RTC-1200SK

Environment Test Report

Report NO: 16R020003

Summary	☐ **Pass** ☐ **Fail** Note : There is/are ___ defect(s) not list in the report, please check it in the DTS Website. ☑ **Pass with Deviation** **Comment:** Power on/off test function set 82 sec/time, but random shown on 71~93 sec/time

Issue date	QE Manager	Test Engineer
2016-11-08	**KJ Wang**	**Rex Chang/Juno**

Test Item List

Testing Result

Num	Test item list	Result	Remark
1	Temp./humidity power on/off test		
2	Room temperature test	Pass	
3	High temperature thermal analysis test	Pass	
4	High temperature storage test	Pass	
5	High temperature operation test	Pass	
6	Low temperature storage test	Pass	
7	Low temperature operation test	Pass	
8	Humidity test	Pass	
9	Temperature shock operation test	Pass	
10	Temperature shock non-operation test	Pass	
11	Cold start and hot start test	Pass	

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Configuration of EUT

Test Product: RTC-1200SK		
Sample Configuration & Quantity Under Test:		
Num	**Item**	**Spec**
RTC-1200SK		
01.	**CPU:**	Intel Skylake-U i3-6100U
02.	**PCBA**	RTC-1000S A0.2
03.	**BIOS**	BIOS Rev0.36/EC Rev 2.00.36
04.	**Memory**	Transcend DD3L SODIMM 4G 1 Rx 8 1600
05.	**3G Module**	QUECTEL UC20GA
06.	**WLAN + BT Module**	Ampak AP12356
07.	**LCD+ Touch Panel**	LITEMAX OLP1167-ITN-A01(1920*1080)
08.	**GPS**	u-blox NEO-M8Q
09.	**Battery**	ETI BP16-001570，(3S1P 2.27Ah)
10.	**AC Adapter**	FSP. FSP065-REBN2(Output 19V 3.42A)
11.	**AC Power Input**	100~240V / 1.5A 50～60 Hz
12.	**Test Software**	Windows Embedded 10 IO T Enterprise 2016 LTSB/ Run PassMark Burn In Test 8.1 Pro
13	**M.2.**	Transcend TS64GMTS800-AA 64G SATA A3 2280
14	**Front Camera**	Gotek NCO-062FR-XA05
15	**Rear Camera**	Gotek NCO-045AS-RL03

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Temp./humidity power on/off test

Test Date: 11-08 ~ 07-2016

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test
Refer to IEC 68-2-1 Testing procedures
Test Ad: Cold Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

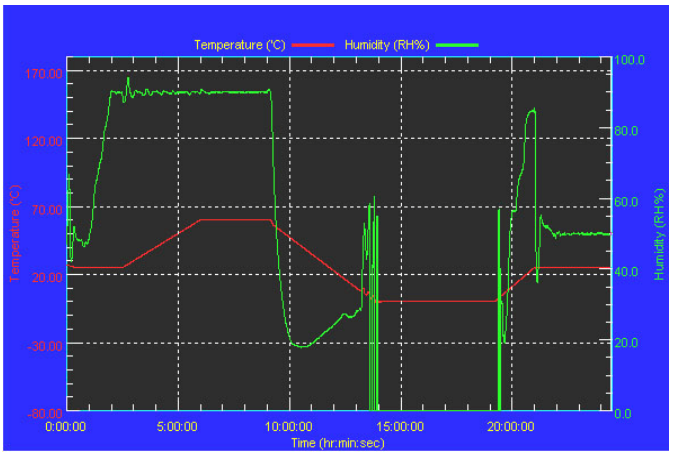
Temperature & Humidity Power On/Off Test:

1. Test High Temp./Humidity: 60℃@90%RH
2. Test Low Temperature: 0℃
3. Test Time: 24Hours / Cycle
4. Test Cycle: 1 Cycles
5. Test Software: DOS Mode / Run Boot Up Record Program ver 1.41

Testing Specification:

Step	Temperature (℃)	Humidity (%RH)	Duration (HH:MM)
1	25	50	00:30
2	25	50	00:30
3	25	90	01:00
4	25	90	00:30
5	60	90	03:30
6	60	90	03:00
7	0	0	04:50
8	0	0	05:23
9	25	50	01:47
10	25	50	03:00

Test Curve:



Test Result:

Power on/off test function set 82 sec/time, but random shown on 71~93 sec/time

	Actual	Successful	Failure rate	Test Result
Power On/Off	1006/times	1006/times	0 %	

Note: 1. Failure rate need to under 0%.
2. Power on/off fixture setting: on - 41 sec / off - 41 sec

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Room Temperature test

Test Date: 11-06 ~07-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/10/16
Due date of Calibration: 09/09/17
Serial Number: 12A323190

Test Condition:

Ambient temperature: 25dC
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows Embedded 10 / Run PassMark Burn In Test 8.1 Pro

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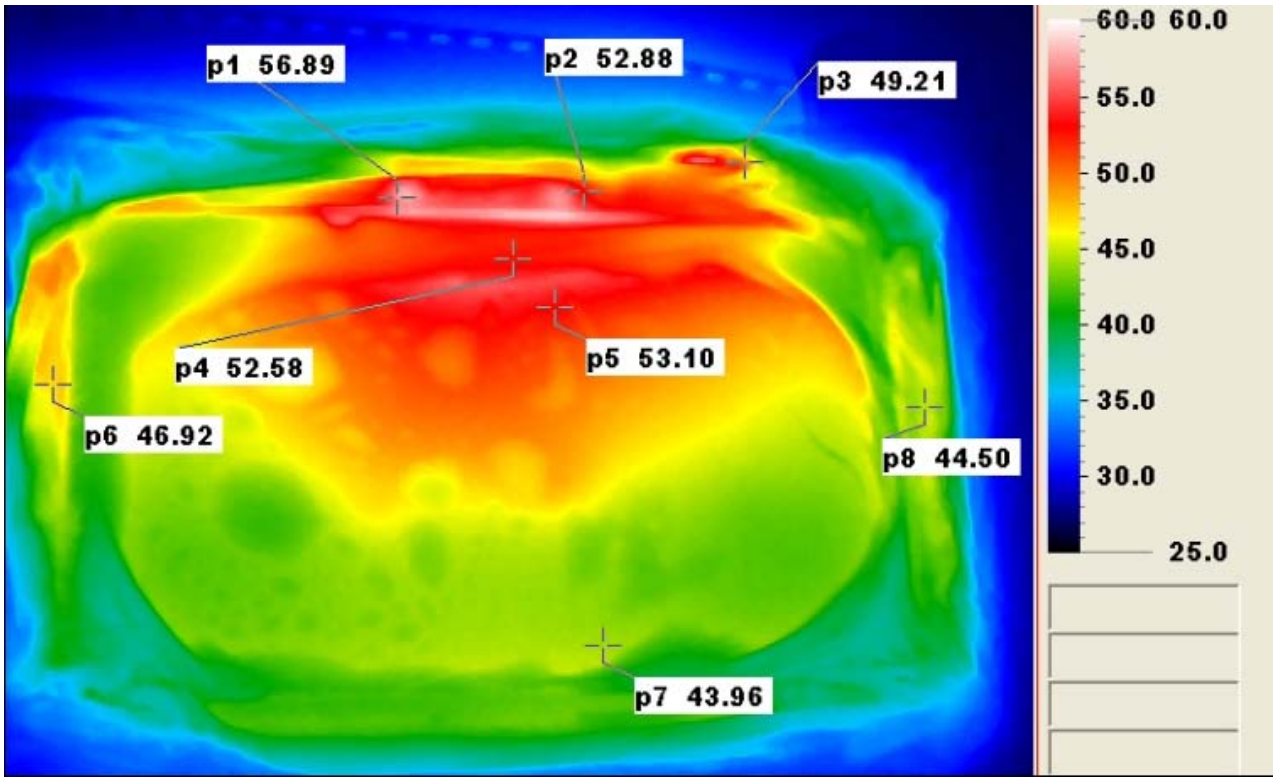
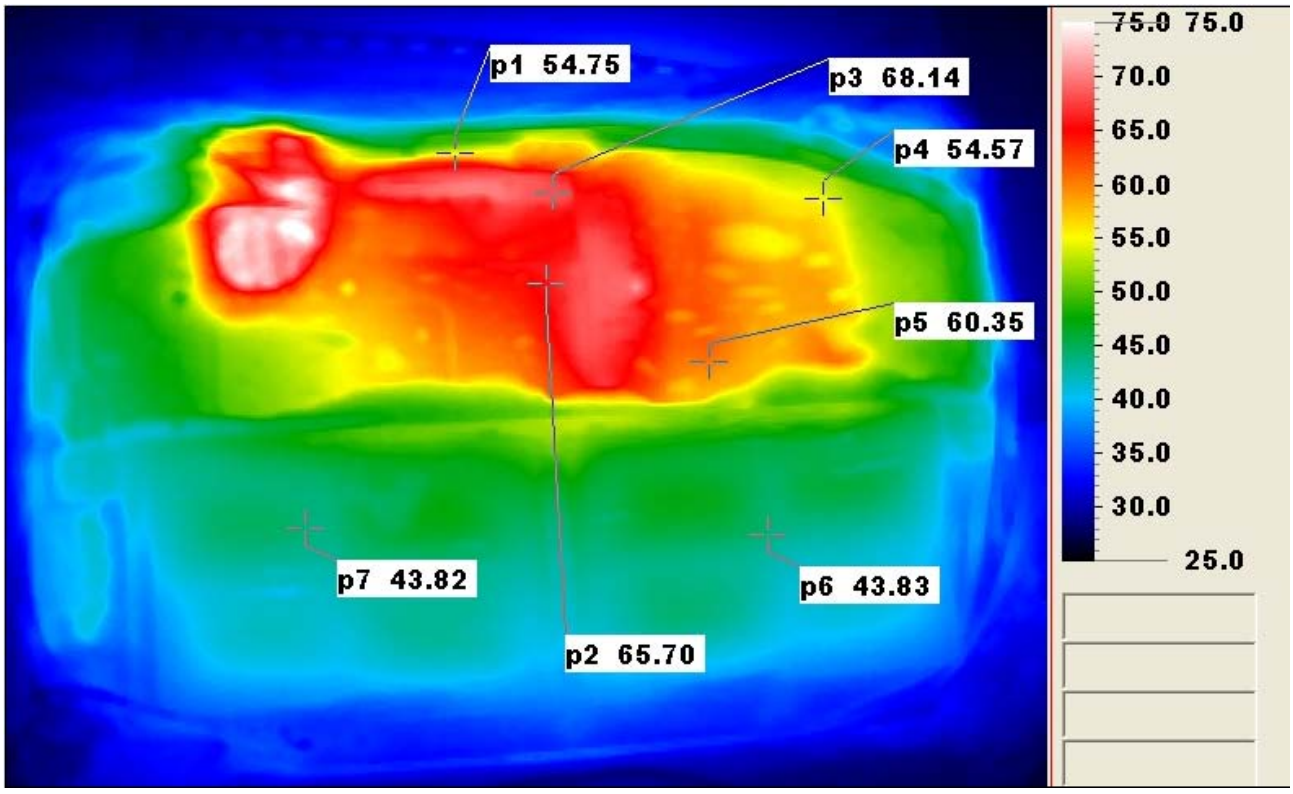
Room Temperature test

Temperature Profile Test:





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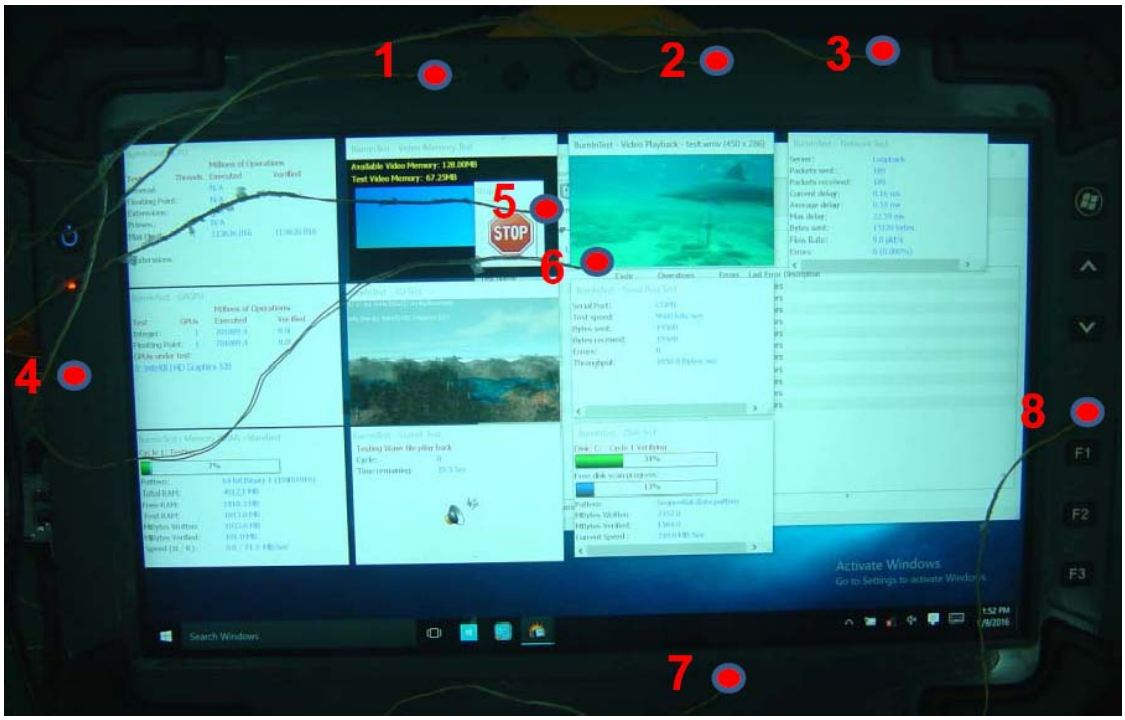
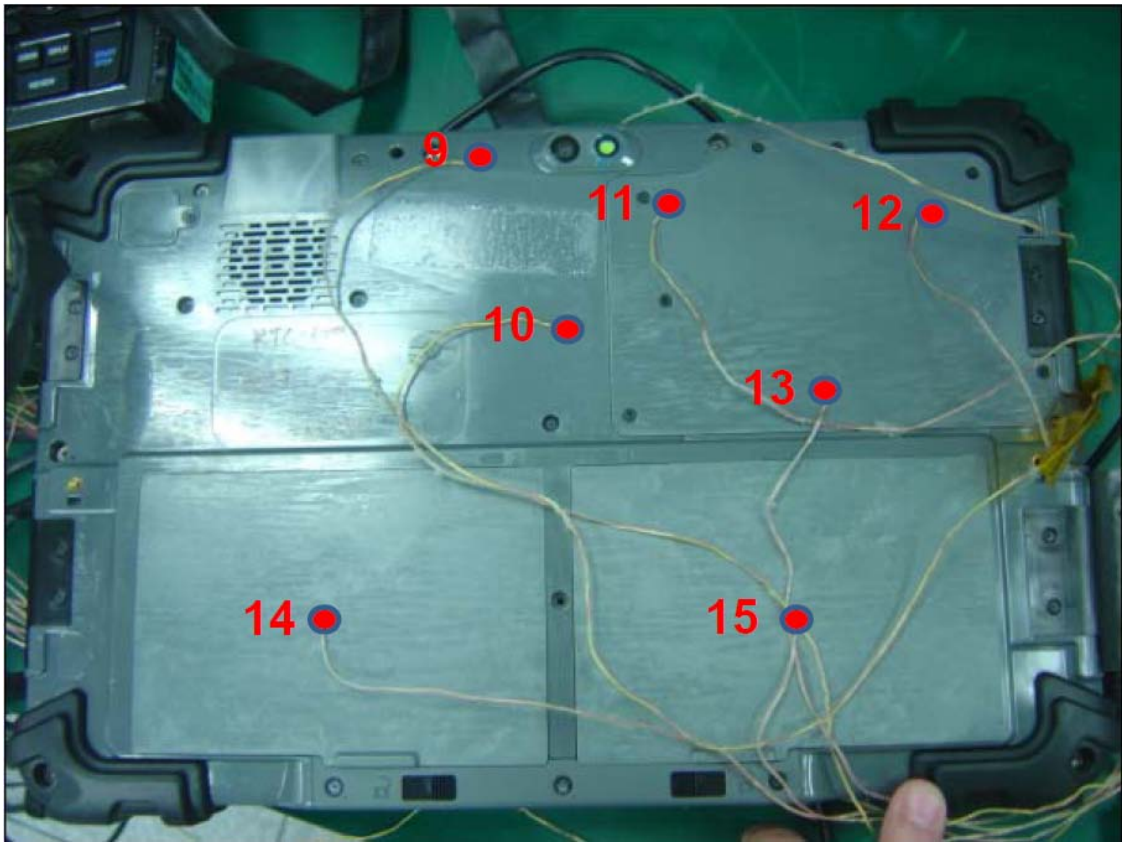
Room Temperature test

Measuring Thermal Couple Position：





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Room Temperature test

Thermal profile data:

RTC-1200SK

Point / Temp. Stage(℃)	Spec	Tm
1. Point 1	50℃	44.4
2. Point 2		41.0
3. Point 3		35.4
4. Point 4		34.9
5. Point 5		44.0
6. Point 6		41.9
7. Point 7		35.0
8. Point 8		34.3
9. Point 9		44.7
10. Point 10		41.9
11. Point 11		45.4
12. Point 12		43.0
13. Point 13		43.4
14. Point 14		32.2
15. Point 15		33.0
Room Temperature		25.0
Any Tm value showed in red words means the value over the Tc degree C of this device specification.		

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issues were found during the room temperature operation test.

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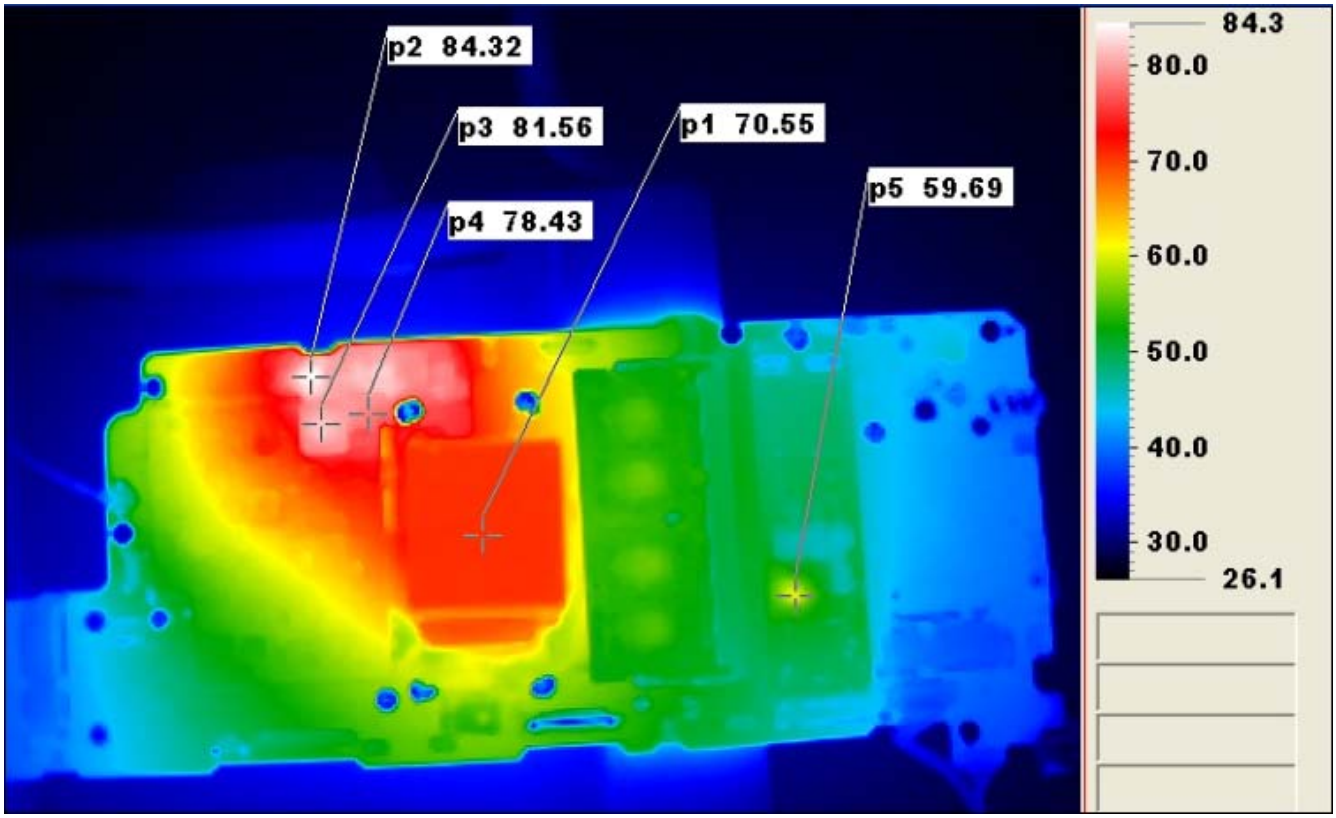
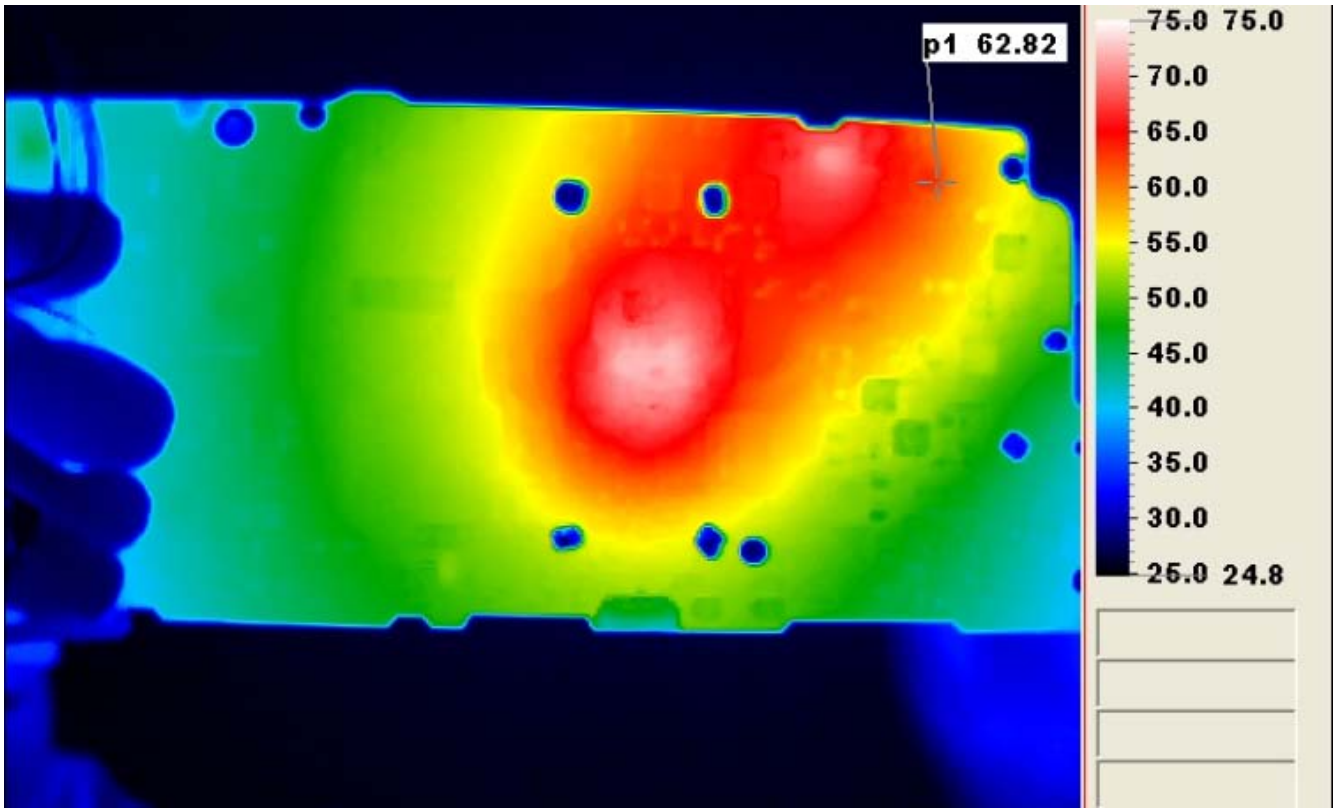
High Temperature Thermal Analysis test

Temperature Profile Test:





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High Temperature Thermal Analysis test

Test Date: 11-05 ~06-2016

Test Product: RTC-1200SK

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-2 Testing procedures

Test Bd: Dry Heat Test (Operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)

Model: NCO-BT-80

Date of Calibration: 02/26/16

Due date of Calibration: 02/25/17

Serial Number: A0446

Temperature Measurement:

40 Channel Thermal Recorder:

YOKOGAWA Inc,

Model: DA100-13-1D

Date of Calibration: 09/10/16

Due date of Calibration: 09/09/17

Serial Number: 12A323190

Testing Item:

1. Test Temperature: 35℃
2. Test Times: 8Hrs
3. Test Software: Windows Embedded 10 / Run PassMark Burn In Test 8.1 Pro
4. Test Environment Curve:

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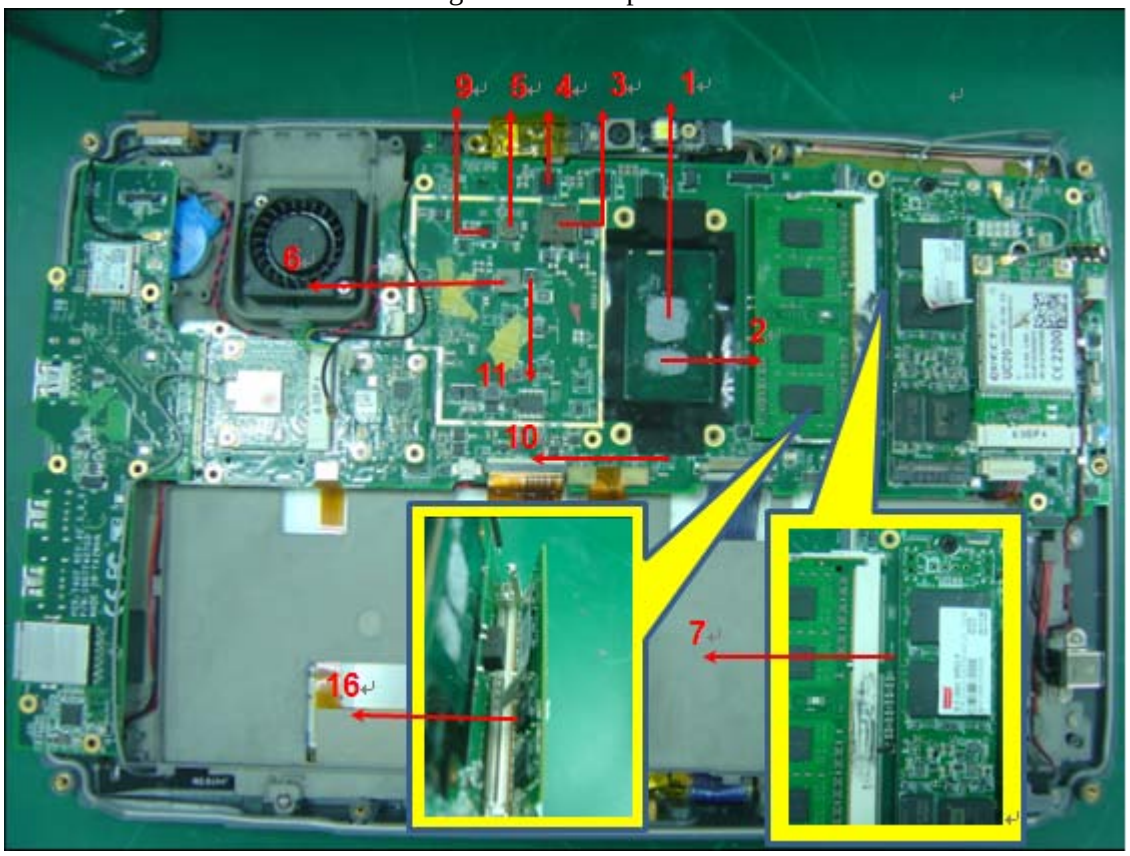
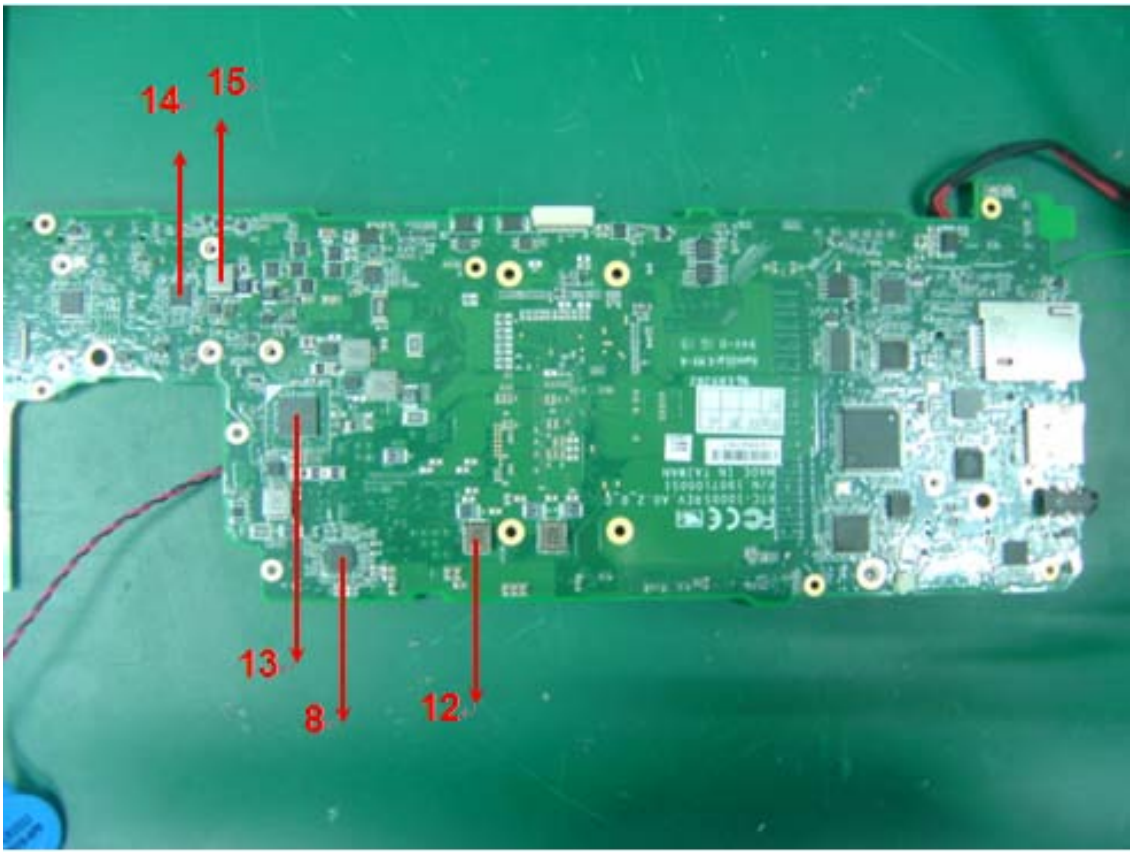
High Temperature Thermal Analysis test

Measuring Thermal Couple Position：





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High Temperature Thermal Analysis test

Terminal Recorder:

RTC-1200SK (With 0.2m/sec airflow)

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under 35.0℃	Note
1	U12	INTEL CORE.CPU.Skylake-U.i3-6100U.2.3GHz.	100	78.8	
2	U12	INTEL CORE.CPU.Skylake-U.i3-6100U.2.3GHz.	100	71.7	
3	L2	COIL.GOTREND.GSTD1040PE-R19M	125	85.3	
4	Q3	PWR.SMD.SON TI.CSD87350Q5D	120	74.3	
5	L3	COIL. SMD.NEC/TOKIN.MPLCG0530LR22	120	80.1	
6	L4	COIL.Zenithtek.ZPWM-6030M-R56M	125	76.3	
7		inside Air Temperature	NA	64.1	
8	U43	Controller with SVID Interface for NCP81246MNTXG	125	70.4	
9	Q7	PWR.Synchronous TI.CSD87330Q3D	125	76.6	
10	U30	IC.Load Switch with Power Good.5A.TI.TPS22954DSQR	105	74.1	
11	C71	POSCAP. SMD.SANYO.2R5TPE220MAZB	125	75.5	
12	L12	COIL.Zenithtek.ZPWM-6030M-R22M	125	75.5	
13	U55	IC.PMIC.Intel skylake TPS650830ZCGR	125	76.4	
14	U68	IC.SMBus Level Dual-Battery. MAXIM.MAX8731AETI	85	72.1	
15	L23	COIL. ZenithTek.ZPWM-6030MA-100M	125	65.2	
16		DIMM	95	76.2	

Note(*):
1. **"Tc"** indicates the component's case maximum temperature value specified in its datasheet.
2. **"TAT"** indicates the actual measured temperature in chamber.
3. **"TPT"** indicates the predicted temperature by offset from TAT
4. Judgment Criteria:
- **Fail** : Tm > Tc; The measured value is over specification.
- **Margin Pass** : Tc > Tm > Tc-5℃; The measured value is within specification with margin.
  It is strongly recommended to add thermal dissipation design for better reliability.
- **Pass** : Tm < Tc-5℃; The measured value is with safety margin.

5. Defect NO.: N/A

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issues were found during the temperature rise operation test.

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High temperature storage test

Test Date: 10-30 ~11- 05-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

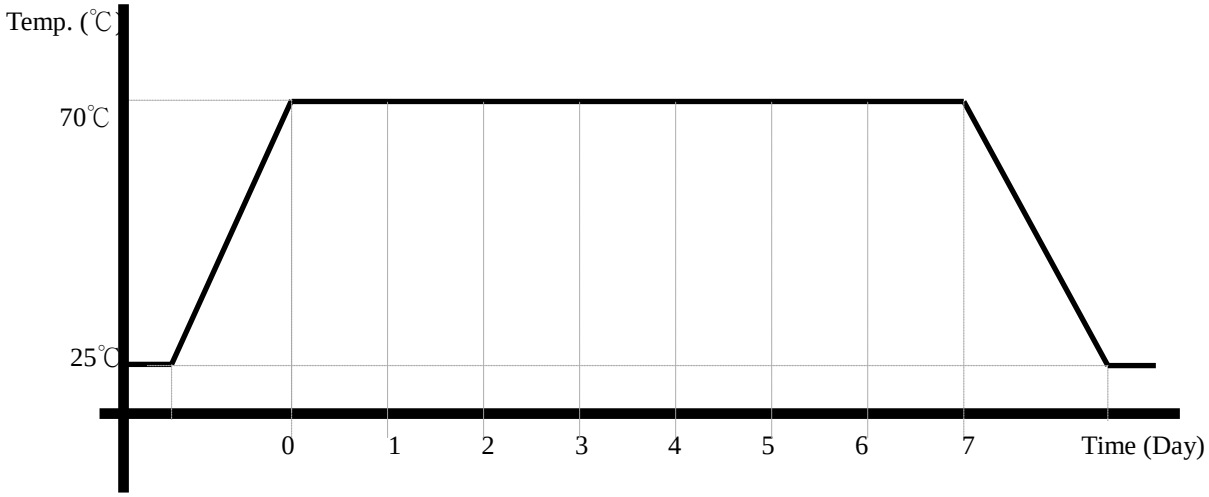
Test Standard: Refer to MIL-STD 810G Method 501.5 High Temperature
Procedure I - Storage

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Testing Item:

5. Test Temperature: 70℃
6. Test Time: 7days
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issue was found after the high temperature storage test.

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High temperature operation test

Test Date: 10-26 ~ 30-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

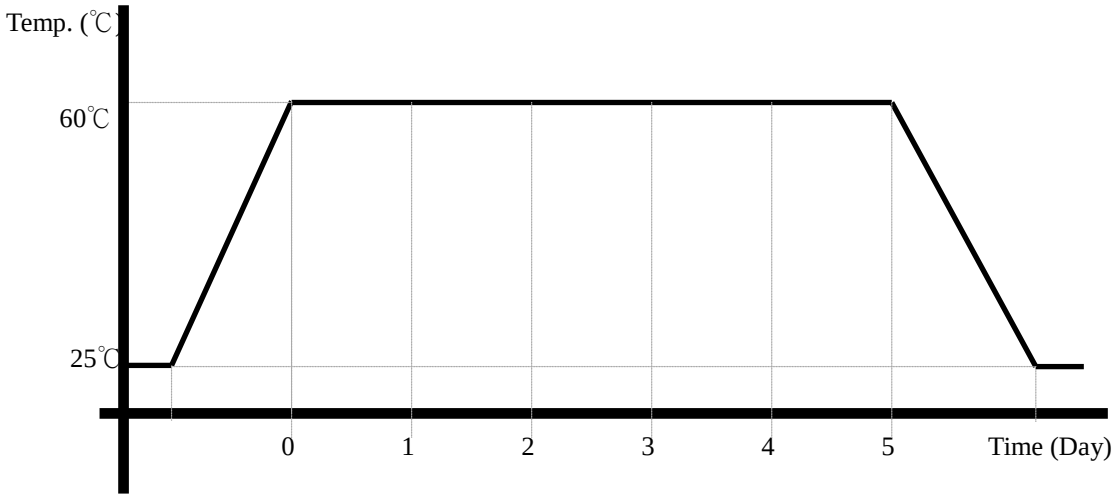
Test Standard: Refer to MIL-STD 810G Method 501.5 High Temperature
Procedure II - Operation

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 60℃
2. Test Time: 5days
3. Test Software: Windows Embedded 10 / Run PassMark Burn In Test 8.1 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issue was found during the high temperature operation test.

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Low temperature storage test

Test Date: 10-25~26-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

Test Standard: Refer to MIL-STD 810G Method 502.5 Low Temperature
Procedure I - Storage

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.).
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Testing Item:

1. Test Temperature: -55℃
2. Test Times: 24Hrs
3. Test Environment Curve:

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issue was found after the low temperature storage test.

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Low temperature operation test

Test Date: 10-24~25-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

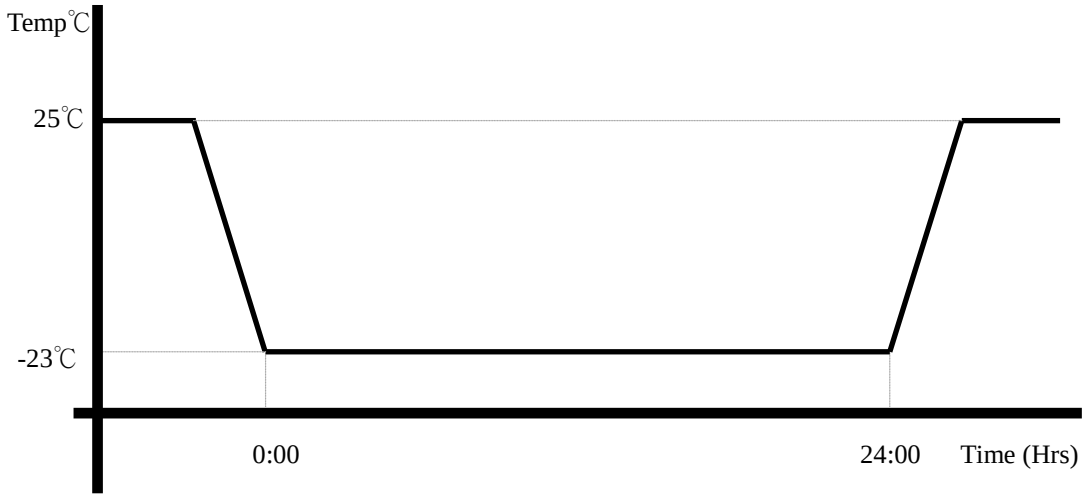
Test Standard: Refer to MIL-STD 810G Method 502.5 Low Temperature
Procedure II - Operation

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Testing Item:

1. Test Temperature: -23℃
2. Test Times: 24Hrs
3. Test Software: Windows Embedded 10 / Run PassMark Burn In Test 8.1 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issue was found during the low temperature operation test.

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Humidity test

Test Date: 10-21 ~ 24-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

Test Standard: Reference IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test (Non-operation)

Test Equipment:

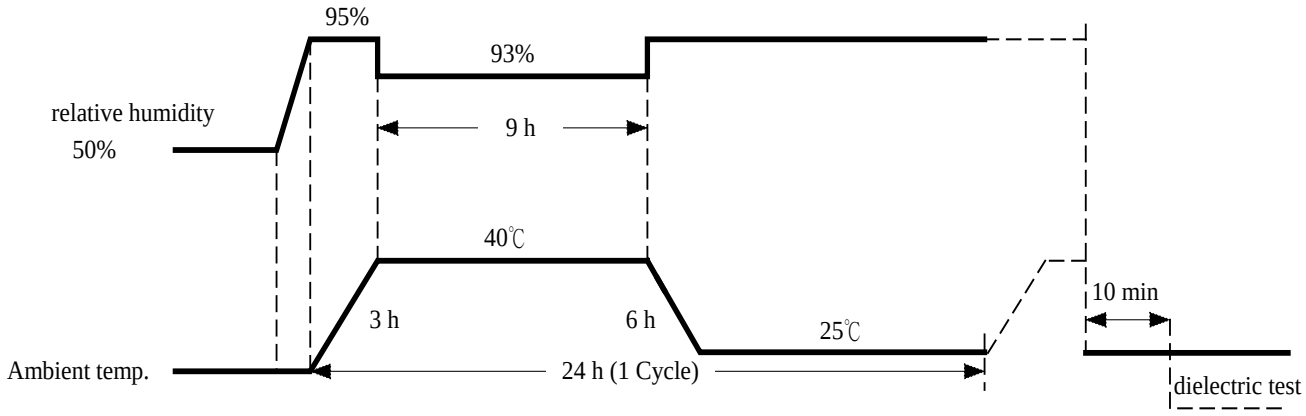
Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)

Model: THS-B6T-150+LN2

Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Testing Item:
Testing Item:

1. Test Temperature: 25℃ / 40℃
2. Test Humidity: 93~95%RH
3. Test Cycle: 2 Cycles
4. Test Times: 48Hrs
5. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issues were found during the humidity non-operation test.

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Temperature shock operation test

Test Date: 10-20 ~ 21-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

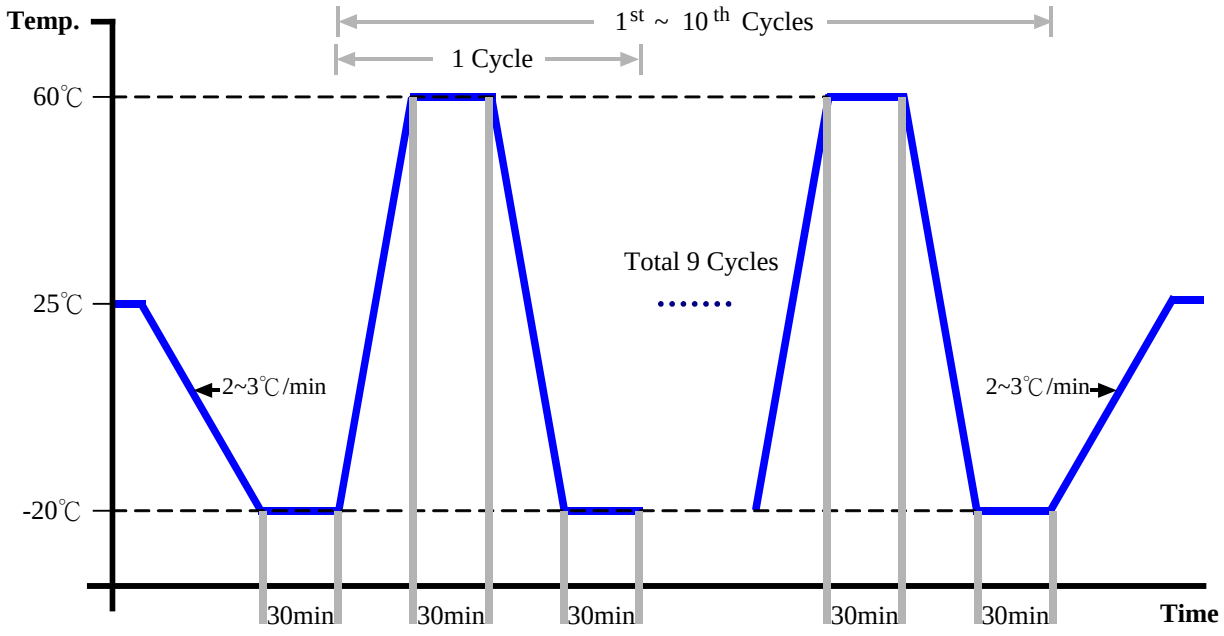
Test Standard: Reference MIL-STD 810G Method 503.5 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Test Condition:

1. Test Low Temperature: -20℃
2. Test High Temperature: 60℃
3. Test dwell time: 30min
4. Temperature slope: 5 min
5. Test cycle: 10 cycles
6. Test Software: Windows Embedded 10 / Run PassMark Burn In Test 8.1 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issues were found during the variation temperature operation test.

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Temperature shock non-operation test

Test Date: 10-16~20-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

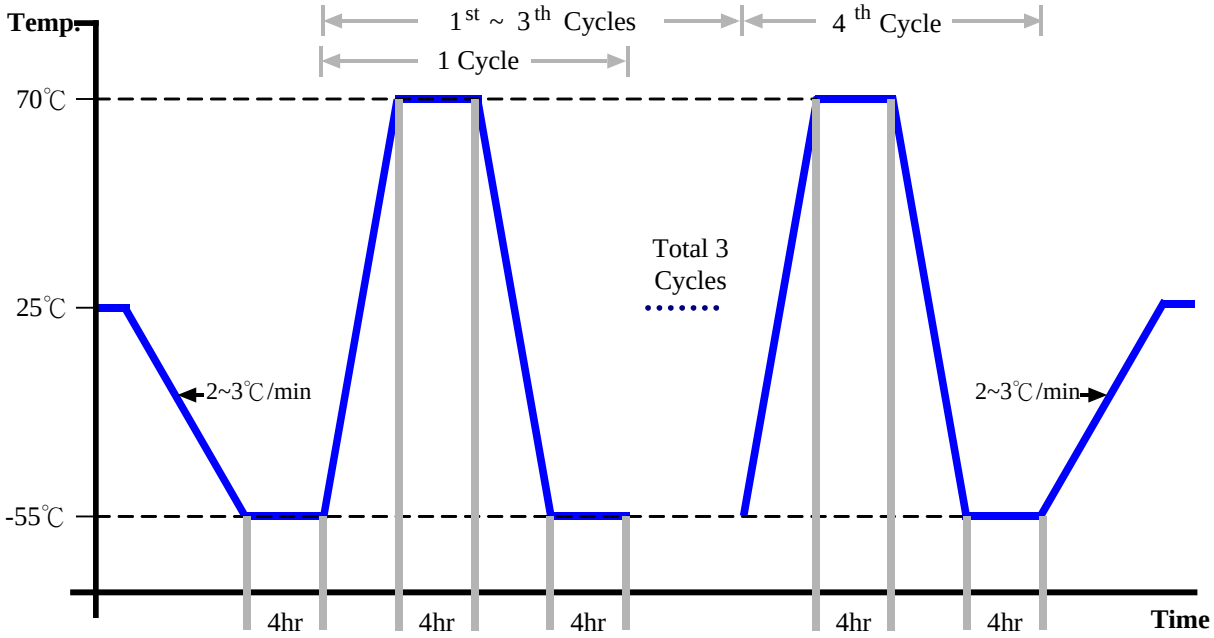
Test Standard: Reference MIL-STD 810G Method 503.5 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Test Condition:

1. Test Low Temperature: -55℃
2. Test High Temperature: 70℃
3. Test dwell time: 4Hrs
4. Temperature slope: 10 min
5. Test cycle: 4 cycles
6. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1200SK + AC Adapter)

Test Result:

No issues were found after the variation temperature non-operation test.

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Cold start and hot start test

Test Date: 10-15~16-2016

Test Product: RTC-1200SK + AC Adapter

Test Site: AAEON QE Dept.

Test Standard: Reference IEC 68-2-14 Testing procedures
Test N: Change of temperature Test

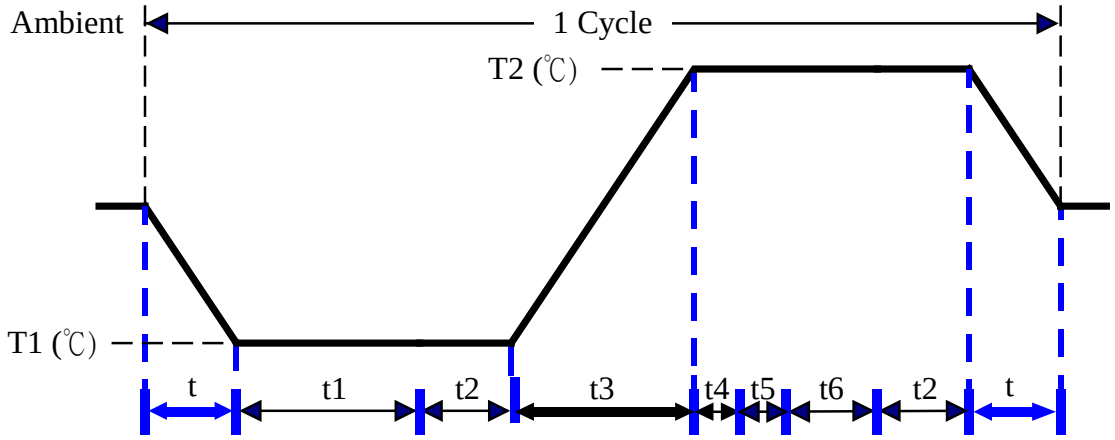
Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)

Model: THS-B6T-150+LN2

Date of Calibration: 06/03/16
Due date of Calibration: 06/02/17
Serial Number: 9095KT

Test Condition:



Parameters	Description
T1	-5℃
T2	45℃
t1	1 hrs
t2	2 hrs
t4, t5	30 min
t, t3	2℃/min
n (Cycle)	1

t,t3 = temprature slope
t, t1: Power Off
t2: Power on/off test 5 times (on 2 min / off 5min)
t3,t4: Run PassMark Burn In Test 8.1 Pro
t5: Windows Embedded 10 Restart test 2 times
Test O.S.: Windows Embedded 10

Test Result:

a. No issues were found during the cold start test.

b. No issues were found during the hot start test.

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