



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-16T0205
Date of Issue : May. 13, 2016
Product name : NETWORK CAMERA
Model/Type No. : QND-7030RN
Variant Model : QND-7020RN, QND-7010RN
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. 02, 2016
Test date : May. 09, 2016
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Yeong Suk, Song
EMC Test Engineer

Reviewed by

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EMC Technical Manager

**KES Co., Ltd.**

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KES-E1-16T0205
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REPORT REVISION HISTORY

Date	Revision	Page No
May. 13, 2016	KES-E1-16T0205	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/3" 4M CMOS
Total Pixels	2720x1536
Effective Pixels	2688x1520
Scanning System	Progressive
Min. Illumination	Color : 0.3Lux, B/W : 0Lux
Lens	
Focal Length (Zoom Ratio)	Fixed 6mm (F2.2)
Max. Aperture Ratio	F2.2
Angular Field of View	D 62° / H 53° / V 31°
Min. Object Distance	-
Lens Type	Fixed
Mount Type	Board type
Pan / Tilt / Rotate	
Pan Range	0~350°
Tilt Range	0~67°
Rotate Range	0~355°
Operational	
IR Viewable Length	20m
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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Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265, H.264, MJPEG
Resolution	2592x1520, 2560x1440(16:9) / 2304x1296 / 1920x1080 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 / 800x600 / 800x450 / 720x576 / 720x480 / 640x480 / 640x360 / 320x240
Max. Framerate	H.265 : Max 20fps at 4M, Max 30fps at 2M all resolutions H.264 : Max 20fps at 4M, Max 30fps at 2M 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	Built-in MIC
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

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Central Management Software	SmartViewer
Pixel Counter	Support (plug-in viewer only)
Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C / Less than 90% RH
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	-
Vandal Resistance	-
Electrical	
Input Voltage / Current	PoE(IEEE802.3af, Class3), DC 12V
Power Consumption	Max.6.5W(PoE), Max.5.43W(DC12V)
Mechanical	
Color / Material	Ivory / Plastic
Dimension (WxHxD)	φ110xH86mm
Weight	290g

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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	Remarks
QND-7020RN	Focus Length differences
QND-7010RN	

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	QND-7030RN	-	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE	HICC-P-2100XIRV	15030100002	Honeywell	-
Notebook	NT630Z5J	JK9091EF400142M	Samsung Electronics Suzhou Computer Co., Ltd.	-
NotebookK Adapter	A13-040N2A	CN60BA4400313ADON 843K0200	Chicony Power Technology (suzhou)Co., Ltd.	-
Alarm	SIE-0001 DO	C54167JB601268 F	SAMSUNG TECHWIN CO., LTD.	-
Micro SD card	-	-	Transcend	4 GB

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)	Alarm IN	Alarm	Alarm IN	3.0	U
	RJ-45	Notebook	RJ-45	4.0	U

- PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (시험기자재)	Alarm IN	Alarm	Alarm IN	3.0	U
	RJ-45	PoE	RJ-45	4.0	U
PoE	RJ-45	Notebook	RJ-45	4.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

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

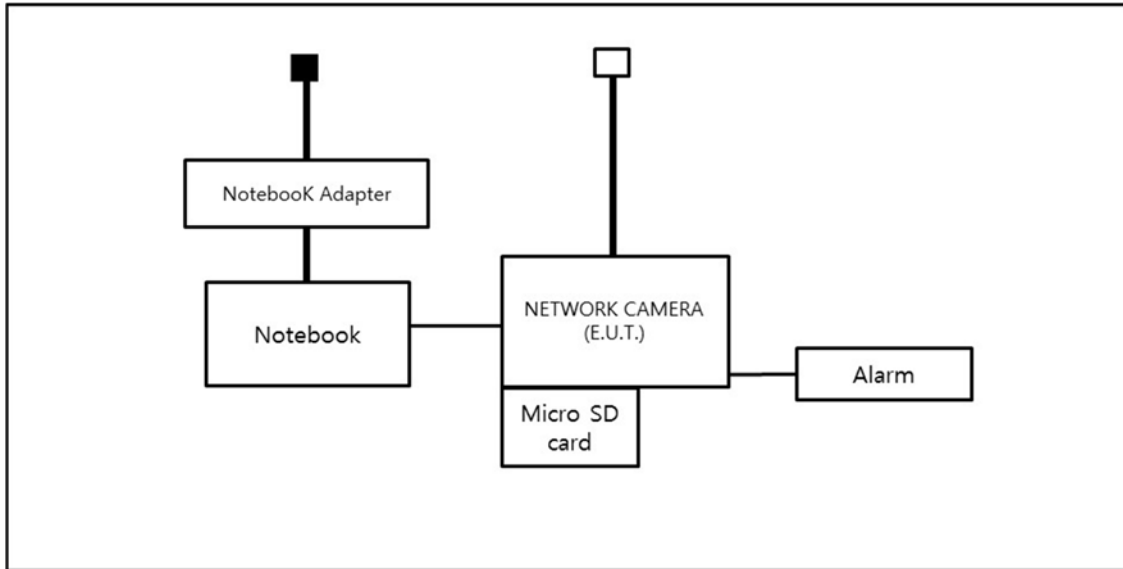
Test mode	Normal operating
OP	MONITORING Network ping test

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

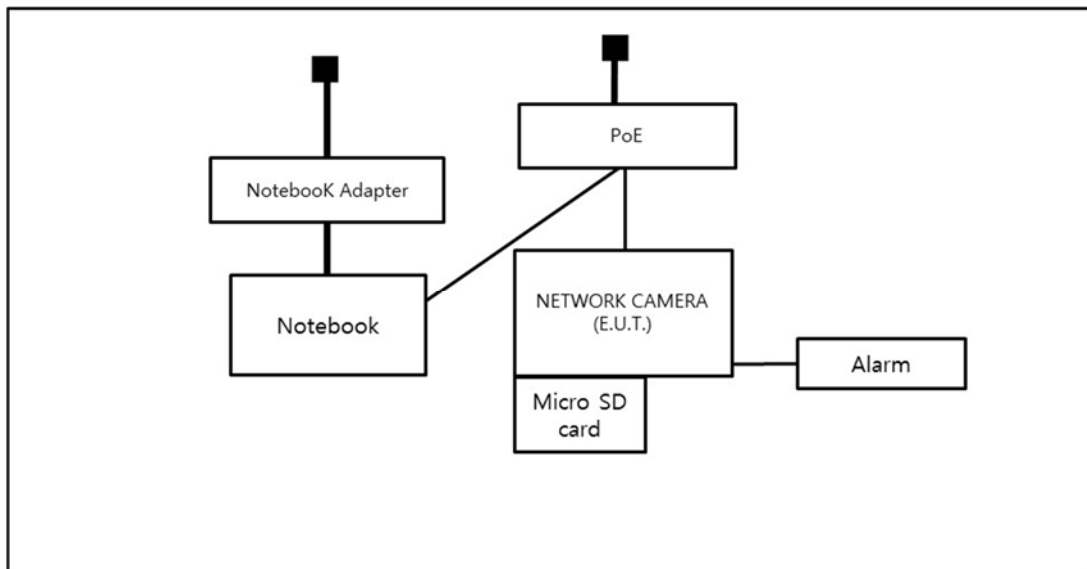
1.8 Configuration

- AC Main
- DC Main
- DC 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 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. 09, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Tesr 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. 2017
☒	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08. 14. 2016
☒	Electro wave Shieldroom	-	AONE SHIELD	-	-

Test Conditions

Temperature: 25,7 °C

Relative Humidity: 39,7 %

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. 09, 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	02. 04, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	EMCO	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 27,4 °C

Relative Humidity: 28,0 %

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

May. 09, 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, 2017
☒	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: 25,7 °C
Relative Humidity: 39,7 %

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



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[NEUTRAL]

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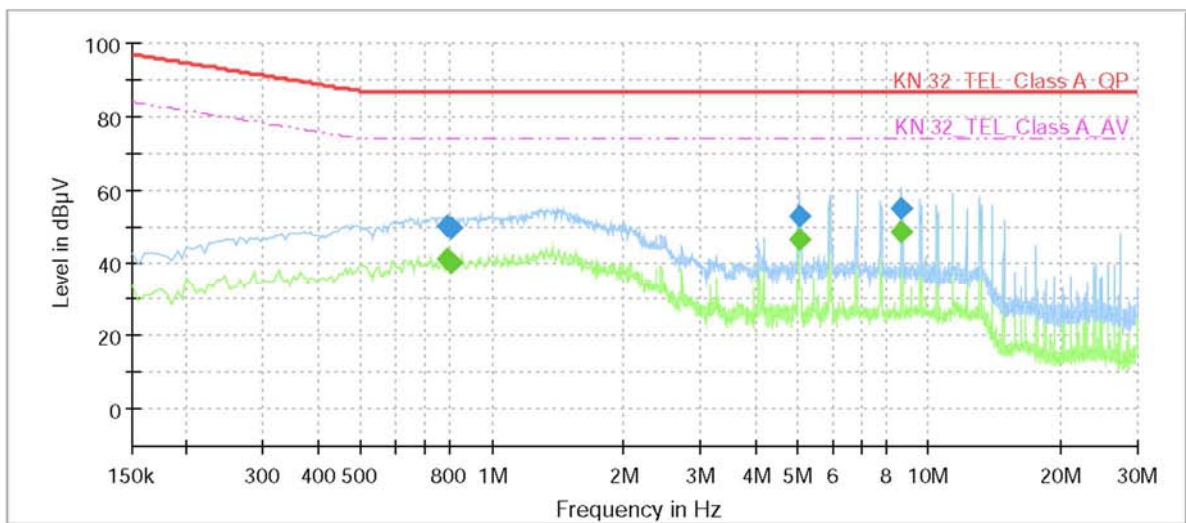
Conducted Emissions at Telecommunication Ports

- DC 12V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	QND-7030RN
Mode	DC-10M-VCCI
Operator Name:	KES



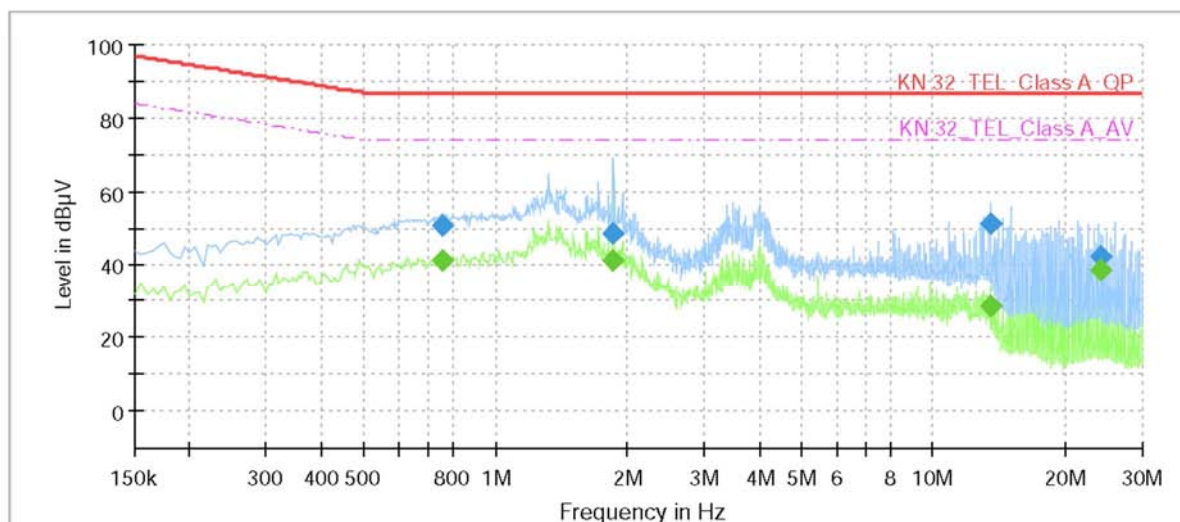
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.790000	---	41.07	74.00	32.93	1000.0	9.000	Single Line	9.9
0.790000	50.08	---	87.00	36.92	1000.0	9.000	Single Line	9.9
0.810000	---	40.34	74.00	33.66	1000.0	9.000	Single Line	9.9
0.810000	49.92	---	87.00	37.08	1000.0	9.000	Single Line	9.9
5.055000	---	46.76	74.00	27.24	1000.0	9.000	Single Line	9.9
5.055000	52.93	---	87.00	34.07	1000.0	9.000	Single Line	9.9
8.640000	---	48.72	74.00	25.28	1000.0	9.000	Single Line	10.0
8.640000	54.85	---	87.00	32.15	1000.0	9.000	Single Line	10.0

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	QND-7030RN
Mode	DC-100M-VCCI
Operator Name:	KES



Final Result

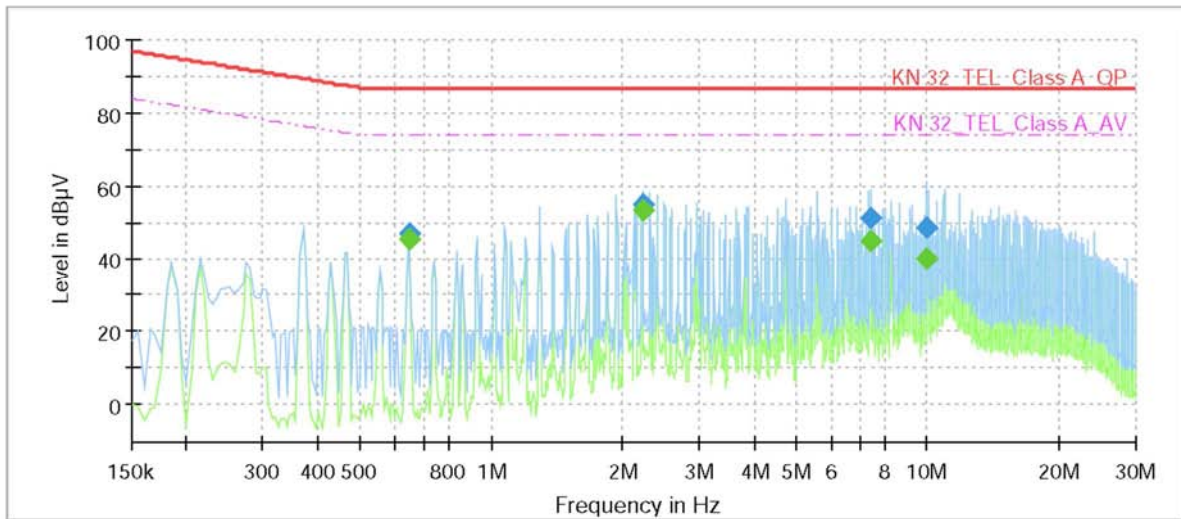
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.755000	---	41.18	74.00	32.82	1000.0	9.000	Single Line	9.4
0.755000	50.80	---	87.00	36.20	1000.0	9.000	Single Line	9.4
1.860000	---	41.08	74.00	32.92	1000.0	9.000	Single Line	9.3
1.860000	48.73	---	87.00	38.27	1000.0	9.000	Single Line	9.3
13.555000	---	28.73	74.00	45.27	1000.0	9.000	Single Line	9.6
13.555000	51.49	---	87.00	35.51	1000.0	9.000	Single Line	9.6
24.000000	---	38.40	74.00	35.60	1000.0	9.000	Single Line	9.5
24.000000	42.37	---	87.00	44.63	1000.0	9.000	Single Line	9.5

- PoE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	QND-7030RN
Mode	POE-10M-VCCI
Operator Name:	KES



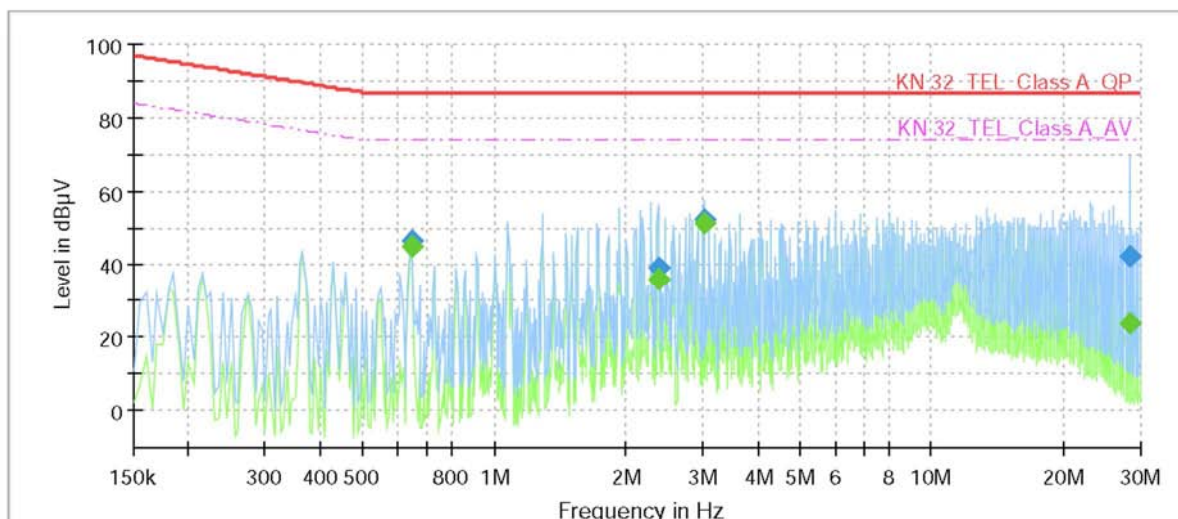
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.645000	---	45.78	74.00	28.22	1000.0	9.000	Single Line	9.9
0.645000	47.23	---	87.00	39.77	1000.0	9.000	Single Line	9.9
2.220000	---	53.37	74.00	20.63	1000.0	9.000	Single Line	9.8
2.220000	54.93	---	87.00	32.07	1000.0	9.000	Single Line	9.8
7.390000	---	45.25	74.00	28.75	1000.0	9.000	Single Line	10.0
7.390000	51.38	---	87.00	35.62	1000.0	9.000	Single Line	10.0
9.995000	---	40.33	74.00	33.67	1000.0	9.000	Single Line	10.1
9.995000	48.89	---	87.00	38.11	1000.0	9.000	Single Line	10.1

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	QND-7030RN
Mode	POE-100M-VCCI
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.645000	---	45.21	74.00	28.79	1000.0	9.000	Single Line	9.4
0.645000	46.69	---	87.00	40.31	1000.0	9.000	Single Line	9.4
2.370000	---	35.75	74.00	38.25	1000.0	9.000	Single Line	9.3
2.370000	39.15	---	87.00	47.85	1000.0	9.000	Single Line	9.3
3.010000	---	51.56	74.00	22.44	1000.0	9.000	Single Line	9.3
3.010000	52.60	---	87.00	34.40	1000.0	9.000	Single Line	9.3
28.410000	---	23.89	74.00	50.11	1000.0	9.000	Single Line	9.4
28.410000	42.49	---	87.00	44.51	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 μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
168.73	12.20	V	2.60	8.93	2.67	23.80	40.00	16.20
216.19	8.67	H	1.84	11.66	3.02	23.35	40.00	16.65
263.99	15.34	V	2.54	12.68	3.44	31.46	47.00	15.54
264.71	12.87	H	1.87	12.70	3.44	29.01	47.00	17.99
312.20	11.98	H	2.33	13.66	3.75	29.39	47.00	17.61
360.64	10.28	H	1.25	14.79	3.96	29.03	47.00	17.97
360.68	11.87	V	3.01	14.79	3.96	30.62	47.00	16.38
408.39	9.87	V	1.99	15.82	4.28	29.97	47.00	17.03

* H : Horizontal, V : Vertical

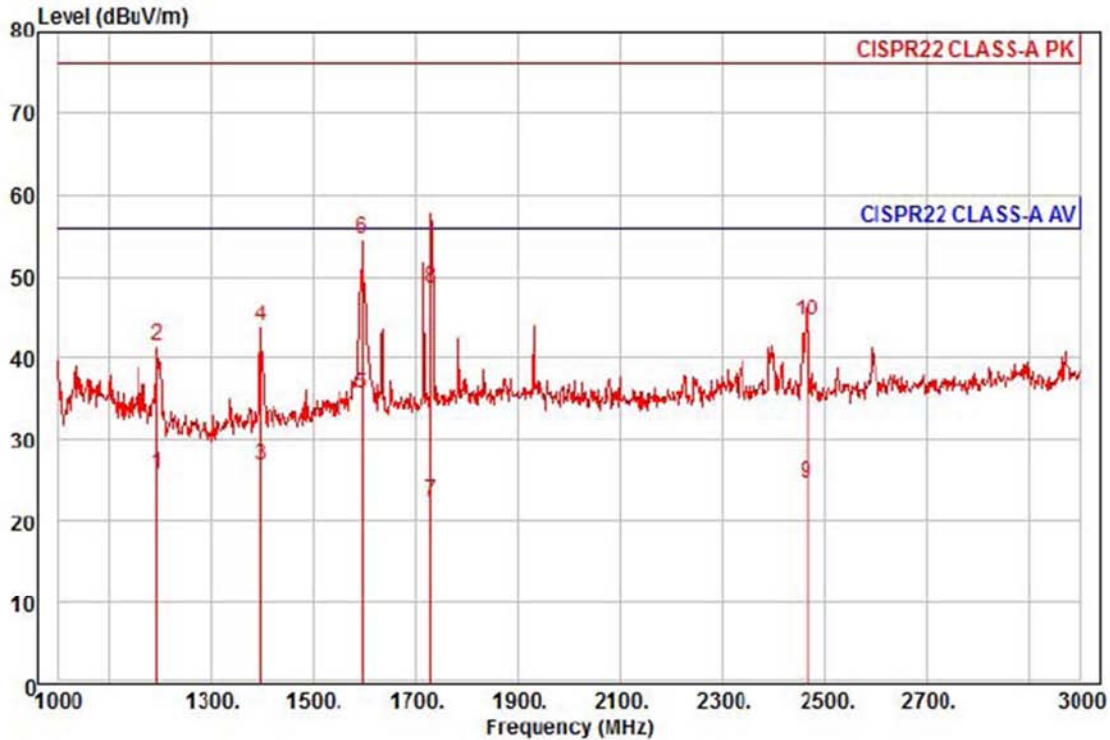
- PoE Mode

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]
138.67	12.92	V	2.30	7.96	2.36	23.24	40.00	16.76
168.72	10.39	H	1.87	8.93	2.67	21.99	40.00	18.01
263.99	15.38	V	2.95	12.68	3.44	31.50	47.00	15.50
270.47	11.38	H	1.88	12.81	3.49	27.68	47.00	19.32
312.16	9.36	H	2.96	13.66	3.75	26.77	47.00	20.23
312.20	10.21	V	2.36	13.66	3.75	27.62	47.00	19.38
360.71	11.87	V	1.90	14.79	3.96	30.62	47.00	16.38
408.38	9.37	H	1.07	15.82	4.28	29.47	47.00	17.53

* 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 :
Model : QND-7030RN
Mode : DC 12V_VCCI
Memo : 1 ~ 3 GHz

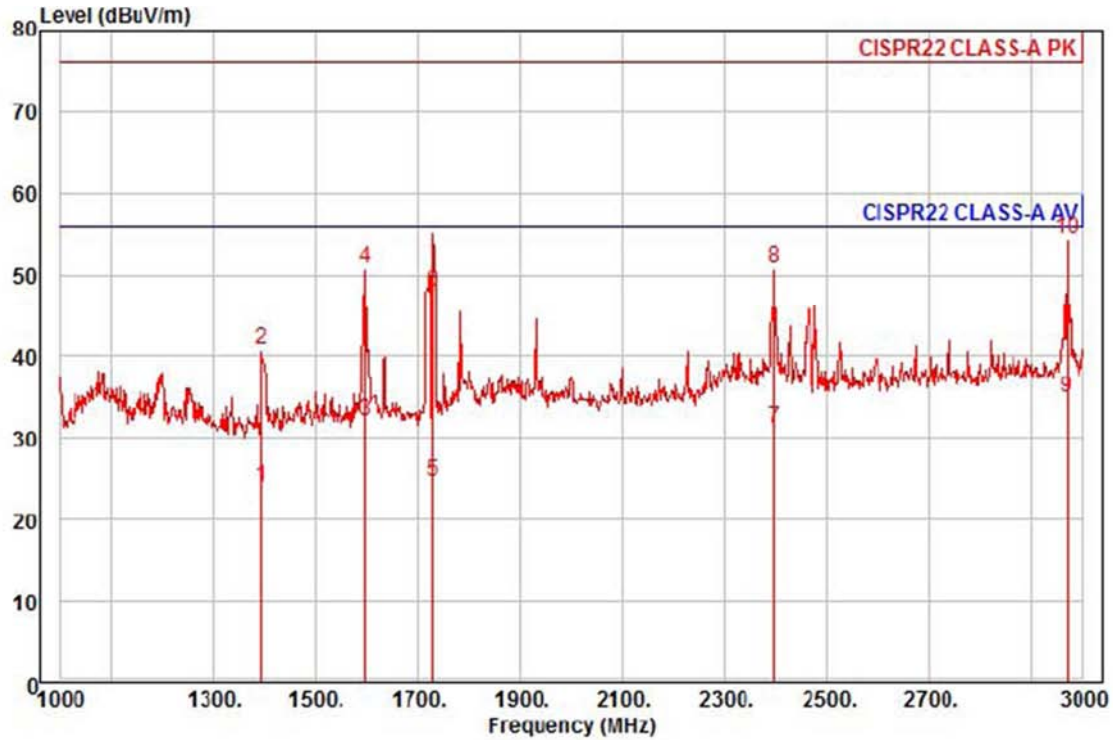
	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1194.00	33.92	24.68	7.07	40.02	89	56.00	-30.35	horizontal	Average
2	1194.00	49.60	24.68	7.07	40.02	89	76.00	-34.67	horizontal	Peak
3	1396.00	33.56	25.48	7.66	39.93	111	56.00	-29.23	horizontal	Average
4	1396.00	50.62	25.48	7.66	39.93	111	76.00	-32.17	horizontal	Peak
5 pp	1596.00	40.82	26.28	8.24	39.83	86	56.00	-20.49	horizontal	Average
6 pk	1596.00	60.09	26.28	8.24	39.83	86	76.00	-21.22	horizontal	Peak
7	1730.00	26.70	26.81	8.61	39.76	63	56.00	-33.64	horizontal	Average
8	1730.00	52.86	26.81	8.61	39.76	63	76.00	-27.48	horizontal	Peak
9	2466.00	25.48	29.02	10.06	39.90	315	56.00	-31.34	horizontal	Average
10	2466.00	45.38	29.02	10.06	39.90	315	76.00	-31.44	horizontal	Peak



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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QND-7030RN
Mode : DC 12V_VCCI
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	1392.00	30.76	25.47	7.65	39.93	214	56.00	-32.05	vertical	Average
2	1392.00	47.54	25.47	7.65	39.93	214	76.00	-35.27	vertical	Peak
3	1598.00	37.44	26.28	8.24	39.83	55	56.00	-23.87	vertical	Average
4	1598.00	56.02	26.28	8.24	39.83	55	76.00	-25.29	vertical	Peak
5	1730.00	28.94	26.81	8.61	39.76	343	56.00	-31.40	vertical	Average
6	1730.00	52.25	26.81	8.61	39.76	343	76.00	-28.09	vertical	Peak
7	2398.00	32.26	28.86	9.96	39.86	226	56.00	-24.78	vertical	Average
8	2398.00	51.90	28.86	9.96	39.86	226	76.00	-25.14	vertical	Peak
9 pp	2970.00	33.66	30.26	11.15	40.19	337	56.00	-21.12	vertical	Average
10 pk	2970.00	53.20	30.26	11.15	40.19	337	76.00	-21.58	vertical	Peak

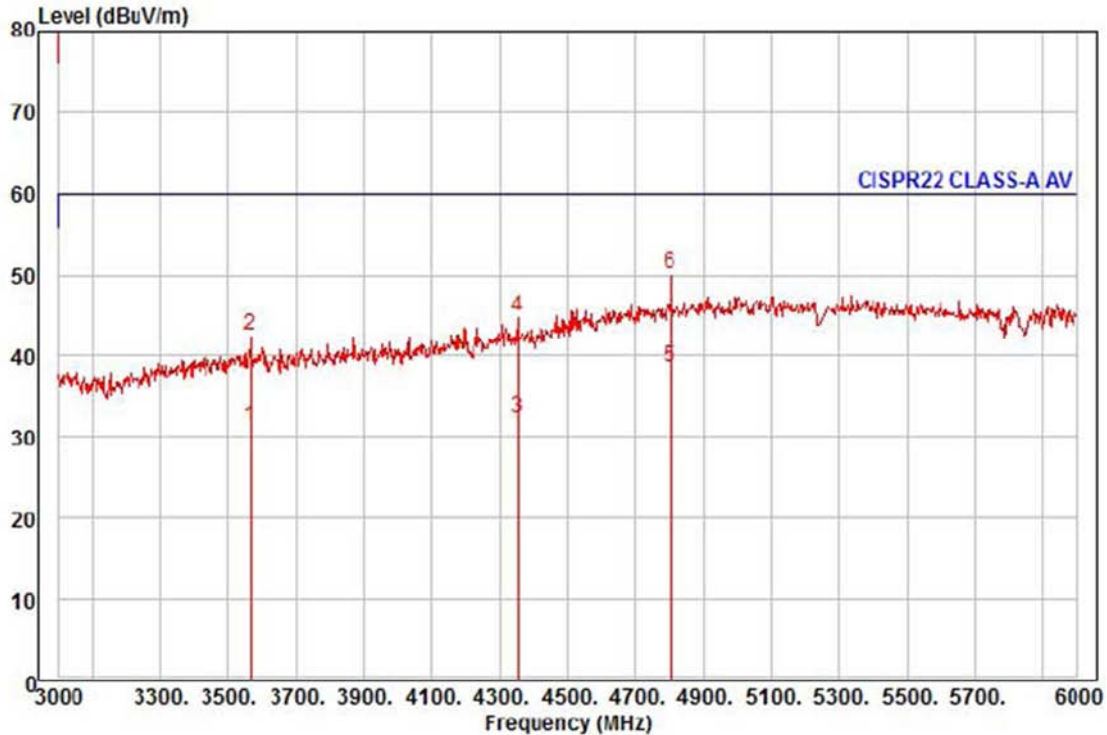
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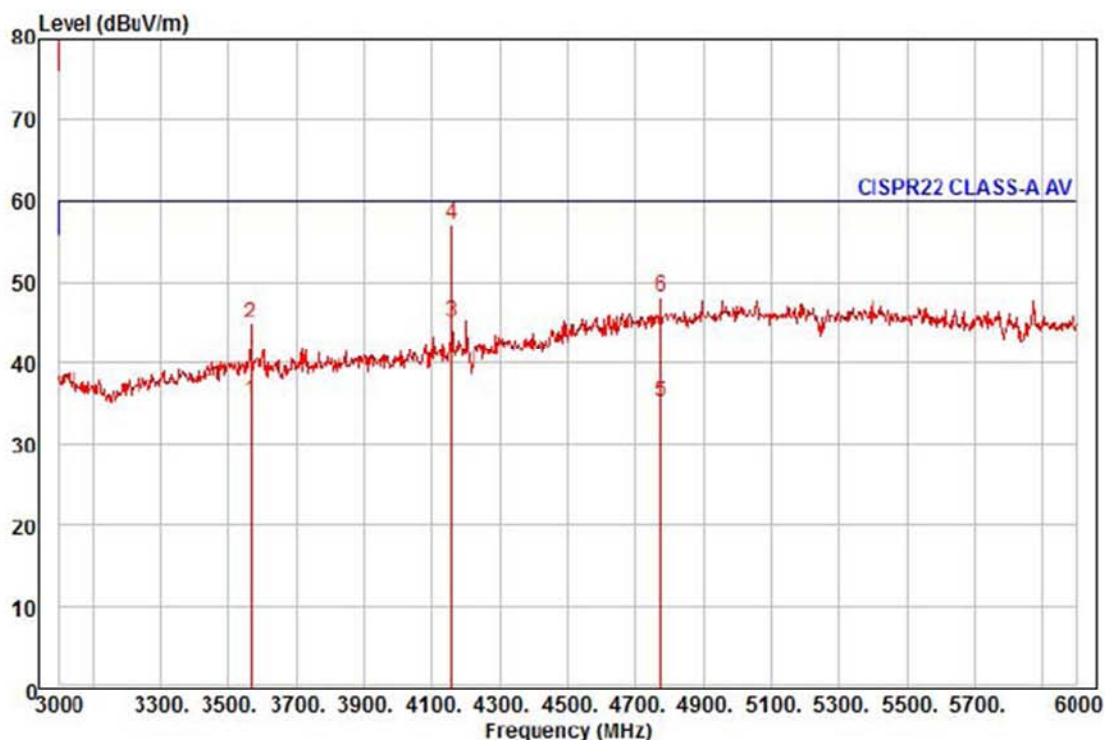
Test report No.:
KES-E1-16T0205
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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QND-7030RN
Mode : DC 12V_VCCI
Memo : 3 ~ 6 GHz

	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/n	dB		
1	3564.00	27.51	31.28	12.64	40.32	338	60.00	-28.89	horizontal	Average
2	3564.00	38.96	31.28	12.64	40.32	338	80.00	-37.44	horizontal	Peak
3	4353.00	24.41	34.03	14.16	40.41	154	60.00	-27.81	horizontal	Average
4	4353.00	37.13	34.03	14.16	40.41	154	80.00	-35.09	horizontal	Peak
5 pp	4800.00	27.41	36.58	14.97	40.41	330	60.00	-21.45	horizontal	Average
6 pk	4800.00	38.91	36.58	14.97	40.41	330	80.00	-29.95	horizontal	Peak

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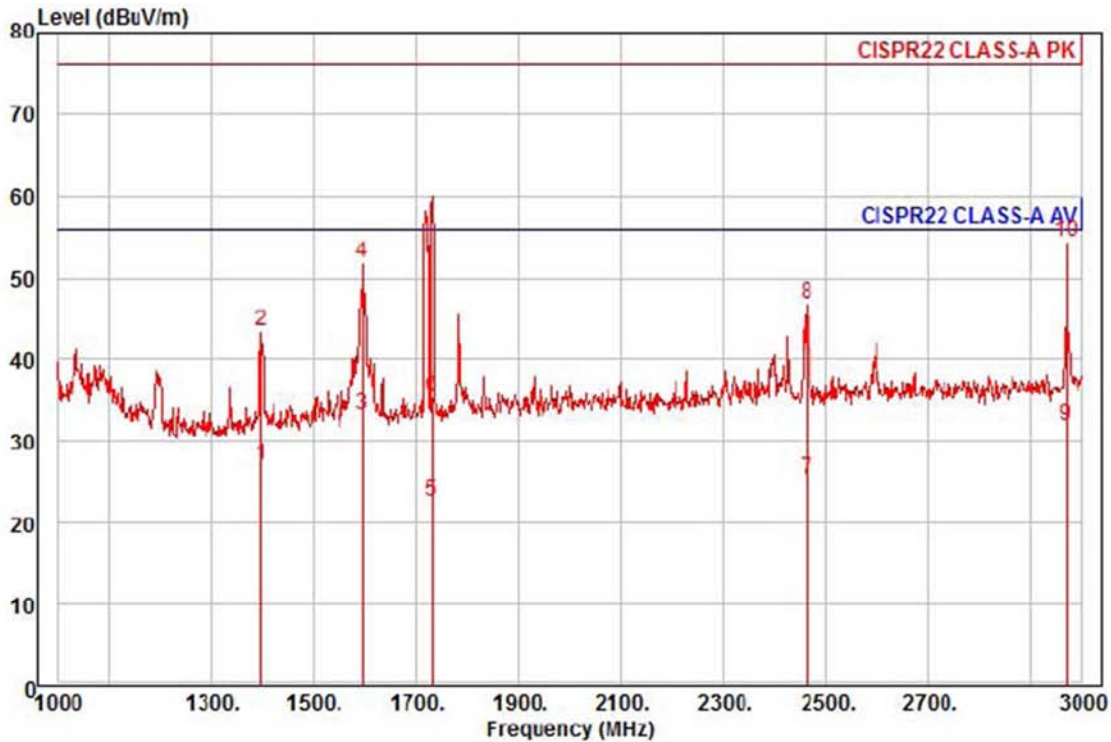


Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QND-7030RN
Mode : DC 12V_VCCI
Memo : 3 ~ 6 GHz

	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	3564.00	31.69	31.28	12.64	40.32	331	60.00	-24.71	vertical	Average
2	3564.00	41.33	31.28	12.64	40.32	331	80.00	-35.07	vertical	Peak
3 pp	4158.00	38.91	32.91	13.80	40.41	275	60.00	-14.79	vertical	Average
4 pk	4158.00	50.73	32.91	13.80	40.41	275	80.00	-22.97	vertical	Peak
5	4773.00	24.21	36.42	14.92	40.41	266	60.00	-24.86	vertical	Average
6	4773.00	37.34	36.42	14.92	40.41	266	80.00	-31.73	vertical	Peak

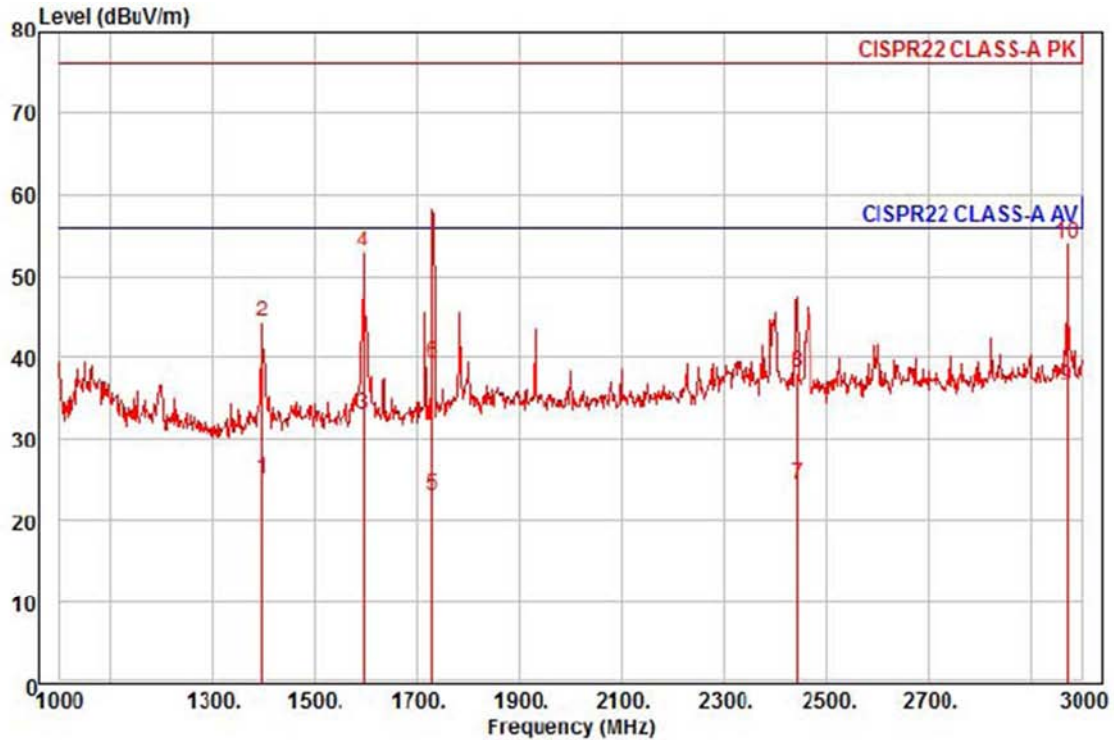


- PoE Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QND-7030RN
Mode : POE_VCCI
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/n	dB		
1	1396.00	33.89	25.48	7.66	39.93	211	56.00	-28.90	horizontal	Average
2	1396.00	50.13	25.48	7.66	39.93	211	76.00	-32.66	horizontal	Peak
3 av	1596.00	38.37	26.28	8.24	39.83	164	56.00	-22.94	horizontal	Average
4	1596.00	57.23	26.28	8.24	39.83	164	76.00	-24.08	horizontal	Peak
5	1732.00	27.04	26.82	8.61	39.76	60	56.00	-33.29	horizontal	Average
6	1732.00	39.74	26.82	8.61	39.76	60	76.00	-40.59	horizontal	Peak
7	2464.00	26.08	29.02	10.06	39.90	225	56.00	-30.74	horizontal	Average
8	2464.00	47.78	29.02	10.06	39.90	225	76.00	-29.04	horizontal	Peak
9	2970.00	30.61	30.26	11.15	40.19	341	56.00	-24.17	horizontal	Average
10 pp	2970.00	53.24	30.26	11.15	40.19	341	76.00	-21.54	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 : QND-7030RN

Mode : POE_VCCI

Memo : 1 ~ 3 GHz

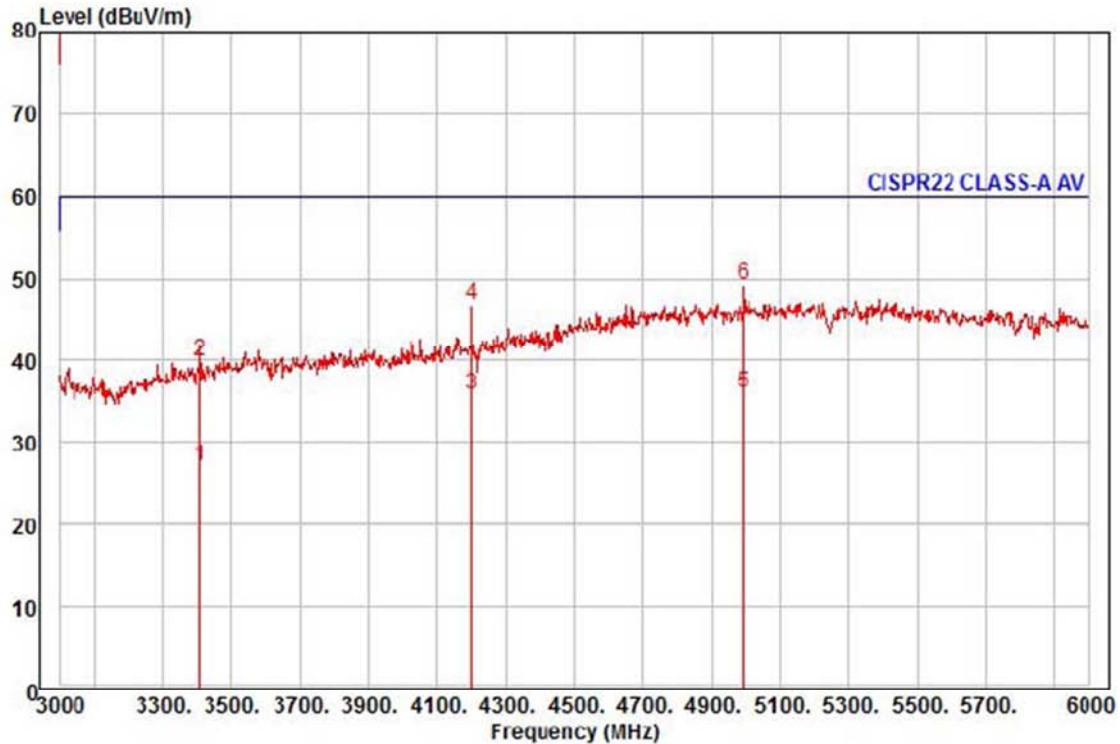
	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1396.00	31.93	25.48	7.66	39.93	220	56.00	-30.86	vertical	Average
2	1396.00	50.97	25.48	7.66	39.93	220	76.00	-31.82	vertical	Peak
3	1596.00	38.28	26.28	8.24	39.83	44	56.00	-23.03	vertical	Average
4	1596.00	58.34	26.28	8.24	39.83	44	76.00	-22.97	vertical	Peak
5	1730.00	27.48	26.81	8.61	39.76	137	56.00	-32.86	vertical	Average
6	1730.00	43.67	26.81	8.61	39.76	137	76.00	-36.67	vertical	Peak
7	2442.00	25.34	28.96	10.03	39.89	336	56.00	-31.56	vertical	Average
8	2442.00	39.04	28.96	10.03	39.89	336	76.00	-37.86	vertical	Peak
9 pp	2970.00	35.11	30.26	11.15	40.19	264	56.00	-19.67	vertical	Average
10 pk	2970.00	52.80	30.26	11.15	40.19	264	76.00	-21.98	vertical	Peak



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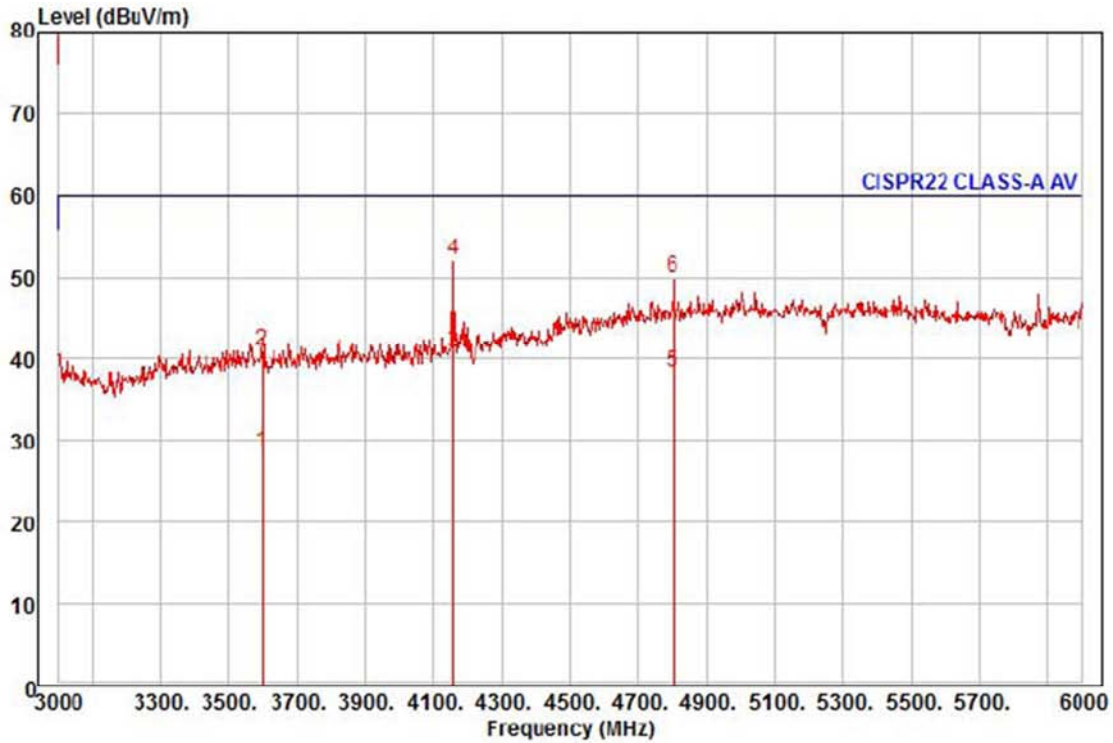
Test report No.:
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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QND-7030RN
Mode : POE_VCCI
Memo : 3 ~ 6 GHz

	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	3405.00	24.13	31.01	12.26	40.29	202	60.00	-32.89	horizontal	Average
2	3405.00	36.92	31.01	12.26	40.29	202	80.00	-40.10	horizontal	Peak
3	4200.00	29.11	33.15	13.88	40.41	345	60.00	-24.27	horizontal	Average
4	4200.00	40.21	33.15	13.88	40.41	345	80.00	-33.17	horizontal	Peak
5 pp	4992.00	23.44	37.67	15.32	40.41	34	60.00	-23.98	horizontal	Average
6 pk	4992.00	36.68	37.67	15.32	40.41	34	80.00	-30.74	horizontal	Peak

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : QND-7030RN
Mode : POE_VCCI
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	3597.00	24.87	31.33	12.70	40.33	338	60.00	-31.43	vertical	Average
2	3597.00	37.39	31.33	12.70	40.33	338	80.00	-38.91	vertical	Peak
3 pp	4158.00	34.53	32.91	13.80	40.41	224	60.00	-19.17	vertical	Average
4 pk	4158.00	45.74	32.91	13.80	40.41	224	80.00	-27.96	vertical	Peak
5	4800.00	27.33	36.58	14.97	40.41	341	60.00	-21.53	vertical	Average
6	4800.00	38.68	36.58	14.97	40.41	341	80.00	-30.18	vertical	Peak



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Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

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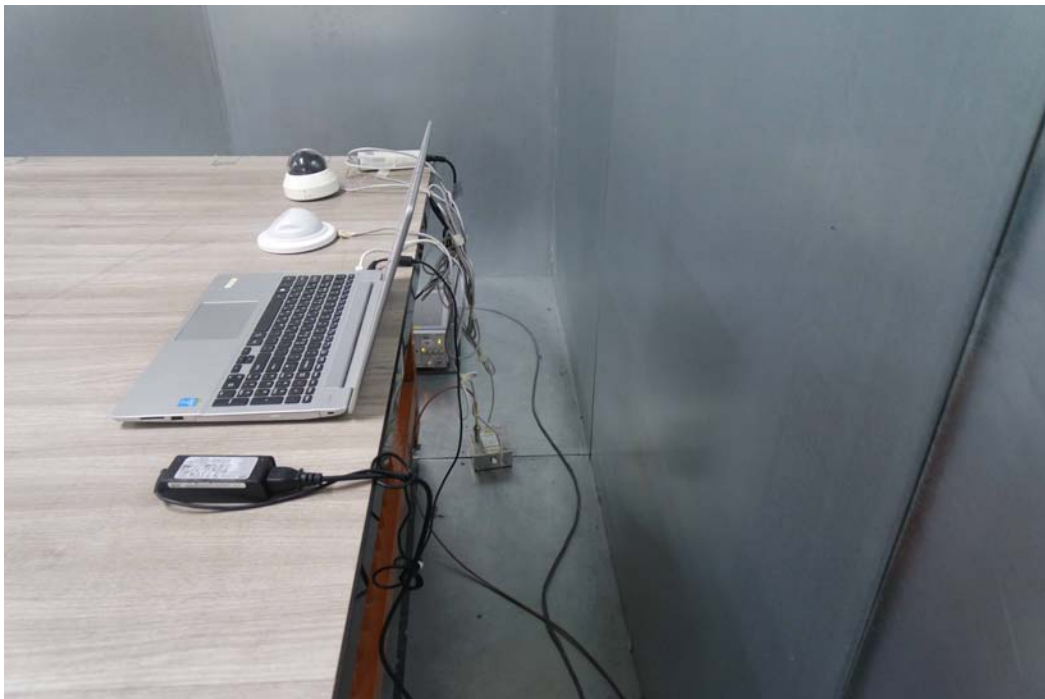
Conducted Telecommunication Emissions

- 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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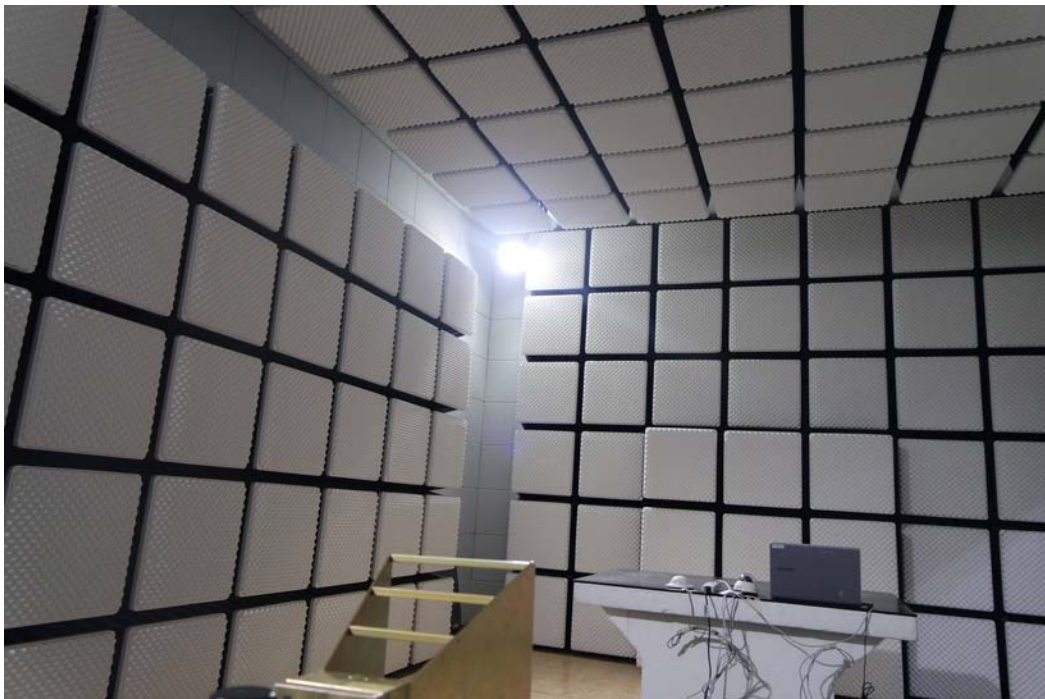
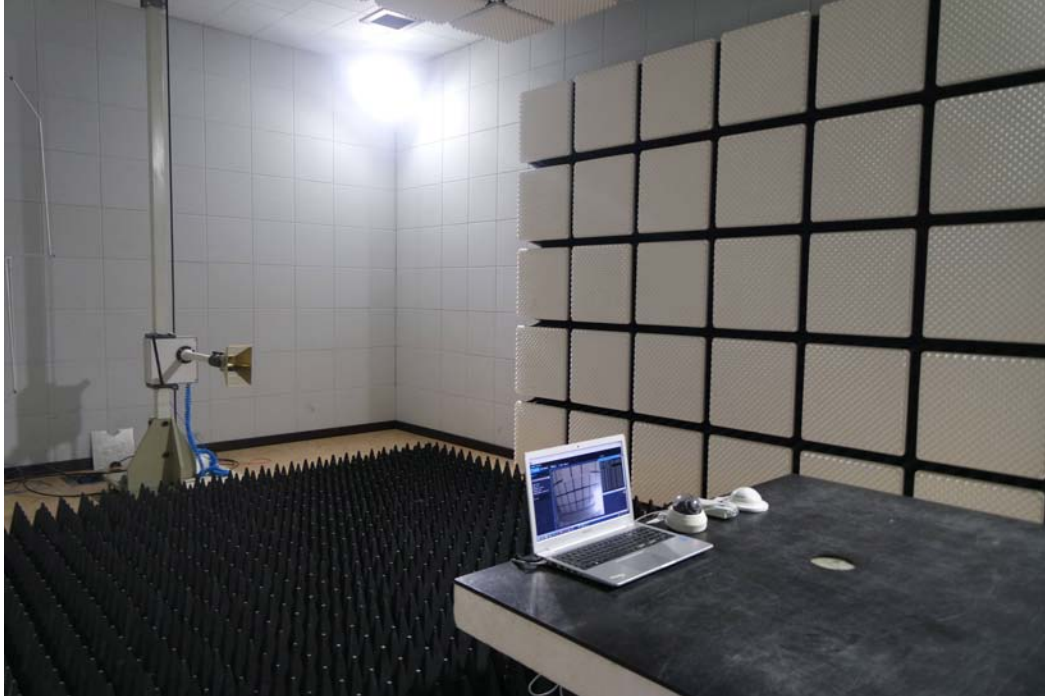
Radiated Electric Field Emissions(Above 1 GHz)

- 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)

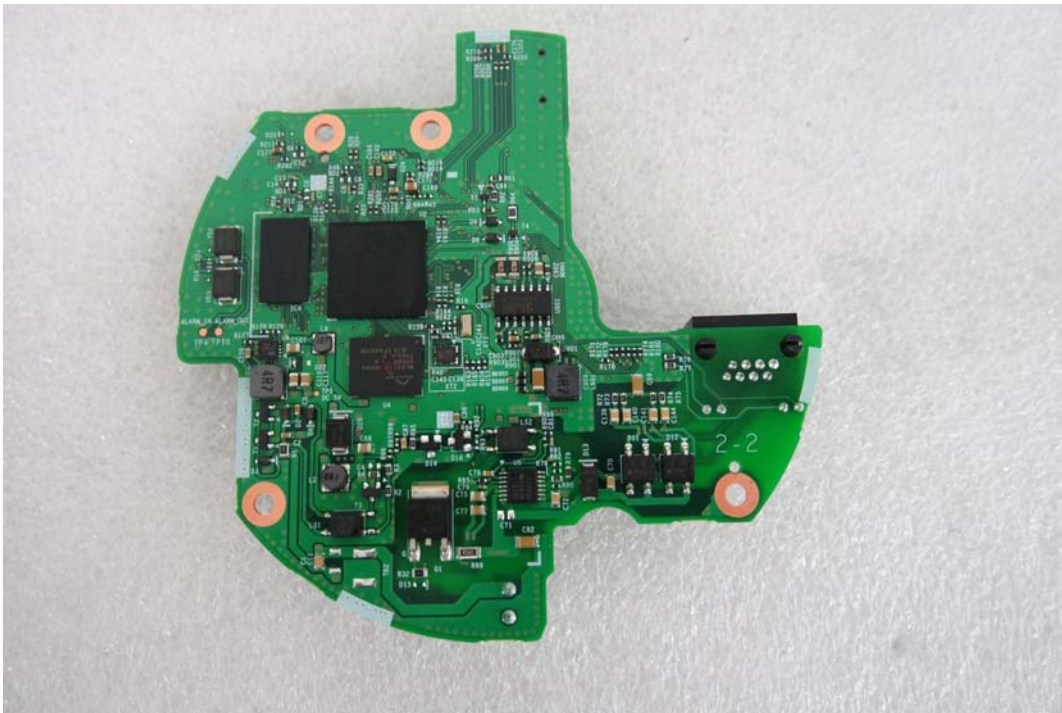


Main Board EUT Internal View – Main Board

(Top)



(Bottom)



Main Board EUT Internal View – Camera lens

(Top)



(Bottom)



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Main Board EUT Internal View – LED

(Top)



(Bottom)



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