

Report Summary

Products tested	VCCR300-xx
Products Description	300W DC/DC Single Output Power Supply
Design Phase	3 – Verification
Tested Products and Serials	VCCR300-48 (S/N 10111314001100008)
Test Goals	Test according to EN50155:2021 cl. 13.4.8
Test dates	25 TH to 28 TH May 2023
Report date	1 ST June 2023

Authorisation

Jorge Almendros

1ST June 2023

Test performed by (Print)

Date

Jorge Almendros

1ST June 2023

Test report written by (Print)

Date

Brian McDonald

1ST June 2023

Test report Authorised by (Signed)

Date

Brian McDonald

1ST June 2023

Test report reviewed by (Signed)

Date

1 Objective

Cyclic Damp Heat Test is a mandatory test required to comply with EN50155 standard. The objective of this report is to show compliance with the requirements of EN50155 clause 13.4.8 for Cyclic damp heat test.

2 Executive Summary

The cyclic damp heat test verifies the correct safety performance and functional operation of the power supply during and after the exposure of the power supply to a stressful controlled profile that combines warm temperature with high humidity levels. It was carried out in accordance with EN50155 clause 13.4.8 on a VCCR300-48 converter (highest output voltage variant) as it is the worst-case for high operating voltages.

The test temperature and humidity are controlled according to the profile specified in EN50155 clause 13.4.8.

The test was carried out at highest nominal input voltage as the standard specifies. The highest nominal input voltage is 110V as defined in product datasheet.

The product operated correctly during the continuous operational checks specified in the standard as shown in the section 'Profile and Operational Check Graphs' located in Appendix A.

The insulation test specified in the standard passed successfully and the results can be found in the section 'Insulation Test Results' located in Appendix A.

The performance test results were compared before and after the profile and no differences were observed as shown in the section 'Functional Test Results' in Appendix A.

The description of the profile data collection and definition of continuous operational checks are in the section 3.2 and the setup pictures are shown in section 3.3.

It can be concluded that the Cyclic Damp Heat test was passed successfully.

3 Test Equipment and Setup

3.1 Description of Test Equipment

The test equipment listed in Table 1 below was used to carry out the test profile and continuous operational checks for the Cyclic Damp Heat test.

Table 1 – Test Profile & Continuous Operational Checks Equipment description				
Description	Manufacturer	Model	S/N	Calibration Certificate
Thermal test Chamber	Espec	SH-241	92000731 (VOX0028)	Not required
AC Source	BK Precision	9833	522H17122 (VOX0126)	Not required
Electronic Load	Agilent	6050A+60504B + 60503B	US37140610 (VOX0054)	VOX0054-0523
Datalogger	Agilent	34970A	MY41010318 (VOX0030)	VOX0030-0523

The test equipment listed in Table 2 below was used to carry out the functional test for the Cyclic Damp Heat test.

Table 2 – Functional Test Equipment description				
Description	Manufacturer	Model	S/N	Calibration Certificate
Safety tester AC/DC, grounding tester	GW Instek	GPT-9804	GEQ161979C075 (VOX0102)	VOX0102-0722

The test equipment listed in Table 3 below was used to carry out the functional test for the Cyclic Damp Heat test.

Table 3 – Functional Test Equipment description				
Description	Manufacturer	Model	S/N	Calibration Certificate
AC Source	Chroma	61505	000685 (VOX0097)	VOX0097-0523
Electronic Load	Chroma	6314A+63103Ax4	0003599 (VOX0098)	VOX0098-0523
Oscilloscope	Keysight	DSO2014A	MY53160421 (VOX0095)	VOX0095-0523
Datalogger	Agilent	34970A	MY41025109 (VOX0070)	VOX0070-0523
Power Meter	Chroma	66202	662021001062 (VOX0101)	VOX0101-0523

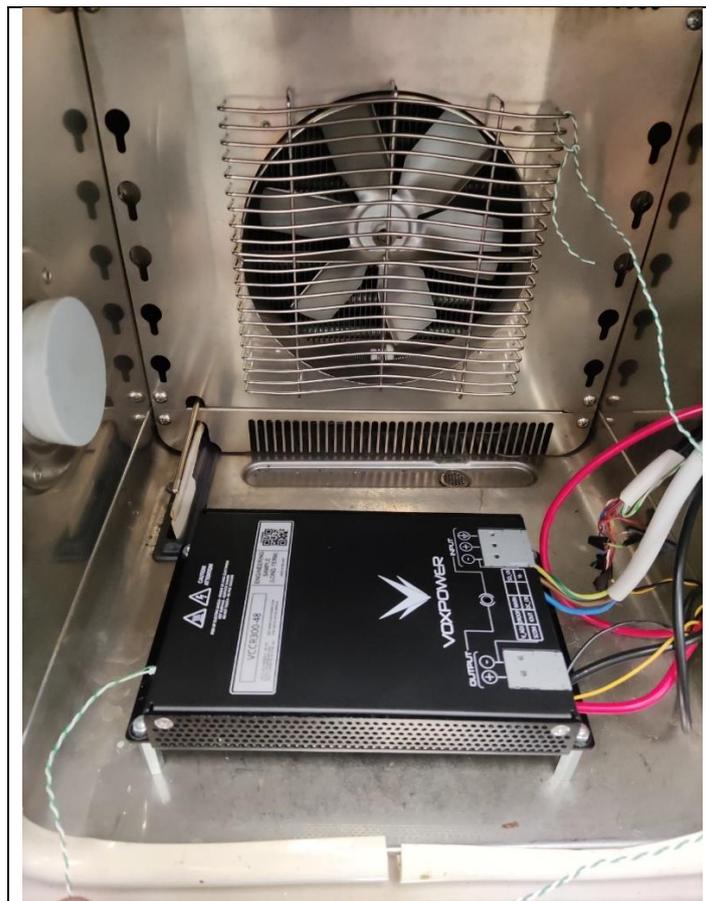
3.2 Profile Data Collection Description

Various environmental, electrical and product performance data was collected and logged at regular intervals throughout the process. Thermocouples were attached to various points on the devices.

The data collected is listed in Table 4 and the test results are detailed in appendix A.

Table 4 – Data to be collected	
Type	Description
Time	Time stamp
Step #	Step number of test sequence
Chamber Temp	Chamber air temperature (Read from Chamber)
Chamber Temp DL	Chamber air temperature (Read from calibrated Datalogger - thermocouple)
Product Temp DL	Product temperature – (Read from calibrated Datalogger - thermocouple)
Chamber Relative Humidity	Chamber relative humidity (Read from Chamber using wet bulb/dry bulb method – no calibration required)
Vo1	Product output voltage in volts (From datalogger)
Iout	Product output current total in amps (From Electric Load)
Vin (V)	Product input voltage in volts (From datalogger)
Iin (A)	Product input current in amps (From AC source)
Pin (W)	Product input power in watts (From AC source)
Pout	Product output power in watts
Eff	Product efficiency

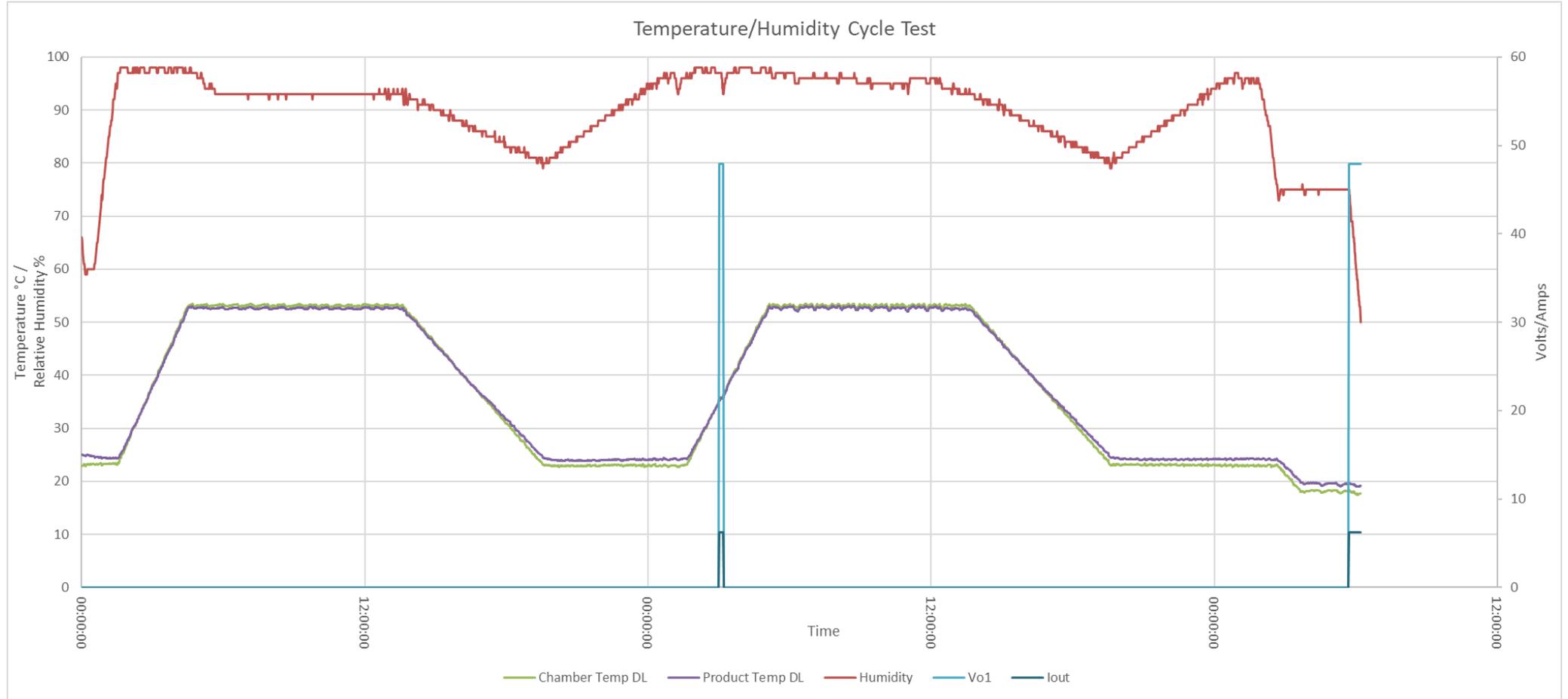
3.3 Profile Test Setup Pictures



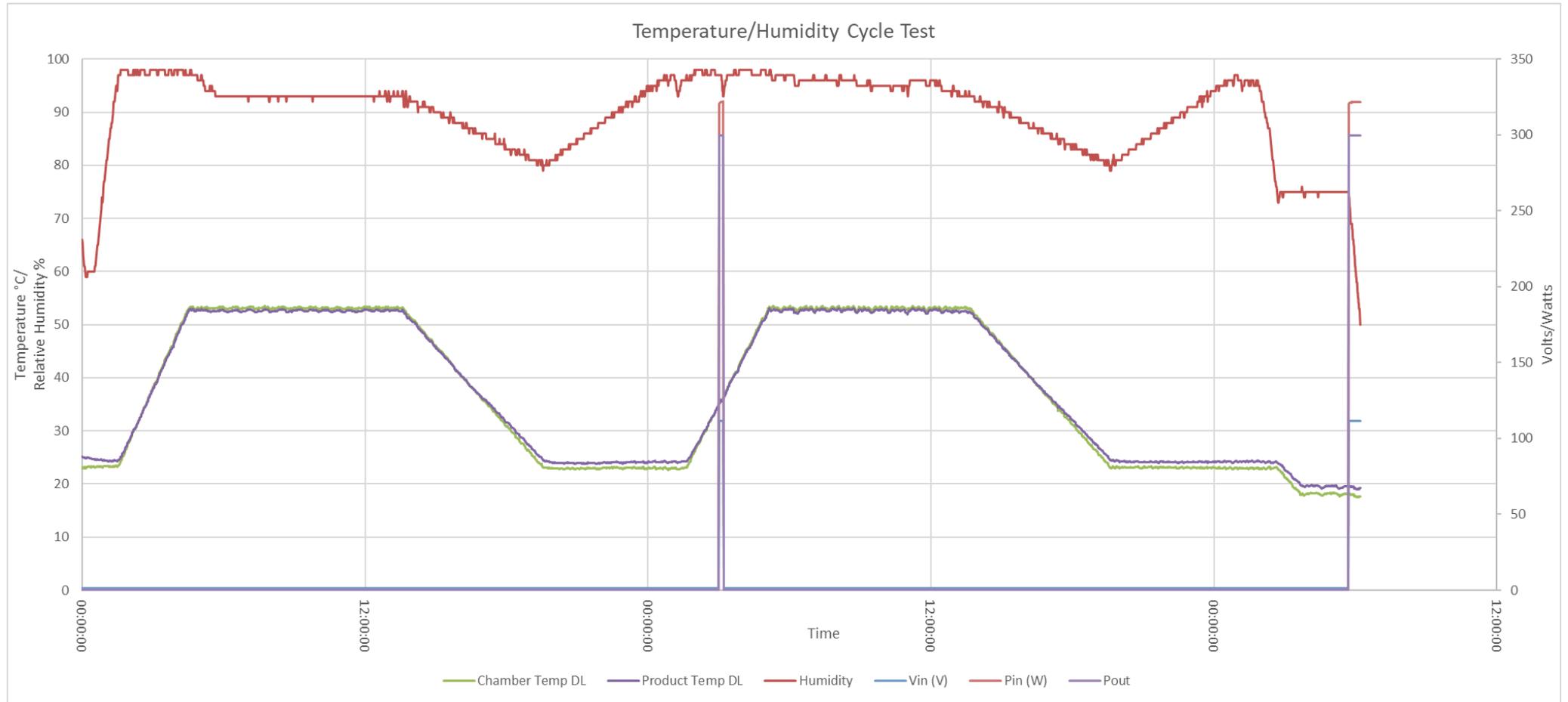
4 Appendix A: Test Results

4.1 Profile and Operational Check Graphs

4.1.1 Output Voltage & Output Current



4.1.2 Input Voltage, Input Power & Output Power



4.2 Insulation Test Results

All the safety insulation tests carried out are detailed in Table 5 making use of the descriptive diagram below.

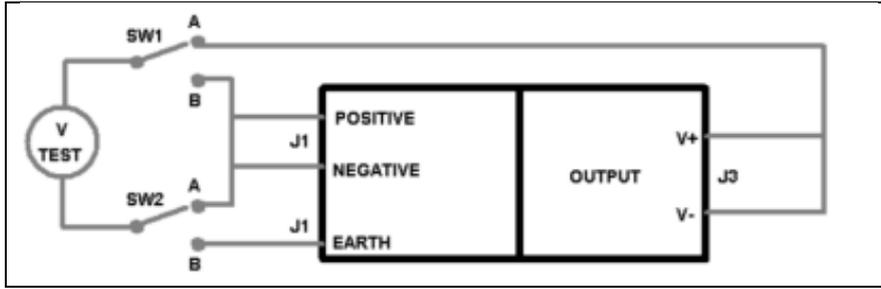


Table 5 – Insulation Test List

Voltage	Ramp	Dwell	IMIN	IMAX	Test Type	SW1	SW2	Result
5400VDC	10s	60s	0	5mA	Input to Output.	A	A	PASSED
3400VDC	10s	60s	0	5mA	Input to Chassis.	B	B	PASSED
3400VDC	10s	60s	0	5mA	Output to Chassis.	A	B	PASSED

4.3 Performance Test Results

