

QA Test Report

Report Number : DVED12100

Project Number : NP12031301

Product Model : NPort 5X50AI-M12-T series -

NPort 5150AI-M12-T,

NPort 5250AI-M12-T,

NPort 5450AI-M12-T

Product Environmental Test Report



QA Manager : Cristophore Approval : Justin Vien Prepare By : I ping

Test Result (Summary)

Test Item	Test Standard	Q'ty	Test Date	Judge	Page
Temperature Cycle Operating Test	IEC 60068-2-14	6	2012/05/10~ 2012/05/12	PASS	4
High Temperature High Humidity Operating Test	IEC 60068-2-3	6	2012/05/12~ 2012/05/13	PASS	9
High Temperature Operating Test	IEC 60068-2-2	6	2012/05/13~ 2012/05/14	PASS	13
Low Temperature Power ON/OFF Test	IEC 60068-2-1	6	2012/05/14~ 2012/05/15	PASS	16
Low Temperature Storage Test	IEC 60068-2-1	3	2012/08/28~ 2012/08/29	PASS	19
High Temperature High Humidity Storage Test	IEC 60068-2-3	3	2012/08/29~ 2012/08/30	PASS	22
Vibration Test	EN50155 EN/IEC 61373	1	2012/05/21	PASS	26
Shock Test	EN50155 EN/IEC 61373	1	2012/05/23	PASS	32
Package Vibration & Drop Test	IEC 60068-2-64 IEC 60068-2-32 ISTA-2A	10	2012/08/30	PASS	37

Product Specifications

1. Power Requirements :

Power Input	12 ~ 48 VDC
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2. Environmental :

Operating Temperature	- 40 ~ 75 °C
Storage Temperature	- 40 ~ 85 °C
Ambient Relative Humidity	5 ~ 95 % RH (non-condensing)



NPort 5X50AI-M12-T series

Temperature Cycle Operating Test

1. Test Date & Instruments :

Test Date	2012/05/10~2012/05/12	
Instrument	Manufacturer	Next Cal. Date
Programmable Temperature & Humidity Chamber	KSON	2012/06/01
Thermometer	TECPEL	2012/11/24

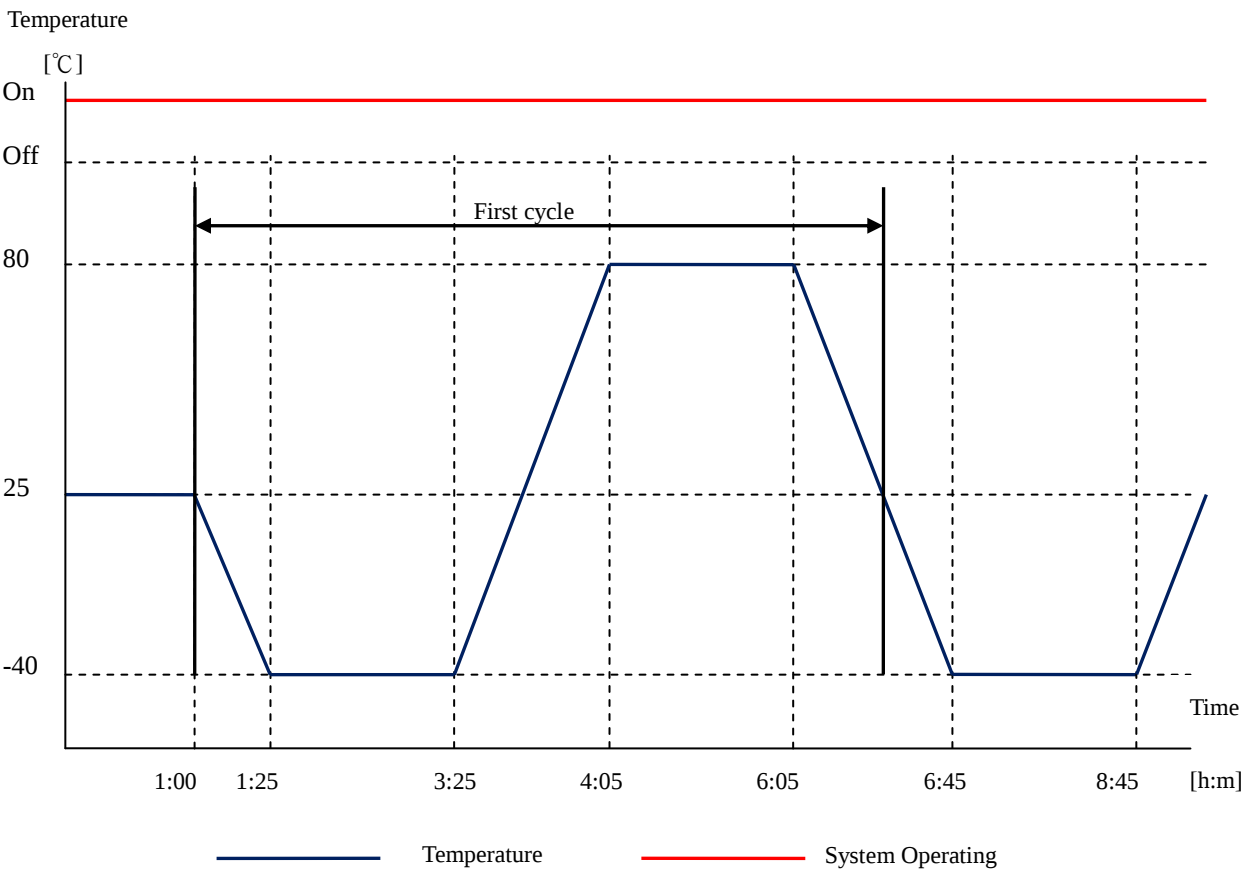
2. Sample Configuration & Quantity Under Test :

Product Model	NPort 5150AI-M12-T, NPort 5250AI-M12-T, NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5150AI-M12-T: 2 Units NPort 5250AI-M12-T: 2 Units NPort 5450AI-M12-T: 2 Units
Sample S/N	NPort 5150AI-M12-T-01, NPort 5150AI-M12-T-02, NPort 5250AI-M12-T-01, NPort 5250AI-M12-T-02, NPort 5450AI-M12-T-01, NPort 5450AI-M12-T-02

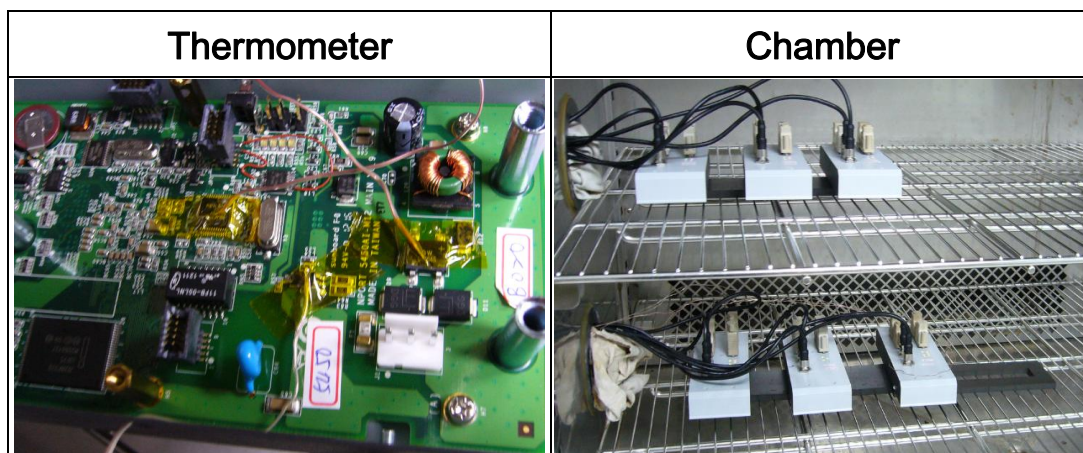
3. Test Parameter :

Parameter	Value
Conditions	Standard : IEC 60068-2-14
	Test category : Nb
	Low temperature/Humidity : -40°C / NA
	High temperature/Humidity : 80 °C / 60 % RH
	Duration of exposure : 2 hrs at each temperature step
	Number of cycles : 8
	Rate of change of temperature : 3 °C / min
Sample status	Operating
Checks , measurements	1.Performance Check: The performance check was carried out before, during and after the temperature cycle operating test. 2.Visual inspection: The visual inspection was carried out before and after the temperature cycle operating test.

4. Test Profile :



5. Test Photograph and Setting :



6. Proceedings :

Temperature / Humidity						
DATE	05/10	05/10	05/11	05/11	05/12	05/12
Check Item	05/10	05/10	05/11	05/11	05/12	05/12
Temperature (°C)	25 °C	-40 °C	80 °C	-40 °C	80 °C	25 °C
Humidity	60 %	0 %	60 %	0 %	60 %	60 %
Components & Location	Test ambient					
U33	51.6	-12.4	105.6	-12.8	105.2	52.3
AIR	37.7	-27.9	92.3	-28.2	92.8	38.2
U31	39.9	-25.2	95.2	-25.7	95.7	40.1
D10	38.7	-18.6	90.8	-19.3	91.3	39.2

7. The acceptance requirements :

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

8. Test Result : **PASS**

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	PASS	PASS
Visual inspection	Refer to QA-W-010/ Defect Inspection Criterion	OK	N/A	PASS
Remark				

High Temperature High Humidity Operating Test

1. Test Date & Instruments :

Test Date	2012/05/12~2012/05/13		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Programmable Temperature & Humidity Chamber	KSON	THS-E4C-100/ 4173T	2012/06/01

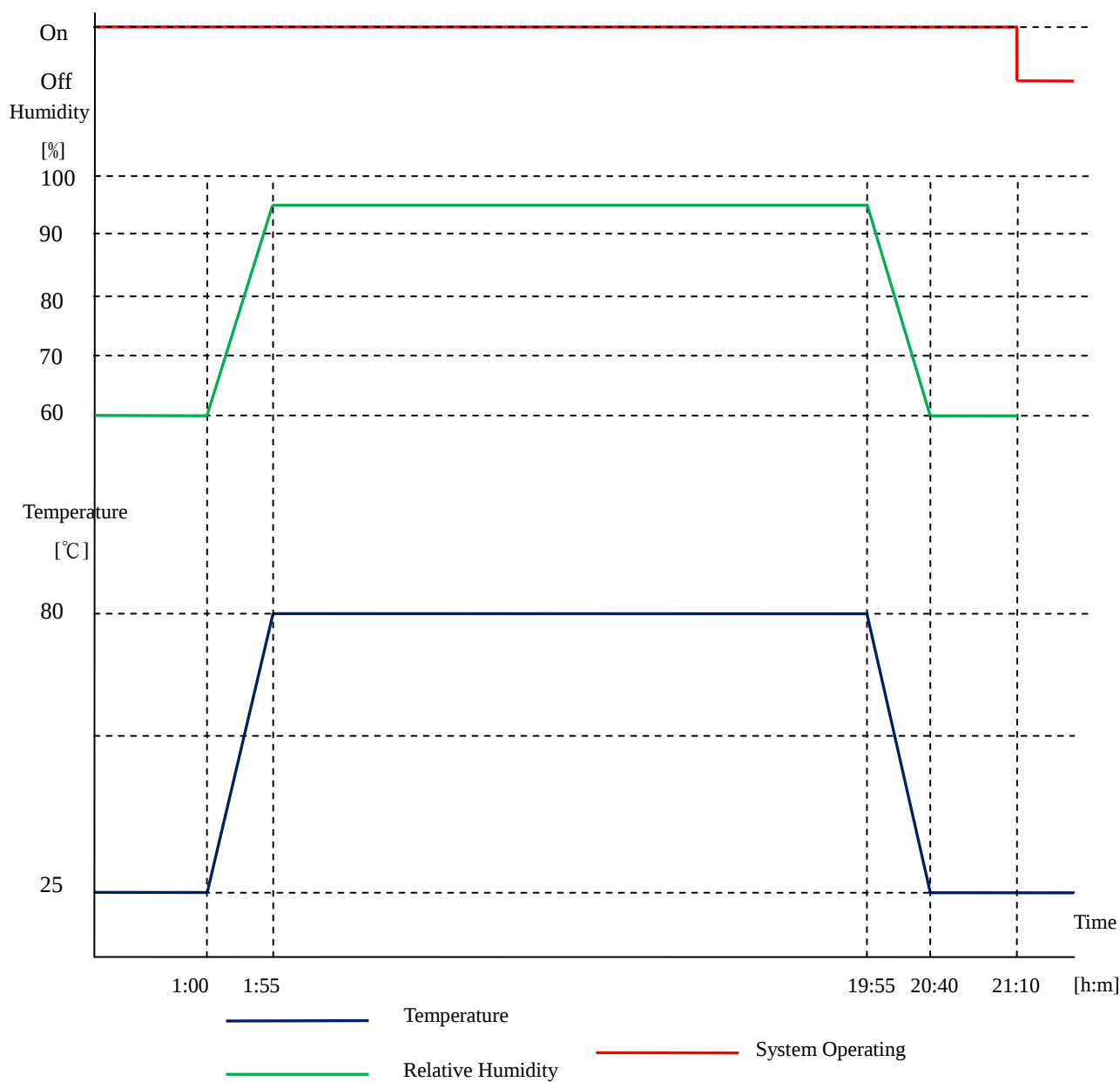
2. Sample Configuration & Quantity Under Test :

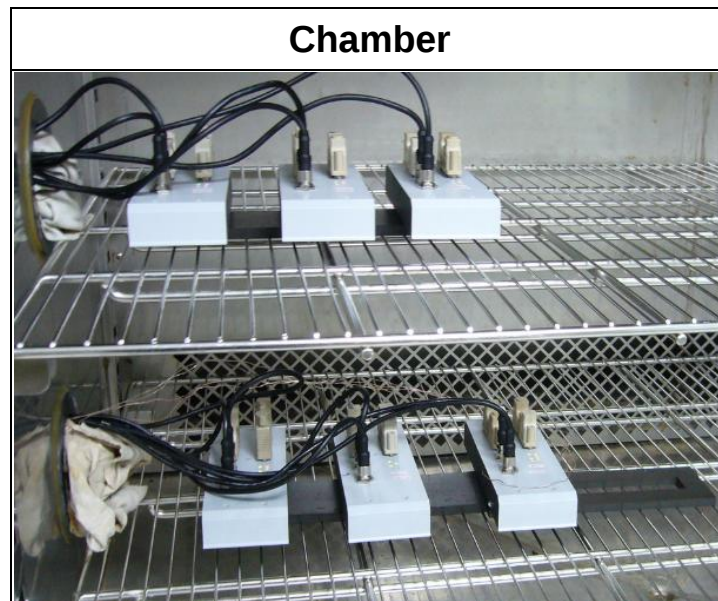
Product Model	NPort 5150AI-M12-T, NPort 5250AI-M12-T, NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5150AI-M12-T: 2 Units NPort 5250AI-M12-T: 2 Units NPort 5450AI-M12-T: 2 Units
Sample S/N	NPort 5150AI-M12-T-01, NPort 5150AI-M12-T-02, NPort 5250AI-M12-T-01, NPort 5250AI-M12-T-02, NPort 5450AI-M12-T-01, NPort 5450AI-M12-T-02

3. Test Parameter :

Parameter	Value
Conditions	Standard : IEC 60068-2-3
	Test category : Ca
	Temperature : 80 °C
	Relative Humidity : 95 % RH
	Duration of exposure : 18 hrs
	Rate of change of temperature : 1 °C / min
Sample status	Operating
Checks , measurements	1.Performance Check: The performance check was carried out before, during and after the high temperature high humidity operating test. 2.Visual inspection: The visual inspection was carried out before and after the high temperature high humidity operating test.

4. Test Environmental Curve :



5. Test Photograph :**6. The acceptance requirements :**

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

7. Test Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	PASS	PASS
Visual inspection	Refer to QA-W-010/ Defect Inspection Criterion	OK	N/A	PASS
Remark				

High Temperature Operating Test

1. Test Date & Instruments :

Test Date	2012/05/13~2012/05/14		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Programmable Temperature & Humidity Chamber	KSON	THS-E4C-100/ 4173T	2012/06/01

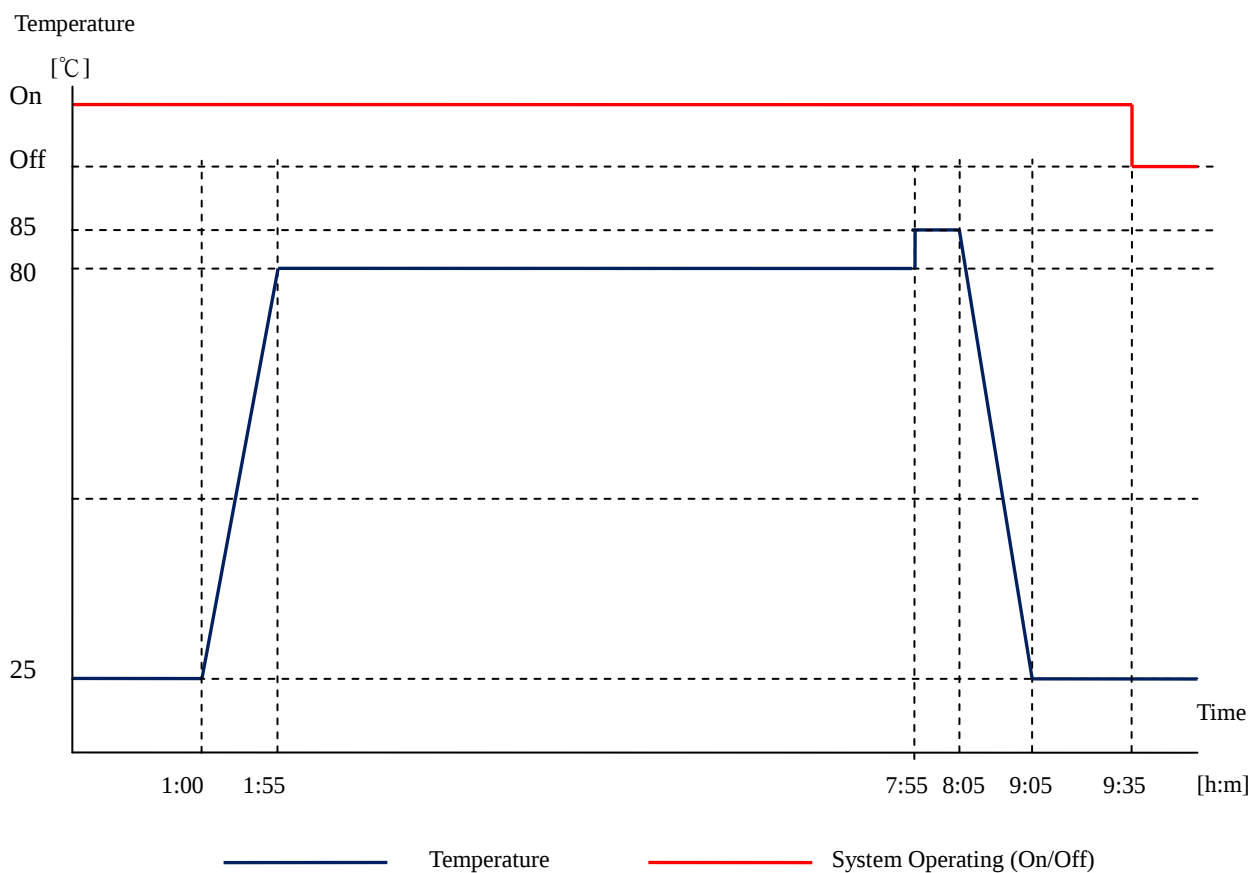
2. Sample Configuration & Quantity Under Test :

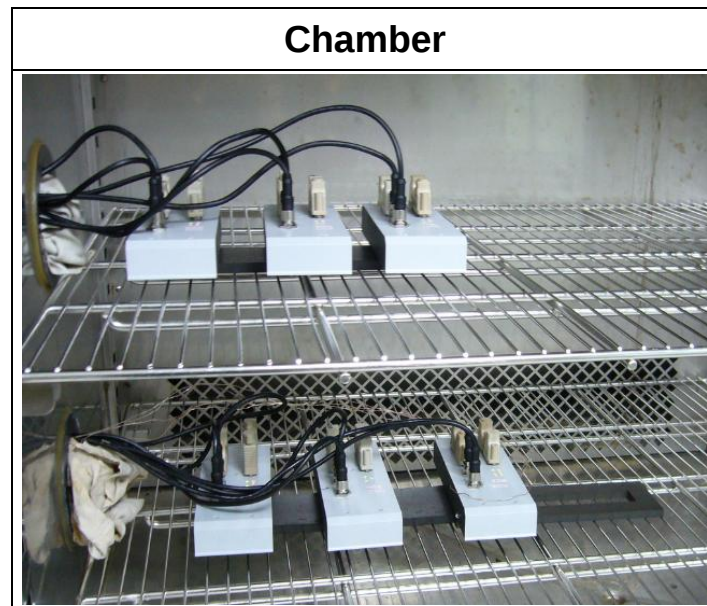
Product Model	NPort 5150AI-M12-T, NPort 5250AI-M12-T, NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5150AI-M12-T: 2 Units NPort 5250AI-M12-T: 2 Units NPort 5450AI-M12-T: 2 Units
Sample S/N	NPort 5150AI-M12-T-01, NPort 5150AI-M12-T-02, NPort 5250AI-M12-T-01, NPort 5250AI-M12-T-02, NPort 5450AI-M12-T-01, NPort 5450AI-M12-T-02

3. Test Parameter :

Parameter	Value
Conditions	Standard : IEC 60068-2-2
	Test category : Bb
	Temperature : 80 °C
	Duration of exposure : 6 hrs
	Over Temperature / Duration : 85 °C / 10 mins
	Rate of change of temperature : 1 °C / min
Sample status	Operating
Checks , measurements	1.Performance Check: The performance check was carried out before, during and after the high temperature operating test. 2.Visual inspection: The visual inspection was carried out before and after the high temperature operating test.

4. Test Environmental Curve :



5. Test Photograph :**6. The acceptance requirements :**

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

7. Test Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	PASS	PASS
Visual inspection	Refer to QA-W-010/ Defect Inspection Criterion	OK	N/A	PASS
Remark				

Low Temperature Power ON/OFF Test

1. Test Date & Instruments :

Test Date	2012/05/14~2012/05/15		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Programmable Temperature & Humidity Chamber	KSON	THS-E4C-100/ 4173T	2012/06/01

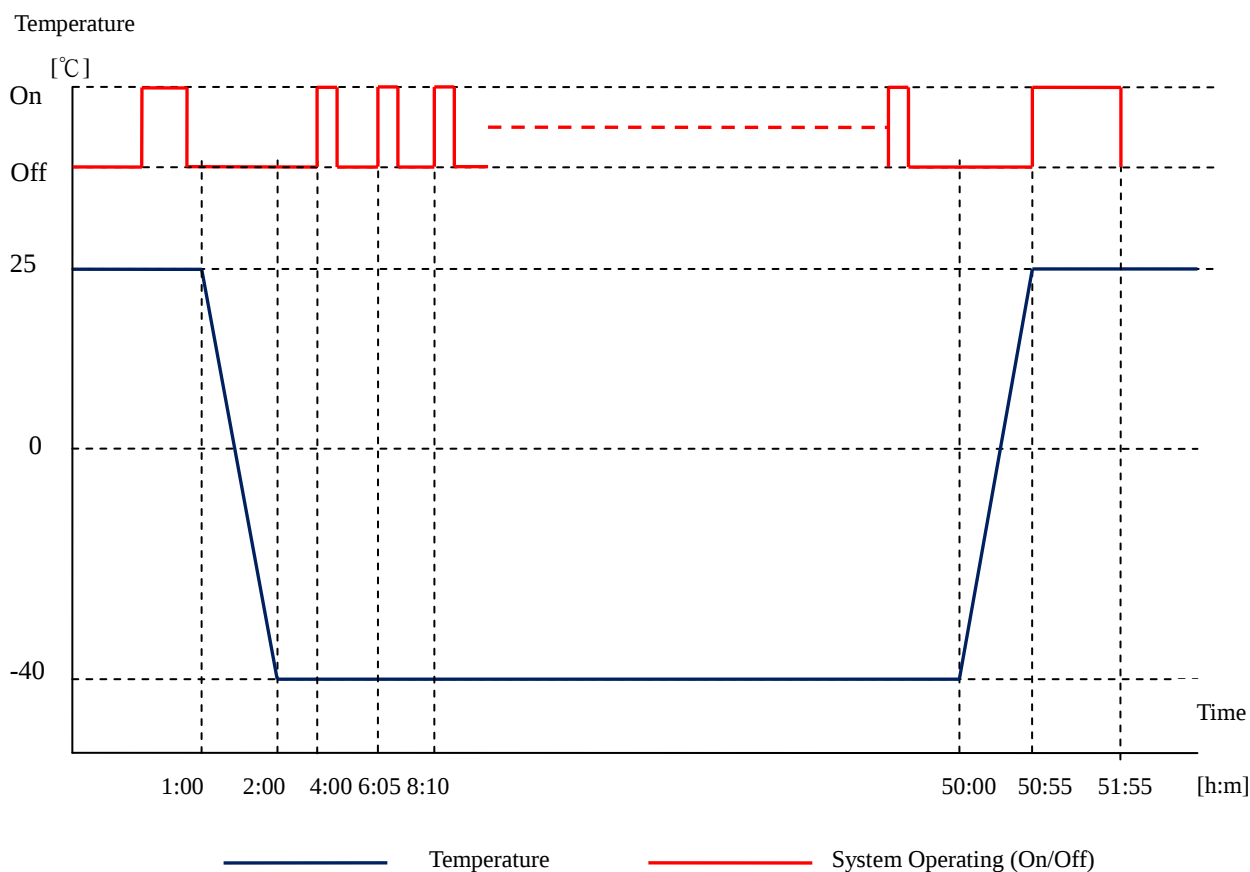
2. Sample Configuration & Quantity Under Test :

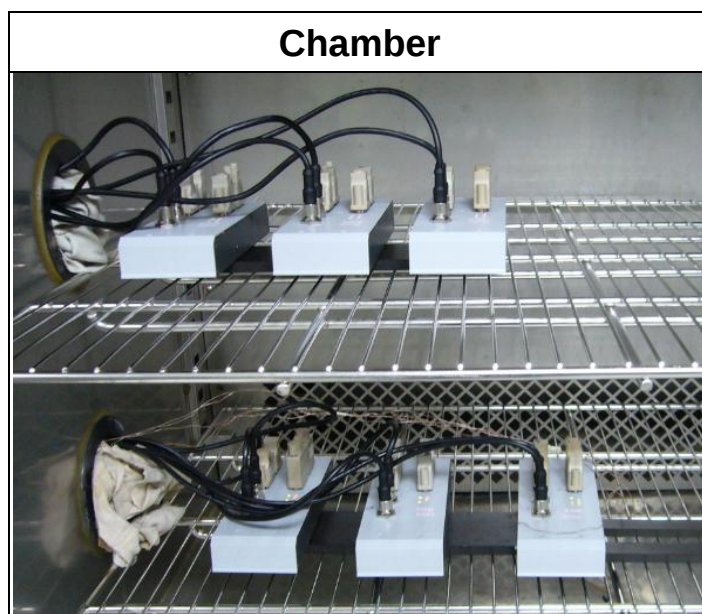
Product Model	NPort 5150AI-M12-T, NPort 5250AI-M12-T, NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5150AI-M12-T: 2 Units NPort 5250AI-M12-T: 2 Units NPort 5450AI-M12-T: 2 Units
Sample S/N	NPort 5150AI-M12-T-01, NPort 5150AI-M12-T-02, NPort 5250AI-M12-T-01, NPort 5250AI-M12-T-02, NPort 5450AI-M12-T-01, NPort 5450AI-M12-T-02

3. Test Parameter :

Parameter	Value
Conditions	Standard : IEC 60068-2-1
	Test category : Ab
	Temperature : -40 °C
	Duration of exposure : 48 hrs
	Power ON / OFF Time/Times : 5 mins / 2hrs / 10 Times
	Rate of change of temperature : 1°C/min
Sample status	Operating
Checks , measurements	1.Performance Check: The performance check was carried out before, during and after the low temperature power on/off test. 2.Visual inspection: The visual inspection was carried out before and after the low temperature power on/off test.

4. Test Environmental Curve :



5. Test Photograph :**6. The acceptance requirements :**

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

7. Test Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	PASS	PASS
Visual inspection	Refer to QA-W-010/ Defect Inspection Criterion	OK	N/A	PASS
Remark				

Low Temperature Storage Test

1. Test Date & Instruments :

Test Date	2012/07/03~2012/07/04		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Programmable Temperature & Humidity Chamber	KSON	THS-E4C-100/ 4173T	2013/05/31

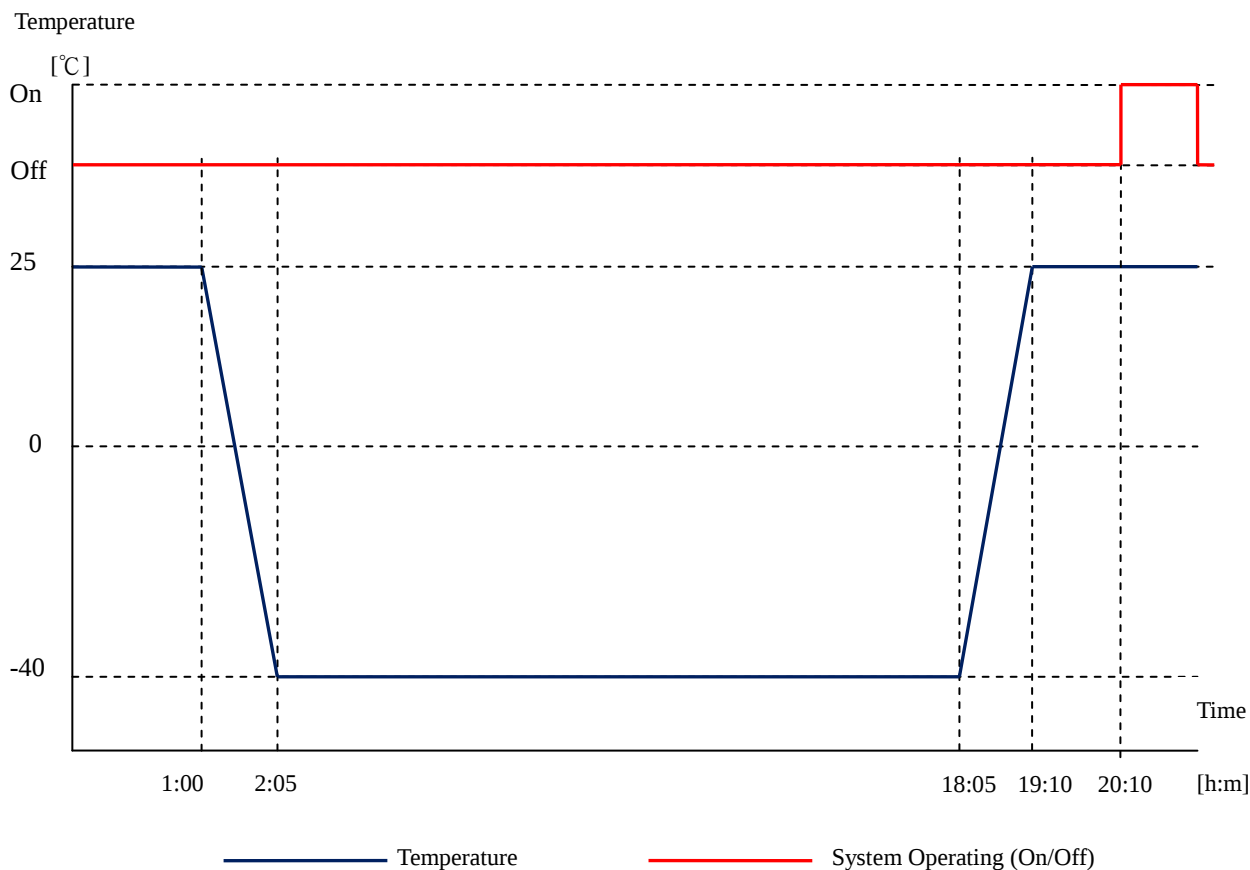
2. Sample Configuration & Quantity Under Test :

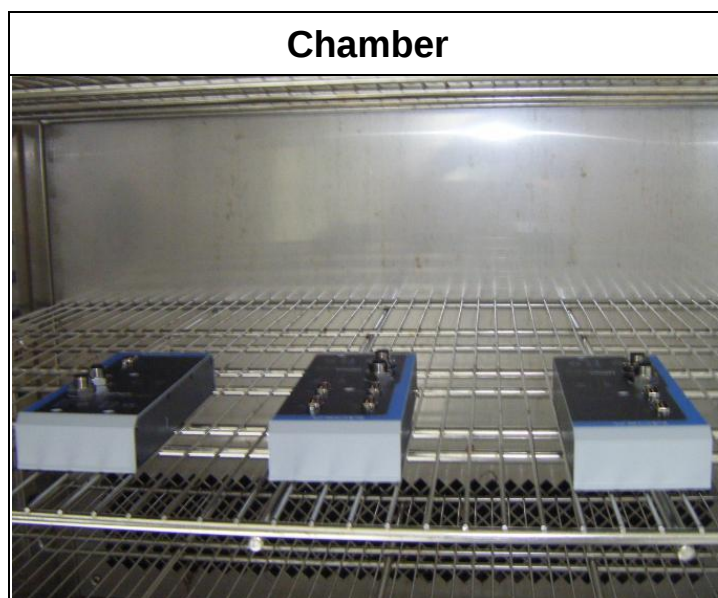
Product Model	NPort 5150AI-M12-T, NPort 5250AI-M12-T, NPort 5450AI-M12-T
Sample Source	Finished Sample
Total Quantity	NPort 5150AI-M12-T: 1 Units NPort 5250AI-M12-T: 1 Units NPort 5450AI-M12-T: 1 Units
Sample S/N	NPort 5150AI-M12-T-04-F, NPort 5250AI-M12-T-04-F, NPort 5450AI-M12-T-05-F

3. Test Parameter :

Parameter	Value
Conditions	Standard : IEC 60068-2-1
	Test category : Ab
	Temperature : -40 °C
	Duration of exposure : 16 hrs
	Rate of change of temperature : 1 °C / min
Sample status	Non-Operating
Checks , measurements	1.Performance Check: The performance check was carried out before and after the low temperature storage test. 2.Visual inspection: The visual inspection was carried out before and after the low temperature storage test.

4. Test Environmental Curve :



5. Test Photograph :**4. The acceptance requirements :**

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

5. Test Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	N/A	PASS
Visual inspection	Refer to QA-W-010/ Defect Inspection Criterion	OK	N/A	PASS
Remark				

High Temperature High Humidity Storage Test

1. Test Date & Instruments :

Test Date	2012/07/04~2012/07/05		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Programmable Temperature & Humidity Chamber	KSON	THS-E4C-100/ 4173T	2013/05/31

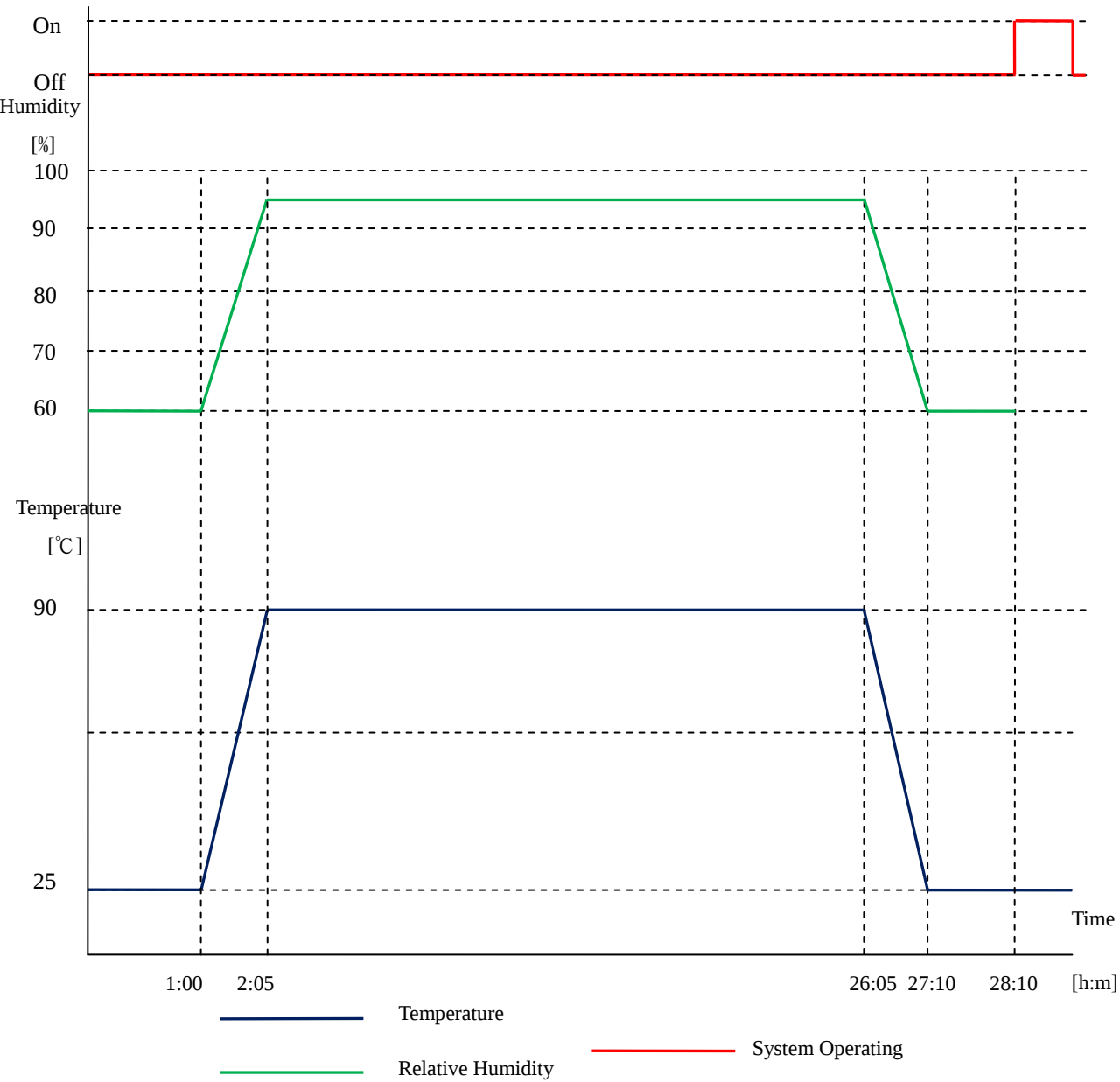
2. Sample Configuration & Quantity Under Test :

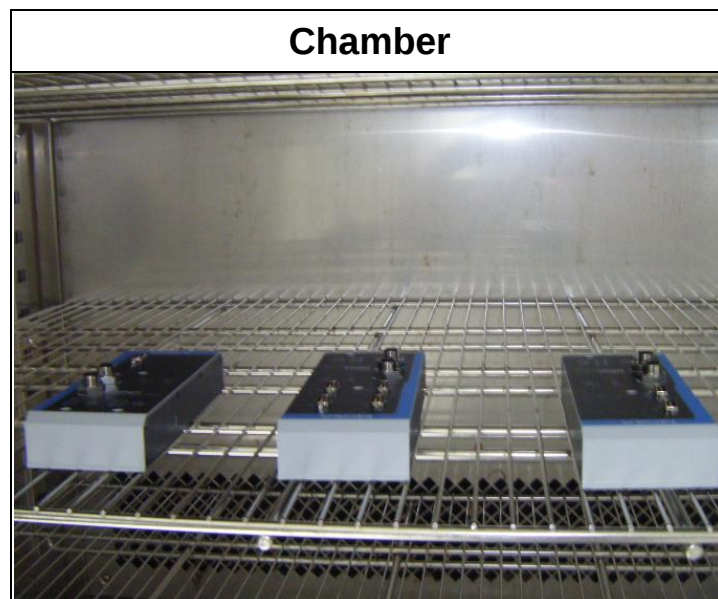
Product Model	NPort 5150AI-M12-T, NPort 5250AI-M12-T, NPort 5450AI-M12-T
Sample Source	Finished Sample
Total Quantity	NPort 5150AI-M12-T: 1 Units NPort 5250AI-M12-T: 1 Units NPort 5450AI-M12-T: 1 Units
Sample S/N	NPort 5150AI-M12-T-04-F, NPort 5250AI-M12-T-04-F, NPort 5450AI-M12-T-05-F

3. Test Parameter :

Parameter	Value
Conditions	Standard : IEC 60068-2-3
	Test category : Ca
	Temperature : 90 °C
	Relative Humidity : 95 % RH
	Duration of exposure : 24 hrs
	Rate of change of temperature : 1 °C / min
Sample status	Non-Operating
Checks , measurements	1.Performance Check: The performance check was carried out before and after the high temperature high humidity storage test. 2.Visual inspection: The visual inspection was carried out before and after the high temperature high humidity storage test.

4. Test Environmental Curve :



5. Test Photograph :**6. The acceptance requirements :**

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

7. Test Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	N/A	PASS
Visual inspection	Refer to QA-W-010/Defect Inspection Criterion	OK	N/A	PASS
Remark				

Vibration Test

1. Test Date & Instruments :

Test Date	2012/05/21		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Vibration Tester	KING DESIGN	KD-9363EM-1000F2K -50N120/ GUG02102091	2012/11/26
Controller	DACTRON COMET DSP	8208367	2012/11/26
Control Accelerometer	B&K	WR-777/4207	2012/11/26

2. Sample Configuration & Quantity Under Test :

Product Model	NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5450AI-M12-T: 1 Unit
Sample S/N	NPort 5450AI-M12-T-03

3. Test Parameter :

Parameter	Value
Conditions	Standard EN50155 、 EN/IEC 61373
	Test category Category 1, Class B
	Random Wave(Non-Operating)
	Frequency 5~150 Hz
	Accelerate 7.90 m/s^2
	PSD 1.857 m/s^2 (5~20Hz) -6dB/oct (20~150Hz)
	Test Axis Vertical Transverse Longitudinal
	Total Time(Three Axis) 5 hrs each axis Total 15 hrs
	Random Wave
	Frequency 5~150 Hz
	Accelerate 1.00 m/s^2
	PSD 0.0298 m/s^2 (5~20Hz) -6dB/oct (20~150Hz)
	Test Axis Vertical Transverse Longitudinal
	Total Time(Three Axis) 20 mins each axis Total 1 hr
Sample status	Operating
Checks , measurements	1.Performance Check: The performance check was carried out before and after the vibration test. 2.Visual inspection: The visual inspection was carried out before and after the vibration test.

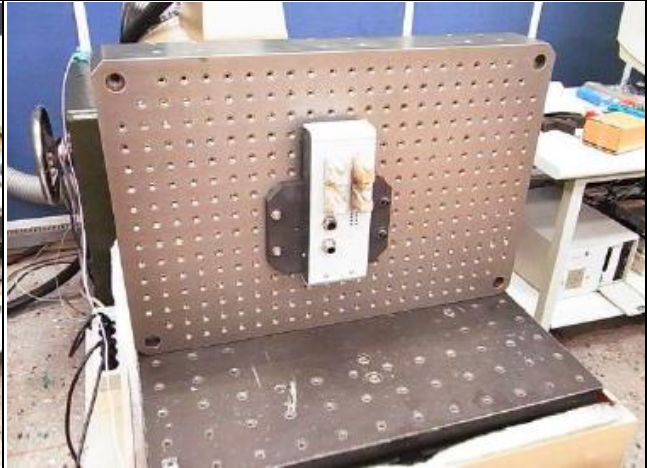
4. The acceptance requirements :

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

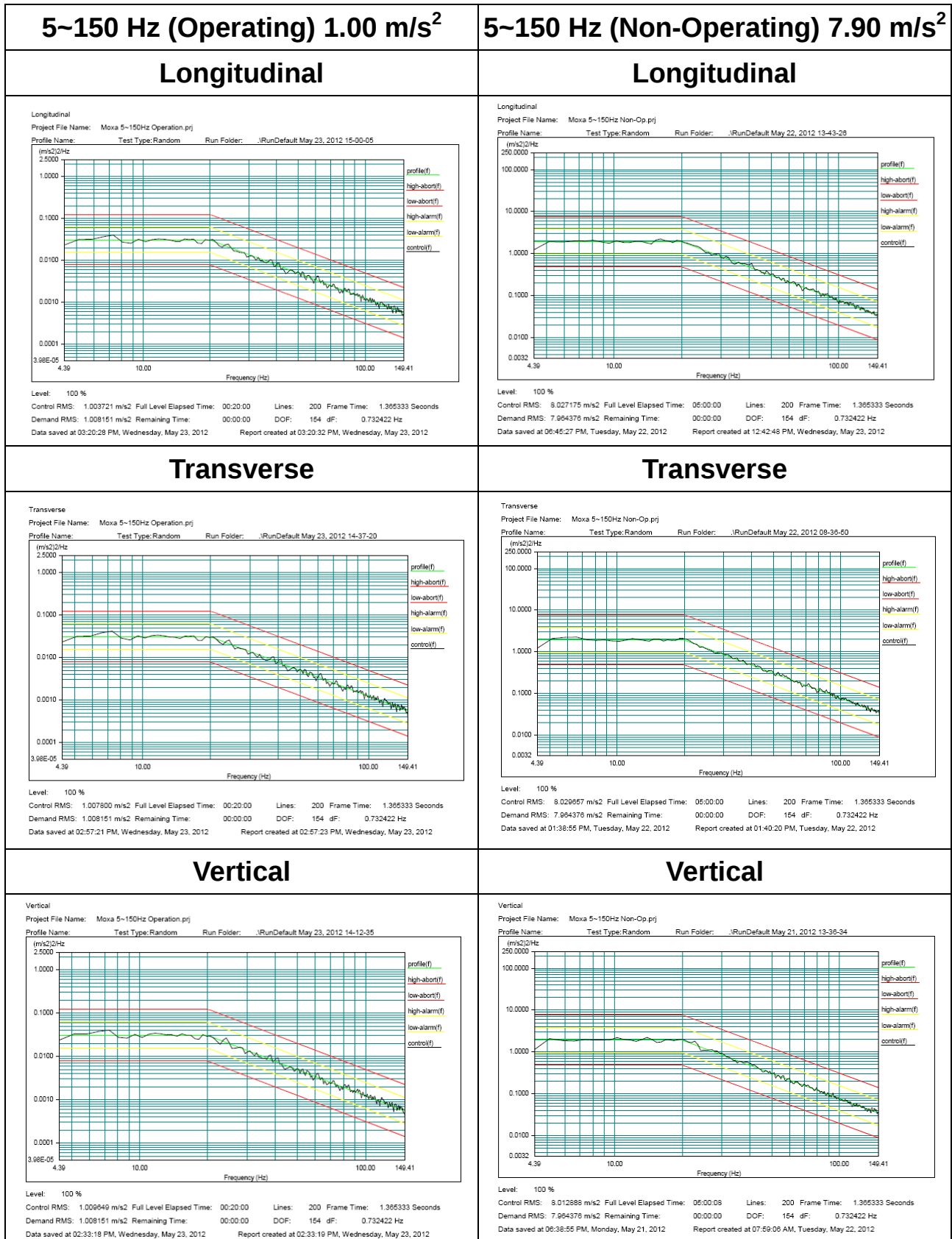
5. Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	PASS	PASS
Visual inspection	Refer to QA-W-010/Defect Inspection Criterion	OK	N/A	PASS
Remark				

6. Test Photograph :

Random Vibration Test (Operating)	Random Vibration Test (Non-Operating)
Longitudinal	Longitudinal
	
Transverse	Transverse
	
Vertical	Vertical
	

7. Test Frequency Curve :



Shock Test

1. Test Date & Instruments :

Test Date	2012/05/23		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Vibration Tester	KING DESIGN	KD-9363EM-1000F2K -50N120/ GUG02102091	2012/11/26
Controller	DACTRON COMET DSP	8208367	2012/11/26
Control Accelerometer	B&K	WR-777/4207	2012/11/26

2. Sample Configuration & Quantity Under Test :

Product Model	NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5450AI-M12-T: 1 Unit
Sample S/N	NPort 5450AI-M12-T-03

3. Test Parameter :

Parameter	Value
Conditions	Standard EN50155 、 EN/IEC 61373
	Test category Category 1, Class B
	Half Sine Wave
	Accelerate 50 m/s ²
	Duration 30 ms
	Test Axis +/- Vertical +/- Transverse +/- Longitudinal
	Test Times 3 shocks each axis Total 18 times
Sample status	Operating
Checks , measurements	1.Performance Check: The performance check was carried out before and after the shock test. 2.Visual inspection: The visual inspection was carried out before and after the shock test.

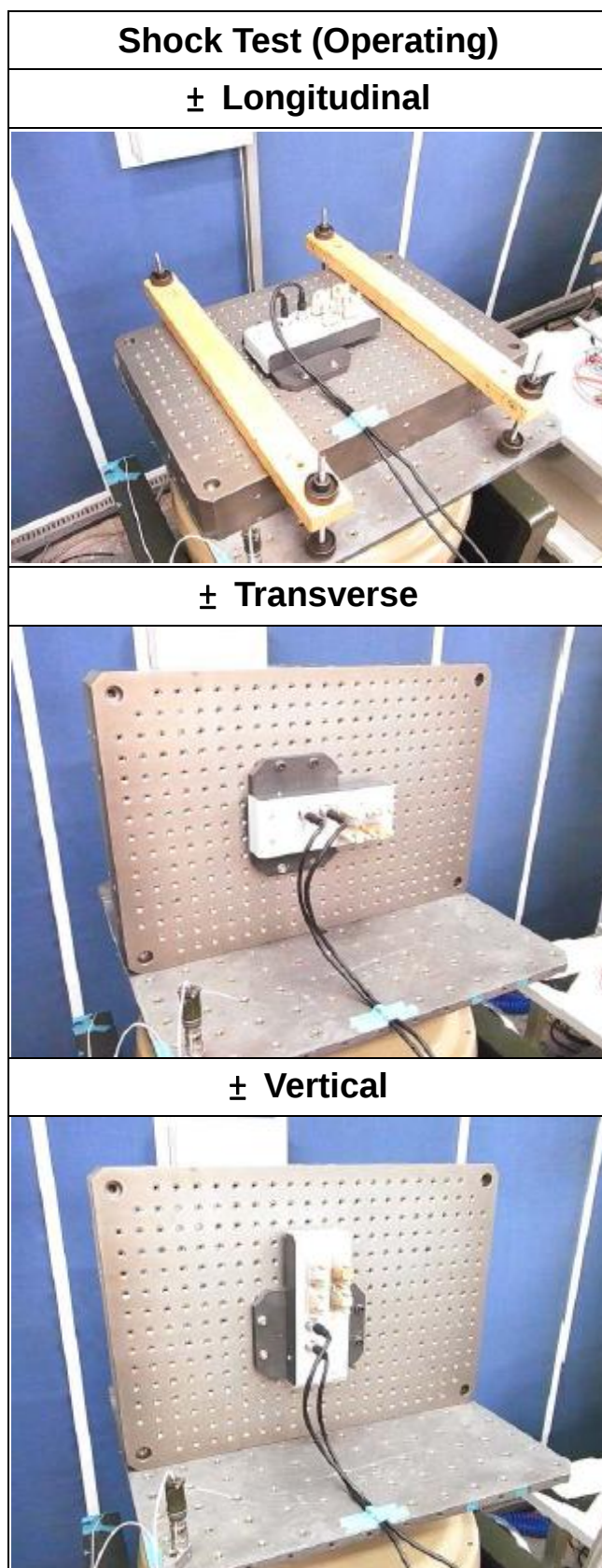
4. The acceptance requirements :

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

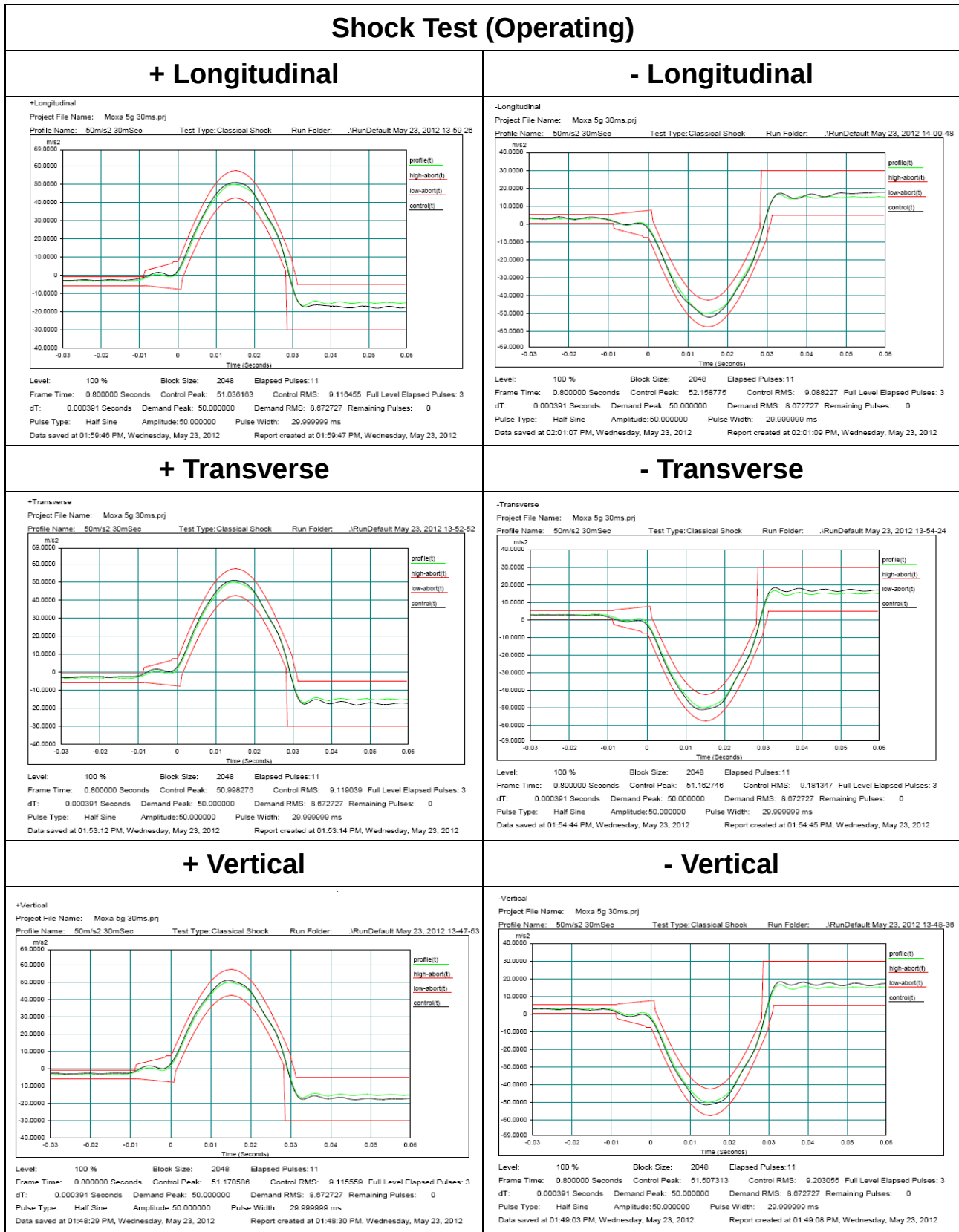
5. Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	PASS	PASS
Visual inspection	Refer to QA-W-010/Defect Inspection Criterion	OK	N/A	PASS
Remark				

6. Test Photograph :



7. Test Frequency Curve :



Package Vibration & Drop Test

1. Test Date & Equipments :

Test Date	2012/08/30		
Instrument	Manufacturer	Model / Serial No.	Next Cal. Date
Vibration Tester	KING DESIGN	KD-9363EM-1000F2K-50N 250/ NX108226200	2013/07/31
Controller	DACTRON FRONT-End Box	11812803	2013/07/31
Control Accelerometer	Wilcoxon Research WR-777	WR-784A /28972	2013/07/31
Drop Tester	KING DESIGN	KD -128	N/A

2. Sample Configuration & Quantity Under Test :

Product Model	NPort 5450AI-M12-T
Sample Source	Engineering Sample
Total Quantity	NPort 5150AI-M12-T: 3 Units NPort 5250AI-M12-T: 3 Units NPort 5450AI-M12-T: 4 Units
Sample S/N	NPort 5150AI-M12-T-01-F, NPort 5150AI-M12-T-02-F, NPort 5150AI-M12-T-03-F, NPort 5250AI-M12-T-01-F, NPort 5250AI-M12-T-02-F, NPort 5250AI-M12-T-03-F, NPort 5450AI-M12-T-01-F, NPort 5450AI-M12-T-02-F, NPort 5450AI-M12-T-03-F, NPort 5450AI-M12-T-04-F

3. Test Parameter :

Vibration

Parameter	Value
Conditions	Standard IEC 60068-2-64
	Test category Fh
	Random Wave(Non-Operating)
	Frequency 5~500 Hz
	Accelerate 3 g rms
	PSD 0.018 g ² /Hz
	Test Axis X, Y, Z
	Total Time(Three Axis) 1 hr each axis Total 3 hrs
Sample status	Non-Operating
Checks , measurements	1.Performance Check: The performance check was carried out before and after the package vibration test. 2.Visual inspection: The visual inspection was carried out before and after the package vibration test.

Drop

Parameter	Value
Conditions	Standard IEC 60068-2-32, ISTA-2A
	Phase One Corner Three Edges Six Faces
	Height 100 cm
	Package Weight 10.02 Kg
	Package Dimension 430 x 320 x 380 (mm)
Sample status	Non-Operating
Checks , measurements	1.Performance Check: The performance check was carried out before and after the package drop test. 2.Visual inspection: The visual inspection was carried out before and after the package drop test.

4. Vibration Test Photograph :

Random Vibration Test (Package)

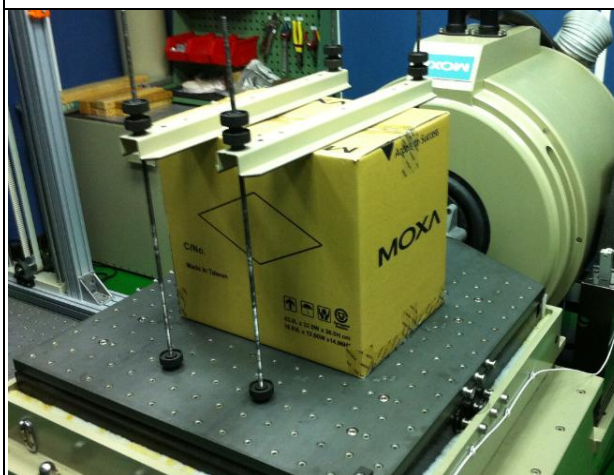
Axis X



Axis Y



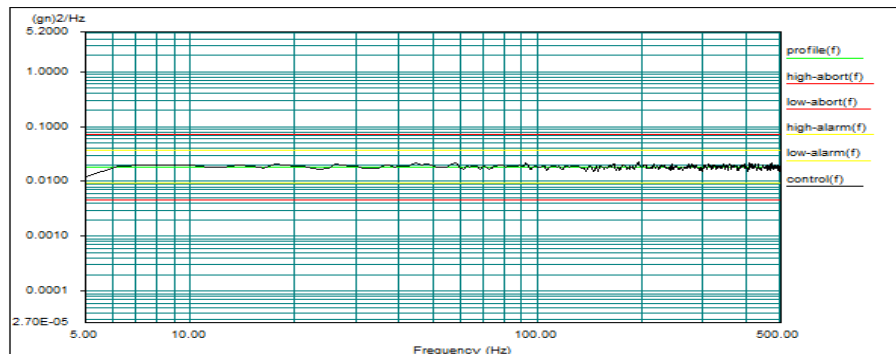
Axis Z



5. Vibration Test Frequency Curve :

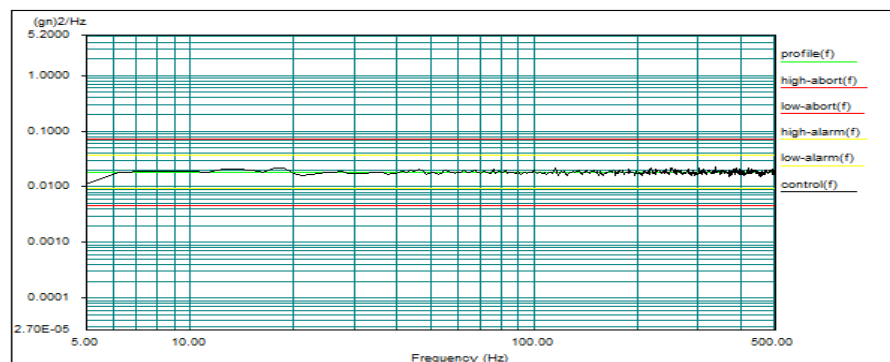
5~500 Hz 3 g rms (Package)

Axis X



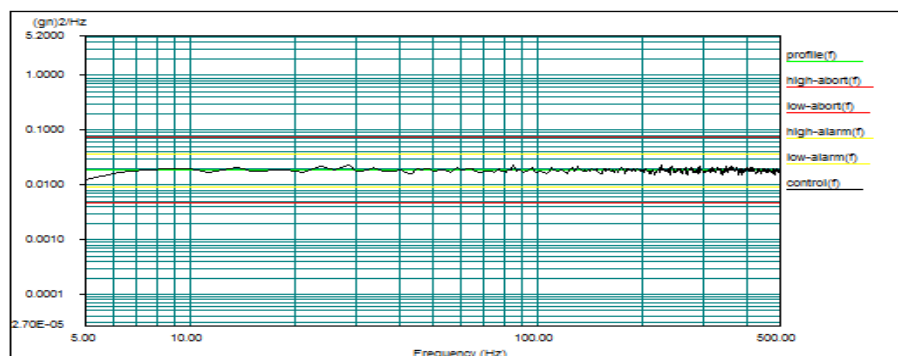
Level: 100 %
Control RMS: 3.002785 g0. Full Level Elapsed Time: 01:00:00 Lines: 400 Frame Time: 0.800000 Seconds
Demand RMS: 3.002162 g0. Remaining Time: 00:00:00 DOF: 154 dF: 1.250000 Hz

Axis Y



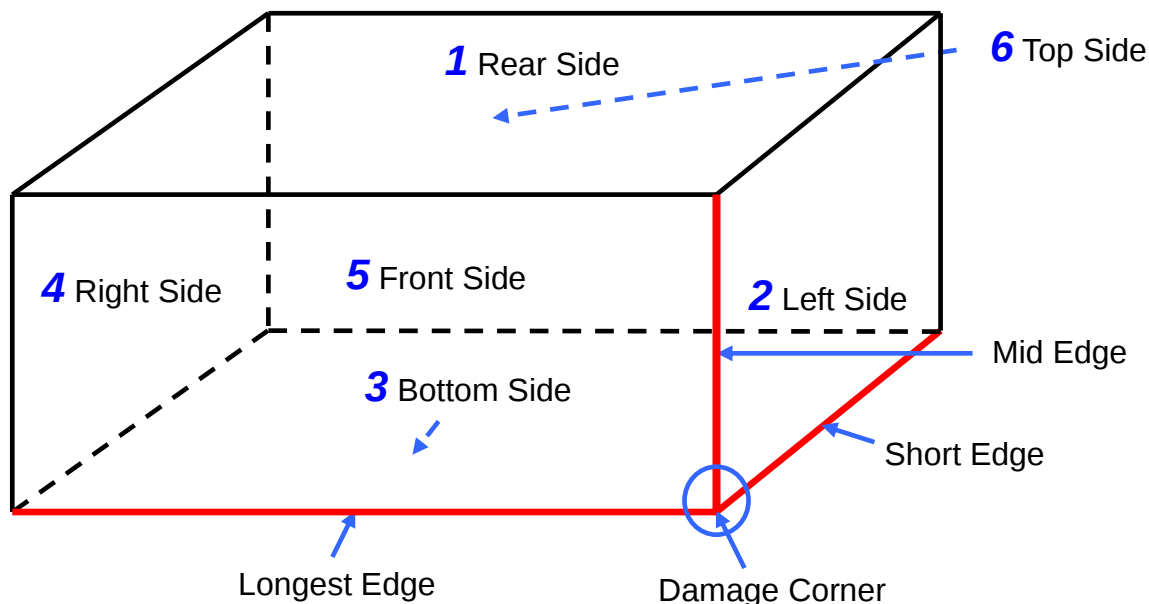
Level: 100 %
Control RMS: 3.003193 g0. Full Level Elapsed Time: 01:00:00 Lines: 400 Frame Time: 0.800000 Seconds
Demand RMS: 3.002162 g0. Remaining Time: 00:00:00 DOF: 154 dF: 1.250000 Hz

Axis Z



Level: 100 %
Control RMS: 3.011101 g0. Full Level Elapsed Time: 01:00:00 Lines: 400 Frame Time: 0.800000 Seconds
Demand RMS: 3.002162 g0. Remaining Time: 00:00:00 DOF: 154 dF: 1.250000 Hz

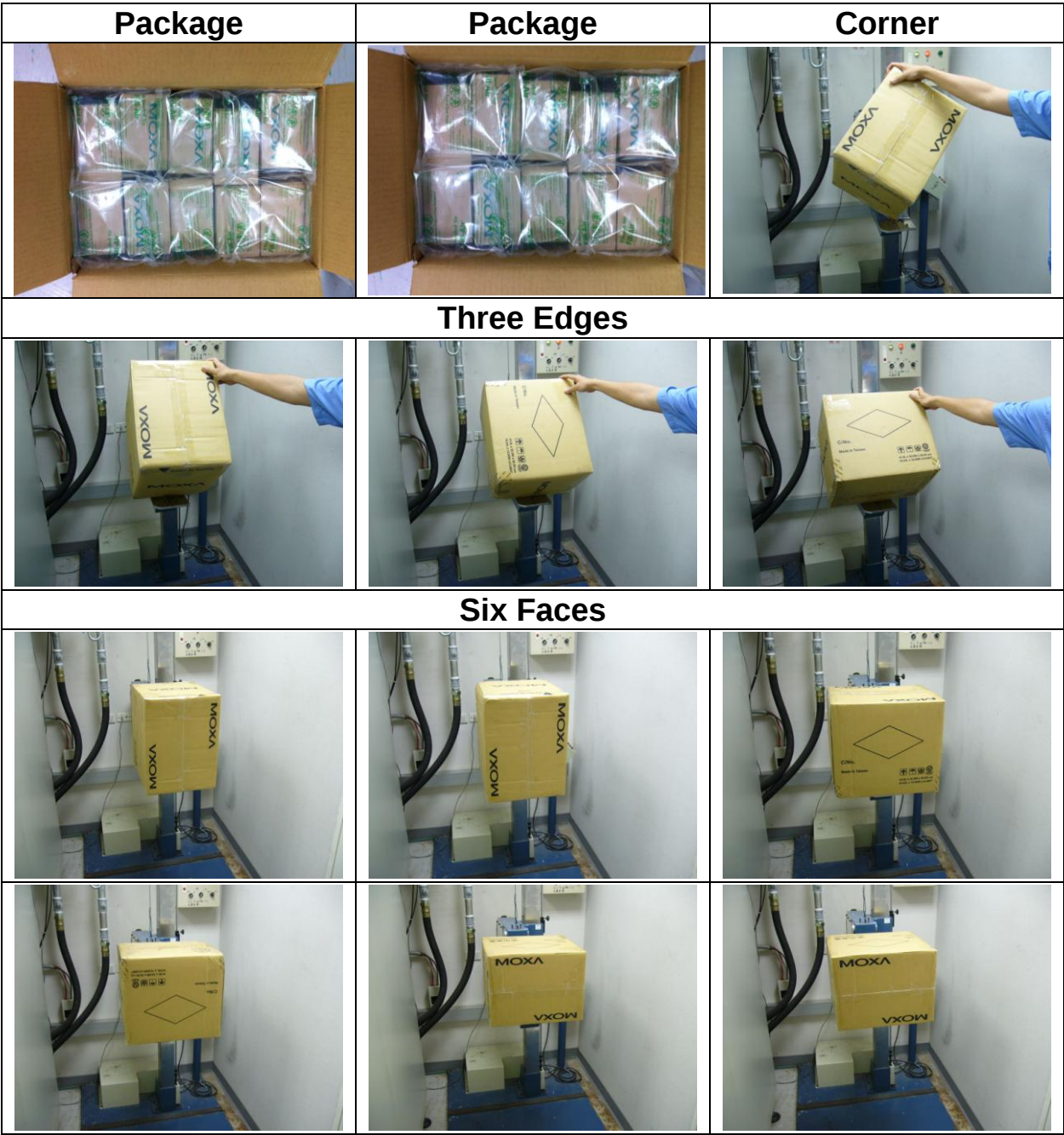
6. Drop Test Drawing :



7. Drop Test Sequence :

No.	Orientation	Specific corner, edge or face
a	Corner	most fragile face-3 corner
b	Edge	shortest edge radiating from the corner tested
c	Edge	next longest edge radiating from the corner tested
d	Edge	longest edge radiating from the corner tested
e	Face	one of the smallest faces
f	Face	opposite small face
g	Face	one of the medium faces
h	Face	opposite medium face
i	Face	one of the largest faces
j	Face	opposite large face

8. Drop Test Photograph :



9. The acceptance requirements :

- a) no failure or damage shall occur
- b) the functional check shall not show any failure or damage nor any results which are beyond the specified tolerance

10. Result : PASS

Item	Spec.	Checks , measurements		
		Before	During	After
Performance check	Refer to Hardware engineering specification	OK	N/A	PASS
Visual inspection	Refer to QA-W-010/Defect Inspection Criterion	OK	N/A	PASS
Remark				