

Reliability Report

Report Reference No. : WH-REL-S22051201

Tested by (name + signature) : Brandon Chiu

Brandon Chiu

Approved by (name + signature) : Tony H.

Tony H.

Date of issue..... : 2022-05-16

Contents..... : 29 pages

Testing laboratory

Name..... : WH Technology Corp.

Address : 7F., No.262, Sec. 3, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

Testing location..... : No.67-22, Baoxin St., Xizhi Dist., New Taipei City 221, 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..... : IT415-24, IT412-24

Trade name : N.A.

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	Hight 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	
11	IP Test	IP66	Pass	

High Temperature Operation Test

1. Test Date: April 07~08, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model: JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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:

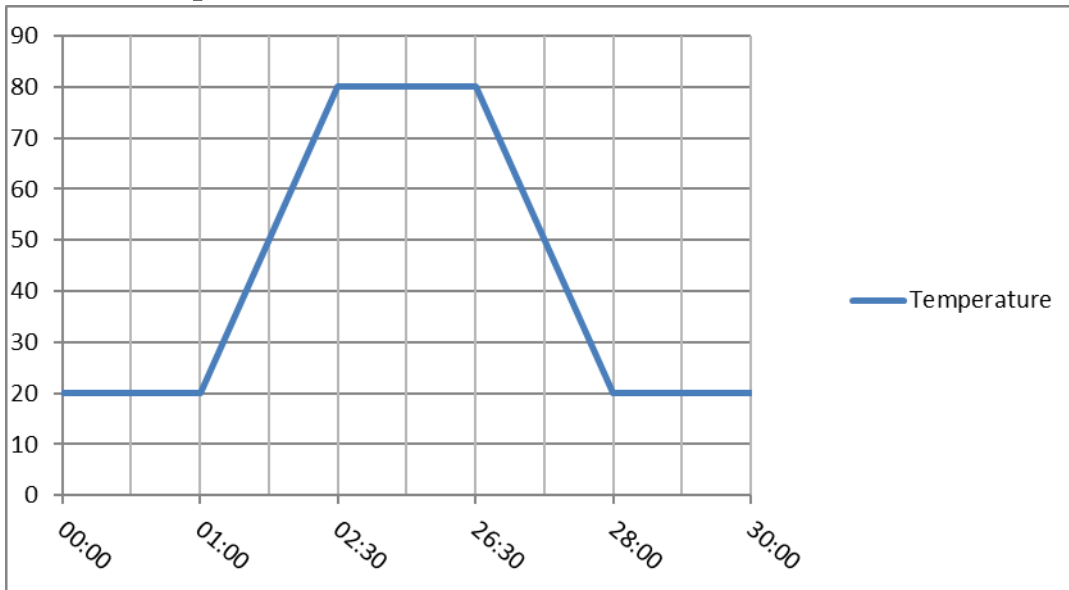
1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

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

8. Temperature



9. Test By: Brandon Chiu

Low Temperature Operation Test

1. Test Date: April 09~10, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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:

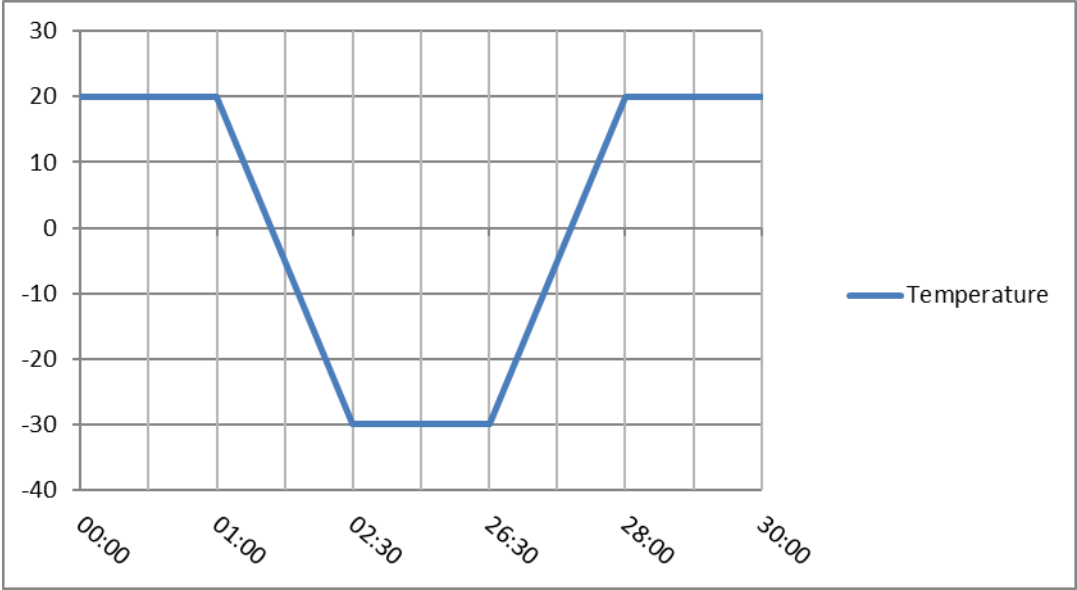
1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation.

8. Temperature



9.Test By: Brandon Chiu

Humidity Test

1. Test Date: April 11~13, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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:

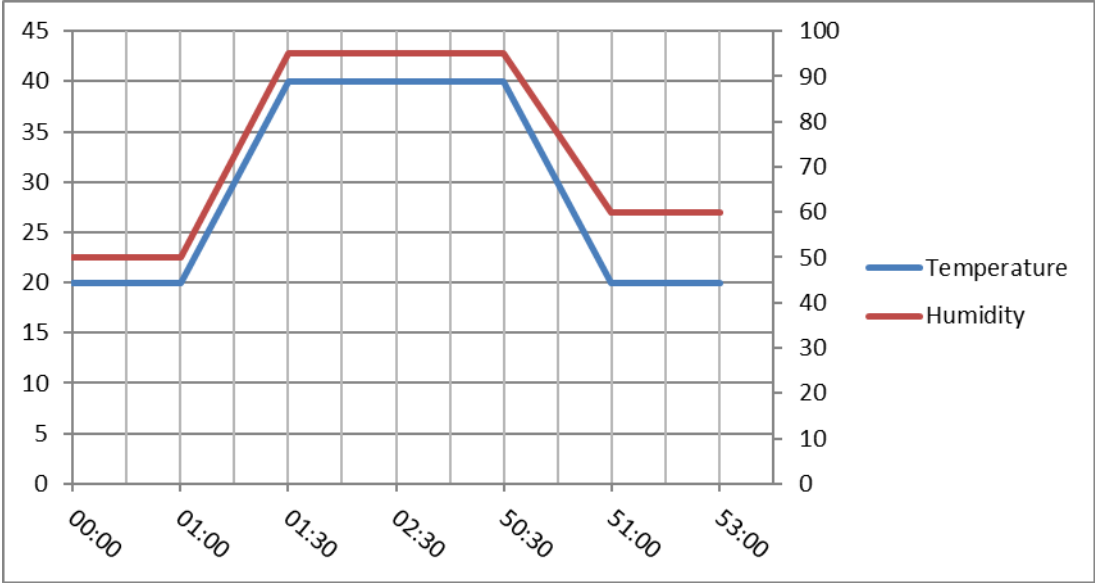
3. The connectors and components should work properly without any interference.
4. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation.

8. Temperature & humidity



9.Test By: **Brandon Chiu**

High Temp. & Hum. Storage Test

1. Test Date: April 14~15, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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:

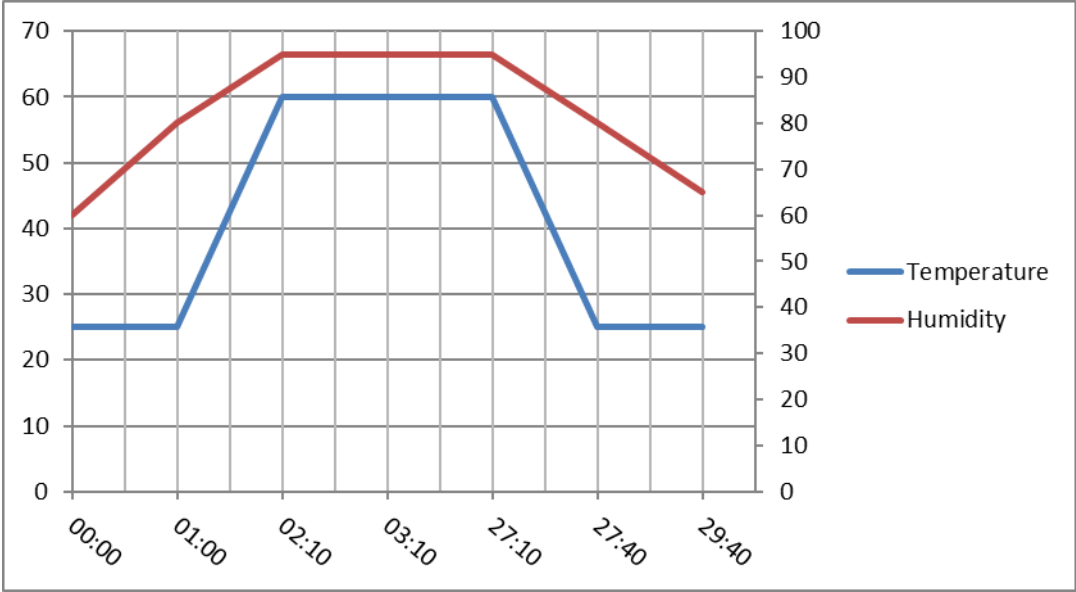
5. The connectors and components should work properly without any interference.
6. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation.

8. Temperature & humidity



9.Test By: Brandon Chiu

High Temp. Storage Test

1. Test Date: April 18~19, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber

Model:JY-S-225L

S/N850140

Data of Calibration:2022/03/09

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.

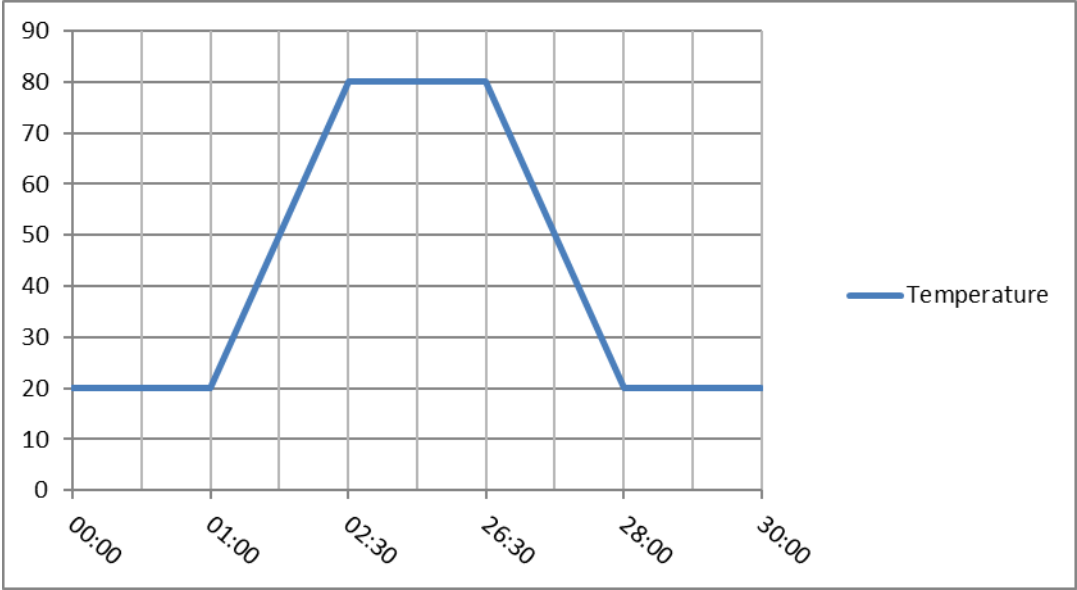
2. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation.

8. Temperature



9.Test By: Brandon Chiu

Low Temp. Storage Test

1. Test Date: April 20~21, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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 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:

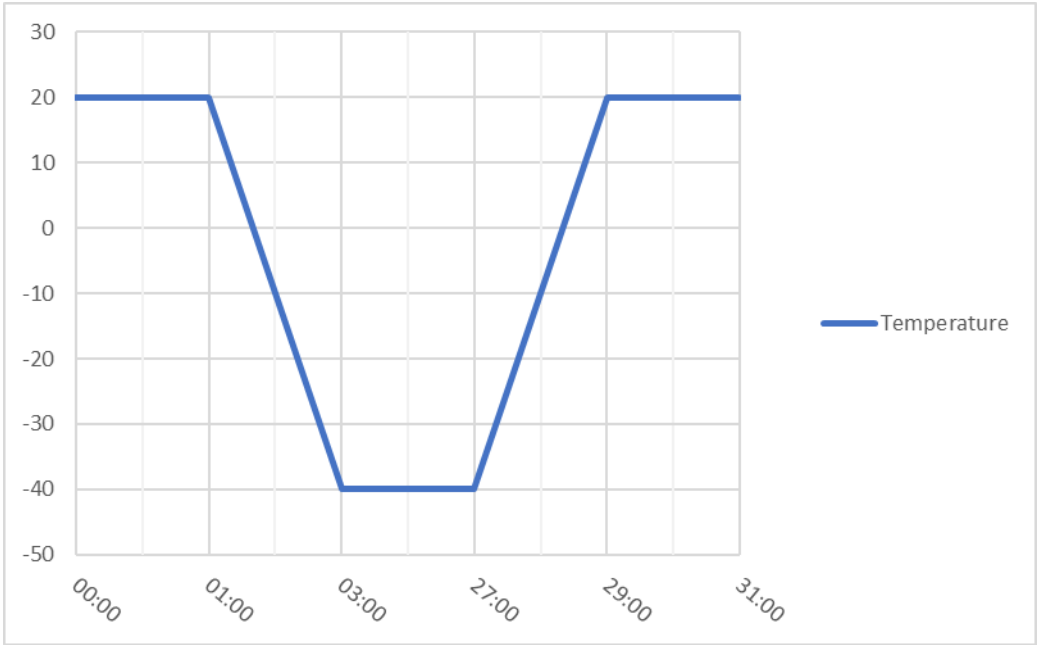
1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation.

8. Temperature



9.Test By: Brandon Chiu

Thermal Shock Test

1. Test Date: April 22~23, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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:

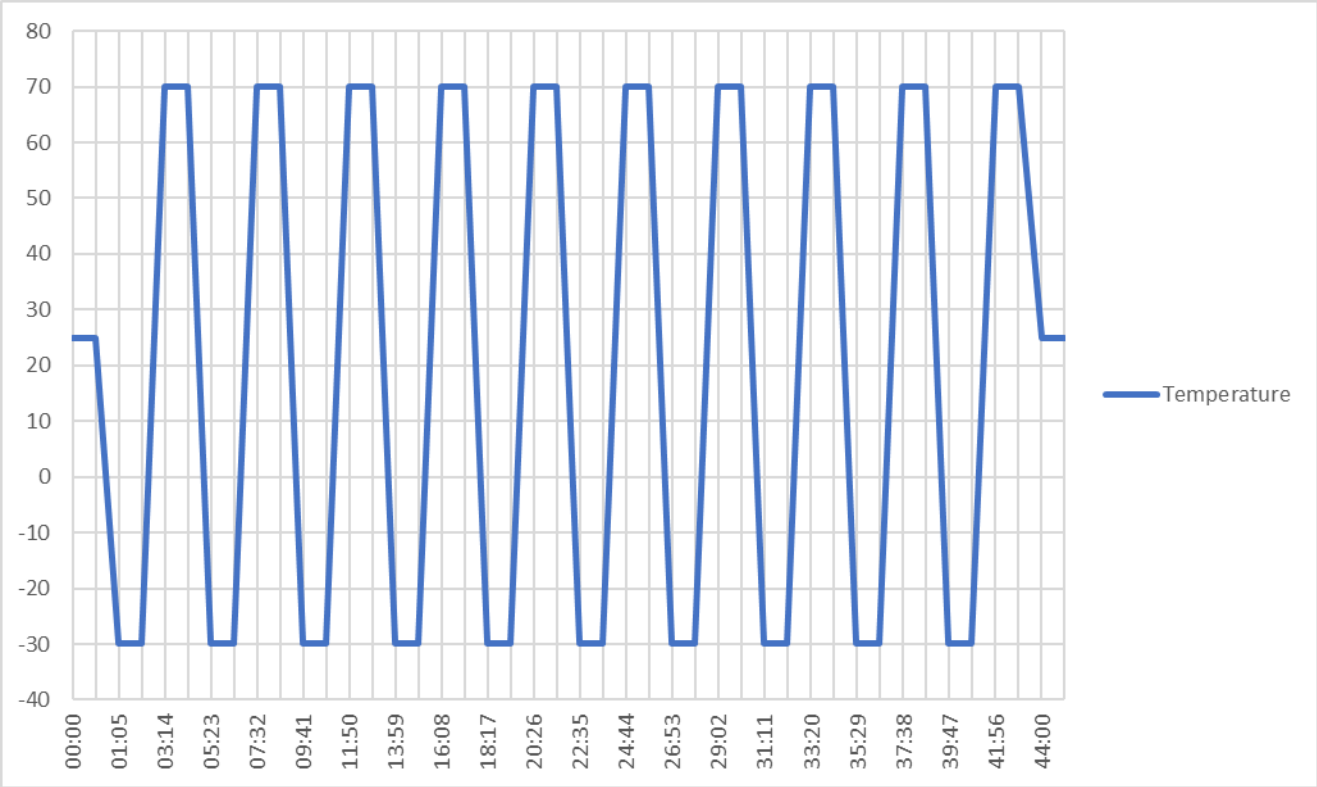
1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation

8. Temperature



9.Test By: **Brandon Chiu**

Power ON/OFF Test

1. Test Date: April 25~26, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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.

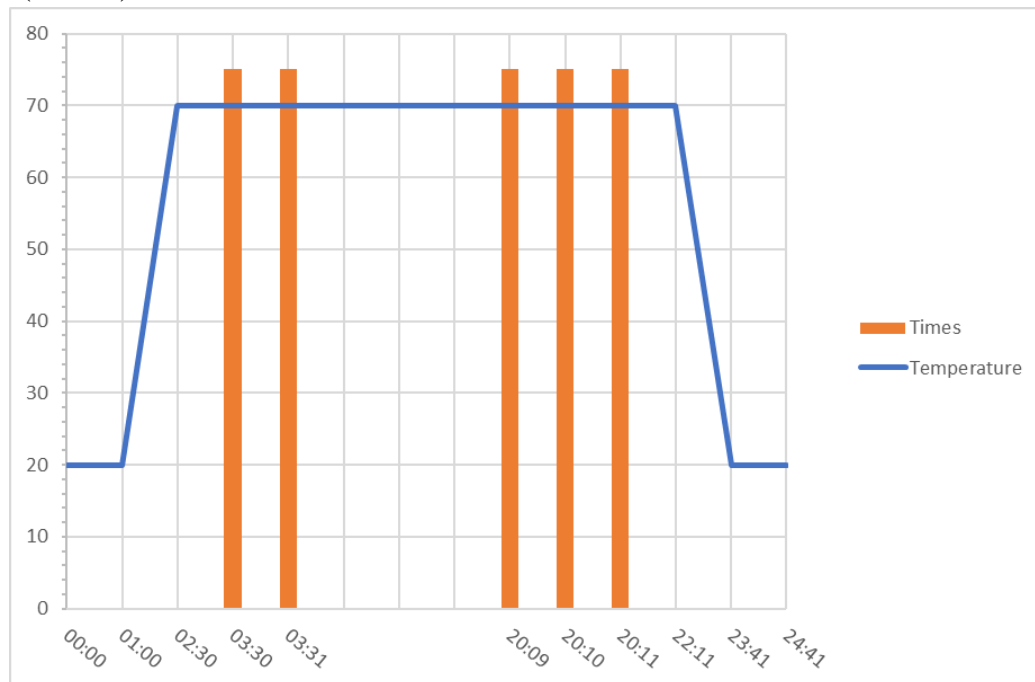
7. Test Result:

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

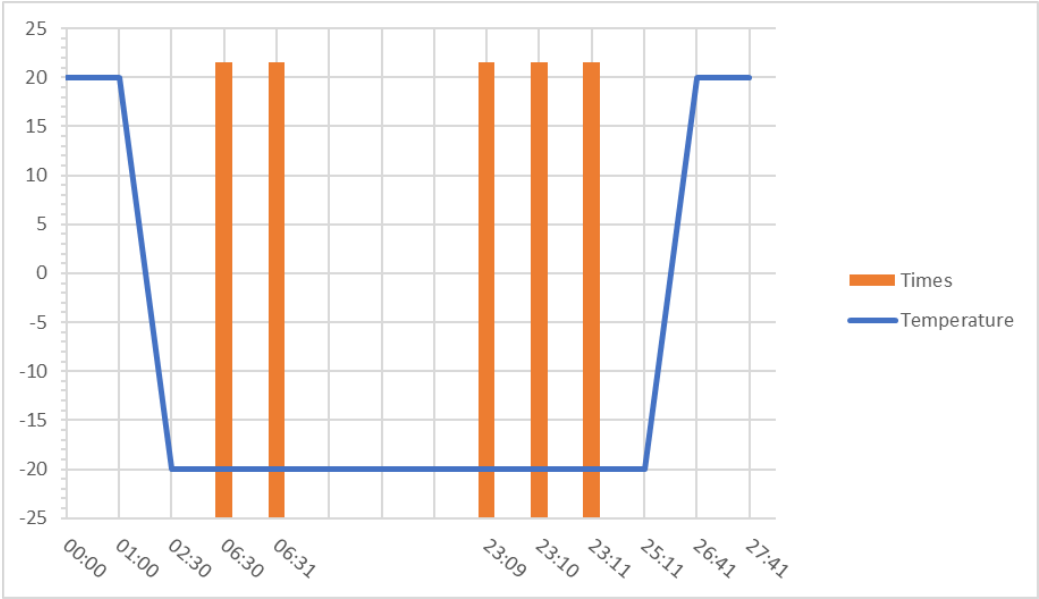
Performance is maintained with no incurable physical damage or degradation

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: Brandon Chiu

Cold Start Test

1. Test Date: April 27~28, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber
Model:JY-S-225L
S/N850140
Data of Calibration:2022/03/09

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 1hour
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:

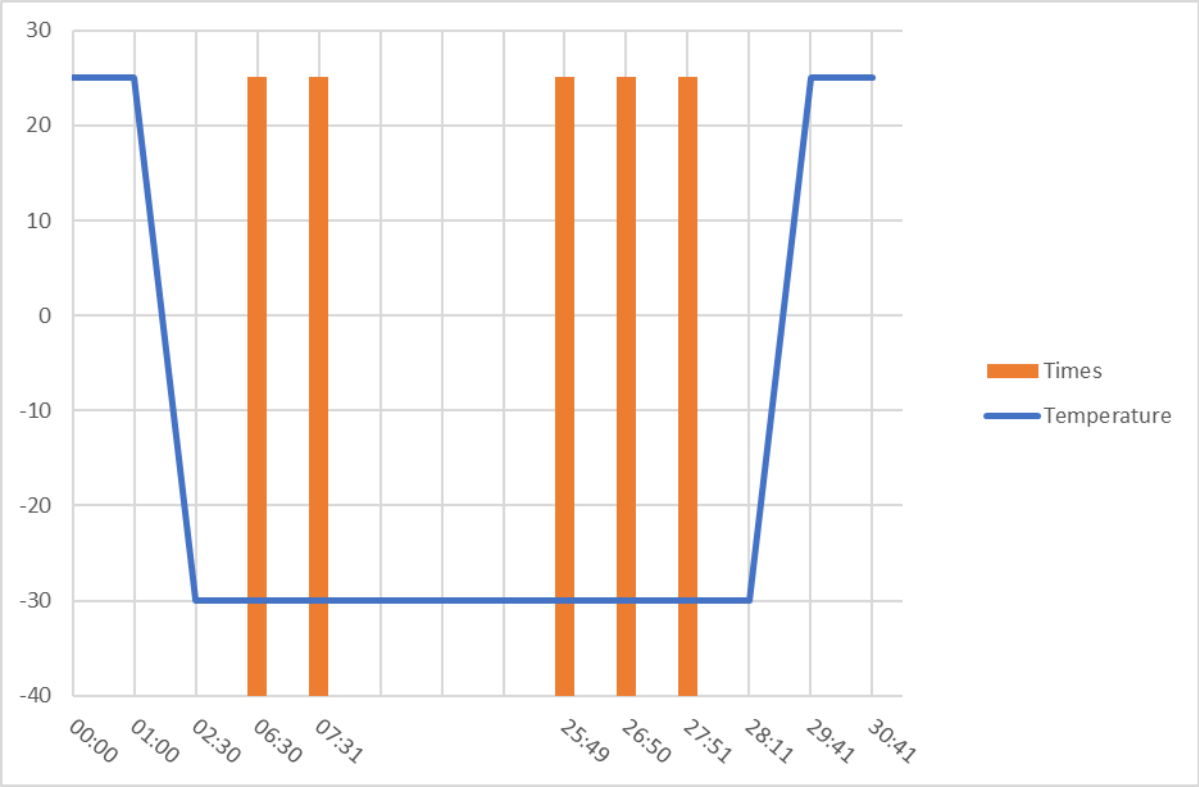
3. The connectors and components should work properly without any interference.
4. All screws should be tightened up appropriately.

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: Brandon Chiu

Thermal Step Stress Test

1. Test Date: April 29, 2022

2. EUT: DVT stage

3. Test equipment : Programmable Temperature & Humidity Chamber

Model:JY-S-225L

S/N850140

Data of Calibration:2022/03/09

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:

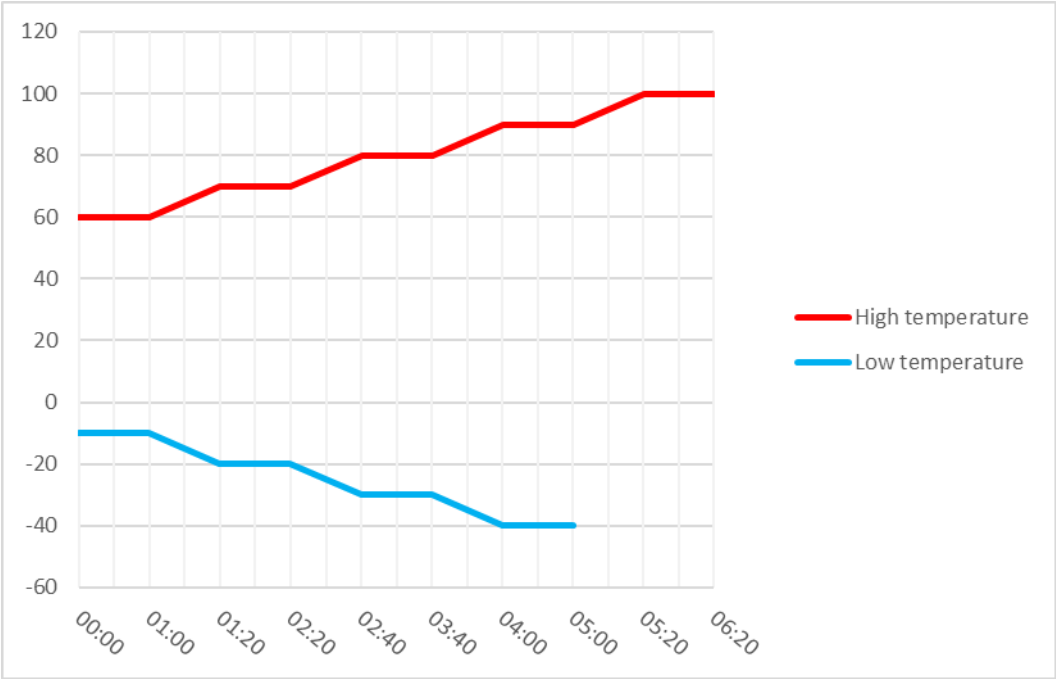
1. The connectors and components should work properly without any interference.
2. All screws should be tightened up appropriately.

7. Test Result:

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

Performance is maintained with no incurable physical damage or degradation

8. Temperature



9.Test By: Brandon Chiu

IP66 Test

Test Date: May 3, 2022 ;

2. EUT: DVT stage

3. Test equipment :

Waterproof Test Chamber

Model: TM-980C S/N: 170203

Date of Calibration: 2022/02/08

Dust Tester chamber

Model: TM-975B S/N: T-170245

Date of Calibration: 2022/02/08

Test Standard: Reference IEC60529 Edition 2.1: 2001-02

Test Condition:

- I. Test for protection against solid foreign objects (IEC60529 IP6X)
 1. Test method: Dust test
 2. Test area: Front panel
 3. System condition: Non-operation
 4. Type of dust: Talcum powder
 5. The amount of dust: $2\text{kg}/\text{m}^3$
 6. Test duration: Maximum depression is 2KPa. (20Mbar)
 7. Test duration: 8 hours
- II. Test for protection against water (IEC60529 IPX6)
 1. Test method: Waterproof test
 2. Test area: Front panel
 3. System condition: Non-operation
 4. Internal diameter of the nozzle: 12.5mm
 5. Delivery rate: 100 liter/minute $\pm 5\%$
 6. Distance from nozzle to enclosure surface: Between 2.5m and 3m.
 7. Test time: 3 minute



Sample Configuration & Quantity Under Test:

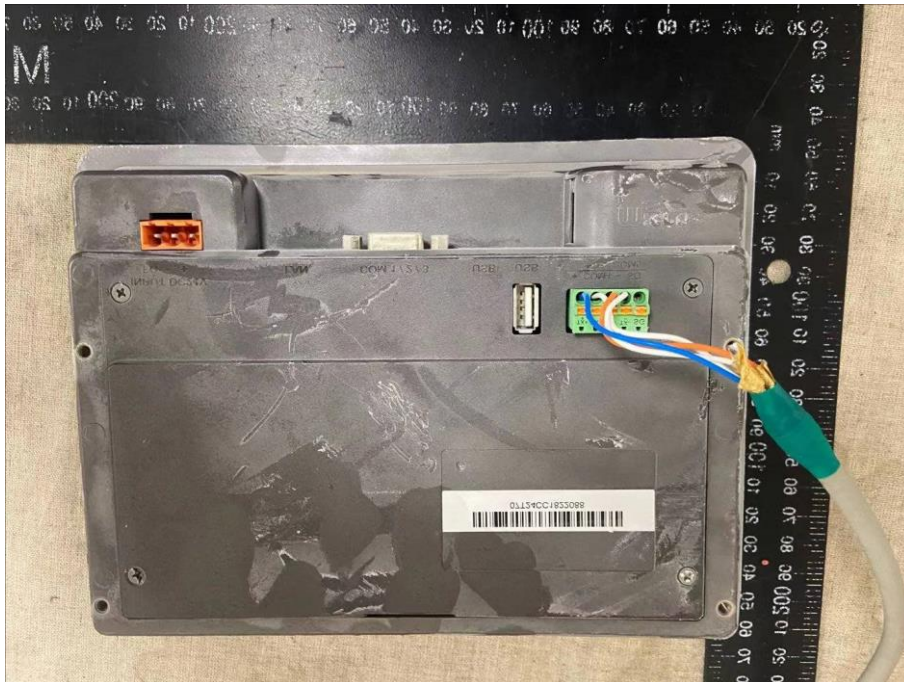
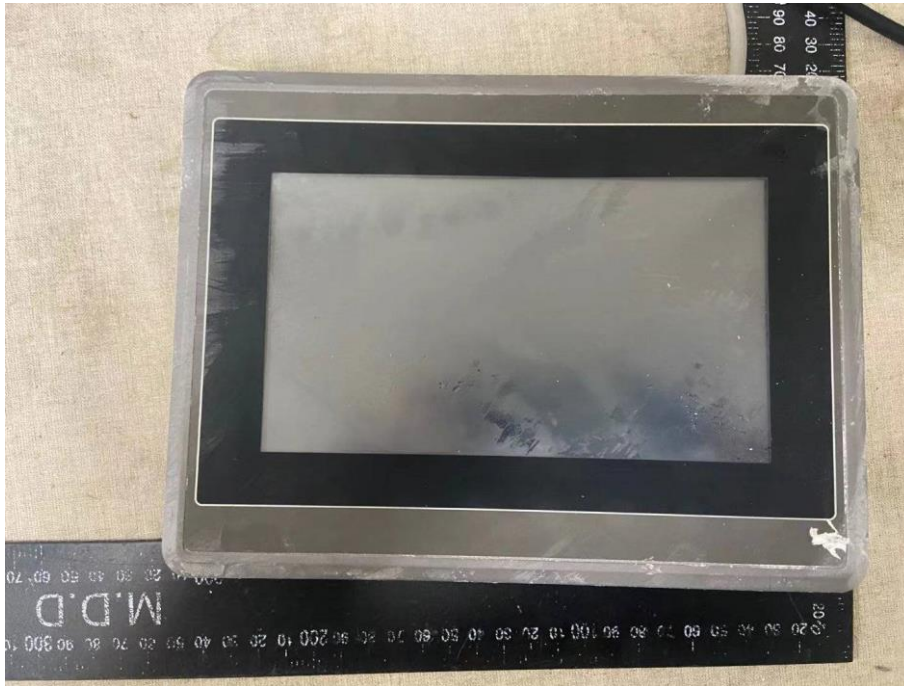
Model No. IT415-24, IT412-24

The model different is screen size.

Performance Criteria:

Visual check after test:

1. No water permeates into the enclosure.
2. No dust deposit inside the enclosure.







WH Technology Corp.



