NVR-6300S

Environment Test Report

Report NO: 14I020012

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: Temperature at one component was estimated to be in marginal temperature point in comparison with component datasheet.**

Issue date	Approval	Issued by
2014-06-09	**Tom Lin**	**Jerry Chen**

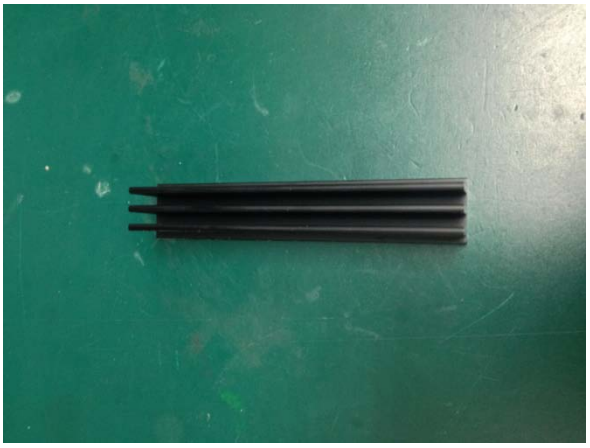
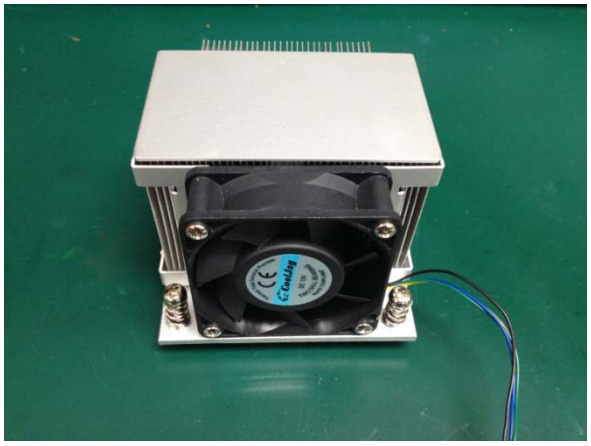
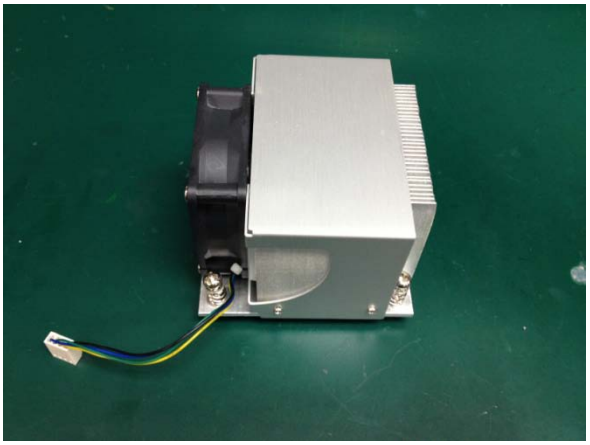
Test item list

Testing Result

Num	Test item list	Result	Remark
1	Temp./humidity power on/off test	Pass	
2	Temperature rise test	Pass	
3	Temperature cycle operation test	Pass	
4	High temperature storage test	Pass	
5	Low temperature storage test	Pass	
6	Humidity test	Pass	
7	Cold start and hot start test	Pass	

Configuration of EUT

Num	Item	Spec
1.	**System**:	NVR-6300S
	1.Main board	NVR-6300 A0.2
	2.BIOS Ver.	NVR-6300S R0.3 (NV87AM03)(04/17/2014)
	3.CPU Type	Intel i7-4790S 3.20GHz
	4. Chipset	Intel Q87
	5. Memory	1. DSL DDR3 1333 8GB / (ELPIDA / J4208BBBG-GN-F)*2 2. Innodisk DDR3 1600 8GB / (hnnix / H5TQ4G83MFR)*1 3. Transcend DDR3 1333 8GB / (SEC / K4B4G0846B)*1
	6. SATA HDD	1. WD 320GB / (WD3200AAKX)*10 2. WD 500GB / (WD5000AAKX)*1 3. Seagate 500GB / (ST500DM002)*1 4. Toshiba 320GB / (MK3261GSYN)*1
	7. Test Software	Windows 7 / Run PassMark BurnIn test 7.1 Pro
2.	**ATX Power Supply:**	Zippy / HG2-5600V

System	Heat Sink
	
CPU Cooler	**CPU Cooler**
	

Temp./humidity power on/off test

Test Date: 05-22 ~ 23-2014

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-30 Testing procedures
Test Db: Damp Heat Test

Test Equipment:

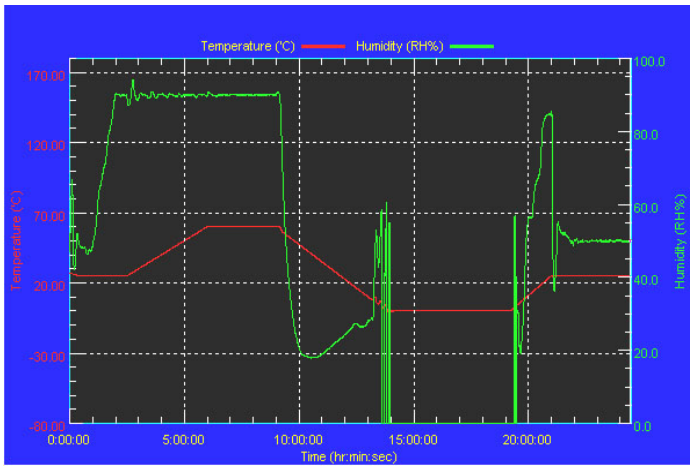
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2014/06/05
Serial Number: 9095KT

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:

Test Method	Actual	Successful	Failure rate
Power On/Off	1137/times	1137/times	0 %
Note: Failure rate need to under 0%.			

Temperature rise test

Test Date: 06-04~05-2014

Test Product: NVR-6300S

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: 10/01/13
Serial Number: 12A323190

IR Scanner: Infrared Camera

NEC Avio Infrared Technologies Co., Ltd.

Model: Thermo GEAR G100W2-D

Date of Calibration: 12/29/13
Serial Number: 1051444

Test Condition:

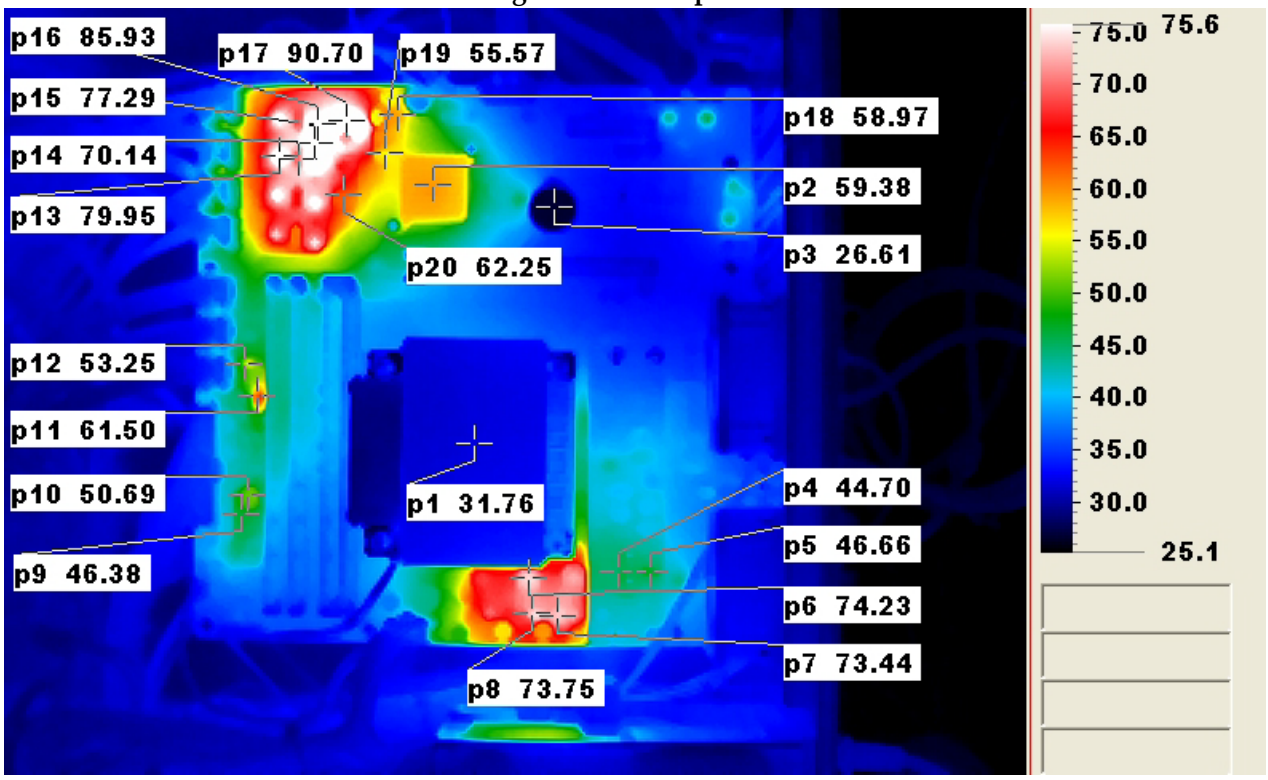
Ambient temperature: 40℃
Continuous running till thermal stability (within less than 1℃) / CPU Fan Full Speed

Test Software:

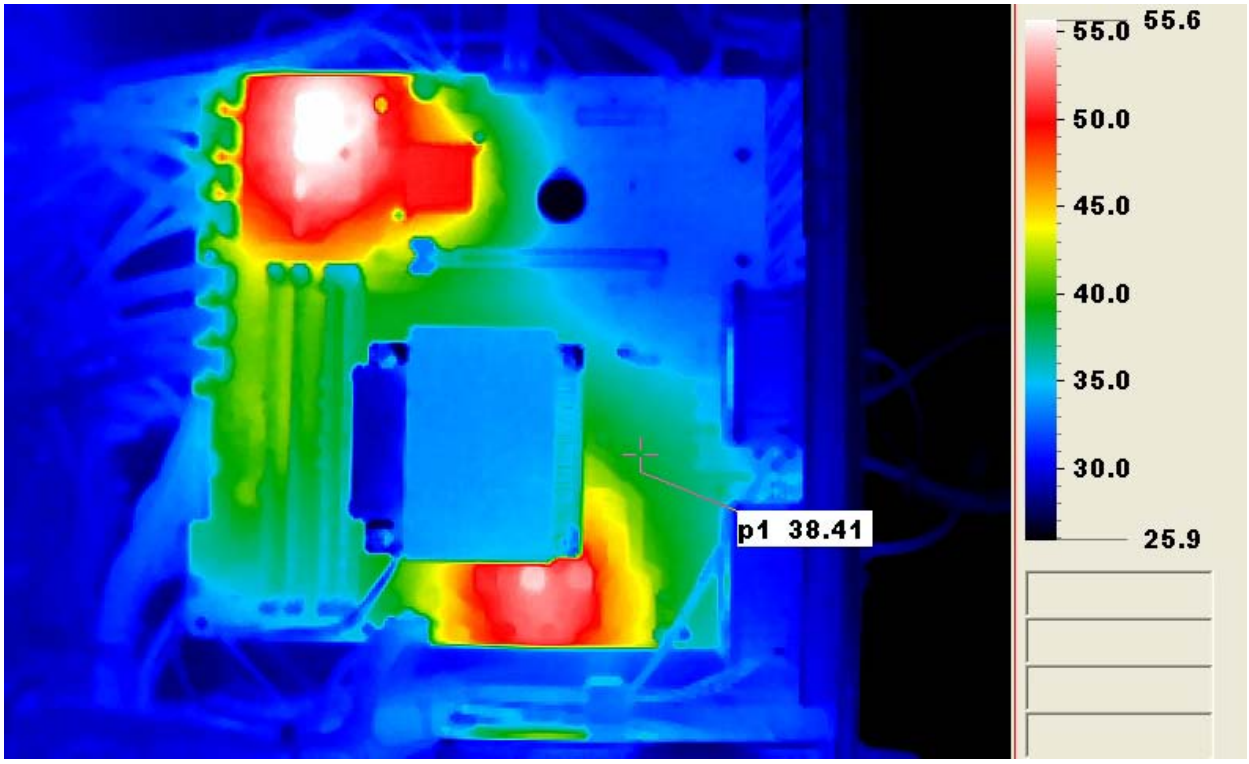
Windows 7 / Run PassMark Burn In Test 7.1 Pro

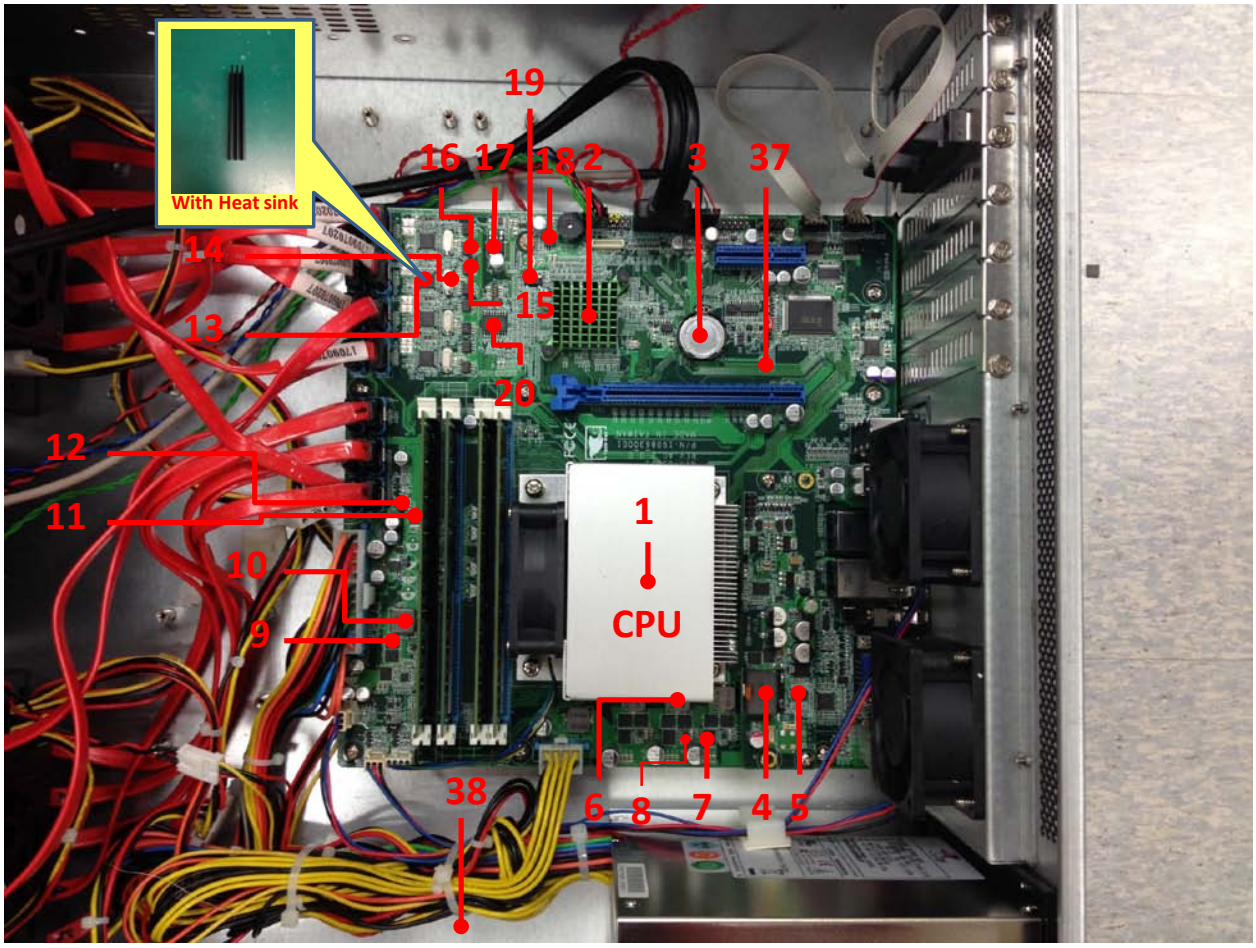
Terminal Recorder:

Measuring Thermal Couple Position：

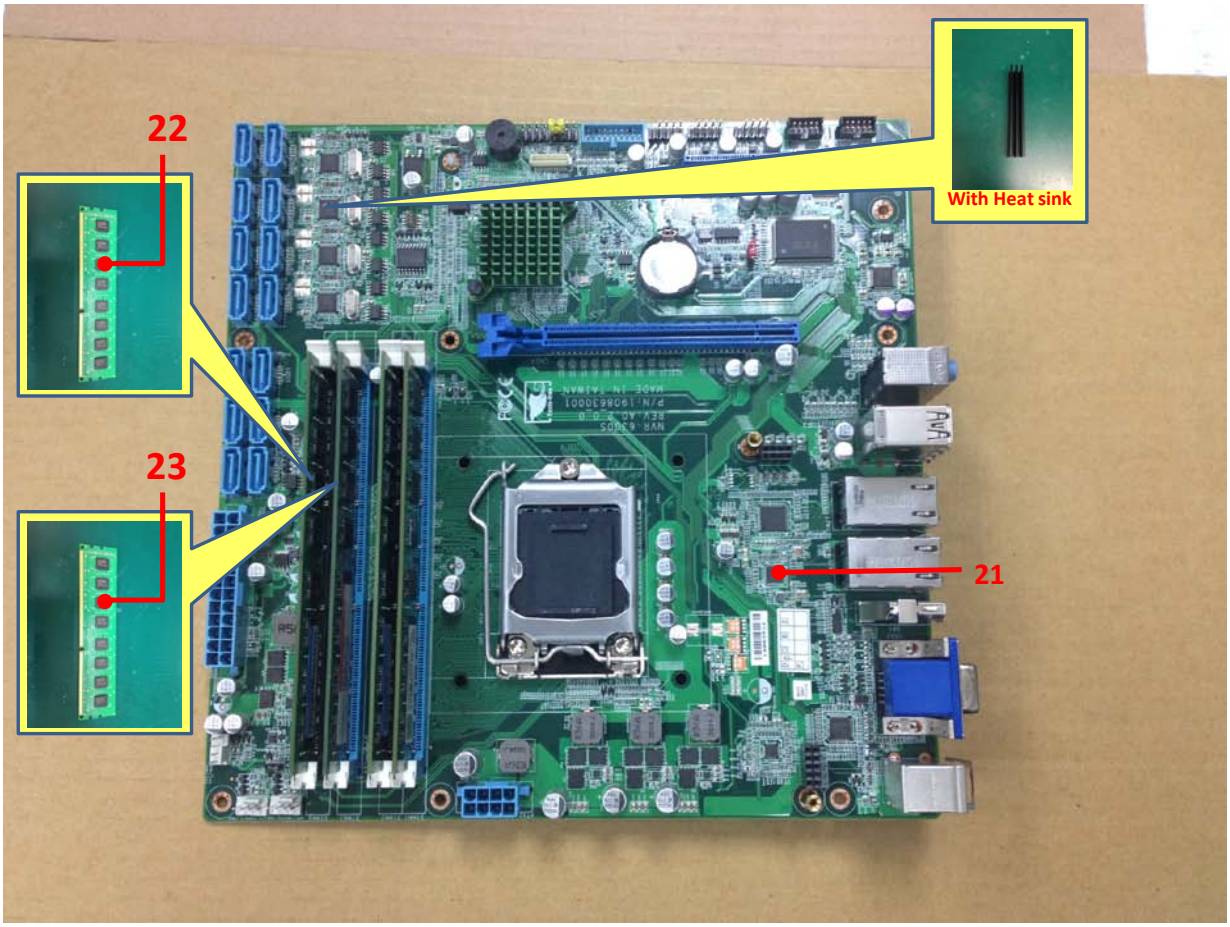


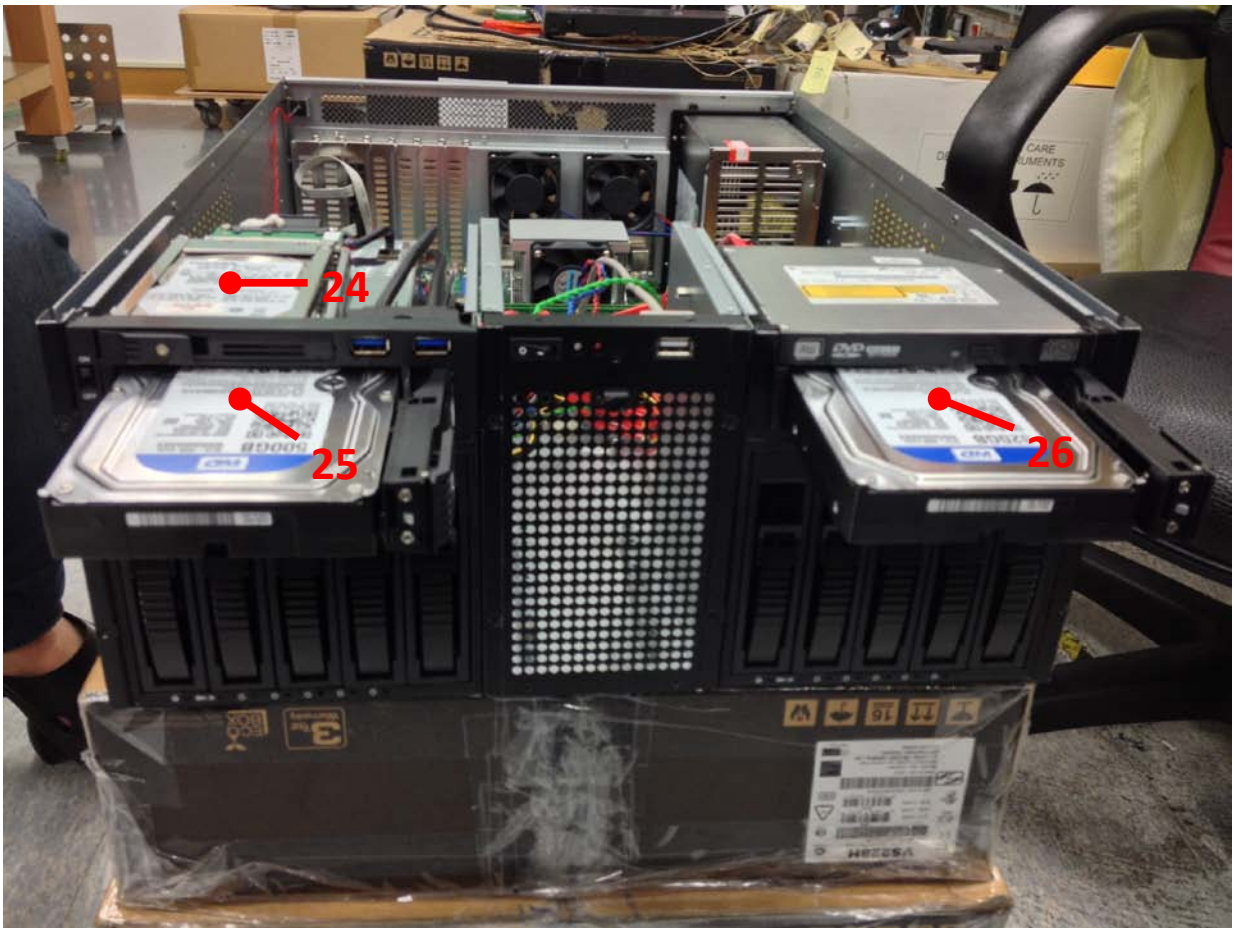
Temperature rise test





Temperature rise test





Temperature rise test

Temperature rise test

Thermal profile data:

NVR-6300S

Point / Temp. Stage(℃)			Spec	40℃	25℃	Note
NVR-6300S A0.2						
01.	CPU	Intel i7-4790S 3.20GHz	71.35	54.6	39.6	
02.	U24	(TF)IC.Desktop Lynx Point PCH.INTEL.DH82Q87 SR173	83	65.3	50.3	
03.	BT1	(TF)Battery Holder.CR2032.LOTES.AAA-BAT-014-K01	100	44.8	29.8	
PER-T290 REV. A1.0						
04.	L1	(TF)COIL.12uH.DCR=7.44mohm.Sumida.CDEP1711NP-120MC-125	140	52.9	37.9	
05.	U1	(TF)Boost with Multiphase capable.HTSSOP.TI.LM5122MHX/NOPB	100	54.1	39.1	
NVR-6300S A0.2						
06.	Q43	(TF)N-MOSFET.Vgs=(+/-)20V.Ids=21.7A .ON.NTMFS4C55NT1G	125	75.8	60.8	
07.	Q44	(TF)N-MOSFET.Vgs=(+/-)20V.Ids=15A.ON.NTMFS4C50NT1G	125	71.3	56.3	
08.	U30	(TF)IC.MOSFET Drivers.DFN 8P.SMD.ON.NCP81146MNTBG	125	74.8	59.8	
09.	Q11	(TF)PWR.Vgs=(+/-)20V.Ids=64A.LFPAK.N-MOSFET.NXP.PH5030AL	150	52.7	37.7	
10.	L5	(TF)COIL.0.36uH.Irms=34A.20%. Ohm.Panasonic.ETQP4LR36AFC	145	57.7	42.7	
11.	Q18	(TF)PWR.SOT669.N-MOSFET.Vgs=(+/-)20V.Ids=76A.NXP.PH7030AL	150	71.1	56.1	
12.	U2	(TF)IC.SO 8P.OP AMP.NS.LM358M-NOPB	85	60.4	45.4	
13.	U7	(TF)IC.PCIe to SATAx2 port.QFN-48P.ASMEDIA.ASM1061	85	78.3	63.3	
14.	Y4	(TF)X'TAL.20.000MHz.20PF+/-30PPM.ARGO.AGX-49U/S	75	67.7	52.7	
15.	U10	(TF)IC.SO8.512 Kbit.SPI FLASH.ST.M25P05-AVMN6TP	100	76.2	61.2	
16.	U11	(TF)IC.LDO Linear Regulator.0.23V.2A.RICHTEK.RT9025-25PSP	100	60	45	
17.	U21	(TF)REG.TO-252 5A Linear Regulator.Diodes.AP1084DG-13	100	91.8	76.8	
18.	U23	(TF)REG.Ultra Low Dropout.Linear Regulator.APEC.APE8955MP	100	59.3	44.3	
19.	Y5	(TF)X'TAL.32.768KHz.12.5pf/20ppm.32721.SMD.4P.EPSON.MC306	100	54.3	39.3	
20.	U19	(TF)IC.128M BIT SPI FLASH.MXIC.MX25L12835FMI-10G	100	66.6	51.6	
21.	U41	(TF)IC.PCI-E GigaBit Ethernet Chipset.QFN-48P.Intel.WGI217LM	100	50.8	35.8	
22.	RAM-1	DSL DDR3 1333 8GB (ELPIDA / J4208BBBG-GN-F)	85	50.7	35.7	
23.	RAM-2	iNNODisk DDR3 1600 8GB (hnnix / H5TQ4G83MFR)	85	49.4	34.4	
24.	HDD-1	Toshiba - 2.5" SATA 320GB (MK3261GSYN)	55	**50.8**	35.8	**Note4**
25.	HDD-2	WD 3.5" SATA 500GB (WD5000AAKX)	60	51.8	36.8	
26.	HDD-3	WD 3.5" SATA 320GB (WD3200AAKX)	60	48.8	33.8	
27.	HDD-4	Seagate 2.5" SATA 500GB (ST500DM002)	60	38.6	23.6	
28.	HDD-5	WD 3.5" SATA 320GB (WD3200AAKX)	60	38.8	23.8	
29.	HDD-6	WD 3.5" SATA 320GB (WD3200AAKX)	60	39.6	24.6	
30.	HDD-7	WD 3.5" SATA 320GB (WD3200AAKX)	60	40.1	25.1	
31.	HDD-8	WD 3.5" SATA 320GB (WD3200AAKX)	60	40	25	

32.	HDD-9	WD 3.5" SATA 320GB (WD3200AAKX)	60	48.2	33.2	
33.	HDD-10	WD 3.5" SATA 320GB (WD3200AAKX)	60	47.1	32.1	
34.	HDD-11	WD 3.5" SATA 320GB (WD3200AAKX)	60	46.7	31.7	
35.	HDD-12	WD 3.5" SATA 320GB (WD3200AAKX)	60	46.5	31.5	
36.	HDD-13	WD 3.5" SATA 320GB (WD3200AAKX)	60	45.7	30.7	
37.	N/A	Control Box Inside Air Temperature-1	N/A	42.1	27.1	
38.	N/A	Control Box Inside Air Temperature-2	N/A	41.5	26.5	
39.	N/A	Control Box External Surface Temperature	N/A	39.7	24.7	
40.	N/A	Chamber Air Temperature	N/A	40	25	

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.

4. Defect NO. I131015QED08

Sample Configuration & Quantity Under Test:

Quantity: 1 (NVR-6300S)

Test Result:

No issues were found during the temperature rise operation test.

Temperature cycle test

Test Date : 05-30 ~ 06-03-2014

Test Product : NVR-6300S

Test Site: AAEON QE Dept.

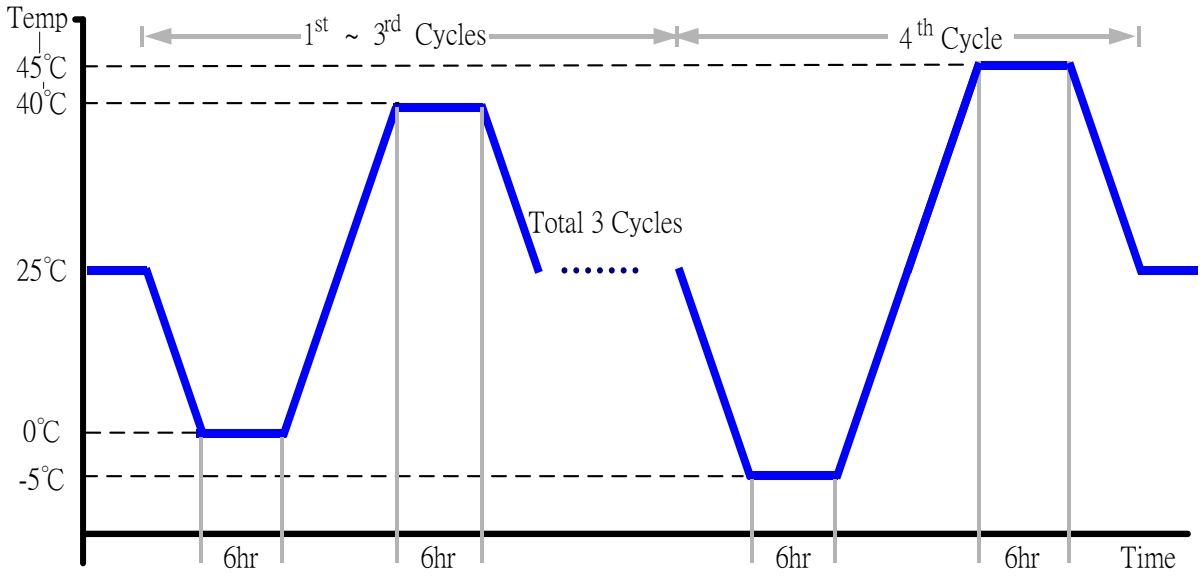
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7S-100+1 N2
Date of Calibration: 09/16/'13
Serial Number: 3898

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-6300S)

Test Result:

No issues were found during the temperature operation cycle test.

High temperature storage test

Test Date: 05-26 ~ 28-2014

Test Product: NVR-6300S

Test Site: AAEON QE Dept.

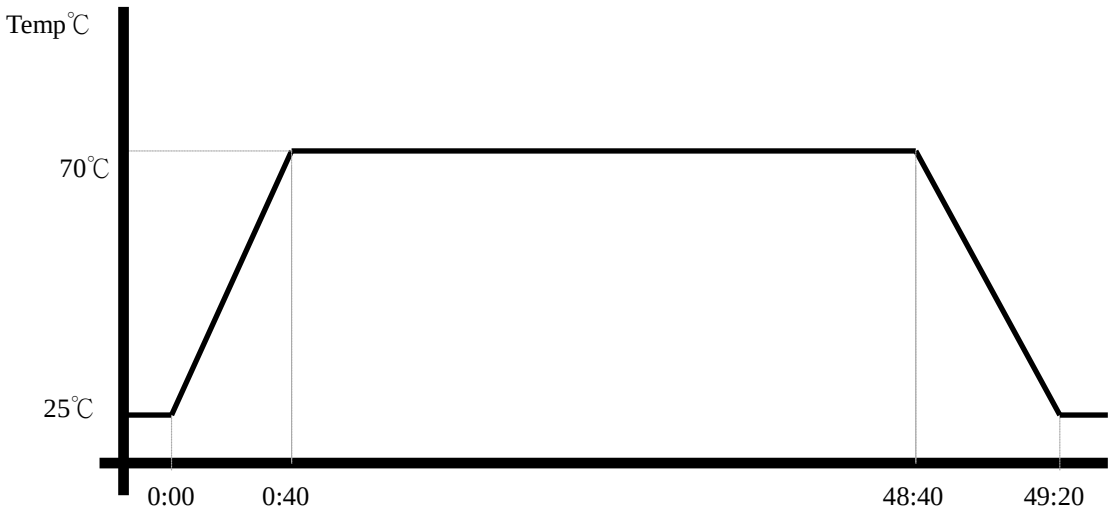
Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 70℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (NVR-6300S)

Test Result:

No issues were found after the high temperature storage test.

Low temperature storage test

Test Date: 05-23 ~ 26-2014

Test Product: NVR-6300S

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-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Testing Item:

1. Test Temperature: -20℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:

Sample Configuration & Quantity Under Test:
Quantity: 1 (NVR-6300S)

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

Humidity test

Test Date: 05-28 ~ 30-2014

Test Product: NVR-6300S

Test Site: AAEON QE Dept.

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

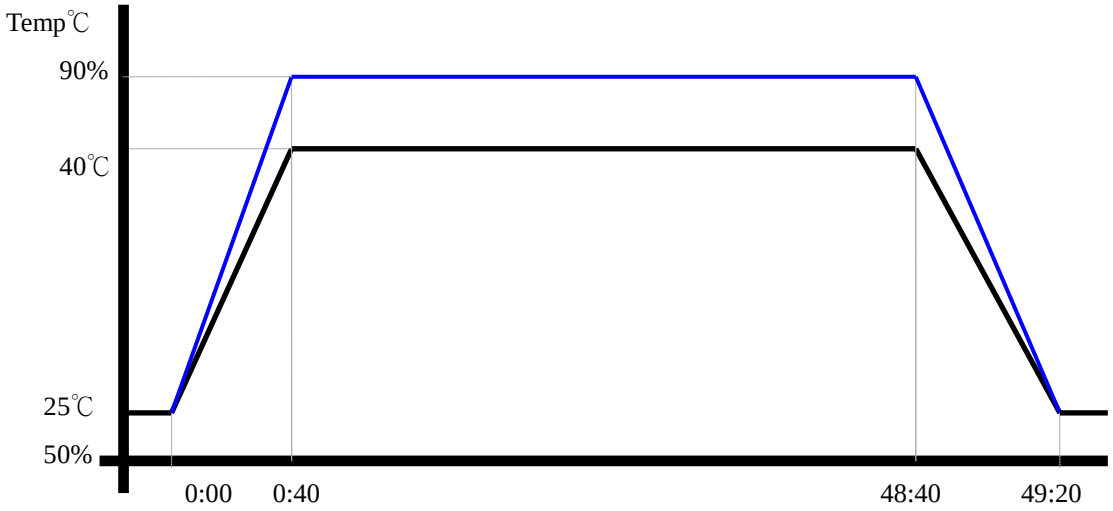
Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-B6T-150+LN2
Date of Calibration: 2013/06/11
Serial Number: 9095KT

Testing Item:

1. Test Temperature: 40℃
2. Test Humidity: 90%RH
3. Test Times: 48Hrs
4. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
5. Test Environment Curve:

Humidity %



Sample Configuration & Quantity Under Test:
Quantity: 1 (NVR-6300S)

Test Result:

No issues were found after the humidity storage test.

Cold start and hot start test

Test Date: 06-03 ~ 04-2014

Test Product: NVR-6300S

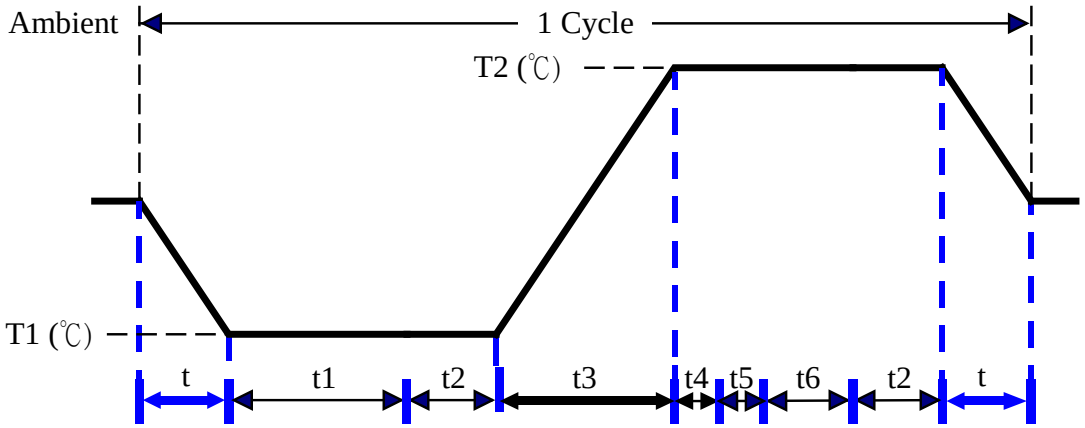
Test Site: AAEON QE Dept.

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-D7S-100+1 N2
Date of Calibration: 09/16/'13
Serial Number: 3898

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 PassMark Burn In Test
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.