RTC-700B

Environment Test Report

Report NO: 16R020002

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: _____**

Issue date	QE Manager	Test Engineer
2016-09-26	**KJ Wang**	**Ben Sun**

Test Item List

Testing Result

Num	Test item list	Result	Remark
1	Temp./humidity power on/off test	Pass	
2	Room temperature test	Pass	
3	Temperature rise 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-700B		
Sample Configuration & Quantity Under Test:		
Num	**Item**	**Description**
RTC-700B		
01.	**CPU:**	Intel Atom x5-Z8350 Processor (2M Cache, up to 1.92 GHz)
02.	**PCBA**	Rev: A1.0_0_0
03.	**BIOS**	R1.0
04.	**Memory**	NANYA NT5CC256M16DP-DI (2GB DDRL-1600)
05.	**Storage**	Samsung KLMCG4JENB-B041 (eMMC 64GB)
06.	**3G**	QUECTEL UC20 Mini PCIe
07.	**WLAN + BT Module**	AMPAK WL334(802.11abgn+BT4.0)
08.	**Battery**	RTC600H, RTC600S (1530mAh x 2)
09.	**AC Adapter**	FSP036-RBBN2 (12VDC/3A/36W)
10.	**Test Software**	Windows 10 IOT Enterprise x64 Editoin

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Temp./humidity power on/off test

Test Date: 06-13~14 - 2016

Test Model: RTC-700B Main Board only

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 Ab: Cold Test

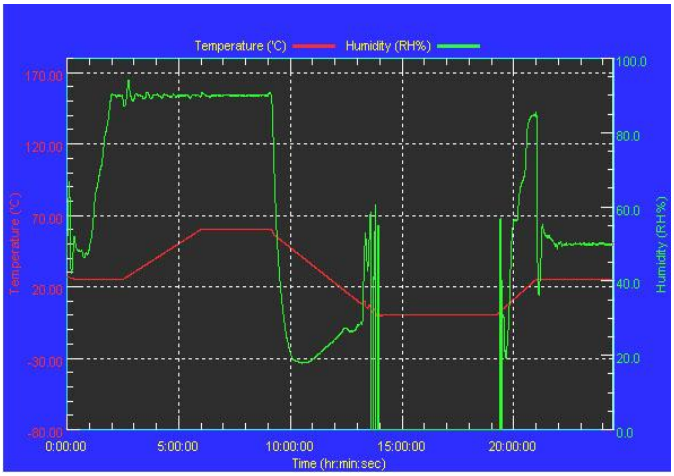
Test Equipment:
Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Temperature & Humidity Power On/Off Test:

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:
No issues were found during the temperature & humidity power on/off test.

Test Method	Actual	Successful	Failure rate
Power On/Off	1279/times	1279/times	0 %
Note: Failure rate need to be 0%.			

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Room Temperature test

Test Date: 06-02~03-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/10/15
Serial Number: 12A323190

Test Condition:

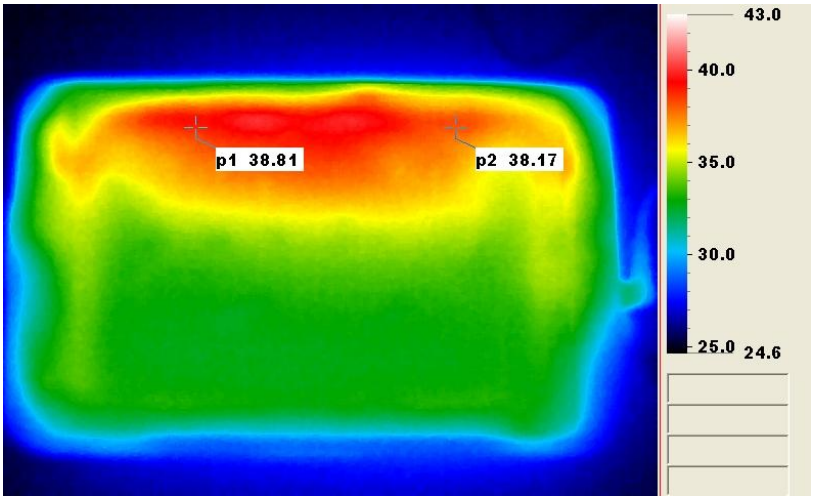
Ambient temperature: 25℃
Continuous running till temperature stable (within less than 1℃)

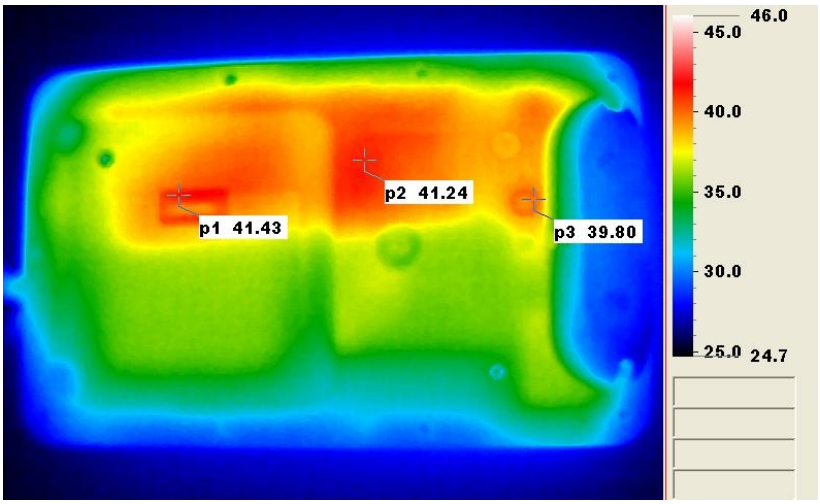
Test Software:

Windows 10 / Run Burn-in Test 8.1 Pro

Terminal Recorder:

Measuring Thermal Couple Position：





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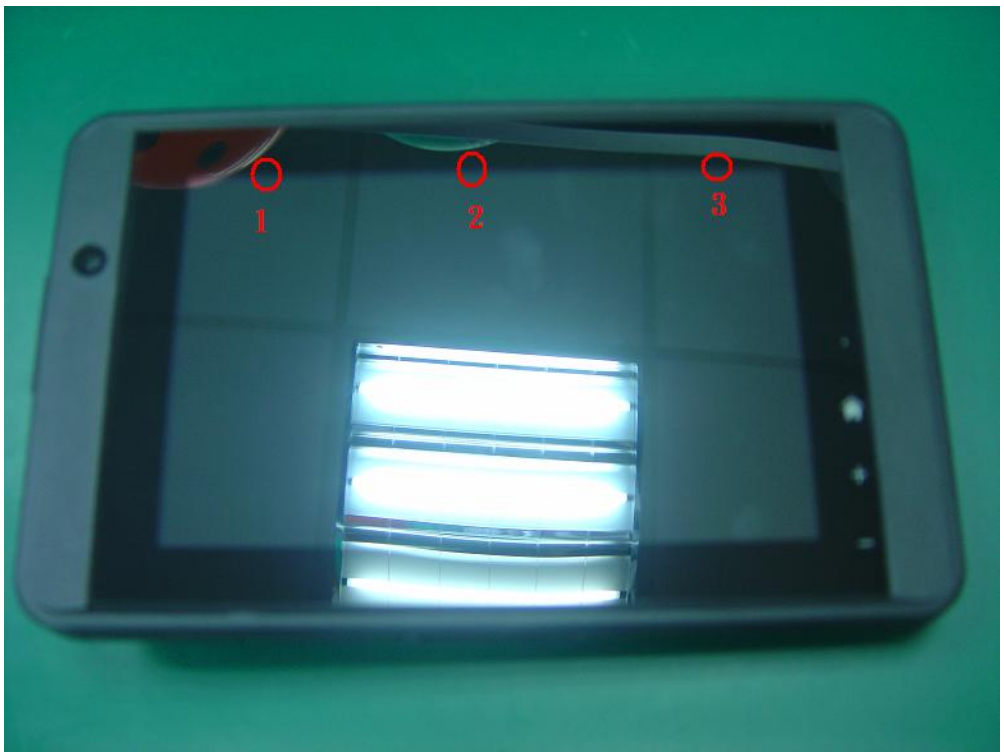
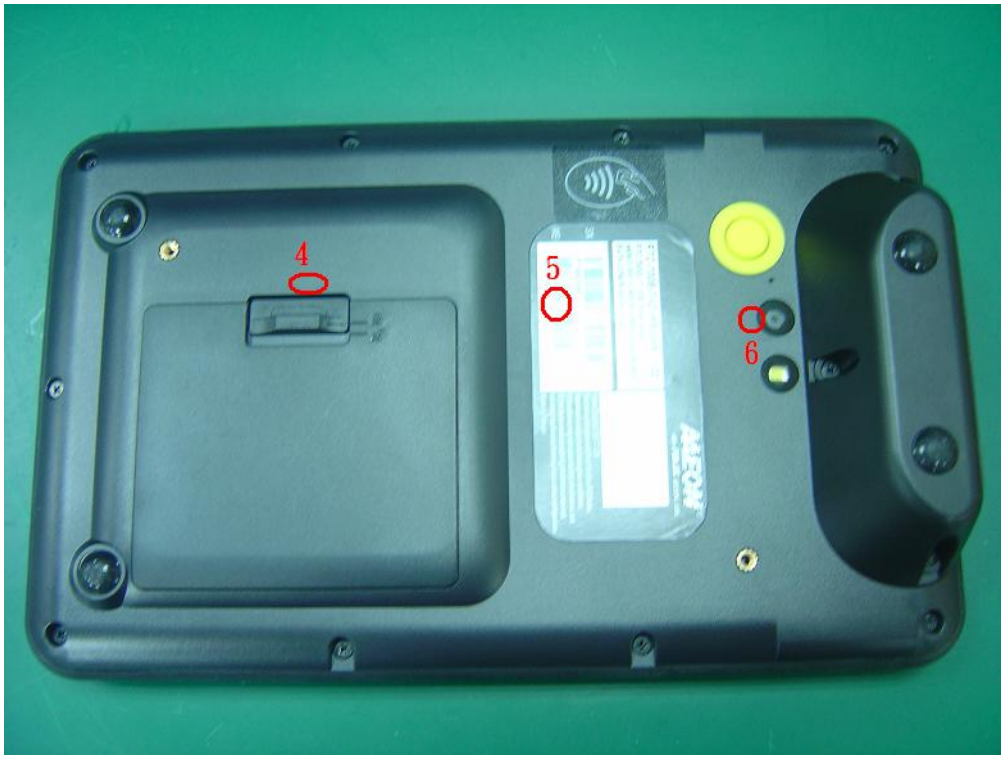
Room Temperature test





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Thermal profile data:

RTC-700B

Point / Temp. Stage(℃)	Spec	Tm
1. Point 1	50℃	45.7
2. Point 2		45.6
3. Point 3		43.5
4. Point 4		45.5
5. Point 5		44.2
6. Point 6		44.3
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-700B)

Test Result:

No issues were found during the room temperature operation test.

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Temperature rise test

Test Date: 06-03~07-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

Test Standard: Refer to EN 61131-2(94), UL508 (94)

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/10/15
Serial Number: 12A323190

Test Condition:

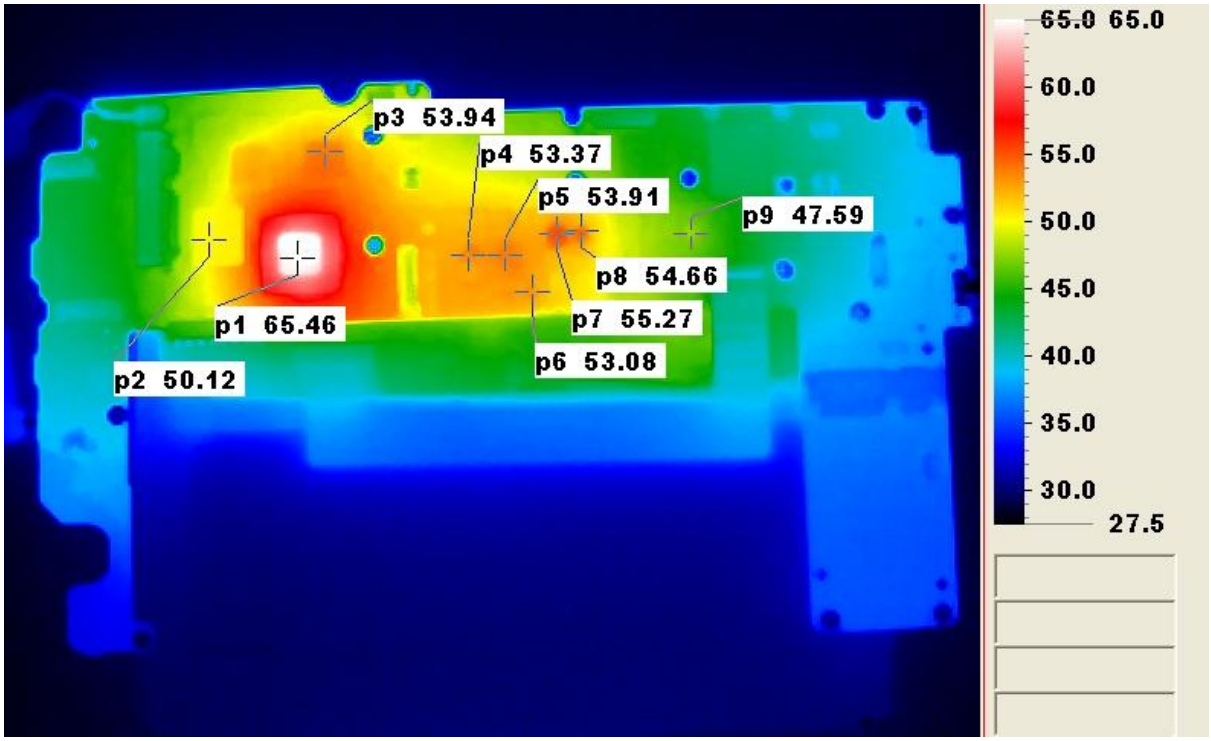
Ambient temperature: 35℃
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 10 / Run Burn-in Test 8.1 Pro

Terminal Recorder:

Measuring Thermal Couple Position：



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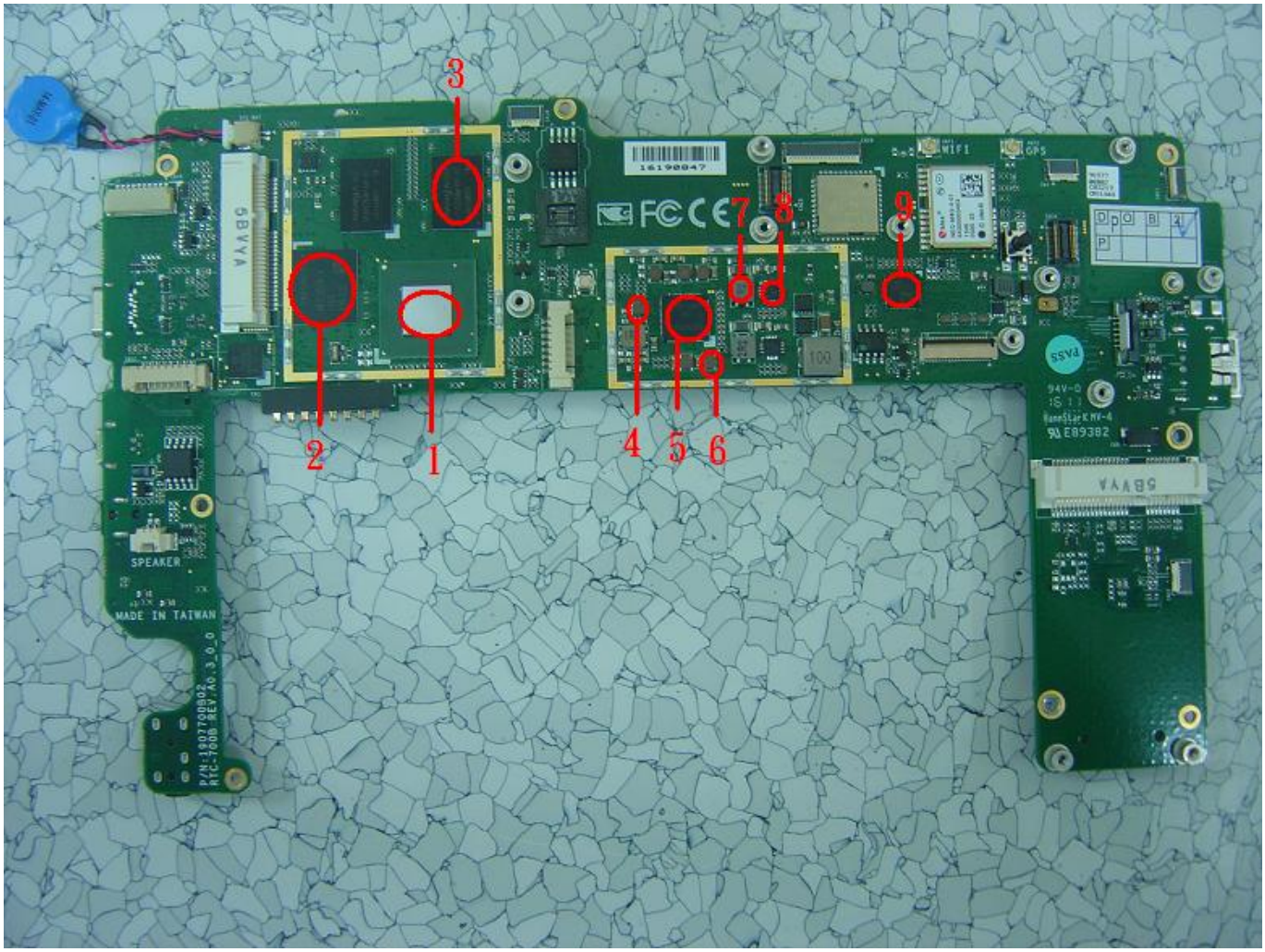

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Thermal profile data:

RTC-700B

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under 35.0℃	Note
1	U1	(TF)INTEL CPU.SOC.Cherry Trail-T3 x5-Z8350.1.92GHz UTFCBGA.592P.FJ8066401836620 SR2KT	90	89.3	NOTE4
2	U16	(TF)IC.eMMC 5.1 MLC Flash.64GB FBGA 153P.SMD SAMSUNG KLMCG4JENB-B041	100	77.3	
3	U10	(TF)IC.4G.DDR3L-1600.SDRAM.1.35V.256Mbit*16.8n.FBGA 96ball.SMD.NANYA.NT5CC256M16DP-DI	110	82.2	
4	L9	(TF)COIL.1.5uH.2.8A.72mohm.20%.SMD.2.5x2.0x1.2mm.Zenith Tek.ZADP-252012MES-1R5M	125	83.0	
5	U69	(TF)IC.PMIC for Intel Cherry Trail.CR Platform VQFN 64P 8x8mm SMD.TI.SND9039A2CTRSKR	100	84.7	
6	L12	(TF)COIL.1.5uH.2.8A.72mohm.20%.SMD.2.5x2.0x1.2mm.Zenith Tek.ZADP-252012MES-1R5M	125	82.3	
7	L14	(TF)COIL.2.2uH.DCR=52mohm.Idc=3Amp.20%.SMD.4.45*4.05* 2.0mm.Zenithtek.ZPWM-4020M-2R2M	125	81.0	
8	U72	(TF)IC.Step-Down Converter 2.5MHz QFN-16 SMD.TI.TPS62130RGT	100	86.6	
9	U78	(TF)IC.Display Port to LVDS Converter.QFN 48P SMD Realtek RTD2136N-CGT	85	67.9	

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.

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-700B)

Test Result:

No issues were found during the temperature rise operation test.

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High temperature storage test

Test Date: 05-16 ~ 22-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

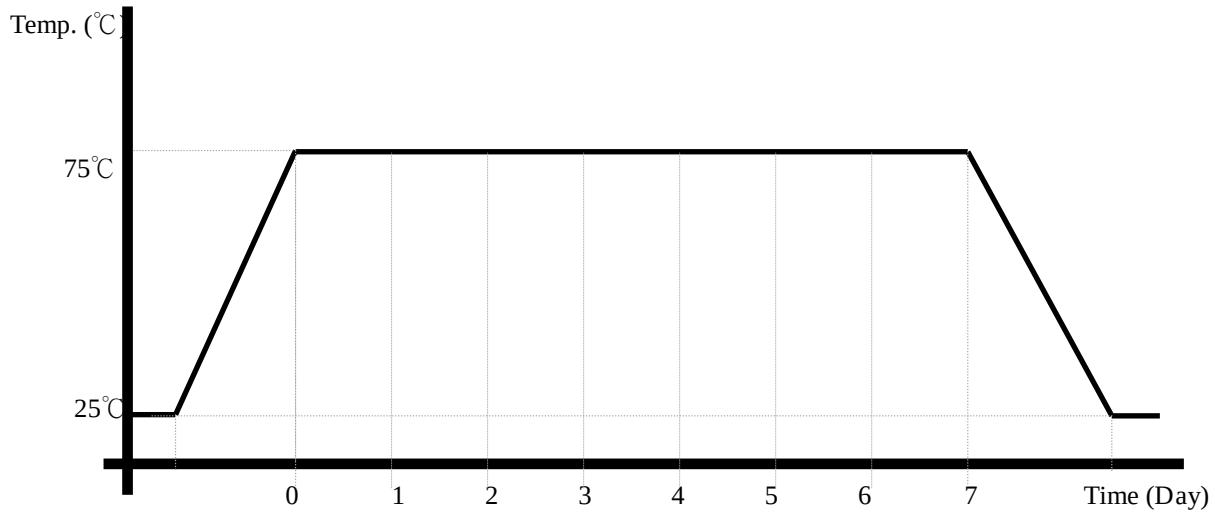
Test Standard: Refer to MIL-STD 810G Method 501.5 High Temperature
Procedure I - Storage

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 75℃
2. Test Time: 7days
3. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-700B)

Test Result:

No issues were found after the high temperature storage test.

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High temperature operation test

Test Date: 05-23 ~ 27-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

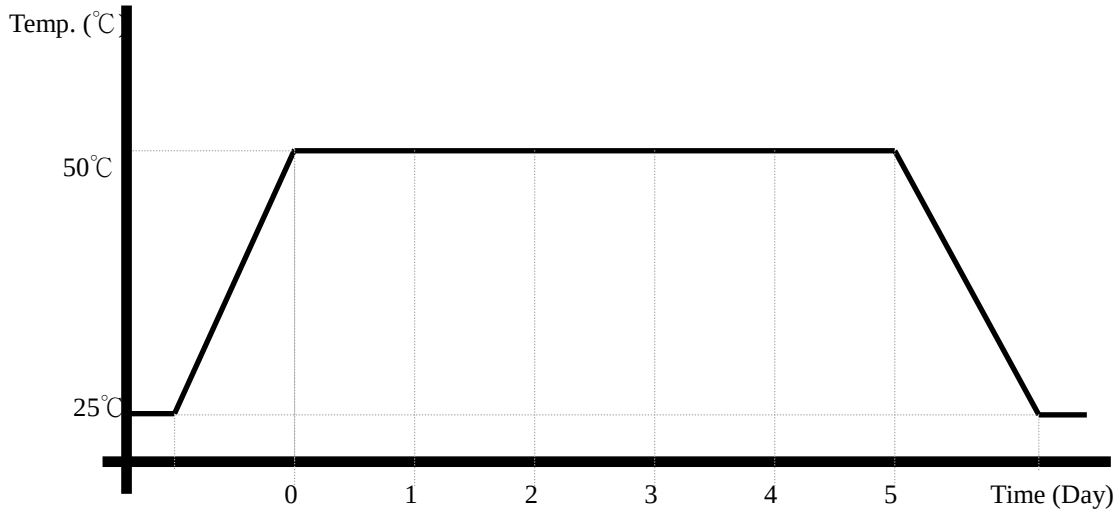
Test Standard: Refer to MIL-STD 810G Method 501.5 High Temperature
Procedure II - Operation

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 50℃
2. Test Time: 5days
3. Test Software: Windows 10 / Run Burn-in Test 8.1 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-700B)

Test Result:
No issues were found during the high temperature operation test.

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Low temperature storage test

Test Date: 05-30~31-2016

Test Product: RTC-700B

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: 04/26/16
Serial Number: 6488KT

Testing Item:

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

Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-700B)

Test Result:
No issues were found after the low temperature storage test.

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Low temperature operation test

Test Date: 07-04~06-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

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

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Testing Item:

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

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-700B)

Test Result:

No issues were found during the low temperature operation test.

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Humidity test

Test Date: 05-09~11-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-3 Testing procedures
Test Ca: Damp heat, steady state (Non-operation)

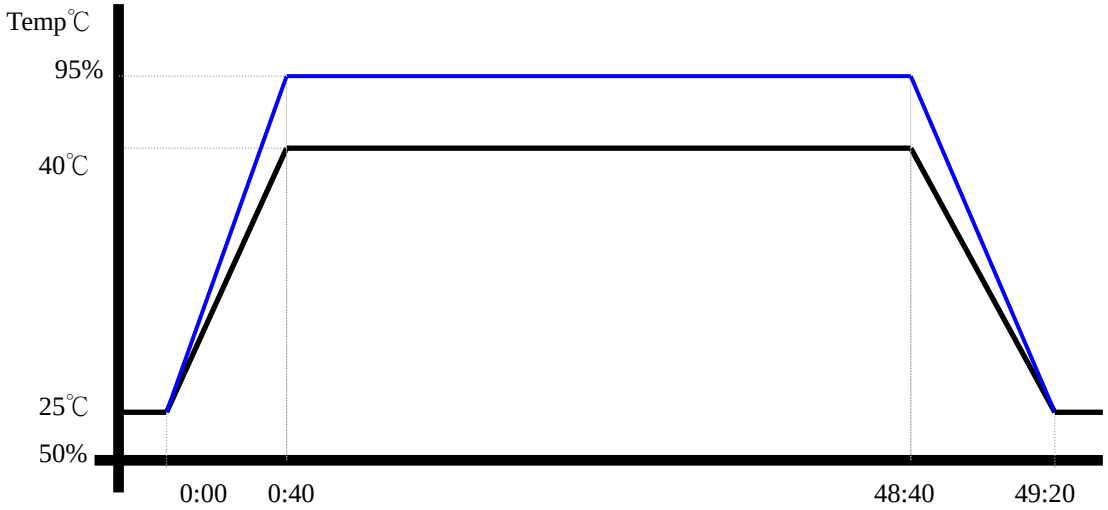
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 95%RH
3. Test Times: 48Hrs
4. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-700B)

Test Result:
No issue was found after the humidity storage test.

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Temperature shock operation test

Test Date: 09-19~21-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

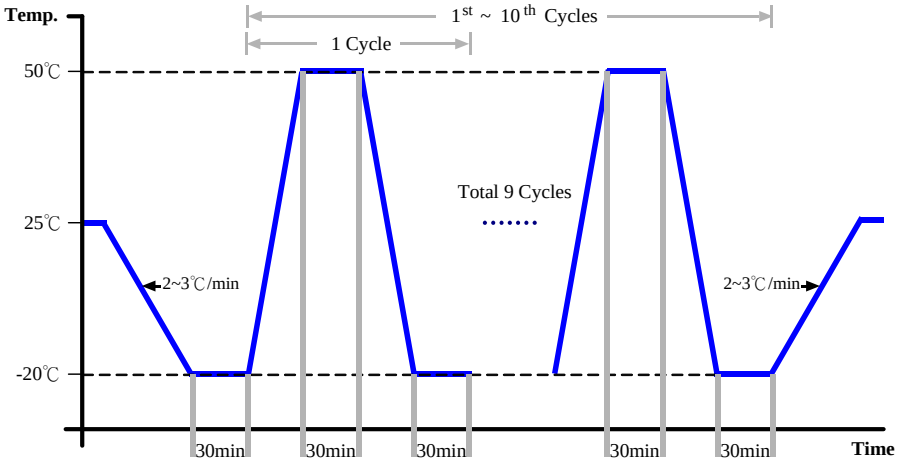
Test Standard: Refer to MIL-STD 810G Method 503.5 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Test Condition:

1. Test Low Temperature: -20℃
2. Test High Temperature: 50℃
3. Test dwell time: 30min
4. Temperature slope: 5 min
5. Test cycle: 10 cycles
6. Test Software: Windows 10 / Run Burn-in Test 8.1 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-700B)

Test Result:

No issues were found during the variation temperature operation test.

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Temperature shock non-operation test

Test Date: 06-14~15-2016

Test Product: RTC-700B

Test Site: AAEON QE Dept.

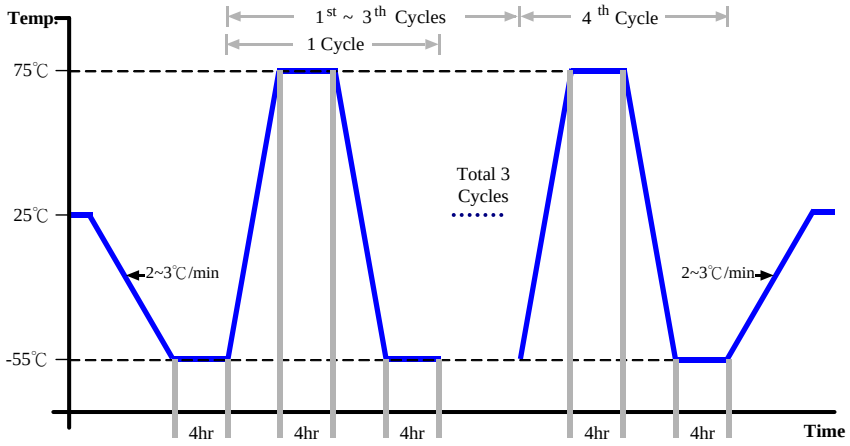
Test Standard: Refer to MIL-STD 810G Method 503.5 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 04/26/16
Serial Number: 6488KT

Test Condition:

1. Test Low Temperature: -55℃
2. Test High Temperature: 75℃
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-700B)

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: 06-07~08-2016

Test Product: RTC-700B

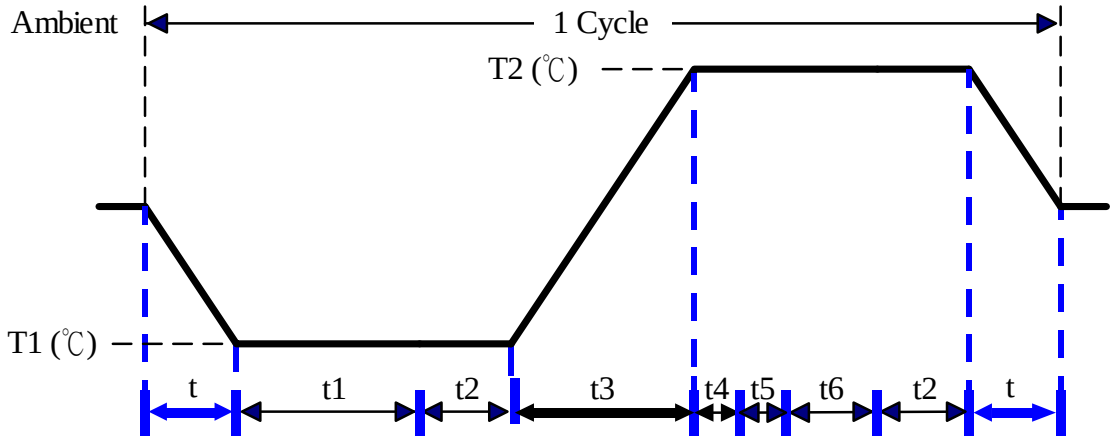
Test Site: AAEON QE Dept.

Test Standard: Refer to 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: 04/26/16
Serial Number: 6488KT

Test Condition:



Parameters	Description
T1	-20℃
T2	50℃
t1	4 hrs
t2, t6	2 hrs
t4, t5	1hrs
t, t3	2℃/min
n (Cycle)	1

t = temprature slope
t , t1, t6: Power Off
t2: Power on/off test 10 times (on 2 min / off 5min)
t3, t4: Run Burn in Test
t5: Windows OS restart test 3 times
Test Software:Windows 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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