

DECLARATION OF CONFORMITY

We; Hanwha Techwin Co., Ltd.

DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE PRODUCT;

Report No: KES-E1-16T0200

**Type of
equipment:** NETWORK CAMERA

Model Name: PNV-9080RP

Variant Model: -

Applicant: Hanwha Techwin Co., Ltd.

Address: 1204, Changwon-daero, Seongsan-gu,
Chang-won-si, Gyeongsangnam-do, Korea

Manufacturer : Tianjin Samsung Techwin Opto-
Electronic Co., Ltd.

Address: No.11 Weiliu Rd, Micro-Electronic
Industrial Park, TEDA, Tianjin, 300385,
People's Republic of China

Test standards : AS/NZS CISPR22:2009+A1:2010

Classification: C-Tick

The above equipment was tested by EMC compliance Testing Laboratory for with the requirements of C-tick Rules and Regulations. The results of testing in this report apply to the product / system which was tested only.

May. 13. 2016
(Date of issue)

(Name and signature of authorized person)



EMC TEST REPORT For C-TICK

Test Report No. : KES-E1-16T0200
Date of Issue : May. 13, 2016
Product name : NETWORK CAMERA
Model/Type No. : PNV-9080RP
Variant Model : -
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, Korea
Manufacturer : Tianjin Samsung Techwin Opto-Electronic Co.,Ltd.
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, People's Republic of China
Date of Receipt : Apr. 14, 2016
Test date : Apr. 18, 2016
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Hyo Jin, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

**KES Co., Ltd.**

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

Test report No.:
KES-E1-16T0200
Page (2) of (44)

REPORT REVISION HISTORY

Date	Revision	Page No
May. 13, 2016	KES-E1-16T0200	Issued

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.



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	4
1.2	Variant Model Differences.....	6
1.3	Device Modifications	6
1.4	Equipment Under Test.....	6
1.5	Support Equipments	6
1.6	External I/O Cabling	7
1.7	EUT Operating Mode(s)	7
1.8	Configuration.....	8
1.9	Calibration Details of Equipment Used for Measurement	9
1.10	Test Facility	9
1.11	Laboratory Accreditations and Listings	9
2.0	Test Regulations.....	10
2.1	Conducted Emissions at Mains Power Ports	12
2.2	Conducted Emissions at Telecommunication Ports.....	13
2.3	Radiated Electric Field Emissions(Below 1 GHz)	14
2.4	Radiated Electric Field Emissions(Above 1 GHz)	15
APPENDIX A – TEST DATA.....		16
Conducted Emissions at Mains Power Ports.....		16
Conducted Emissions at Telecommunication Ports		18
Radiated Electric Field Emissions(Below 1 GHz)		24
Radiated Electric Field Emissions(Above 1 GHz)		25
Test Setup Photos and Configuration		33
Conducted Voltage Emissions		33
Conducted Telecommunication Emissions		34
Radiated Electric Field Emissions(Below 1 GHz)		36
Radiated Electric Field Emissions(Above 1 GHz)		38
EUT External Photographs.....		40
EUT Internal Photographs		41



1.0 General Product Description

Main Specifications of EUT are:

	PNV-9080R (DVT)
Video	
Imaging Device	1/1.7" 12.4M CMOS
Total Pixels	4,168(H) x 3,062(V)
Effective Pixels	4,072(H) x 3,046(V)
Scanning System	Progressive Scan
Min. Illumination	Color : 0.3 Lux(1/30sec, F1.6, 30IRE), 0.01 Lux(2sec, F1.6, 30IRE) 0 Lux (IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 704x480(N), 704x576(P), for installation - DIP connector type
Lens	
Focal Length (Zoom Ratio)	4.5 ~ 10mm (2.2x) Motorized Varifocal
Max. Aperture Ratio	F1.6
Angular Field of View	[4096 x 2160] H : 100.3°(Wide) / V : 49.7°(Wide) [3840 x 2160] H : 92.9°(Wide) / V : 49.7°(Wide)
Min. Object Distance	0.5m(1.64ft)
Focus Control	Simple Focus (Motorized V/F) / Manual - Remote control via network (Manual, Simple Focus)
Lens Type	P-Iris mode
Mount Type	Board-in type
LDC(Lens Distortion Correction)	Off/On
Operational	
IR LED	4 ea
Viewable Length	30m
Camera Title	Off / On (Displayed up to 45 characters) - W/W : English/Numeric/Special Characters - Korea : English/Numeric/Special/Korean Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 6), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Samsung Super Dynamic Range) (Off / On)
Digital Noise Reduction	SSNR (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	-
Defog	Auto/Manual/Off
Motion Detection	Off / On(8ea, Polygonal)
Privacy Masking	Off / On (16ea, Polygonal with 4Lines Only) - Color : Gray, Green, Red, Blue, Black, White
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (included Mercury & Sodium)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Rotate Image	Flip : On/Off Mirror : On/Off Hallway : 90° / 270°

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.



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (5) of (44)

Intelligent Video Analytics	Tampering(Scene Change), Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Defocus Detection, Digital Auto Tracking - with Metadata
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm Input, Motion Detection, Video Analytics , Audio Detection, Network Disconnect
Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail • Local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers
Audio In	Selectable (Mic IN/Line IN), Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out (3.5mm stereo mini jack), Max output level: 1 Vrms
Network	

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.



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 ☐ 110 Vac ☐ 230 Vac ☒ PoE ☒ 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 CAMERA	PNV-9080RP	-	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
POE Adapter	POE36U-1AT-R	-	PHIHONG	-
Notebook	NT63025J	JK9091EF400432X	Samsung Electronics Co., Ltd.	-
AC/DC Adapter	A13-040N2A	CN60BA4400313AD0N 843KO243	Chicony Power Technology (suzhou)Co., Ltd.	-
MIC	CMK-303	-	CAMAC	-
Speaker	BR10000A CUVE	SN128458950887	BEIJING EDIFIER HI-TECH GROUP.	
Monitor	SMT-2232	C95V67VF900038B	Weiha Daewoo Electronics Co., Ltd.	-
Alarm Jig	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-

1.6 External I/O Cabling

- DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	Notebook	RJ-45	3.0	U
	MIC	MIC	Line Out	1.5	U
	Audio Out	Speaker	Audio In	1.9	U
	BNC	Monitor	BNC	3.0	S
	Alarm Out	Alarm Jig	Alarm Out	3.0	U

- PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	POE Adapter	RJ-45	3.0	U
PoE Adapter	RJ-45	Notebook	RJ-45	3.0	U
NETWORK CAMERA (E.U.T)	MIC	MIC	Line Out	1.5	U
	Audio Out	Speaker	Audio In	1.9	U
	BNC	Monitor	BNC	3.0	S
	Alarm Out	Alarm Jig	Alarm Out	3.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

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

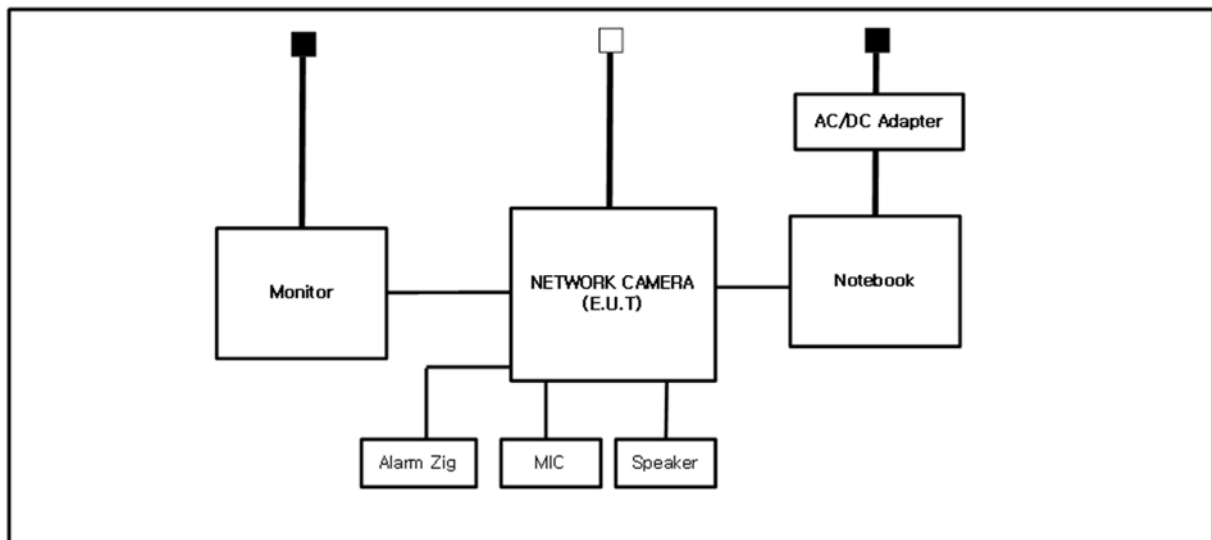
Test mode	Normal operating
OP	MONITORING Network ping test

- Input power condition during the measurements was POE, 12 V(dc)

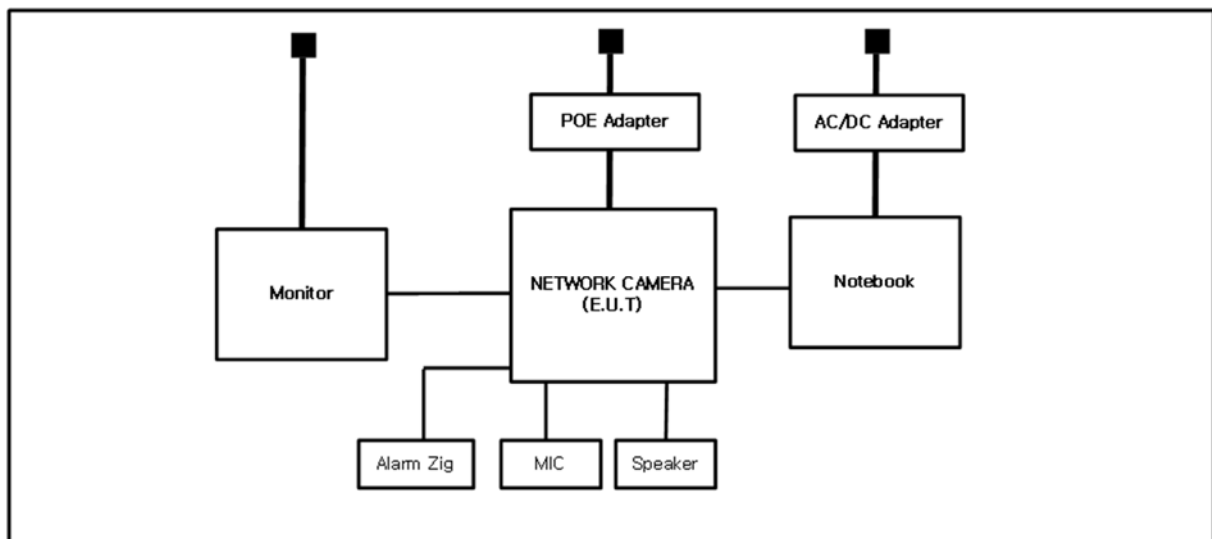
1.8 Configuration

■ AC Main
 □ DC Main

- DC 12 V Mode



- PoE Mode



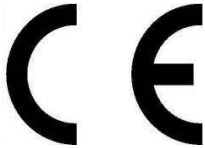
1.9 Calibration Details of Equipment Used for Measurement

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 473-29 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
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-4308, C-4798, T-2311, G-914
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	

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

☐ VCCI V-3/2013.04

☐ Class A

☐ Class B

☒ AS/NZS CISPR22:2009 +A1:2010

☒ Class A

☐ Class B

☐ 47 CFR Part 15, Subpart B / ANSI C63.4-2009

☐ Class A

☐ Class B

☐ IC Regulation ICES-003 : 2012
/ ANSI C63.4-2014

☐ Class A

☐ Class B

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B



☐ **R&TTE- Directive 1999/5/EC**

☐ 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



2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

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	-	AONE SHIELD	-	-

Test Conditions

Temperature: °C
Relative Humidity: %

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

Remarks

Beacause the E.U.T power is 12 V (dc) power and PoE, limits are not specified

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Apr. 18, 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
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04. 01. 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04. 01. 2016
☒	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08. 14. 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 25,0 °C

Relative Humidity: 36,5 %

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

Remarks

See Appendix A for test data.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Apr. 18, 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	ESR3	R&S	101781	05, 03, 2017
☒	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9168-713	05, 15, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 21,1 °C

Relative Humidity: 30,0 %

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

RemarksSee Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Apr. 18, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100551	04, 18, 2016
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10. 23. 2016
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05. 07. 2017
☒	Semi Anchoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions

Temperature: 25,0 °C
Relative Humidity: 36,5 %

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

[HOT]

N/A



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (17) of (44)

[NEUTRAL]

N/A

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.

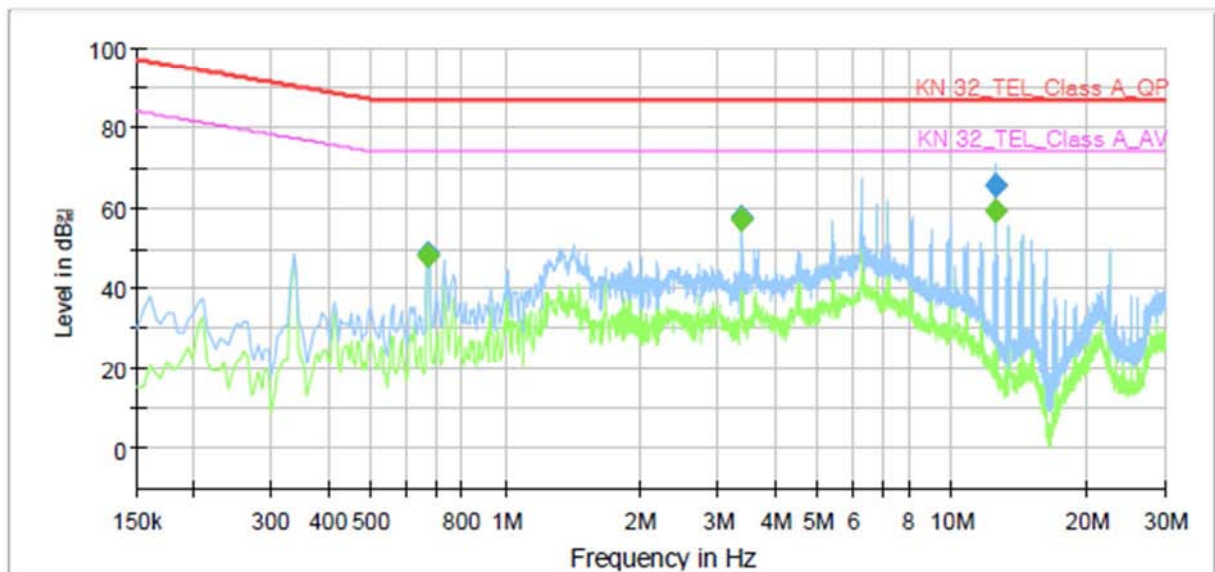
Conducted Emissions at Telecommunication Ports

- DC 12 V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNV-9080RP
Mode	DC 12 V_10 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	---	48.31	74.00	25.69	1000.0	9.000	Single Line	9.9
0.670000	48.64	---	87.00	38.36	1000.0	9.000	Single Line	9.9
3.385000	---	57.18	74.00	16.82	1000.0	9.000	Single Line	9.8
3.385000	57.55	---	87.00	29.45	1000.0	9.000	Single Line	9.8
12.500000	---	59.14	74.00	14.86	1000.0	9.000	Single Line	10.1
12.500000	65.47	---	87.00	21.53	1000.0	9.000	Single Line	10.1



KES Co., Ltd.

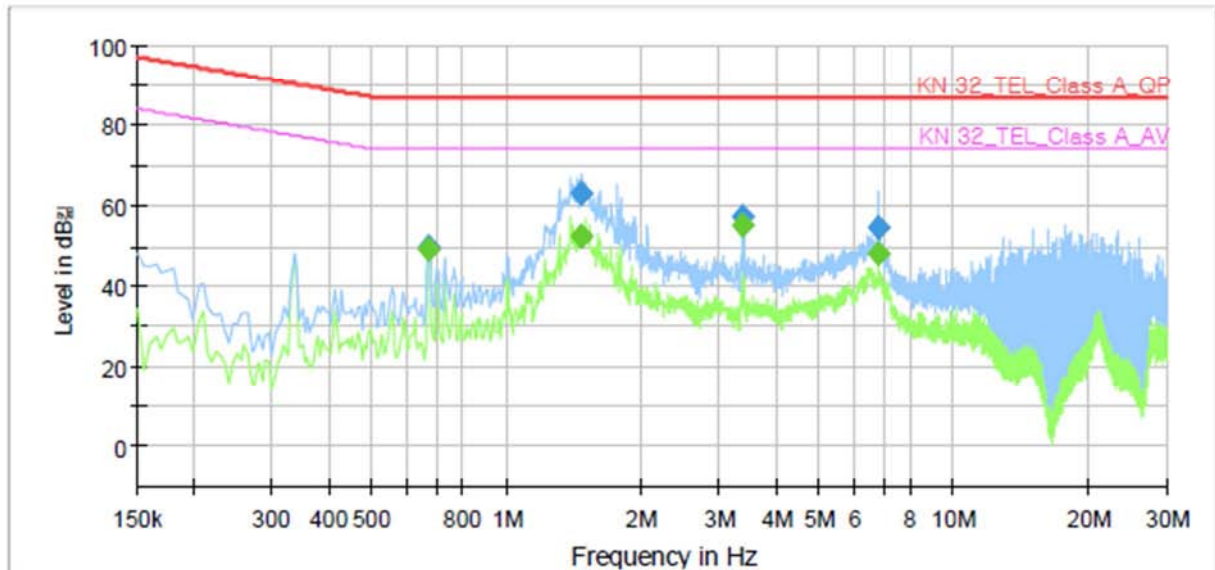
C-3701, Simin-daero 365-40,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:
KES-E1-16T0200
Page (19) of (44)

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PNV-9080RP
Mode: DC 12 V_100 Mbps
Operator Name: KES



Final Result

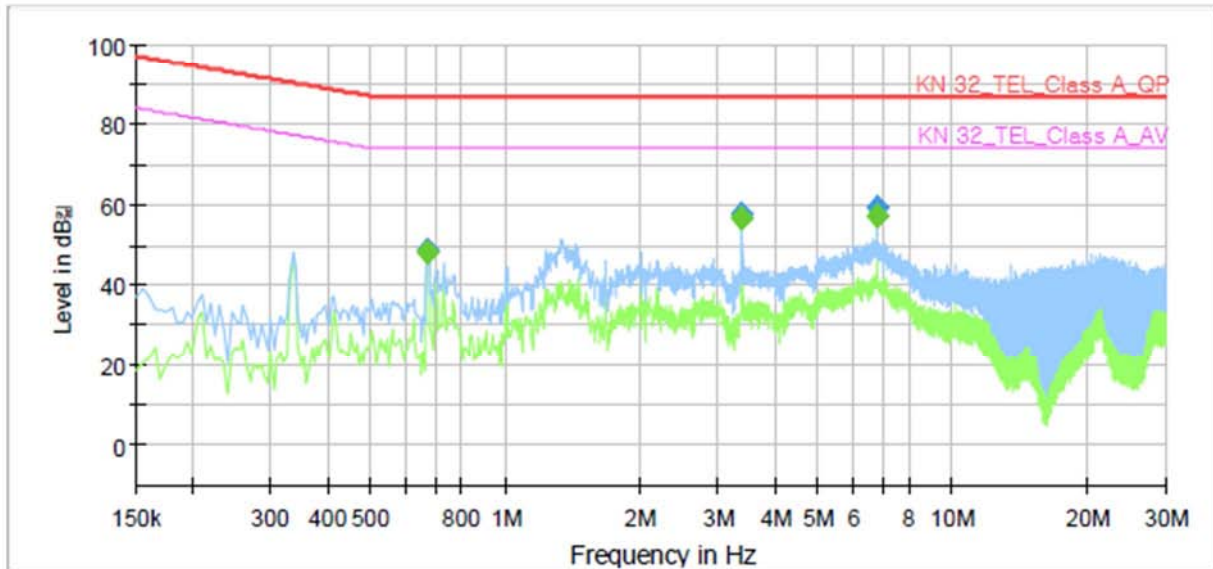
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	---	49.11	74.00	24.89	1000.0	9.000	Single Line	9.4
0.670000	49.94	---	87.00	37.06	1000.0	9.000	Single Line	9.4
1.475000	---	52.17	74.00	21.83	1000.0	9.000	Single Line	9.3
1.475000	62.93	---	87.00	24.07	1000.0	9.000	Single Line	9.3
3.390000	---	54.96	74.00	19.04	1000.0	9.000	Single Line	9.3
3.390000	57.14	---	87.00	29.86	1000.0	9.000	Single Line	9.3
6.780000	---	48.22	74.00	25.78	1000.0	9.000	Single Line	9.5
6.780000	54.41	---	87.00	32.59	1000.0	9.000	Single Line	9.5

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.

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNV-9080RP
Mode	DC 12 V_1000 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.670000	---	48.37	74.00	25.63	1000.0	9.000	Single Line	9.3
0.670000	48.75	---	87.00	38.25	1000.0	9.000	Single Line	9.3
3.385000	---	56.89	74.00	17.11	1000.0	9.000	Single Line	9.2
3.385000	57.44	---	87.00	29.56	1000.0	9.000	Single Line	9.2
6.770000	---	57.15	74.00	16.85	1000.0	9.000	Single Line	9.3
6.770000	59.06	---	87.00	27.94	1000.0	9.000	Single Line	9.3

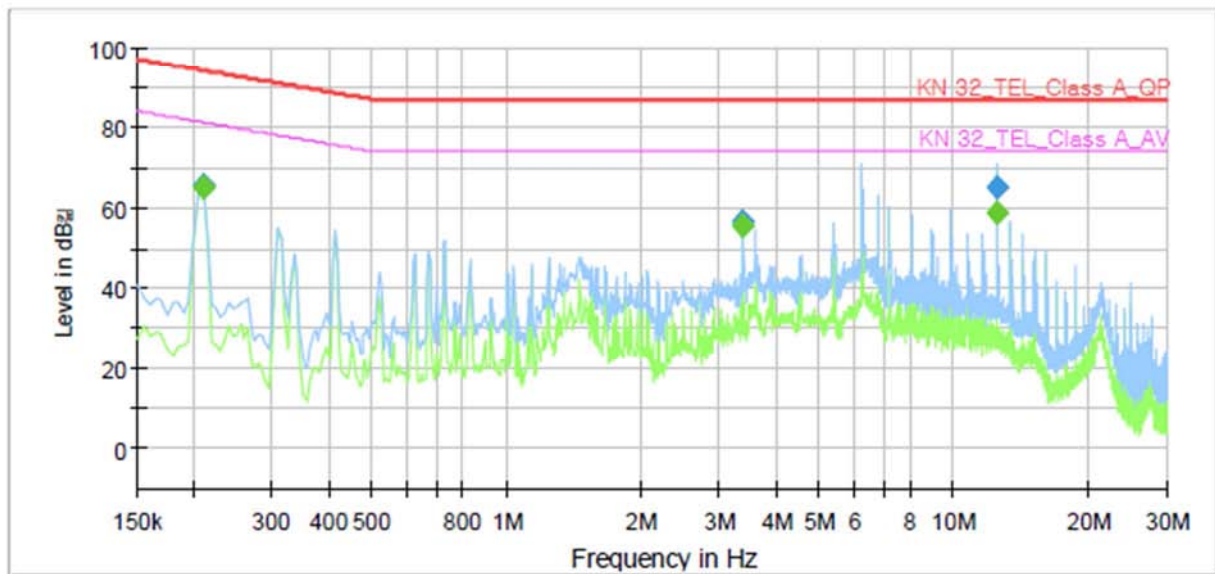
- PoE Mode

[10 Mbps]

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Telecommunication Emission
PNV-9080RP
PoE_10 Mbps
KES



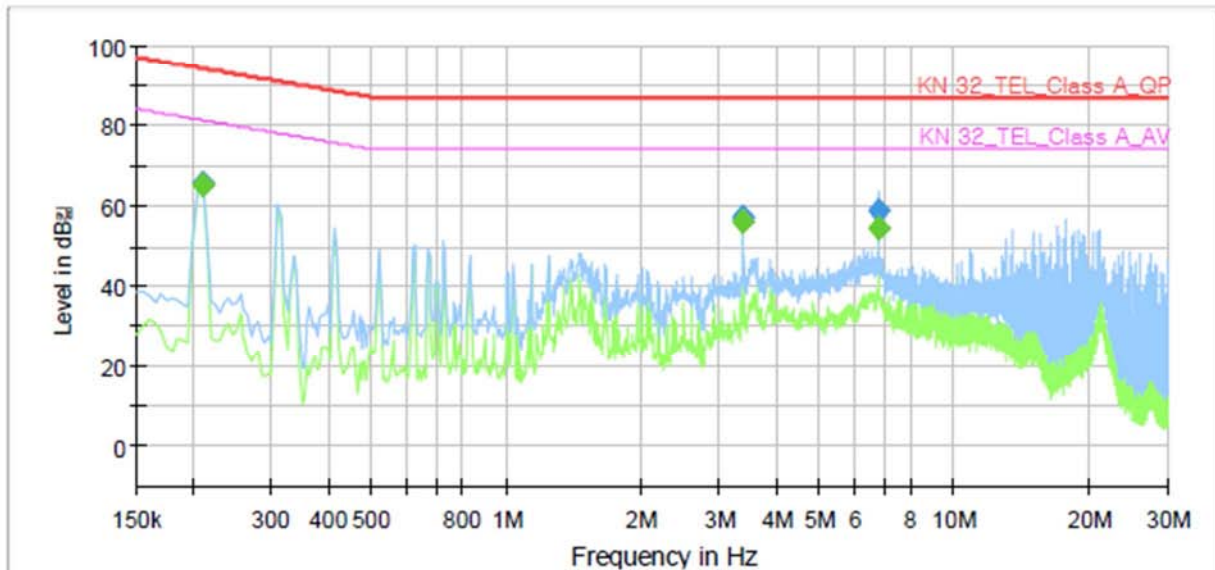
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.210000	---	65.21	81.21	16.00	1000.0	9.000	Single Line	10.1
0.210000	65.65	---	94.21	28.56	1000.0	9.000	Single Line	10.1
3.385000	---	55.34	74.00	18.66	1000.0	9.000	Single Line	9.8
3.385000	56.49	---	87.00	30.51	1000.0	9.000	Single Line	9.8
12.500000	---	58.90	74.00	15.10	1000.0	9.000	Single Line	10.1
12.500000	65.15	---	87.00	21.85	1000.0	9.000	Single Line	10.1

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNV-9080RP
Mode	PoE_100 Mbps
Operator Name:	KES



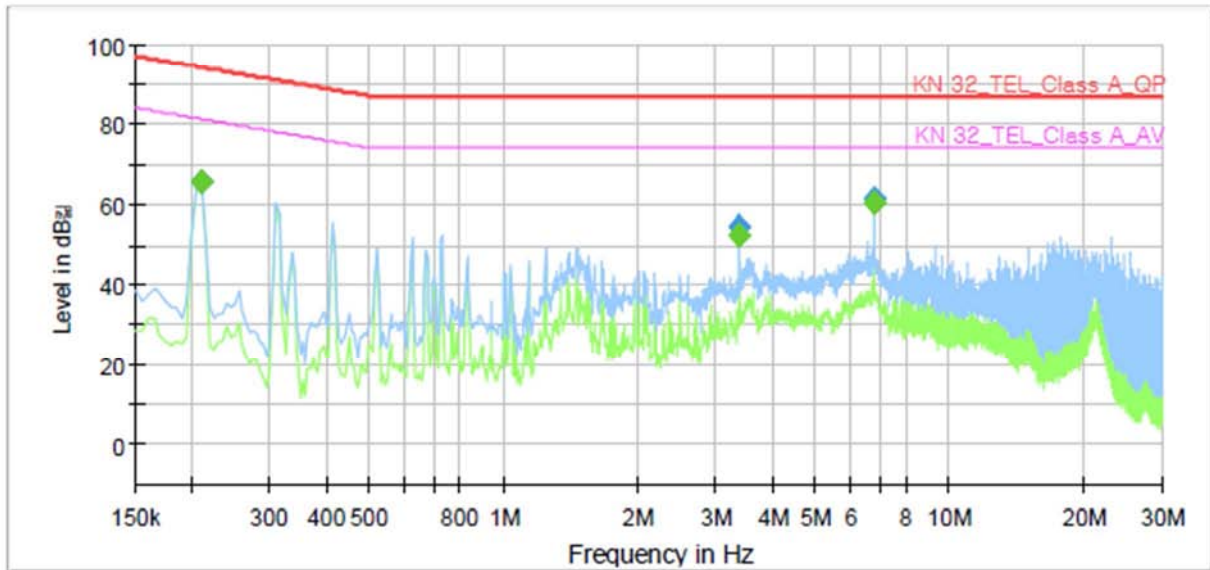
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.210000	---	65.29	81.21	15.92	1000.0	9.000	Single Line	9.6
0.210000	65.79	---	94.21	28.42	1000.0	9.000	Single Line	9.6
3.385000	---	56.10	74.00	17.90	1000.0	9.000	Single Line	9.3
3.385000	56.98	---	87.00	30.02	1000.0	9.000	Single Line	9.3
6.770000	---	54.75	74.00	19.25	1000.0	9.000	Single Line	9.5
6.770000	58.51	---	87.00	28.49	1000.0	9.000	Single Line	9.5

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNV-9080RP
Mode	PoE_1000 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.210000	---	65.40	81.21	15.81	1000.0	9.000	Single Line	9.5
0.210000	65.88	---	94.21	28.33	1000.0	9.000	Single Line	9.5
3.385000	---	52.22	74.00	21.78	1000.0	9.000	Single Line	9.2
3.385000	54.38	---	87.00	32.62	1000.0	9.000	Single Line	9.2
6.765000	---	60.27	74.00	13.73	1000.0	9.000	Single Line	9.3
6.765000	61.18	---	87.00	25.82	1000.0	9.000	Single Line	9.3

**Radiated Electric Field Emissions(Below 1 GHz)**

- DC 12 V 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]
216.08	7.30	H	4.00	11.66	3.44	22.40	40.00	17.60
360.00	22.21	V	1.00	14.77	4.74	41.72	47.00	5.28
425.10	6.80	V	1.20	16.05	5.22	28.07	47.00	18.93
432.60	7.12	H	3.85	16.16	5.27	28.55	47.00	18.45
504.00	15.02	H	4.00	17.19	5.77	37.98	47.00	9.02
525.07	7.11	V	1.20	17.65	5.89	30.65	47.00	16.35

* H : Horizontal, V : Vertical

- PoE Mode

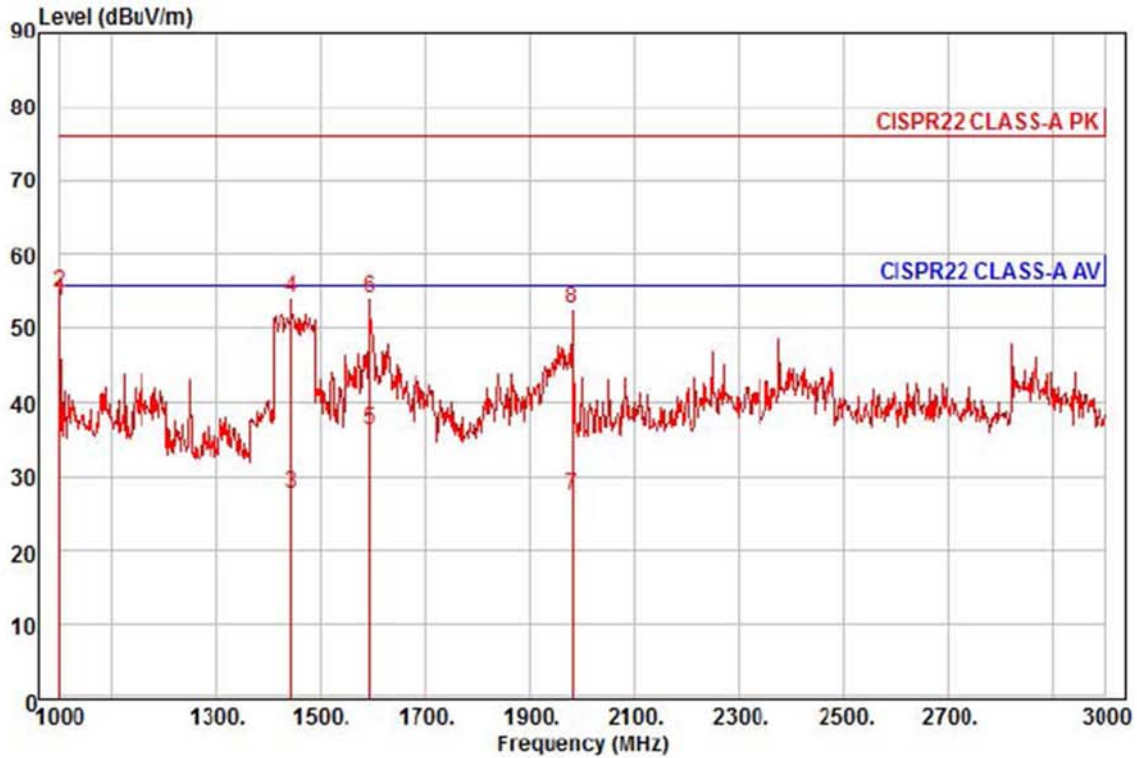
Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
240.10	7.43	V	1.00	12.19	3.70	23.32	47.00	23.68
360.00	22.20	V	1.20	14.77	4.74	41.71	47.00	5.29
426.66	6.50	H	4.00	16.07	5.23	27.80	47.00	19.20
432.44	6.20	H	3.80	16.15	5.27	27.62	47.00	19.38
504.04	16.20	V	1.00	17.19	5.77	39.16	47.00	7.84
525.40	6.82	H	3.85	17.66	5.89	30.37	47.00	16.63

* H : Horizontal, V : Vertical



Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PNV-9080RP
Mode : DC 12 V
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	pp	1000.00	63.47	23.91	6.51	40.12	210	56.00	-2.23	horizontal Average
2	pk	1000.00	64.54	23.91	6.51	40.12	210	76.00	-21.16	horizontal Peak
3		1444.00	34.14	25.67	7.80	39.90	26	56.00	-28.29	horizontal Average
4		1444.00	60.68	25.67	7.80	39.90	26	76.00	-21.75	horizontal Peak
5		1594.00	41.74	26.27	8.23	39.83	185	56.00	-19.59	horizontal Average
6		1594.00	59.61	26.27	8.23	39.83	185	76.00	-21.72	horizontal Peak
7		1982.00	30.09	27.81	9.30	39.64	41	56.00	-28.44	horizontal Average
8		1982.00	55.36	27.81	9.30	39.64	41	76.00	-23.17	horizontal Peak

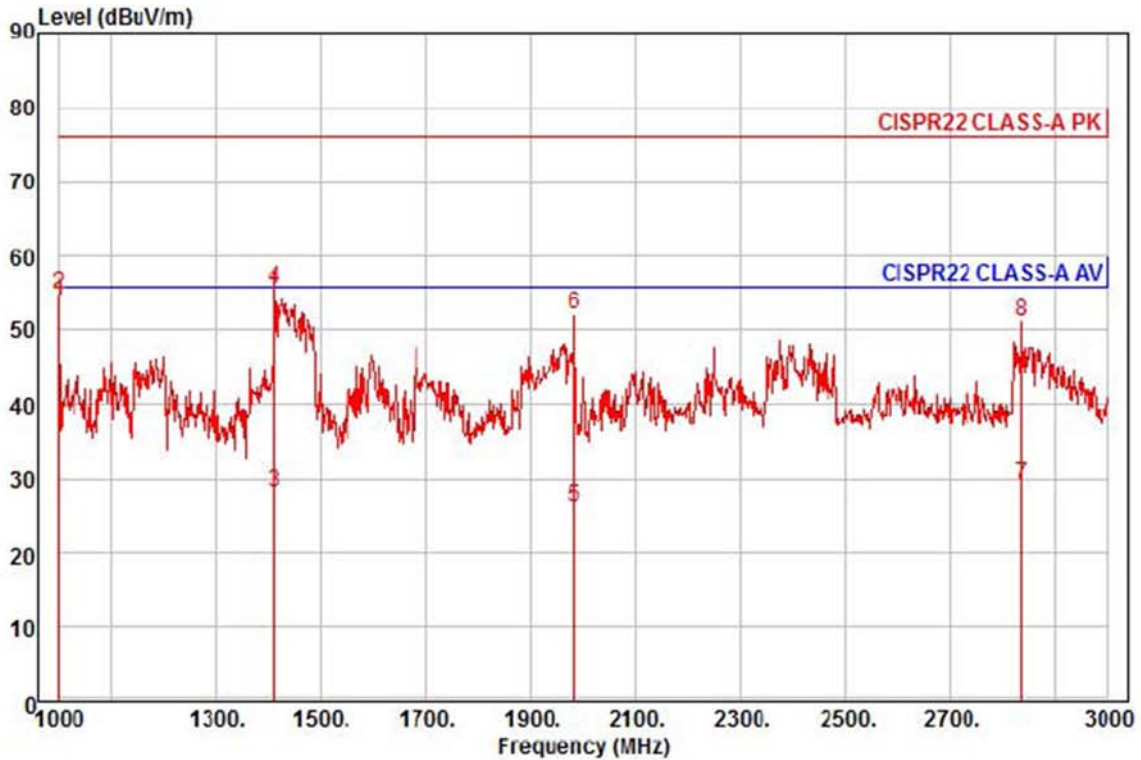
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
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 : PNV-9080RP
Mode : DC 12 V
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 pp	1000.00	63.76	23.91	6.51	40.12	325	56.00	-1.94	vertical	Average
2	1000.00	64.67	23.91	6.51	40.12	325	76.00	-21.03	vertical	Peak
3	1410.00	34.86	25.54	7.70	39.92	330	56.00	-27.82	vertical	Average
4 pk	1410.00	62.39	25.54	7.70	39.92	330	76.00	-20.29	vertical	Peak
5	1984.00	28.65	27.82	9.31	39.64	307	56.00	-29.86	vertical	Average
6	1984.00	54.73	27.82	9.31	39.64	307	76.00	-23.78	vertical	Peak
7	2836.00	28.50	29.93	10.83	40.11	5	56.00	-26.85	vertical	Average
8	2836.00	50.50	29.93	10.83	40.11	5	76.00	-24.85	vertical	Peak

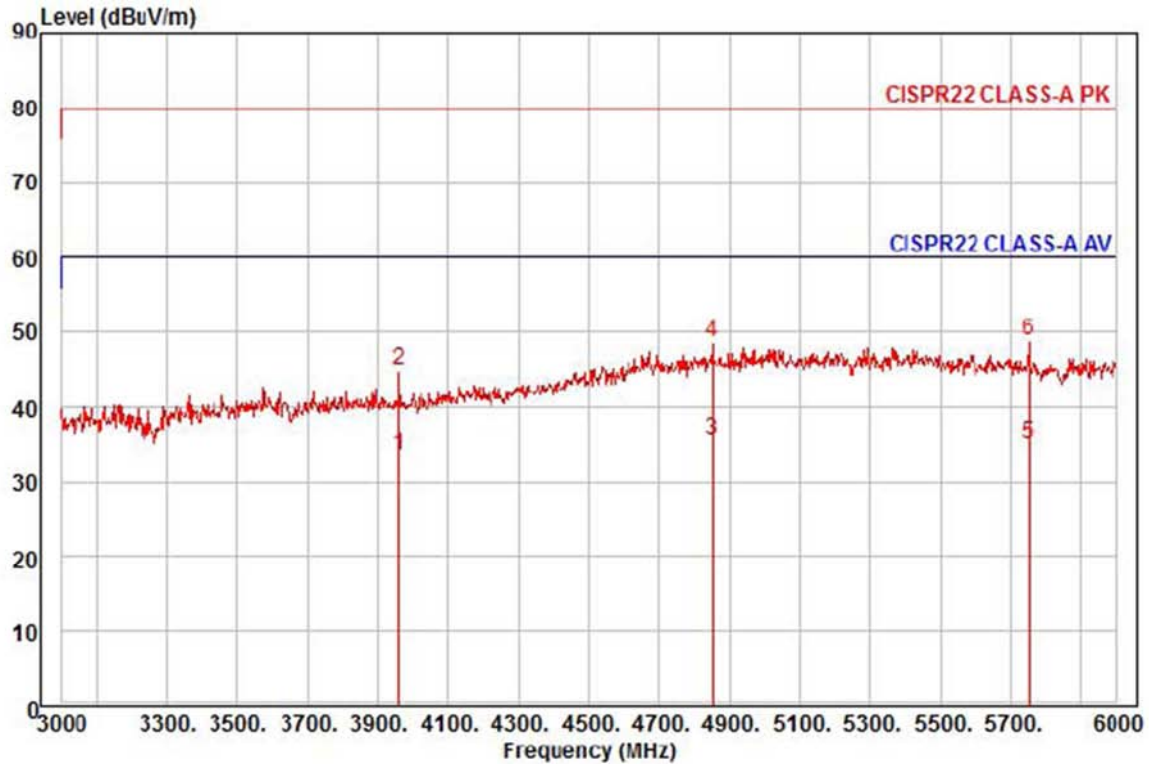
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

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

Test report No.:
KES-EI-16T0200
Page (27) 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 : PNV-9080RP
Mode : DC 12 V
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	3960.00	28.54	31.94	13.43	40.40	87	60.00	-26.49	horizontal	Average
2	3960.00	40.03	31.94	13.43	40.40	87	80.00	-35.00	horizontal	Peak
3 pp	4854.00	23.93	36.89	15.07	40.41	179	60.00	-24.52	horizontal	Average
4	4854.00	37.09	36.89	15.07	40.41	179	80.00	-31.36	horizontal	Peak
5	5751.00	22.88	36.20	16.39	40.30	194	60.00	-24.83	horizontal	Average
6 pk	5751.00	36.44	36.20	16.39	40.30	194	80.00	-31.27	horizontal	Peak

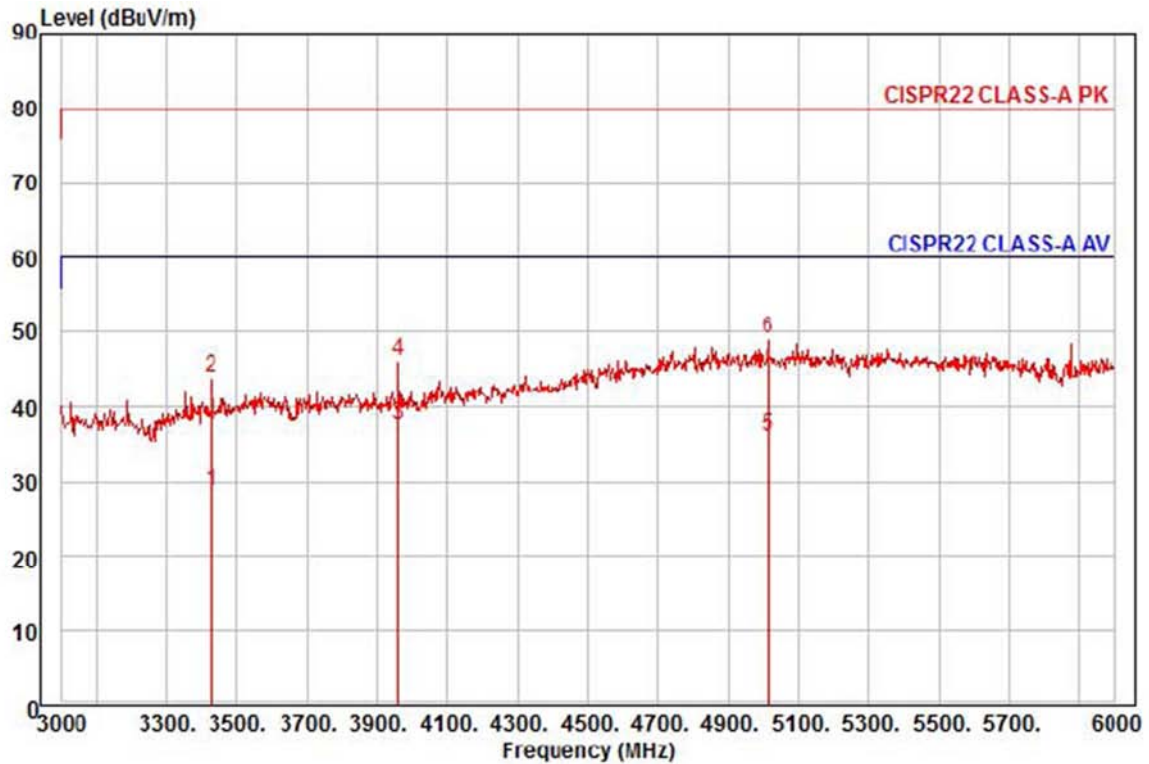
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (28) 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 : PNV-9080RP
Mode : DC 12 V
Memo : 3 - 6 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	3426.00	25.63	31.05	12.32	40.30	341	60.00	-31.30	vertical	Average
2	3426.00	40.80	31.05	12.32	40.30	341	80.00	-36.13	vertical	Peak
3 pp	3960.00	32.62	31.94	13.43	40.40	85	60.00	-22.41	vertical	Average
4	3960.00	41.14	31.94	13.43	40.40	85	80.00	-33.89	vertical	Peak
5	5016.00	23.54	37.69	15.35	40.41	195	60.00	-23.83	vertical	Average
6 pk	5016.00	36.37	37.69	15.35	40.41	195	80.00	-31.00	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.

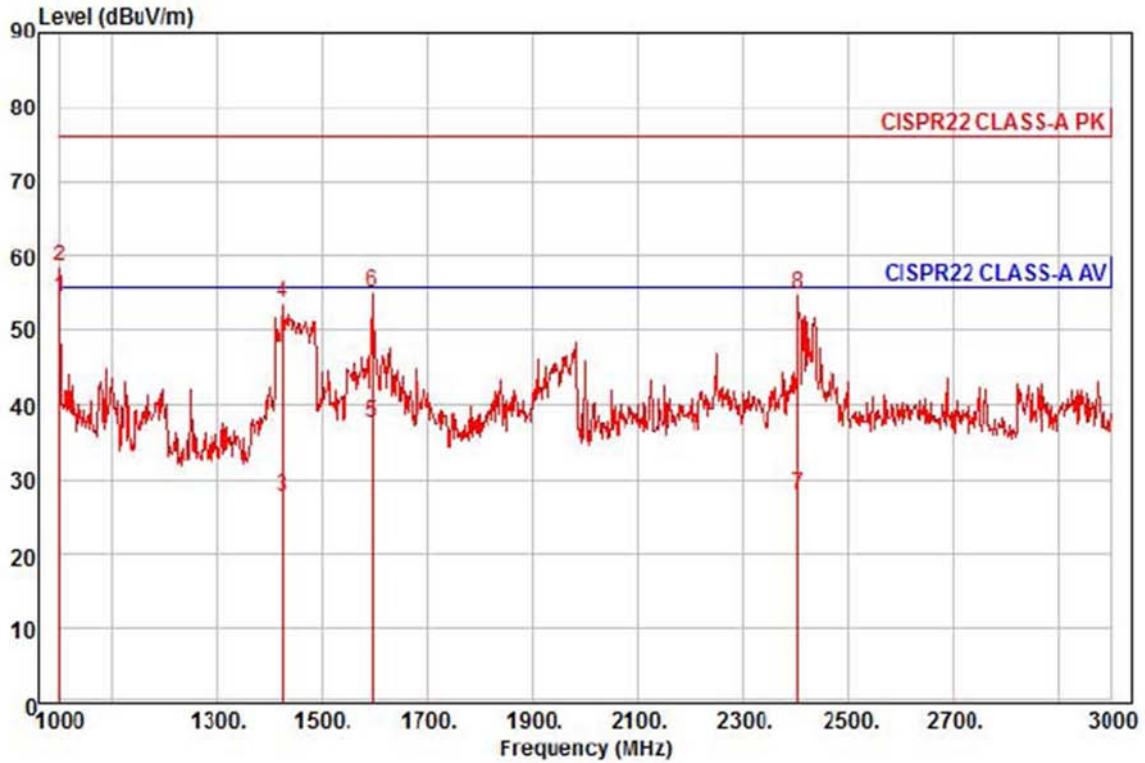


KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (29) of (44)

- PoE Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : PNV-9080RP
Mode : PoE
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	pp	1000.00	64.08	23.91	6.51	40.12	191	56.00	-1.62	horizontal Average
2	pk	1000.00	68.33	23.91	6.51	40.12	191	76.00	-17.37	horizontal Peak
3		1426.00	34.36	25.60	7.75	39.91	21	56.00	-28.20	horizontal Average
4		1426.00	60.31	25.60	7.75	39.91	21	76.00	-22.25	horizontal Peak
5		1596.00	42.90	26.28	8.24	39.83	182	56.00	-18.41	horizontal Average
6		1596.00	60.60	26.28	8.24	39.83	182	76.00	-20.71	horizontal Peak
7		2404.00	29.06	28.87	9.97	39.86	82	56.00	-27.96	horizontal Average
8		2404.00	56.00	28.87	9.97	39.86	82	76.00	-21.02	horizontal Peak

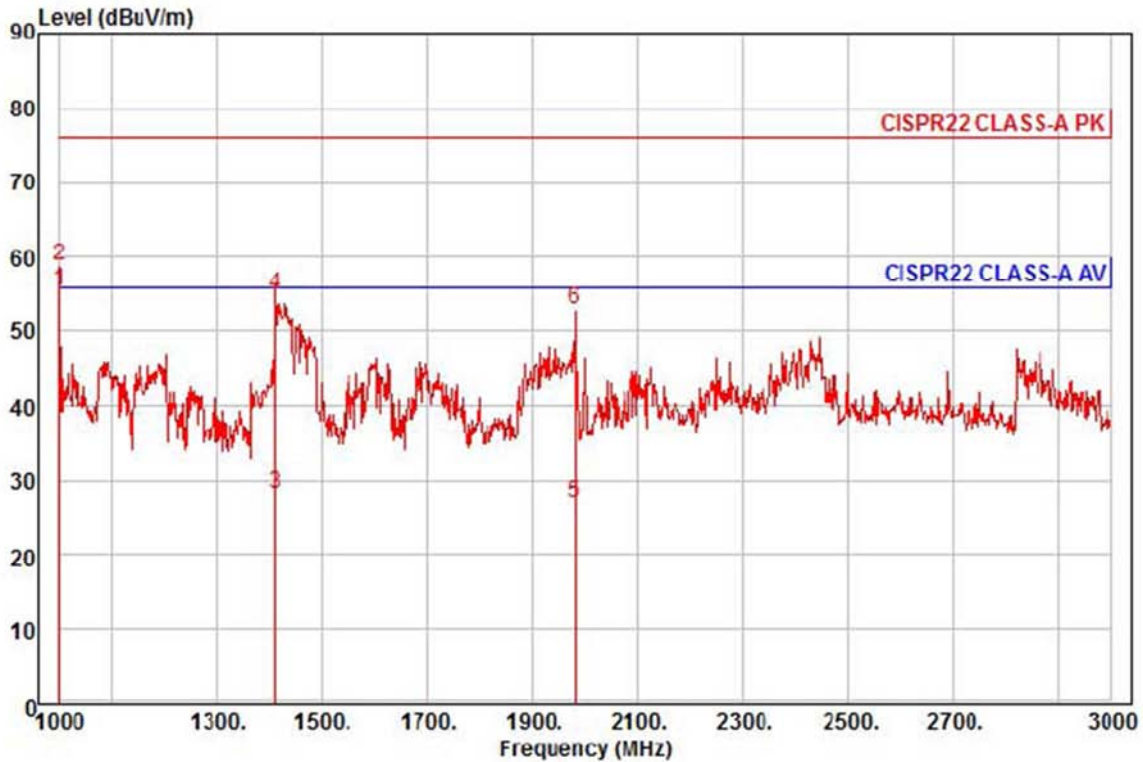
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (30) 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 : PNV-9080RP
Mode : PoE
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	pp	1000.00	65.12	23.91	6.51	40.12	321	56.00	-0.58 vertical	Average
2	pk	1000.00	68.60	23.91	6.51	40.12	321	76.00	-17.10 vertical	Peak
3		1410.00	34.95	25.54	7.70	39.92	333	56.00	-27.73 vertical	Average
4		1410.00	61.67	25.54	7.70	39.92	333	76.00	-21.01 vertical	Peak
5		1982.00	29.58	27.81	9.30	39.64	312	56.00	-28.95 vertical	Average
6		1982.00	55.52	27.81	9.30	39.64	312	76.00	-23.01 vertical	Peak

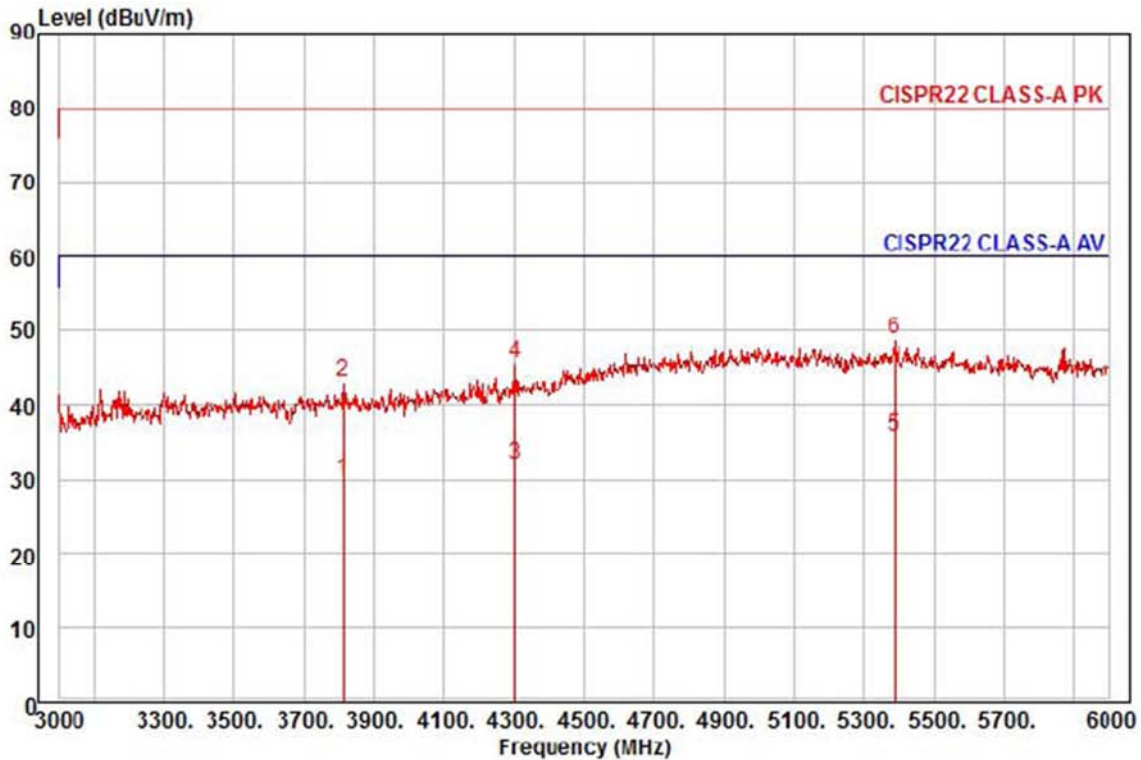
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (31) 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 : PNV-9080RP
Mode : PoE
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	3810.00	25.40	31.69	13.13	40.37	351	60.00	-30.15	horizontal	Average
2	3810.00	38.59	31.69	13.13	40.37	351	80.00	-36.96	horizontal	Peak
3	4302.00	24.70	33.73	14.07	40.41	7	60.00	-27.91	horizontal	Average
4	4302.00	38.22	33.73	14.07	40.41	7	80.00	-34.39	horizontal	Peak
5 pp	5385.00	23.52	36.94	15.78	40.36	254	60.00	-24.12	horizontal	Average
6 pk	5385.00	36.45	36.94	15.78	40.36	254	80.00	-31.19	horizontal	Peak

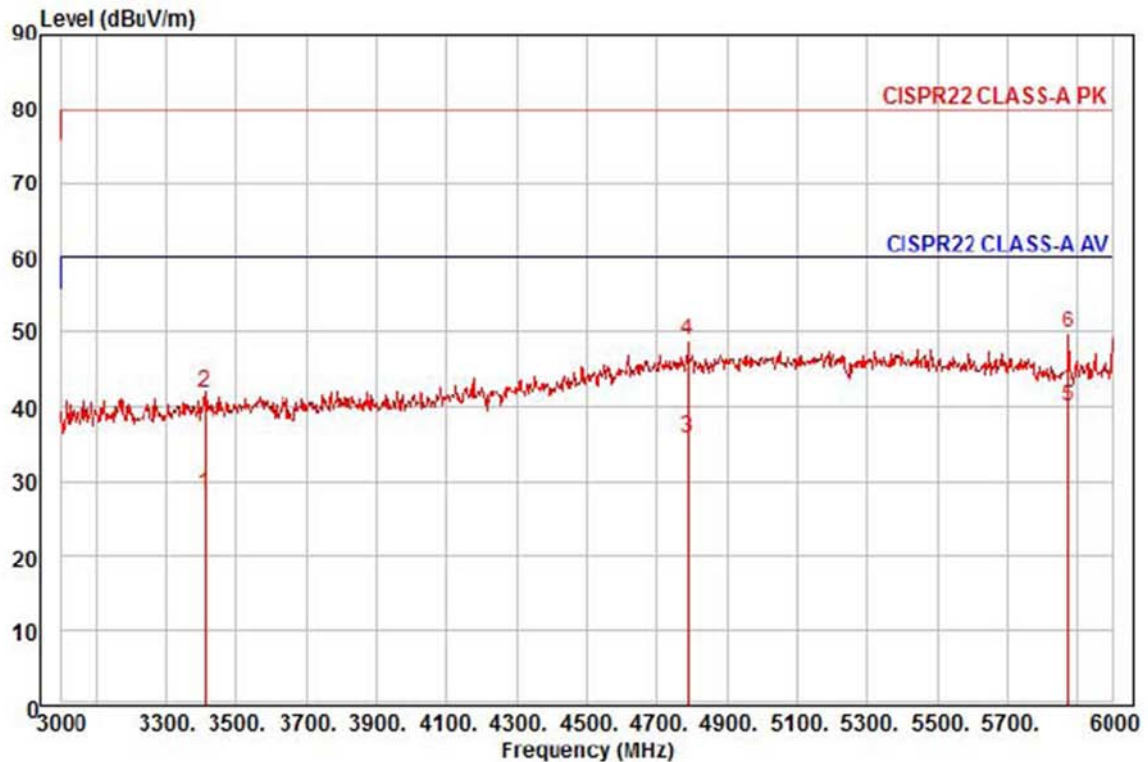
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

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

Test report No.:
KES-E1-16T0200
Page (32) 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 : PNV-9080RP
Mode : PoE
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	3408.00	25.14	31.02	12.27	40.29	336	60.00	-31.86	vertical	Average
2	3408.00	38.83	31.02	12.27	40.29	336	80.00	-38.17	vertical	Peak
3	4785.00	24.67	36.49	14.94	40.41	172	60.00	-24.31	vertical	Average
4	4785.00	37.80	36.49	14.94	40.41	172	80.00	-31.18	vertical	Peak
5 pp	5874.00	27.59	35.95	16.62	40.29	122	60.00	-20.13	vertical	Average
6 pk	5874.00	37.46	35.95	16.62	40.29	122	80.00	-30.26	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.



Test Setup Photos and Configuration

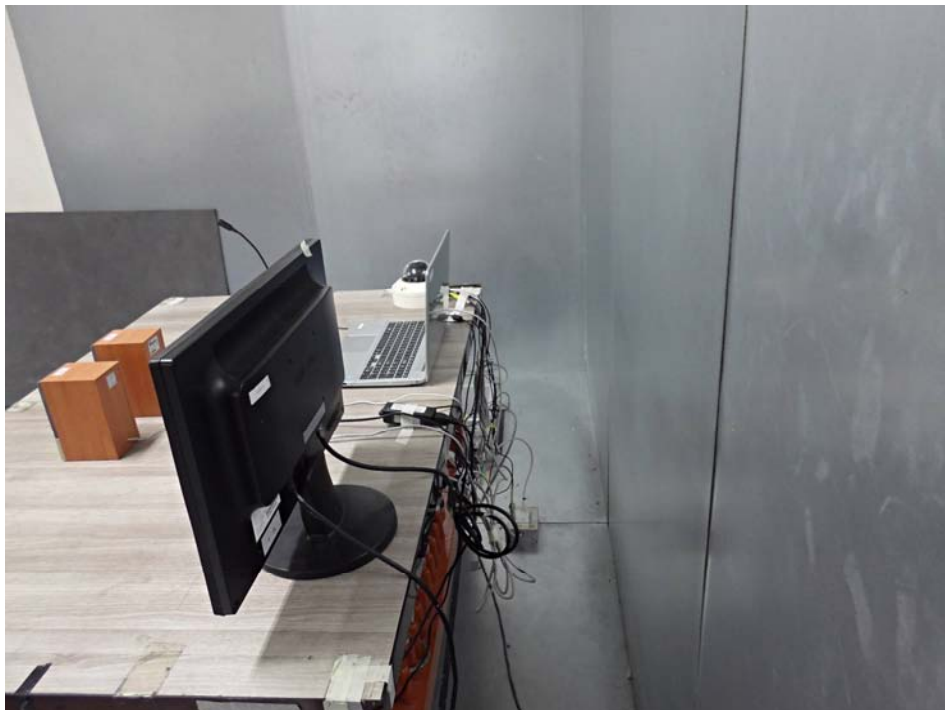
Conducted Voltage Emissions

N/A

N/A

Conducted Telecommunication Emissions

- DC 12 V 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.

- PoE 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.

Radiated Electric Field Emissions(Below 1 GHz)

- DC 12 V 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.

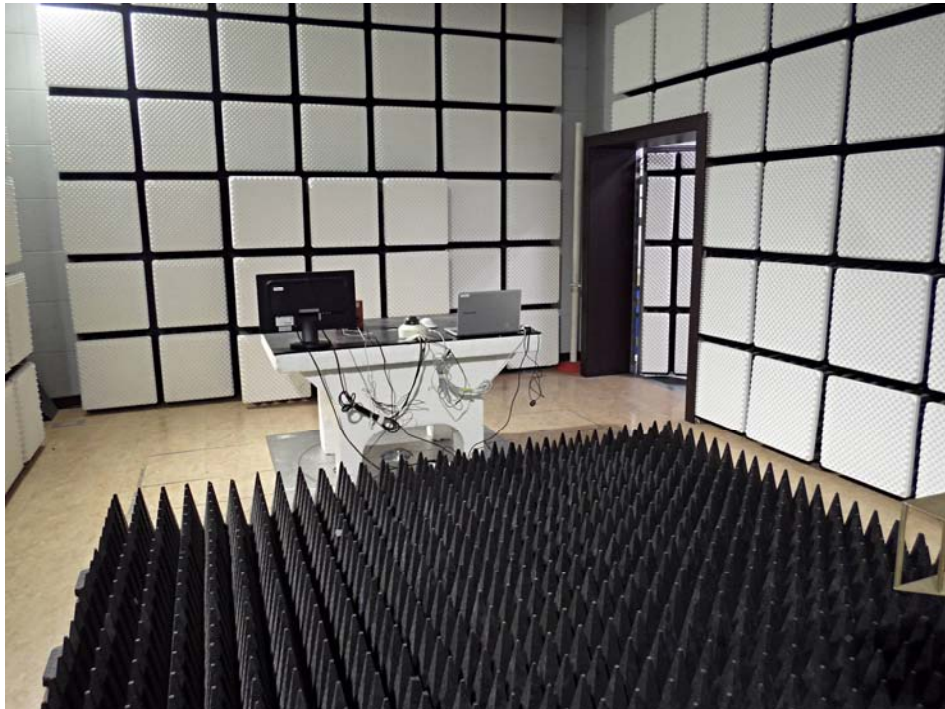
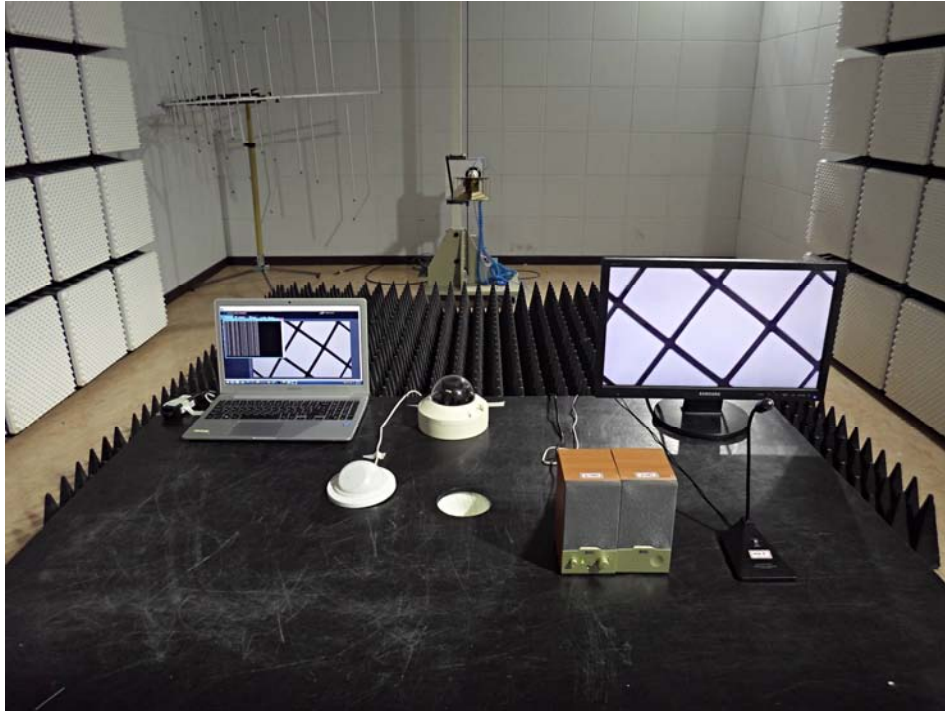
- PoE Mode



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.

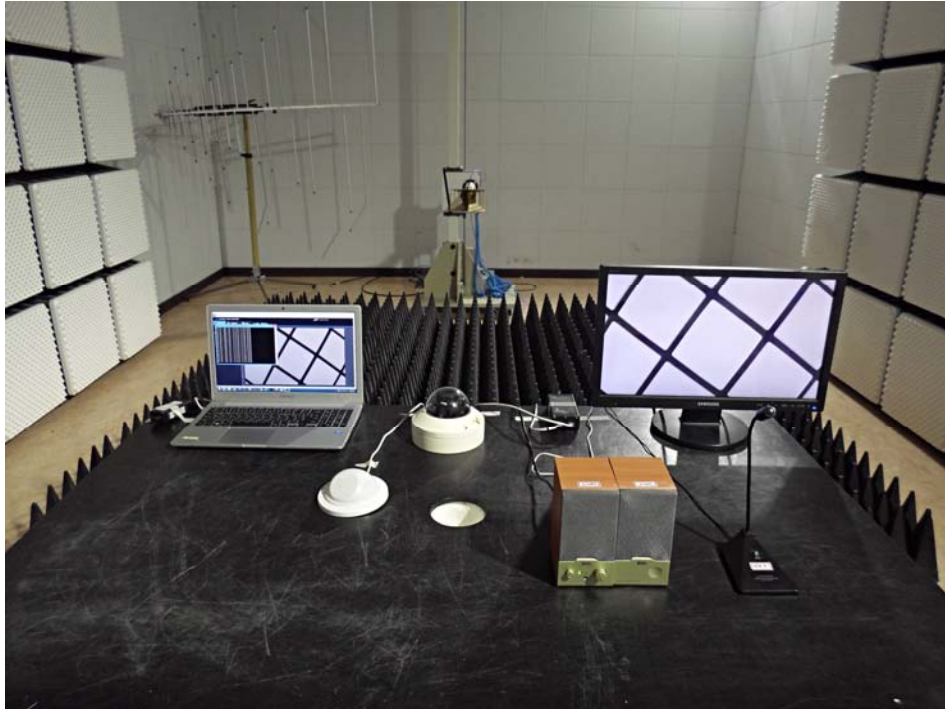
Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V 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.

- PoE 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.

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.

EUT Internal Photographs

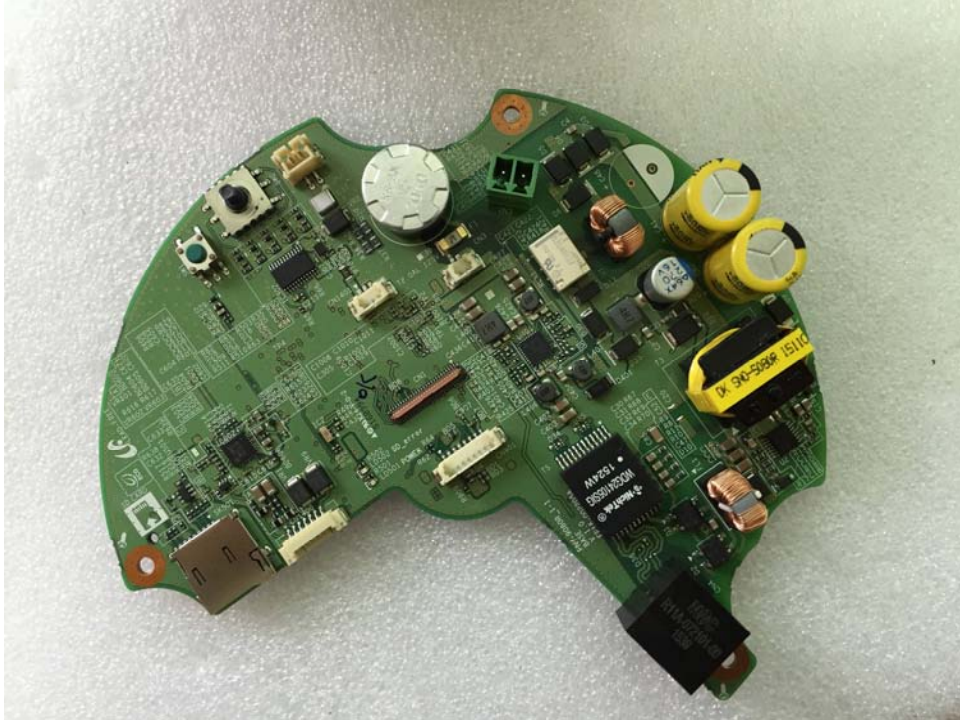
(Internal View)



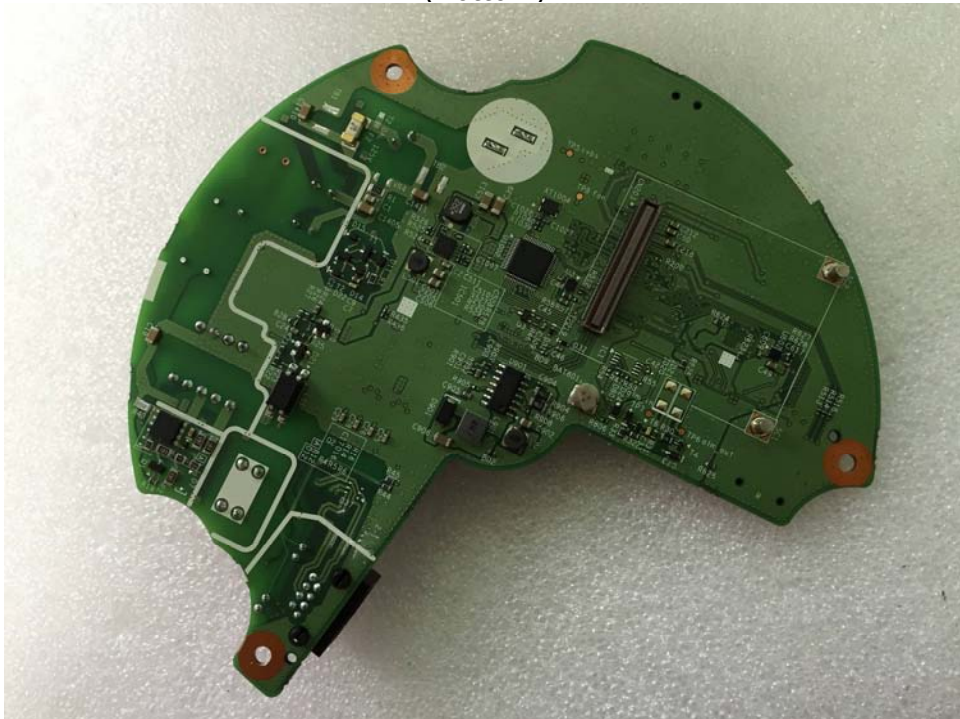
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Main Board 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.

Main Board EUT Internal View – Sub Board1

(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.

Main Board EUT Internal View – Sub Board 2

(Top)

