NVR-B75-A10
Environment Test Report

Report NO: 13I020024

Summary	☑ **Pass** ☐ **Fail** ☐ **Pass with Deviation**

Issue date	Approval	Test Engineer
2013-08-12	**Tom Lin**	**Willy Shih**

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Test item list

Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass	
2	Temperature cycle operation test	Pass	
3	High temperature storage test	Pass	
4	Low temperature storage test	Pass	
5	Humidity test	Pass	
6	Cold start and hot start test	Pass	

Configuration of EUT

Num	Item	Spec
1	CPU	Intel Core i3-3220 Processor(3M Cache, up to 3.30GHz)
2	CPU Board	EMB-B75A
3	BIOS	R1.1(EM75AM11)(08/31/2012)
4	Chipset	Intel B75
5	Memory(wide temp.)	DSL 1333 4GB ELPIDA J2108BDBG-DJ-F*1
6	HDD	WDC D3200AAKX 3.5” 320GB*6
7	Test Software	Windows 7 / Run PassMark Burn In Test 7.0 Pro

Temperature rise test

Test Date: 08-09-2013

Test Product: NVR-B75-A10

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: 10/08/12
Serial Number: 12A323190

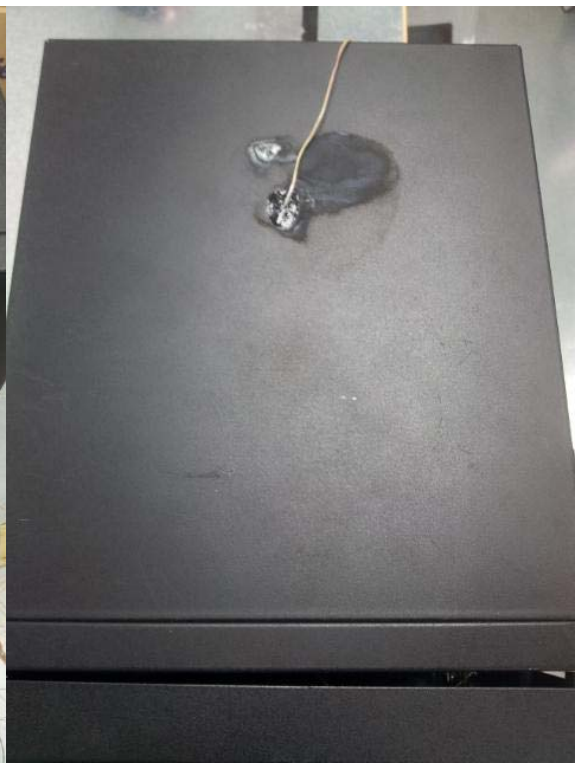
Test Condition:

Ambient temperature: 40℃
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 7 / Run PassMark Burn In Test 7.0 Pro

Terminal Recorder:



Temperature rise test

Thermal profile data:

Point	Position	Describe	Tc (*1) (℃)	Tm (*2) Measured Under		Note
				25℃	40℃	
1	CPU	Intel core i3-3200 Processor(3M Cache, up to 3.30GHz)	65	44.1	59.1	
2	B75	Intel C.S BD82B75 FCBGA942	100	64.8	79.8	
3	PQ7	PH7030AL	150	51.8	66.8	
4	PL6	INDUCTOR 0.68UH/35A 1.5φ DI	125	51.5	66.5	
5	PQ26	PH2525L	150	52.1	67.1	
6	U62	APE8955MP	85	52.2	67.2	
7	PQ17	PH2525L	150	57.8	72.8	
8	memory	Transcend DDR3 1600 4GB CL11	85	43.6	58.6	
9	HDD 1	WDC D3200AAKX 3.5” 320GB	60	35.6	50.6	
10	HDD 2	WDC D3200AAKX 3.5” 320GB	60	37.2	52.2	
11	HDD 3	WDC D3200AAKX 3.5” 320GB	60	37.9	52.9	
12	HDD 4	WDC D3200AAKX 3.5” 320GB	60	37.8	52.8	

13	HDD 5	WDC D3200AAKX 3.5” 320GB	60	36.6	51.6	
14	HDD 6	WDC D3200AAKX 3.5” 320GB	60	36.8	51.8	
15	System inside air temperature	N/A	N/A	31.3	46.3	
16	System inside air temperature	N/A	N/A	31.2	46.2	
17	Housing surface temperature	N/A	N/A	27.6	42.6	

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.
3. 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.

Sample Configuration & Quantity Under Test:

Quantity: 1 (NVR-B75-A10)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 08-07 ~ 09-2013

Test Product: NVR-B75-A10

Test Site: AAEON QE Dept.

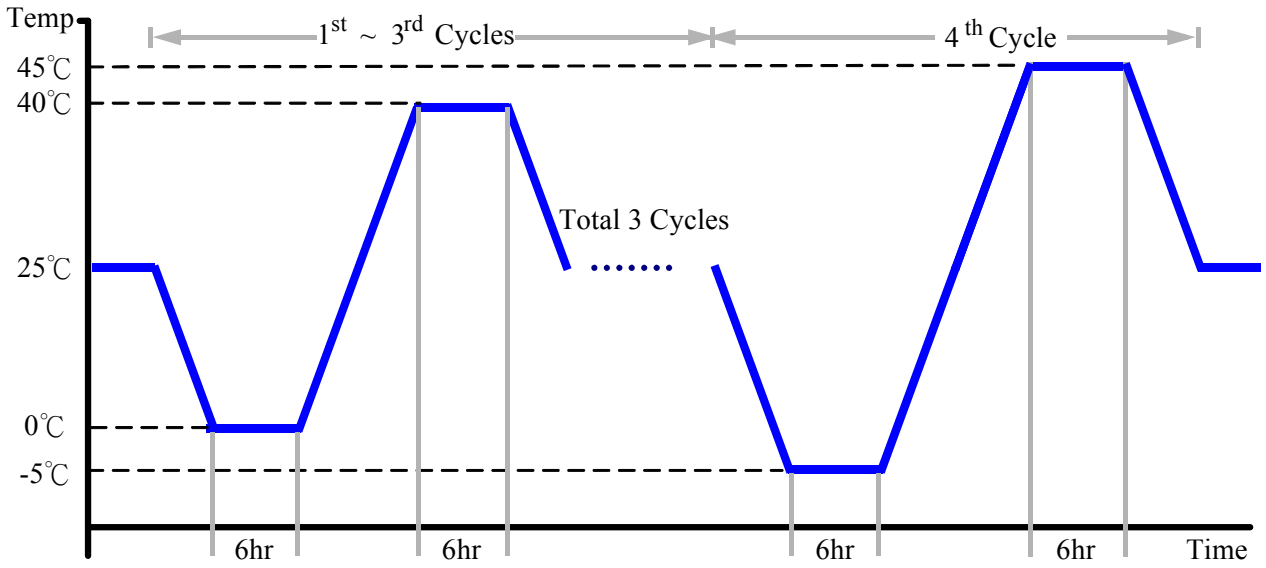
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Test Condition:

1. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (4th cycle)
2. Test High Temperature: 40℃ (1~3 cycles)
   45℃ (4th cycle)
3. Test dwell time: 6Hrs
4. Temperature slope: 2℃/min
5. Test cycle: 4 cycles
6. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (NVR-B75-A10)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 08-05 ~ 07-2013

Test Product: NVR-B75-A10

Test Site: AAEON QE Dept.

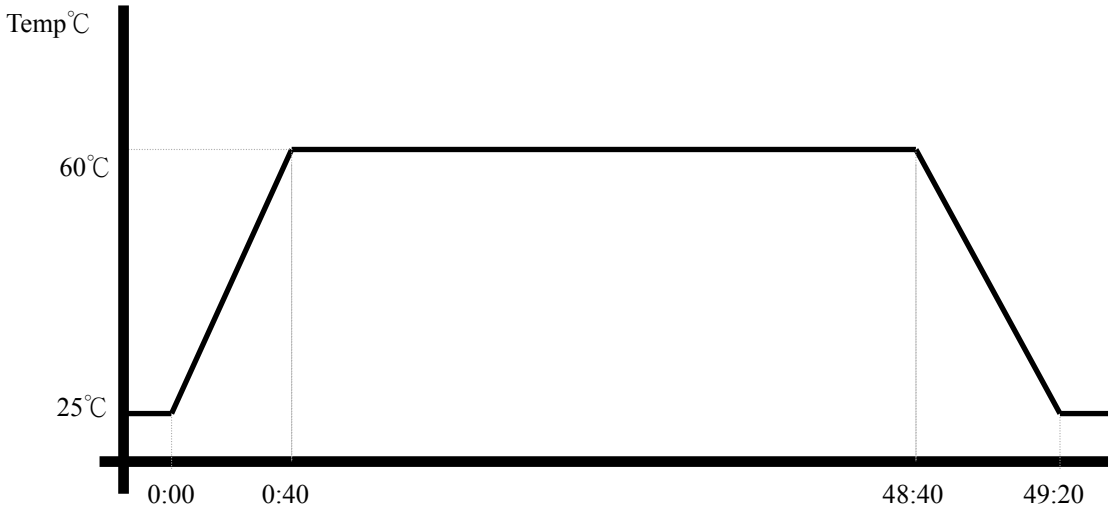
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Testing Item:

1. Test Temperature: 60℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.0 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (NVR-B75-A10)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 07-31 ~ 08-02-2013

Test Product: NVR-B75-A10

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-1 Testing procedures
Test Ab: Cold Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.0 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (NVR-B75-A10)

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

Humidity test

Test Date: 07-29~31-2013

Test Product: NVR-B75-A10

Test Site: AAEON QE Dept.

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

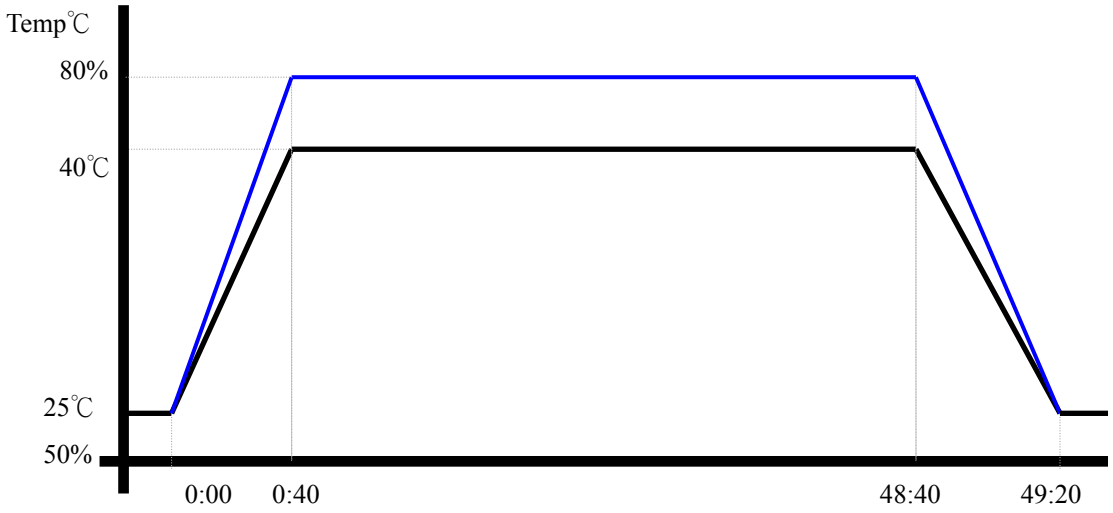
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 80%RH
3. Test Times: 48Hrs
4. Test Software: Windows 7 / Run PassMark Burn In Test 7.0 Pro
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:

Quantity: 1 (NVR-B75-A10)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 07-24~ 26-2013

Test Product: NVR-B75-A10

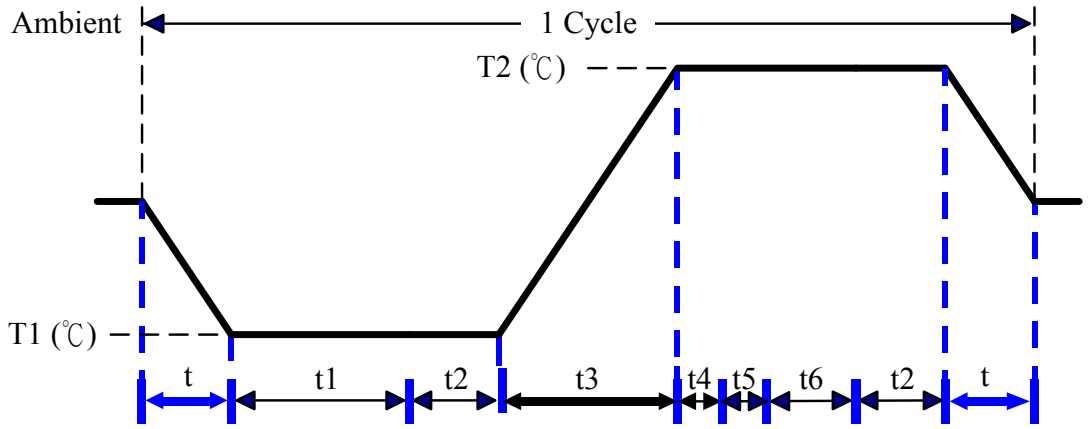
Test Site: AAEON QE Dept.

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-D4H+-100
Date of Calibration: 10/10/12
Serial Number: 2582

Test Condition:



Parameters	Description
T1	-5℃
T2	45℃
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 7.0
t5: Win 7 Software restart test 3 times
Test Software: Windows 7

Test Result:

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

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