AAEON®
Industrial Computing Platform Partner

RTC-1000A

Temp./Humidity Test Report

Report NO: 09E020051

Issued by:	Rex Chang	/	*10/30/2009*
	Engineer		**Date**
Reviewed by:	Wenyuan Yang	/	*10/30/2009*
	Manager		**Date**

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Test Configuration

Sample Configuration:

Num	Item	Spec
01.	**CPU:**	Intel Atom N270 / 1.6GHz / 0.9~1.2V / FSB: 533
02.	**PCBA**	RTC-1000A A0.2
03.	**BIOS**	39US
04.	**Memory**	Team Group 2GB / Hynix HSPS1G83EFR / DDR2 667
05.	**SATA HDD**	Western Digital 80GB / WD800BEVT
06.	**WLAN + BT Module**	AECO-AWM-S0021M
07.	**LCD**	CPT 10.2” LCD / CLAA102NA0ACW
08.	**LED Driving Board**	LITEMAX LID10B02
09.	**Touch Panel**	Liyitec PIC16F819 4-wire, Analog Resistive
10.	**Modem**	QCOM-MA560-7 / Agere SV92A3 Chipset
11.	**Battery**	LI-ION Rechargeable Battery / DR202 DC11.1V / 7800mAh
12.	**AC Adapter**	LI SHIN 0335A2065 (Output: 20V / 3.25A)
13.	**AC Power Input**	110V / 60 Hz
14.	**Test Software**	Windows XP Embedded / Run Pass Mark Burn In Test 4.0 Pro

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Temp./humidity power on/off test

Test Date: 10-06~07-2009

Test Model: RTC-1000A A0.2

Test Site: AAEON QA Internal Lab.

Test Standard: Reference IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test
Reference IEC 68-2-1 Testing procedures
Test Ab: Cold Test

Test Equipment:

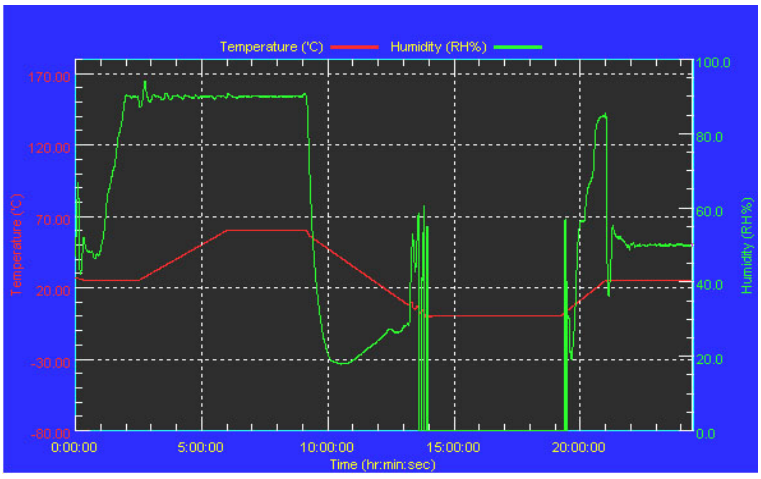
Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
Serial Number: 6488KT

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:

1. With Transcend 2GB / SEC K4T1G084QQ / DDR2-667 Memory

No problem was found during the temperature & humidity power on/off test.

Test Method	Actual	Successful	Failure rate	On time	Off Time
Power On/Off	1389/times	1389/times	0%	33 Sec.	33 Sec.

2. With Transcend 1GB / SEC K4T51083QC / DDR2-667 Memory

No problem was found during the temperature & humidity power on/off test.

Test Method	Actual	Successful	Failure rate	On time	Off Time
Power On/Off	1431/times	1431/times	0%	30 Sec.	30 Sec.

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Room Temperature test

Test Date: 10-27-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 12/13/08
Serial Number: 12A323190

Test Condition:

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

Test Software:

Windows XP Embedded / Run PassMark Burn In Test 4.0 Pro

Terminal Recorder:

Measuring Thermal Couple Position：

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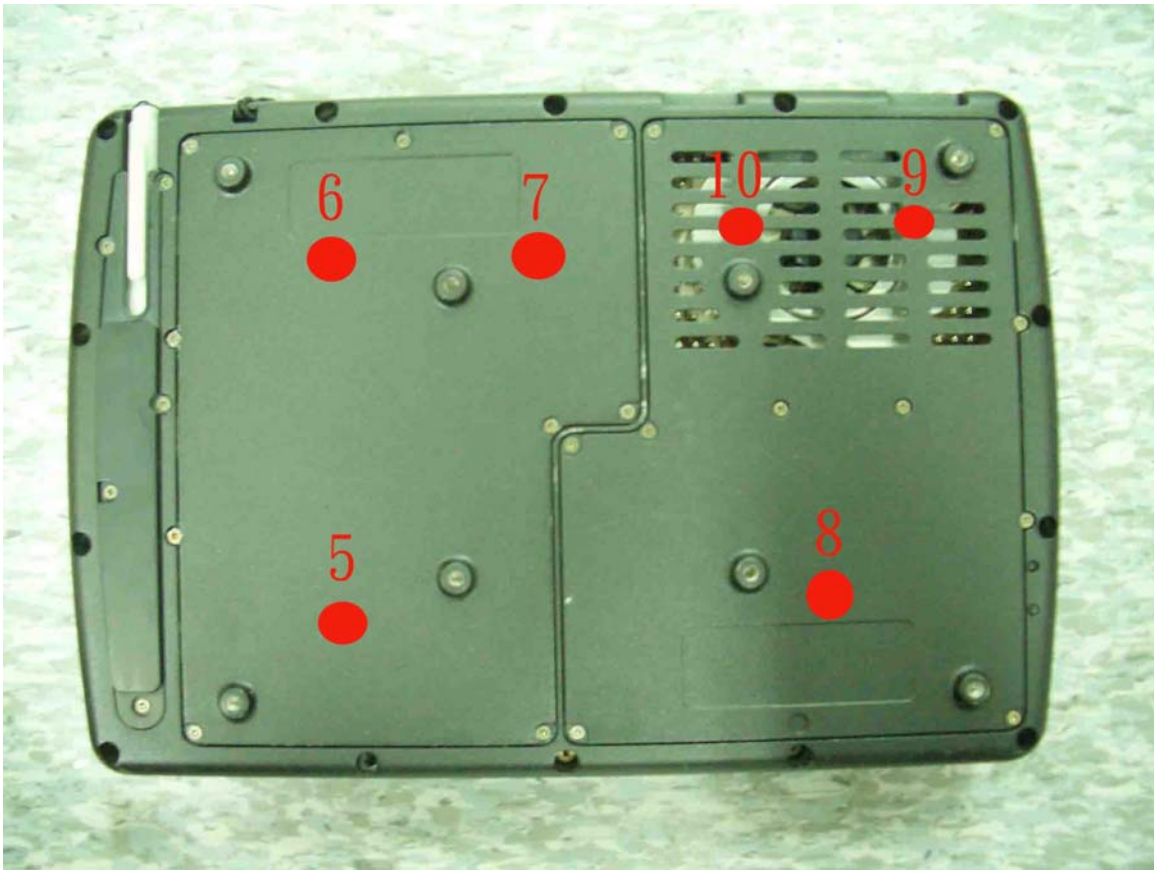
Room Temperature test



Thermal profile data:

RTC-1000A

Point \ Temp. Stage(℃)	Spec	25
1. Point 1	△T ≦20 ℃	37.6
2. Point 2		35.4
3. Point 3		37.5
4. Point 4		39.0
5. Point 5 - Bottom of Battery		38.2
6. Point 6 - Bottom of Battery		38.0
7. Point 7 - Bottom of RAM		38.7
8. Point 8 - Bottom of HDD		39.4
9. Point 9 - Bottom of FAN (CPU)		34.9
10. Point 10 - Bottom of FAN (NB)		37.5
Room Temperature		24.9
Any Tm value showed in red words which meaning the value over the Tc degree C of this device specification.		

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1000A)

Test Result:

No problem was found during the room temperature operation test.

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Temperature rise test

Test Date: 10-29-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

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

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 12/13/08
Serial Number: 12A323190

Test Condition:

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

Test Software:

Windows XP Embedded / Run PassMark Burn In Test 4.0 Pro

Thermal profile data:

RTC-1000A

Point / Temp. Stage(℃)	Spec	35	25
1. CPU	125	47.9	37.9
2. North Bridge	105	50.3	40.3
3. South Bridge	108	67.7	57.7
4. Clock Generator.IDT.9LPRS501PGLF	70	64.1	54.1
5. RAM ambient 1 - Between on board RAM & External RAM	85	59.3	49.3
6. RAM ambient 2 - Between External RAM & Bluetooth	85	58.3	48.3
7. WLAN	80	63.4	53.4
8. HDD - Between main board& HDD	60	61.8	51.8
9. Q103	150	68.5	58.5
10. Q99	150	71.6	61.6
11. L17	125	73.8	63.8
12. Q100	125	70.9	60.9
13. U46	125	73.0	63.0
14. Q91	125	77.4	67.4
15. U26	100	70.2	60.2
16. L20	125	81.4	71.4
17. U45	100	77.4	67.4
18. Q126	125	75.9	65.9
19. Q101	150	71.7	61.7
20. TC5	105	51.0	41.0
17. Chamber Air Temperature	N/A	34.9	24.9

Any Tm value showed in red words which meaning the value over the Tc degree C of this device specification.

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Temperature rise test

Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1000A)

Test Result:

No problem was found during the temperature rise operation test. But operation temperature of HDD was over the specification.

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High temperature storage test

Test Date: 10-20~27-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

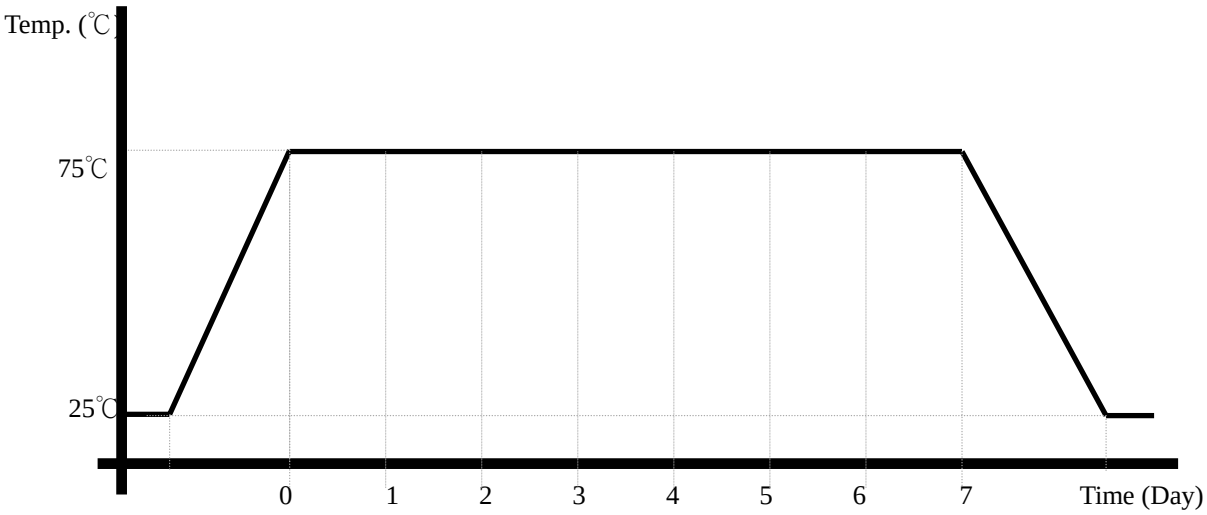
Test Standard: Reference MIL-STD 810F Method 501.4 High Temperature
Procedure I - Storage

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
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-1000A)

Test Result:

No problem was found after the high temperature storage test.

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High temperature operation test

Test Date: 09-25~30-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

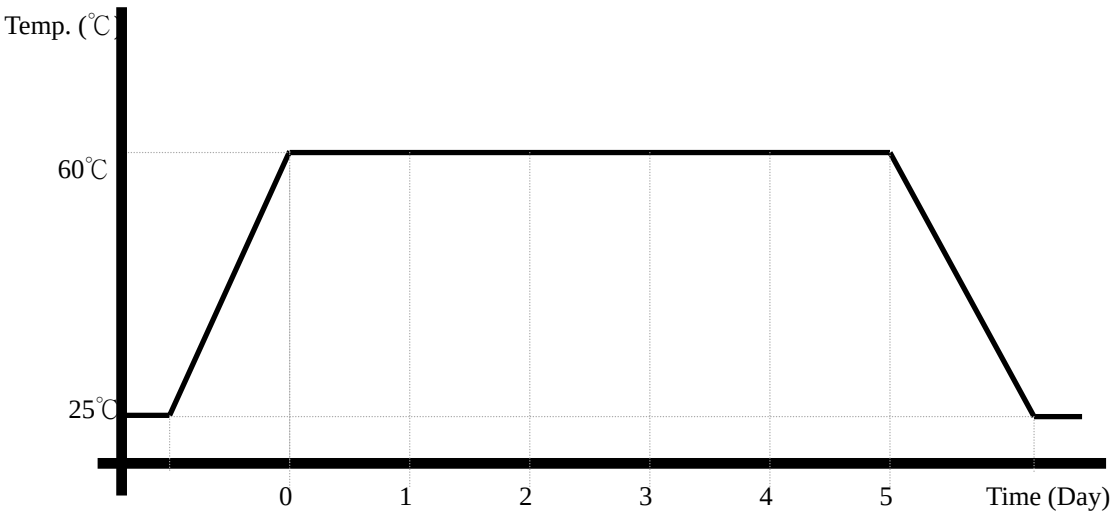
Test Standard: Reference MIL-STD 810F Method 501.4 High Temperature
Procedure II - Operation

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
Serial Number: 6488KT

Testing Item:

4. Test Temperature: 60℃
5. Test Time: 5days
6. Test Software: Windows XP Embedded / Run PassMark Burn In Test 4.0 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1000A)

Test Result:

No problem was found during the high temperature operation test.

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Low temperature storage test

Test Date: 09-30-2009 ~ 10-01-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

Test Standard: Reference MIL-STD 810F Method 502.4 Low Temperature
Procedure I - Storage

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
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-1000A)

Test Result:
No problem was found after the low temperature storage test.

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Low temperature operation test

Test Date: 10-01~02-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

Test Standard: Reference MIL-STD 810F Method 501.4 High Temperature
Procedure II - Operation

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
Serial Number: 6488KT

Testing Item:

1. Test Temperature: -23℃
2. Test Times: 24Hrs
3. Test Software: Windows XP Embedded / Run PassMark Burn In Test 4.0 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (RTC-1000A)

Test Result:
No problem was found during the low temperature operation test.

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Humidity test

Test Date: 10-02~12-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

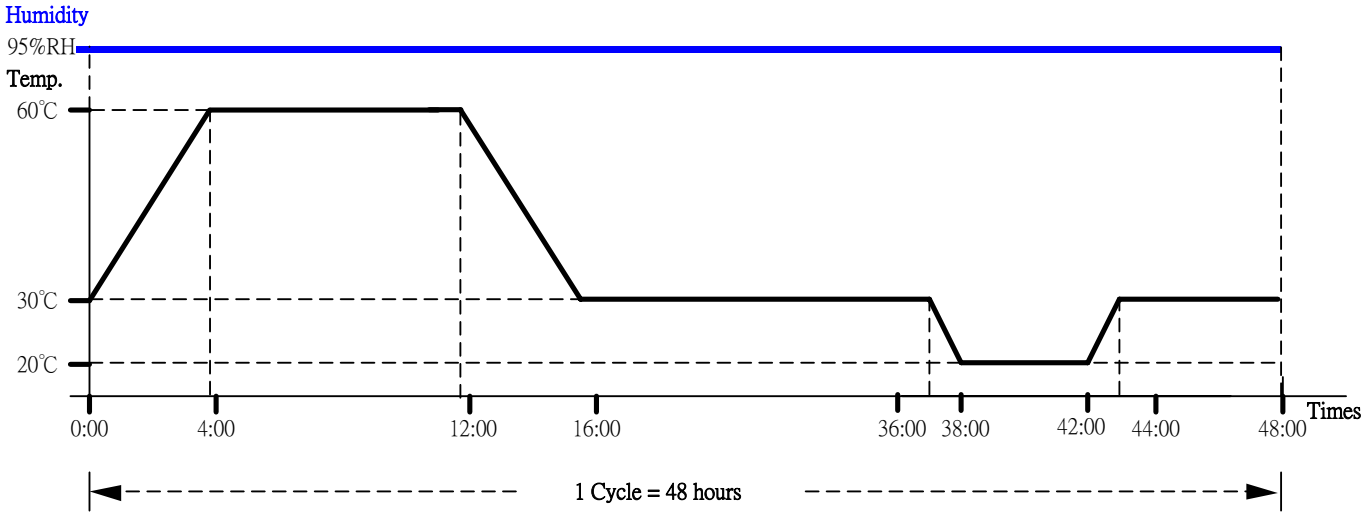
Test Standard: Reference MIL-STD 810F Method 507.4 Testing procedures
FIGURE 507.4-1. Aggravated temperature-humidity cycle

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
Serial Number: 6488KT

Test Condition:

1. Test Humidity: 95%RH
2. Test Temperature: 60℃ / 30℃ / 20℃
3. Test Times: 48Hrs / Cycle
4. Test Cycle: 5 Cycles
5. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1000A)

Test Result:

No problem was found after the humidity storage test.

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Temperature Shock Operation test

Test Date: 10-13~14-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

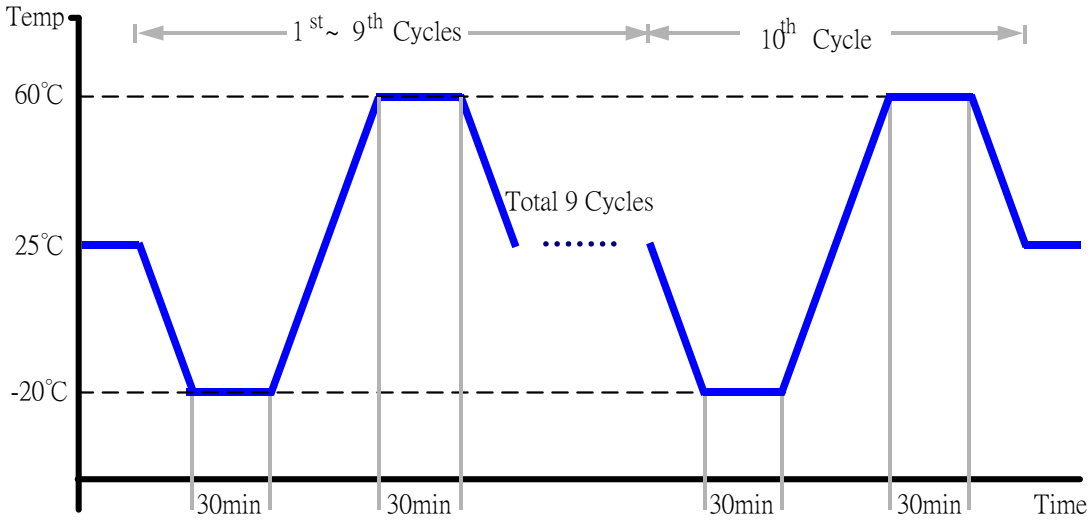
Test Standard: Reference MIL-STD 810F Method 503.4 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
Serial Number: 6488KT

Test Condition:

1. Test Low Temperature: -20℃
2. Test High Temperature: 60℃
3. Test dwell time: 15min
4. Temperature slope: 5 min
5. Test cycle: 10 cycles
6. Test Software: Windows XP Embedded / Run PassMark Burn In Test 4.0 Pro
7. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (RTC-1000A)

Test Result:

No problem was found during the variation temperature operation test.

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Temperature Shock Non-operation test

Test Date: 10-14~15-2009

Test Product: RTC-1000A

Test Site: AAEON QA Internal Lab.

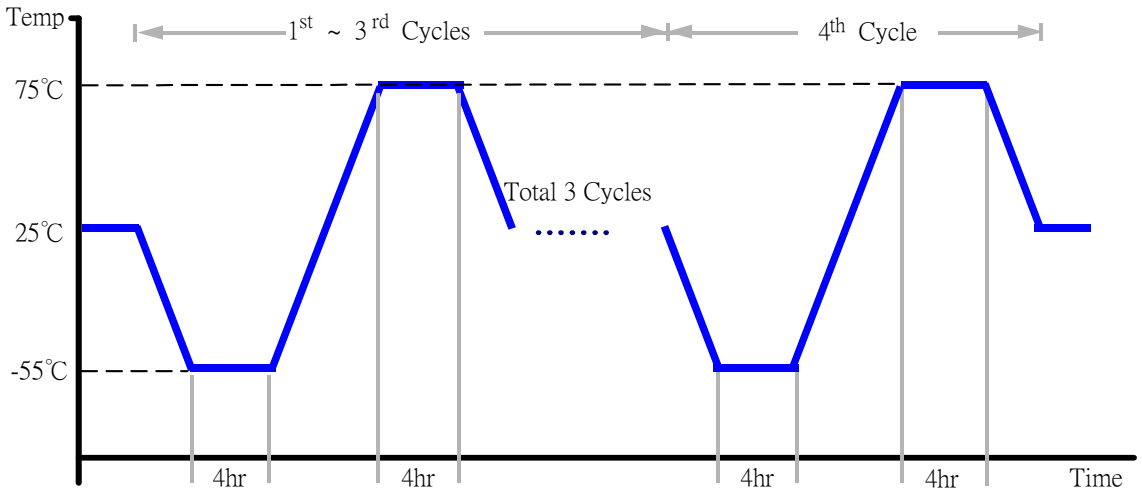
Test Standard: Reference MIL-STD 810F Method 503.4 Temperature Shock
Procedure I - Shock from constant extreme temperatures

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-B6T-150+LN2
Date of Calibration: 04/10/09
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-1000A)

Test Result:

No problem was found after the variation temperature non-operation test.

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Cold start and hot start test

Test Date: 10-18~19-2009

Test Product: RTC-1000A

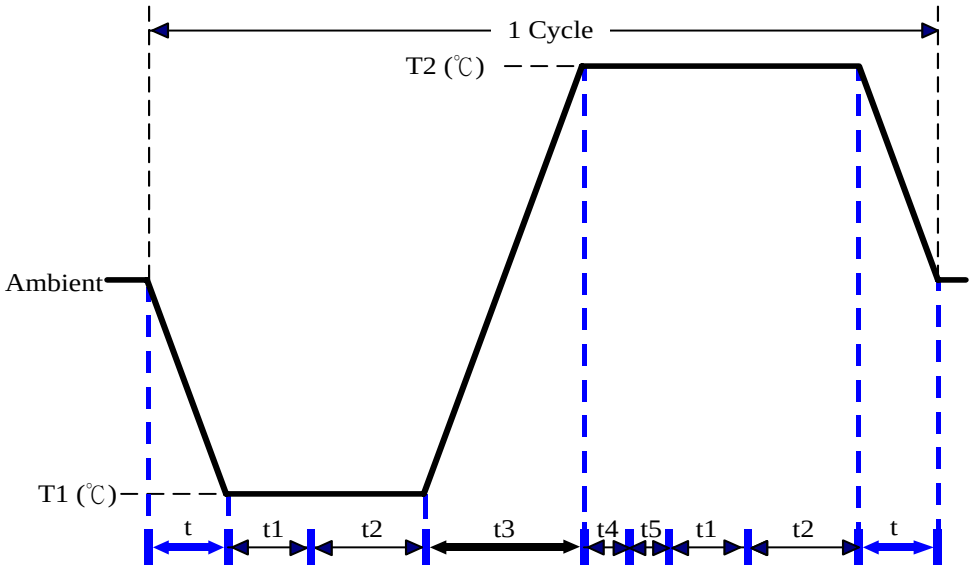
Test Site: AAEON QA Internal Lab.

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: 04/10/09
Serial Number: 6488KT

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
t5: Win XP Embedded Software restart test 2 times
Test Software:Windows XP

Test Result:

a. No problem was found during the cold start test.
b. No problem was found during the hot start test.

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