



EMC TEST REPORT For IC

Test Report No. : KES-E1-16T0287-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CONTROLLER
Model/Type No. : SPC-7000
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Jun. 07, 2016
Test date : Jun. 23, 2016 ~ Jun. 26, 2016
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

김세헌

Reviewed by

Se Heon, Kim
EMC Test Engineer

Dong-Hun, Jang
EMC Technical Manager

Tested by Young-Jun Jo
(Department changed person)
Proxy signature : Se Heon, Kim

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-E1-16T0287-R1

Page (2) of (44)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 26, 2016	KES-E1-16T0287	Issued
Feb. 24, 2023	KES-E1-16T0287-R1	Change the Model/Type No., Applicant, Applicant Address, Manufacturer and Manufacturer Address at the request of the customer

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-E1-16T0287-R1

Page (3) of (44)

TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	5
1.2	Variant Model Differences	5
1.3	Device Modifications	5
1.4	Equipment Under Test.....	5
1.5	Support Equipments	5
1.6	External I/O Cabling	6
1.7	EUT Operating Mode(s)	6
1.8	Configuration.....	7
1.9	Calibration Details of Equipment Used for Measurement	8
1.10	Test Facility	8
1.11	Laboratory Accreditations and Listings	8
2.0	Test Regulations.....	9
2.1	Conducted Emissions at Mains Power Ports	11
2.2	Radiated Electric Field Emissions(Below 1 GHz)	12
2.3	Radiated Electric Field Emissions(Above 1 GHz)	13
APPENDIX A – TEST DATA.....		14
Conducted Emissions at Mains Power Ports.....		14
Radiated Electric Field Emissions(Below 1 GHz)		18
Radiated Electric Field Emissions(Above 1 GHz)		19
Test Setup Photos and Configuration		27
EUT External Photographs		33
EUT Internal Photographs		34

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:
KES-E1-16T0287-R1
Page (4) of (44)

1.0 General Product Description

Main Specifications of EUT are:

LCD DISPLAY	5 inch TFT LCD
Communication Method	SSM, RJ-45
Operating temperature	0 ~ 40 °C
Humidity	10 ~ 70 %
dimension	(459.1 x 59.1 x 177.9) mm
weight	1.5 kg

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage ☐ 100 Vac ☒ 120 Vac ☐ 277 Vac ☐ 24 Vac ☐ 12 Vdc

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CONTROLLER	SPC-7000	-	HANWHA VISION VIETNAM COMPANY LIMITED	E.U.T
AC/DC Adapter	KPL-048F-VI	-	Channel Well Technology(guangzhou)c o.,Ltd.	-

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	RV518	HSVX91HC801452M	Samsung Electronics Co., Ltd.	-
Notebook AC/DC Adapter	CPA09-004A	-	Chicony Power Technology Co., Ltd.	-
PTZ Camera	-	-	-	-
PTZ Camera AC/DC Adapter	DRL-241500AC	-	Dream Electronics Co., Ltd.	-

1.6 External I/O Cabling

- USB Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CONTROLLER (E.U.T)	USB	Notebook	USB	1.2	U

- LAN Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CONTROLLER (E.U.T)	RJ45	PTZ Camera	RJ45	3.5	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

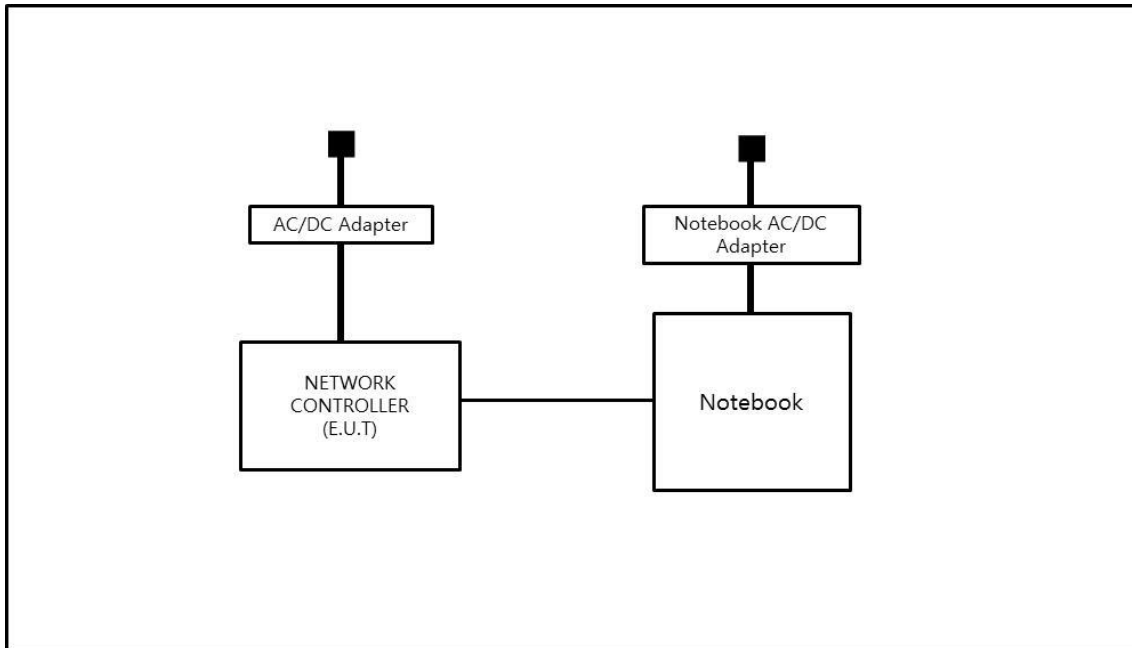
Equipment under test was operated during the measurement under the following conditions:

Test mode	Normal operating
USB	Notebook's game controller setting page check.
LAN	PTZ Camera Controlled

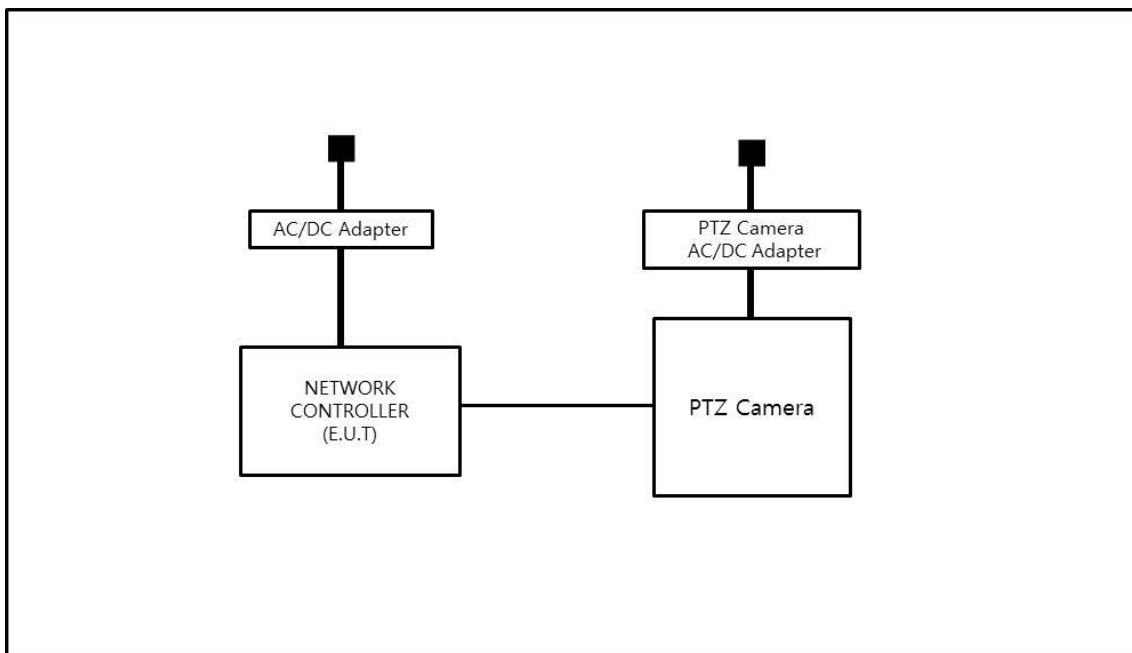
1.8 Configuration

■ AC Main
 □ DC Main

- USB Mode



- LAN Mode



1.9 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.10 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55022:2010

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:
KES-E1-16T0287-R1
Page (10) of (44)

-
- | | | |
|--|---|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2009 | | |
| ☒ IC Regulation ICES-003 : 2016 | | |
| ☒ CAN/CSA-CISPR 22-10 | ☒ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
|
 | | |
| ☐ RE- Directive 2014/53/EU | | |
|
 | | |
| ☐ EN 301 489-1 V1.9.2 | | |
| ☐ Equipment for fixed use | | |
| ☐ Equipment for vehicular use | | |
| ☐ Equipment for portable use | | |
| ☐ EN 301 489-3 V1.6.1 | | |
| ☐ EN 301 489-17 V2.2.1 | | |
| ☐ EN 60945:2002 | | |

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-E1-16T0287-R1

Page (11) of (44)

2.1 Conducted Emissions at Mains Power Ports

Test Date

Jun. 23, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101783	05, 03, 2017
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 02, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 23,8 °C

Relative Humidity: 43,6 %

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 26, 2016

Test Location

☒ Open Area Test Site #1 ☐ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESU26	R&S	100551	04, 18, 2017
☒	Trilog-Broadband ANT	VULB 9163	Schwarzbeck	9163-715	04, 14, 2018
☒	OATS	-	KES	-	-
☒	Antenna Mast	1070/1080	EMCO	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 31,2 °C
Relative Humidity: 50,0 %

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 24, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
☒	Semi Anchoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions

Temperature: 23,6 °C

Relative Humidity: 52,1 %

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

APPENDIX A – TEST DATA

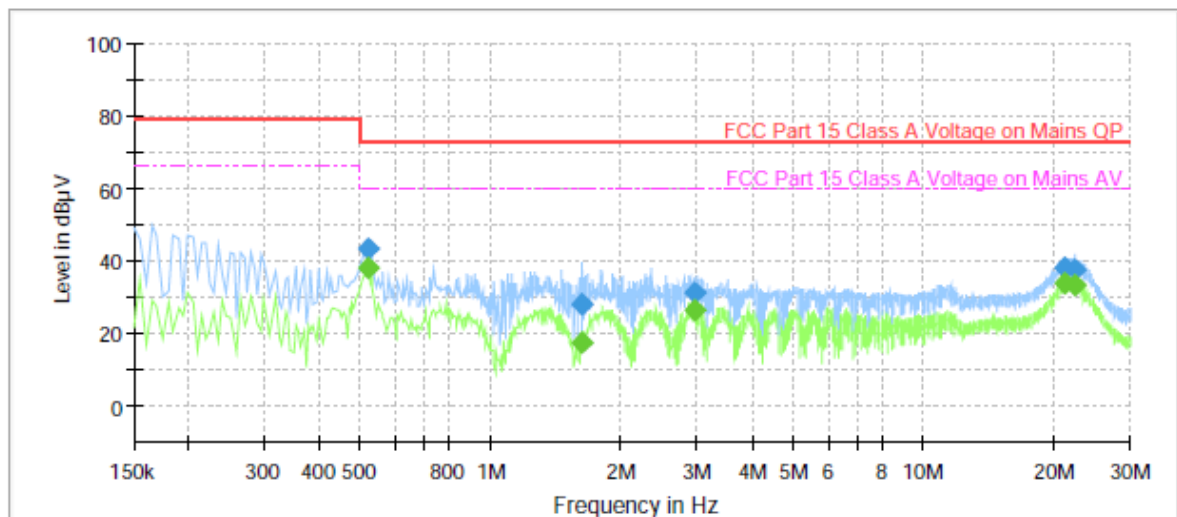
Conducted Emissions at Mains Power Ports

- USB Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	SPC-7000N
Mode	USB
Operator Name:	KES



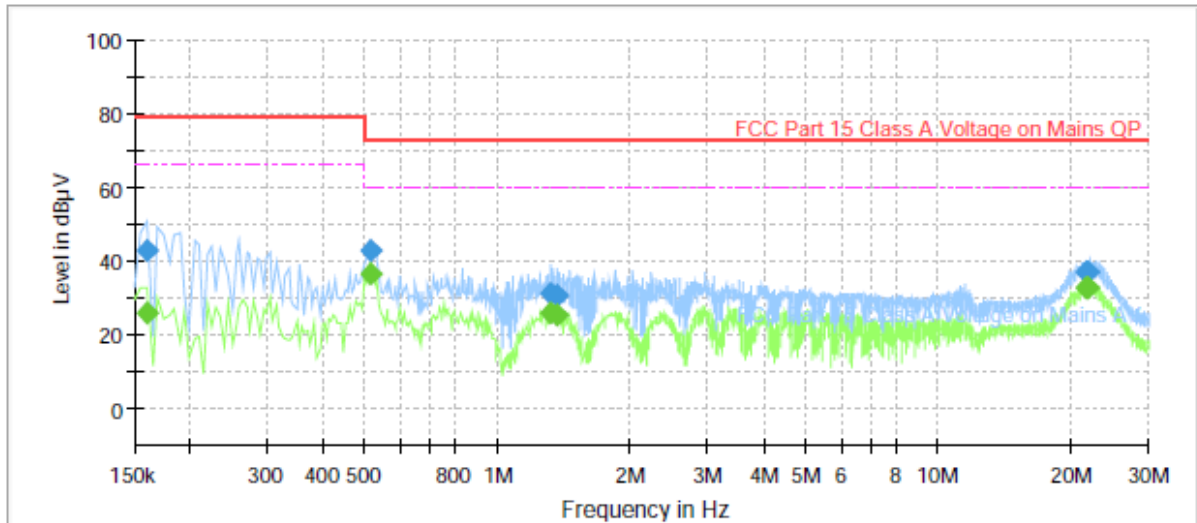
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.520000	---	37.87	60.00	22.13	1000.0	9.000	L1	9.7
0.520000	43.56	---	73.00	29.44	1000.0	9.000	L1	9.7
1.630000	---	17.69	60.00	42.31	1000.0	9.000	L1	9.7
1.630000	27.92	---	73.00	45.08	1000.0	9.000	L1	9.7
2.970000	---	26.68	60.00	33.32	1000.0	9.000	L1	9.7
2.970000	31.16	---	73.00	41.84	1000.0	9.000	L1	9.7
21.190000	---	33.74	60.00	26.26	1000.0	9.000	L1	10.2
21.190000	38.11	---	73.00	34.89	1000.0	9.000	L1	10.2
22.280000	---	33.39	60.00	26.61	1000.0	9.000	L1	10.2
22.280000	37.82	---	73.00	35.18	1000.0	9.000	L1	10.2

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	SPC-7000N
Mode	USB
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	26.02	66.00	39.98	1000.0	9.000	N	9.6
0.160000	43.05	---	79.00	35.95	1000.0	9.000	N	9.6
0.515000	---	36.73	60.00	23.27	1000.0	9.000	N	9.7
0.515000	43.07	---	73.00	29.93	1000.0	9.000	N	9.7
1.325000	---	25.90	60.00	34.10	1000.0	9.000	N	9.7
1.325000	31.03	---	73.00	41.97	1000.0	9.000	N	9.7
1.360000	---	25.25	60.00	34.75	1000.0	9.000	N	9.7
1.360000	30.84	---	73.00	42.16	1000.0	9.000	N	9.7
21.660000	---	32.66	60.00	27.34	1000.0	9.000	N	10.2
21.660000	36.99	---	73.00	36.01	1000.0	9.000	N	10.2
21.750000	---	32.73	60.00	27.27	1000.0	9.000	N	10.2
21.750000	37.07	---	73.00	35.93	1000.0	9.000	N	10.2



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-E1-16T0287-R1

Page (16) of (44)

- LAN Mode

[HOT]

Common Information

Test Description:

Model No.:

Mode

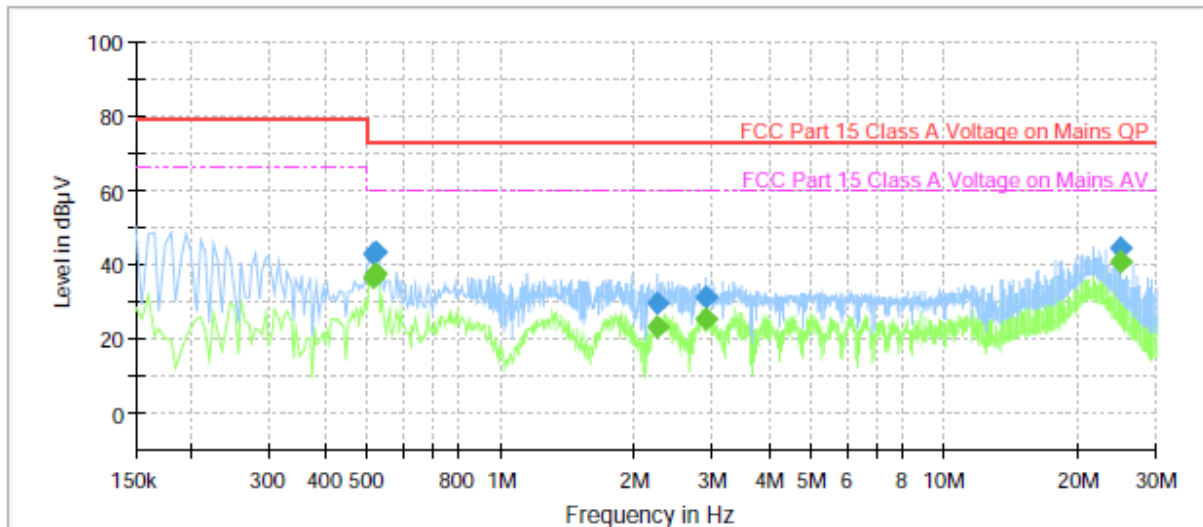
Operator Name:

Conducted Emission

SPC-7000N

RJ45

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.515000	---	36.72	60.00	23.28	1000.0	9.000	L1	9.7
0.515000	43.02	---	73.00	29.98	1000.0	9.000	L1	9.7
0.520000	---	37.46	60.00	22.54	1000.0	9.000	L1	9.7
0.520000	43.35	---	73.00	29.65	1000.0	9.000	L1	9.7
2.255000	---	23.34	60.00	36.66	1000.0	9.000	L1	9.7
2.255000	29.75	---	73.00	43.25	1000.0	9.000	L1	9.7
2.905000	---	25.50	60.00	34.50	1000.0	9.000	L1	9.7
2.905000	31.10	---	73.00	41.90	1000.0	9.000	L1	9.7
25.000000	---	40.84	60.00	19.16	1000.0	9.000	L1	10.2
25.000000	44.64	---	73.00	28.36	1000.0	9.000	L1	10.2

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-E1-16T0287-R1

Page (17) of (44)

[NEUTRAL]

Common Information

Test Description:

Conducted Emission

Model No.:

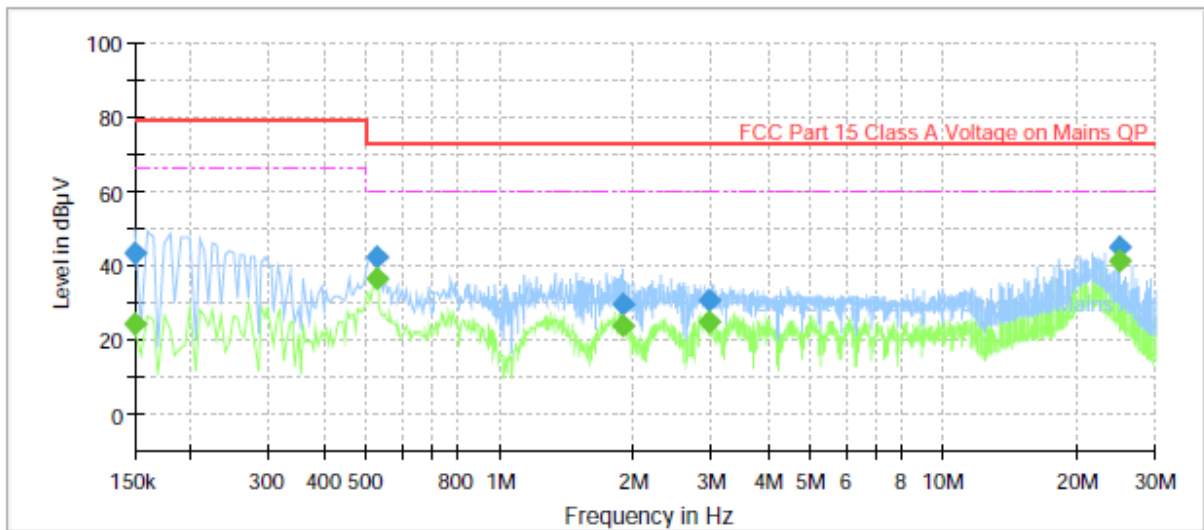
SPC-7000N

Mode

RJ45

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	24.29	66.00	41.71	1000.0	9.000	N	9.6
0.150000	43.25	---	79.00	35.75	1000.0	9.000	N	9.6
0.525000	---	36.36	60.00	23.64	1000.0	9.000	N	9.7
0.525000	42.43	---	73.00	30.57	1000.0	9.000	N	9.7
1.895000	---	23.67	60.00	36.33	1000.0	9.000	N	9.7
1.895000	29.78	---	73.00	43.22	1000.0	9.000	N	9.7
2.970000	---	24.80	60.00	35.20	1000.0	9.000	N	9.7
2.970000	30.85	---	73.00	42.15	1000.0	9.000	N	9.7
25.000000	---	41.11	60.00	18.89	1000.0	9.000	N	10.3
25.000000	44.87	---	73.00	28.13	1000.0	9.000	N	10.3

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr



Radiated Electric Field Emissions(Below 1 GHz)

- USB Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
144.16	8.34	V	1.15	8.05	2.42	18.81	40.00	21.19
150.23	11.25	H	3.97	8.22	2.47	21.94	40.00	18.06
250.00	19.57	H	4.00	12.55	3.33	35.45	47.00	11.55
275.17	11.16	V	1.02	12.98	3.52	27.66	47.00	19.34
400.96	14.26	H	4.00	15.59	4.23	34.08	47.00	12.92
494.31	8.42	V	1.22	17.20	4.91	30.53	47.00	16.47

* H : Horizontal, V : Vertical

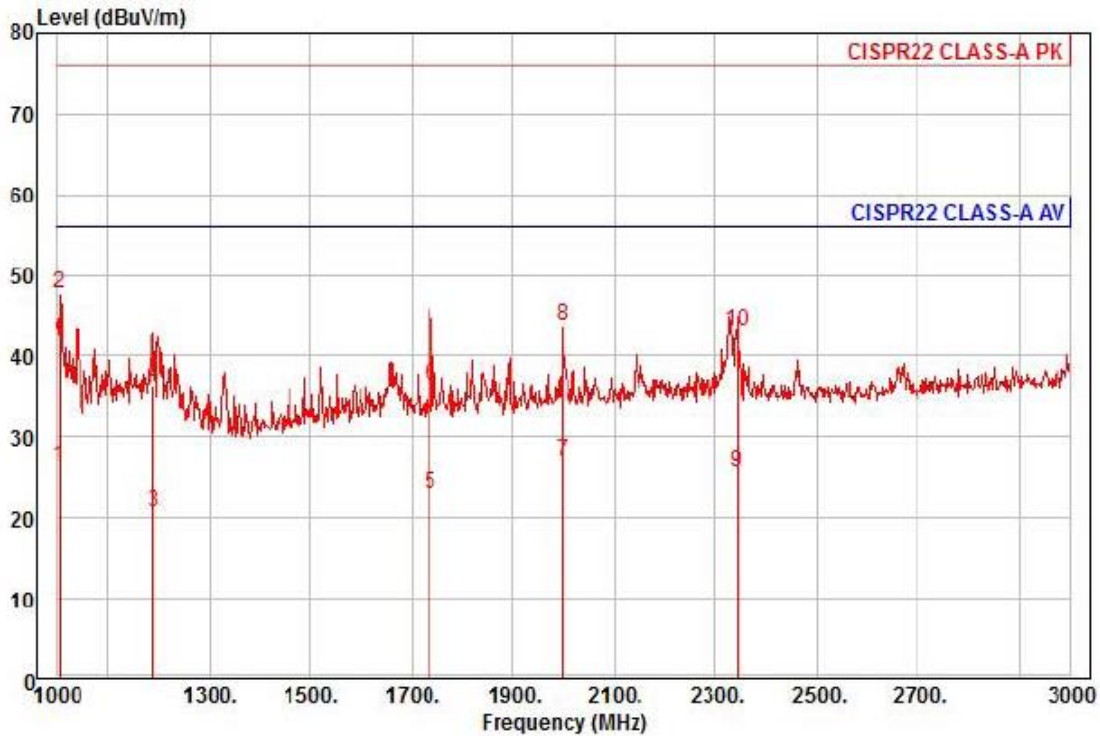
- LAN Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
150.01	25.13	H	3.67	8.21	2.47	35.81	40.00	4.19
225.43	13.84	V	1.41	12.02	3.10	28.96	40.00	11.04
275.57	22.14	H	4.00	12.98	3.52	38.64	47.00	8.36
325.99	10.46	V	1.08	13.96	3.80	28.22	47.00	18.78
496.38	16.43	H	3.76	17.24	4.92	38.59	47.00	8.41
560.48	14.72	V	1.00	18.49	5.32	38.53	47.00	8.47

* H : Horizontal, V : Vertical

Radiated Electric Field Emissions(Above 1 GHz)

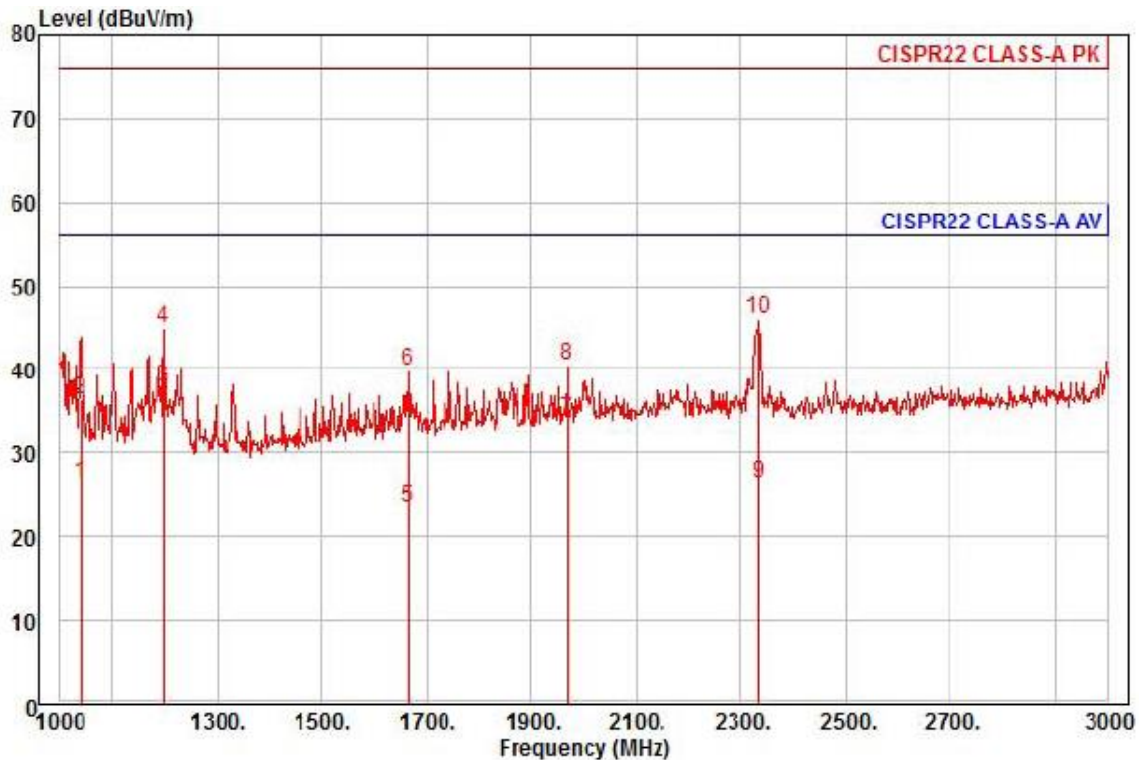
- LAN Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPC-7000N
Mode : LAN
Memo : 1 - 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1004.00	36.09	23.93	6.52	40.12	334	56.00	-29.58	horizontal	Average
2 pp	1004.00	57.45	23.93	6.52	40.12	334	76.00	-28.22	horizontal	Peak
3	1190.00	29.12	24.66	7.06	40.03	7	56.00	-35.19	horizontal	Average
4	1190.00	44.71	24.66	7.06	40.03	7	76.00	-39.60	horizontal	Peak
5	1736.00	27.30	26.83	8.62	39.76	233	56.00	-33.01	horizontal	Average
6	1736.00	40.60	26.83	8.62	39.76	233	76.00	-39.71	horizontal	Peak
7 av	1998.00	29.53	27.87	9.34	39.63	10	56.00	-28.89	horizontal	Average
8	1998.00	46.14	27.87	9.34	39.63	10	76.00	-32.28	horizontal	Peak
9	2344.00	26.95	28.72	9.88	39.83	294	56.00	-30.28	horizontal	Average
10	2344.00	44.37	28.72	9.88	39.83	294	76.00	-32.86	horizontal	Peak

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical

: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : SPC-7000N

Mode : LAN

Memo : 1 - 3 GHz

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1040.00	35.79	24.07	6.63	40.10	103	56.00	-29.61	vertical	Average
2	1040.00	45.87	24.07	6.63	40.10	103	76.00	-39.53	vertical	Peak
3 pp	1200.00	46.08	24.70	7.09	40.02	288	56.00	-18.15	vertical	Average
4	1200.00	53.07	24.70	7.09	40.02	288	76.00	-31.16	vertical	Peak
5	1666.00	28.42	26.55	8.43	39.79	3	56.00	-32.39	vertical	Average
6	1666.00	44.67	26.55	8.43	39.79	3	76.00	-36.14	vertical	Peak
7	1968.00	36.59	27.75	9.26	39.65	325	56.00	-22.05	vertical	Average
8	1968.00	43.28	27.75	9.26	39.65	325	76.00	-35.36	vertical	Peak
9	2334.00	27.60	28.70	9.86	39.82	132	56.00	-29.66	vertical	Average
10 pk	2334.00	47.22	28.70	9.86	39.82	132	76.00	-30.04	vertical	Peak

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

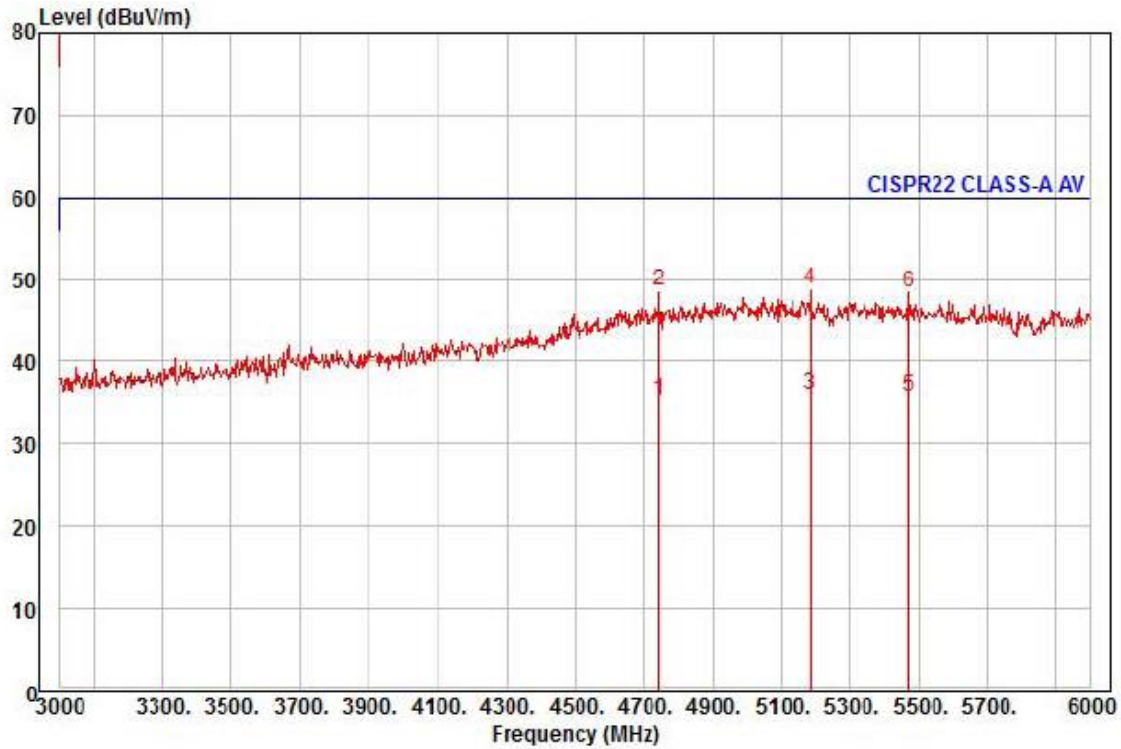
The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:
KES-E1-16T0287-R1
Page (21) of (44)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPC-7000N
Mode : LAN
Memo : 3 - 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4746.00	24.51	36.27	14.87	40.41	318	60.00	-24.76	horizontal	Average
2	4746.00	37.92	36.27	14.87	40.41	318	80.00	-31.35	horizontal	Peak
3 pp	5187.00	23.53	37.34	15.55	40.38	312	60.00	-23.96	horizontal	Average
4 pk	5187.00	36.31	37.34	15.55	40.38	312	80.00	-31.18	horizontal	Peak
5	5472.00	23.40	36.77	15.89	40.34	67	60.00	-24.28	horizontal	Average
6	5472.00	36.01	36.77	15.89	40.34	67	80.00	-31.67	horizontal	Peak

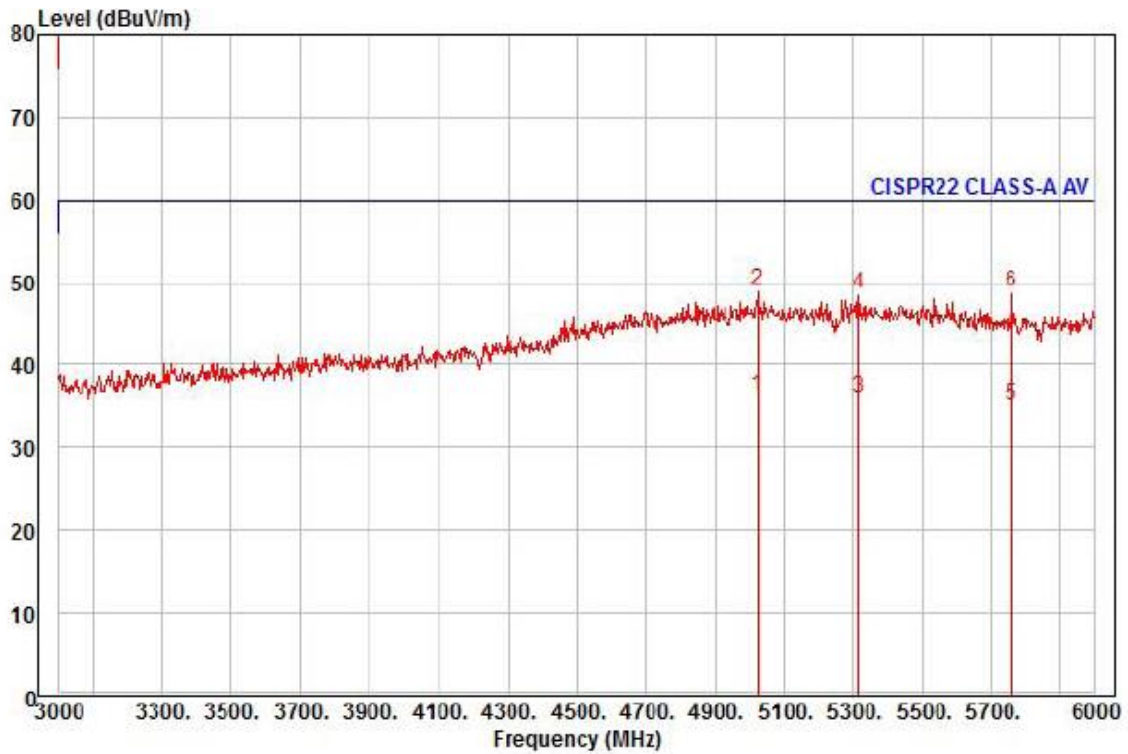
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:
KES-E1-16T0287-R1
Page (22) of (44)

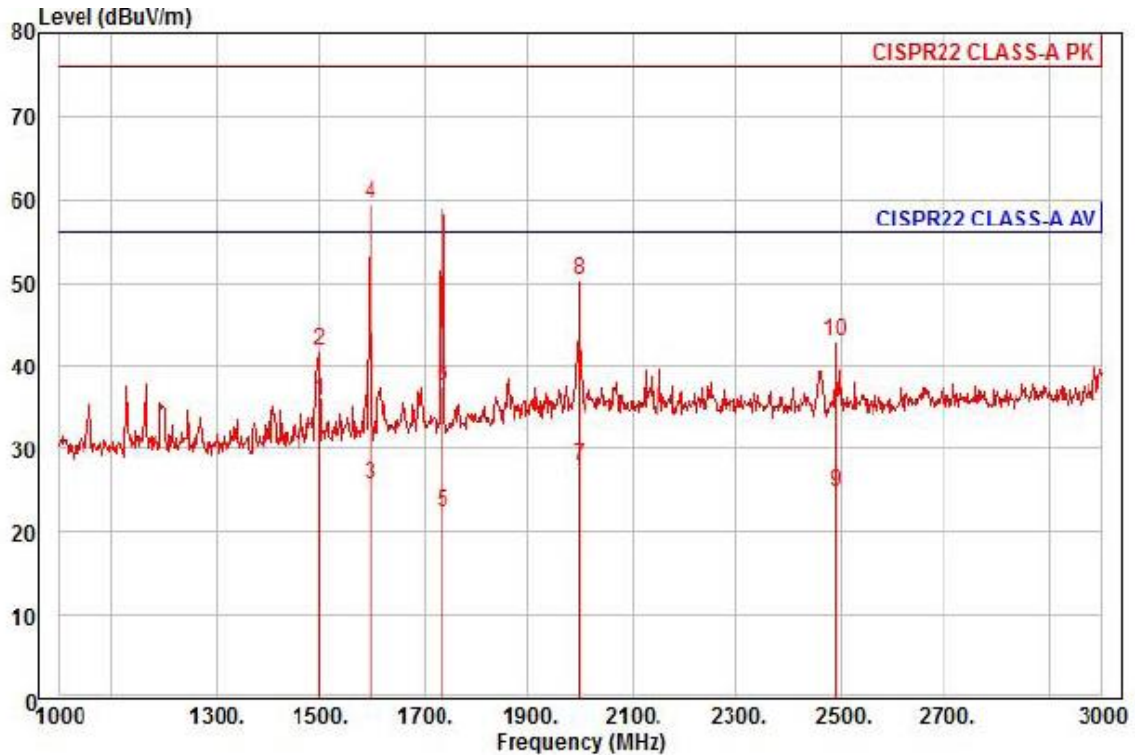


Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPC-7000N
Mode : LAN
Memo : 3 - 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 pp	5025.00	23.65	37.67	15.36	40.41	180	60.00	-23.73	vertical	Average
2 pk	5025.00	36.42	37.67	15.36	40.41	180	80.00	-30.96	vertical	Peak
3	5316.00	23.57	37.08	15.70	40.37	174	60.00	-24.02	vertical	Average
4	5316.00	36.23	37.08	15.70	40.37	174	80.00	-31.36	vertical	Peak
5	5760.00	22.91	36.18	16.41	40.30	338	60.00	-24.80	vertical	Average
6	5760.00	36.56	36.18	16.41	40.30	338	80.00	-31.15	vertical	Peak

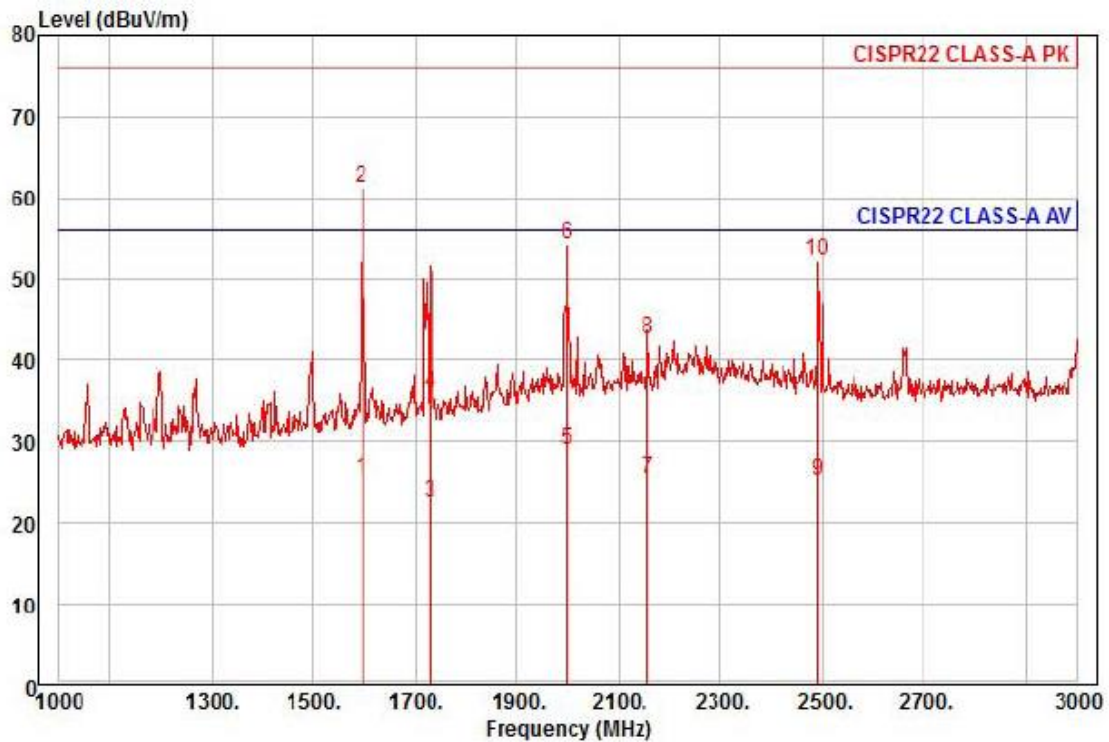
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

- USB Mode



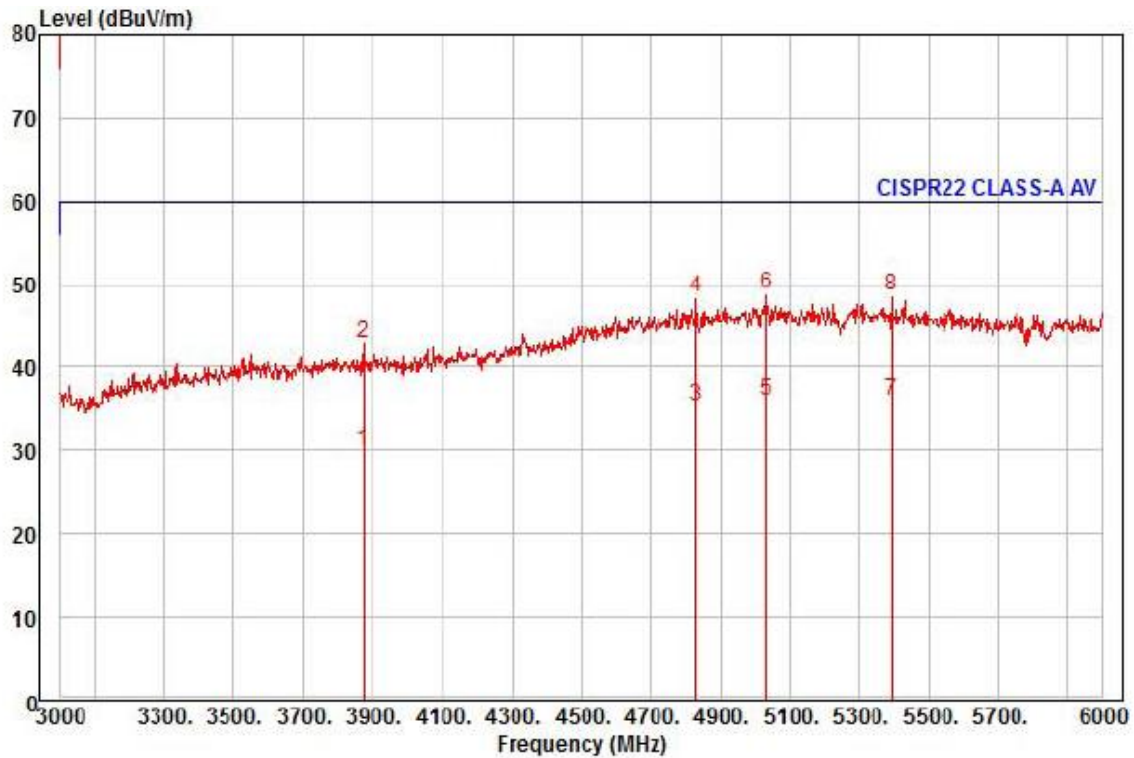
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPC-7000N
Mode : USB
Memo : 1 - 3 GHz

		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 av	1500.00	41.87	25.90	7.96	39.88	109	56.00	-20.15	horizontal	Average
2	1500.00	47.85	25.90	7.96	39.88	109	76.00	-34.17	horizontal	Peak
3	1598.00	31.00	26.28	8.24	39.83	146	56.00	-30.31	horizontal	Average
4 pp	1598.00	64.79	26.28	8.24	39.83	146	76.00	-16.52	horizontal	Peak
5	1736.00	26.82	26.83	8.62	39.76	195	56.00	-33.49	horizontal	Average
6	1736.00	41.87	26.83	8.62	39.76	195	76.00	-38.44	horizontal	Peak
7	1998.00	30.33	27.87	9.34	39.63	143	56.00	-28.09	horizontal	Average
8	1998.00	52.79	27.87	9.34	39.63	143	76.00	-25.63	horizontal	Peak
9	2492.00	25.65	29.09	10.10	39.92	209	56.00	-31.08	horizontal	Average
10	2492.00	43.65	29.09	10.10	39.92	209	76.00	-33.08	horizontal	Peak



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPC-7000N
Mode : USB
Memo : 1 - 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1596.00	30.78	26.28	8.24	39.83	160	56.00	-30.53	vertical	Average
2 pp	1596.00	66.66	26.28	8.24	39.83	160	76.00	-14.65	vertical	Peak
3	1730.00	26.86	26.81	8.61	39.76	78	56.00	-33.48	vertical	Average
4	1730.00	40.30	26.81	8.61	39.76	78	76.00	-40.04	vertical	Peak
5 av	1998.00	31.36	27.87	9.34	39.63	102	56.00	-27.06	vertical	Average
6	1998.00	56.76	27.87	9.34	39.63	102	76.00	-21.66	vertical	Peak
7	2158.00	27.45	28.27	9.59	39.72	53	56.00	-30.41	vertical	Average
8	2158.00	44.68	28.27	9.59	39.72	53	76.00	-33.18	vertical	Peak
9	2492.00	25.97	29.09	10.10	39.92	138	56.00	-30.76	vertical	Average
10	2492.00	53.05	29.09	10.10	39.92	138	76.00	-23.68	vertical	Peak



Site : chamber

Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : SPC-7000N

Mode : USB

Memo : 3 - 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3873.00	25.29	31.80	13.26	40.38	238	60.00	-30.03	horizontal	Average
2	3873.00	38.24	31.80	13.26	40.38	238	80.00	-37.08	horizontal	Peak
3	4830.00	23.88	36.75	15.02	40.41	21	60.00	-24.76	horizontal	Average
4	4830.00	36.98	36.75	15.02	40.41	21	80.00	-31.66	horizontal	Peak
5 pp	5034.00	23.45	37.65	15.37	40.41	108	60.00	-23.94	horizontal	Average
6 pk	5034.00	36.12	37.65	15.37	40.41	108	80.00	-31.27	horizontal	Peak
7	5397.00	23.52	36.92	15.80	40.35	290	60.00	-24.11	horizontal	Average
8	5397.00	36.22	36.92	15.80	40.35	290	80.00	-31.41	horizontal	Peak

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

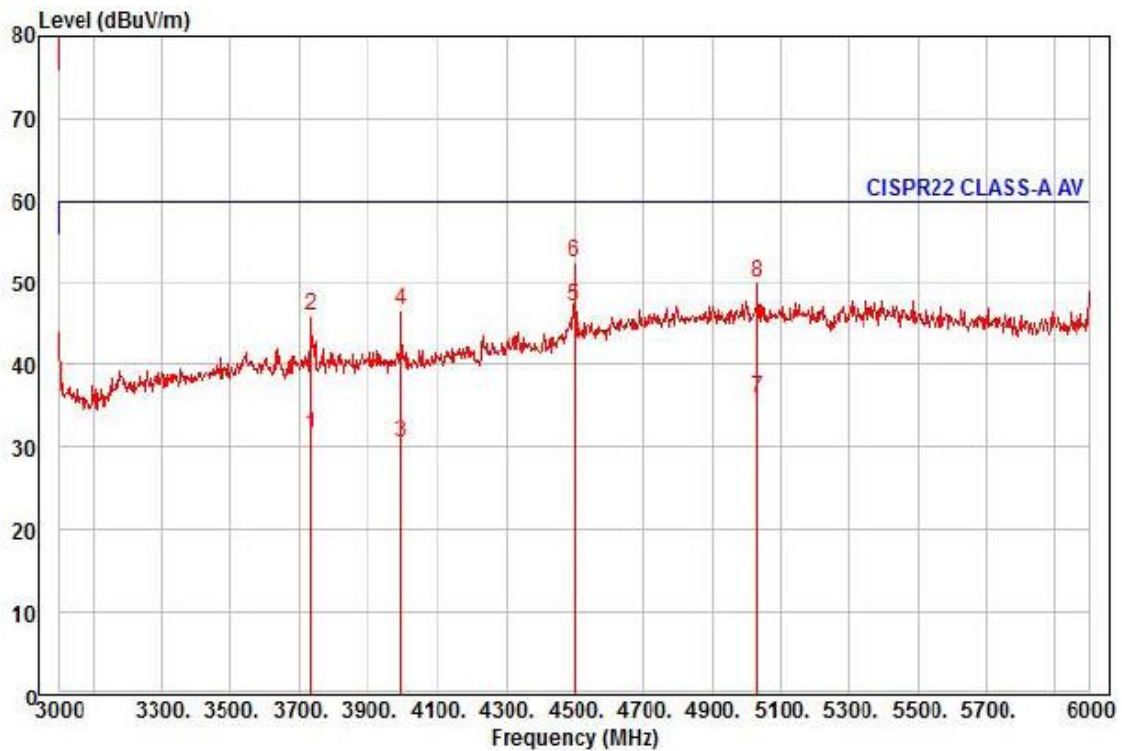
The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:
KES-E1-16T0287-R1
Page (26) of (44)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SPC-7000N
Mode : USB
Memo : 3 - 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3735.00	27.42	31.56	12.98	40.36	192	60.00	-28.40	vertical	Average
2	3735.00	41.82	31.56	12.98	40.36	192	80.00	-34.00	vertical	Peak
3	3996.00	25.35	32.00	13.50	40.41	189	60.00	-29.56	vertical	Average
4	3996.00	41.59	32.00	13.50	40.41	189	80.00	-33.32	vertical	Peak
5 pp	4500.00	38.21	34.86	14.43	40.41	241	60.00	-12.91	vertical	Average
6 pk	4500.00	43.58	34.86	14.43	40.41	241	80.00	-27.54	vertical	Peak
7	5034.00	23.44	37.65	15.37	40.41	154	60.00	-23.95	vertical	Average
8	5034.00	37.61	37.65	15.37	40.41	154	80.00	-29.78	vertical	Peak

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Test Setup Photos and Configuration

Conducted Voltage Emissions

- USB Mode



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

- LAN Mode



Radiated Electric Field Emissions(Below 1 GHz)

- USB Mode



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

- LAN Mode



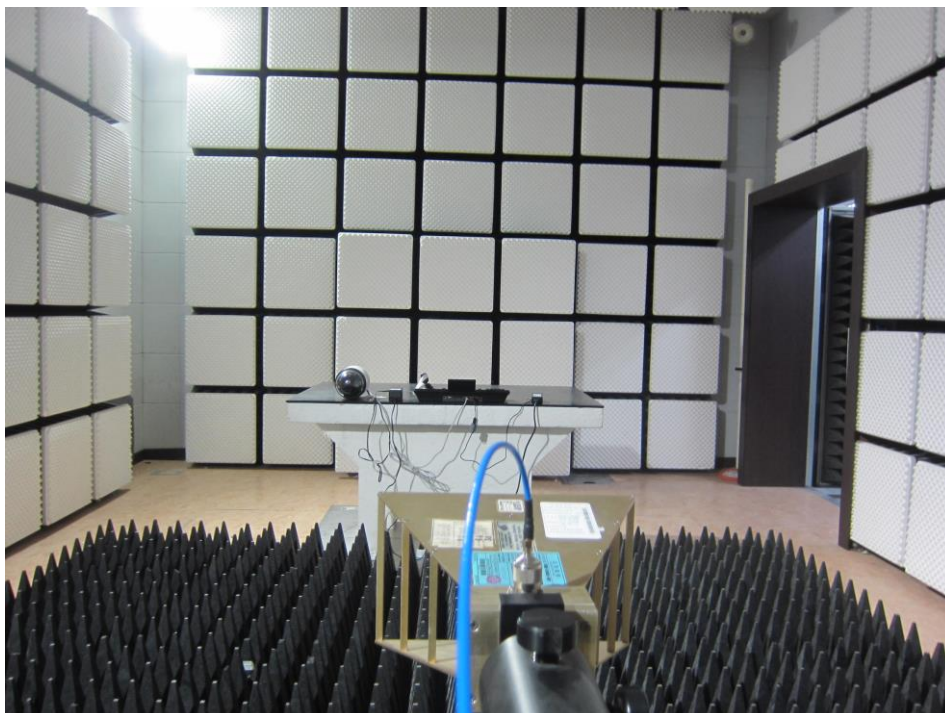
Radiated Electric Field Emissions(Above 1 GHz)

- USB Mode



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

- LAN Mode



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT External Photographs

(Top)



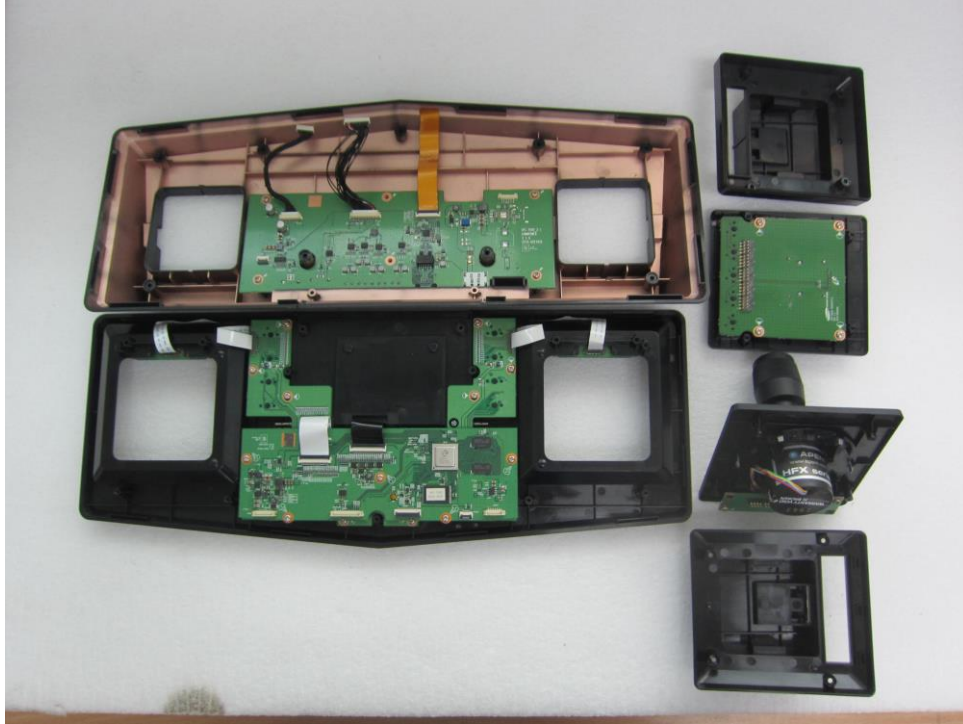
(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

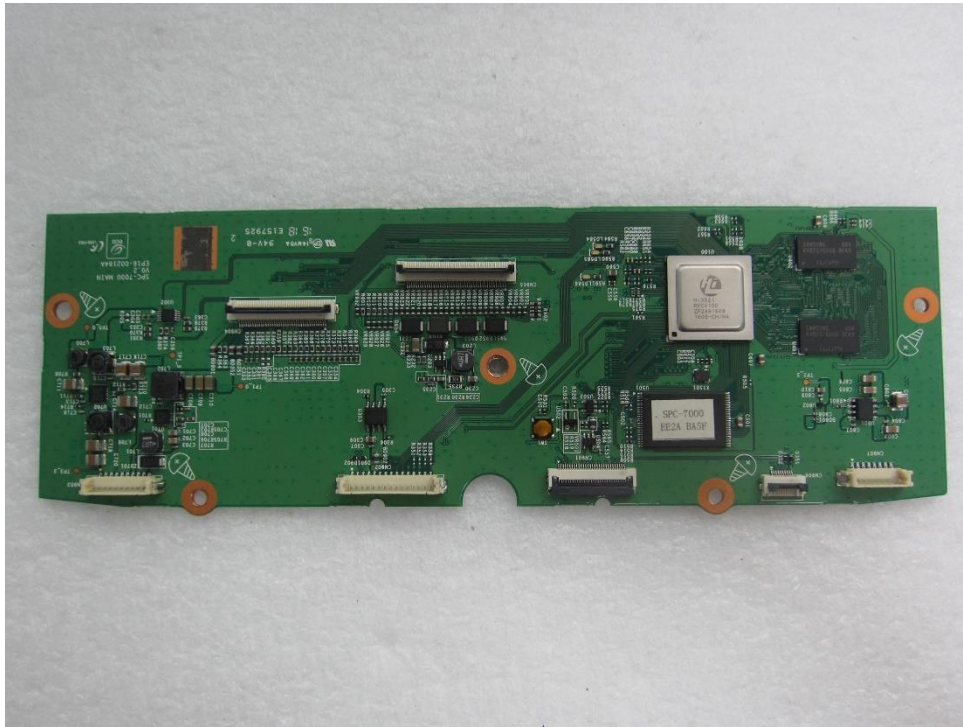
EUT Internal Photographs

(Internal View)

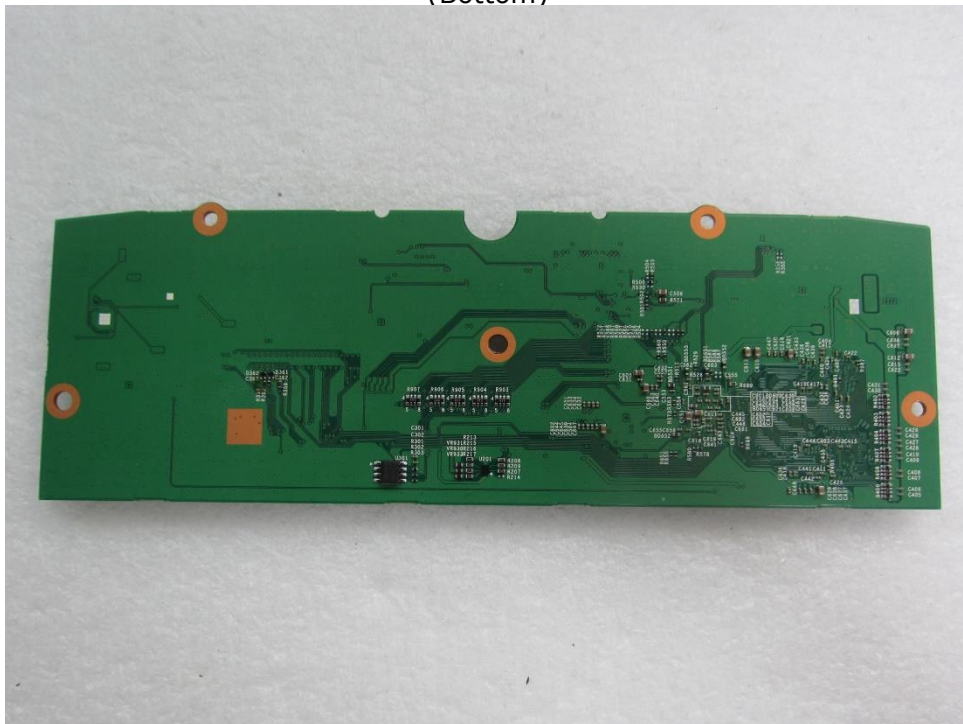


EUT Internal View – Main Board

(Top)



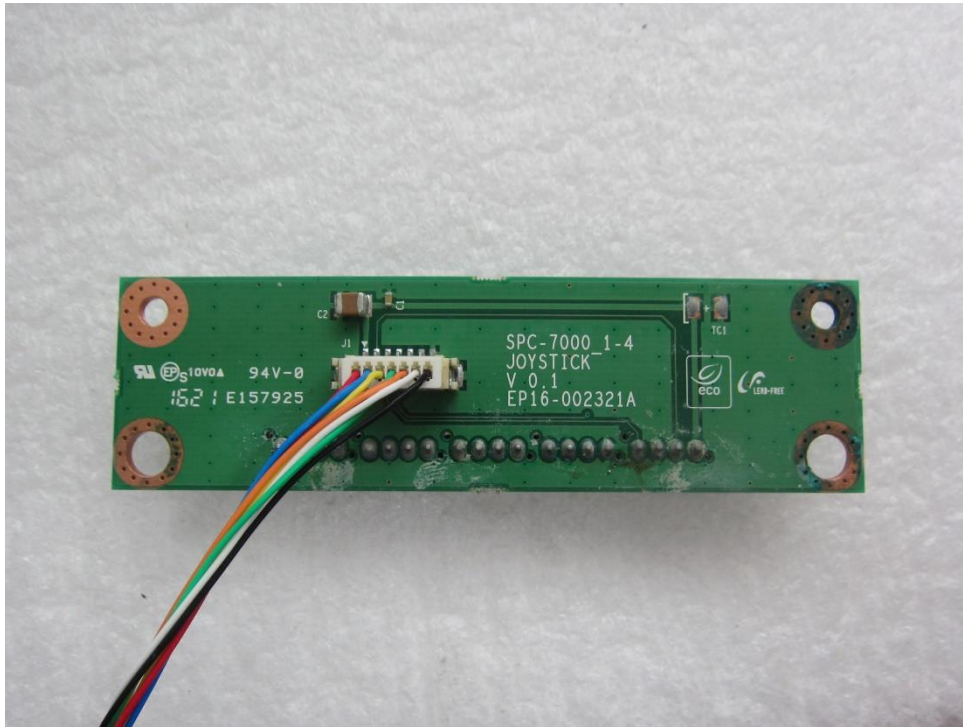
(Bottom)



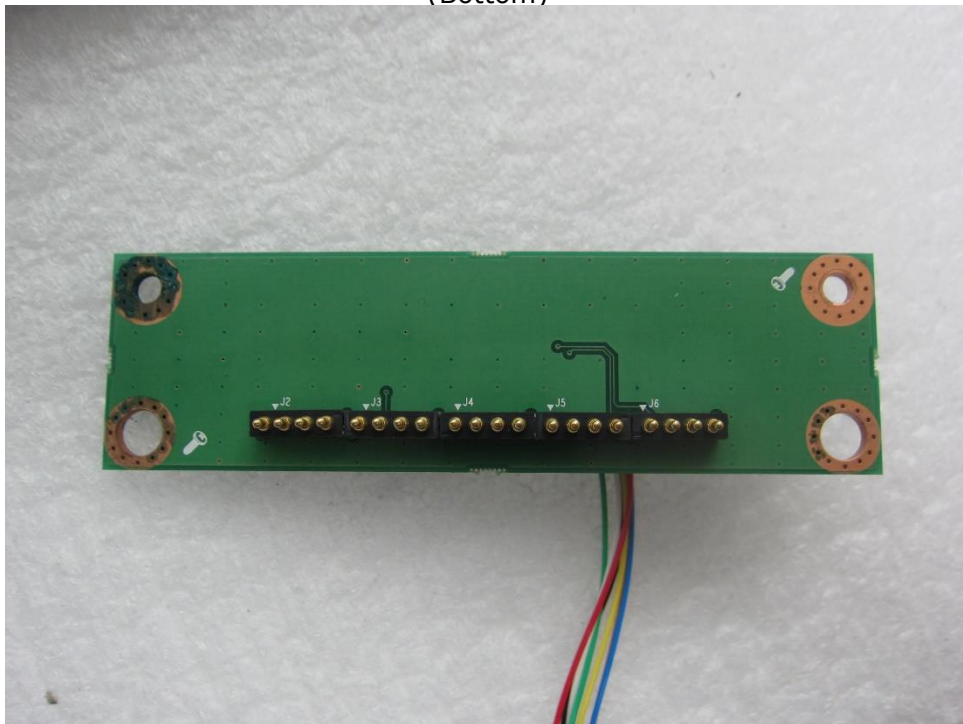
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Sub Board 1

(Top)

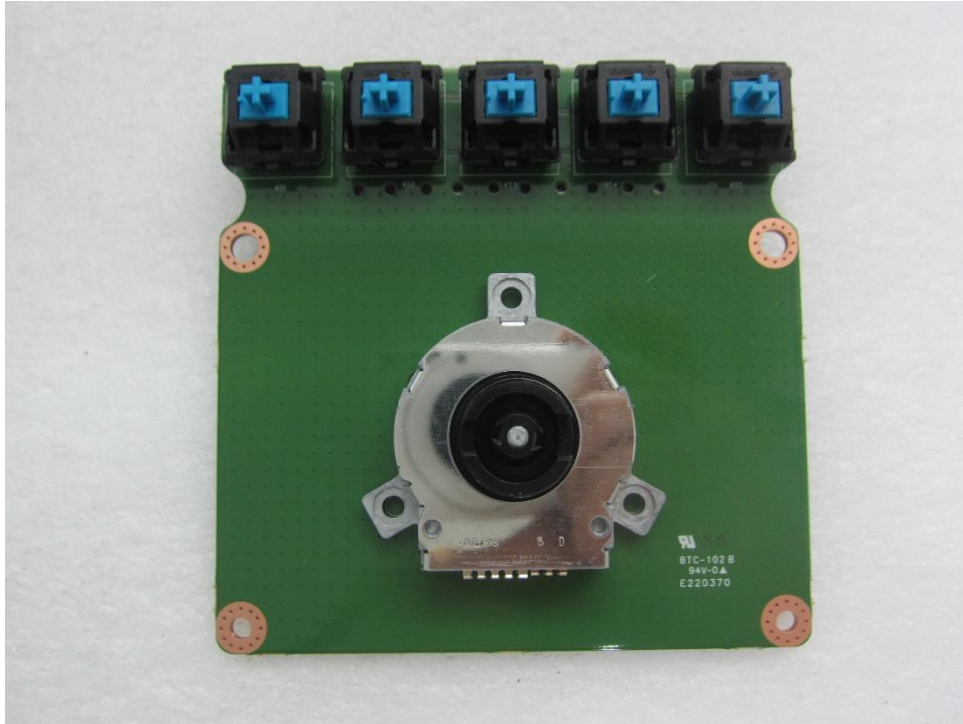


(Bottom)

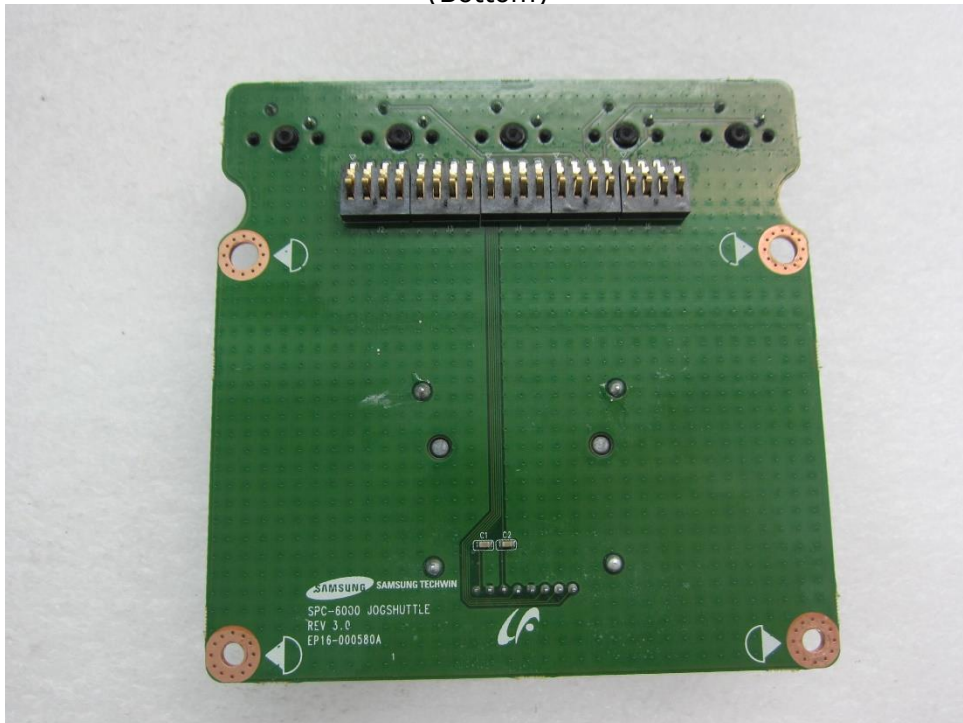


EUT Internal View – Sub Board 2

(Top)



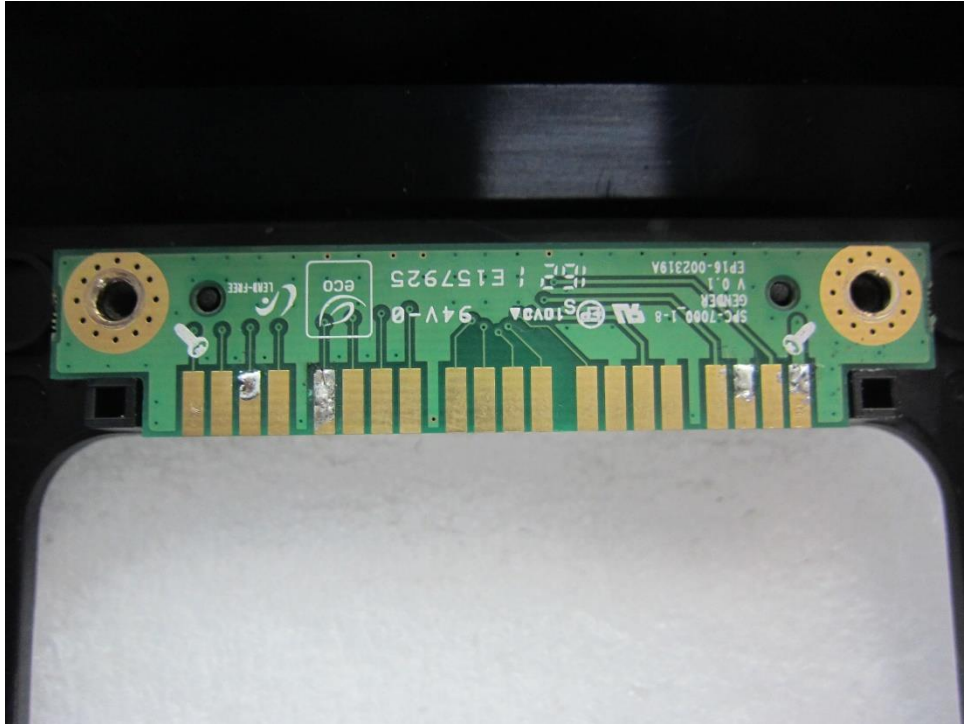
(Bottom)



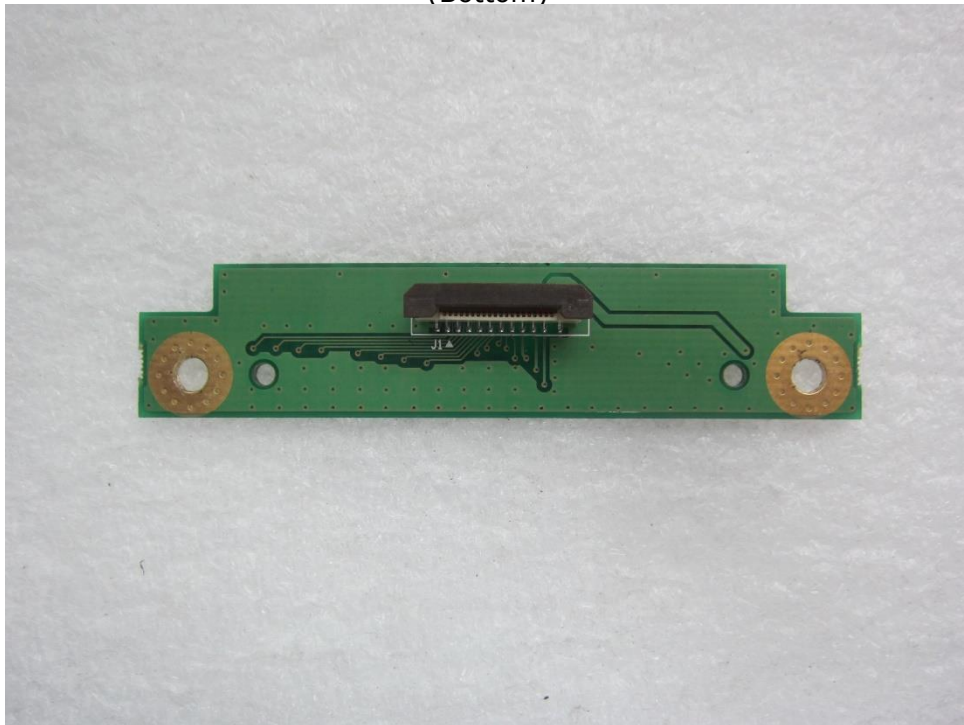
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
 The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
 The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Sub Board 3

(Top)



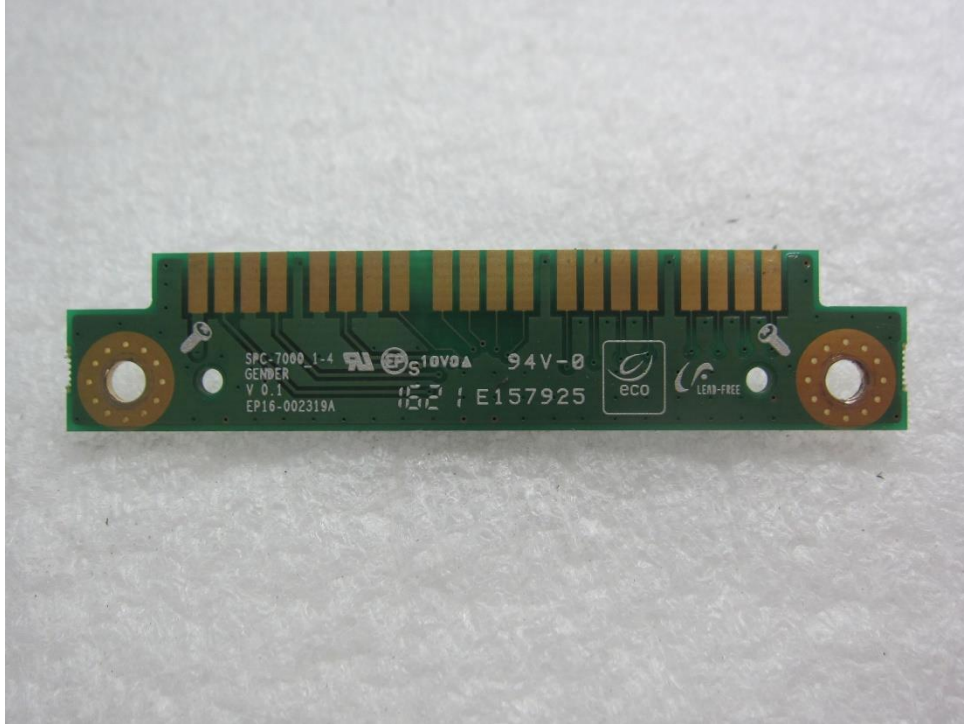
(Bottom)



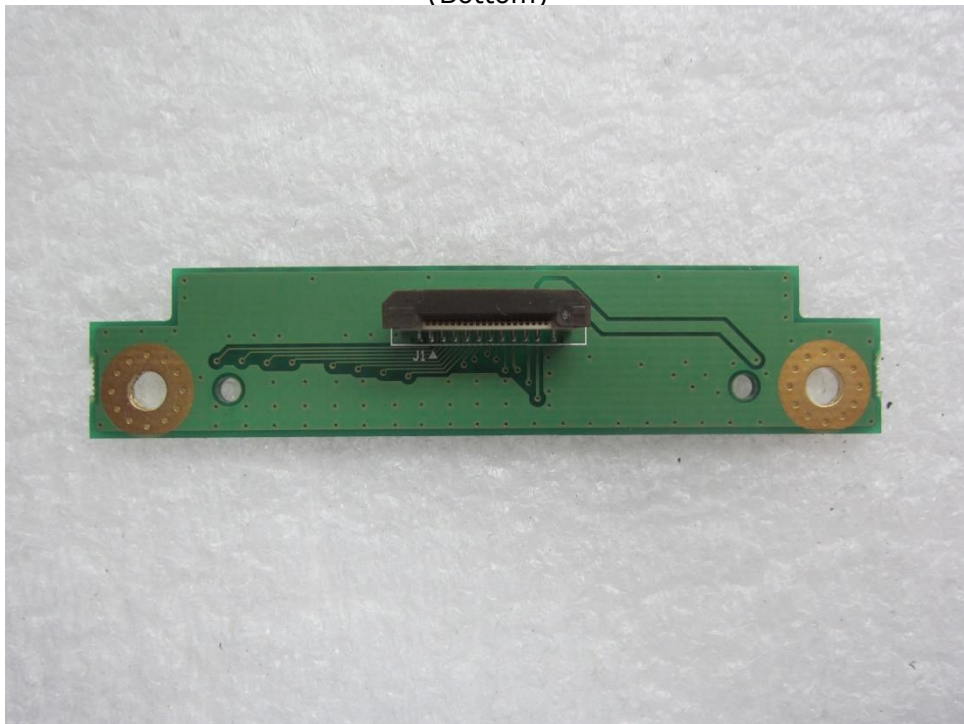
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Sub Board 4

(Top)

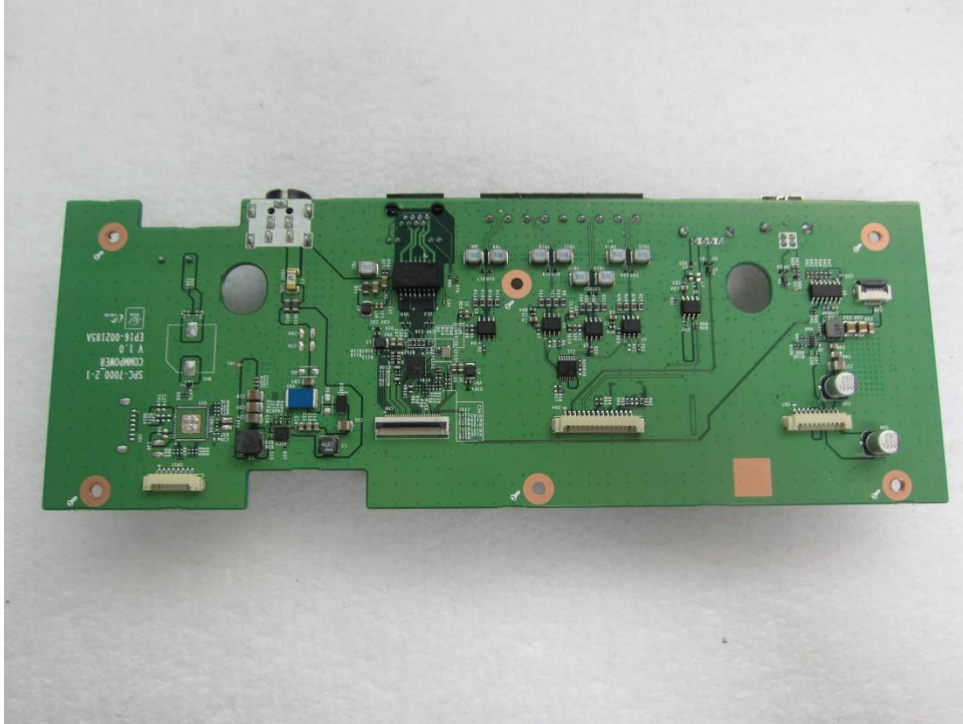


(Bottom)

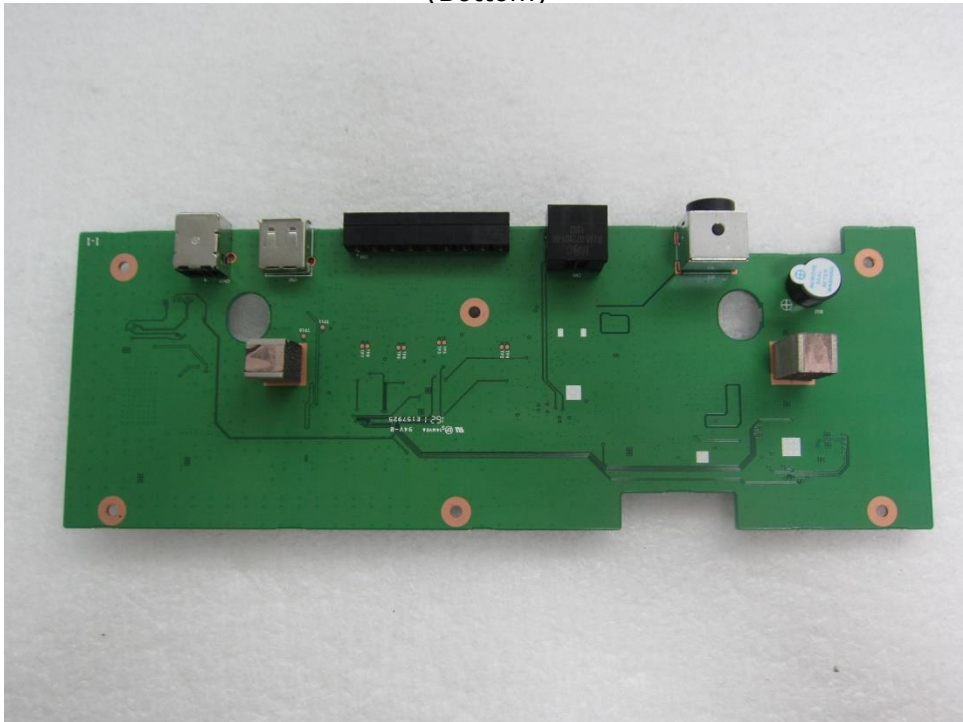


EUT Internal View – Sub Board 5

(Top)



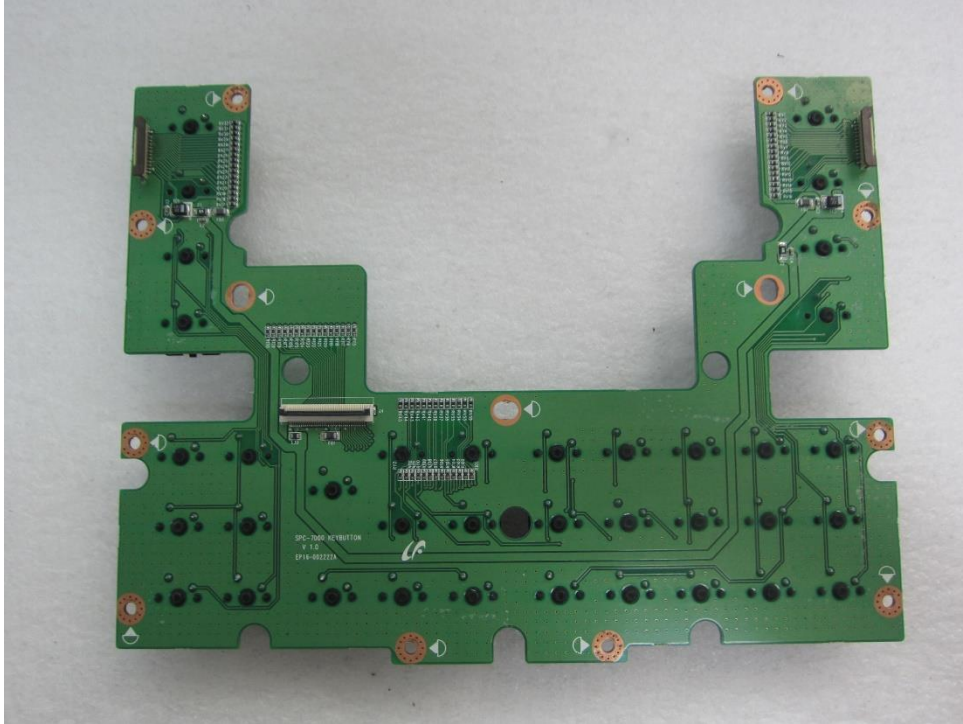
(Bottom)



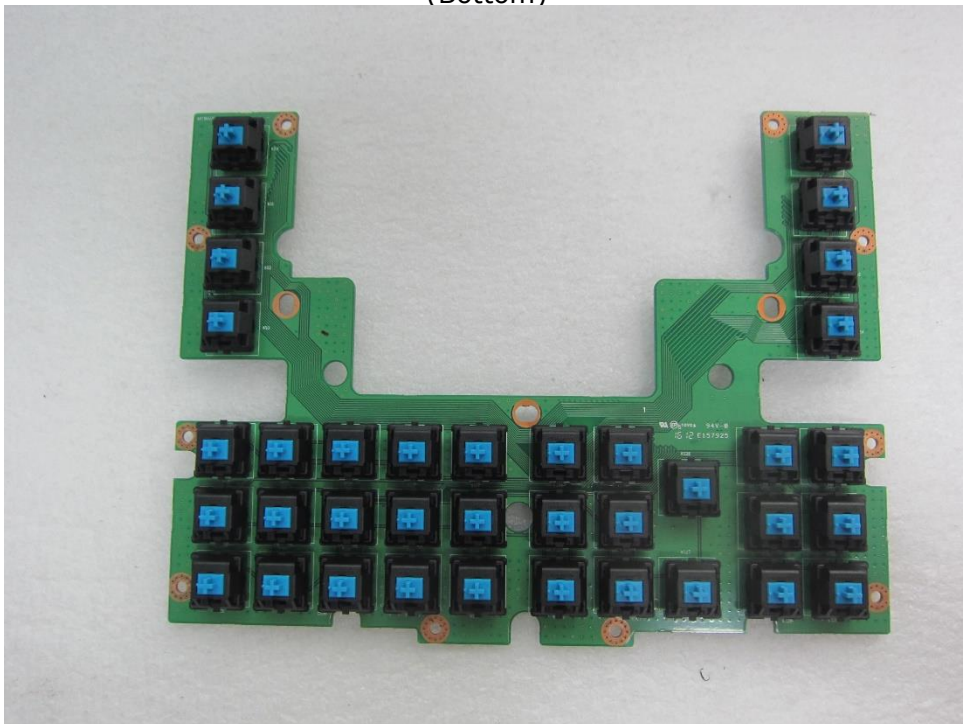
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Sub Board 6

(Top)

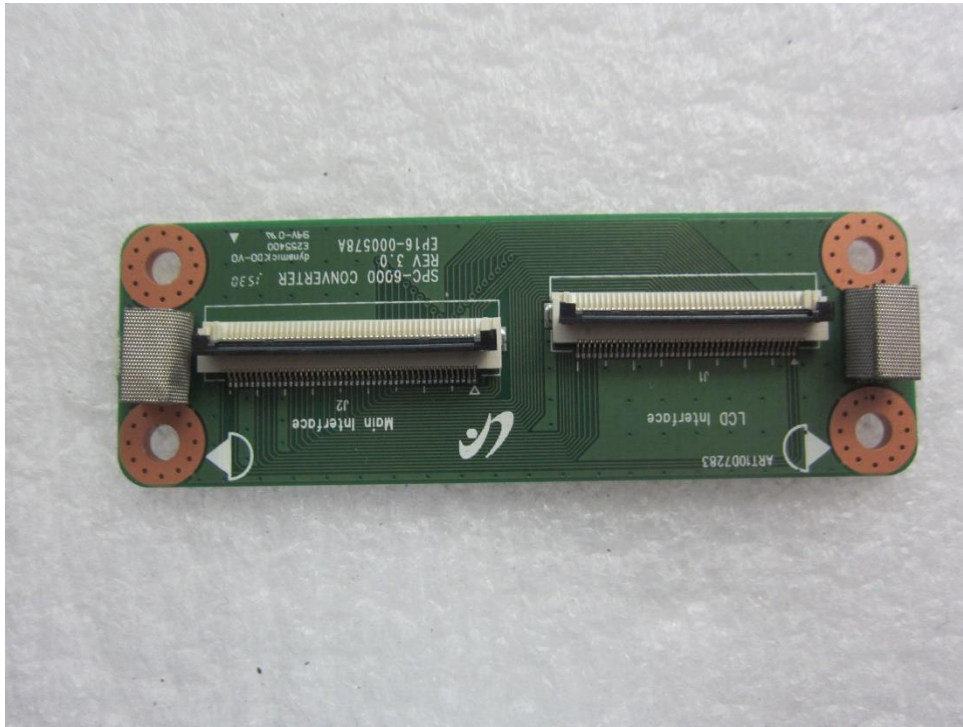


(Bottom)

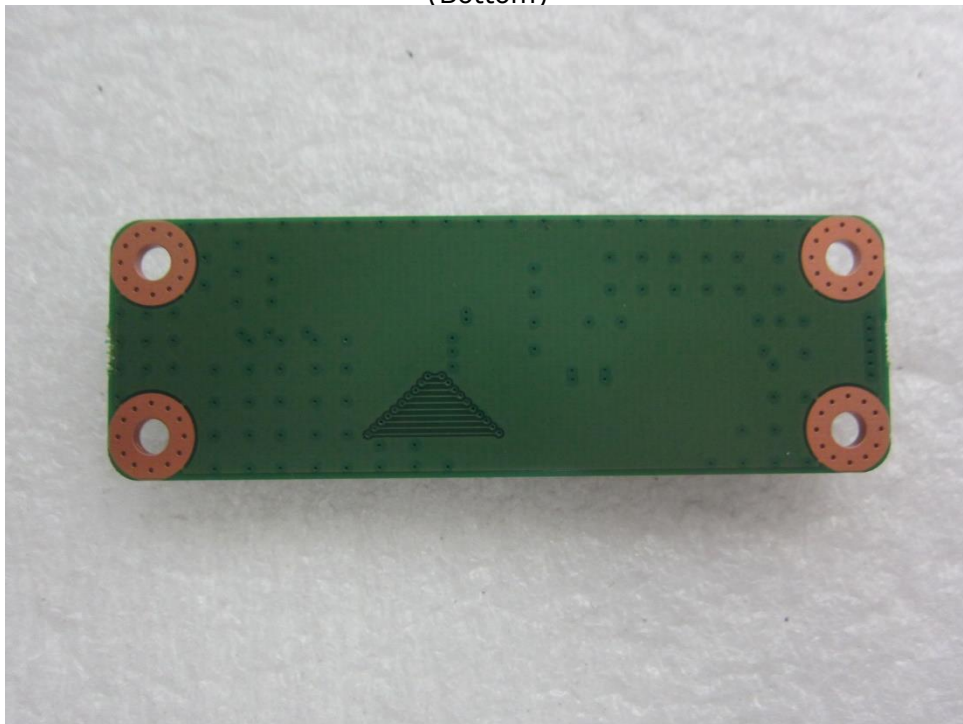


EUT Internal View – Sub Board 7

(Top)



(Bottom)



EUT Internal View – Adaptor

(Top)



(Bottom)



Label Photographs



[LABEL VIEW]

CAN ICES-3 (A)/NMB-3(A)