

TEST REPORT



Report No. : SGS-R13-0686-EN
Applicant : SAMSUNG TECHWIN Co., Ltd.
Address : SAMSUNG TECHWIN R&D Center, #6 319 beongil,
Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do
Product : NETWORK CAMERA
Model : SNV-6012M
Environment : Temp. (25 ± 3) °C, Humidity (42 ± 5) % R.H.
Test Date : June 12, 2013 ~ June 13, 2013
Standard : EN 50155: 2007 Electronic equipment used on rolling
stock (Section 12.2.11)
EN 61373: 2010 Rolling stock equipment - shock and
vibration tests (Category 1 class A)
Test Result : Refer to the attached document
Use of report : Validation

This is certified that the above mentioned products have been tested for the sample provided by client.

Confirmation	Tested by Name : Cha, Min-ha	Approved by Title : Technical Manager Name : Kim, Dong-kyun
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This is to certify that the sample submitted by client above has been tested. The above test certificate is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

June 18, 2013

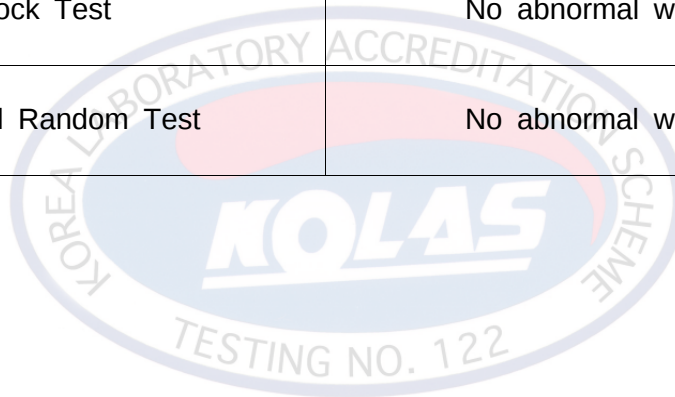
SGS KOREA Co., Ltd.

Accredited by KOLAS, Republic of KOREA

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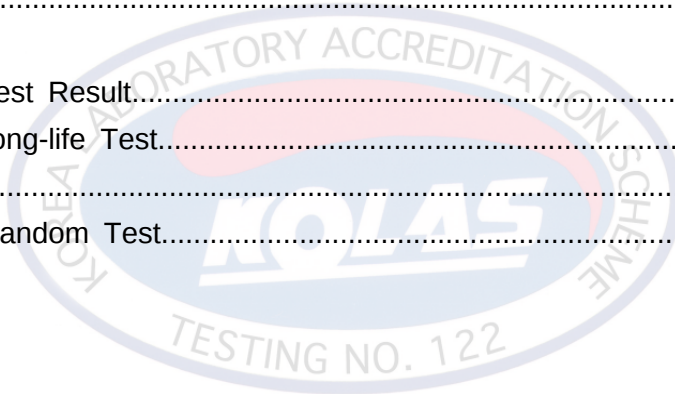
Summary of Test Results

NETWORK CAMERA / SNV-6012M	
TEST ITEM	TEST RESULT
Simulated Long-life Test	No abnormal was found
Shock Test	No abnormal was found
Functional Random Test	No abnormal was found



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1. Overview

As requested by the client, this test was conducted on test sample according to the test specification presented by the client.

2. Product

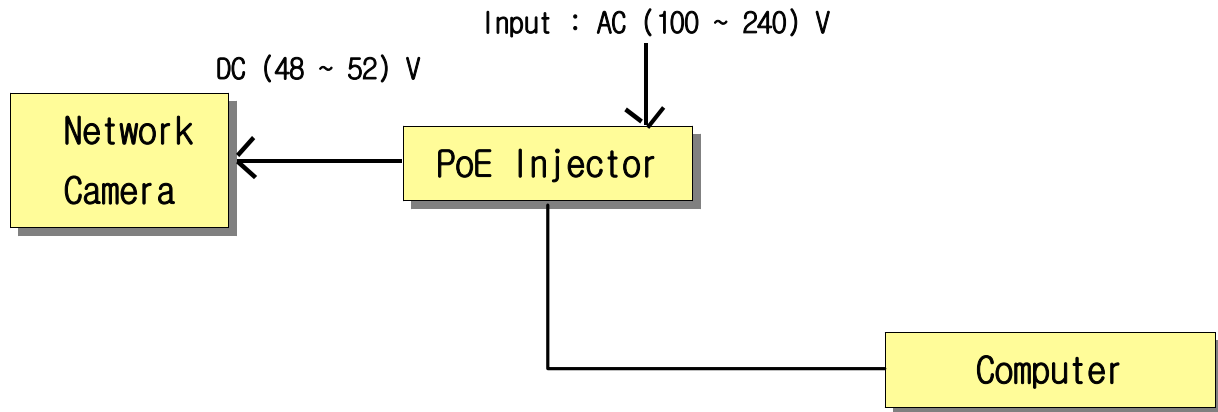
2.1 Description

Applicant : SAMSUNG TECHWIN Co., Ltd.
Manufacturer : SAMSUNG TECHWIN Co., Ltd.
Product : NETWORK CAMERA
Model : SNV-6012M
Serial No. : N/A
Control Voltage : DC (48 ~ 52) V

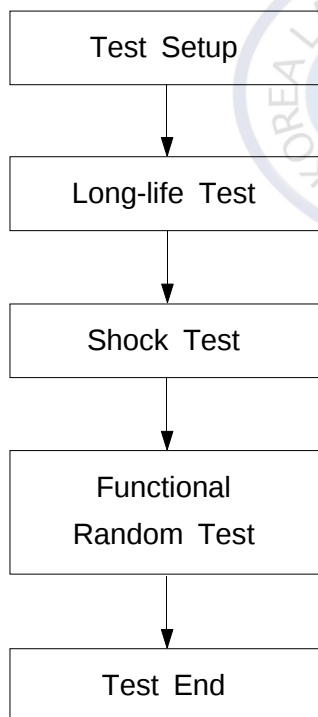
2.2 Photograph



2.3 System Configuration



3. Test Process



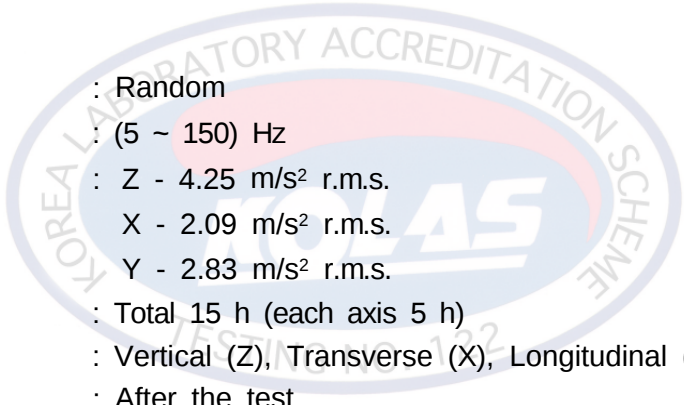
4. Test Condition & Test Result

Refer to each test report (Next page)

4.1 Simulated Long-life Test

Applicant	SAMSUNG TECHWIN Co., Ltd.	Dept. in charge	Reliability Test Team
Product	NETWORK CAMERA	Tester	Cha, Min-ha (+82-31-548-0725)
Model	SNV-6012M	Date	June 12, 2013 ~ June 13, 2013
Serial No.	N/A		
Standard	EN 61373: 2010 (Category 1 class A)	Page	7

(1) Test Conditions

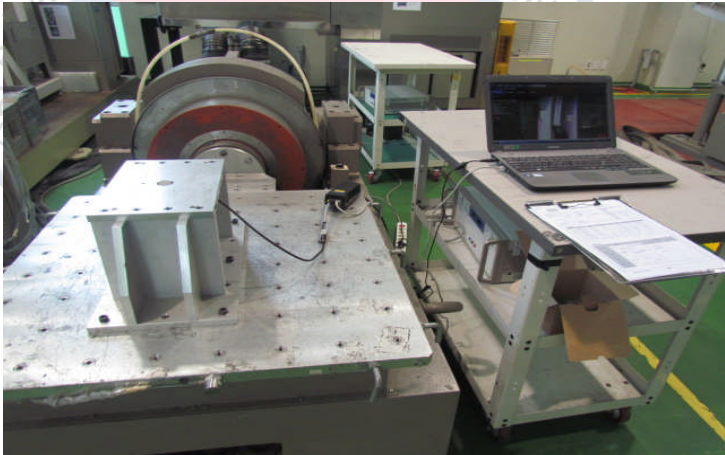
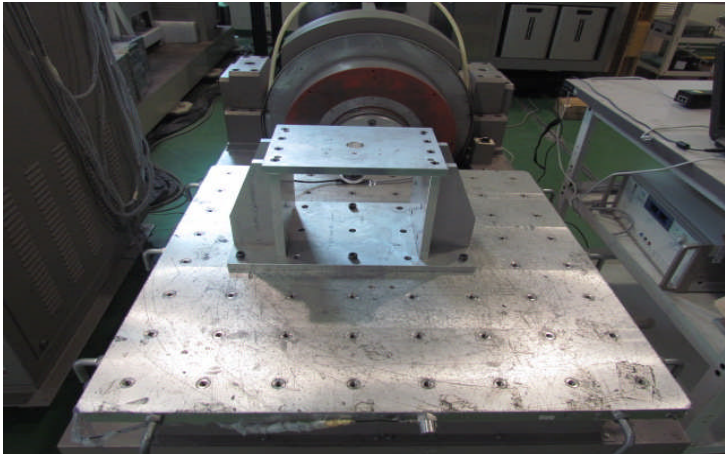
- 
- 1) Test type : Random
 - 2) Frequency : (5 ~ 150) Hz
 - 3) Acceleration : Z - 4.25 m/s² r.m.s.
X - 2.09 m/s² r.m.s.
Y - 2.83 m/s² r.m.s.
 - 4) Test time : Total 15 h (each axis 5 h)
 - 5) Test axis : Vertical (Z), Transverse (X), Longitudinal (Y)
 - 6) Check time : After the test
 - 7) Sample condition : Unpackaged product / Non-operation
 - 8) Sample quantity : 1 EA

(2) Environment Condition : Temperature (25 ± 3) °C, Humidity (42 ± 5) % R.H.

(3) Test Method

- 1) Perform a visual inspection and an operational check for the specimen.
- 2) Fix the specimen on the vibration table.
- 3) Operate the vibration tester.
- 4) Repeat from steps 1) to step 3) for each required axis.
- 5) Perform a final visual inspection and an operational check for the specimen.

(4) Test Photograph

Test axis	Test photograph
Vertical (Z)	
Transverse (X)	
Longitudinal (Y)	

(5) Test Equipment

Description	Manufacturer and Model	Serial Number	The due date of next Calibration	Calibration Laboratory
Vibration Tester	Shinken/G-0215NS	SG-4589	2014. 05. 16	SICT
Accelerometer	FUJICERA/S41SCB	0107	2014. 05. 16	SICT

(6) Test Result

Check List	Test Result
1. Visual inspection -. Mechanical damage such as deformation, crack, separating, loosening of screw, etc.	No abnormal was found
2. Performance check -. display output check	Refer to ※ Appendix 1

※ Appendix 1. Performance check

-. Display output check



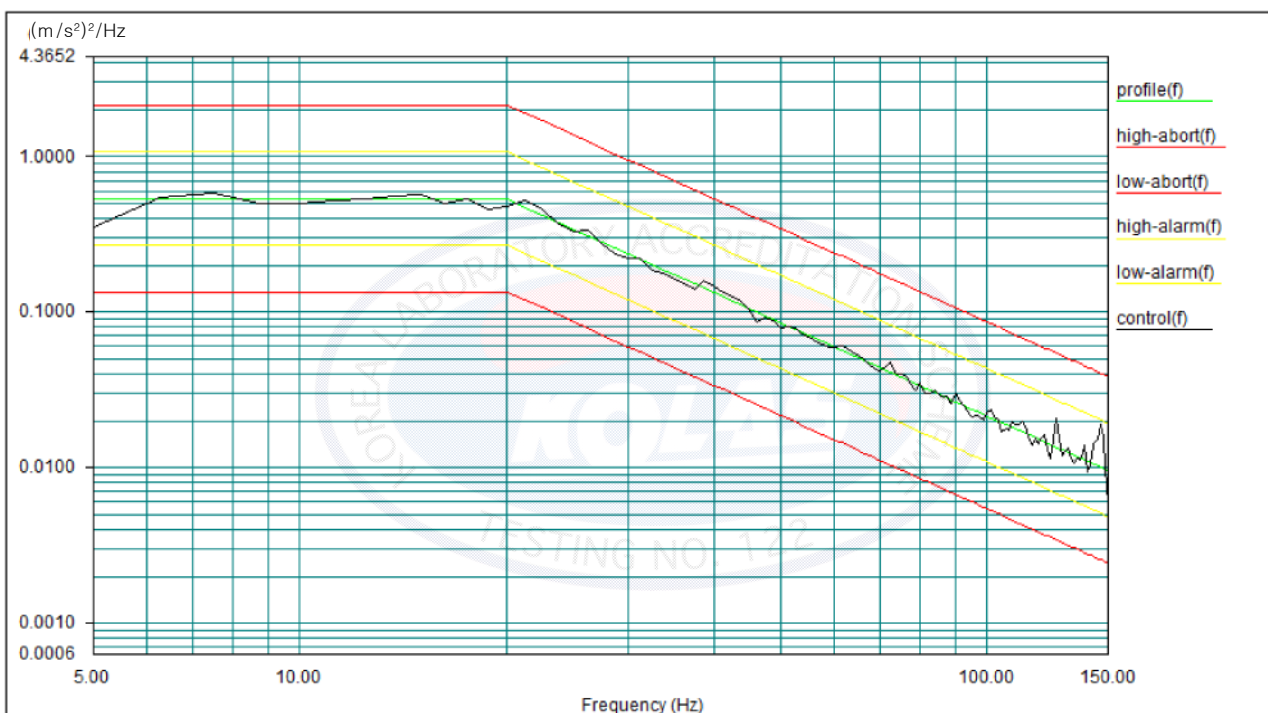
※ Appendix 2. Long-life Test Data

Project File Name: EN 50155 .prj

Profile Name: Vertical / Long life test

Test Type: Random

Run Folder: \Run June 12, 2013



Level: 0 dB

Control RMS: 4.165604 m/s²

Full Level Elapsed Time: 04:59:58

Lines: 400

Frame Time: 0.800000 Seconds

Demand RMS: 4.170134 m/s²

Remaining Time: 00:00:00

DOF: 154

dF: 1.250000 Hz

Data saved at 02:42:20 PM, Wednesday, June 12, 2013

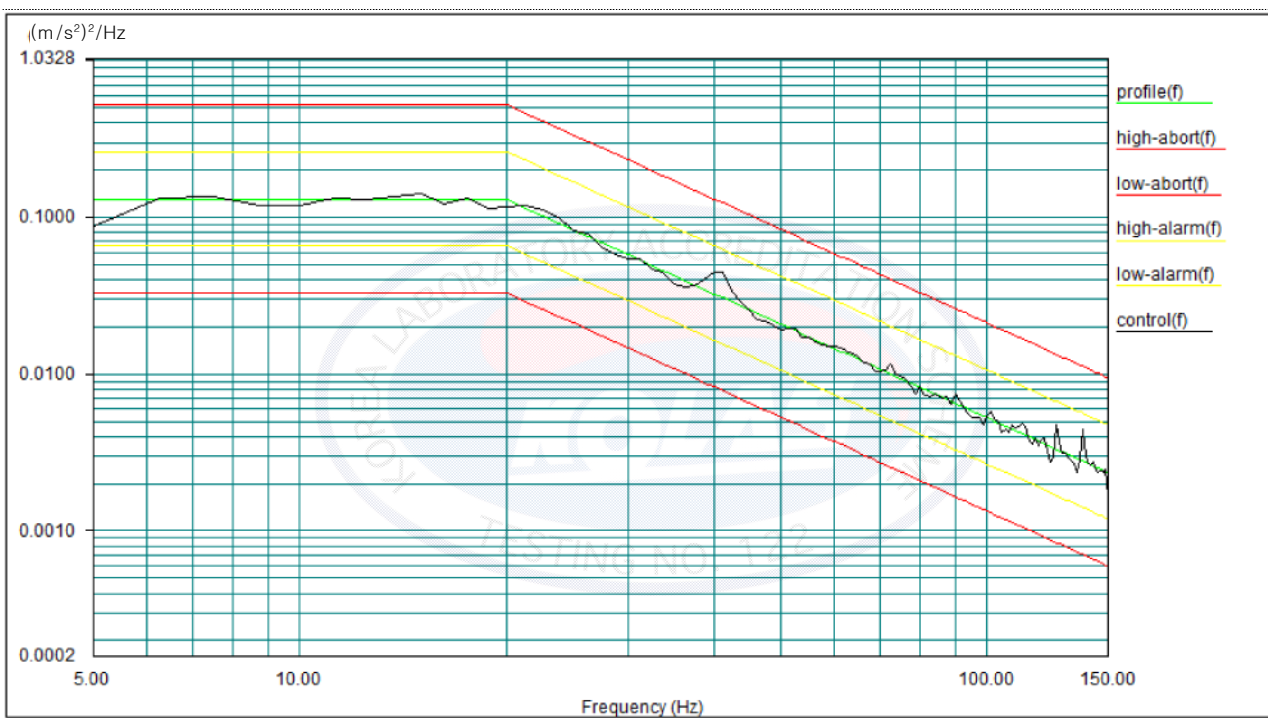
Report created at 02:42:26 PM, Wednesday, June 12, 2013

Project File Name: EN 50155 .prj

Profile Name: Transverse / Long life test

Test Type: Random

Run Folder: \Run June 12, 2013



Level: 0 dB

Control RMS: 2.079776 m/s²

Full Level Elapsed Time: 04:59:57

Lines: 400

Frame Time: 0.800000 Seconds

Demand RMS: 2.069331 m/s²

Remaining Time: 00:00:00

DOF: 154

dF: 1.250000 Hz

Data saved at 01:47:11 AM, Thursday, June 13, 2013

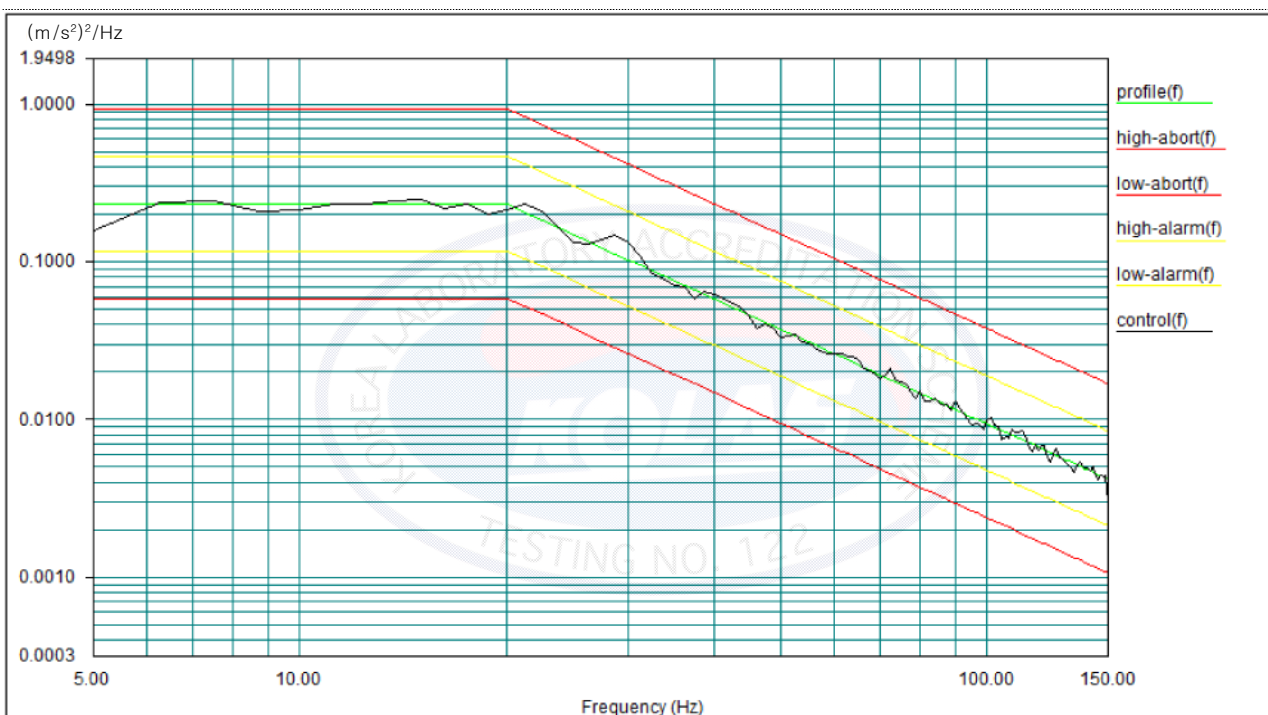
Report created at 01:47:13 AM, Thursday, June 13, 2013

Project File Name: EN 50155 .prj

Profile Name: Longitudinal / Long life test

Test Type: Random

Run Folder: \Run June 12, 2013



Level: 0 dB

Control RMS: 2.788262 m/s²

Full Level Elapsed Time: 04:59:57

Lines: 400

Frame Time: 0.800000 Seconds

Demand RMS: 2.765682 m/s²

Remaining Time: 00:00:00

DOF: 154

dF: 1.250000 Hz

Data saved at 06:25:40 PM, Wednesday, June 12, 2013

Report created at 06:25:41 PM, Wednesday, June 12, 2013

4.2 Shock Test

Applicant	SAMSUNG TECHWIN Co., Ltd.	Dept. in charge	Reliability Test Team
Product	NETWORK CAMERA	Tester	Cha, Min-ha (+82-31-548-0725)
Model	SNV-6012M	Date	June 12, 2013 ~ June 13, 2013
Serial No.	N/A		
Standard	EN 61373: 2010 (Category 1 class A)	Page	10

(1) Test Conditions

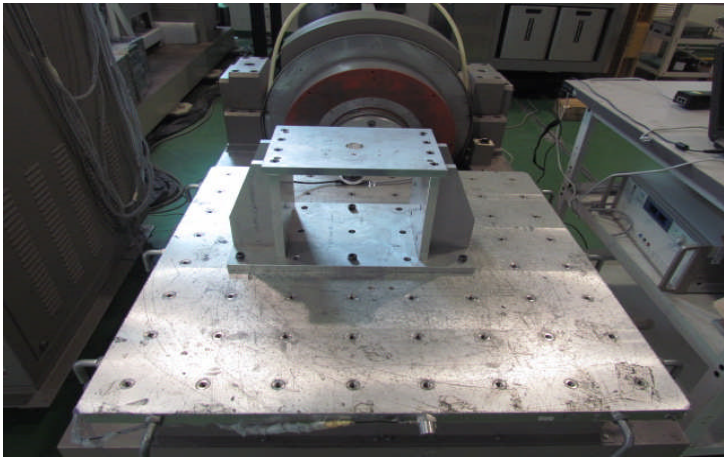
- 1) Test type : Half sine
- 2) Acceleration : Z - 30 m/s², X - 30 m/s², Y - 50 m/s²
- 3) Duration : 30 ms
- 4) Test time : 18 times in total
(6 times in each axis : positive 3 / negative 3)
- 5) Test axis : Vertical (Z), Transverse (X), Longitudinal (Y)
- 6) Check time : After the test
- 7) Sample condition : Unpackaged product / Non-operation
- 8) Sample quantity : 1 EA

(2) Environment Condition : Temperature (25 ± 3) °C, Humidity (42 ± 5) % R.H.

(3) Test Method

- 1) Perform a visual inspection and an operational check for the specimen.
- 2) Fix the specimen on the vibration table.
- 3) Operate the vibration tester.
- 4) Repeat from steps 1) to step 3) for each required axis.
- 5) Perform a final visual inspection and an operational check for the specimen.

(4) Test Photograph

Test axis	Test photograph
Vertical (Z)	
Transverse (X)	
Longitudinal (Y)	

(5) Test Equipment

Description	Manufacturer and Model	Serial Number	The due date of next Calibration	Calibration Laboratory
Vibration Tester	Shinken/G-0215NS	SG-4589	May 16, 2014	SICT
Accelerometer	FUJICERA/S41SCB	0104	June 27, 2013	KRISS

(6) Test Result

Check List	Test Result
1. Visual inspection -. Mechanical damage such as deformation, crack, separating, loosening of screw, etc.	No abnormal was found
2. Performance check -. Display output check	Refer to ※ Appendix 1

※ Appendix 1. Performance check

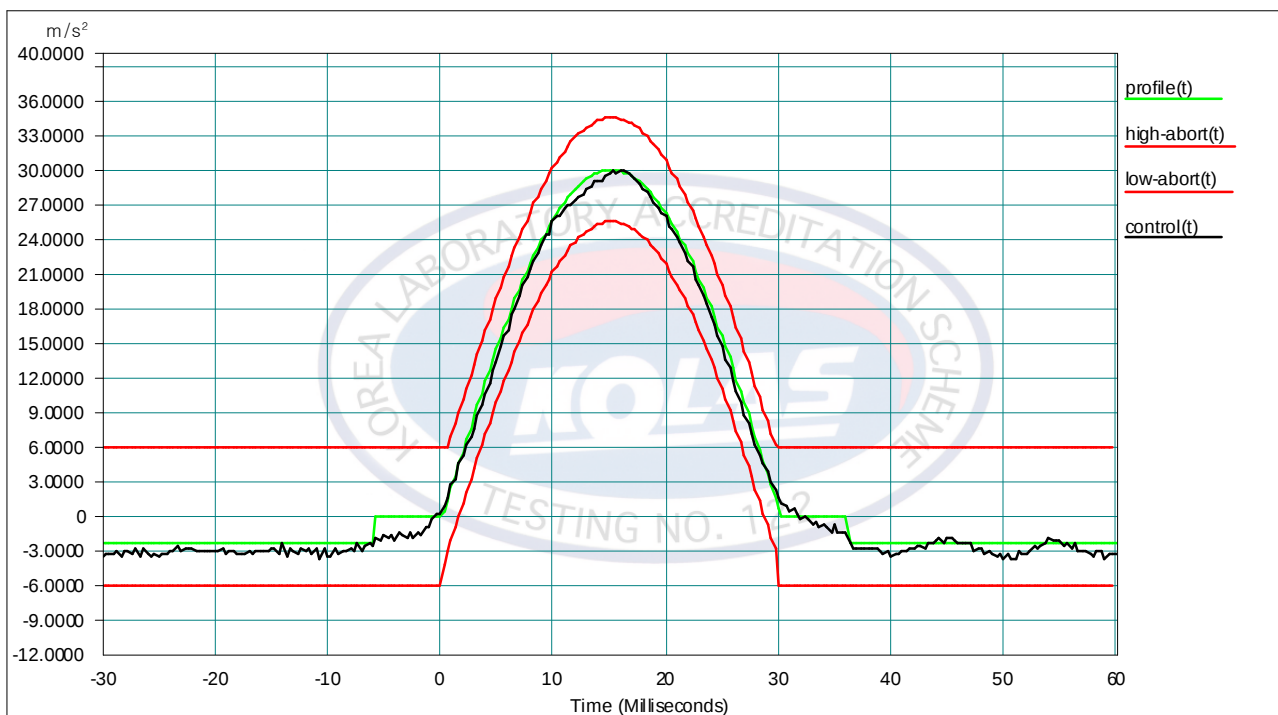
-. Display output check



※ Appendix 2. Shock Test Data

Project File Name: EN 50155 .prj
Profile Name: Shock (Z) - Positive
Run Folder: \Run June 12, 2013

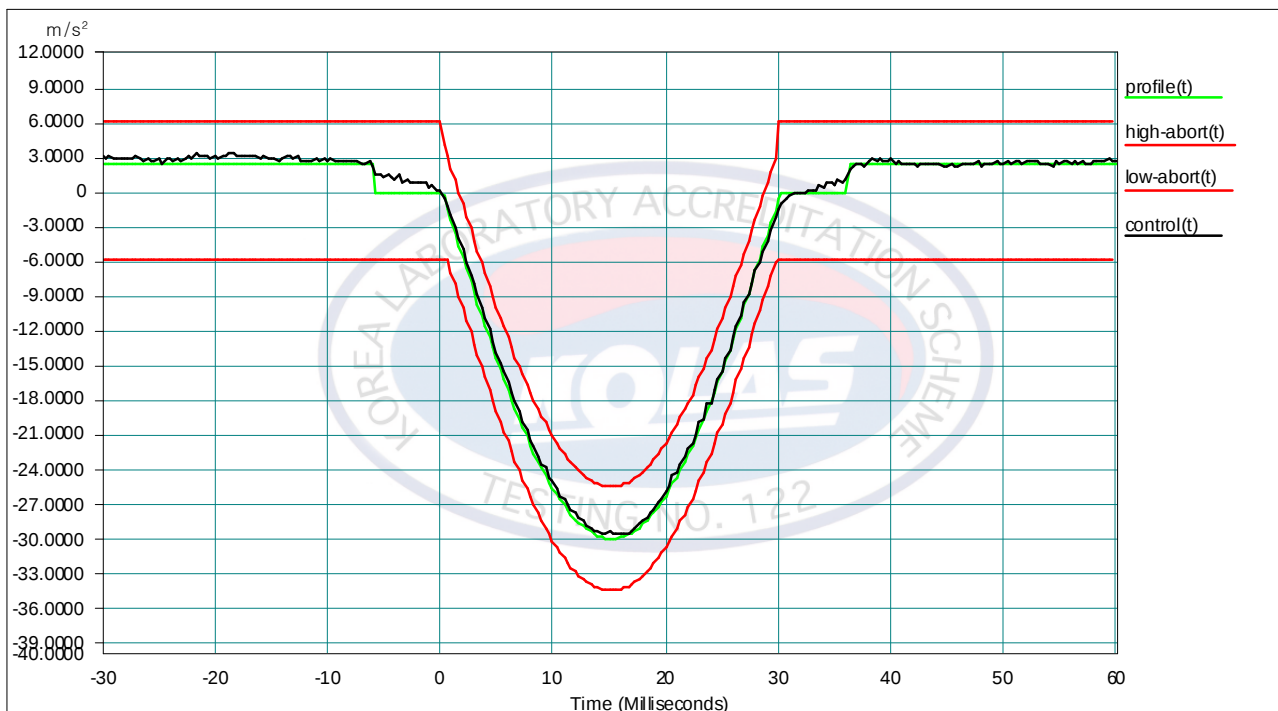
Test Type: Classical Shock



Level: 100%	Block Size: 4096	Elapsed Pulses: 10
Frame Time: 1.365333 Seconds	Control Peak: 29.987766 m/s ²	Control RMS: 3.390134 m/s ²
Full Level Elapsed Pulses: 3	dT: 0.000333 Seconds	Demand Peak: 30.000000 m/s ²
Demand RMS: 3.365699 m/s ²	Remaining Pulses: 0	
Pulse Type: Half Sine	Amplitude: 30.000000 m/s ²	
Data saved at 02:55:39 PM, Wednesday, June 12, 2013		
Report created at 02:55:41 PM, Wednesday, June 12, 2013		

Project File Name: EN 50155 .prj
 Profile Name: Shock (Z) - Negative
 Run Folder: .\Run June 12, 2013

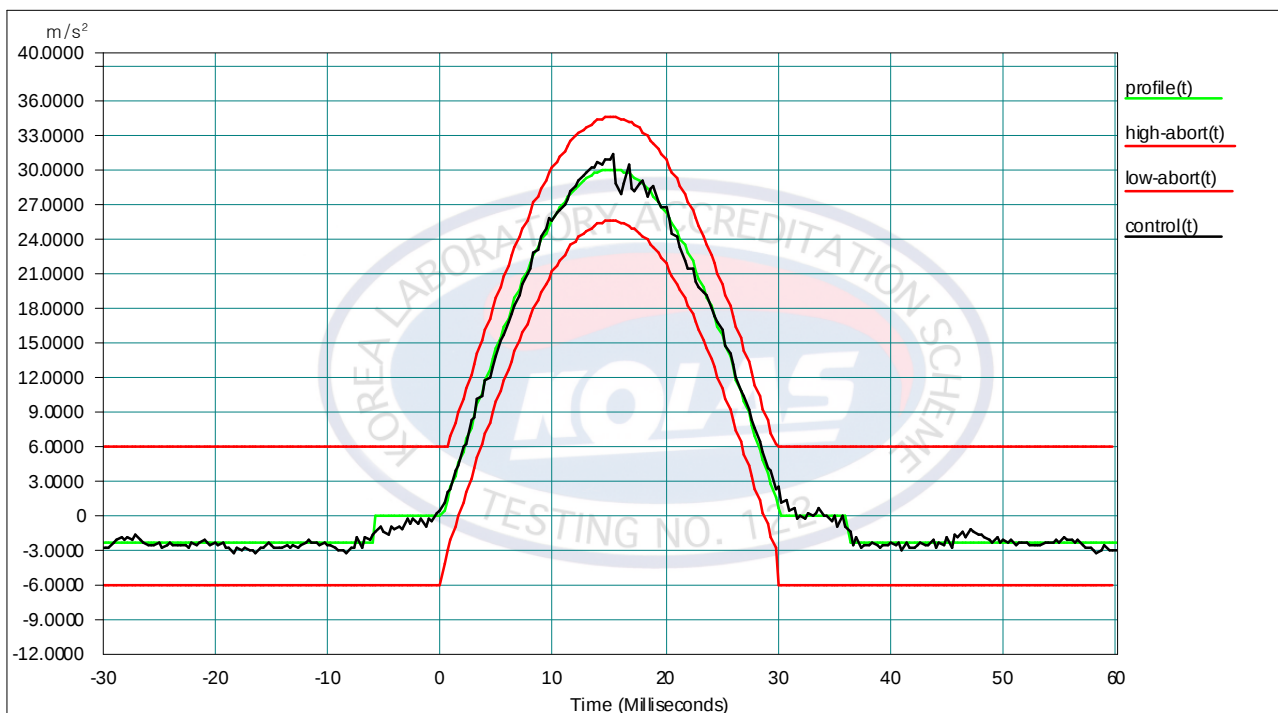
Test Type: Classical Shock



Level: 100%	Block Size: 4096	Elapsed Pulses: 10
Frame Time: 1.365333 Seconds	Control Peak: 29.595325 m/s ²	Control RMS: 3.371370 m/s ²
Full Level Elapsed Pulses: 3	dT: 0.000333 Seconds	Demand Peak: 30.000000 m/s ²
Demand RMS: 3.365699 m/s ²	Remaining Pulses: 0	
Pulse Type: Half Sine	Amplitude: 30.000000 m/s ²	
Data saved at 02:56:44 PM, Wednesday, June 12, 2013		
Report created at 02:56:46 PM, Wednesday, June 12, 2013		

Project File Name: EN 50155 .prj
Profile Name: Shock (X) - Positive
Run Folder: .\Run June 13, 2013

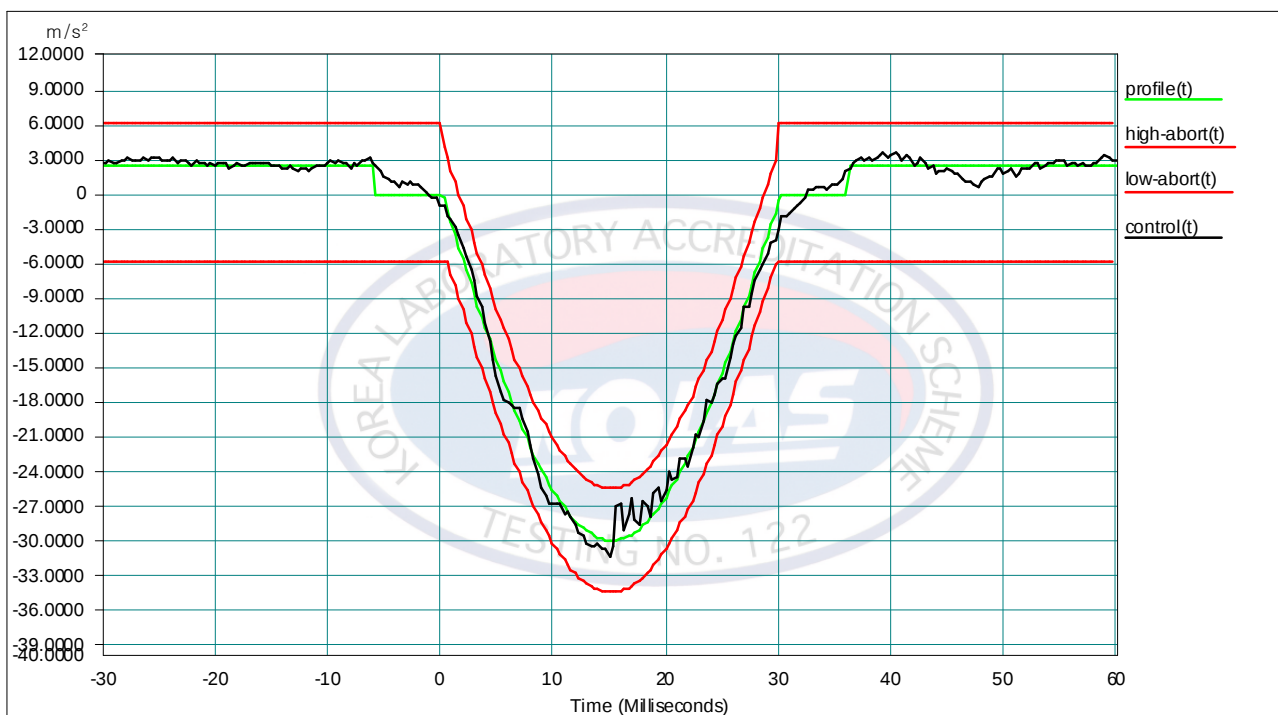
Test Type: Classical Shock



Level: 100%	Block Size: 4096	Elapsed Pulses: 10
Frame Time: 1.365333 Seconds	Control Peak: 31.254267 m/s²	Control RMS: 3.377671 m/s²
Full Level Elapsed Pulses: 3	dT: 0.000333 Seconds	Demand Peak: 30.000000 m/s²
Demand RMS: 3.365699 m/s²	Remaining Pulses: 0	
Pulse Type: Half Sine	Amplitude: 30.000000 m/s²	
Data saved at 08:46:59 AM, Thursday, June 13, 2013		
Report created at 08:47:01 AM, Thursday, June 13, 2013		

Project File Name: EN 50155 .prj
Profile Name: Shock (X) - Negative
Run Folder: .\Run June 13, 2013

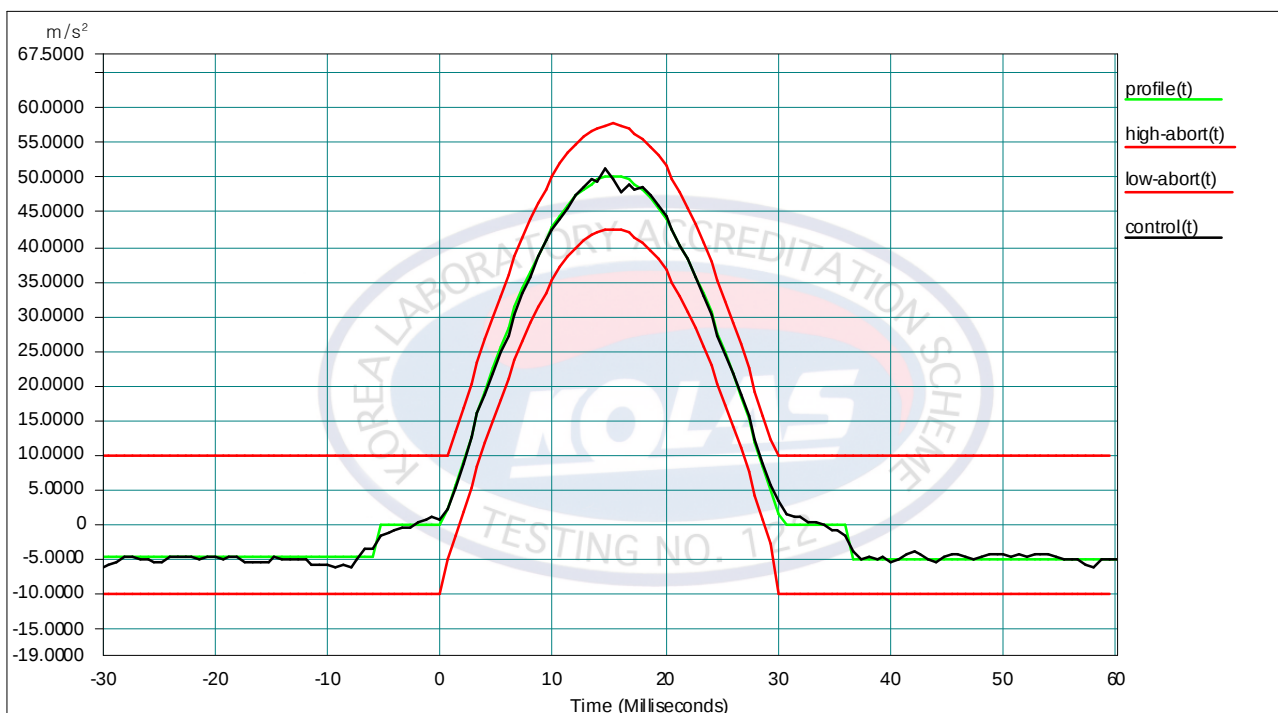
Test Type: Classical Shock



Level: 100%	Block Size: 4096	Elapsed Pulses: 10
Frame Time: 1.365333 Seconds	Control Peak: 31.462017 m/s ²	Control RMS: 3.379698 m/s ²
Full Level Elapsed Pulses: 3	dT: 0.000333 Seconds	Demand Peak: 30.000000 m/s ²
Demand RMS: 3.365699 m/s ²	Remaining Pulses: 0	
Pulse Type: Half Sine	Amplitude: 30.000000 m/s ²	
Data saved at 08:47:37 AM, Thursday, June 13, 2013		
Report created at 08:47:38 AM, Thursday, June 13, 2013		

Project File Name: EN 50155 .prj
Profile Name: Shock (Y) - Positive
Run Folder: .\Run June 13, 2013

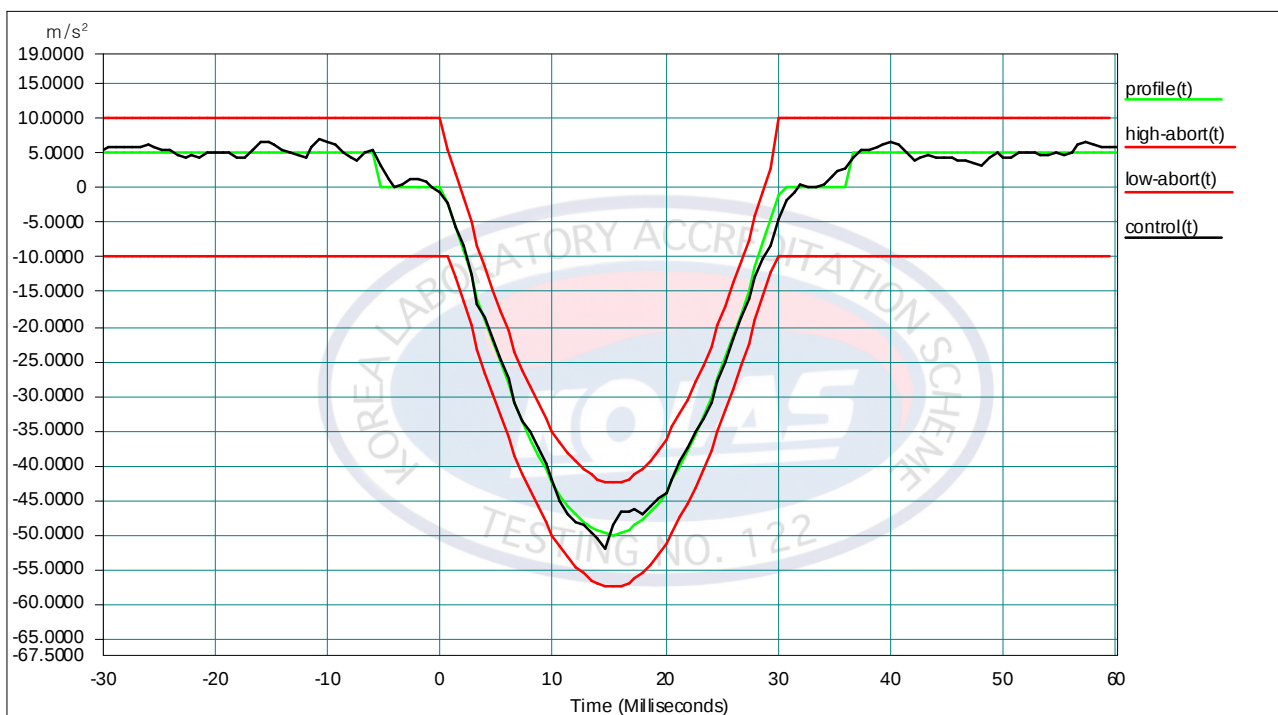
Test Type: Classical Shock



Level: 100%	Block Size: 2048	Elapsed Pulses: 10
Frame Time: 1.365333 Seconds	Control Peak: 51.325108 m/s ²	Control RMS: 5.698715 m/s ²
Full Level Elapsed Pulses: 3	dT: 0.000667 Seconds	Demand Peak: 50.000000 m/s ²
Demand RMS: 5.699245 m/s ²	Remaining Pulses: 0	
Pulse Type: Half Sine	Amplitude: 50.000000 m/s ²	
Data saved at 09:12:29 AM, Thursday, June 13, 2013		
Report created at 09:12:32 AM, Thursday, June 13, 2013		

Project File Name: EN 50155 .prj
Profile Name: Shock (Y) - Negative
Run Folder: .\Run June 13, 2013

Test Type: Classical Shock

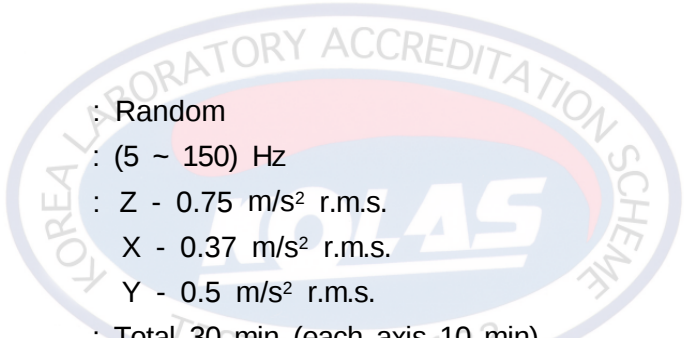


Level: 100%	Block Size: 2048	Elapsed Pulses: 10
Frame Time: 1.365333 Seconds	Control Peak: 50.191429 m/s ²	Control RMS: 5.696634 m/s ²
Full Level Elapsed Pulses: 3	dT: 0.000667 Seconds	Demand Peak: 50.000000 m/s ²
Demand RMS: 5.699245 m/s ²	Remaining Pulses: 0	
Pulse Type: Half Sine	Amplitude: 50.000000 m/s ²	
Data saved at 09:13:23 AM, Thursday, June 13, 2013		
Report created at 09:13:25 AM, Thursday, June 13, 2013		

4.3 Functional Random Test

Applicant	SAMSUNG TECHWIN Co., Ltd.	Dept. in charge	Reliability Test Team
Product	NETWORK CAMERA	Tester	Cha, Min-ha (+82-31-548-0725)
Model	SNV-6012M	Date	June 12, 2013
Serial No.	N/A		
Standard	EN 61373: 2010 (Category 1 class A)	Page	7

(1) Test Conditions

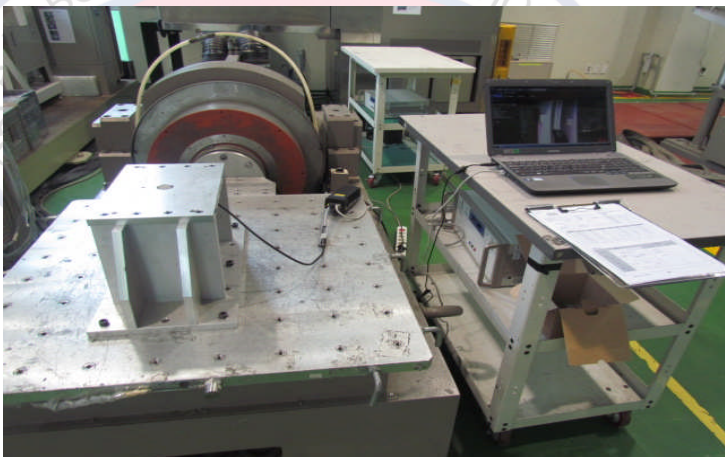
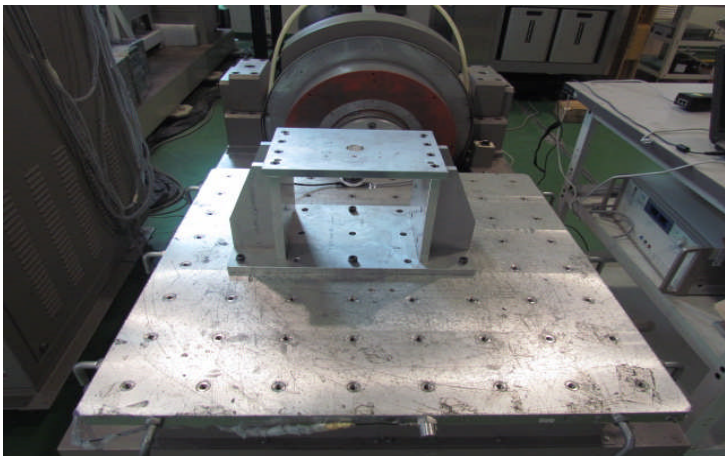
- 
- 1) Test type : Random
 - 2) Frequency : (5 ~ 150) Hz
 - 3) Acceleration : Z - 0.75 m/s² r.m.s.
X - 0.37 m/s² r.m.s.
Y - 0.5 m/s² r.m.s.
 - 4) Test time : Total 30 min (each axis 10 min)
 - 5) Test axis : Vertical (Z), Transverse (X), Longitudinal (Y)
 - 6) Check time : During the test
 - 7) Sample condition : Unpackaged product / Operation
 - 8) Sample quantity : 1 EA
 - 9) Input voltage : DC (48 ~ 52) V

(2) Environment Condition : Temperature (25 ± 3) °C, Humidity (42 ± 5) % R.H.

(3) Test Method

- 1) Perform a visual inspection and an operational check for the specimen.
- 2) Fix the specimen on the vibration table.
- 3) Operate the vibration tester.
- 4) Repeat from steps 1) to step 3) for each required axis.
- 5) Perform a final visual inspection and an operational check for the specimen.

(4) Test Photograph

Test axis	Test photograph
Vertical (Z)	
Transverse (X)	
Longitudinal (Y)	

(5) Test Equipment

Description	Manufacturer and Model	Serial Number	The due date of next Calibration	Calibration Laboratory
Vibration Tester	Shinken/G-0215NS	SG-4589	2014. 05. 16	SICT
Accelerometer	FUJICERA/S41SCB	0107	2014. 05. 16	SICT

(6) Test Result

Check List	Test Result
1. Visual inspection -. Mechanical damage such as deformation, crack, separating, loosening of screw, etc.	No abnormal was found
2. Performance check -. Display output check	Refer to ※ Appendix 1

※ Appendix 1. Performance check

-. Display output check



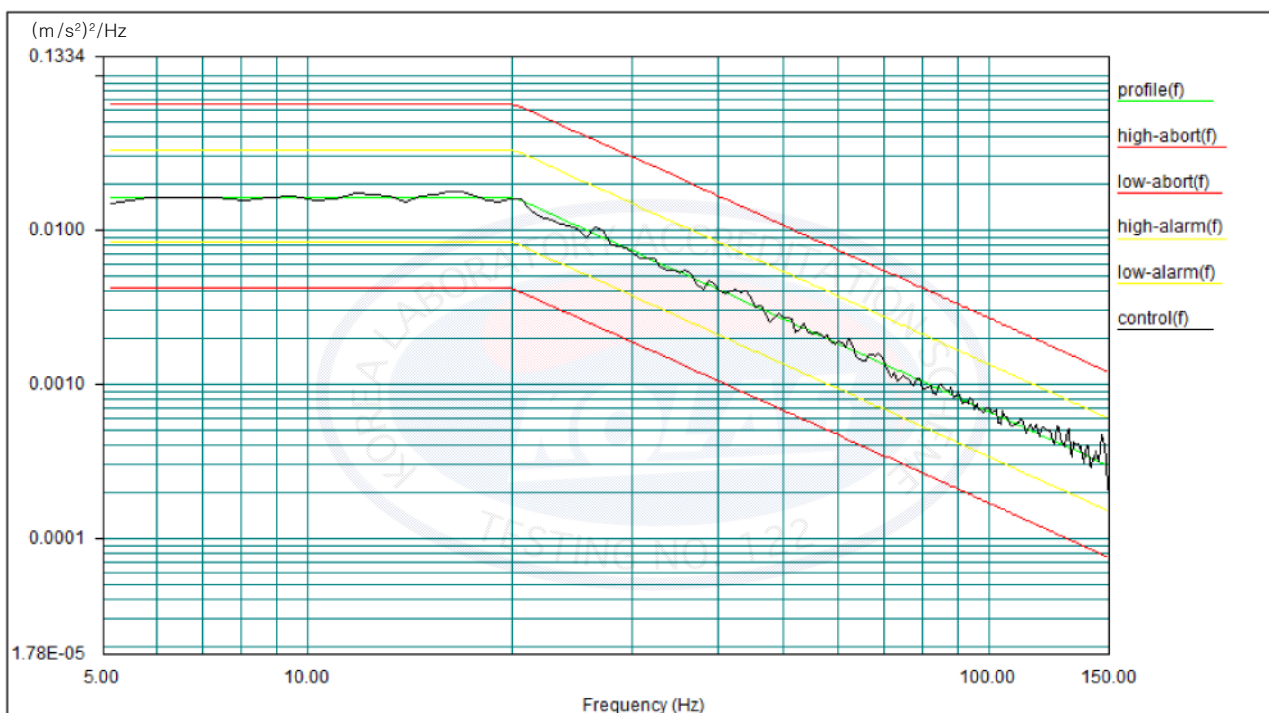
※ Appendix 2. Functional Random Test Data

Project File Name: EN 50155 .prj

Profile Name: Vertical / Functional Test

Test Type: Random

Run Folder: .\Run June 12, 2013



Level: 0 dB

Control RMS: 0.782874 m/s²

Full Level Elapsed Time: 00:10:00

Lines: 800

Frame Time: 1.365333 Seconds

Demand RMS: 0.738389 m/s²

Remaining Time: 00:00:00

DOF: 154

dF: 0.732422 Hz

Data saved at 05:48:56 PM, Tuesday, June 12, 2013

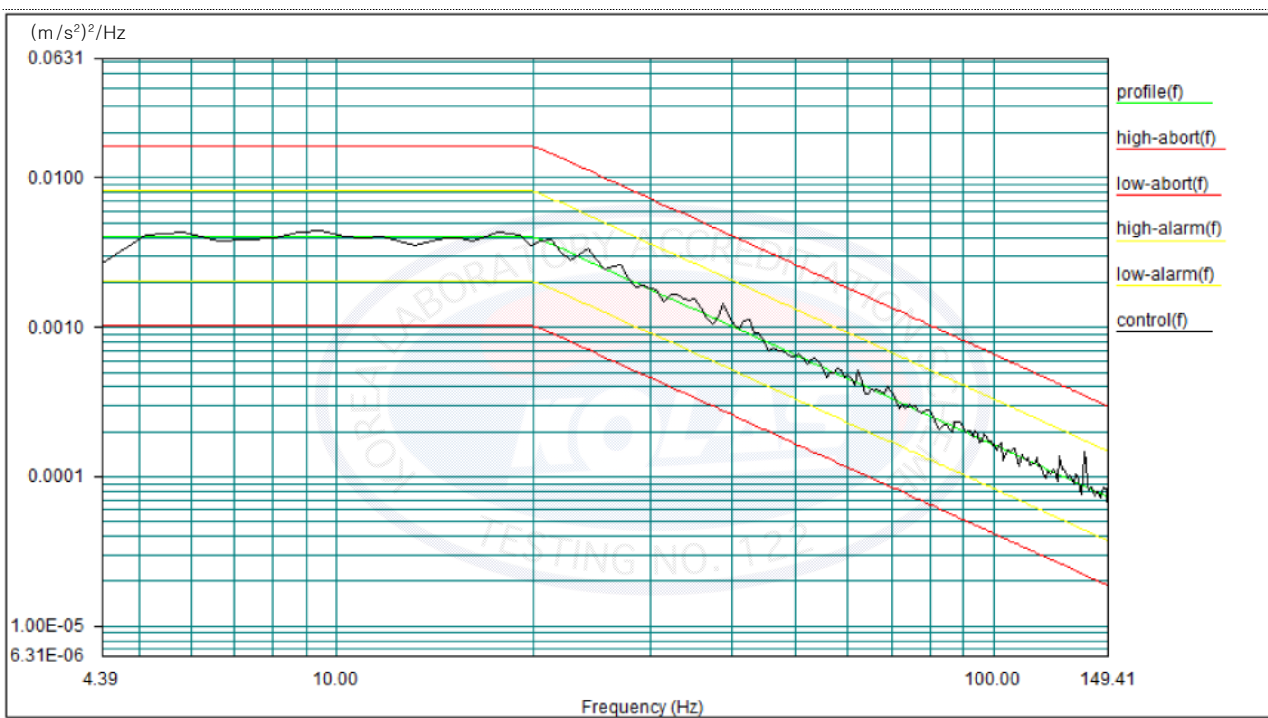
Report created at 06:05:11 PM, Tuesday, June 12, 2013

Project File Name: EN 50155 .prj

Profile Name: Transverse / Functional Test

Test Type: Random

Run Folder: \Run June 12, 2013



Level: 0 dB

Control RMS: 0.369917 m/s²

Full Level Elapsed Time: 00:10:00

Lines: 800

Frame Time: 1.365333 Seconds

Demand RMS: 0.366964 m/s²

Remaining Time: 00:00:00

DOF: 154

dF: 0.732422 Hz

Data saved at 08:54:19 AM, Thursday, June 12, 2013

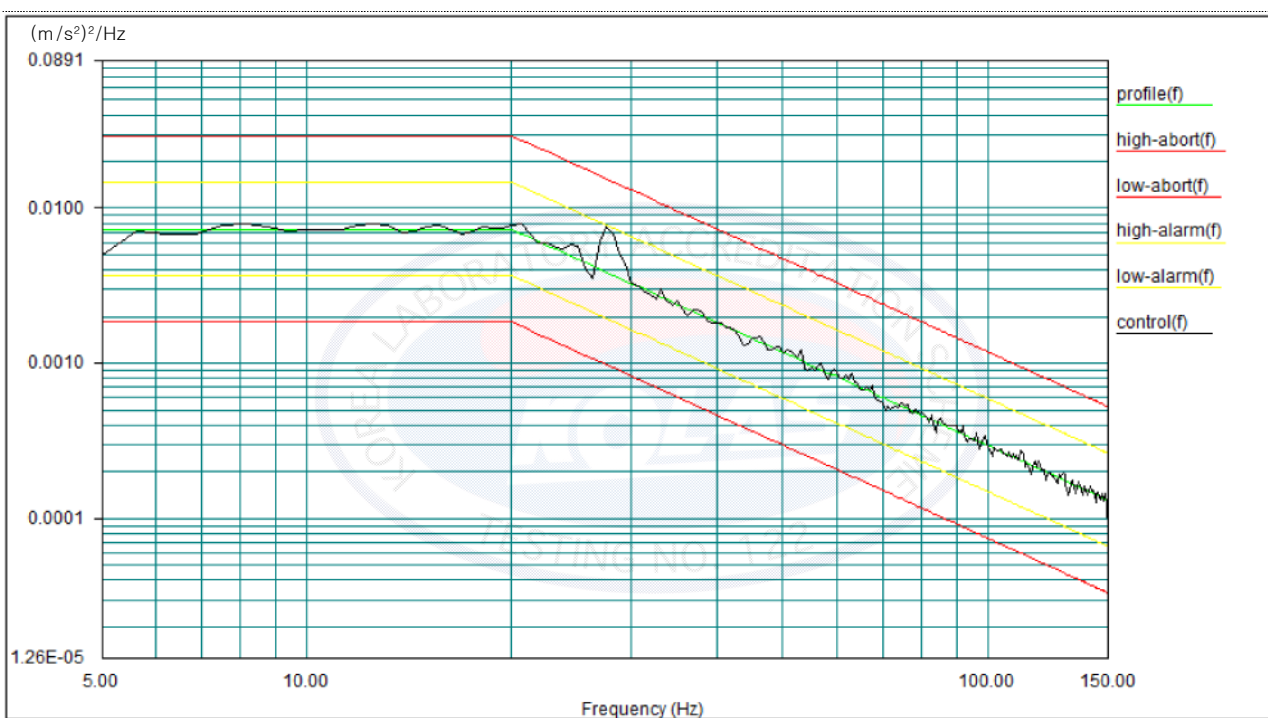
Report created at 08:54:21 AM, Thursday, June 12, 2013

Project File Name: EN 50155 .prj

Profile Name: Longitudinal / Functional Test

Test Type: Random

Run Folder: .\Run June 12, 2013



Level: 0 dB

Control RMS: 0.492955 m/s²

Full Level Elapsed Time: 00:10:00

Lines: 800

Frame Time: 1.600000 Seconds

Demand RMS: 0.487275 m/s²

Remaining Time: 00:00:00

DOF: 154

dF: 0.625000 Hz

Data saved at 05:24:36 PM, Wednesday, June 12, 2013

Report created at 05:24:37 PM, Wednesday, June 12, 2013