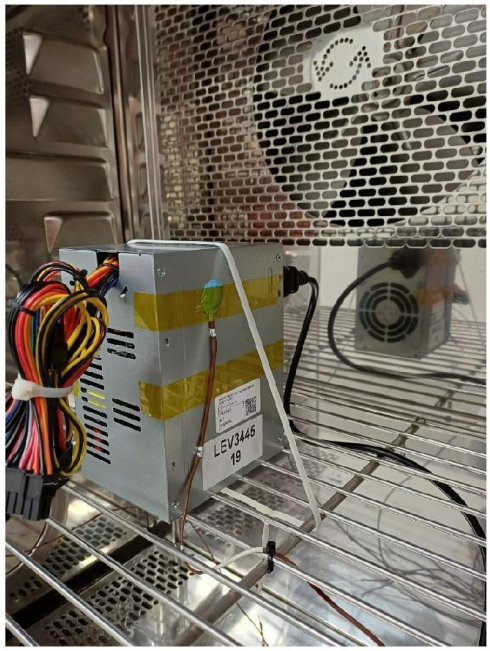


Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

Photos of the climatic setup.

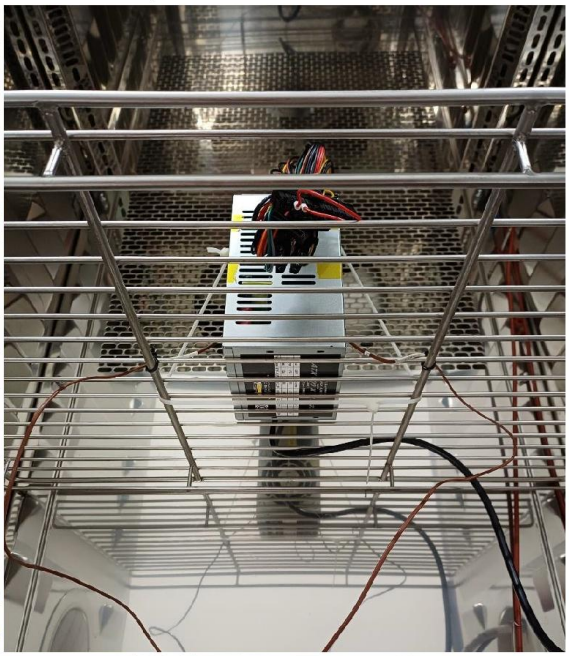


Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

Photos of the climatic setup.



Date of tests: -	Operator: -

020E/lab-edA

RapE-ABB 000/lab-edB

4 Result

4.1 Test #01 – Preliminary Functional verifications

Connector	Expected Voltage output	Voltage measured between PINs #:		Measure (Vdc)
24pin power connector	+3.3Vdc	1	3	3.3
		2	17	3.3
		13	18	3.3
		12	24	3.3
	-12Vdc	14	19	-11.4
	+5Vdc	4	5	5.2
		6	7	5.2
		21	7	5.2
		22	7	5.2
		23	7	5.2
	+12Vdc	10	7	12.1
		11	7	12.1
	+5Vdc Standby	9	7	5.2
Molex 4-pin peripheral connector 1.0	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
SPIN SATA POWER connector 1.1	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 2.0	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
SPIN SATA POWER connector 2.1	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
4-PIN 12V power connector	+12Vdc	3	1	12.1
	+12Vdc	4	2	12.1

Measurement uncertainties: Voltage 0.2%

Date of tests: 2025/11/26 – 2025/11/26	Operator: Cornago Davide

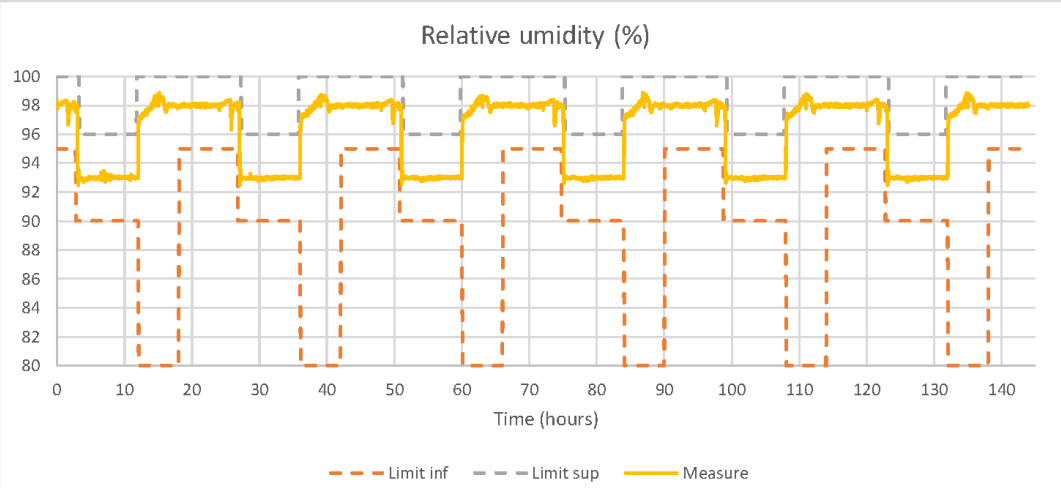
020E/lab-edA

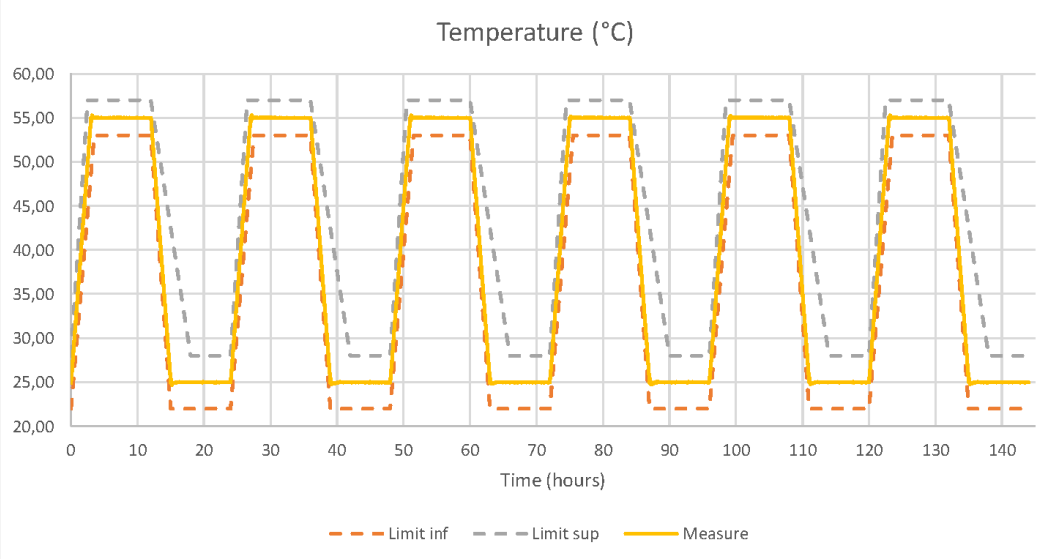
RapE-ABB 000/lab-edB

4.2 Test #02 - Damp Heat test

Evaluation of performed cycle against standard limits	Result
Temperature	OK
Relative humidity	OK

Following graph shows all performed test cycles and standard limits.





Date of tests: 2025/12/05 – 2025/12/11	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

4.2.1 Specimen final images

Date of tests: 2025/12/05 – 2025/12/11	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

Date of tests: 2025/12/05 – 2025/12/11	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

Visual inspection results: **No visible signs of deterioration were detected on the object under test at the end of the Damp Heat Test**

Date of tests: 2025/12/05 – 2025/12/11	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

4.3 Test #01 – Final Functional verification

Connector	Expected Voltage output	Voltage measured between PINs #:		Measure (Vdc)
24pin power connector	+3.3Vdc	1	3	3.3
		2	17	3.3
		13	18	3.3
		12	24	3.3
	-12Vdc	14	19	-11.4
	+5Vdc	4	5	5.2
		6	7	5.2
		21	7	5.2
		22	7	5.2
		23	7	5.2
	+12Vdc	10	7	12.1
		11	7	12.1
	+5Vdc Standby	9	7	5.2
Molex 4-pin peripheral connector 1.0	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
SPIN SATA POWER connector 1.1	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
Molex 4-pin peripheral connector 2.0	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
SPIN SATA POWER connector 2.1	+12Vdc	1	2	12.1
	+5Vdc	4	3	5.2
4-PIN 12V power connector	+12Vdc	3	1	12.1
	+12Vdc	4	2	12.1

Final functional verification results: **No changes in measured output voltages after damp heat test**

Measurement uncertainties: Voltage 0.2%

Date of tests: 2025/12/05 – 2025/12/11	Operator: Cornago Davide

020E/lab-edA

RapE-ABB 000/lab-edB

APPENDIX B

VOID

----- END OF REPORT -----