Boxer-6301VS

Environment Test Report

Report NO: 15P020001

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: 1. There is one temperature point (CFast) cannot meet the spec Requirement under the temperature rise test.** **2. However CFast can be passed while under the chamber test with air flow condition (0.5m/sec).** **3. Customer application is suggested to adopt the air flow solution in which needs to be amended on the product user manual.** **4. All of the founded items will need PM/RD's further enhancement forthe future generation.**

Issue date	Approval	Test Engineer
2015-01-06	Vincent Chen	Juno / Rex

Test item list

Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass	
2	High Temperature operation 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	

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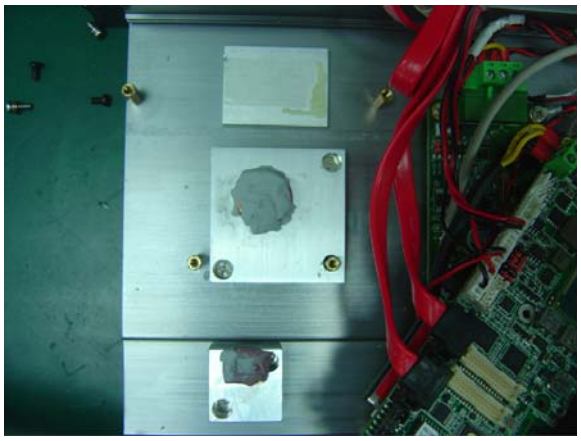
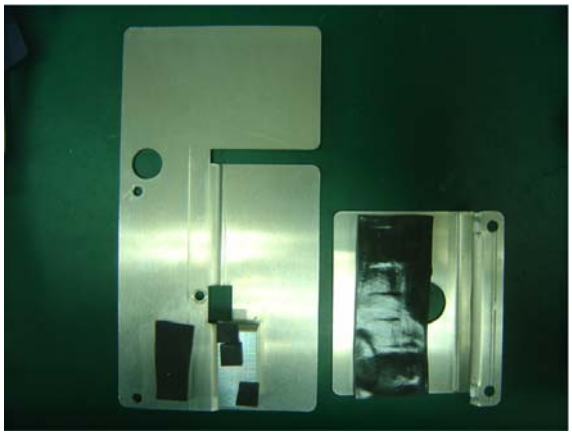
Configuration of EUT

Num	Item	Spec
1.	**System**:	Boxer-6301VS
	1. Main Board	GENE-QM87 REV. A1.0 (BIOS Ver: B301AM01.bin)
	2. CPU	Intel Haswell i5-4402E 1.6GHz (up to 2.7GHz)
	3. Memory	ADATA DDR3L 1600 4GB X 8 SO-DIMM
	4. 2.5” SATA HDD	TOSHIBA MK1060GSC 100GB *2 PCS
	5.CFAST	Innodisk 3ME 32GB * 1 PC
	6. Test Software	Windows 7 / Run PassMark Burn In Test 7.1 Pro Etro Scan rev. 1.2.4.3
	7. Power Board	PER-P20D REV. A0.2
	8. 4 POR POE Board	PER-T263 A1.0
	9. Bullet Camerra	ETROUISION EV8782Q-BQ 3MP X 4 PCS
2.	Adapter	FSP. FSP150-AAAN1 (9NA1501726) 24V DC OUT

Heat Sink





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Temperature rise test

Test Date: 01-05～06-2015

Test Product: Boxer-6301VS

Test Site: AAEON QE Dept.

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

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 11/09/2014
Serial Number: 12A323190

Test Condition:

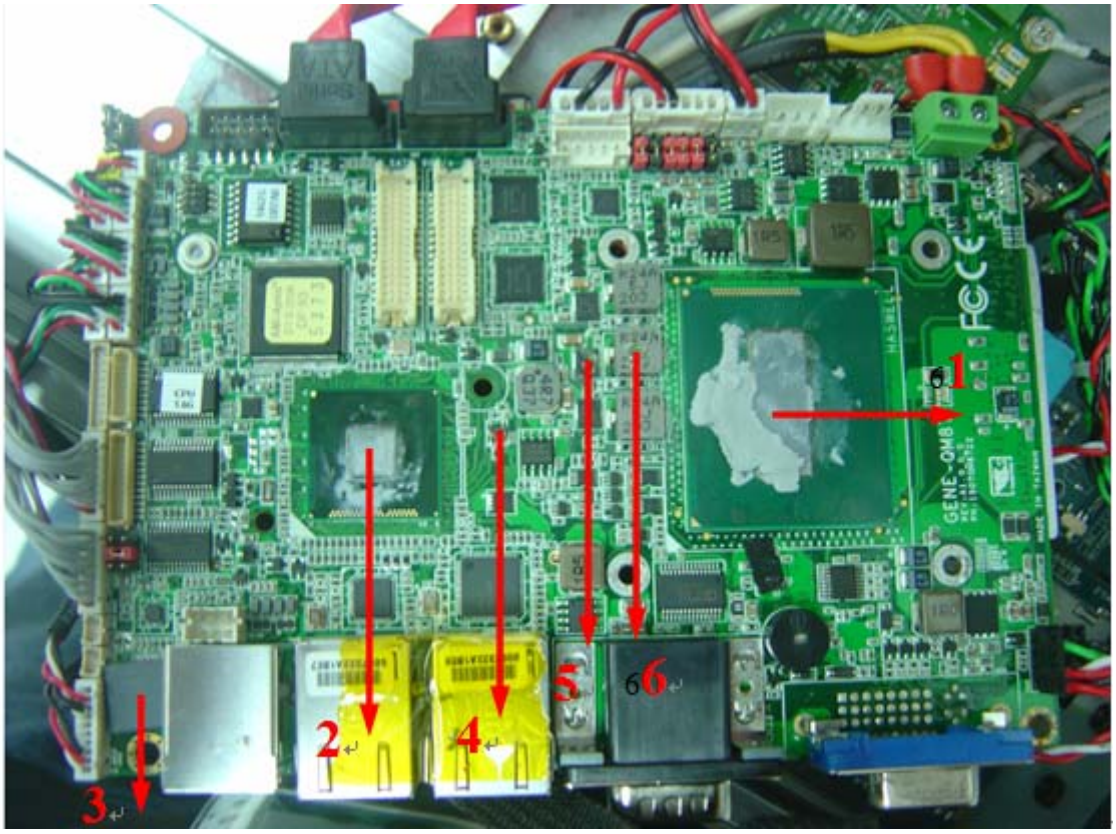
Ambient temperature: 50℃
Continuous running till thermal stability (within less than 1℃)

Test Software:

Windows 7 / Run PassMark Burn In Test 7.1 Pro

Terminal Recorder:

Measuring Thermal Couple Position：



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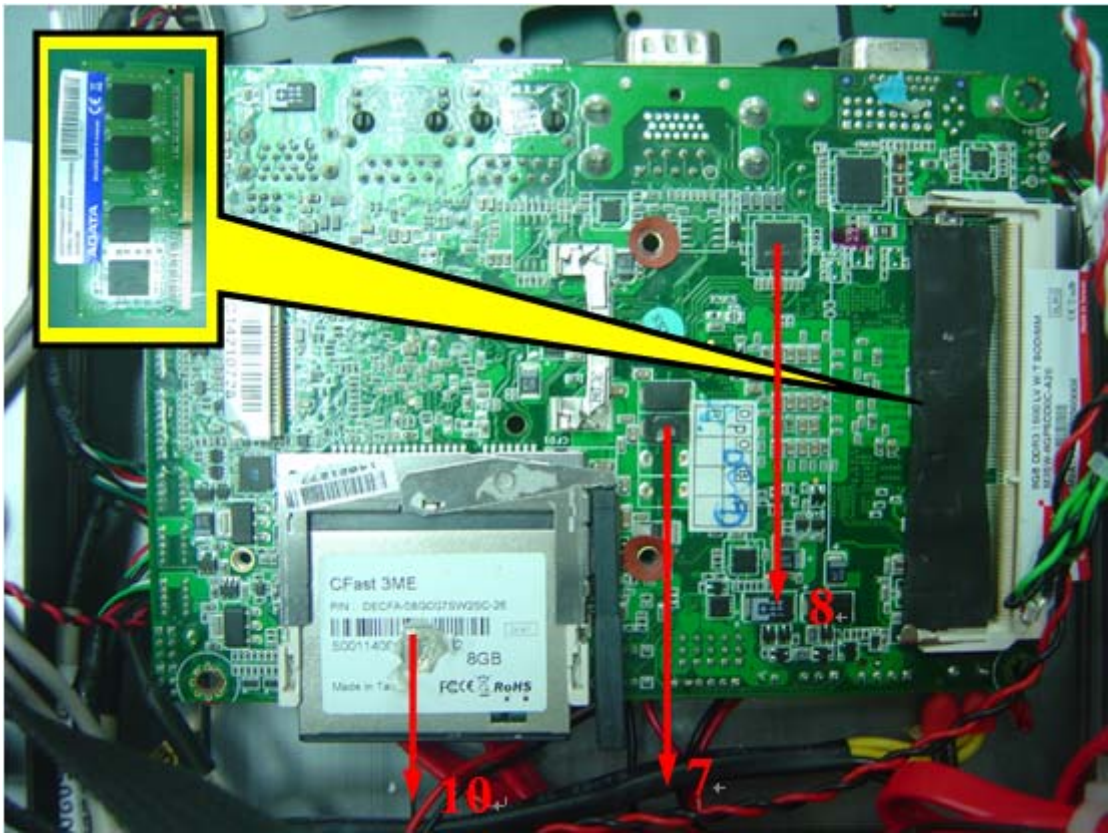
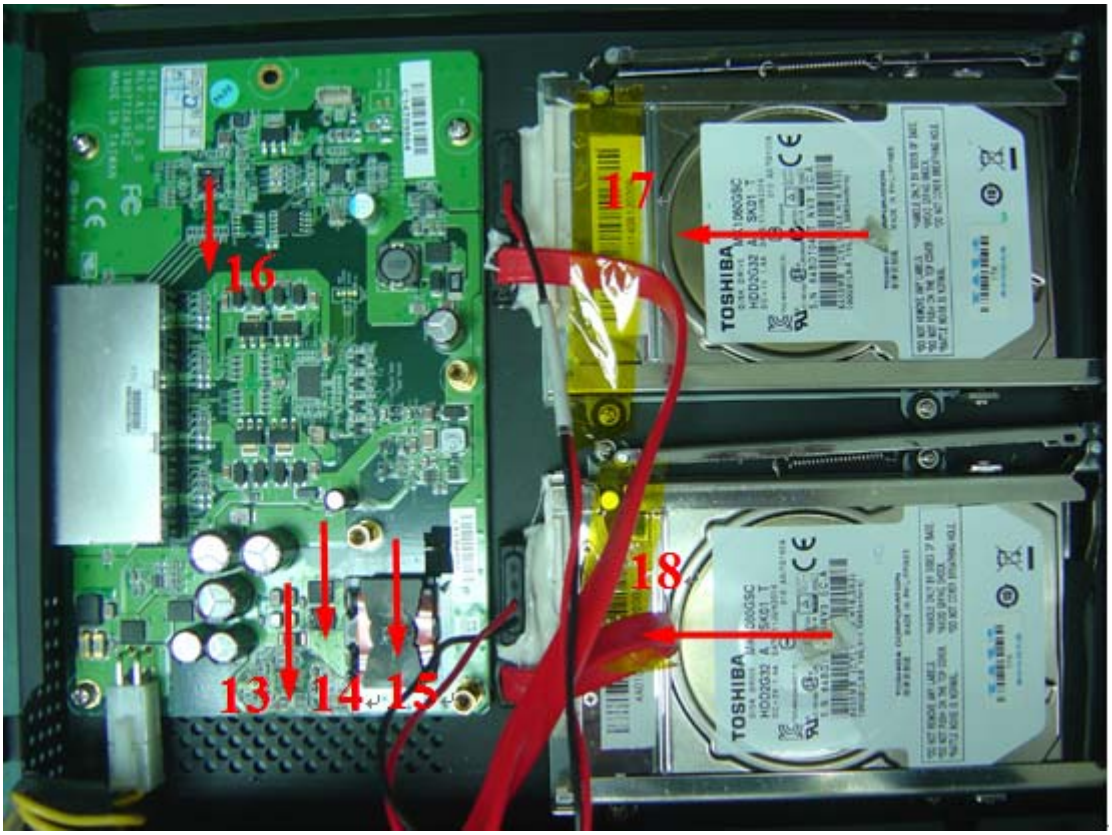
Temperature rise test





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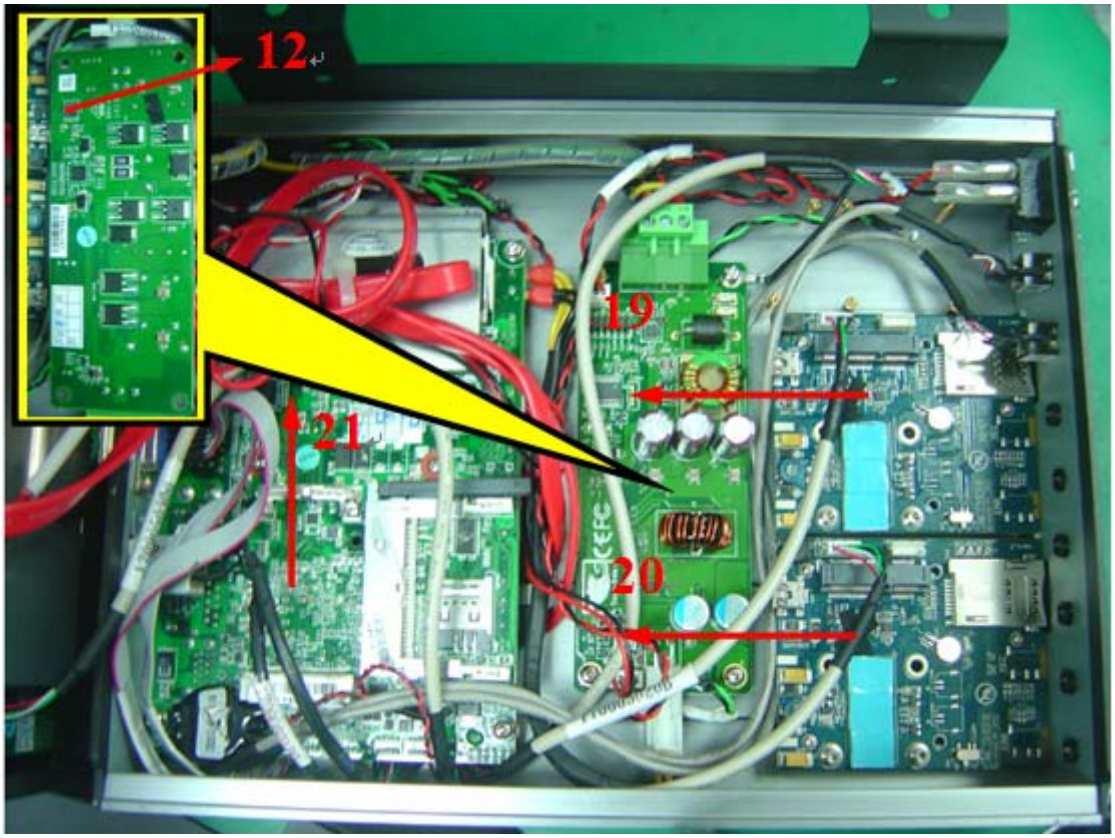
Temperature rise test



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Temperature rise test

Thermal profile data:

Boxer-6301VS (Without airflow)

Point / Temp. Stage(℃)	Spec	50	25	Note
1. CPU Intel Core i5-4400E (2.70 GHz)	105	85.6	60.6	
2. U21 (TF)Chipset PCH.SMD.INTEL.BD82QM87	108	79.1	54.1	
3. U39 (TF)High Definition.Audio Codec.REALTEK.ALC892-GR	100.5	87.7	62.7	
4. U19 (TF)LDO Regulator.500mA.SOT23-5 5P.SMD.UPI.UP0107BMA5-00	100	76.5	51.5	
5. U15 (TF)Synchronous Buck NexFETTM.Power Stage.SMD.TI.CSD97374Q4M	150	99.8	74.8	
6. L4 (TF)COIL.0.24uH.DCR=1mohm.Irms=24Amp.20%.ETQP4LR24AFM	130	99.6	74.6	
7. TC17 (TF)SP CAP.330uF.2.5V.+10/-35%.D2(7.3*4.3*1.9). EEFSX0E331EY	105	91.9	66.9	
8. U57 (TF)for DP to HDMI/DVI.HVQFN 48P.SMD.NXP.PTN3360DBS	100	88.7	63.7	
9. Memory Transcend DDR3L 1600 8GB	95	85.8	60.8	
10. (TF)8GB.MLC.CFast 3ME.InnoDisk.DECFA-08GD07SW2SC-26	85	**88.0**	63.0	**Note 3**
11 電池	85	78.7	53.7	
12. U5 (TF)16V/500mA.LDO Regulator.MICREL.MIC5209YM	125	80.8	55.8	
13.U2 (TF)IC.Low IQ Synchronous Boost.Controller.Linear.LTC3786IMSE#PBF	100	76.0	51.0	
14. Q3 (TF)PWR.MOSFET.N-Channel.75V.28A.11mΩ.Vishay.Si7148DP-T1-GE3	125	75.7	50.7	
15. L2 (TF)Inductor.20.6.*24.0*11.0mm.SMD.Sumida.CDPQ2010NP-100MC-180	150	75.8	50.8	
16. U11 (TF)ETHERNET.SWITCH CONTROLLER.REALTEK.RTL8305NB-CG	85	78.2	53.2	
17. HDD	85	70.5	45.5	
18. HDD	85	72.5	47.5	
19. Control Box Inside Air Temperature-1	N/A	72.0	47.0	
20. Control Box Inside Air Temperature-2	N/A	71.8	46.8	
21. Control Box Inside Air Temperature-3	N/A	88.5	63.5	
22. Control Box Surface Temperature	.N/A	74.1	49.1	

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. P140909LABE01

Test Result:

No issues were found during the temperature rise operation test.

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High Temperature Operation test

Test Date: 01-03～05-2015

Test Product: Boxer-6301VS

Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-2 Testing procedures
Test Bd: Dry Heat Test (Operation)

Test Equipment:

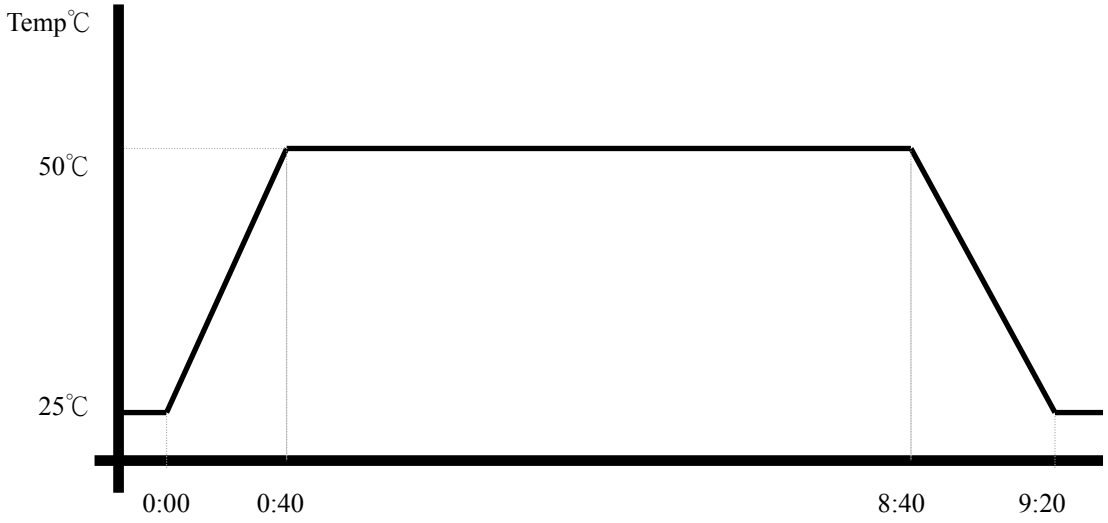
Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D7S-100+1 N2
Date of Calibration: 10/09/'14
Serial Number: 3898

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 11/09/2014
Serial Number: 12A32319

Testing Item:

1. Test Temperature: 50℃
2. Test Times: 48Hrs
3. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
4. Test Environment Curve:



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High Temperature Operation test

Thermal profile data:

Boxer-6301VS (With 0.5m/sec airflow)

Point / Temp. Stage(℃)	Spec	50	25	Note
1. CPU Intel Core i5-4400E (2.70 GHz)	105	81.5	56.5	
2. U21 (TF)Chipset PCH.SMD.INTEL.BD82QM87	108	77.3	52.3	
3. U39 (TF)High Definition.Audio Codec.REALTEK.ALC892-GR	100.5	76.3	51.3	
4. U19 (TF)LDO Regulator.500mA.SOT23-5 5P.SMD.UPI.UP0107BMA5-00	100	71.8	46.8	
5. U15 (TF)Synchronous Buck NexFETTM.Power Stage.SMD.TI.CSD97374Q4M	150	94.2	69.2	
6. L4 (TF)COIL.0.24uH.DCR=1mohm.Irms=24Amp.20%.ETQP4LR24AFM	130	89.1	64.1	
7. TC17 (TF)SP CAP.330uF.2.5V.+10/-35%.D2(7.3*4.3*1.9). EEFSX0E331EY	105	82.5	57.5	
8. U57 (TF)for DP to HDMI/DVI.HVQFN 48P.SMD.NXP.PTN3360DBS	100	76.5	51.5	
9. Memory Transcend DDR3L 1600 8GB	95	74.0	49.0	
10.(TF)8GB.MLC.CFast 3ME.InnoDisk.DECFA-08GD07SW2SC-26	85	78.7	53.7	
11 電池	85	70.8	45.8	
12. U5 (TF)16V/500mA.LDO Regulator.MICREL.MIC5209YM	125	64.8	39.8	
13.U2 (TF)IC.Low IQ Synchronous Boost.Controller.Linear.LTC3786IMSE#PBF	100	61.0	36.1	
14. Q3 (TF)PWR.MOSFET.N-Channel.75V.28A.11mΩ.Vishay.Si7148DP-T1-GE3	125	63.9	38.9	
15. L2 (TF)Inductor.20.6.*24.0*11.0mm.SMD.Sumida.CDPQ2010NP-100MC-180	150	66.6	41.6	
16. U11 (TF)ETHERNET.SWITCH CONTROLLER.REALTEK.RTL8305NB-CG	85	70.6	45.6	
17. HDD	85	56.5	31.5	
18. HDD	85	58.3	33.3	
19. Control Box Inside Air Temperature-1	N/A	57.6	32.6	
20. Control Box Inside Air Temperature-2	N/A	56.9	31.9	
21. Control Box Inside Air Temperature-3	N/A	78.6	53.6	
22. Control Box Surface Temperature	.N/A	56.9	31.9	

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.

Test Result:

No issues were found during the temperature rise operation test.

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Temperature cycle test

Test Date: 01-01~03-2015

Test Product: Boxer-6301VS

Test Site: AAEON QE Dept .

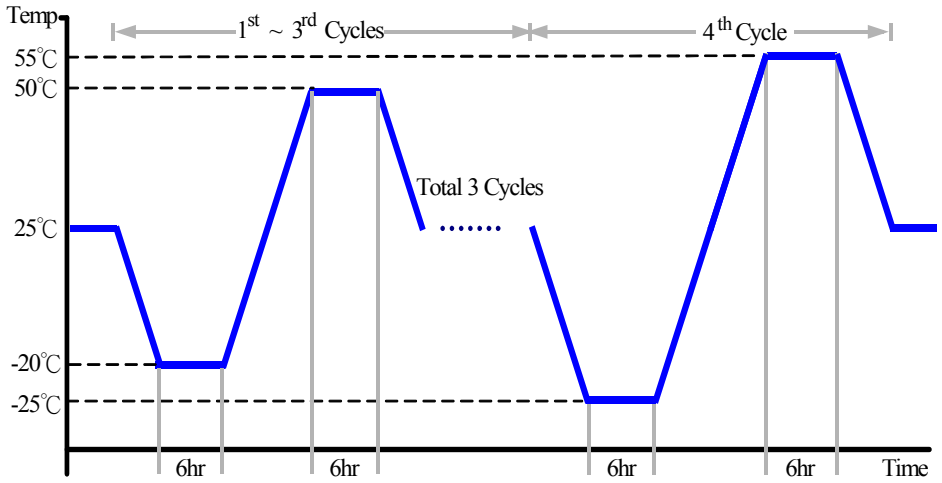
Test Standard: Reference IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-D75-100+LN2
Date of Calibration: 09/11/14
Serial Number: 6487KT

Test Condition:

1. Test Low Temperature: -20℃ (1~3 cycles)
   -25℃ (4^{th} cycle)
2. Test High Temperature: 50℃ (1~3 cycles)
   55℃ (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 (Boxer-6301VS)

Test Result:

No issues were found during the temperature operation cycle test.

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High temperature storage test

Test Date: 12-30-2014~01-01-2015

Test Product: Boxer-6301VS

Test Site: AAEON QE Dept

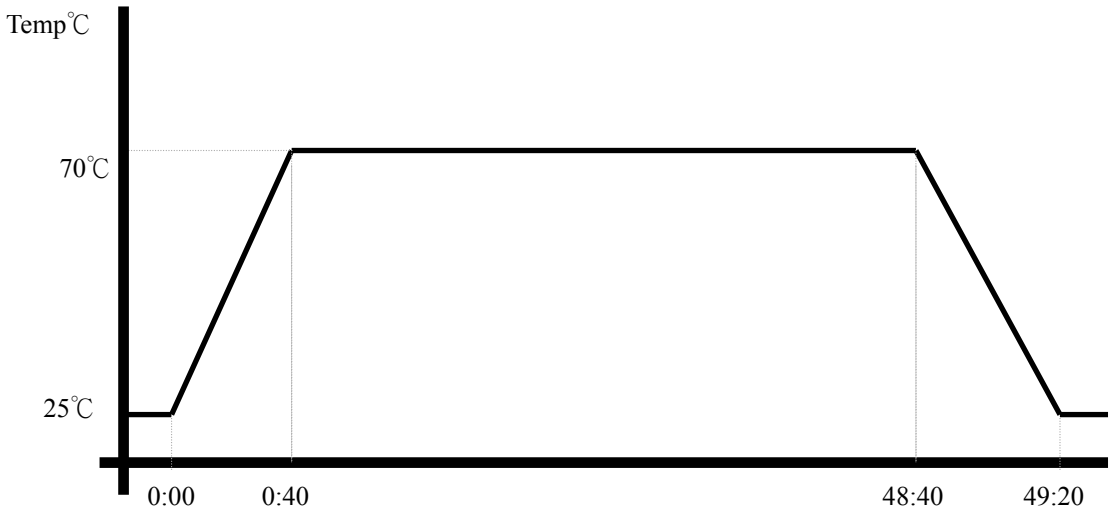
Test Standard: Reference IEC 68-2-2 Testing procedures
Test Bb: Dry Heat Test (Non-operation)

Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-D75-100+LN2
Date of Calibration: 09/11/14
Serial Number: 6487KT

Testing Item:

5. Test Temperature: 70℃
6. Test Times: 48Hrs
7. Test Software: Windows 7 / Run PassMark Burn In Test 7.1 Pro
8. Test Environment Curve:



Sample Configuration & Quantity Under Test:
Quantity: 1 (Boxer-6301VS)

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

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Low temperature storage test

Test Date: 12-28~30-2014

Test Product: Boxer-6301VS

Test Site: AAEON QE Dept

Test Standard: Reference 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-D75-100+LN2
Date of Calibration: 09/11/14
Serial Number: 6487KT

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 (Boxer-6301VS)

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

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Humidity test

Test Date: 12-26~28-2014

Test Product: Boxer-6301VS

Test Site: AAEON QE Dept .

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

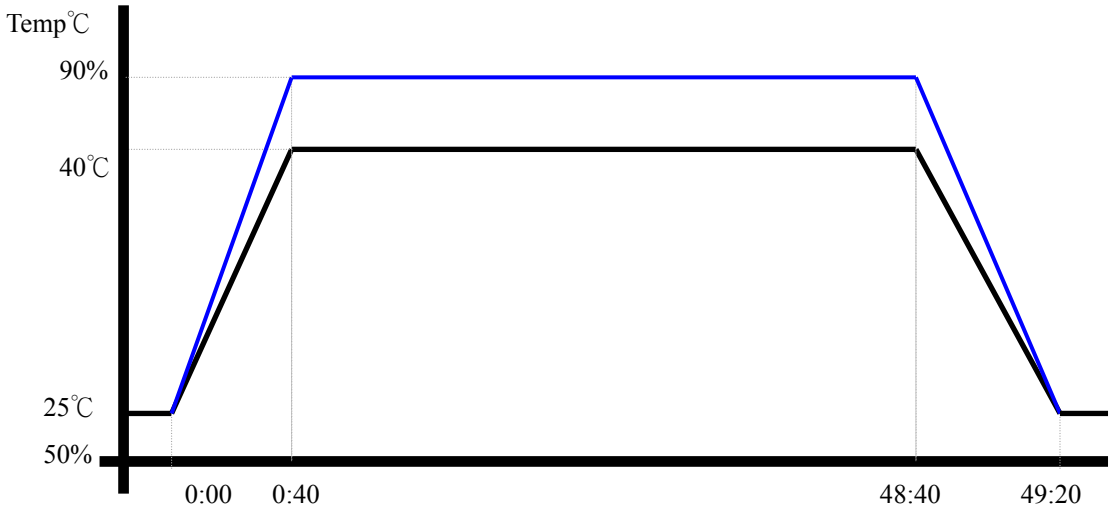
Test Equipment:

Programmable Temperature & Humidity Chamber
K.SON. INS. TECH. CORP.
Model: THS-D75-100+LN2
Date of Calibration: 09/11/14
Serial Number: 6487KT

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 (Boxer-6301VS)

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

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Cold start and hot start test

Test Date: 12-24~26-2014

Test Product: Boxer-6301VS

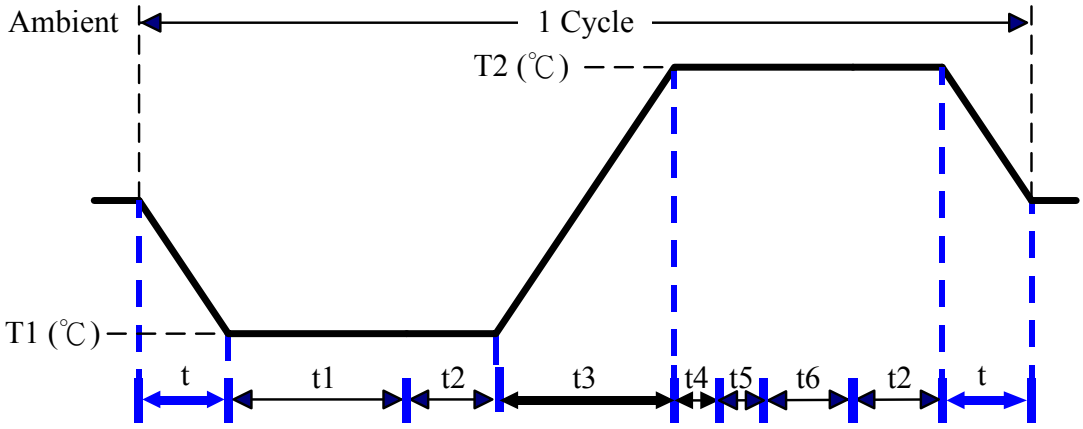
Test Site: AAEON QE Dept .

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-D75-100+LN2
Date of Calibration: 09/11/14
Serial Number: 6487KT

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 PassMark Burn In Test
t5: Win XP 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.

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