

TEST REPORT

For

INVERTER/CHARGER

Model/Spec.:

Alpha V III 5kw-48v

Report No.: WT166003316

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Test Report Declaration

Applicant : CELLCRONIC TECHNOLOGIES PRIVATE LIMITED

Address : Daniyalpur Chowk, Airport Road, Karnal, Haryana
India (132001)

Factory : CELLCRONIC TECHNOLOGIES PRIVATE LIMITED

Address : Daniyalpur Chowk, Airport Road, Karnal, Haryana,
India (132001)

Specimen : Hybrid inverter

Trade mark :  **CELLCRONIC**

Model/Spec. : Alpha V III 5kw-48v

Specimen quantity : 1pcs

Serial/Specimen No. : N/A

Manufactured date : APR,10.2018

Specimen source : Submitted by applicant

Received date : APR,19.2018

Processed date : APR,20.2018 ~ APR,29.2018

Test criteria : IEC 60068-2-1: 2007, IEC 60068-2-2: 2007,
IEC 60068-2-30: 2005, IEC 60068-2-78: 2012,
IEC 60068-2-14: 2009, IEC 60068-2-75: 1997,
IEC 60068-2-6: 2007, IEC 62268-2-27: 2008

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Tested by:	<u>Ling Jia Cheng</u>	Date:	<u>APR.05,2018</u>
Checked by:	<u>Chen Xiangyu</u>	Date:	<u>APR.05,2018</u>
Approved by:	<u>Zhu Jianhua</u>	Date:	<u>APR.05,2018</u>

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1. TEST SUMMARY

Table 1 Test overview

Test Item	Specimen status	Serial/Specimen No.	Test conclusion	Processed date
Low temperature test	Unpackaged, non-operating	N/A	Pass	APR.20,2018~ APR.21,2018
High temperature test	Unpackaged, non-operating	N/A	Pass	APR.21,2018
Damp heat cyclic test	Unpackaged, non-operating	N/A	Pass	APR.21,2018~ APR.22,2018
Change of temperature test	Unpackaged, non-operating	N/A	Pass	APR.22,2018
Damp heat test	Unpackaged, non-operating	N/A	Pass	APR.23,2018~ APR.25,2018
Sinusoidal vibration test	Unpackaged, non-operating	N/A	Pass	APR.26,2018~ APR.28,2018
Mechanical shock test	Unpackaged, non-operating	N/A	Pass	APR.26,2018~ APR.28,2018
IK07 test	Unpackaged, non-operating	N/A	Pass	APR.29,2018

2. AMBIENT CONDITION

Temperature: (20~24)°C

Relative Humidity: (50~62)%

Atmospheric pressure: (100~102) kPa

3. INITIAL CHECK

Before the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.1)

4. LOW TEMPERATURE TEST

4.1. Test Requirement

Test refers to IEC 60068-2-1:2007

Specimen status: Unpackaged, non-operating

Temperature: $(-25 \pm 2)^{\circ}\text{C}$

Rate of temperature change: $1^{\circ}\text{C}/\text{min}$

Test duration: 16h

Recovery: 1h

4.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

4.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.2~No.3 and appendix B No.9)

4.4. Test Conclusion

Pass

5. HIGH TEMPERATURE TEST

5.1. Test Requirement

Test refers to IEC 60068-2-2:2007

Specimen status: Unpackaged, non-operating

Temperature: $(60 \pm 2)^\circ\text{C}$

Rate of temperature change: $1^\circ\text{C}/\text{min}$

Test duration: 16h

Recovery: 1h

5.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

5.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.2~No.3 and appendix B No.10)

5.4. Test Conclusion

Pass

6. DAMP HEAT CYCLIC TEST

6.1. Test Requirement

Test refers to IEC 60068-2-30:2005

Specimen status: Unpackaged, non-operating

Test parameter see table 2

Table 2 Test parameter

Step	Temperature(°C)	Humidity(%RH)	Test duration(h)
1. Ramp	25±2	97±2	1
2. Ramp	40±2	97±2	3
3. Dwell	40±2	93±2	9
4. Ramp	25±2	97±2	3
5. Dwell	25±2	97±2	9

6.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

6.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.2~No.3 and appendix B No.11)

6.4. Test Conclusion

Pass

7. CHANGE OF TEMPERATURE TEST

7.1. Test Requirement

Test refers to IEC 60068-2-14:2009

Specimen status: Unpackaged, non-operating

Low temperature extreme: $(-25 \pm 2)^\circ\text{C}$

High temperature extreme: $(60 \pm 2)^\circ\text{C}$

Rate of temperature change: $1^\circ\text{C}/\text{min}$

Dwell time: 3h for each temperature extremes

Number of cycles: 1

7.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

7.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.2~No.3 and appendix B No.12)

7.4. Test Conclusion

Pass

8. DAMP HEAT TEST

8.1. Test Requirement

Test refers to IEC 60068-2-78:2012

Specimen status: Unpackaged, non-operating

Temperature: $(40 \pm 2)^\circ\text{C}$

Relative humidity: $(93 \pm 2)\%$

Rate of temperature change: $1^\circ\text{C}/\text{min}$

Test duration: 48h

Recovery: 1h

8.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

8.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.2~No.3 and appendix B No.13)

8.4. Test Conclusion

Pass

9. SINUSOIDAL VIBRATION TEST

9.1. Test Requirement

Test refers to IEC 60068-2-6:2007

Specimen status: Unpackaged, non-operating

Vibration parameter:

Frequency range (Hz)	Amplitude (mm)	Acceleration (g)
10~58	0.075	N/A
58~150	N/A	1

Sweep rate: 1 Oct/min

Test axis: X, Y, Z axis

Test duration: 2h/axis, 6h in total

9.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

9.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.4~No.6, No.8 and appendix B No.14)

9.4. Test Conclusion

Pass

10. MECHANICAL SHOCK TEST

10.1. Test Requirement

Test refers to IEC 60068-2-27:2008

Specimen status: Unpackaged, non-operating

Pulse shape: Half-sine

Shock level: 6g

Pulse duration: 11ms

Test axis: $\pm X$, $\pm Y$, $\pm Z$ axis

Number of shocks: 3 shocks per axis, 18 shocks in total

10.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

10.3. Test Results

After the test, the specimen exhibited no external physical damage.

(Refer to the appendix A No.4~No.6, No.8 and appendix B No.15~No.16)

10.4. Test Conclusion

Pass

11. IK07 TEST

11.1. Test Requirement

Test refers to IEC 60068-2-75:1997

Specimen status: Unpackaged, non-operating

Test equipment: Spring hammer

Impact energy: 2J

Impact position: Every side of the enclosure

Number of impacts: 5 impact per position

11.2. Acceptance Criteria

After the test, the specimen should exhibit no external physical damage.

11.3. Test Results




After the test, the specimen exhibited no external physical damage.


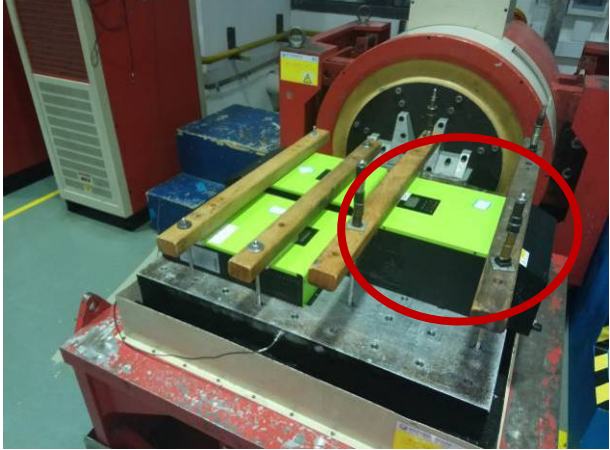

(Refer to the appendix A No.7~No.8)



11.4. Test Conclusion

Pass

APPENDIX A PHOTO

No.	Depiction	Photo
1	Inspection before the test	
2	Low temperature test, High temperature test, Damp heat cyclic test, Damp heat test and Change of temperature test specimen setting (Note: The red circle indicated the specimen)	
3	Inspection after test (Low temperature test, High temperature test, Damp heat cyclic test, Damp heat test and Change of temperature test)	

No.	Depiction	Photo
4	<p>Sinusoidal vibration test on X axis Mechanical shock test on \pmX axis (Note: The red circle indicated the specimen)</p>	 <p>A photograph showing a specimen mounted on a shaker table. The specimen is a small black rectangular object, highlighted with a red circle. It is secured between two wooden blocks on a metal shaker table. The shaker is a large red and white industrial machine.</p>
5	<p>Sinusoidal vibration test on Y axis Mechanical shock test on \pmY axis (Note: The red circle indicated the specimen)</p>	 <p>A photograph showing a specimen mounted on a shaker table. The specimen is a small black rectangular object, highlighted with a red circle. It is secured between two wooden blocks on a metal shaker table. The shaker is a large red and white industrial machine.</p>
6	<p>Sinusoidal vibration test on Z axis Mechanical shock test on \pmZ axis (Note: The red circle indicated the specimen)</p>	 <p>A photograph showing a specimen mounted on a shaker table. The specimen is a small black rectangular object, highlighted with a red circle. It is secured between two wooden blocks on a metal shaker table. The shaker is a large red and white industrial machine.</p>

No.	Depiction	Photo
7	IK07 test	
8	Inspection after test (Sinusoidal vibration test, Mechanical shock test and IK07 test)	

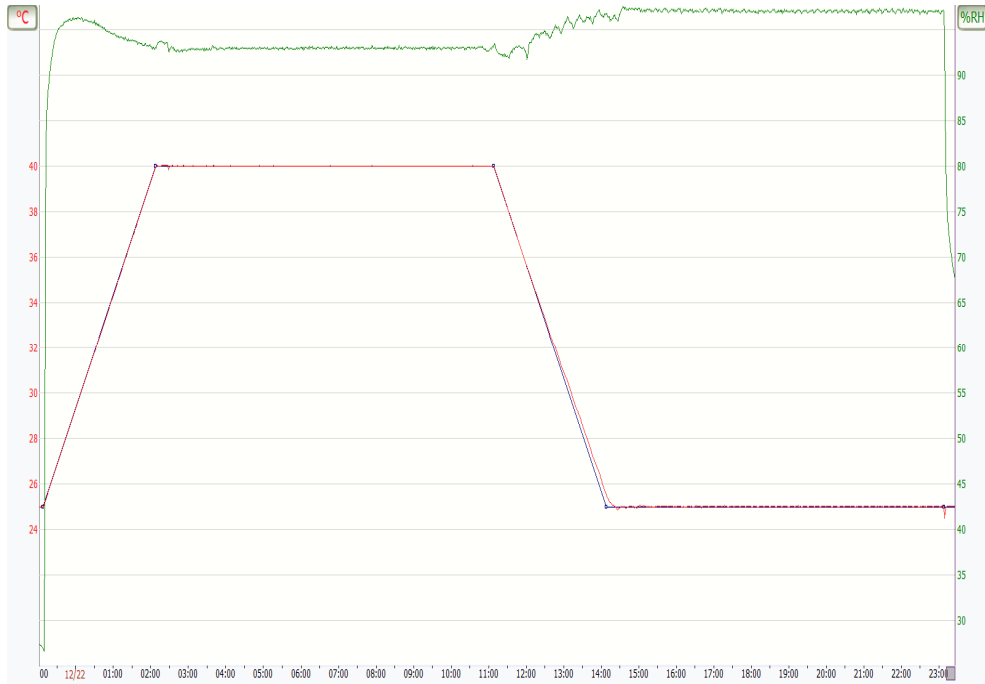
APPENDIX B TEST PROFILE



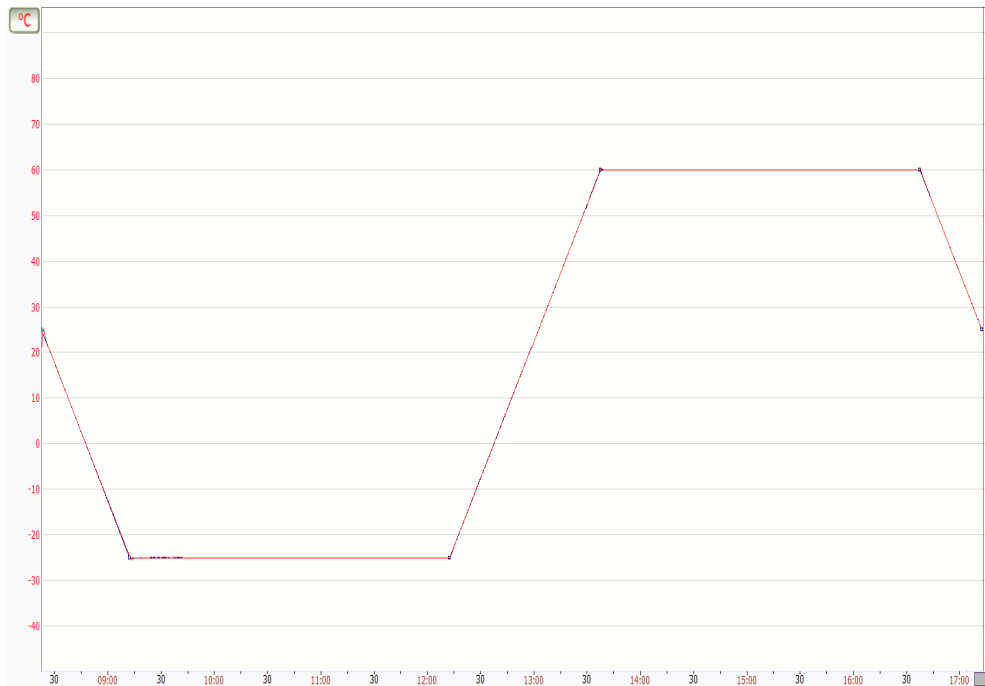
No.9 Low temperature test profile



No.10 High temperature test profile



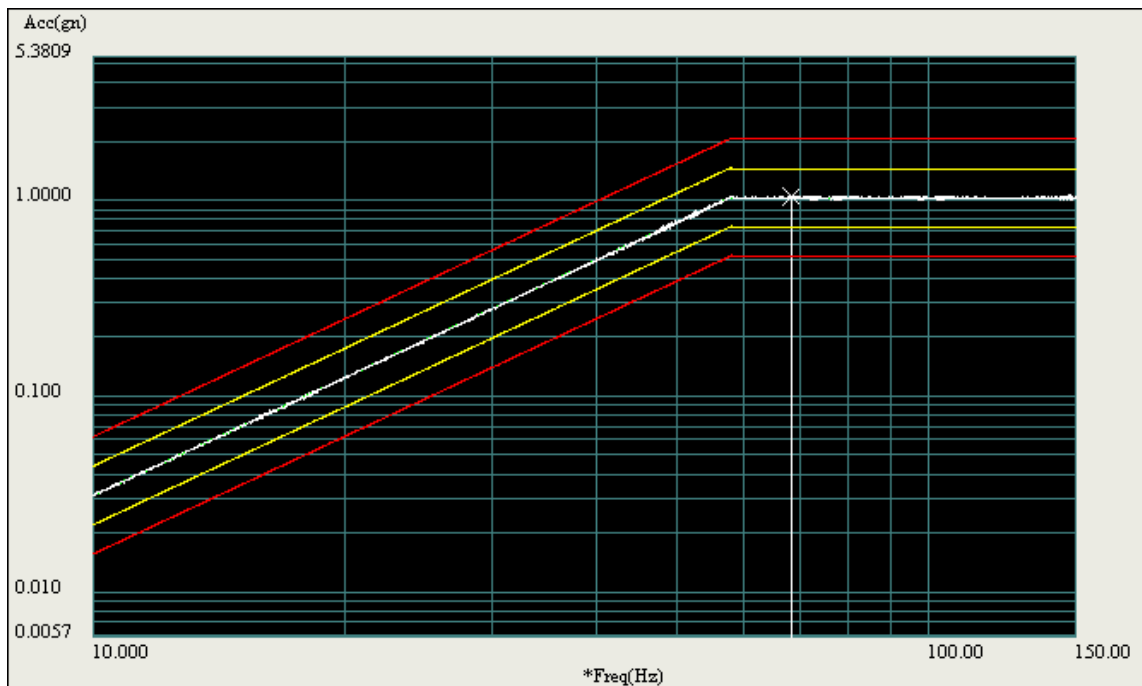
No.11 Damp heat cyclic test profile



No.12 Change of temperature test profile



No.13 Damp heat test profile



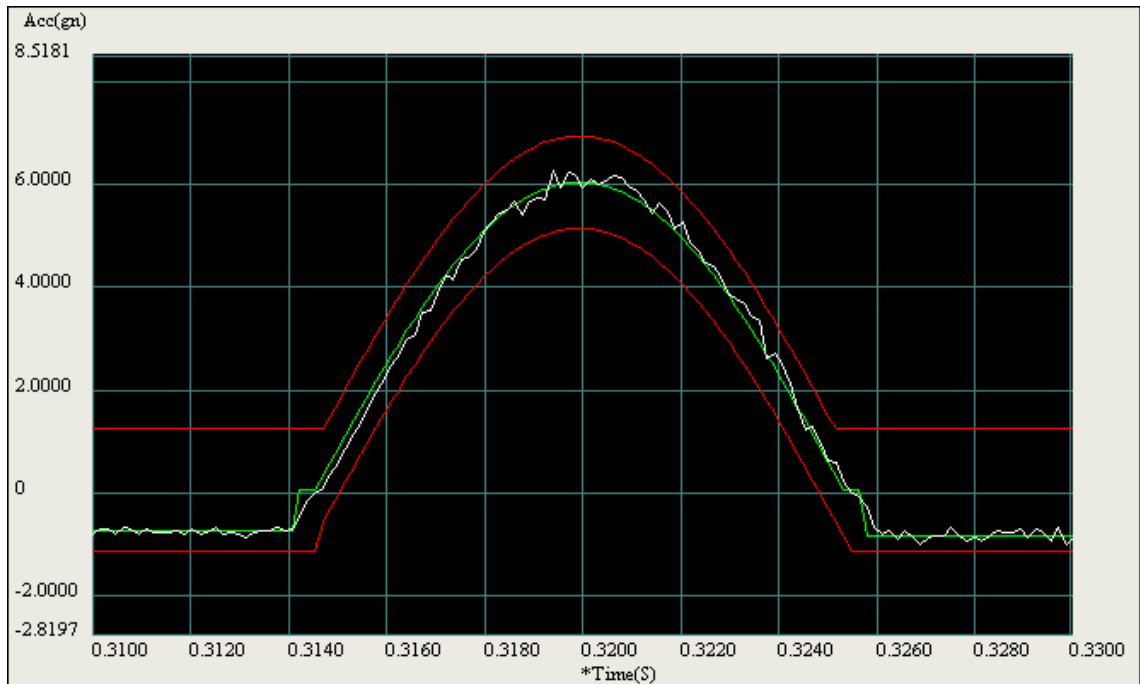
Real information

Control Peak: 1.0065gn
Frequency: 68.4201Hz

Full Level Time: 02:00:00
Time Remaining: 00:00:00

Sweep Type: Logarithmic
Sweep Rate: 1 Oct/Min

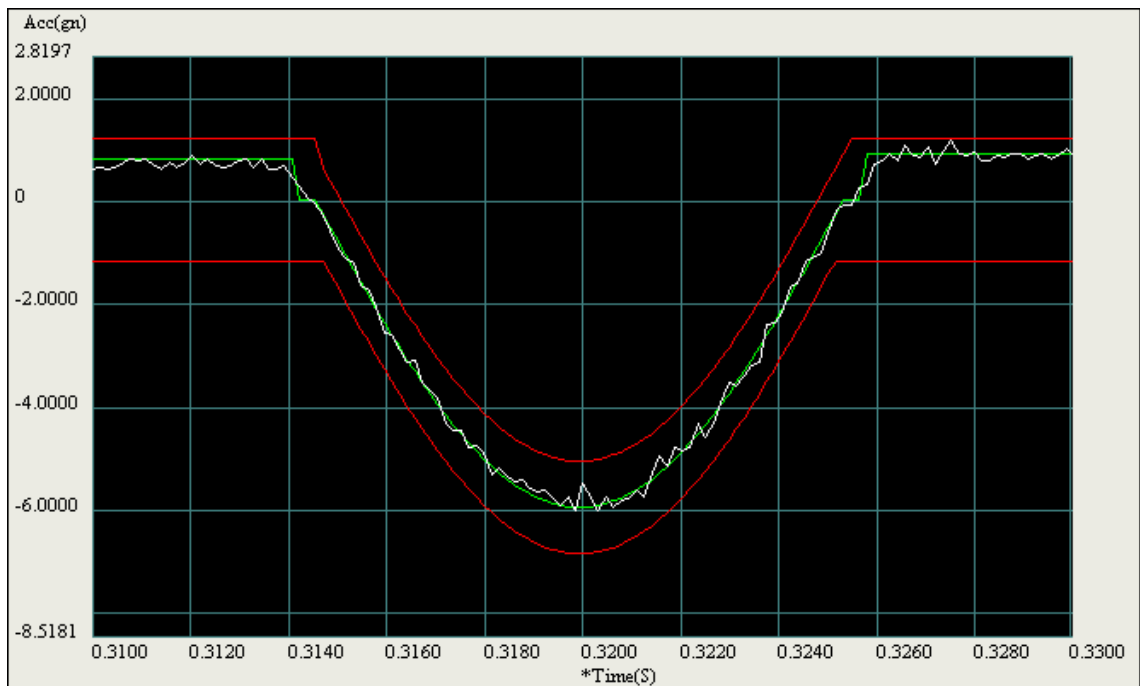
No. 14 Sinusoidal vibration test profile



Real information

Control peak:	6.1377gn	Full Level Elapsed Pulses:	3
Pulse Type:	Half Sine	Pulse Width:	11

No.15 Mechanical shock test profile, positive axis



Real information

Control peak:	-6.0468gn	Full Level Elapsed Pulses:	3
Pulse Type:	Half Sine	Pulse Width:	11

No.16 Mechanical shock test profile, negative axis

APPENDIX C EQUIPMENT USED FOR TEST

Table 3 Test equipment used

No.	Equipment	Equipment ID	Type	Manufacturer	Last Calib.	Next Calib.
1	Thermal Chamber	SB11002	Model10H 45/22 CM PV	Climats	Aug.23,2016	Aug.22,2017
2	Electromagnetic Vibrater	SB5104	ACT2000-R50L	CMI	Sep.09.2016	Sep.08.2017
3	Electromagnetic Vibrater	SB4025	ACT2000-S20L- MI2240L	CMI	Jul.04,2016	Jul.03,2017
4	Spring hammer	SB6715	N/A	Damsion	Apr.22,2016	Apr.21,2017

(The End)