NVR-CV
Environment Test Report

Report NO: 13I020015

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

Issue date	Approval	Test Engineer
2013-07-10	**Tom Lin**	**Willy Shih**

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 D2550 1.86GHz
2	CPU Board	EMB-CV2
3	BIOS	NVR-CV R0.6(NVRCVAT06)
4	Chipset	Intel ICH10R
5	Memory	DSL DDR3 1066/4GB ELPIDA J2108BDBG
6	HDD	WDC WD3200AAKX-320GB*3 Hitachi HDS721050CLA362*1 Mach Xtreme MXSSD2MJTD4G-V 4GB
7	Test Software	Windows 7 / Run PassMark Burn In Test 7.0 Pro

Temperature rise test

Test Date: 07-09-2013

Test Product: NVR-CV

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

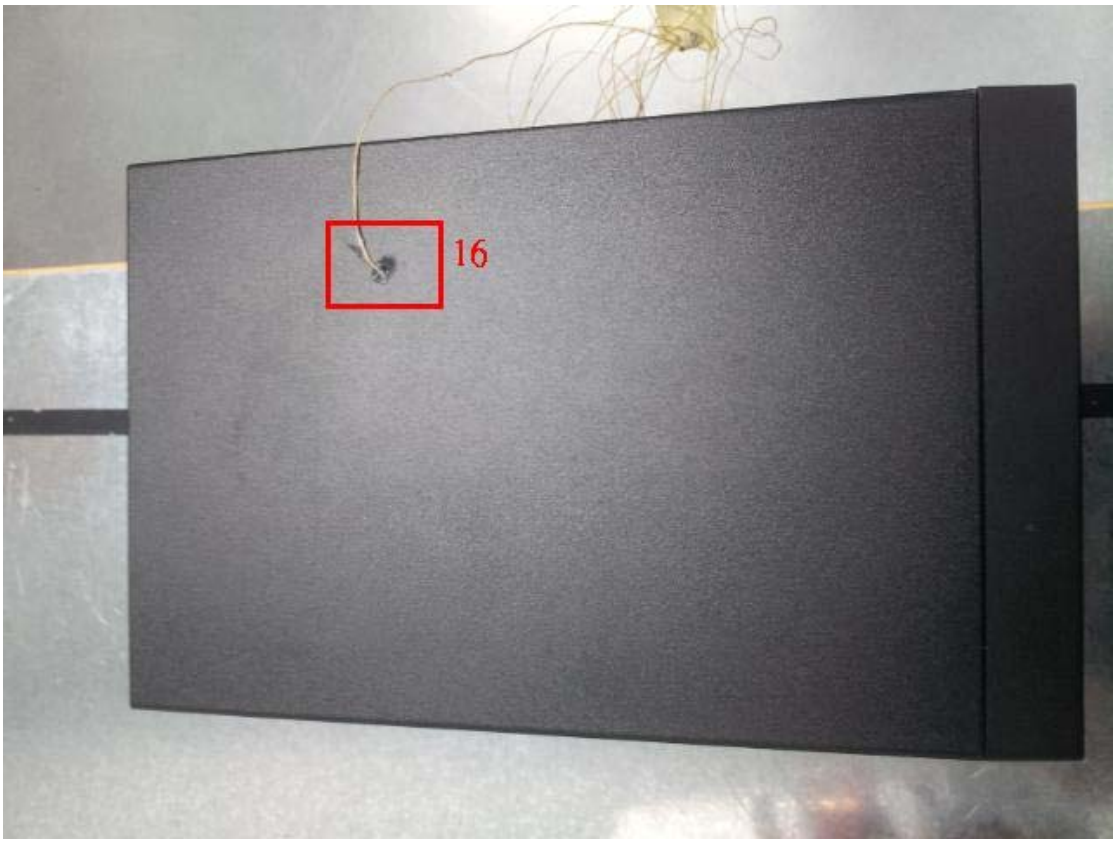
Test Condition:

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	U11	(TF)INTEL CPU.Cedarview.1.86GHz.D2550	100	61.3	76.3	
2	U12	(TF) Chipset.AF82801.INTEL.ICH10R	109	40.2	55.2	
3	U18	(TF)REG.Low-Voltage LDO Regulator.UPI.UP0104PSU8	125	47.5	62.5	
4	U22	(TF)DisplayPort to LVDS Converter.Chrontel.CH7511B-BF	125	45.3	60.3	
5	L7	(TF)COIL.4.7uH.20%,GOTREND.GSTD6030PE-4R7M	125	45.7	60.7	
6	U24	(TF)LPC Super I/O.Winbond.W83627DHG-P	85	38.5	53.5	
7	U49	(TF)Digital Video Level Shifter.ASMEDIA.ASM1442 Rev.D	85	39.1	54.1	
8	U30	(TF)Audio Codec EUP (CD). VIA.VT1708S	100	37.2	52.2	
9	U28	(TF)Linear Regulator.1.35A.BCD.AZ1117H-ADJTRE1	100	35.9	50.9	
10	Q17	(TF)PWR.N-Channel MOSFET.NIKO-SEM.P0903BDL	100	40.9	55.9	
11	U1	(TF)REG.Low-Voltage LDO Regulator.UPI.UP0109PSW8	125	36.4	55.6	
12	Q8	(TF)PWR. N-MOSFET. NXP.PH7030AL	100	38.9	53.9	
13	Q6	(TF)PWR. N-MOSFET. NXP.PH7030AL	100	37.8	52.8	
14	N/A	Memory chipset	95	40.9	55.9	
15	N/A	Control Box Inside Air Temperature - (SATA DOM Ambient)	-	26.9	41.9	
16	N/A	Housing Surface Temperature	-	28.5	43.5	

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+5℃; The measured value is over specification plus margin.
- **Margin** : Tc+5℃ > Tm > Tc-10℃; The measured value is within specification with margin. For FANLESS system application, it is strongly recommended to add thermal dissipation design for better reliability.
- **Pass** : Tm < Tc-10℃; The measured value is with safety margin.

Sample Configuration & Quantity Under Test:

Quantity: 1 (NVR-CV)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date: 06-24 ~ 28-2013

Test Product: NVR-CV

Test Site: AAEON QE Dept.

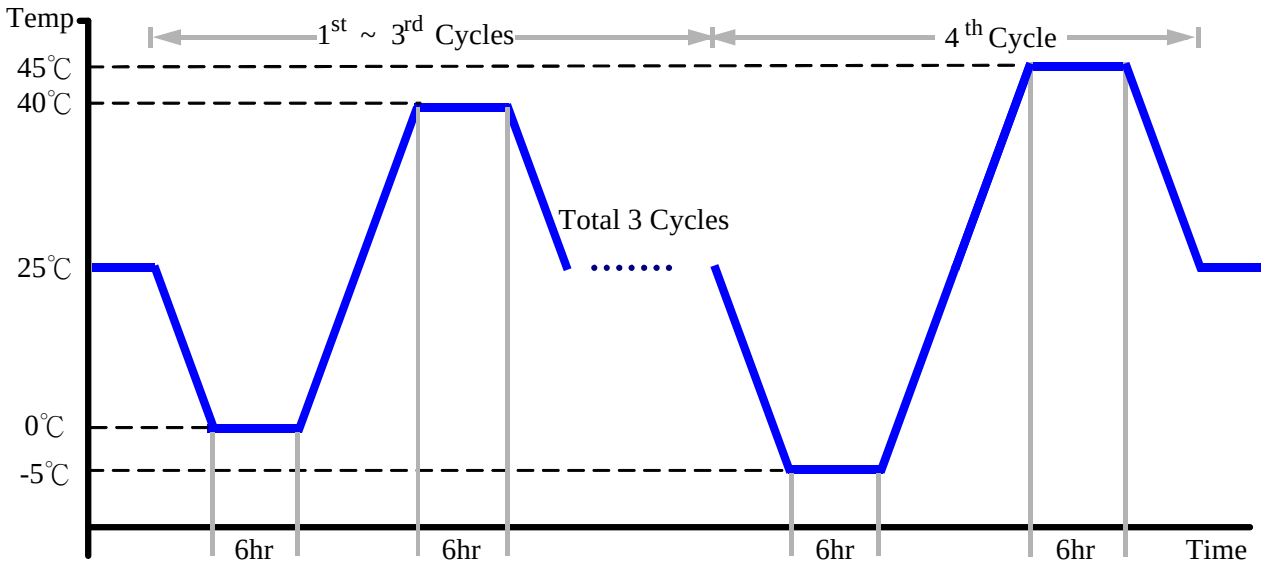
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

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℃ (4^{th} cycle)
2. Test High Temperature: 40℃ (1~3 cycles)
   45℃ (4^{th} 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-CV)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 06-26 ~ 28-2013

Test Product: NVR-CV

Test Site: AAEON QE Dept.

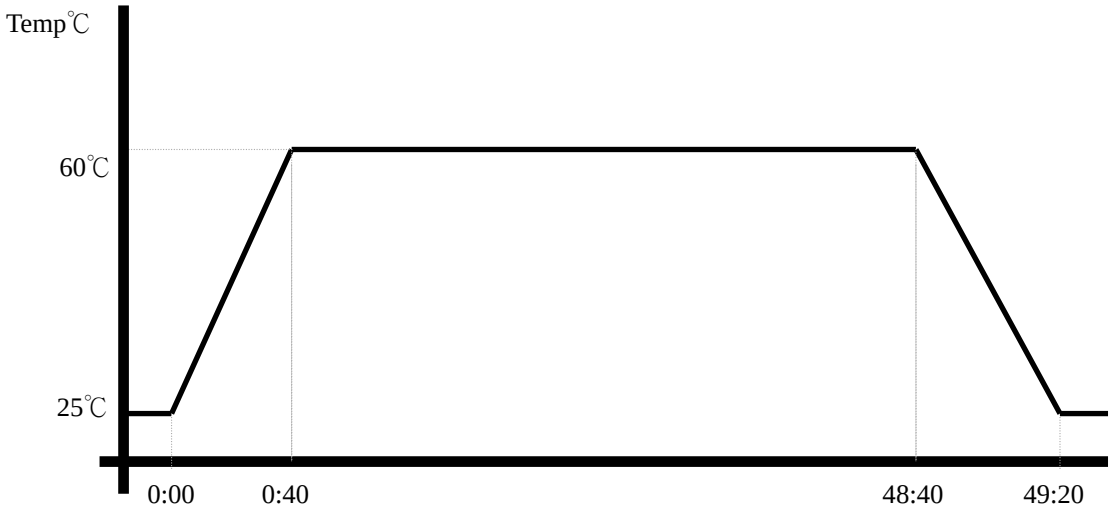
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

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-CV)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 07-01 ~ 03-2013

Test Product: NVR-CV

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: -10℃
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-CV)

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

Humidity test

Test Date: 06-28-2013 ~ 07-01-2013

Test Product: NVR-CV

Test Site: AAEON QE Dept.

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

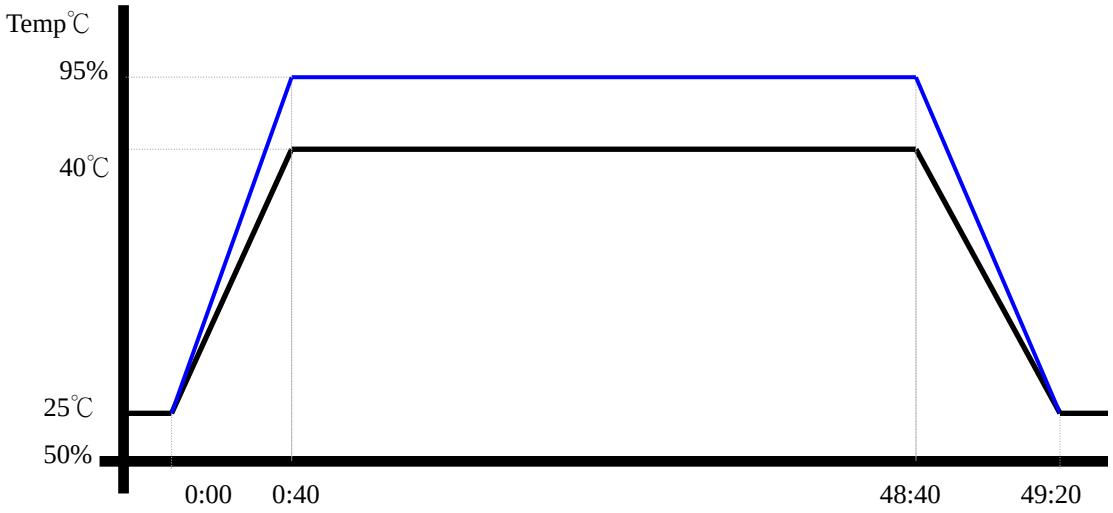
Test Equipment:

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: 95%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-CV)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 07-03~ 04-2013

Test Product: NVR-CV

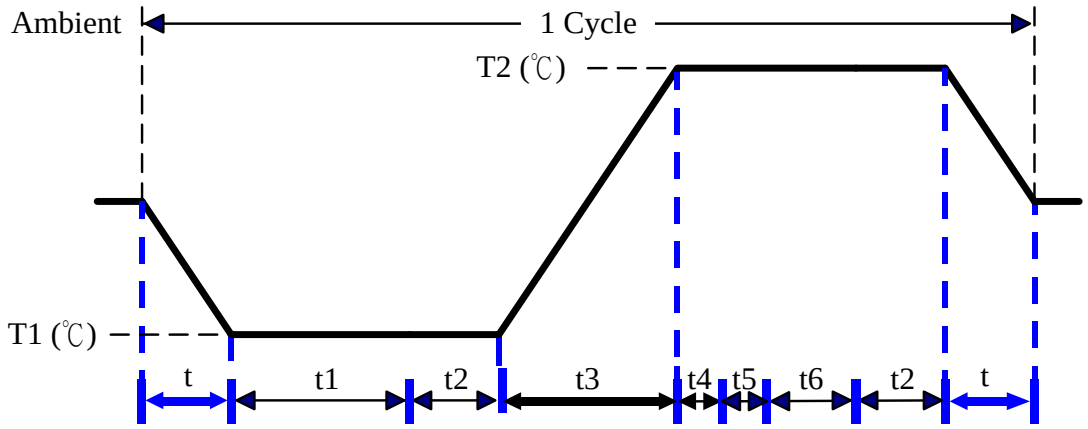
Test Site: AAEON QE Dept.

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.