RTC-600A

Environment Test Report

Report NO: 15R020001

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	Approval	Test Engineer
2015-09-18	**KJ Wang**	**Ben Sun**

Test Item List

Testing Result

Num	Test item list	Result	Remark
1	Room temperature test	Pass	
2	Temperature rise test	Pass	
3	High temperature storage test	Pass	
4	High temperature operation test	Pass	
5	Low temperature storage test	Pass	
6	Low temperature operation test	Pass	
7	Humidity test	Pass	
8	Temperature shock operation test	Pass	
9	Temperature shock non-operation test	Pass	
10	Cold start and hot start test	Pass	

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Configuration of EUT

Test Product: RTC-600A		
Sample Configuration & Quantity Under Test:		
Num	**Item**	**Spec**
RTC-6A00C		
01.	**CPU:**	ARM® Cortex® Dual-Core up to 1.5 GHz
02.	**PCBA**	RTC-600A A1.0
03.	**Memory**	LPDDR2 1GB SDRAM
04.	**Storage**	eMMC Flash 16GB
05.	**3G**	Quectel, UC20-G
06.	**GPS**	U-blox, MAX-M8C-0
07.	**WLAN + BT Module**	Jorjin, WG7550-00
08.	**Battery (soft-pack)**	Getac.BP-RTC600S-21/1530SN.(541386230002), 2S1P 1530mAh
09.	**Battery (hard-pack)**	Getac.BP-RTC600H-21/1530SN.(541386230001), 2S1P 1530mAh
10.	**AC Adapter**	LTE, LTE24E-S2-2D6 (Output: 12V / 2A)
11.	**Test Software**	Android 4.2.2

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Room Temperature test

Test Date: 09-03-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/11/14
Serial Number: 12A323190

Test Condition:

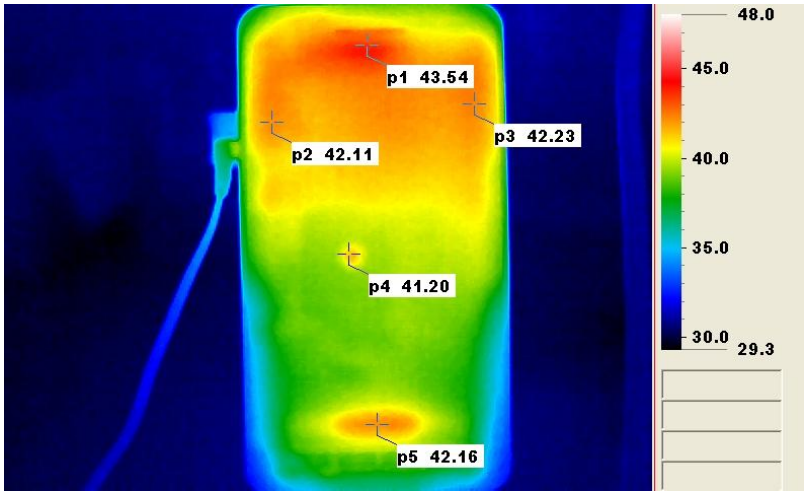
Ambient temperature: 25℃
Continuous running till thermal stability (within less than 1℃)

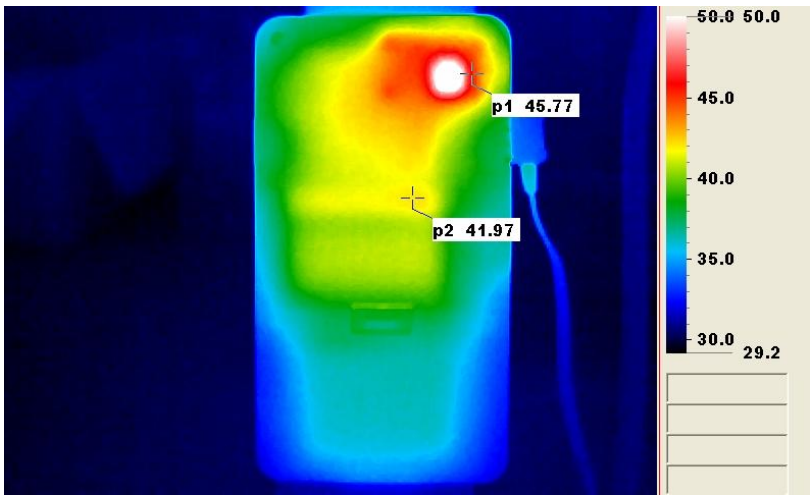
Test Software:

Android 4.2.2 / Run Burn In Test APP

Terminal Recorder:

Measuring Thermal Couple Position：





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Room Temperature test

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Thermal profile data:

RTC-600A

Point / Temp. Stage(℃)	Spec	25
1. Point 1	△T ≦25 ℃	45.3
2. Point 2		44.2
3. Point 3		43.9
4. Point 4		42.3
5. Point 5		43.6
6. Point 6 -		46.9
7. Point 7 -		42.5
Room Temperature		25.2
Any Tm value showed in red words which meaning the value over the Tc degree Cof this device specification.		

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-600A)

Test Result:

No issues were found during the room temperature operation test.

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Temperature rise test

Test Date: 09-16-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

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

Temperature Measurement:

20 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: ZR-RX45
Date of Calibration: 12/12/14
Serial Number: H30481978

Test Condition:

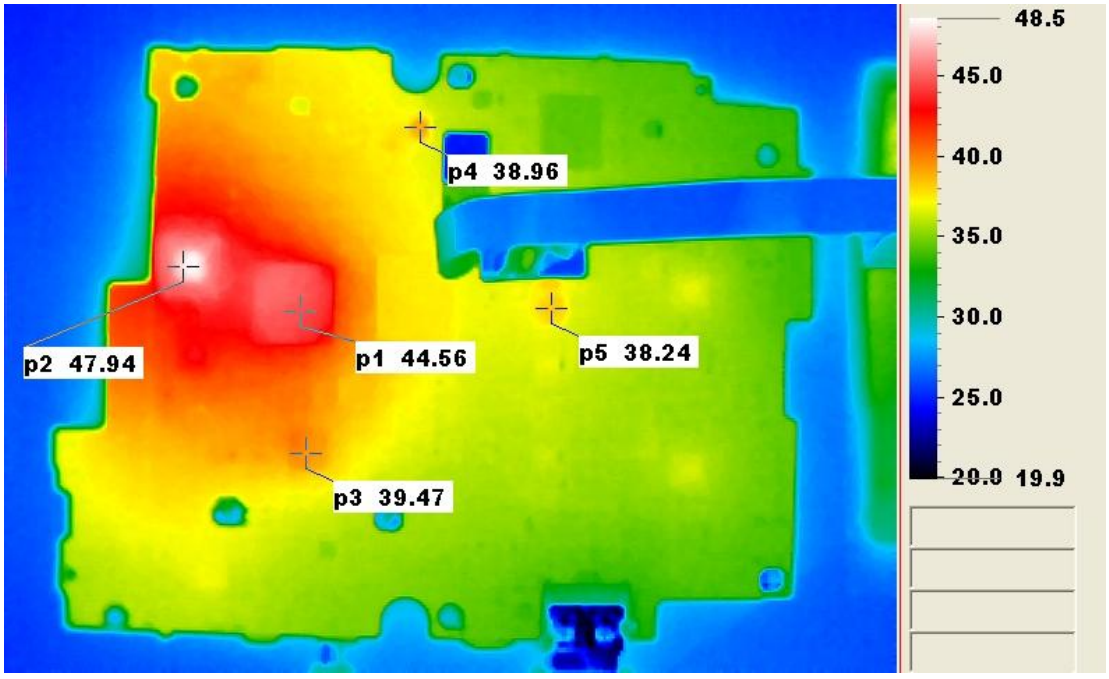
Ambient temperature: 26℃
Continuous running till thermal stability (within less than 1℃)

Test Software:

Android 4.2.2 / Run Burn In Test APP

Terminal Recorder:

Measuring Thermal Couple Position：



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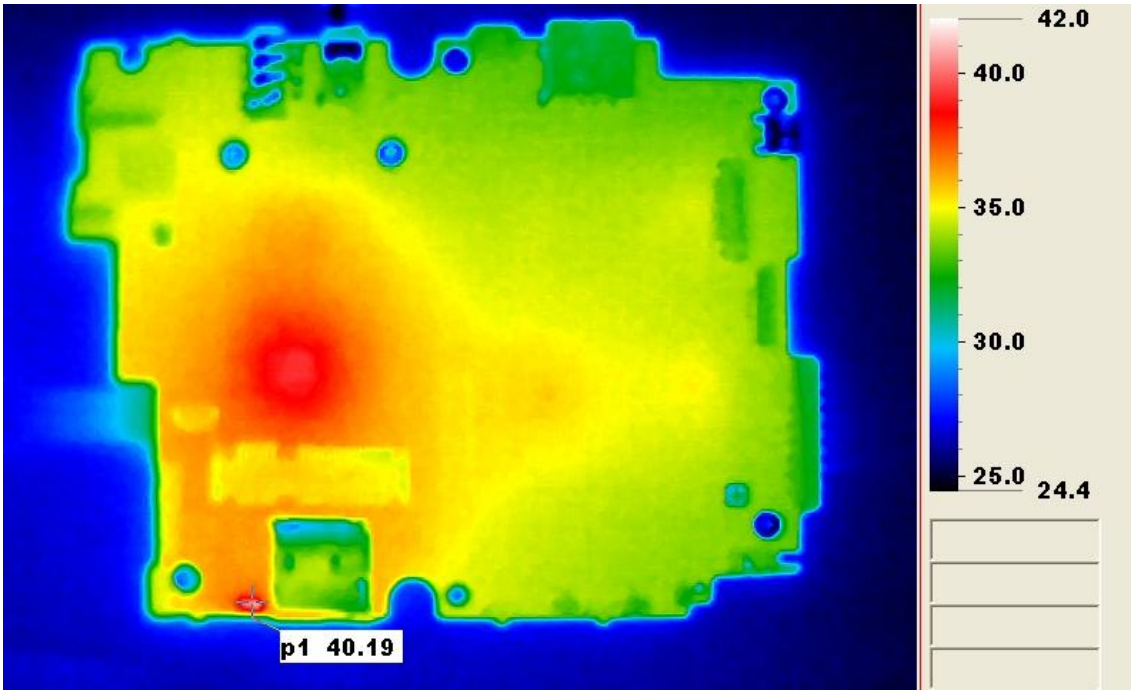

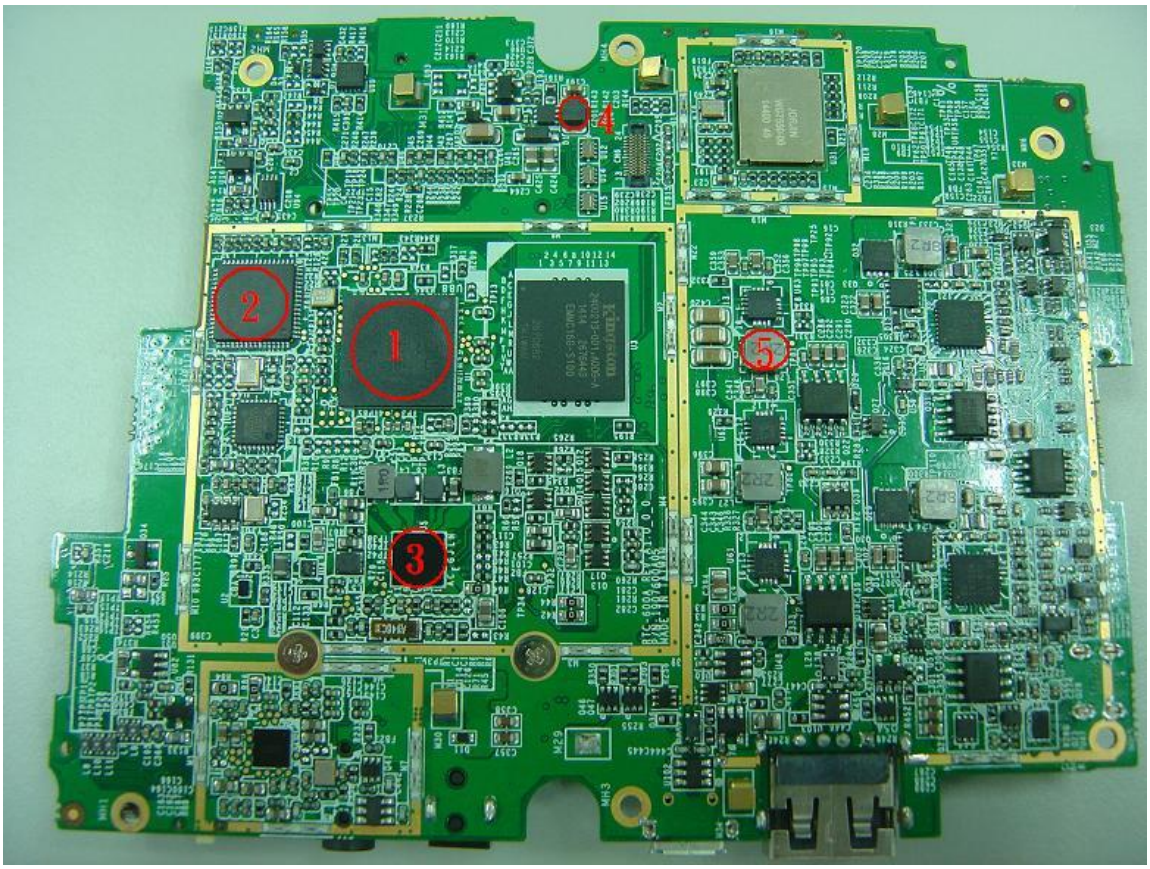

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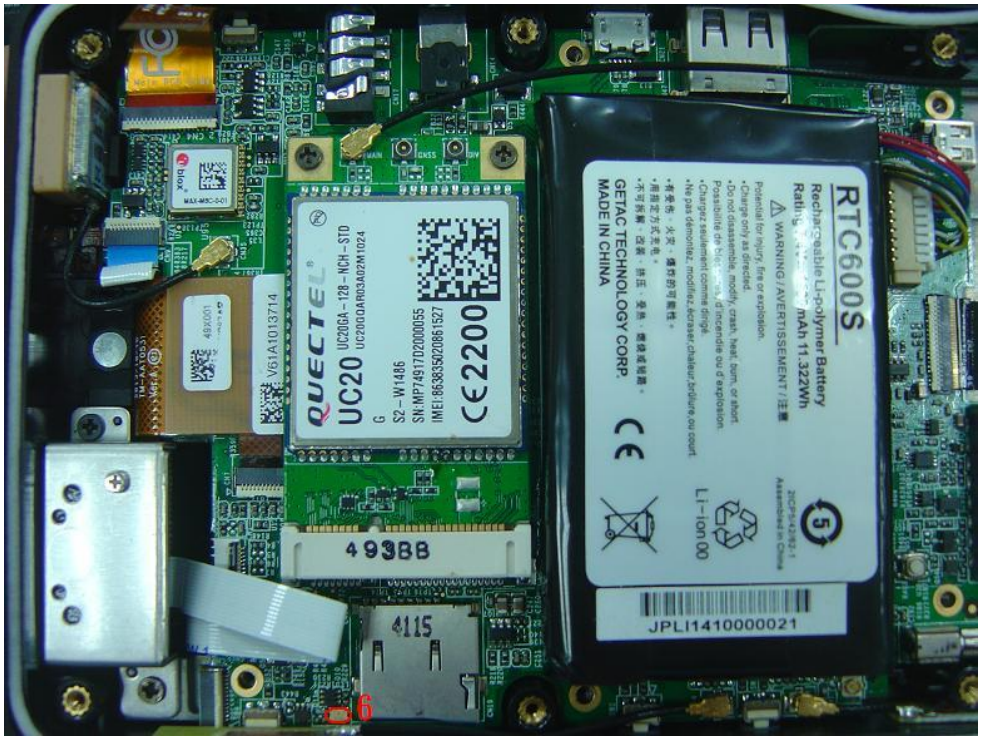

Thermal profile data:

RTC-600A

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under 27.0℃	Note
1	U1	(TF)TI CPU.OMAP4470.1.5GHz.PBGA 547P.SMD.44705GPCBS	110℃	59.5	
2	U7	(TF)IC.USB2.0 7-PORT HUB CONTROLLER.QFN 64.SMD.SMSC.USB2517i-JZX	85℃	59.0	
3	U5	(TF)IC.PMIC.WCSP 155P.SMD.TI.TWL6032A1B4YFFR	85℃	54.2	
4	L14	(TF)INDUCTOR.10uH.10%.SMD 1210.muRata.LQH32CN100K53L	85℃	50.0	
5	L28	(TF)COIL.2.2uH.DCR=52mΩ.Irms=3.0Amp.20%.4.5*4.0*1.8mm.SMD.GOTREND.GSTD4020PM-2R2M	125℃	50.6	
6	LED	(AOH)(TF)LED.1.6*2.1*0.4mm.Red/Green/Blue.SMD.LITEON.LTST-C19GD2WT	80℃	49.8	

Note(*):
1. "Tc" indicates the component's case maximum temperature value specified in its datasheet.
2. "Tm" indicates the measured Tc value under working environmental temperature within product specification.

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-600A)

Test Result:

No issues were found during the temperature rise operation test.

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High temperature storage test

Test Date: 08-14 ~ 21-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

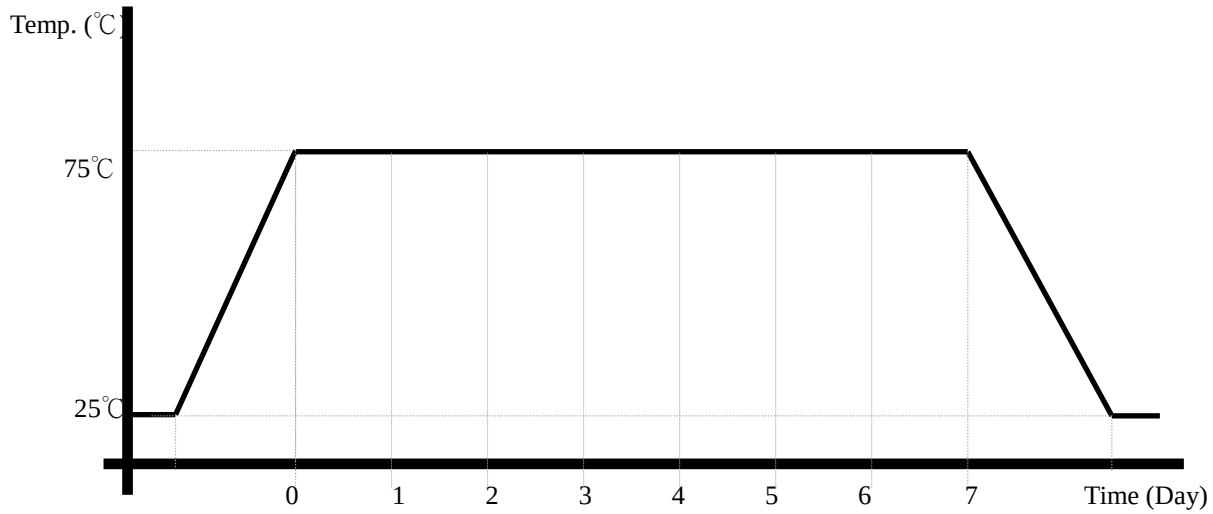
Test Standard: Refer to MIL-STD 810G Method 501.5 High Temperature
Procedure I - Storage

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/04/15
Serial Number: 9095KT

Testing Item:

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



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-600A)

Test Result:

No issues were found after the high temperature storage test.

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High temperature operation test

Test Date: 07-31 ~ 08-5-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

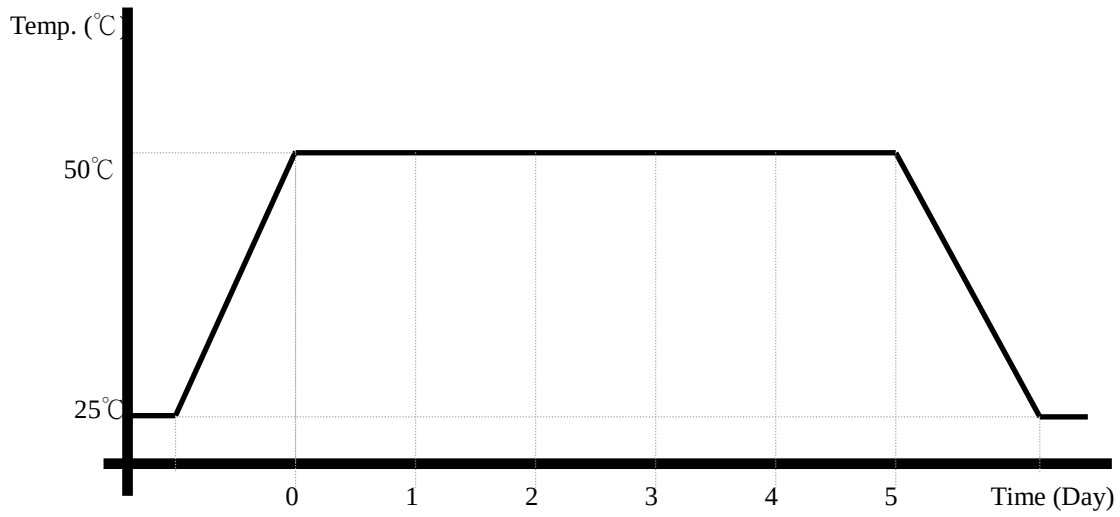
Test Standard: Refer to MIL-STD 810G Method 501.5 High Temperature
Procedure II - Operation

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 08/20/15
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 50℃
2. Test Time: 5days
3. Test Software: Android 4.2.2 / Run Burn In Test APP
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-600A)

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

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Low temperature storage test

Test Date: 08-24~25-2015

Test Product: RTC-600A

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: 06/04/15
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-600A)

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

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Low temperature operation test

Test Date: 08-06~07-2015

Test Product: RTC-600A

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: 06/04/15
Serial Number: 9095KT

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 24Hrs
3. Test Software: Android 4.2.2 / Run Burn In Test APP
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-600A)

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

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Humidity test

Test Date: 08-07~13-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

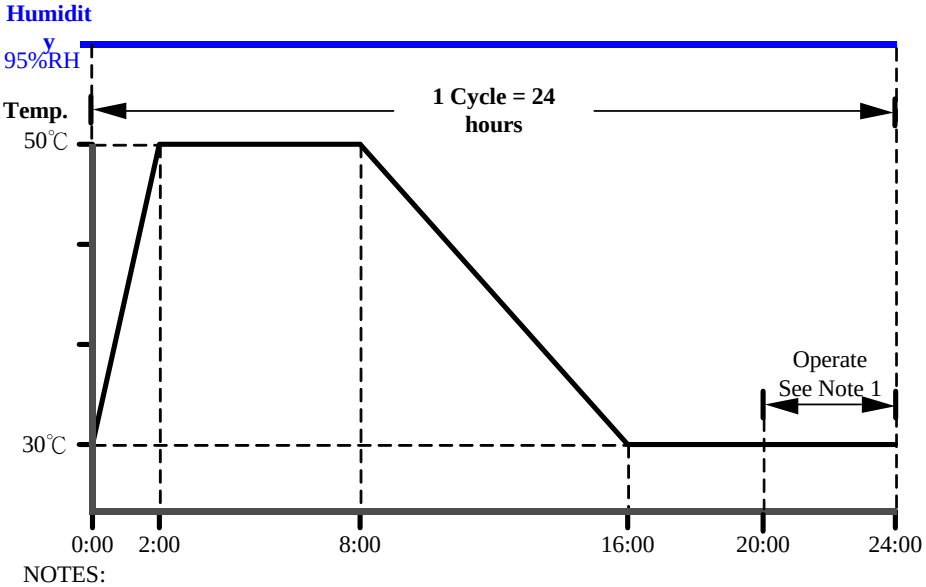
Test Standard: Refer to MIL-STD 810G Method 507.5 Testing
Procedures II – Aggravated Cycle (FIGURE 507.5-7)

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/04/15
Serial Number: 9095KT

Test Condition:

1. Test Humidity: 95%RH
2. Test Temperature: 50℃ / 30℃
3. Test Times: 24Hrs / Cycle
4. Test Cycle: 5 Cycles
5. Test Environment Curve:



NOTES:
1. Perform operational checks near the end of the fifth cycles.

Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-600A)

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

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Temperature shock operation test

Test Date: 08-26~27-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

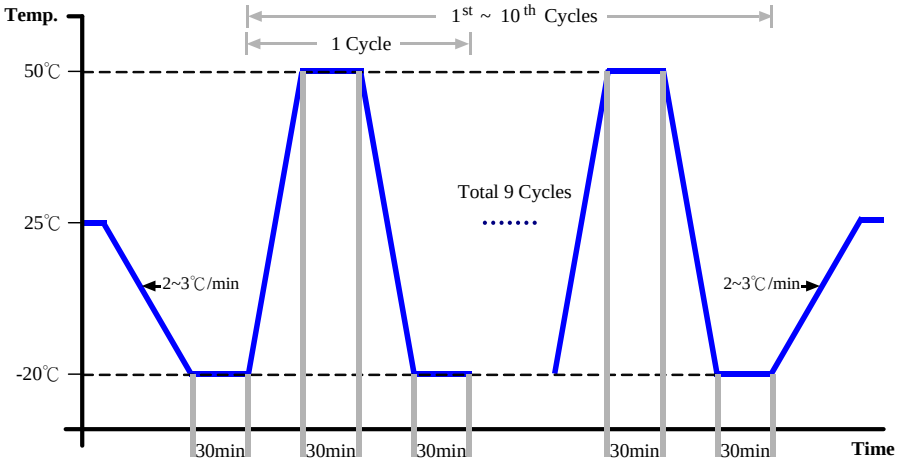
Test Standard: Refer to MIL-STD 810G Method 503.5 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/04/15
Serial Number: 9095KT

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: Android 4.2.2 / Run Burn In Test APP
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-600A)

Test Result:

No issues were found during the variation temperature operation test.

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Temperature shock non-operation test

Test Date: 09-07~09-2015

Test Product: RTC-600A

Test Site: AAEON QE Dept.

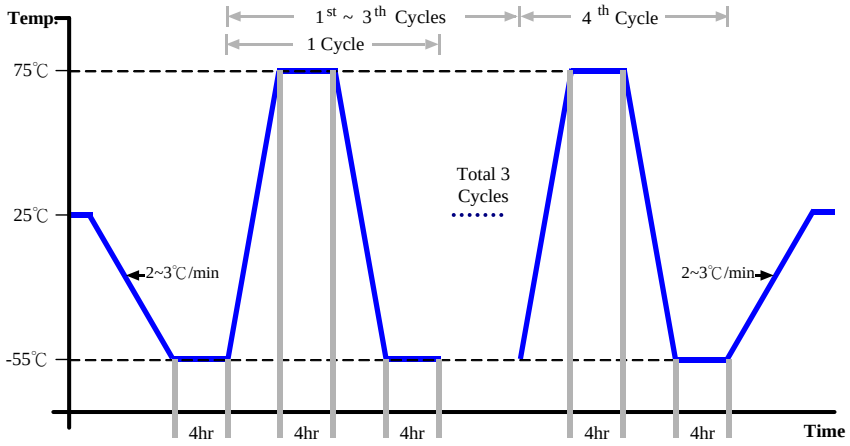
Test Standard: Refer to MIL-STD 810G Method 503.5 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 06/04/15
Serial Number: 9095KT

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-600A)

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: 08-28-2015

Test Product: RTC-600A

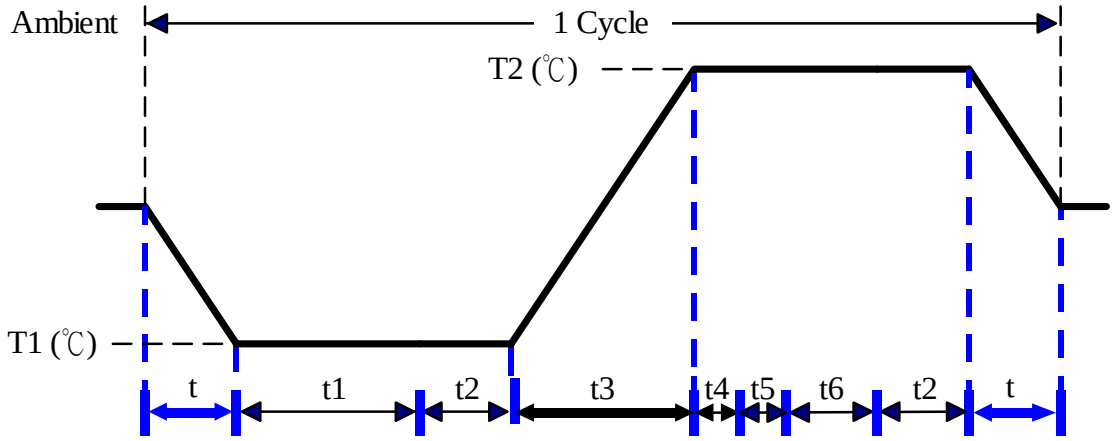
Test Site: AAEON QE Dept.

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: 06/04/15
Serial Number: 9095KT

Test Condition:



Parameters	Description
T1	-25℃
T2	55℃
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 APP
t5: System restart test 3 times
Test Software:Android 4.2.2

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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