

Certificate of Test & Analysis

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Certificate No. : KTS-10-15300

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Client

- Company : SAMSUNG TECHWIN CO., LTD.
- Name : Chang-Suk, Oh
- Address : #42 Seongju-Dong, Changwon-si, Kyungsangnam-do, Korea

Date of Receipt : 19.Aug. 2010

Start Date of Test : 27.Aug. 2010

End Date of Test : 01.Sep. 2010

Date of Issue : 03.Sep. 2010

Use of Report : Quality

Test Sample : NETWORK CAMERA(SNV-5010P)

Test method used : EN 61373

Testing Environment : Temperature (23 ± 5) °C , Relative Humidity (40 ± 20) % R.H.

Test Results

Test Classify	Test Condition	Test Result	Test Method
Random vibration test 1	Refer to Page 2	Refer to Page 7	EN 61373
Random vibration test 2	Refer to Page 3	Refer to Page 7	EN 61373
Mechanical shock test	Refer to Page 4	Refer to Page 7	EN 61373

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
 This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Name : Man-Soo, Chang Tel. : +82-41-559-3191	Technical Chip Name : Hyeon-Dong, Shin E-Mail : hdshin@katech.re.kr
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Date. 03. Sep. 2010

President


 Korea Automotive Technology Institute

Test Method(1)

【 Name of the Test 】 : Random vibration test 1

【 Name of the Sample 】 : NETWORK CAMERA(SNV-5010P)

【 Sample Quantity 】 : 1 EA

【 Test Condition 】

1) ASD profile for the random vibration test of vertical direction

Test Type	Frequency (Hz)	PSD $((m/s^2)^2/Hz)$	Direction	Test Duration	Accelerometer Position (Control)	Test temp.
Random vibration test 1	5	0.0164	Z Axis	30min	Refer to [Photo. 1]	Room Temp.
	20	0.0164				
	150	-6dB/octave				
	GRMS	0.75				

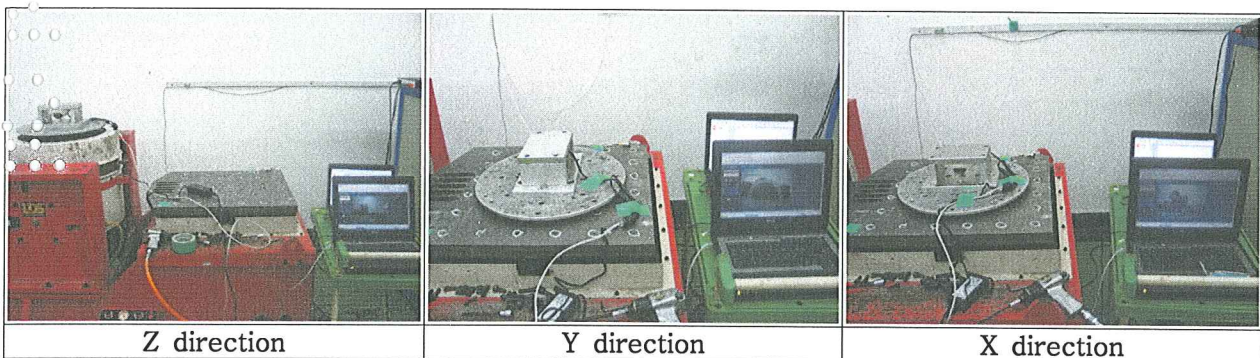
2) ASD profile for the random vibration test of lateral direction

Test Type	Frequency (Hz)	PSD $((m/s^2)^2/Hz)$	Direction	Test Duration	Accelerometer Position (Control)	Test temp.
Random vibration test 1	5	0.0041	Y Axis	30min	Refer to [Photo. 1]	Room Temp.
	20	0.0041				
	150	-6dB/octave				
	GRMS	0.37				

3) ASD profile for the random vibration test of longitudinal direction

Test Type	Frequency (Hz)	PSD $((m/s^2)^2/Hz)$	Direction	Test Duration	Accelerometer Position (Control)	Test temp.
Random vibration test 1	5	0.0073	X Axis	30min	Refer to [Photo. 1]	Room Temp.
	20	0.0073				
	150	-6dB/octave				
	GRMS	0.50				

【 Requirements 】 : After the random vib. test 1, cracks or deformations shall not be found in the visual examination of the samples.



[Photo. 1] Random vib. test 1

Test Method(2)

【 Name of the Test 】 : Random vibration test 2

【 Name of the Sample 】 : NETWORK CAMERA(SNV-5010P)

【 Sample Quantity 】 : 1 EA

【 Test Condition 】

1) ASD profile for the random vibration test of vertical direction

Test Type	Frequency (Hz)	PSD $((m/s^2)^2/Hz)$	Direction	Test Duration	Accelerometer Position (Control)	Test temp.
Random vibration test 1	5	1.034	Z Axis	5hr	Refer to [Photo. 2]	Room Temp.
	20	1.034				
	150	-6dB/octave				
	GRMS	5.9				

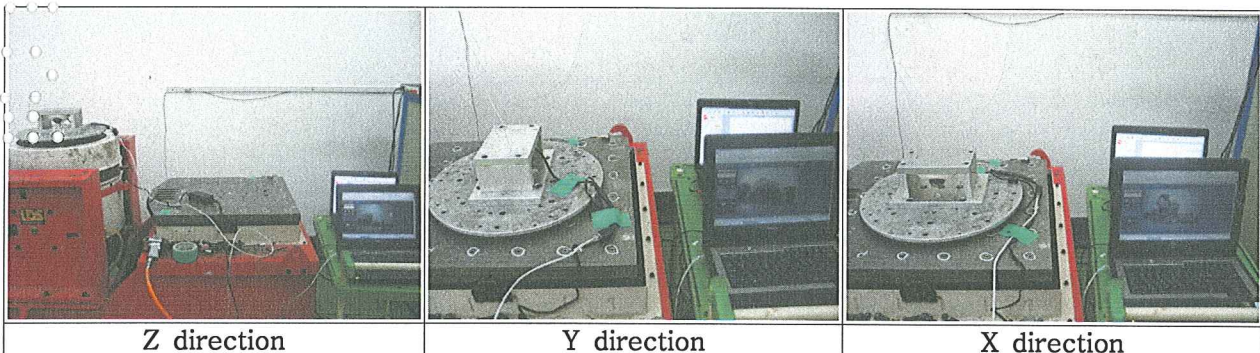
2) ASD profile for the random vibration test of lateral direction

Test Type	Frequency (Hz)	PSD $((m/s^2)^2/Hz)$	Direction	Test Duration	Accelerometer Position (Control)	Test temp.
Random vibration test 1	5	0.250	Y Axis	5hr	Refer to [Photo. 2]	Room Temp.
	20	0.250				
	150	-6dB/octave				
	GRMS	2.9				

3) ASD profile for the random vibration test of longitudinal direction

Test Type	Frequency (Hz)	PSD $((m/s^2)^2/Hz)$	Direction	Test Duration	Accelerometer Position (Control)	Test temp.
Random vibration test 1	5	0.452	X Axis	5hr	Refer to [Photo. 2]	Room Temp.
	20	0.452				
	150	-6dB/octave				
	GRMS	3.9				

【 Requirements 】 : After the random vib. test 2, cracks or deformations shall not be found in the visual examination of the samples.



[Photo. 2] Random vib. test 2

Test Method(3)

【 Name of the Test 】 : Mechanical shock test

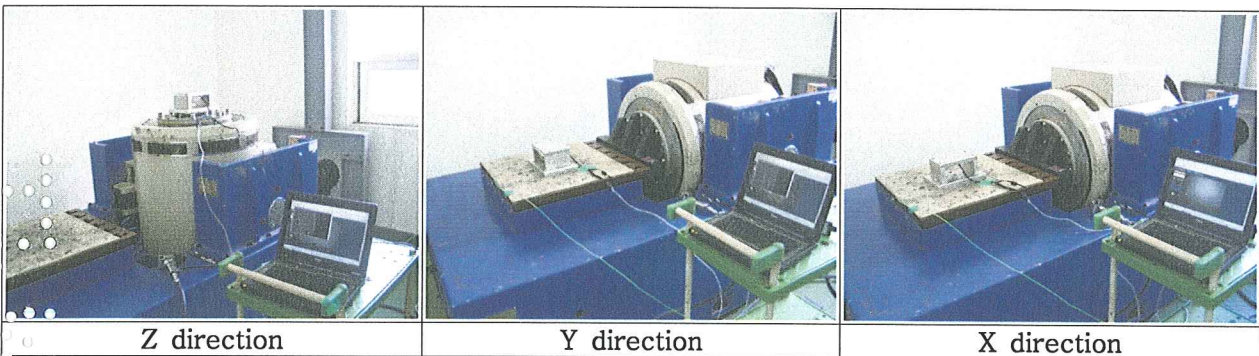
【 Name of the Sample 】 : NETWORK CAMERA(SNV-5010P)

【 Sample Quantity 】 : 1 EA

【 Test Condition 】

Waveform Type	Peak Acceleration (G)	Pulse Duration (ms)	Number of Shock	Direction	Accelerometer Position (Control)	Test Temp.
Half Sine	3	30	±3	Vertical	Refer to [photo. 3]	Room temp.
	3	30	±3	Longitudinal		
	3	30	±3	Lateral		

【 Requirements 】 : After the mechanical shock test, cracks or deformations shall not be found in the visual examination of the samples.

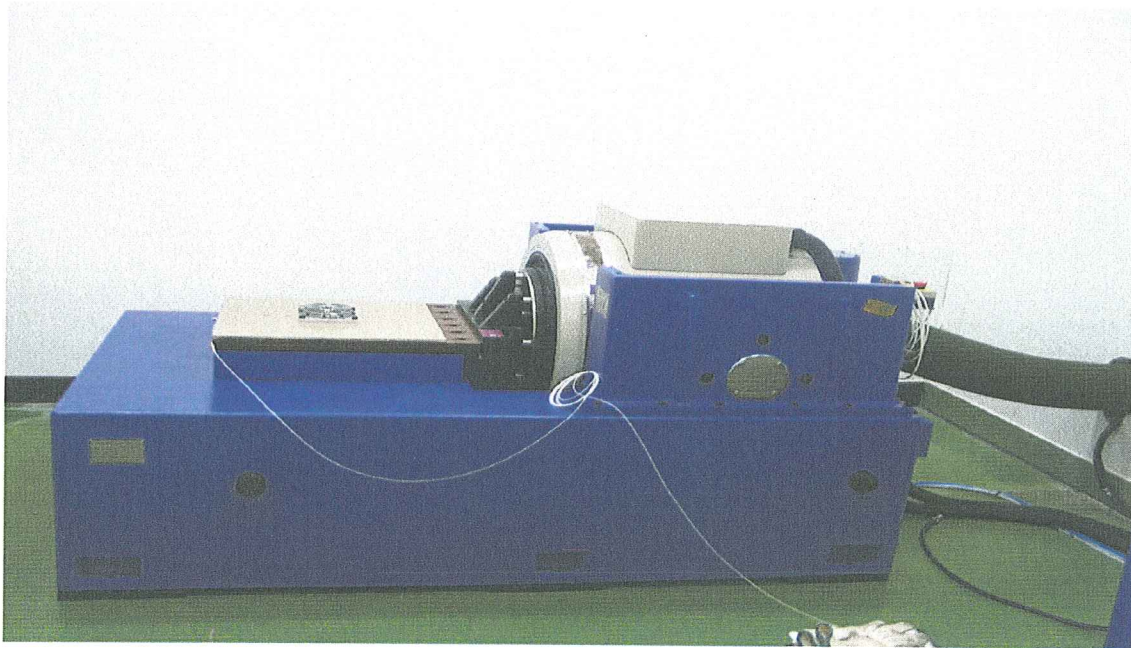


[Photo. 3] Mechanical shock test

Test Method(4)

【 Description on vibration system 】

진동시험기(EDS4000LS-445 Electrodynamic Shaker)



EDS4000LS-445 Electrodynamic Shaker		
Generated Force	*Sine (Pk)	4,000 kgf (8,800 lbf)
	**Random (Rms)	4,000 kgf (8,800 lbf)
	Shock (Pk)	8,000 kgf (17,600 lbf)
Useable Frequency		5-3,000Hz
Maximum displacement (Peak-Peak):		
Continuous duty		90 mm (3.5 in.)
Shock		100 mm (4 in.)
Between mechanical stops		106 mm (4.2 in.)
Maximum Velocity		180 cm/s (70.9 in/s)
Maximum Acceleration		100g @ sweep test; 90g @ dwell test
Fundamental Resonance Frequency (Nominal, Bare Table)		2,400 Hz (nom.) +/- 5%
Body Suspension Natural Frequency (Thrust Axis)		2.5 Hz
Armature Rated Current		400 A
Armature Rated Voltage		100 V
Armature Coil Resistance		0.05 Ω
Effective Nominal Armature Mass		<45 kg (99 lbs)
Armature Diameter		445 mm (17.5 in.)
Vertical Load Support		500 kg (1100 lbs)
Load Attachment Points (Standard)		17 stainless steel M10 Inserts (UNC option)



Test Method(5)

[Description on vibration system]

Ling Dynamic System 1993 (LDS V730-335, V-WIN)



- ☞ General Force, Continuous Rating
 - Sine Force : 2,000 lbs (8.9 kN)
 - Random Force : 2,000 lbs (8.9 kN)
- ☞ Armature Assembly Effective Weight : 27 lbs (12.03 kg)
- ☞ Maximum Free Table Acceleration : 75 g pk (739 m/s²)
- ☞ Shaker Stroke : 2.0 inches (50.8 mm)
- ☞ Shaker Table Load Support : 350 lbs (160 kg)



Results of Test & Analysis

【 Name of the Test 】 : Random vibration test 1~2, Mechanical shock test

【 Name of the Sample 】 : NETWORK CAMERA(SNV-5010P)

【 Sample Quantity 】 : 1 EA

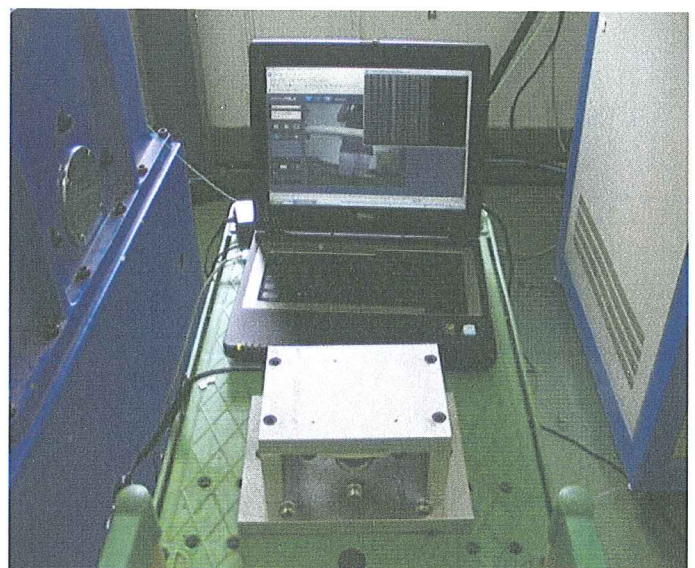
【 Results of the Test Analysis 】 :

	Requirements	Test & Analysis Result
Random vibration test 1	After the random vibration test, cracks or deformations shall not be found in the visual examination of the samples.	Cracks or deformations were not found. Refer to [Photo. 4]
Random vibration test 2		
Mechanical shock test	Test samples have to operate normally after the vibration test.	Test samples operate normally after the vibration test. Refer to [Photo. 5]

【 Test Sample After Test 】



[Photo. 4]



[Photo. 5]