



# EMC TEST REPORT For VCCI

Test Report No. : KES-E1-16T0260  
Date of Issue : Jun. 14, 2016  
Product name : NETWORK CAMERA  
Model/Type No. : QNV-6020RN  
Variant Model : QNV-6030RN, QNV-6010RN  
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 : May. 23, 2016  
Test date : May. 26, 2016 - May. 31, 2016  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Jung, Choi  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

**KES Co., Ltd.**

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Test report No.:  
KES-E1-16T0260  
Page (2) of (43)

**REPORT REVISION HISTORY**

Date	Revision	Page No
Jun. 14, 2016	KES-E1-16T0260	Issued

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## TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency .....	6
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) .....		22
Radiated Electric Field Emissions(Above 1 GHz) .....		23
Test Setup Photos and Configuration .....		31
Conducted Voltage Emissions .....		31
Conducted Telecommunication Emissions .....		32
Radiated Electric Field Emissions(Below 1 GHz) .....		34
Radiated Electric Field Emissions(Above 1 GHz) .....		36
EUT External Photographs.....		38
EUT Internal Photographs .....		39



## 1.0 General Product Description

### Main Specifications of EUT are:

<b>Video</b>	
Imaging Device	1/2.9" 2.19M CMOS
Total Pixels	2,000(H) x 1,121(V)
Effective Pixels	1,984(H) x 1,105(V)
Scanning System	Progressive
Min. Illumination	Color : 0.15Lux, B/W : 0Lux
<b>Lens</b>	
Focal Length (Zoom Ratio)	Fixed 3.6mm
Max. Aperture Ratio	F1.8
Angular Field of View	H 86.48° / V 46.22° / D 102.44°
Min. Object Distance	-
Lens Type	Fixed
Mount Type	Board type
<b>Pan / Tilt / Rotate</b>	
Pan Range	0~350°
Tilt Range	0~67°
Rotate Range	0~355°
<b>Operational</b>	
IR Viewable Length	30m
Camera Title	Off / On (Displayed up to 20 characters per line) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	True Day & Night
Backlight Compensation	Off / BLC
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR(Off / On)
Motion Detection	Off / On (4ea polygon zones)
Privacy Masking	Off / On (6ea rectangler zones)
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC(Lens distortion control)	On/Off (5 levels with Min/Max)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker
Flip / Mirror	Flip / Mirror / Hallway view
Intelligent Video Analytics	Motion Detection with metadata, Tampering, Defocus
Alarm I/O	Input 1 / Output 1
Alarm Triggers	Motion detection, Tampering Detection, SD card error, NAS error, Alarm input, Defocus detection
Alarm Events	File upload via FTP and E-Mail Local storage recording at Event Notification via E-Mail External output



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Test report No.:  
KES-E1-16T0260  
Page (5) of (43)

<b>Network</b>	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265, H.264, MJPEG
Resolution	1920x1080/ 1280x1024/ 1280x960/ 1280x720/ 1024x768/ 800x600/ 720x576/ 720x480/ 640x480/ 320x240
Max. Framerate	H.265 : Max 30fps at all resolutions H.264 : Max 30fps at all resolutions MJPEG : Max 15fps @ all resolution.
Smart codec	Wise Stream
Video Quality Ajustment	H.265 : Target Bitrate Level Control H.264 : Target Bitrate Level Control MJPEG : Quality Level Control
Bitrate control method	H.265 : CBR or VBR H.264 : CBR or VBR MJPEG : VBR
Streaming Capability	Multiple Streaming(Up to 3 Profiles)
Audio I/O	Line in
Audio Compression Format	G.711 u-law /G.726 Selectable G.726(ADPCM) : 8KHz, G.711 : 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps
Audio Communication	Uni-directional
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TSL, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication
Streaming Method	Unicast / Multicast
Max. User Access	6 users at Unicast Mode
Edge storage	Micro SD/SDHC/SDXC Max 128G, NAS - Motion images recorded in the SD memory card can be downloaded - Manual recording at Local PC
Application Programming Inte	ONVIF Profile S, G SUNAPI(HTTP API)
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Denish, Portuguese, Turkish, Polish, Czech, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek, Finnish, Norwegian
Web Viewer	Supported OS: Windows 7, 8, 10, Mac OS X 10.8, 10.9, 10.10, 10.11 [Non-plugin Webviewer] Supported Browser: Google Chrome 47, MS Edge 20 Support Codec : Video-H.264, MJPEG (Max. 1M 15fps), Audio-G.711 [Plug-in Webviewer] Supported Browser : MS Explore 11 , Mozilla Firefox 43, Apple Safari 9 * Mac OS X only
Central Management Software	SmartViewer
Pixel Counter	Support ( plug-in viewer only )
<b>Environmental</b>	
Operating Temperature / Hum	-30°C ~ +55°C / Less than 90% RH * Start up should be done at above -20°C
Storage Temperature / Humid	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
<b>Electrical</b>	
Input Voltage / Current	PoE(IEEE802.3af, Class3), DC 12V
Power Consumption	Max.6.8W(PoE), Max.5.7W(DC12V)
<b>Mechanical</b>	
Color / Material	Ivory / Metal
Dimension (WxHxD)	φ120 x H92
Weight	490g

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## 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 ☐ 120 Vac ☒ PoE ☒ 12 Vdc  
Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

## 1.2 Variant Model Differences

Variant Model	
QNV-6030RN	Focus Length differences
QNV-6010RN	

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	QNV-6020RN	-	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.	E.U.T

## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	X56K	HN11N5151FJ00 45W	Hansung Corp.	-
AC/DC ADAPTER	A12-120P1A	F1802715520117 58	CHICONY POWER TECHNOLOGY CO.,LTD.	-
PoE	PD3001GC/AC	RD93560820169 64200	Power Dsine	-
Mike	CMK-303	-	CAMAC	-
Alarm	-	-	-	-

## 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 (EUT)	RJ-45	Notebook	RJ-45	5.0	U
	Alarm	Alarm	Alarm	3.5	U
	mic	Mike	mic	2.0	U

- PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	PoE	RJ-45	5.0	U
	Alarm	Alarm	Alarm	3.5	U
	mic	Mike	mic	2.0	U
PoE	RJ-45	Notebook	RJ-45	5.0	U

\* Unshielded=U, Shielded=S

## 1.7 EUT Operating Mode(s)

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

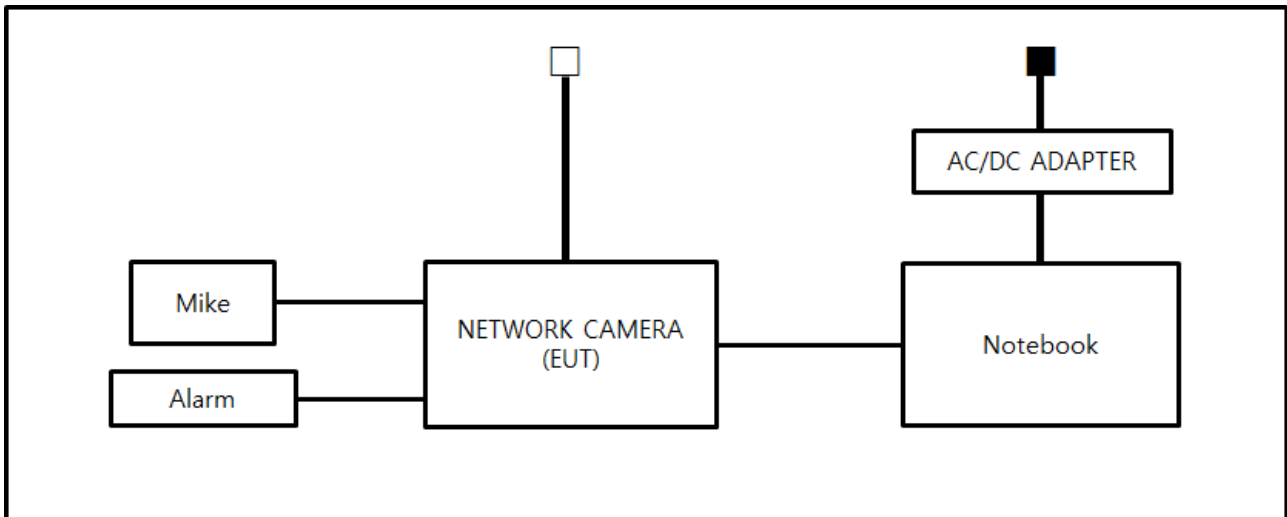
Test mode	Normal operating
OP	MONITORING Network ping test

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

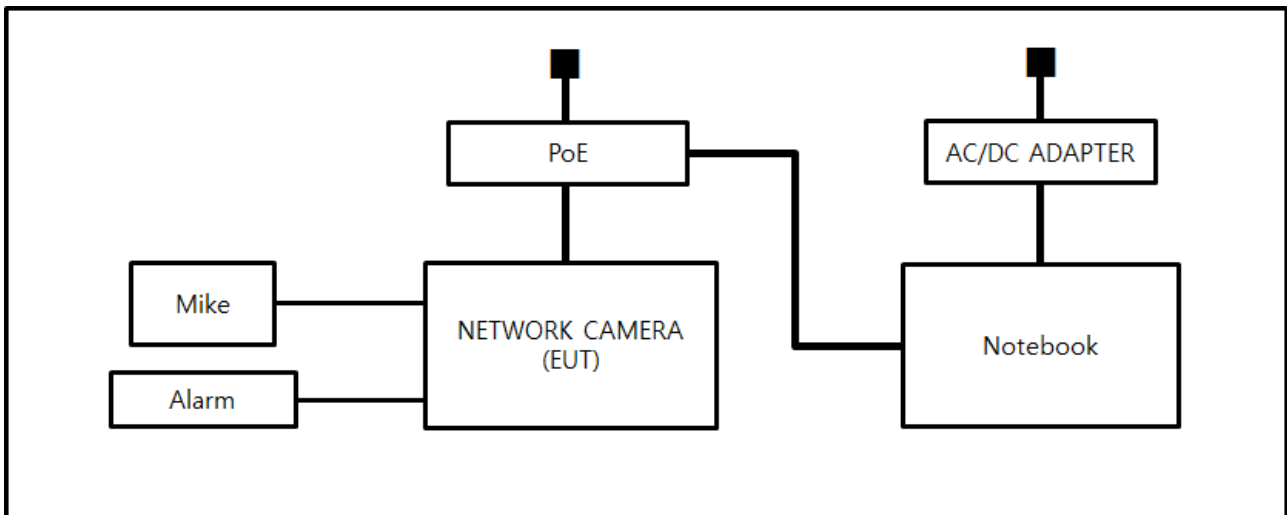
## 1.8 Configuration

■ AC Main  
 □ DC Main

- DC 12 V Mode



- PoE Mode









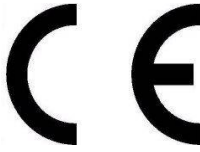

## 1.9 Calibration Details of Equipment Used for Measurement

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



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Test report No.:  
KES-E1-16T0260  
Page (11) of (43)

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☐ **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

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## 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
<input type="checkbox"/>	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
<input type="checkbox"/>	LISN	ENV216	R & S	101137	02, 04, 2017
<input type="checkbox"/>	LISN	ENV216	R & S	101786	05, 02, 2017
<input type="checkbox"/>	Electro wave Shieldroom	-	AONE SEMITEC	-	-

### 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

Because 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

May. 26, 2016

### Test Location

Electro wave Shieldroom

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101137	02, 04, 2017
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101786	05, 02, 2017
<input checked="" type="checkbox"/>	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
<input checked="" type="checkbox"/>	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
<input type="checkbox"/>	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
<input checked="" type="checkbox"/>	Electro wave Shieldroom	-	AONE SHIELD	-	-

### Test Conditions

Temperature: 23,7 °C

Relative Humidity: 51,5 %

### 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

May. 30, 2016

### Test Location

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

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R&S	101781	05, 03, 2017
<input checked="" type="checkbox"/>	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9163-713	05, 15, 2017
<input checked="" type="checkbox"/>	Open Area Test Site	-	KES	-	-
<input checked="" type="checkbox"/>	Antenna Mast	-	EMCO	-	-
<input checked="" type="checkbox"/>	Turn Table	-	DAEIL EMC	-	-

### Test Conditions

Temperature: 28,3 °C

Relative Humidity: 42,0 %

### 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.



## 2.4 Radiated Electric Field Emissions(Above 1 GHz)

### Test Date

May. 31, 2016

### Test Location

Semi Anchoic Chamber #2

### Test Equipment

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

### Test Conditions

Temperature: 26,4 °C  
Relative Humidity: 48,5 %

### 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.



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Test report No.:  
KES-E1-16T0260  
Page (16) of (43)

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## **APPENDIX A – TEST DATA**

### **Conducted Emissions at Mains Power Ports**

**[HOT]**

N/A

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Test report No.:  
KES-E1-16T0260  
Page (17) of (43)

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**[NEUTRAL]**

N/A

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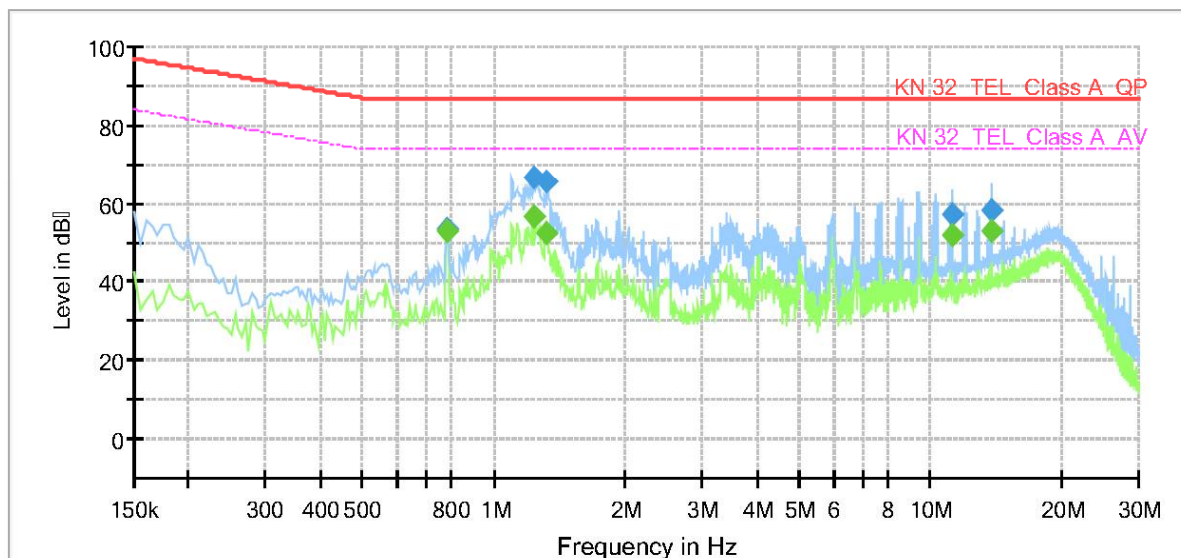
## Conducted Emissions at Telecommunication Ports

- DC 12V Mode

**[10 Mbps]**

### Common Information

Test Description: Telecommunication Emission  
Model No.: QNV-6020RN  
Mode: 12 V (dc) , 10 Mbps  
Operator Name: KES



### Final Result

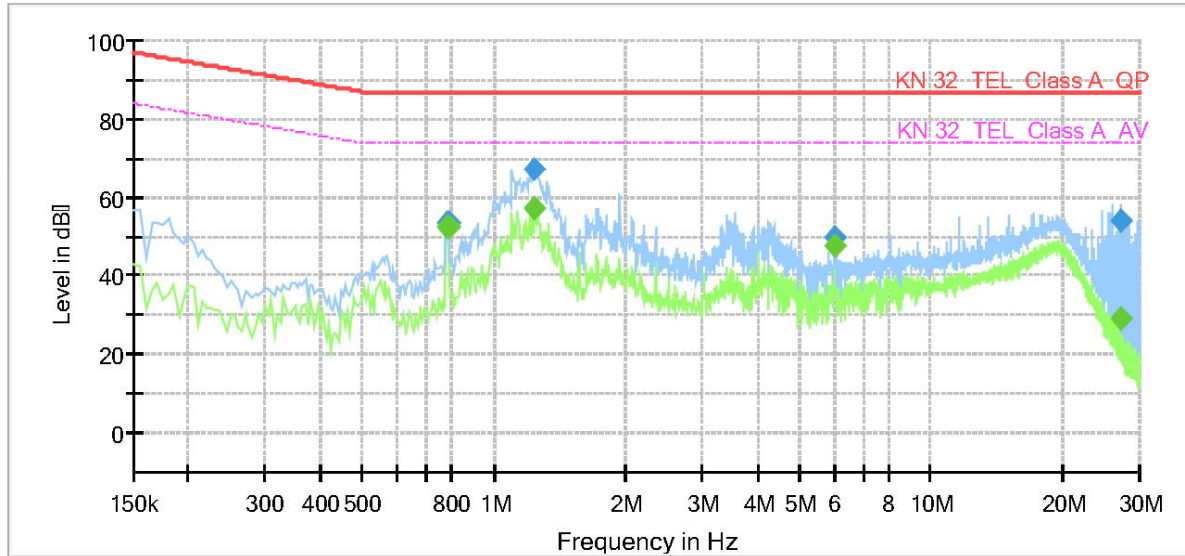
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.780000	--	52.89	74.00	21.11	1000.0	9.000	Single Line	9.9
0.780000	53.63	--	87.00	33.37	1000.0	9.000	Single Line	9.9
1.230000	--	56.57	74.00	17.43	1000.0	9.000	Single Line	9.8
1.230000	66.58	--	87.00	20.42	1000.0	9.000	Single Line	9.8
1.325000	--	52.19	74.00	21.81	1000.0	9.000	Single Line	9.8
1.325000	65.37	--	87.00	21.63	1000.0	9.000	Single Line	9.8
11.195000	--	51.63	74.00	22.37	1000.0	9.000	Single Line	10.1
11.195000	57.38	--	87.00	29.62	1000.0	9.000	Single Line	10.1
13.750000	--	52.72	74.00	21.28	1000.0	9.000	Single Line	10.1
13.750000	58.33	--	87.00	28.67	1000.0	9.000	Single Line	10.1



**[100 Mbps]**

**Common Information**

Test Description: Telecommunication Emission  
Model No.: QNV-6020RN  
Mode: 12 V (dc) , 100 Mbps  
Operator Name: KES



**Final Result**

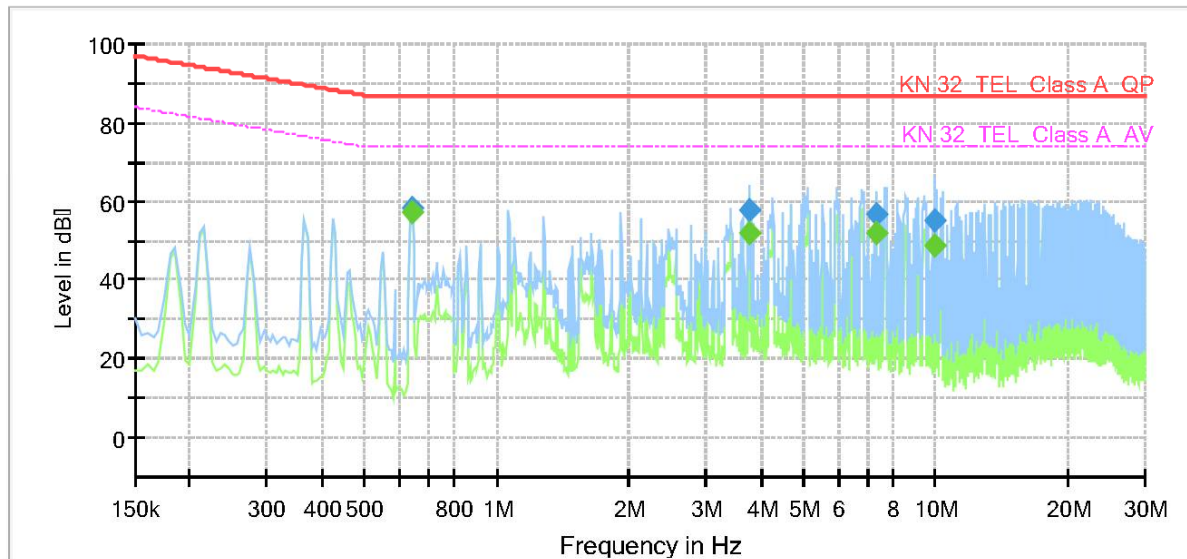
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.780000	---	52.62	74.00	21.38	1000.0	9.000	Single Line	9.4
0.780000	53.39	---	87.00	33.61	1000.0	9.000	Single Line	9.4
0.785000	---	52.26	74.00	21.74	1000.0	9.000	Single Line	9.4
0.785000	53.39	---	87.00	33.61	1000.0	9.000	Single Line	9.4
1.230000	---	57.00	74.00	17.00	1000.0	9.000	Single Line	9.3
1.230000	67.05	---	87.00	19.95	1000.0	9.000	Single Line	9.3
6.045000	---	47.55	74.00	26.45	1000.0	9.000	Single Line	9.4
6.045000	49.73	---	87.00	37.27	1000.0	9.000	Single Line	9.4
27.295000	---	29.27	74.00	44.73	1000.0	9.000	Single Line	9.4
27.295000	53.73	---	87.00	33.27	1000.0	9.000	Single Line	9.4

- PoE Mode

**[10 Mbps]**

## Common Information

Test Description:	Telecommunication Emission
Model No.:	QNV-6020RN
Mode	PoE , 10 Mbps
Operator Name:	KES



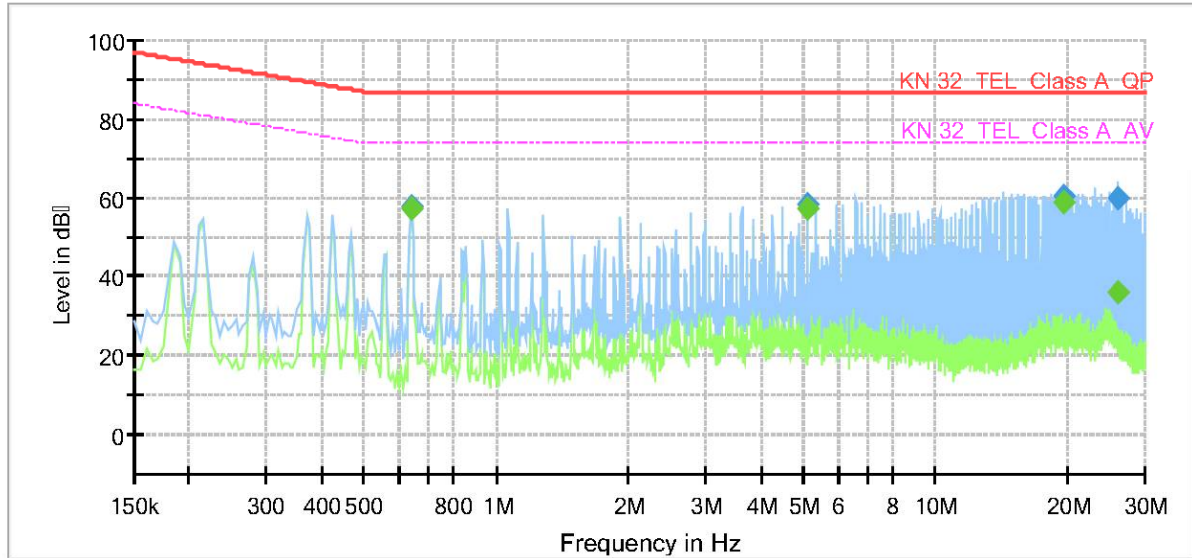
## Final Result

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.640000	---	57.05	74.00	16.95	1000.0	9.000	Single Line	9.9
0.640000	58.02	---	87.00	28.98	1000.0	9.000	Single Line	9.9
3.750000	---	51.92	74.00	22.08	1000.0	9.000	Single Line	9.8
3.750000	57.92	---	87.00	29.08	1000.0	9.000	Single Line	9.8
7.335000	---	51.80	74.00	22.20	1000.0	9.000	Single Line	10.0
7.335000	56.49	---	87.00	30.51	1000.0	9.000	Single Line	10.0
9.945000	---	48.84	74.00	25.16	1000.0	9.000	Single Line	10.1
9.945000	55.24	---	87.00	31.76	1000.0	9.000	Single Line	10.1

## [100 Mbps]

### Common Information

Test Description: Telecommunication Emission  
Model No.: QNV-6020RN  
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)
0.640000	--	56.95	74.00	17.05	1000.0	9.000	Single Line	9.4
0.640000	57.49	--	87.00	29.51	1000.0	9.000	Single Line	9.4
5.115000	--	57.07	74.00	16.93	1000.0	9.000	Single Line	9.4
5.115000	58.06	--	87.00	28.94	1000.0	9.000	Single Line	9.4
19.610000	--	58.69	74.00	15.31	1000.0	9.000	Single Line	9.5
19.610000	60.19	--	87.00	26.81	1000.0	9.000	Single Line	9.5
26.015000	--	35.86	74.00	38.14	1000.0	9.000	Single Line	9.4
26.015000	59.76	--	87.00	27.24	1000.0	9.000	Single Line	9.4

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

- DC 12V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB $\mu$ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB $\mu$ V/m]	[dB $\mu$ V/m]	[dB]
147.45	22.02	H	4.00	8.11	2.45	32.58	40.00	7.42
155.64	25.40	V	1.05	8.40	2.57	36.37	40.00	3.63
224.99	14.24	H	3.90	11.85	3.10	29.19	40.00	10.81
229.36	11.53	V	1.10	11.95	3.14	26.62	40.00	13.38
324.98	25.30	V	1.00	13.96	3.80	43.06	47.00	3.94
349.98	23.76	H	2.82	14.54	3.89	42.19	47.00	4.81
374.99	22.05	H	2.24	15.12	4.05	41.22	47.00	5.78
375.00	23.41	V	1.00	15.12	4.06	42.59	47.00	4.41
499.98	13.02	H	2.11	17.10	4.95	35.07	47.00	11.93

\* H : Horizontal, V : Vertical

- PoE Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB $\mu$ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB $\mu$ V/m]	[dB $\mu$ V/m]	[dB]
221.16	18.50	V	1.00	11.77	3.06	33.33	40.00	6.67
221.17	10.84	H	3.66	11.77	3.06	25.67	40.00	14.33
222.77	11.70	V	1.05	11.81	3.08	26.59	40.00	13.41
224.00	10.90	H	1.78	11.83	3.09	25.82	40.00	14.18
374.98	16.92	H	3.63	15.12	4.05	36.09	47.00	10.91
374.99	22.84	V	1.00	15.12	4.05	42.01	47.00	4.99
399.99	17.00	H	3.52	15.70	4.22	36.92	47.00	10.08
400.00	18.20	V	1.10	15.70	4.22	38.12	47.00	8.88

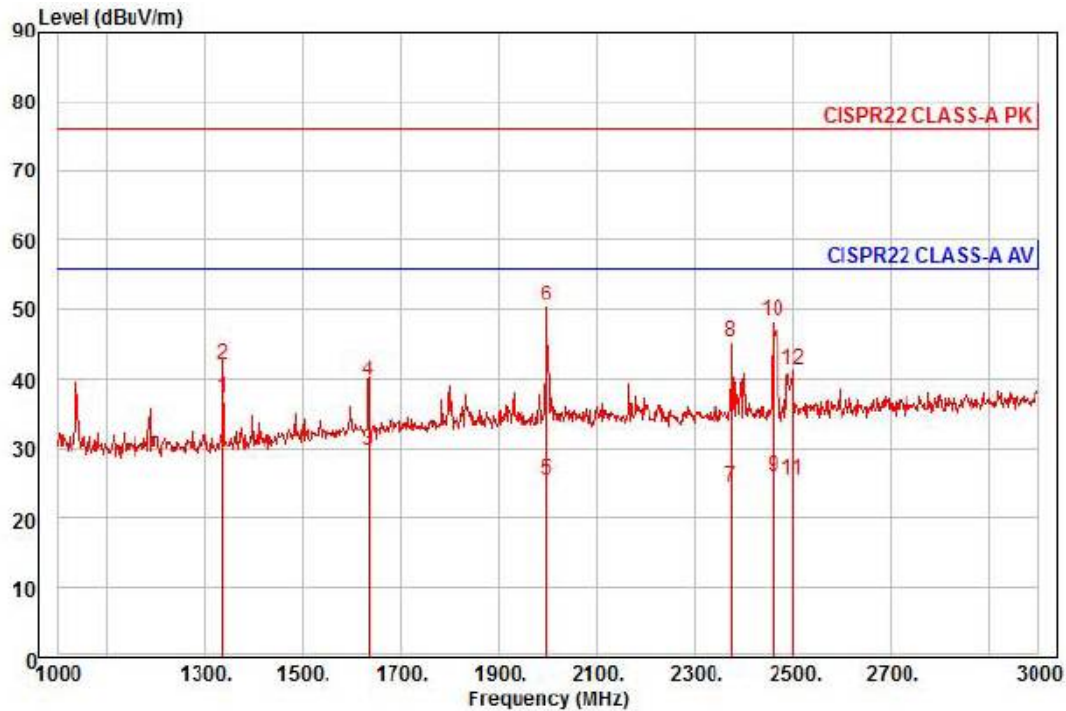
\* H : Horizontal, V : Vertical





## Radiated Electric Field Emissions(Above 1 GHz)

- DC 12V Mode



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QNV-6020RN  
Mode : 12 V (dc)  
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	1336.00	44.57	25.24	7.48	313	56.00	-18.67	horizontal	Average
2		1336.00	49.48	25.24	7.48	313	76.00	-33.76	horizontal	Peak
3		1634.00	34.72	26.43	8.34	116	56.00	-26.32	horizontal	Average
4		1634.00	44.71	26.43	8.34	116	76.00	-36.33	horizontal	Peak
5		1998.00	27.98	27.87	9.34	178	56.00	-30.44	horizontal	Average
6	pk	1998.00	53.00	27.87	9.34	178	76.00	-25.42	horizontal	Peak
7		2374.00	25.56	28.80	9.92	212	56.00	-31.57	horizontal	Average
8		2374.00	46.61	28.80	9.92	212	76.00	-30.52	horizontal	Peak
9		2460.00	26.93	29.01	10.06	316	56.00	-29.90	horizontal	Average
10		2460.00	49.04	29.01	10.06	316	76.00	-27.79	horizontal	Peak
11		2500.00	26.15	29.10	10.12	197	56.00	-30.55	horizontal	Average
12		2500.00	42.12	29.10	10.12	197	76.00	-34.58	horizontal	Peak

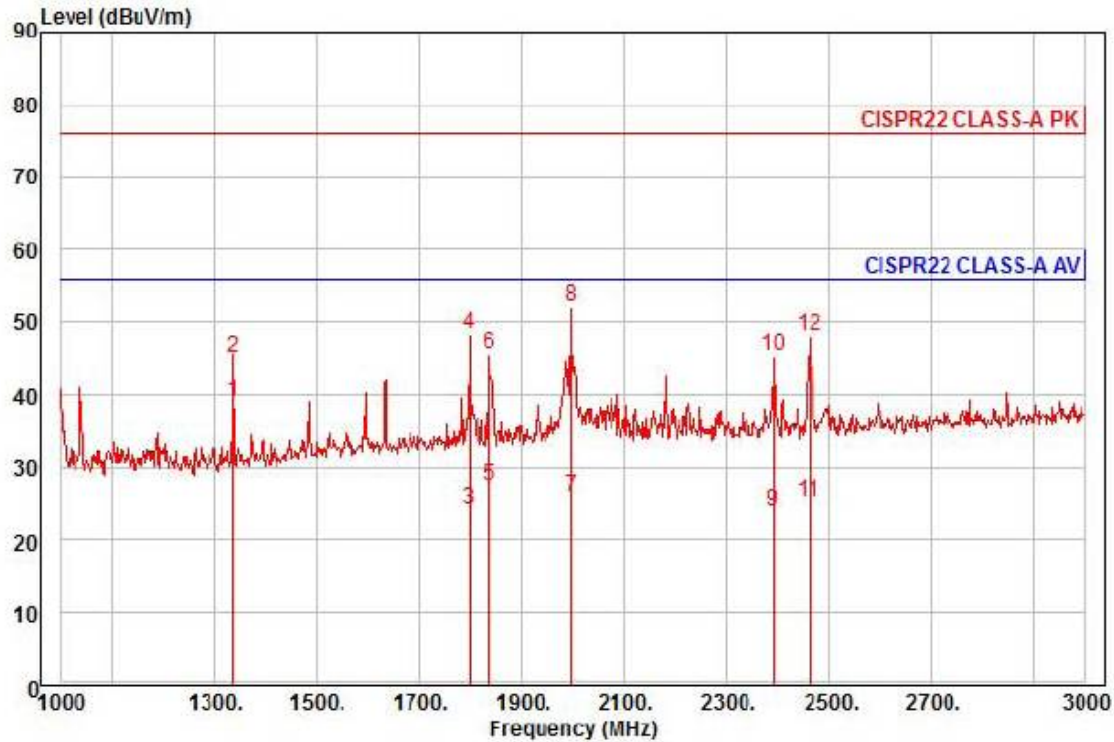
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Test report No.:  
KES-E1-16T0260  
Page (24) of (43)



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QNV-6020RN  
Mode : 12 V (dc)  
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	pp 1336.00	46.33	25.24	7.48	39.96	7	56.00	-16.91	vertical	Average
2	1336.00	52.29	25.24	7.48	39.96	7	76.00	-30.95	vertical	Peak
3	1798.00	28.02	27.08	8.79	39.73	345	56.00	-31.84	vertical	Average
4	1798.00	52.07	27.08	8.79	39.73	345	76.00	-27.79	vertical	Peak
5	1838.00	30.99	27.24	8.90	39.71	215	56.00	-28.58	vertical	Average
6	1838.00	49.16	27.24	8.90	39.71	215	76.00	-30.41	vertical	Peak
7	1998.00	28.32	27.87	9.34	39.63	305	56.00	-30.10	vertical	Average
8	pk 1998.00	54.56	27.87	9.34	39.63	305	76.00	-23.86	vertical	Peak
9	2392.00	25.19	28.84	9.95	39.86	21	56.00	-31.88	vertical	Average
10	2392.00	46.32	28.84	9.95	39.86	21	76.00	-30.75	vertical	Peak
11	2462.00	26.15	29.01	10.06	39.90	348	56.00	-30.68	vertical	Average
12	2462.00	48.80	29.01	10.06	39.90	348	76.00	-28.03	vertical	Peak

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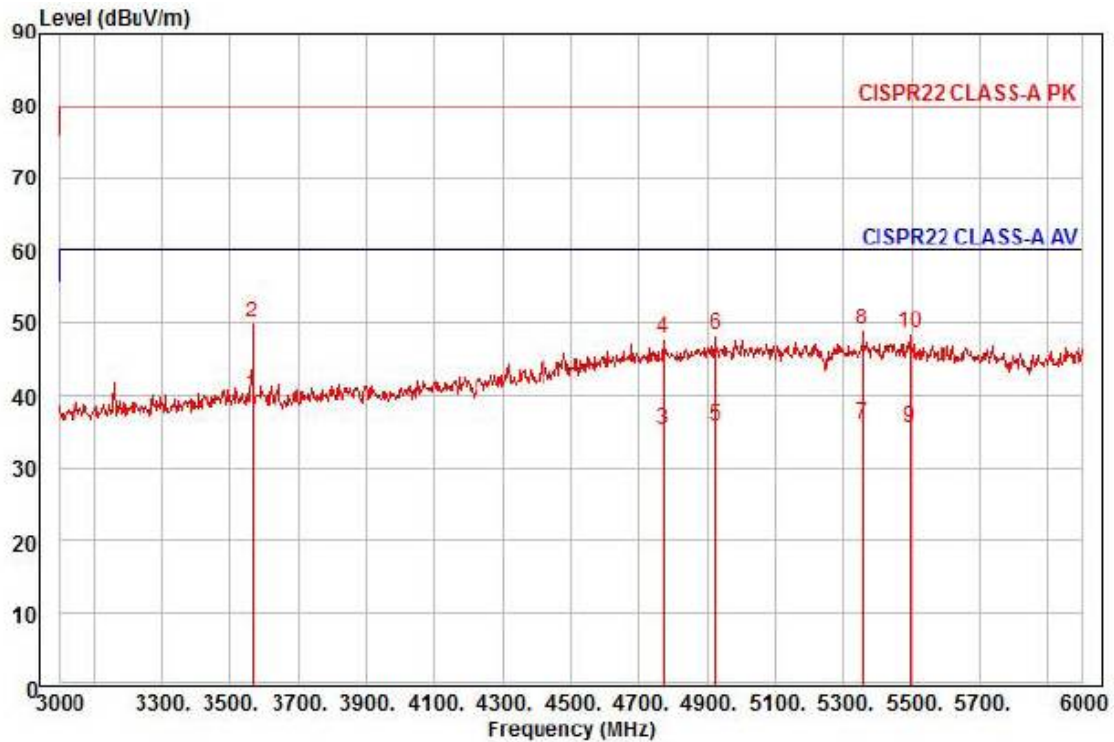




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Test report No.:  
KES-E1-16T0260  
Page (25) of (43)



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QMV-6020RN  
Mode : 12 V (dc)  
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	3564.00	36.58	31.28	12.64	40.32	148	60.00	-19.82	horizontal	Average
2 pk	3564.00	46.48	31.28	12.64	40.32	148	80.00	-29.92	horizontal	Peak
3	4770.00	24.50	36.41	14.92	40.41	61	60.00	-24.58	horizontal	Average
4	4770.00	36.84	36.41	14.92	40.41	61	80.00	-32.24	horizontal	Peak
5	4923.00	23.81	37.28	15.19	40.41	26	60.00	-24.13	horizontal	Average
6	4923.00	36.30	37.28	15.19	40.41	26	80.00	-31.64	horizontal	Peak
7	5355.00	23.72	37.00	15.75	40.36	72	60.00	-23.89	horizontal	Average
8	5355.00	36.67	37.00	15.75	40.36	72	80.00	-30.94	horizontal	Peak
9	5496.00	23.36	36.72	15.92	40.34	78	60.00	-24.34	horizontal	Average
10	5496.00	36.20	36.72	15.92	40.34	78	80.00	-31.50	horizontal	Peak

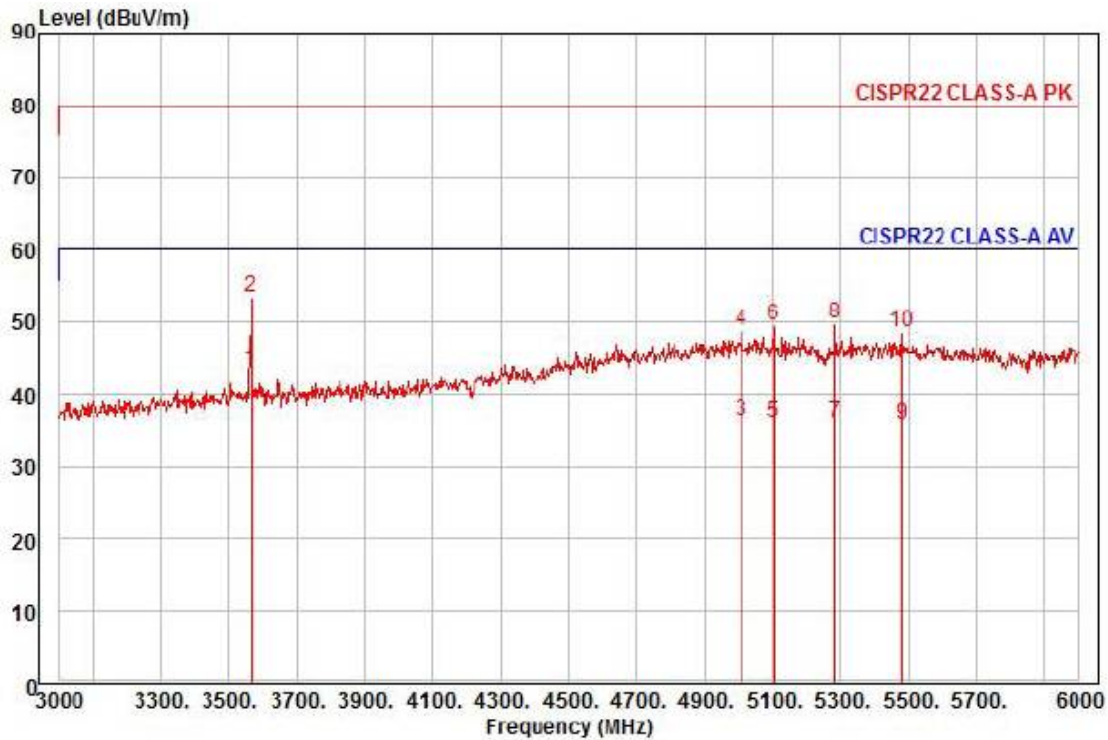
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Test report No.:  
KES-E1-16T0260  
Page (26) of (43)

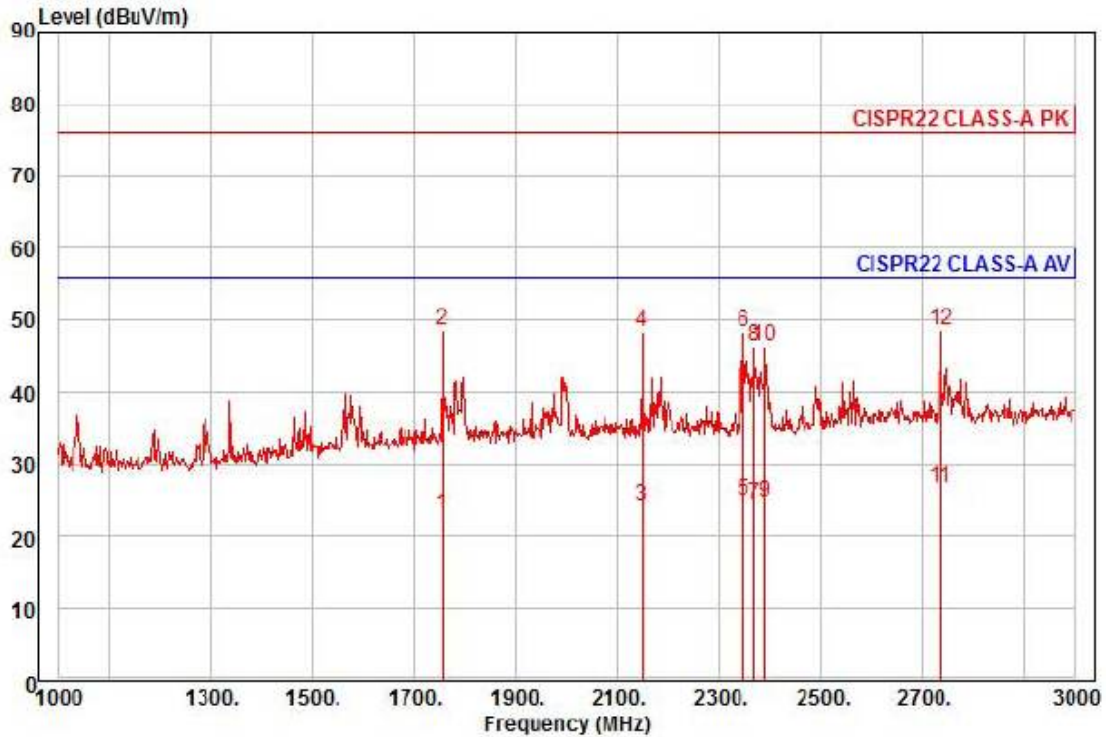


Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QNV-6020RN  
Mode : 12 V (dc)  
Memo : (3 ~ 6) GHz

		Read Freq	Ant 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	3564.00	39.85	31.28	12.64	40.32	125	60.00	-16.55	vertical	Average
2	pk	3564.00	49.76	31.28	12.64	40.32	125	80.00	-26.64	vertical	Peak
3		5010.00	23.57	37.70	15.34	40.41	47	60.00	-23.80	vertical	Average
4		5010.00	36.27	37.70	15.34	40.41	47	80.00	-31.10	vertical	Peak
5		5103.00	23.58	37.51	15.45	40.40	344	60.00	-23.86	vertical	Average
6		5103.00	37.03	37.51	15.45	40.40	344	80.00	-30.41	vertical	Peak
7		5283.00	23.59	37.15	15.66	40.37	88	60.00	-23.97	vertical	Average
8		5283.00	37.37	37.15	15.66	40.37	88	80.00	-30.19	vertical	Peak
9		5481.00	23.46	36.75	15.90	40.34	18	60.00	-24.23	vertical	Average
10		5481.00	36.29	36.75	15.90	40.34	18	80.00	-31.40	vertical	Peak

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- PoE Mode



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QNV-6020RN  
Mode : PoE  
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	1756.00	27.33	26.91	8.68	39.75	111	56.00	-32.83	horizontal	Average
2	1756.00	52.61	26.91	8.68	39.75	111	76.00	-27.55	horizontal	Peak
3	2148.00	26.15	28.24	9.58	39.72	226	56.00	-31.75	horizontal	Average
4	2148.00	50.09	28.24	9.58	39.72	226	76.00	-27.81	horizontal	Peak
5	2348.00	26.13	28.73	9.88	39.83	229	56.00	-31.09	horizontal	Average
6	2348.00	49.61	28.73	9.88	39.83	229	76.00	-27.61	horizontal	Peak
7	2370.00	25.75	28.79	9.92	39.84	119	56.00	-31.38	horizontal	Average
8	2370.00	47.55	28.79	9.92	39.84	119	76.00	-29.58	horizontal	Peak
9	2390.00	25.72	28.84	9.95	39.86	229	56.00	-31.35	horizontal	Average
10	2390.00	47.45	28.84	9.95	39.86	229	76.00	-29.62	horizontal	Peak
11 av	2736.00	26.54	29.68	10.59	40.06	241	56.00	-29.25	horizontal	Average
12 pp	2736.00	48.31	29.68	10.59	40.06	241	76.00	-27.48	horizontal	Peak

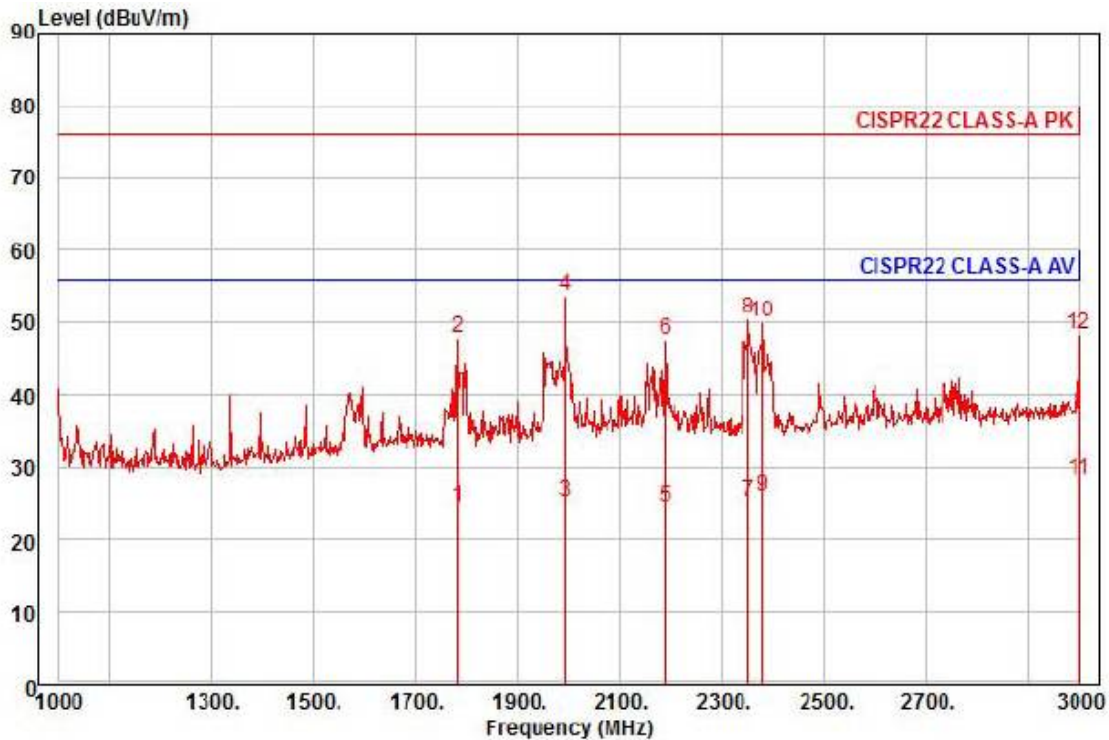




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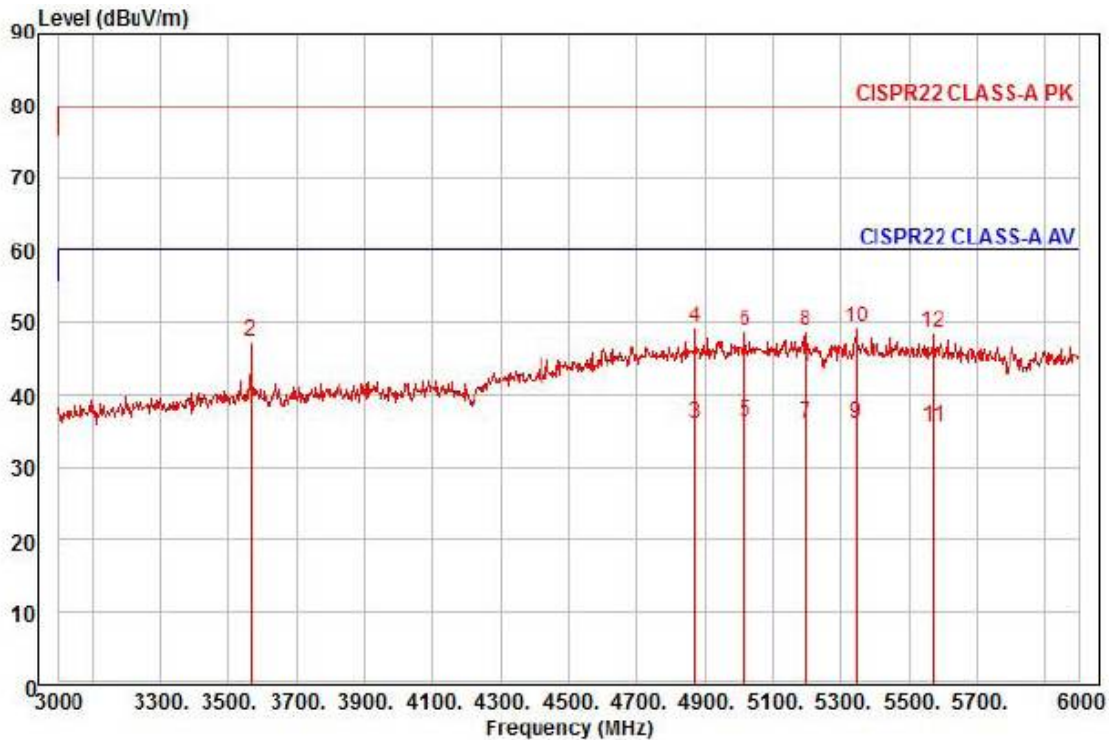
Test report No.:  
KES-E1-16T0260  
Page (28) of (43)



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QNV-6020RN  
Mode : PoE  
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	1782.00	28.55	27.01	8.75	39.74	299	56.00	-31.43	vertical	Average
2	1782.00	51.70	27.01	8.75	39.74	299	76.00	-28.28	vertical	Peak
3	1994.00	27.67	27.86	9.33	39.63	302	56.00	-30.77	vertical	Average
4 pp	1994.00	56.17	27.86	9.33	39.63	302	76.00	-22.27	vertical	Peak
5	2188.00	26.36	28.34	9.64	39.74	113	56.00	-31.40	vertical	Average
6	2188.00	49.27	28.34	9.64	39.74	113	76.00	-28.49	vertical	Peak
7	2352.00	26.48	28.74	9.89	39.83	113	56.00	-30.72	vertical	Average
8	2352.00	51.60	28.74	9.89	39.83	113	76.00	-25.60	vertical	Peak
9	2380.00	27.05	28.81	9.93	39.85	113	56.00	-30.06	vertical	Average
10	2380.00	51.21	28.81	9.93	39.85	113	76.00	-25.90	vertical	Peak
11 av	3000.00	26.95	30.33	11.22	40.21	233	56.00	-27.71	vertical	Average
12	3000.00	46.95	30.33	11.22	40.21	233	76.00	-27.71	vertical	Peak

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Site : chamber

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

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

Project : NETWORK CAMERA

Model : QNV-6020RN

Mode : PoE

Memo : (3 ~ 6) GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preampl Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 pp	3564.00	34.33	31.28	12.64	40.32	177	60.00	-22.07	horizontal	Average
2	3564.00	43.81	31.28	12.64	40.32	177	80.00	-32.59	horizontal	Peak
3	4872.00	24.25	36.99	15.10	40.41	291	60.00	-24.07	horizontal	Average
4	4872.00	37.62	36.99	15.10	40.41	291	80.00	-30.70	horizontal	Peak
5	5019.00	23.66	37.68	15.35	40.41	118	60.00	-23.72	horizontal	Average
6	5019.00	36.24	37.68	15.35	40.41	118	80.00	-31.14	horizontal	Peak
7	5196.00	23.55	37.32	15.56	40.38	6	60.00	-23.95	horizontal	Average
8	5196.00	36.31	37.32	15.56	40.38	6	80.00	-31.19	horizontal	Peak
9	5343.00	23.61	37.03	15.73	40.36	348	60.00	-23.99	horizontal	Average
10 pk	5343.00	36.96	37.03	15.73	40.36	348	80.00	-30.64	horizontal	Peak
11	5571.00	23.23	36.57	16.05	40.33	18	60.00	-24.48	horizontal	Average
12	5571.00	36.18	36.57	16.05	40.33	18	80.00	-31.53	horizontal	Peak

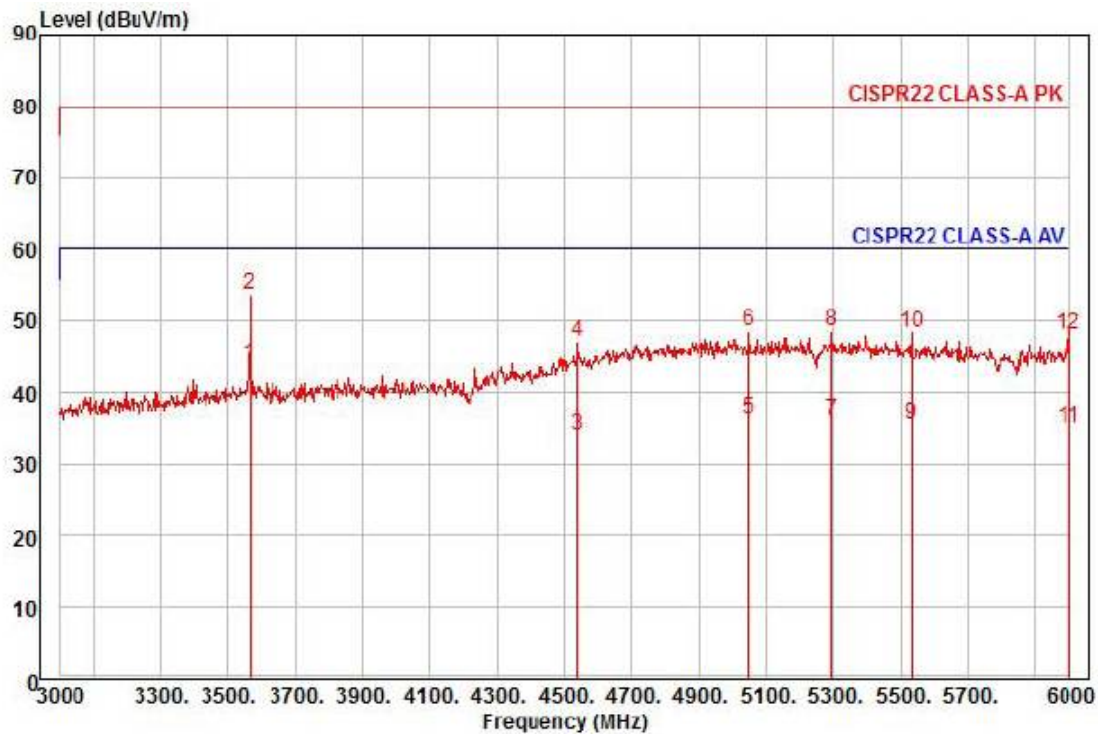




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Test report No.:  
KES-E1-16T0260  
Page (30) of (43)



Site : chamber  
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project : NETWORK CAMERA  
Model : QNV-6020RN  
Mode : PoE  
Memo : (3 ~ 6) GHz

		Read Freq	Ant 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	3564.00	40.27	31.28	12.64	40.32	92	60.00	-16.13	vertical	Average
2	pk	3564.00	50.11	31.28	12.64	40.32	92	80.00	-26.29	vertical	Peak
3		4539.00	24.82	35.09	14.50	40.41	35	60.00	-26.00	vertical	Average
4		4539.00	37.94	35.09	14.50	40.41	35	80.00	-32.88	vertical	Peak
5		5049.00	23.58	37.62	15.39	40.40	237	60.00	-23.81	vertical	Average
6		5049.00	35.93	37.62	15.39	40.40	237	80.00	-31.46	vertical	Peak
7		5295.00	23.51	37.12	15.68	40.37	133	60.00	-24.06	vertical	Average
8		5295.00	36.13	37.12	15.68	40.37	133	80.00	-31.44	vertical	Peak
9		5532.00	23.36	36.65	15.98	40.34	46	60.00	-24.35	vertical	Average
10		5532.00	35.98	36.65	15.98	40.34	46	80.00	-31.73	vertical	Peak
11		6000.00	22.90	35.70	16.86	40.27	298	60.00	-24.81	vertical	Average
12		6000.00	35.69	35.70	16.86	40.27	298	80.00	-32.02	vertical	Peak

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## **Test Setup Photos and Configuration**

### **Conducted Voltage Emissions**

N/A

N/A

## Conducted Telecommunication Emissions

- DC 12V Mode



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- PoE Mode



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

- DC 12V Mode



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- PoE Mode

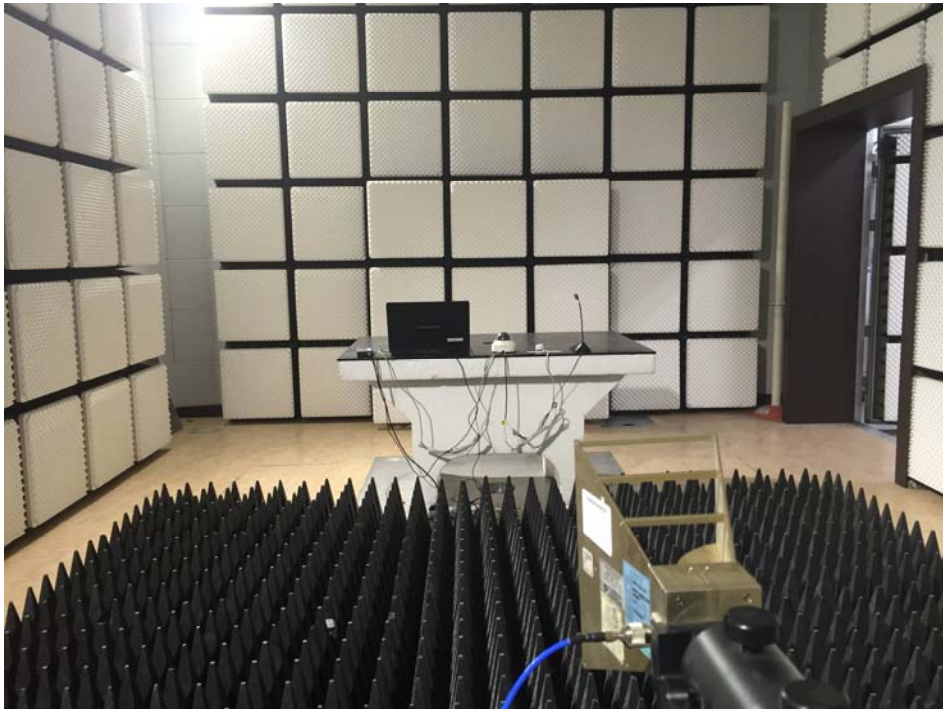


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## **Radiated Electric Field Emissions(Above 1 GHz)**

- DC 12V Mode



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- PoE Mode



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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

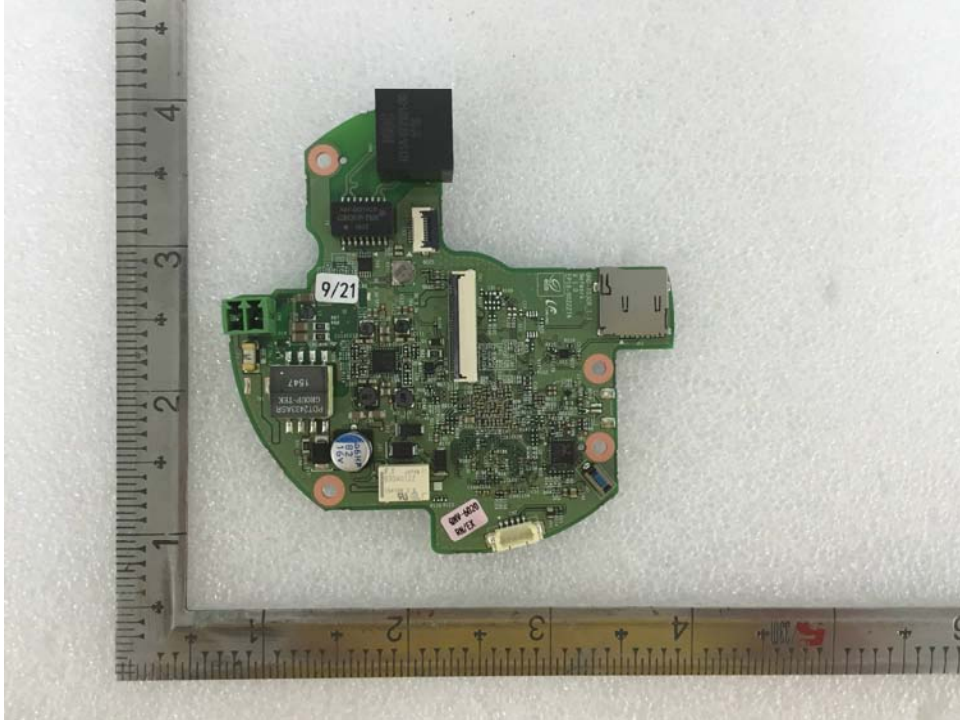
(Internal View)



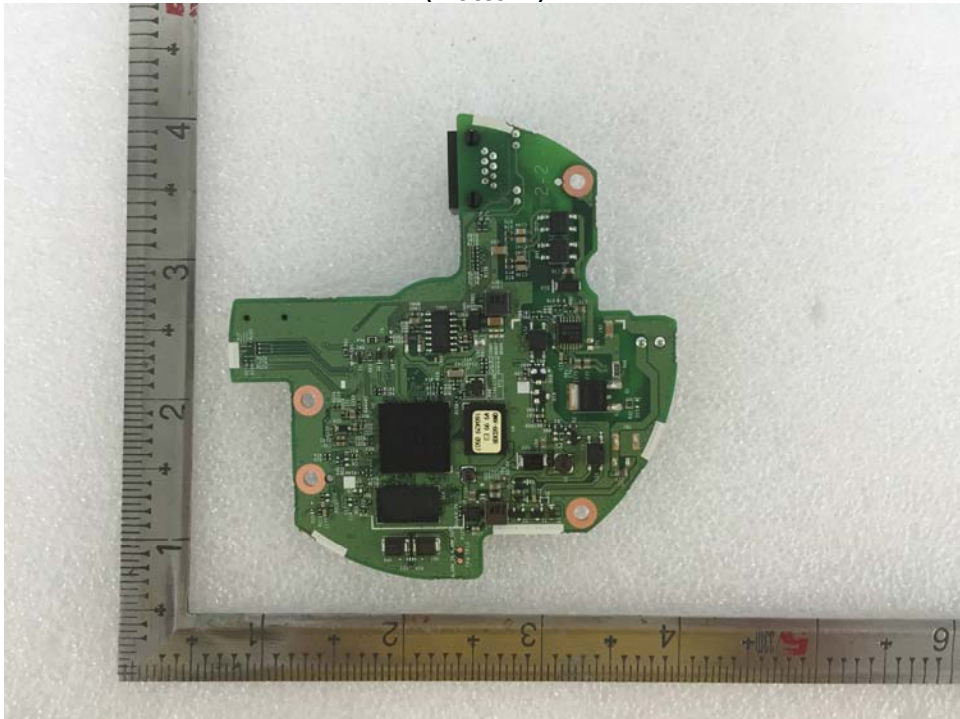
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## Main Board EUT Internal View – Main Board

(Top)



(Bottom)



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## Main Board EUT Internal View – IR Board

(Top)



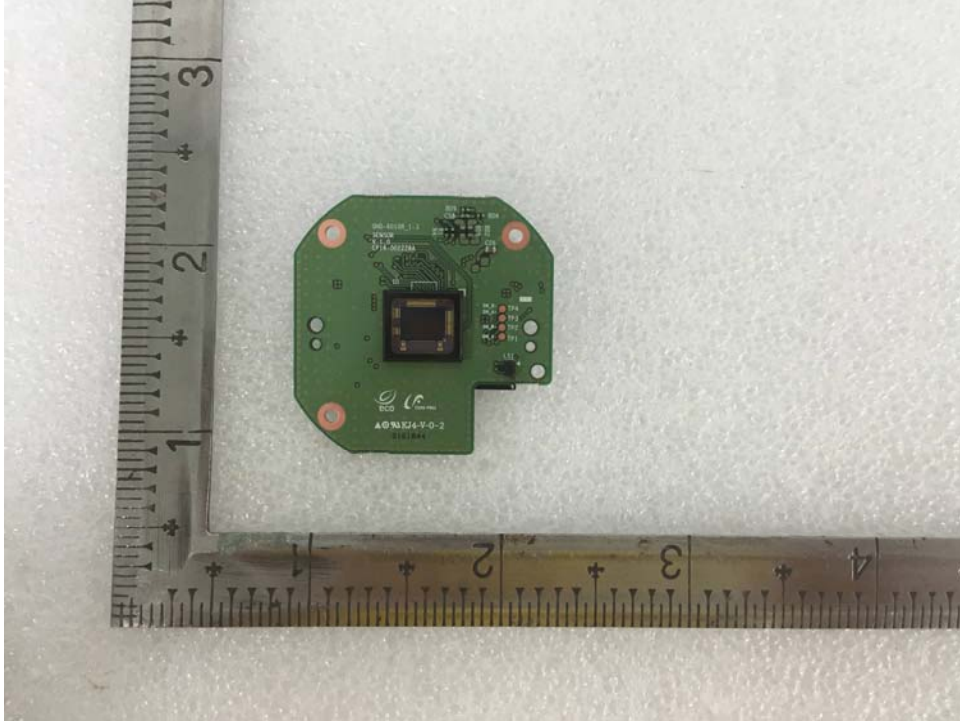
(Bottom)



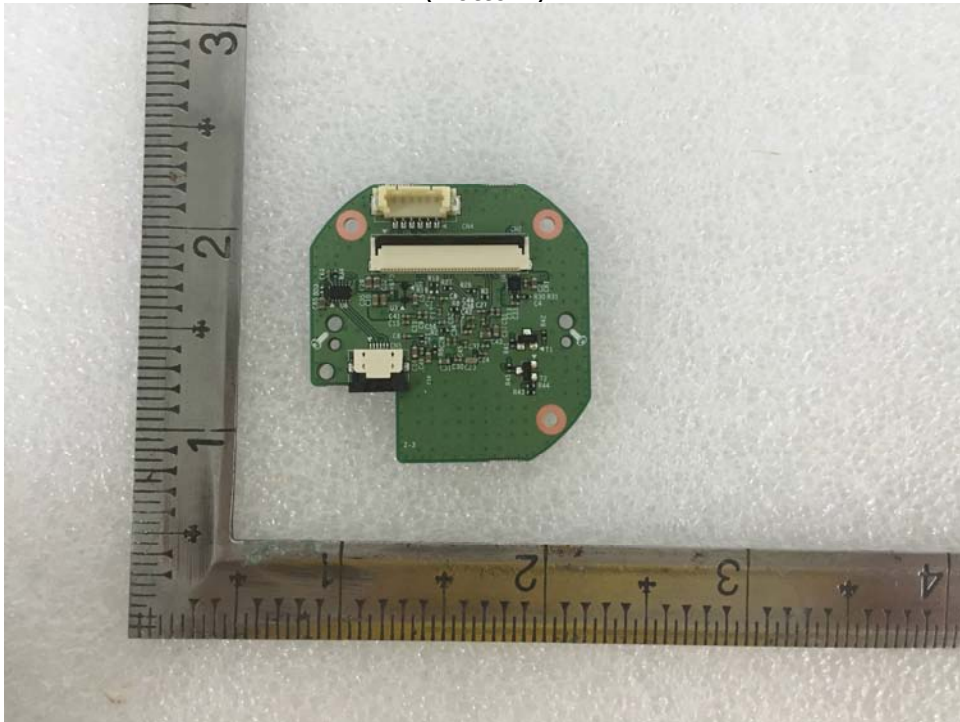
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## Main Board EUT Internal View – Lens Board

(Top)



(Bottom)



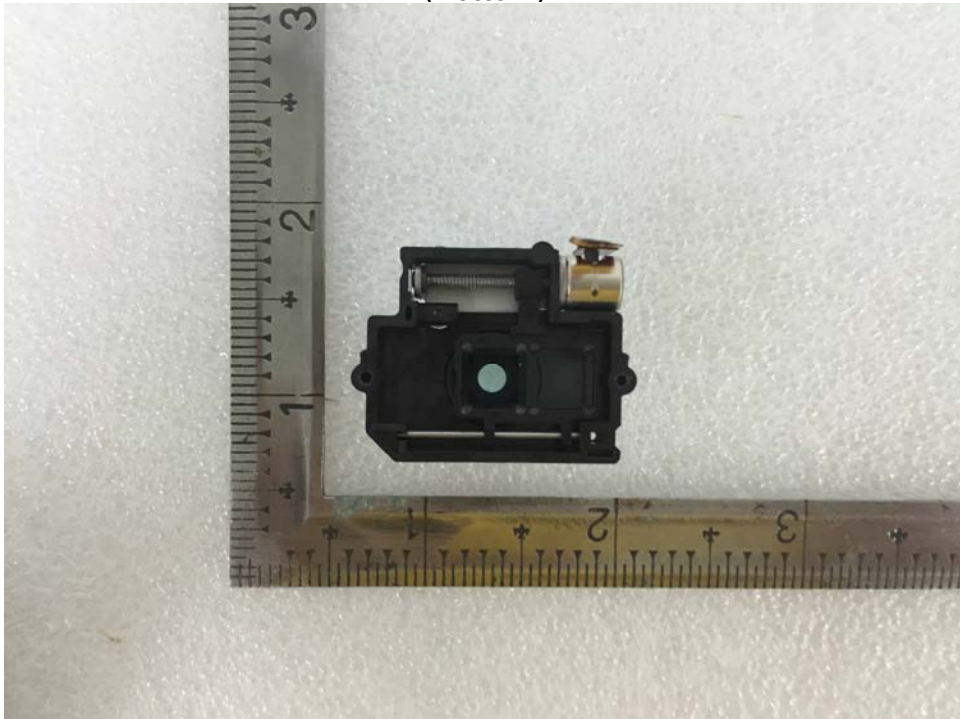
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## Main Board EUT Internal View –Lens

(Top)



(Bottom)



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