

Right Power Certification Inc.

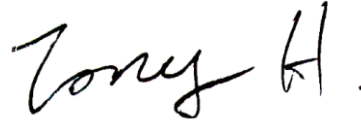
1F., No.11-2, Qionglin Rd., Xinzhuang Dist., New Taipei City 242, Taiwan (R.O.C.)
Tel.:+ 886-2-8201-1888 Fax: + 886-2-8201-8388

Reliability Report

Report Reference No.....: B21111601-00

Tested by (name): Jimmy Lu

Approved by (name + signature): Tony H.



Date of issue.....: 2022-12-30

Contents: 25 pages

Testing laboratory

Name: Right Power Certification Inc.

Address.....: 1F., No.11-2, Qionglin Rd., Xinzhuang Dist., New Taipei City 242,
Taiwan (R.O.C.)

Testing location.....: 1F., No.11-2, Qionglin Rd., Xinzhuang Dist., New Taipei City 242,
Taiwan (R.O.C.)

Applicant

Name: Cermate Technologies Inc

Address.....: 7F.-1, No.168, Liancheng Rd. Zhonghe Dist.,New Taipei City
235, Taiwan (R.O.C.)

Test item

Description.....: DVT stage

Model and/or type reference.....: PT2043-WSK, PT2043-WSP

Trade name: N.A.

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List of Attachments (including a total number of pages in each attachment):
- Photos documentation (2 pages)

Test Item

No.	Test Item	Test specification	Result	Remark
1	High temperature operation test	+80°C, 24hrs	Pass	
2	Low temperature operation test	-30°C, 24hrs	Pass	
3	Humidity test	+40°C 95% Rh, 48hrs	Pass	
4	High temperature & humidity storage test	+60°C 95% Rh, 24hrs	Pass	
5	High temperature storage test	+80°C, 24hrs	Pass	
6	Low temperature storage test	-40°C, 24hrs	Pass	
7	Thermal shock test	+70°C, 2hrs -30°C, 2hrs 10 cycles	Pass	
8	Power ON/OFF test	+70°C -30°C	Pass	
9	Cold start test	-30°C	Pass	
10	Thermal step stress test	Max.+100°C Min. -40°C	Pass	

High Temperature Operation Test

1. Test Date: Dec 12~13, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model: GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference IEC60068-2-2:2007 Testing procedures

Test item: Dry Heat Test

5. Test Condition:

1. Test Temperature: 80°C

2. Test Times: 24 hrs

3. Test Software: Running burning test program.(Serial signal self communication, test confirms that the communication signal and display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Running DVT program system should not have degradation in performance.

Mechanical function check:

1. The connectors and components should work properly without any interference.

2. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

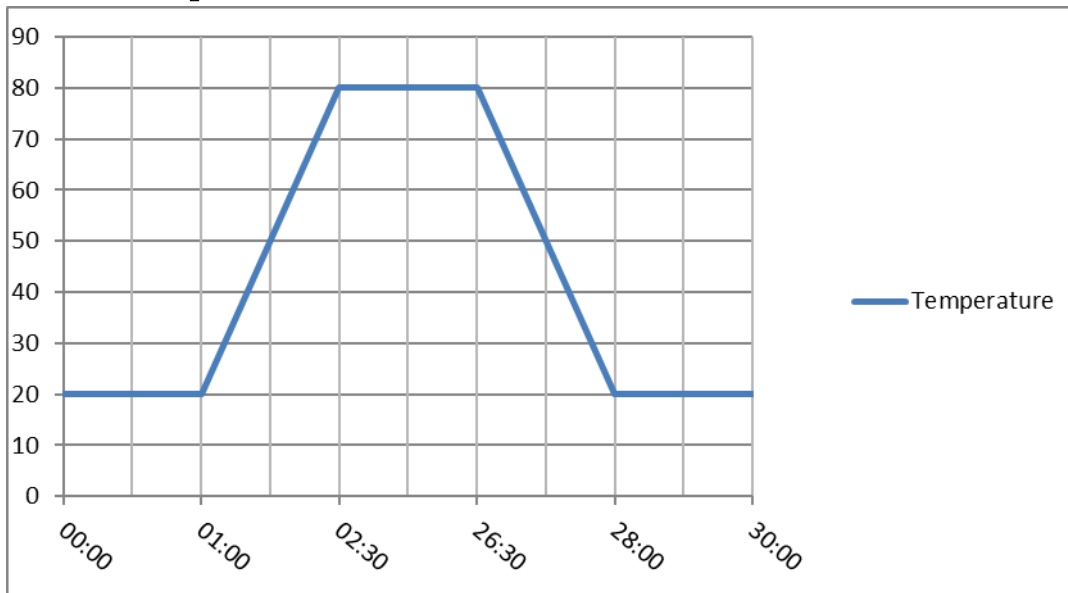
Performance is maintained with no incurable physical damage or degradation

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8. Temperature



9. Test By: Jimmy Lu

Low Temperature Operation Test

1. Test Date: Dec. 14~15, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference IEC60068-2-1:2007 Testing procedures

Test item: Cold Test

5. Test Condition:

1. Test Temperature: -30°C

2. Test Times: 24hrs

3. Test Software: Running burning test program.(Serial signal self communication, test confirms that the communication signal and display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Running DVT program system should not have degradation in performance.

Mechanical function check:

1. The connectors and components should work properly without any interference.

2. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

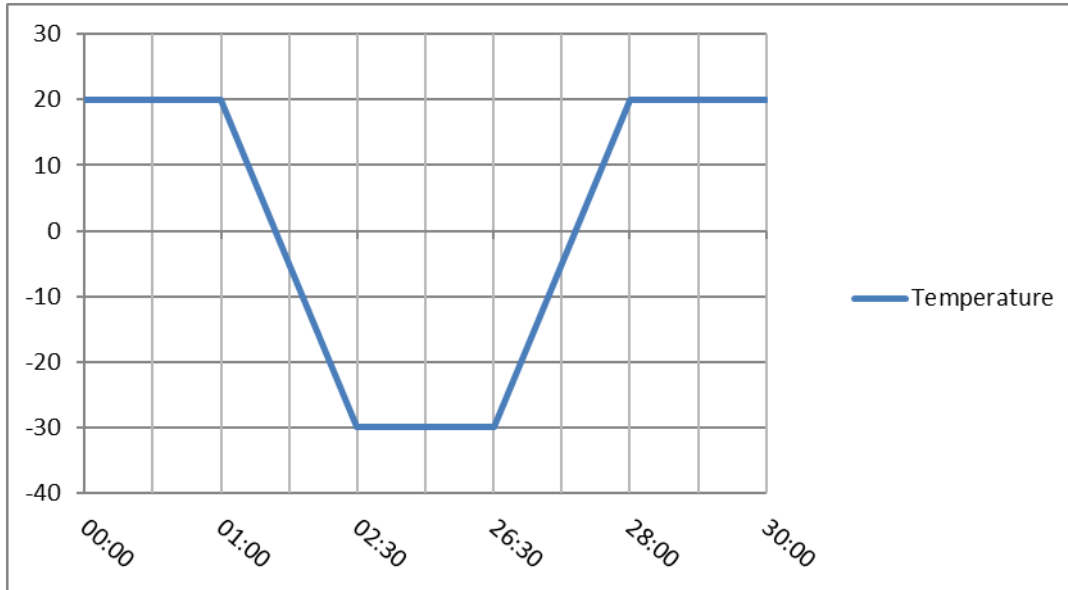
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8. Temperature



9.Test By: Jimmy Lu

Humidity Test

1. Test Date: Oct. 16~17, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference IEC60068-2-78:2012 Testing procedures

Test Cab: Damp Heat steady state Test

5. Test Condition:

1. Test Temperature : 40°C

2. Test Humidity: 95%

3. Test Times: 48 hrs

4. Test Software: Running burnin test program in RTOS.(Serial signal self communication, test confirms that the communication signal and LCD display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Running DVT program system should not have degradation in performance.

Mechanical function check:

3. The connectors and components should work properly without any interference.

4. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

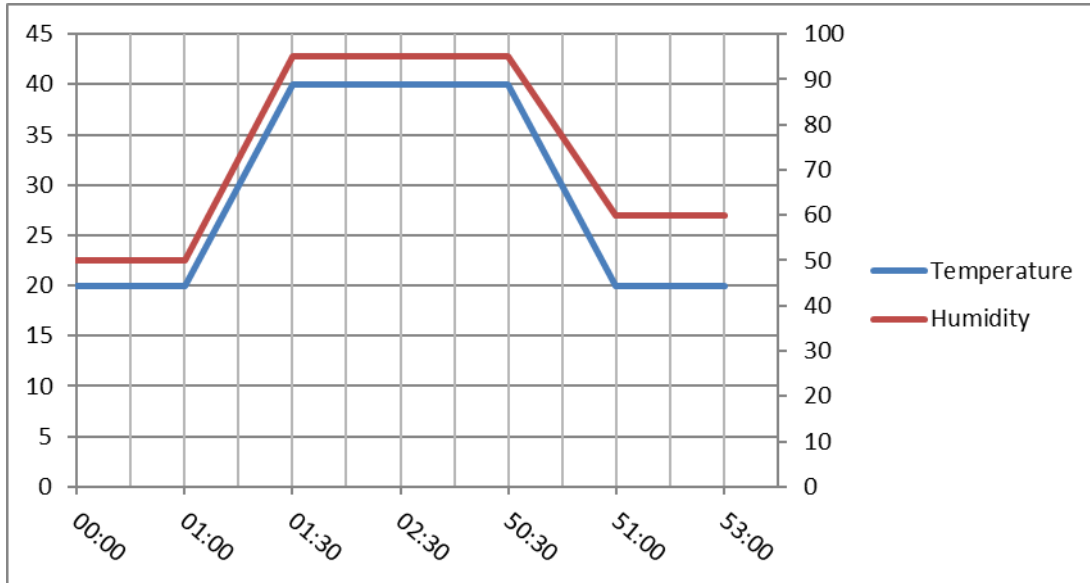
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8. Temperature & humidity



9. Test By: Jimmy Lu

High Temp. & Hum. Storage Test

1. Test Date: Dec. 18~19, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference IEC60068-2-78:2012 Testing procedures

Test Cab: Damp Heat Steady State Test

5. Test Condition:

1. Test Temperature : 60°C

2. Test Humidity: 95%

3. Test Times: 24 hrs

4. Test Software: Running burnin test program in RTOS.(Serial signal self communication, test confirms that the communication signal and LCD display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Running DVT program system should not have degradation in performance.

Mechanical function check:

5. The connectors and components should work properly without any interference.

6. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

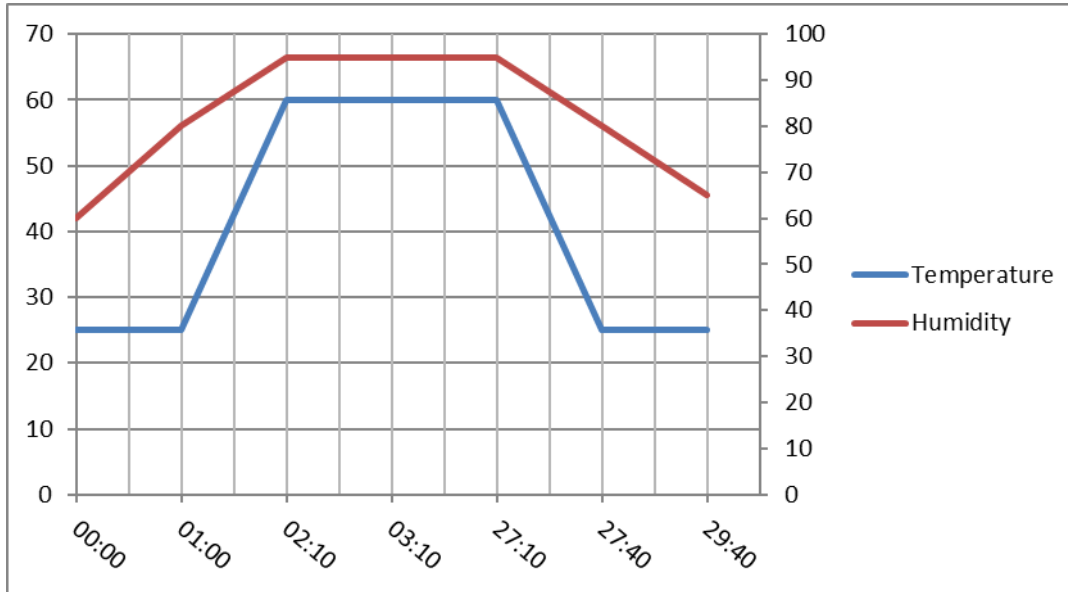
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8. Temperature & humidity



9. Test By: Jimmy Lu

High Temp. Storage Test

1. Test Date: Dec. 20~21, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference IEC60068-2-2:2007 Testing procedures

Test item: Dry Heat Test

5. Test Condition:

1. Test Temperature : 80°C

2. Test Times: 24 hrs

3. Test Software: Running burnin test program in RTOS.(Serial signal self communication, test confirms that the communication signal and LCD display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Running DVT program system should not have degradation in performance.

Mechanical function check:

1. The connectors and components should work properly without any interference.

2. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

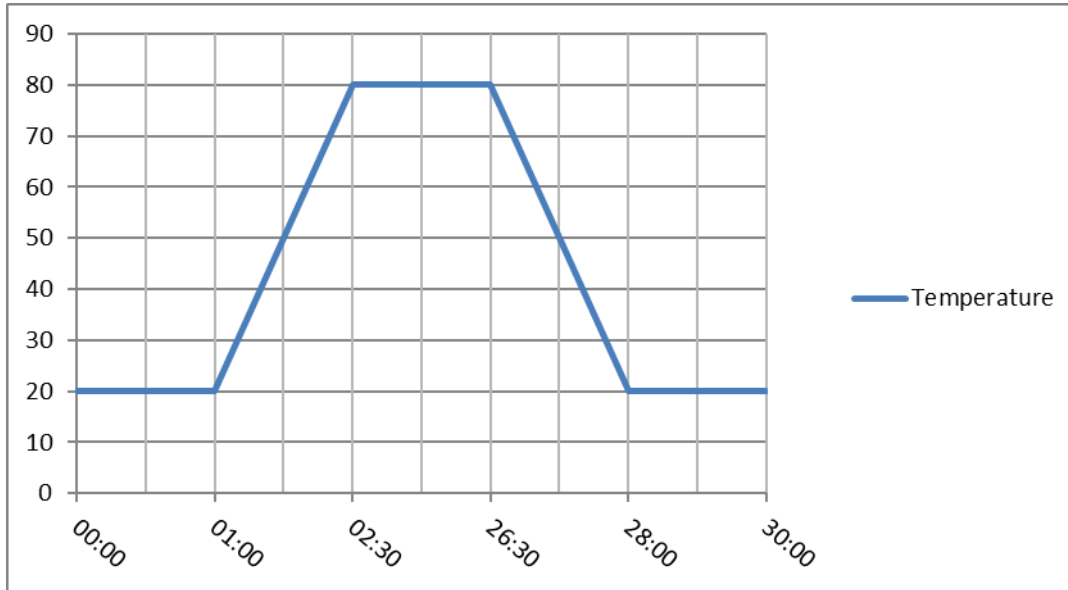
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8. Temperature



9. Test By: Jimmy Lu

Low Temp. Storage Test

1. Test Date: Dec. 22~23, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: IEC60068-2-1:2007 Testing procedures

Test Ab: Cold Test

5. Test Condition:

1. Test Temperature : -40°C

2. Test Times: 24 hrs

3. Test Software: Running burning test program in RTOS.(Serial signal self communication, test confirms that the communication signal and LCD display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Running DVT program system should not have degradation in performance.

Mechanical function check:

1. The connectors and components should work properly without any interference.

2. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

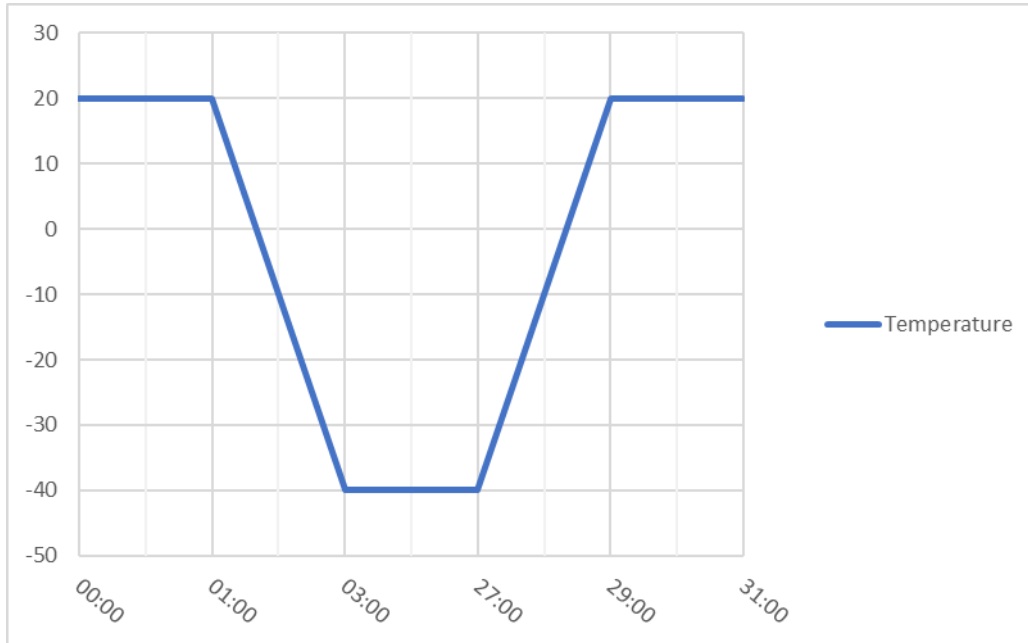
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8. Temperature



9. Test By: Jimmy Lu

Thermal Shock Test

1. Test Date: Dec. 26~27, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference to the IEC 60068-2-14:2009 testing procedures
Test N: Change of temperature.

5. Test Condition:

Test mode: Operation

1. Test Software: Running burning test program.(Serial signal self communication, test confirms that the communication signal and display are normal)
2. Test High Temperature: 70°C
3. Test Low Temperature: -30°C
4. Test dwell time: 2 hrs
5. Temperature slope: 10°C/minute
6. Test cycle: 10 cycles

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Mechanical function check:

1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

7. Test Result:

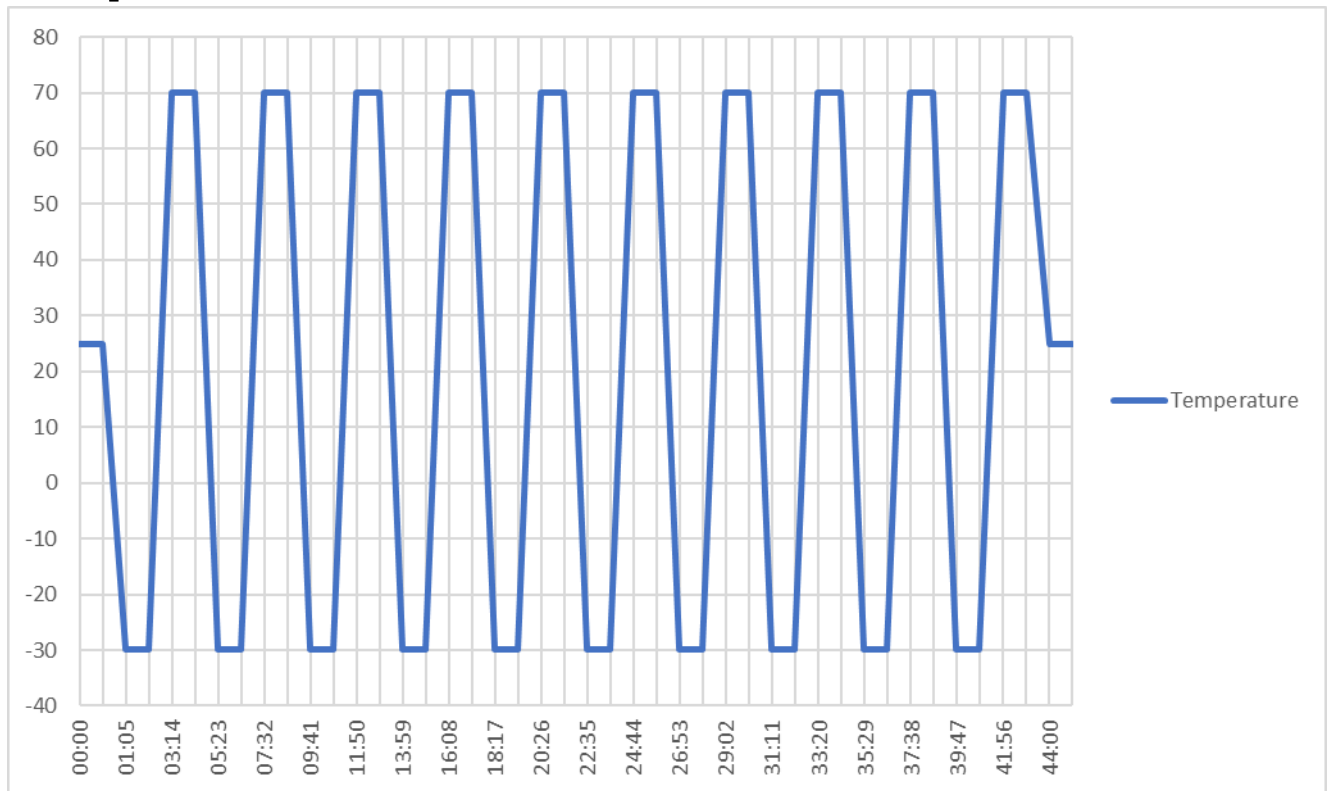
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8. Temperature



9. Test By: Jimmy Lu

Power ON/OFF Test

1. Test Date: Dec. 28~29, 2022

2. EUT: DVT stage

3. Test equipment : **Programmable Temperature & Humidity Chamber**

Model:GTH-150-40-CP-SD

S/N: MAA160

Data of Calibration:2022/04/12

4. Test Standard: Reference IEC60068-2-2:2007 Testing procedures

Test Bb: Dry Heat Test

Reference IEC60068-2-1:2007 Testing procedures

Test Ab: Cold Test.

5. Test Condition:

1. Test Temperature: High temperature 70°C / Low temperature -20°C

2. Power ON / OFF time interval: On 0.5 minute, off 0.5 minute at high temperature On 0.5 minute, off 0.5 minute at low temperature

3. Number of test: 1000 times for each temperature

4. Test program: power counter program for RTOS

5. Test mode: AT

6. Power ON / OFF time interval curve:

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Mechanical function check:

1. The connectors and components should work properly without any interference.

2. All screws should be tightened up appropriately.

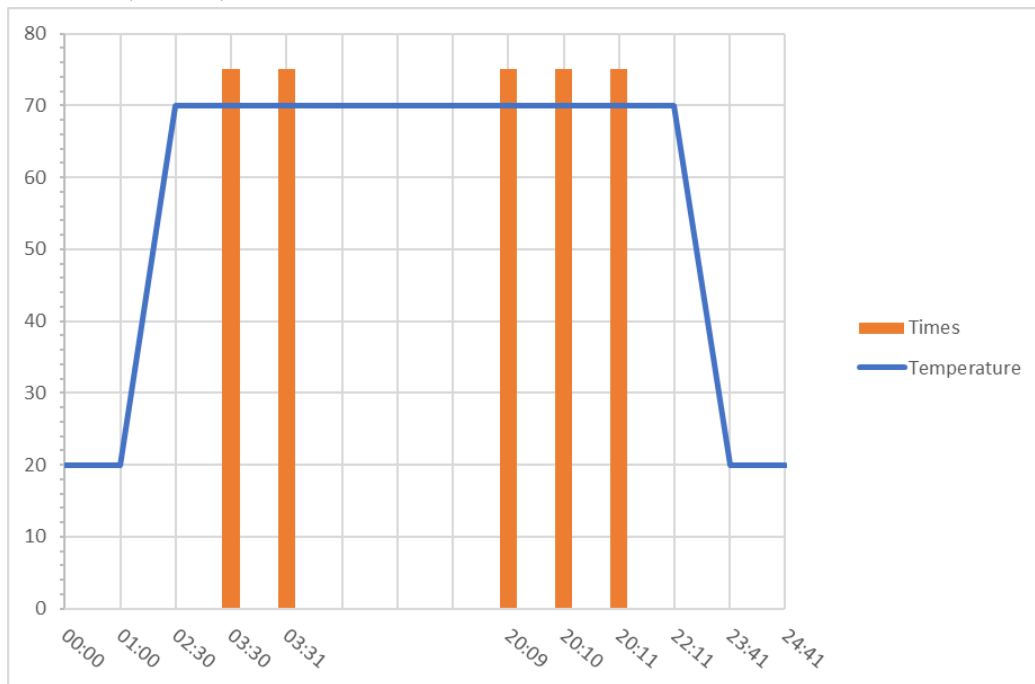
7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.

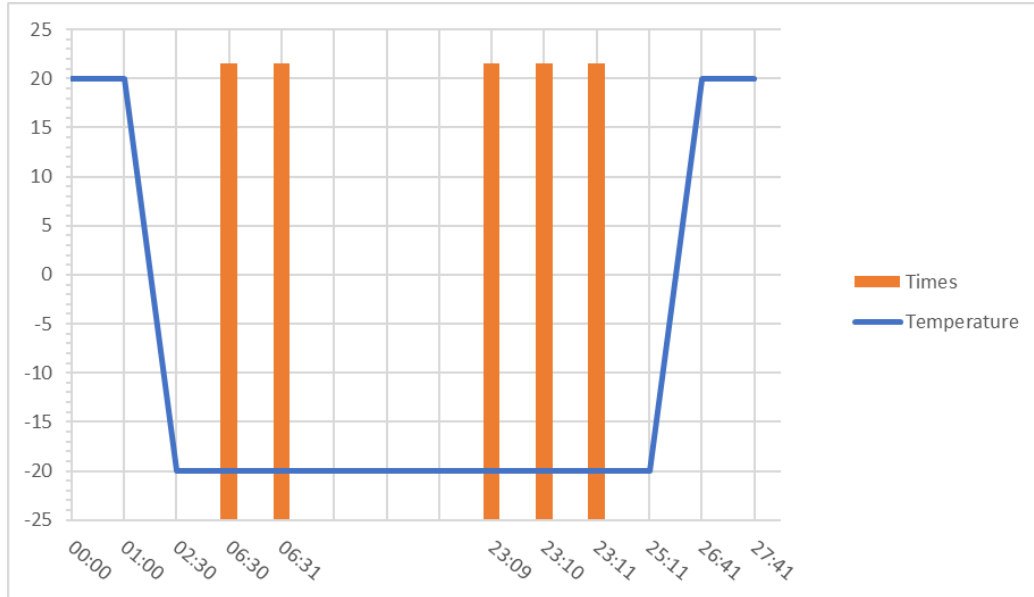
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Test temperature	Test times	Test Result
-20 °C	1000 times	1000 times passed
70 °C	1000 times	1000 times passed

8. Temperature (-20°C)



Temperature (70°C)



9.Test By: Jimmy Lu

Cold Start Test

1. **Test Date:** Dec. 29~30, 2022
2. **EUT:** DVT stage
3. **Test equipment :** **Programmable Temperature & Humidity Chamber**
Model:GTH-150-40-CP-SD
S/N: MAA160
Data of Calibration:2022/04/12

4. **Test Standard:** Reference IEC60068-2-1:2007 Testing procedures
Test Ab: Cold Test

5. Test Condition:

1. Test Temperature: -20°C
2. Storage times: 4 hrs
3. Power ON / OFF time interval: On 1 minute, off 1 hour
4. Number of test: 20 times
5. System OS: RTOS
6. Power ON / OFF time interval curve

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Mechanical function check:

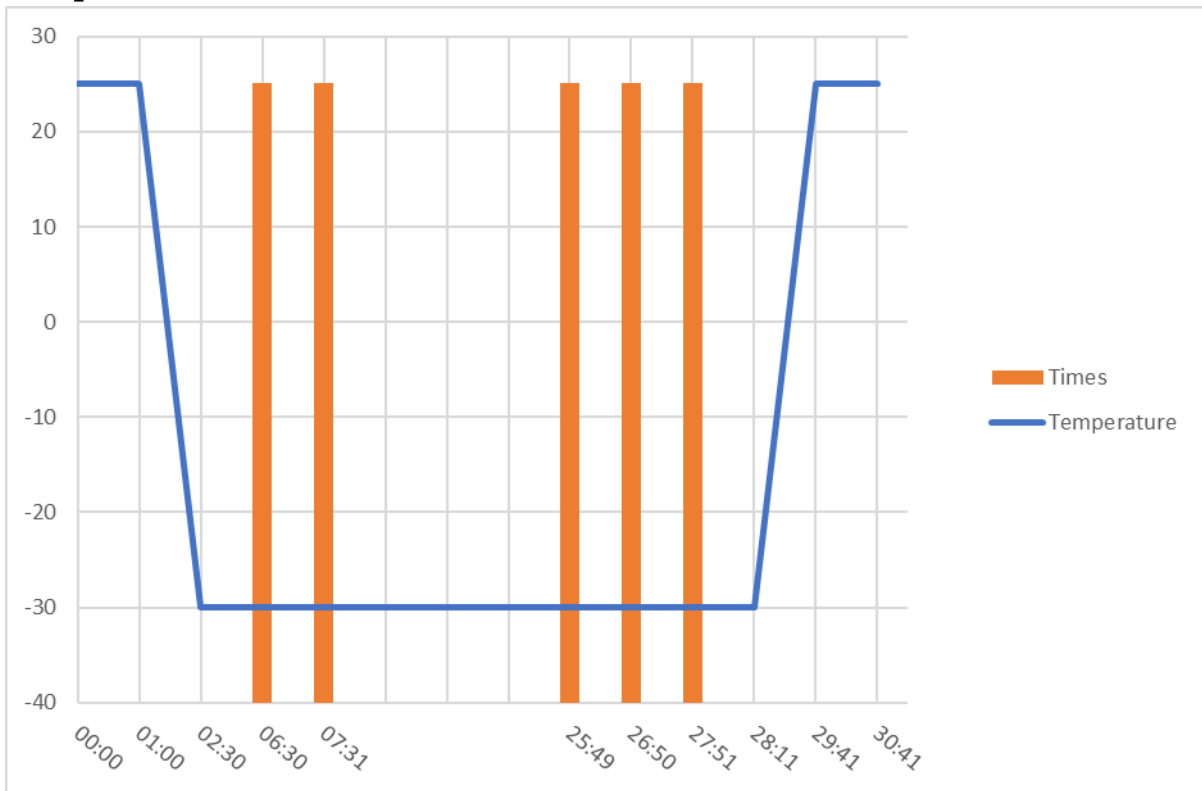
3. The connectors and components should work properly without any interference.
4. All screws should be tightened up appropriately.

7. Test Result:

There is no damage in electronic and mechanical functions. Degradation has not been found.
Performance is maintained with no incurable physical damage or degradation

Test temperature	Test times	Test Result
-20 °C	20 times	20 times passed

8. Temperature



9. Test By: Jimmy Lu

Thermal Step Stress Test

- 1. Test Date:** Dec. 30, 2022
- 2. EUT:** DVT stage
- 3. Test equipment :** **Programmable Temperature & Humidity Chamber**
Model:GTH-150-40-CP-SD
S/N: MAA160
Data of Calibration:2022/04/12

4. Test Standard: Reference to the Advantech HALT procedure.

5. Test Condition:

To find the temperature upper/lower operational limit

1. High temperature: 60C~ XX C (the highest to 100C)
2. Low temperature: -10C~-XX C (the lowest to -40C)
3. Temperature step scale: 10C each level
4. Power ON/OFF test 1 time for each temperature
5. Dwell time: 1 hour each level
6. Temperature gradient: 0.5C/min
7. Test Software: Running burnin test program in RTOS.(Serial signal self communication, test confirms that the communication signal and LCD display are normal)

6. Performance Criteria:

Electronic function check:

All system functions must be checked with appropriate testing programs and should pass the inspection.

Mechanical function check:

1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

7. Test Result:

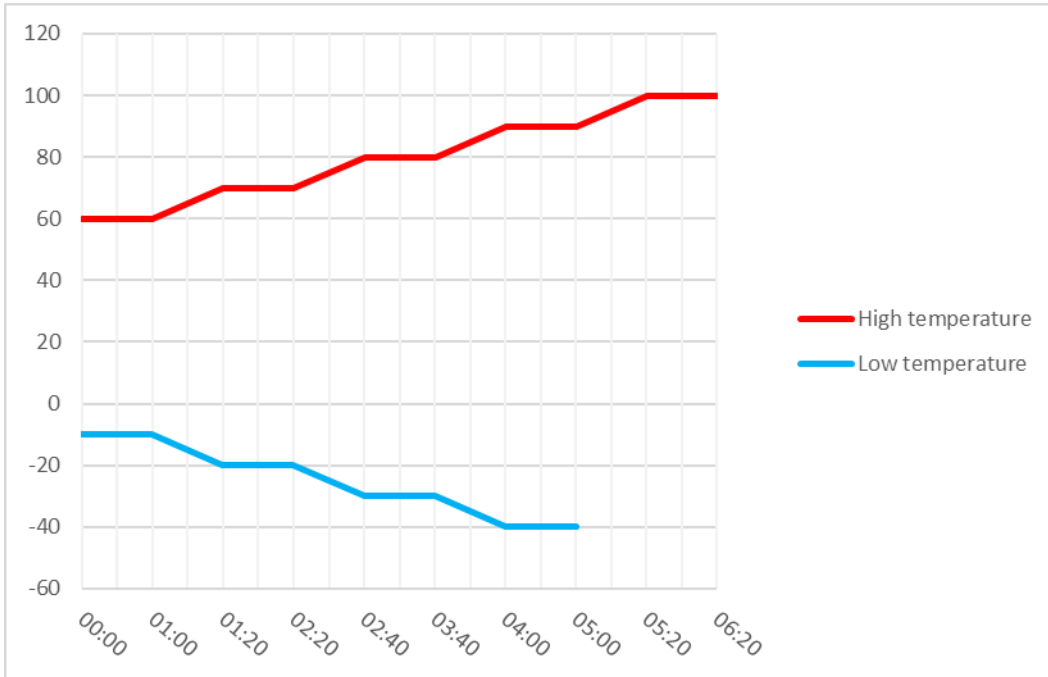
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8. Temperature



9. Test By: Jimmy Lu

PHOTOS

