



## EMC TEST REPORT For VCCI

Test Report No. : KES-E1-16T0214  
Date of Issue : May. 17, 2016  
Product name : NETWORK CAMERA  
Model/Type No. : QNO-7030RN  
Variant Model : QNO-7010RN, QNO-7020RN  
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

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EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

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**REPORT REVISION HISTORY**

Date	Revision	Page No
May. 17, 2016	KES-E1-16T0214	Issued

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## 1.0 General Product Description

### Main Specifications of EUT are:

	QNO-7030R
<b>Video</b>	
Imaging Device	1/3" 4M CMOS
Total Pixels	2720x1536
Effective Pixels	2688x1520
Scanning System	Progressive
Min. Illumination	Color : 0.3Lux, B/W : 0Lux
<b>Lens</b>	
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
<b>Pan / Tilt / Rotate</b>	
Pan Range	0
Tilt Range	0
Rotate Range	0
<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
Highlight Compensation	(미지원)
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR(Off / On)
Motion Detection	Off / On (4ea polygon zones)
Privacy Masking	Off / On (6ea rectangular 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
<b>Network</b>	
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.

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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 Inter	ONVIF Profile S, G SUNAPI(HTTP API)
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Danish, 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 )
Environmental	
Operating Temperature / Humi	-30°C ~ +55°C / Less than 90% RH * Start up should be done at above -20°C
Storage Temperature / Humidi	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
Electrical	
Input Voltage / Current	PoE(IEEE802.3af, Class3), DC 12V
Power Consumption	Max.6.6W(PoE), Max.5.5W(DC12V)
Mechanical	
Color / Material	Gray / Metal
Dimension (WxHxD)	φ70.0x246mm
Weight	730g

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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	Differences
QNO-7020RN	Focus Length differences
QNO-7010RN	

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	QNO-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	JK9091EF400142 M	Samsung Electronics Suzhou Computer Co., Ltd.	-
NotebookK Adapter	A13-040N2A	CN60BA4400313 ADON843K0200	Chicony Power Technology (suzhou)Co., Ltd.	-
Alarm	SIE-0001 DO	C54167JB601268 F	SAMSUNG TECHWIN CO., LTD.	-
Micro SD card	-	-	Transcend	4 GB
MIC	CMK-303	-	CAMAC	-



## 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
	Micro SD card SLOT	Micro SD card	Micro SD card SLOT	-	-
	Audio In	MIC	Audio In	1.9	U

- PoE 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	PoE	RJ-45	4.0	U
	Micro SD card SLOT	Micro SD card	Micro SD card SLOT	-	-
	Audio In	MIC	Audio In	1.9	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:

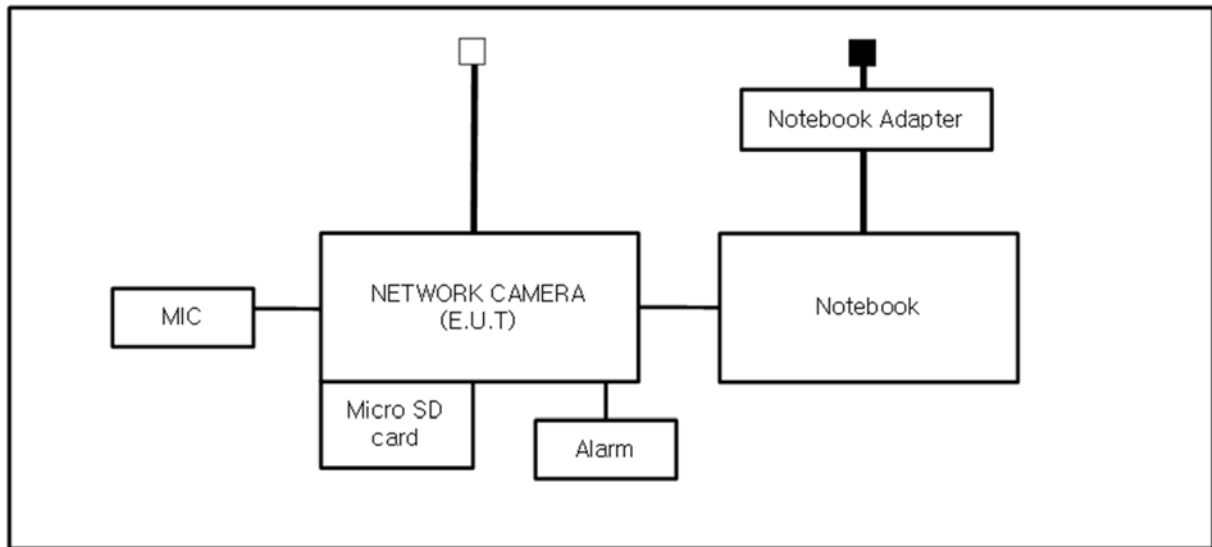
Test mode	Normal operating
OP	MONITORING Network ping test

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

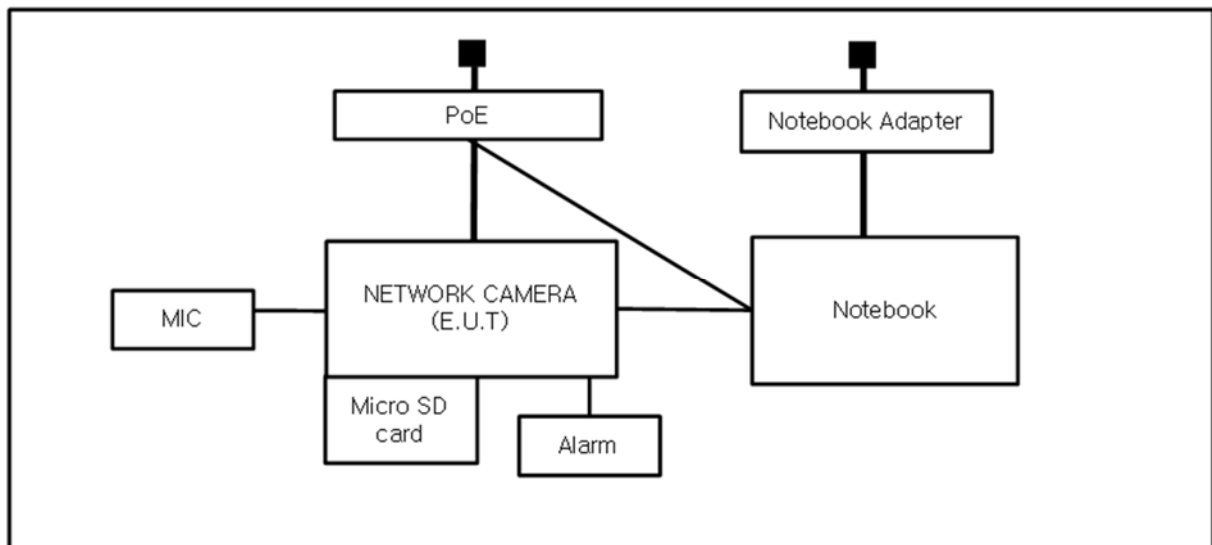
## 1.8 Configuration

■ AC Main  
□ DC Main

- DC 12 V Mode



- PoE Mode









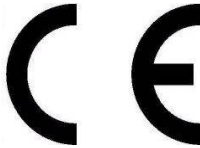

## 1.9 Calibration Details of Equipment Used for Measurement

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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☐ **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. 09, 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: 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
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R&S	101781	05, 03, 2017
<input checked="" type="checkbox"/>	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9168-713	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: 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

### Remarks

See 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
<input checked="" type="checkbox"/>	EMI Test Receiver	ESU26	R&S	100551	04, 18, 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: 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.





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## **APPENDIX A – TEST DATA**

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

**[HOT]**

N/A



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**[NEUTRAL]**

N/A

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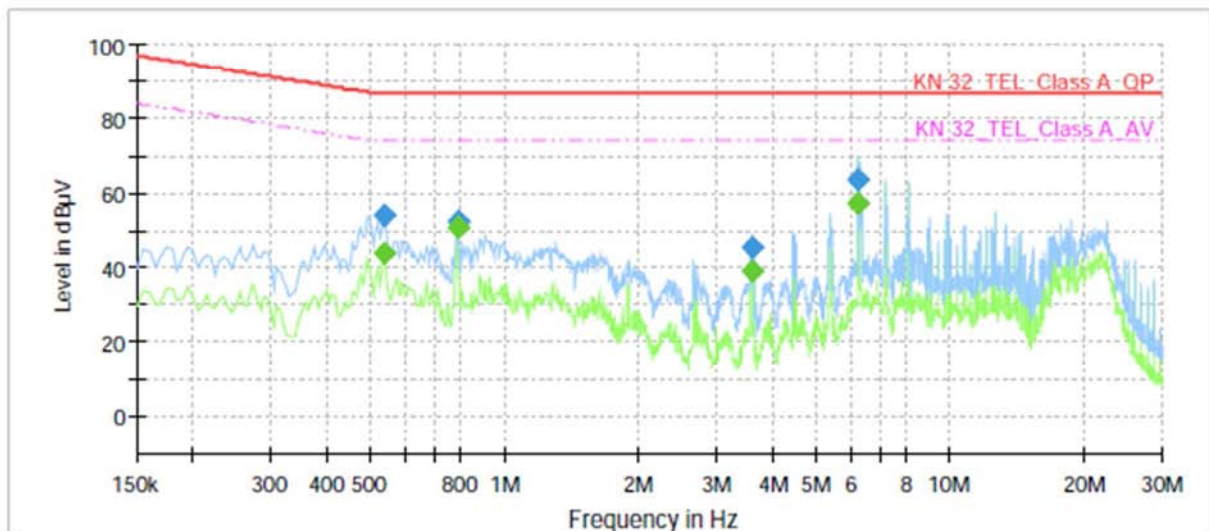
## Conducted Emissions at Telecommunication Ports

- DC 12V Mode

[10 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	QNO-7030RN
Mode	10 Mbps_DC 12 V
Operator Name:	KES



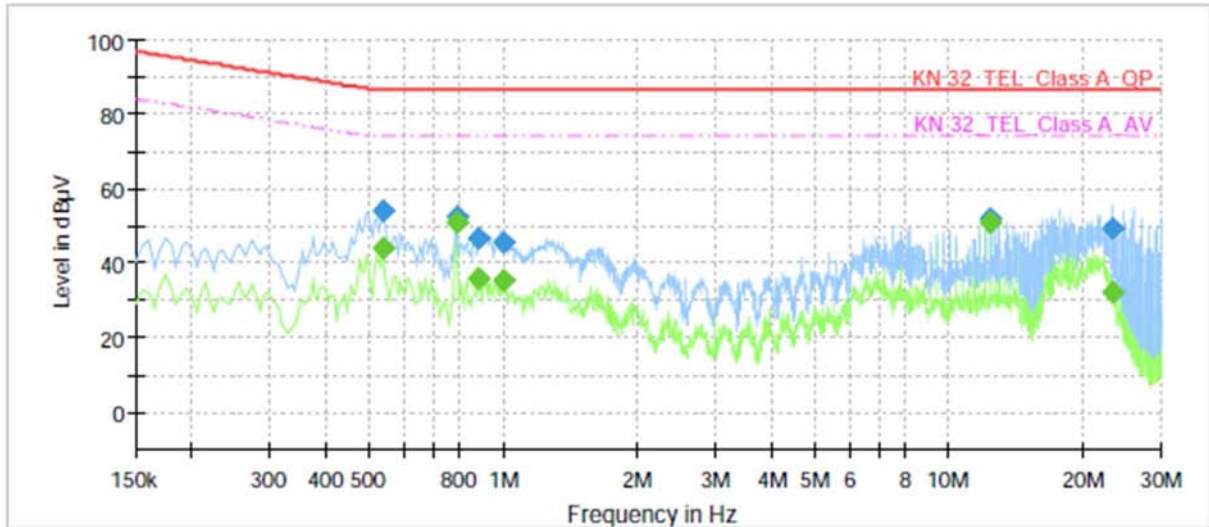
### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.540000	---	43.96	74.00	30.04	1000.0	9.000	Single Line	9.9
0.540000	54.05	---	87.00	32.95	1000.0	9.000	Single Line	9.9
0.785000	---	50.94	74.00	23.06	1000.0	9.000	Single Line	9.9
0.785000	52.50	---	87.00	34.50	1000.0	9.000	Single Line	9.9
3.585000	---	38.98	74.00	35.02	1000.0	9.000	Single Line	9.8
3.585000	45.72	---	87.00	41.28	1000.0	9.000	Single Line	9.8
6.250000	---	56.96	74.00	17.04	1000.0	9.000	Single Line	9.9
6.250000	63.36	---	87.00	23.64	1000.0	9.000	Single Line	9.9

## [100 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	QNO-7030RN
Mode	100 Mbps_DC 12 V
Operator Name:	KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.540000	---	43.98	74.00	30.02	1000.0	9.000	Single Line	9.5
0.540000	54.09	---	87.00	32.91	1000.0	9.000	Single Line	9.5
0.785000	---	50.67	74.00	23.33	1000.0	9.000	Single Line	9.4
0.785000	52.37	---	87.00	34.63	1000.0	9.000	Single Line	9.4
0.885000	---	36.12	74.00	37.88	1000.0	9.000	Single Line	9.4
0.885000	46.33	---	87.00	40.67	1000.0	9.000	Single Line	9.4
1.000000	---	35.61	74.00	38.39	1000.0	9.000	Single Line	9.4
1.000000	45.48	---	87.00	41.52	1000.0	9.000	Single Line	9.4
12.385000	---	51.07	74.00	22.93	1000.0	9.000	Single Line	9.6
12.385000	51.80	---	87.00	35.20	1000.0	9.000	Single Line	9.6
23.325000	---	32.39	74.00	41.61	1000.0	9.000	Single Line	9.5
23.325000	49.26	---	87.00	37.74	1000.0	9.000	Single Line	9.5

- PoE Mode

**[10 Mbps]**

## Common Information

Test Description:

Model No.:

Mode

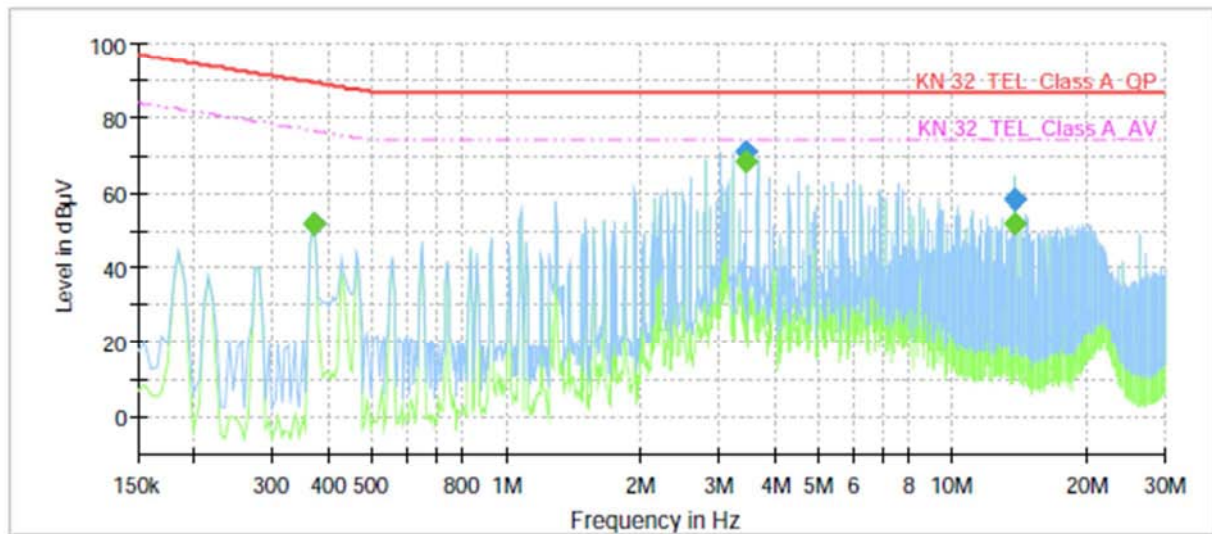
Operator Name:

Telecommunication Emission

QNO-7030RN

10 Mbps\_PoE

KES



## Final Result

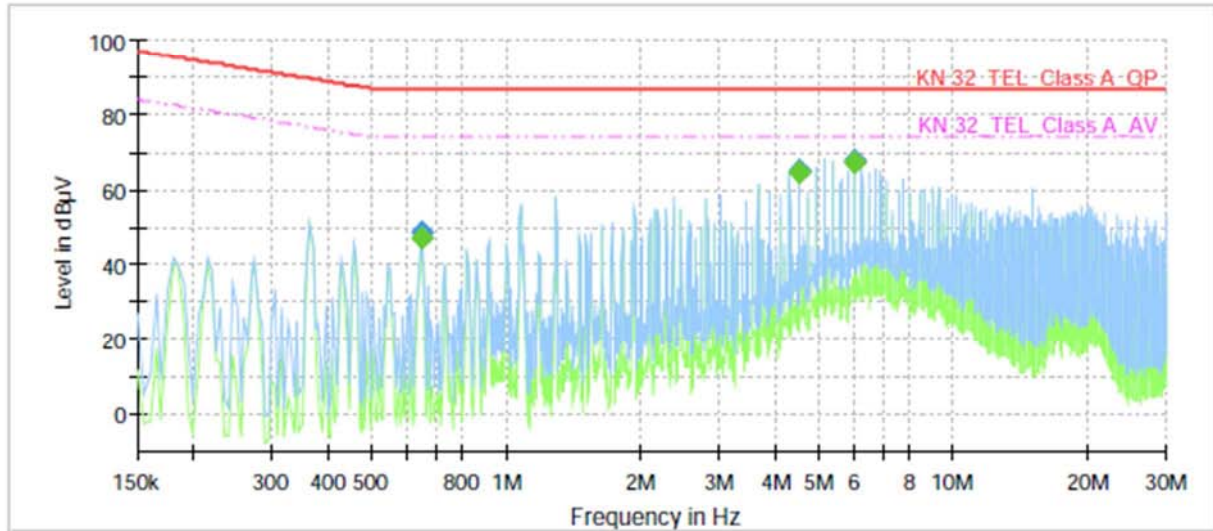
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.370000	---	51.74	76.50	24.76	1000.0	9.000	Single Line	10.0
0.370000	51.79	---	89.50	37.71	1000.0	9.000	Single Line	10.0
3.450000	---	68.37	74.00	5.63	1000.0	9.000	Single Line	9.8
3.450000	70.76	---	87.00	16.24	1000.0	9.000	Single Line	9.8
13.750000	---	52.13	74.00	21.87	1000.0	9.000	Single Line	10.1
13.750000	58.19	---	87.00	28.81	1000.0	9.000	Single Line	10.1



## [100 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	QNO-7030RN
Mode	100 Mbps_PoE
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	---	47.20	74.00	26.80	1000.0	9.000	Single Line	9.4
0.645000	48.67	---	87.00	38.33	1000.0	9.000	Single Line	9.4
4.530000	---	64.63	74.00	9.37	1000.0	9.000	Single Line	9.3
4.530000	65.20	---	87.00	21.80	1000.0	9.000	Single Line	9.3
6.040000	---	67.40	74.00	6.60	1000.0	9.000	Single Line	9.4
6.040000	67.89	---	87.00	19.11	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]
230.44	6.81	H	4.00	11.98	3.15	21.94	47.00	25.06
250.43	6.73	V	1.00	12.42	3.33	22.48	47.00	24.52
264.12	7.13	H	3.90	12.68	3.44	23.25	47.00	23.75
309.65	6.81	V	1.12	13.60	3.74	24.15	47.00	22.85
408.23	8.42	H	4.00	15.82	4.28	28.52	47.00	18.48
448.73	6.84	V	1.20	16.38	4.58	27.80	47.00	19.20

\* 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]
168.65	6.68	V	1.20	8.93	2.67	18.28	40.00	21.72
270.65	7.36	H	4.00	12.81	3.49	23.66	47.00	23.34
408.54	6.52	H	3.90	15.82	4.28	26.62	47.00	20.38
448.34	6.21	V	1.10	16.38	4.57	27.16	47.00	19.84
456.95	7.44	H	4.00	16.50	4.64	28.58	47.00	18.42
594.87	7.26	V	1.12	19.19	5.54	31.99	47.00	15.01

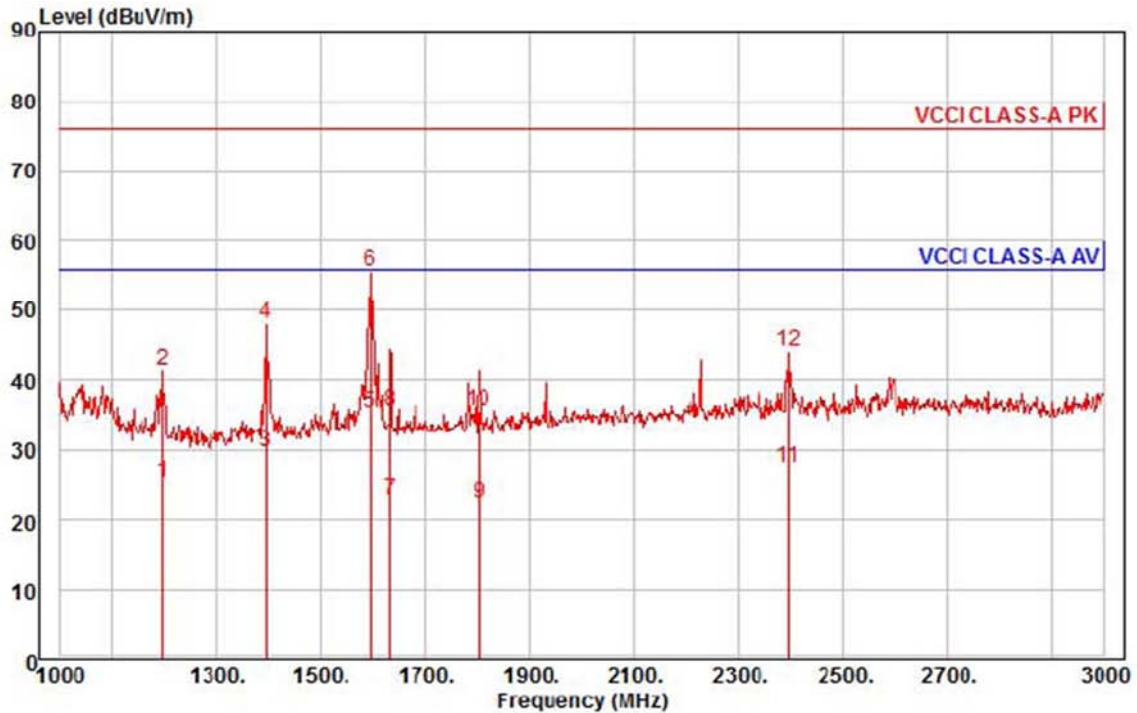
\* H : Horizontal, V : Vertical





## Radiated Electric Field Emissions(Above 1 GHz)

- DC 12V Mode



Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : DC 12 V  
Memo :

	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	1198.00	33.73	24.70	7.08	40.02	138	56.00	-30.51	horizontal	Average
2	1198.00	49.63	24.70	7.08	40.02	138	76.00	-34.61	horizontal	Peak
3	1394.00	36.41	25.47	7.65	39.93	121	56.00	-26.40	horizontal	Average
4	1394.00	54.87	25.47	7.65	39.93	121	76.00	-27.94	horizontal	Peak
5 av	1596.00	40.73	26.28	8.24	39.83	92	56.00	-20.58	horizontal	Average
6 pp	1596.00	60.87	26.28	8.24	39.83	92	76.00	-20.44	horizontal	Peak
7	1632.00	28.10	26.42	8.34	39.81	161	56.00	-32.95	horizontal	Average
8	1632.00	40.61	26.42	8.34	39.81	161	76.00	-40.44	horizontal	Peak
9	1802.00	26.38	27.09	8.81	39.73	23	56.00	-33.45	horizontal	Average
10	1802.00	39.35	27.09	8.81	39.73	23	76.00	-40.48	horizontal	Peak
11	2396.00	28.54	28.85	9.96	39.86	124	56.00	-28.51	horizontal	Average
12	2396.00	45.23	28.85	9.96	39.86	124	76.00	-31.82	horizontal	Peak

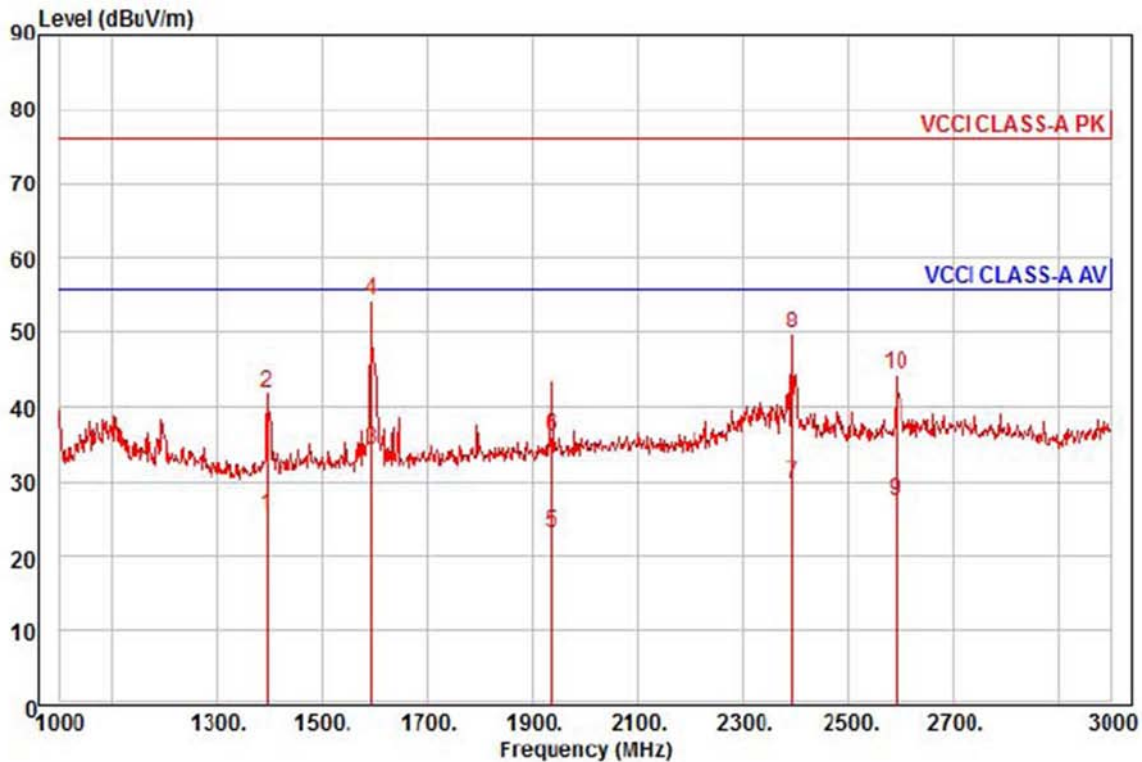
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Test report No.:  
KES-E1-16T0214  
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Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : DC 12 V  
Memo :

	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	1394.00	32.25	25.47	7.65	39.93	221	56.00	-30.56	vertical	Average
2	1394.00	48.84	25.47	7.65	39.93	221	76.00	-33.97	vertical	Peak
3 av	1594.00	39.78	26.27	8.23	39.83	45	56.00	-21.55	vertical	Average
4 pp	1594.00	59.89	26.27	8.23	39.83	45	76.00	-21.44	vertical	Peak
5	1934.00	26.11	27.62	9.17	39.66	175	56.00	-32.76	vertical	Average
6	1934.00	38.90	27.62	9.17	39.66	175	76.00	-39.97	vertical	Peak
7	2394.00	30.85	28.85	9.95	39.86	224	56.00	-26.21	vertical	Average
8	2394.00	50.93	28.85	9.95	39.86	224	76.00	-26.13	vertical	Peak
9	2590.00	27.74	29.33	10.25	39.97	36	56.00	-28.65	vertical	Average
10	2590.00	44.79	29.33	10.25	39.97	36	76.00	-31.60	vertical	Peak

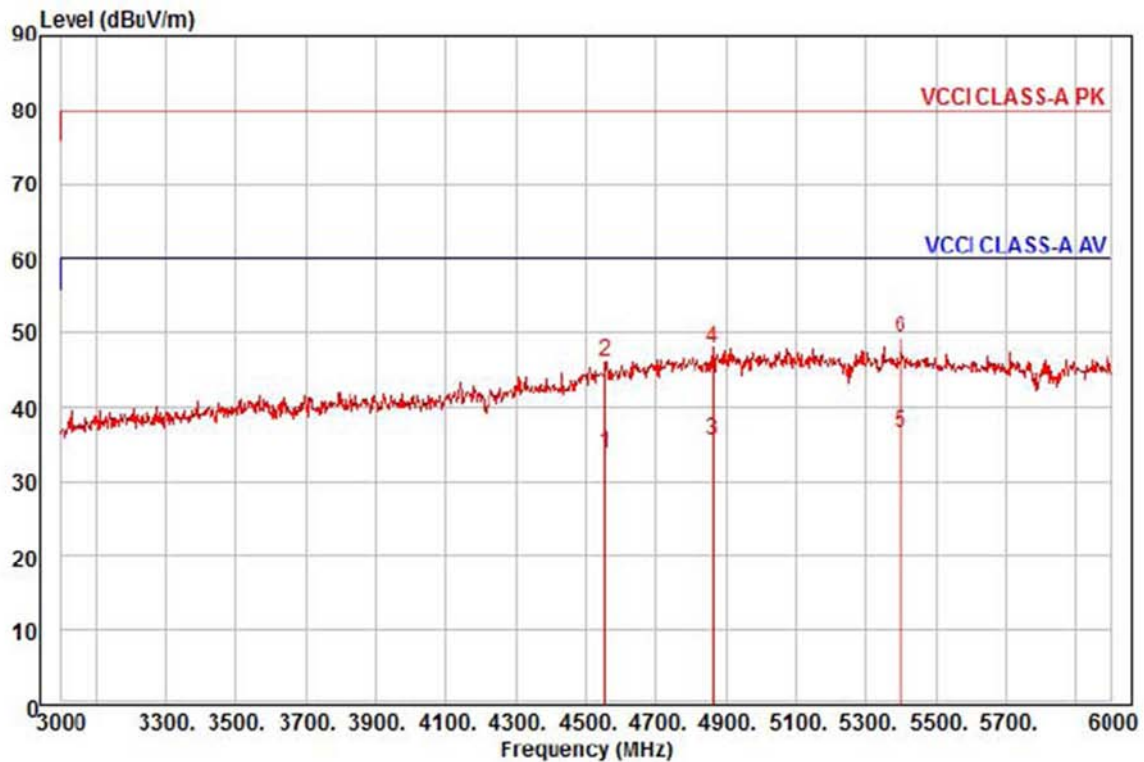
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Test report No.:  
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Page (25) of (43)



Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : DC 12 V  
Memo :

	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	4554.00	24.62	35.17	14.53	40.41	354	60.00	-26.09	horizontal	Average
2	4554.00	36.88	35.17	14.53	40.41	354	80.00	-33.83	horizontal	Peak
3	4863.00	24.07	36.94	15.08	40.41	232	60.00	-24.32	horizontal	Average
4	4863.00	36.33	36.94	15.08	40.41	232	80.00	-32.06	horizontal	Peak
5 pp	5400.00	24.13	36.91	15.80	40.35	230	60.00	-23.51	horizontal	Average
6 pk	5400.00	36.83	36.91	15.80	40.35	230	80.00	-30.81	horizontal	Peak

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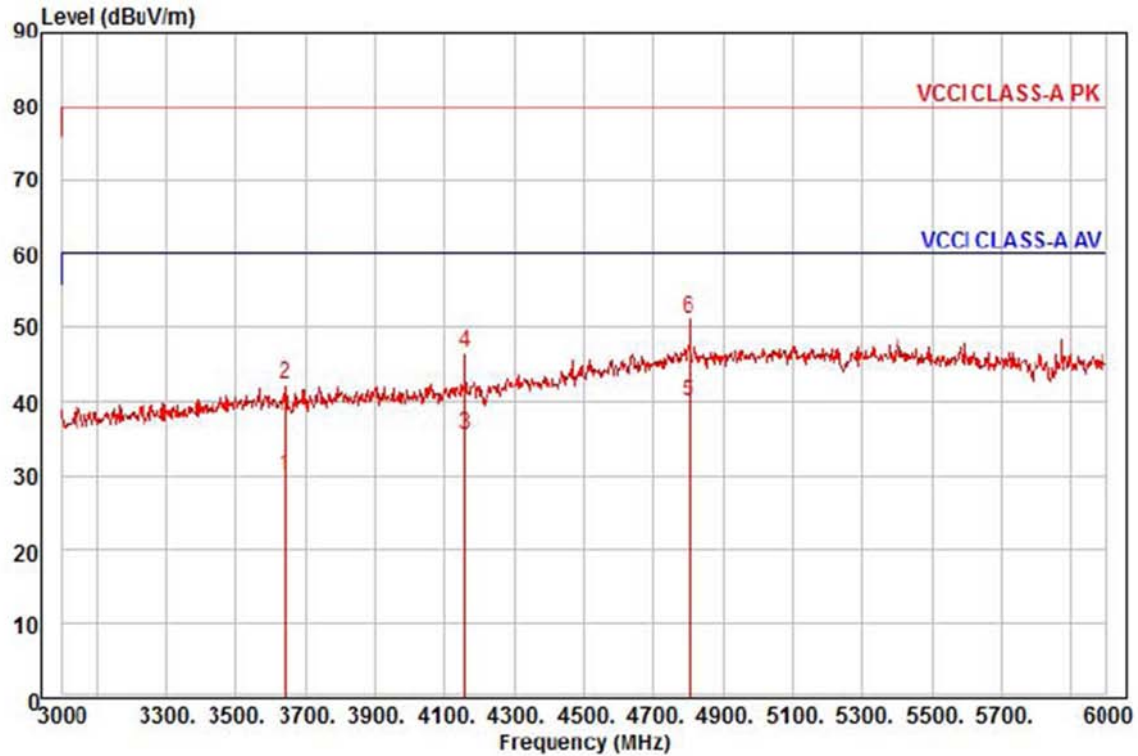




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Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : DC 12 V  
Memo :

	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	3642.00	25.99	31.41	12.79	40.34	245	60.00	-30.15	vertical	Average
2	3642.00	38.59	31.41	12.79	40.34	245	80.00	-37.55	vertical	Peak
3	4158.00	29.37	32.91	13.80	40.41	222	60.00	-24.33	vertical	Average
4	4158.00	40.33	32.91	13.80	40.41	222	80.00	-33.37	vertical	Peak
5 pp	4800.00	28.92	36.58	14.97	40.41	216	60.00	-19.94	vertical	Average
6 pk	4800.00	40.08	36.58	14.97	40.41	216	80.00	-28.78	vertical	Peak

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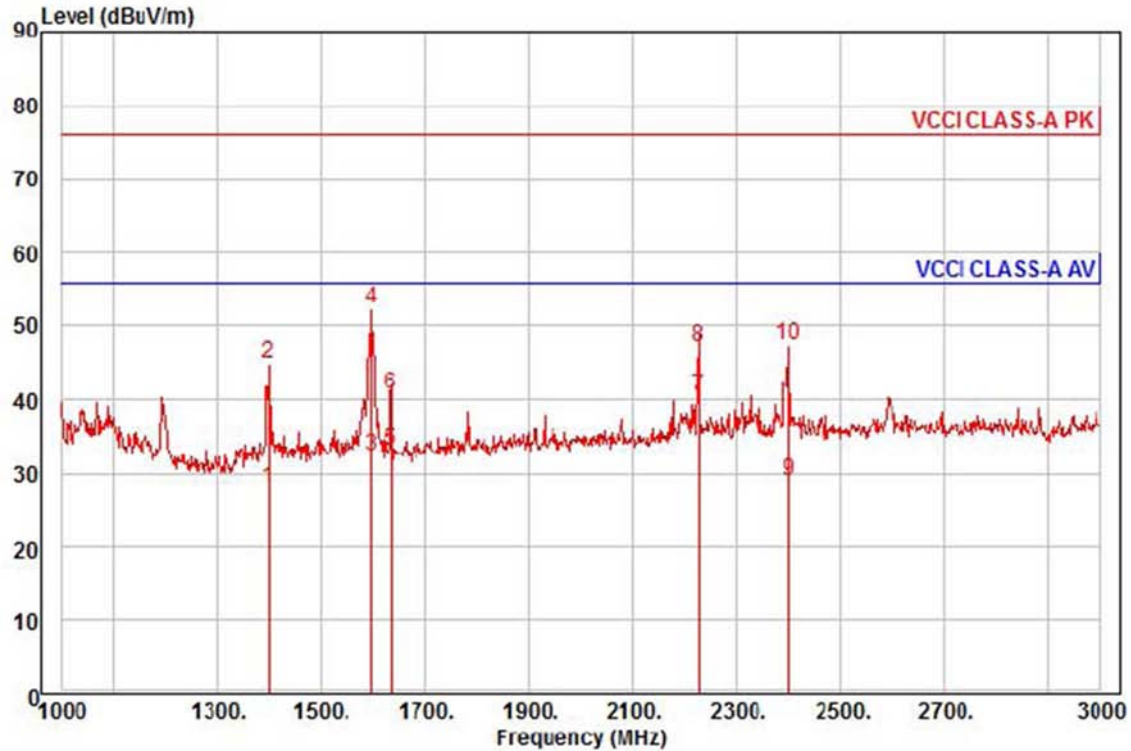


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Test report No.:  
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## - PoE Mode



Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : PoE  
Memo :

	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	1398.00	34.63	25.49	7.66	39.92	111	56.00	-28.14	horizontal	Average
2	1398.00	51.72	25.49	7.66	39.92	111	76.00	-31.05	horizontal	Peak
3	1598.00	37.70	26.28	8.24	39.83	278	56.00	-23.61	horizontal	Average
4 pk	1598.00	57.67	26.28	8.24	39.83	278	76.00	-23.64	horizontal	Peak
5	1634.00	38.18	26.43	8.34	39.81	169	56.00	-22.86	horizontal	Average
6	1634.00	45.66	26.43	8.34	39.81	169	76.00	-35.38	horizontal	Peak
7 pp	2228.00	42.17	28.44	9.70	39.76	121	56.00	-15.45	horizontal	Average
8	2228.00	48.75	28.44	9.70	39.76	121	76.00	-28.87	horizontal	Peak
9	2400.00	30.08	28.86	9.96	39.86	95	56.00	-26.96	horizontal	Average
10	2400.00	48.49	28.86	9.96	39.86	95	76.00	-28.55	horizontal	Peak

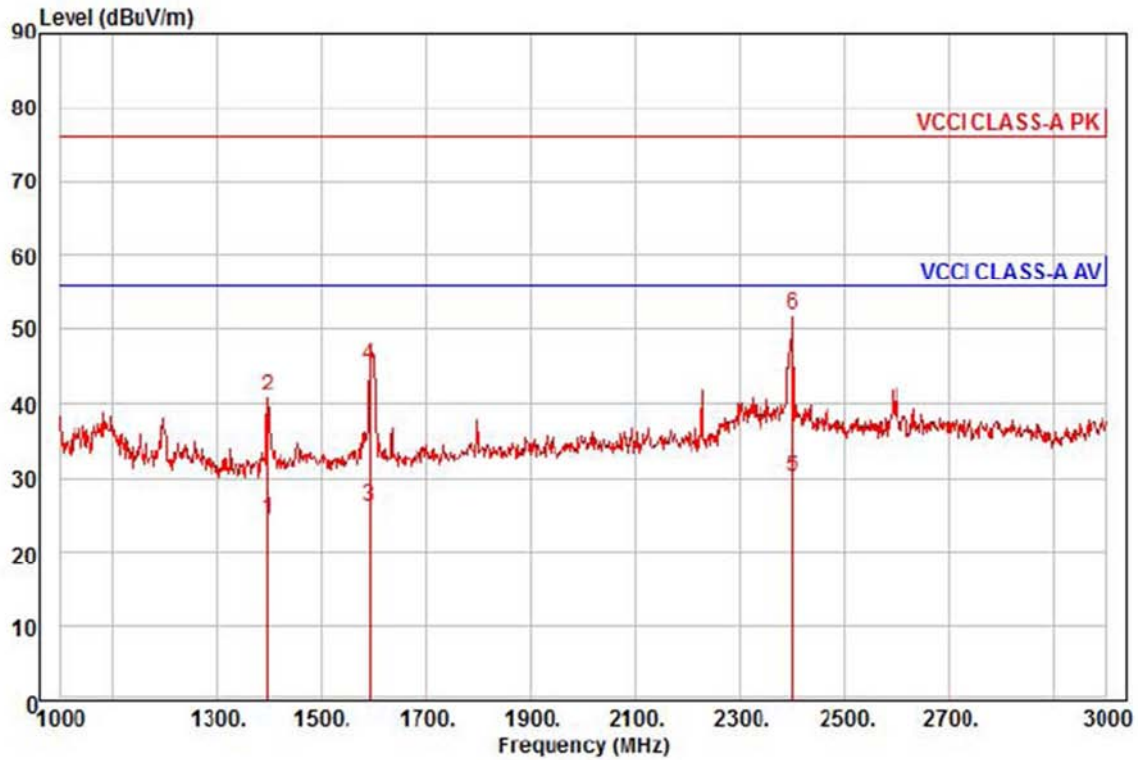
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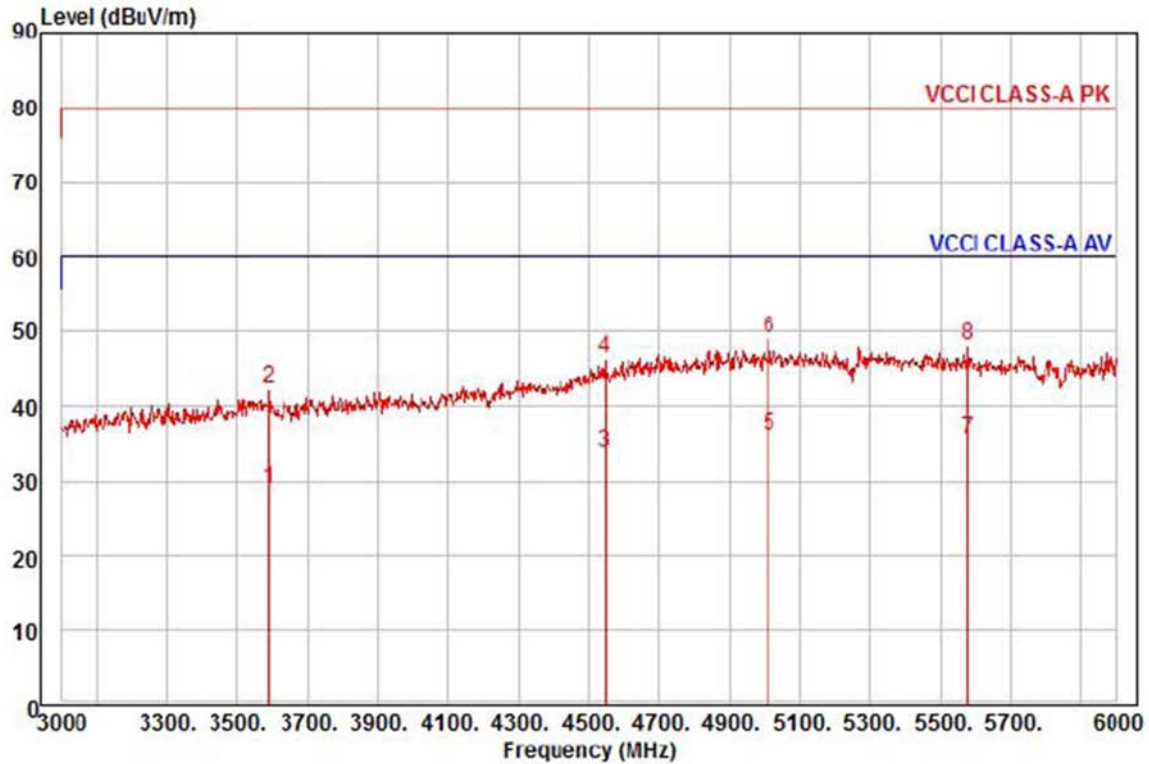


Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : PoE  
Memo :

	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	1396.00	31.43	25.48	7.66	39.93	232	56.00	-31.36	vertical	Average
2	1396.00	47.79	25.48	7.66	39.93	232	76.00	-35.00	vertical	Peak
3	1592.00	31.63	26.26	8.23	39.83	53	56.00	-29.71	vertical	Average
4	1592.00	50.37	26.26	8.23	39.83	53	76.00	-30.97	vertical	Peak
5 av	2400.00	31.21	28.86	9.96	39.86	220	56.00	-25.83	vertical	Average
6 pp	2400.00	53.03	28.86	9.96	39.86	220	76.00	-24.01	vertical	Peak

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Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : PoE  
Memo :

	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	3588.00	25.23	31.32	12.69	40.33	243	60.00	-31.09	horizontal	Average
2	3588.00	38.65	31.32	12.69	40.33	243	80.00	-37.67	horizontal	Peak
3	4545.00	24.72	35.12	14.51	40.41	79	60.00	-26.06	horizontal	Average
4	4545.00	37.10	35.12	14.51	40.41	79	80.00	-33.68	horizontal	Peak
5 pp	5013.00	23.50	37.69	15.35	40.41	116	60.00	-23.87	horizontal	Average
6 pk	5013.00	36.47	37.69	15.35	40.41	116	80.00	-30.90	horizontal	Peak
7	5577.00	23.16	36.55	16.06	40.33	56	60.00	-24.56	horizontal	Average
8	5577.00	35.75	36.55	16.06	40.33	56	80.00	-31.97	horizontal	Peak

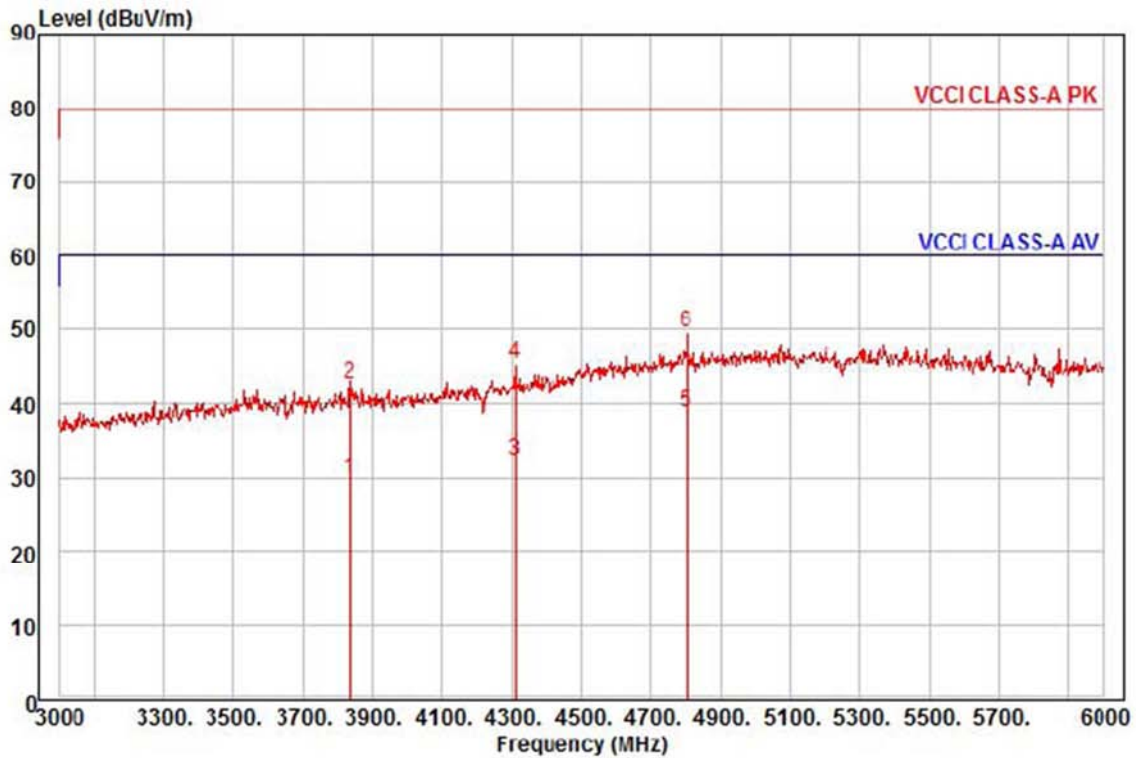




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Site : chamber  
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical  
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
Project :  
Model : QNO-7030RN  
Mode : PoE  
Memo :

	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	3837.00	25.22	31.74	13.18	40.38	230	60.00	-30.24	vertical	Average
2	3837.00	38.07	31.74	13.18	40.38	230	80.00	-37.39	vertical	Peak
3	4311.00	24.81	33.79	14.08	40.41	311	60.00	-27.73	vertical	Average
4	4311.00	37.98	33.79	14.08	40.41	311	80.00	-34.56	vertical	Peak
5 pp	4800.00	27.50	36.58	14.97	40.41	198	60.00	-21.36	vertical	Average
6 pk	4800.00	38.48	36.58	14.97	40.41	198	80.00	-30.38	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

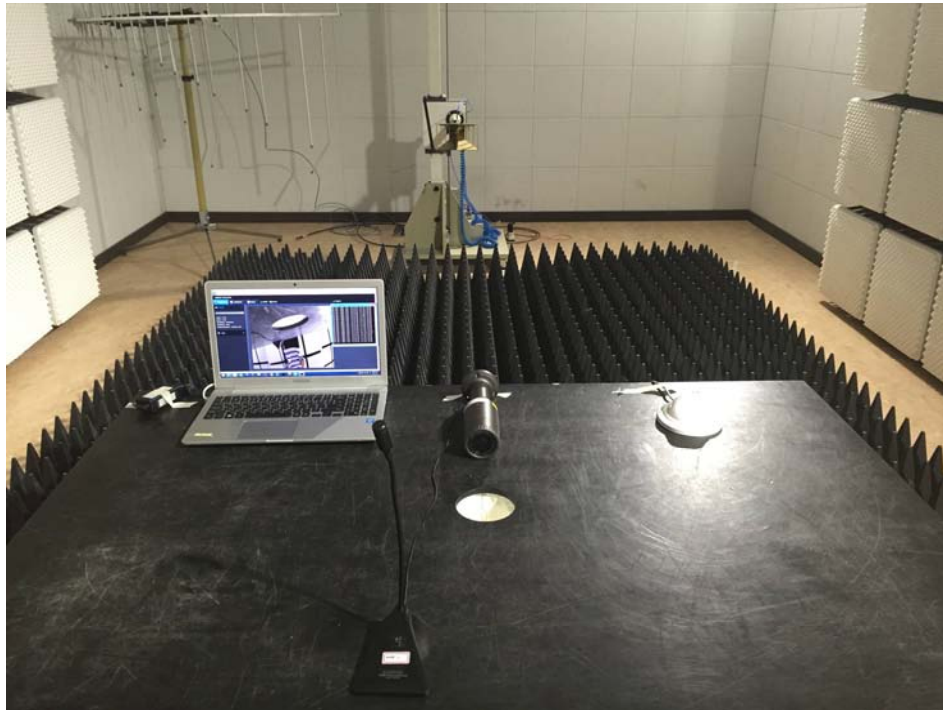


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## **Radiated Electric Field Emissions(Above 1 GHz)**

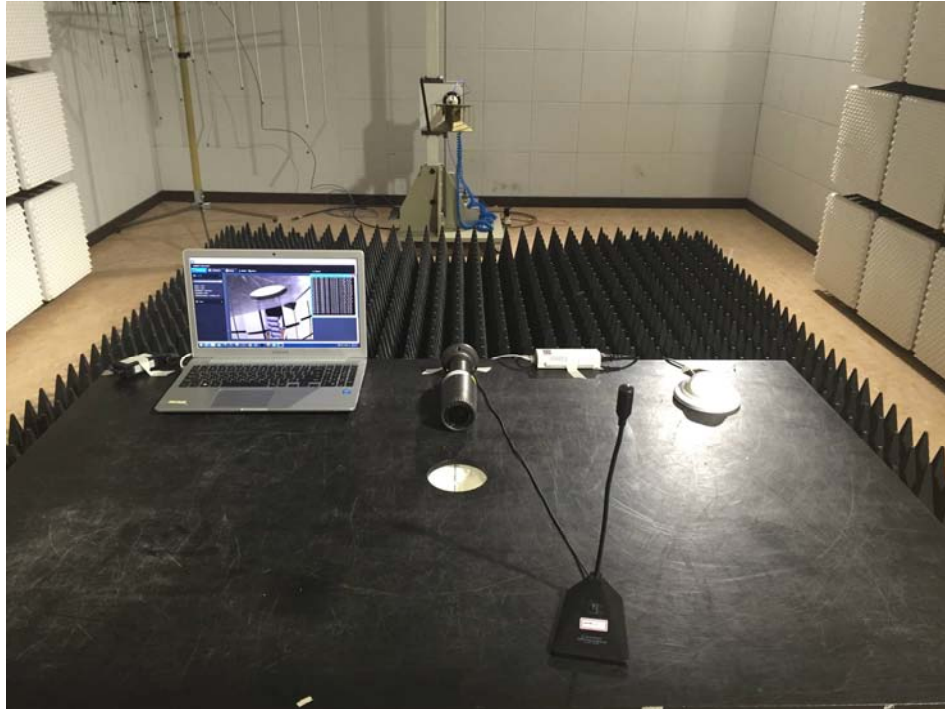
- DC 12V Mode



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- PoE Mode



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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

(Internal View)



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## Main Board EUT Internal View – Main Board

(Top)



(Bottom)



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## Main Board EUT Internal View – Sub Board1

(Top)



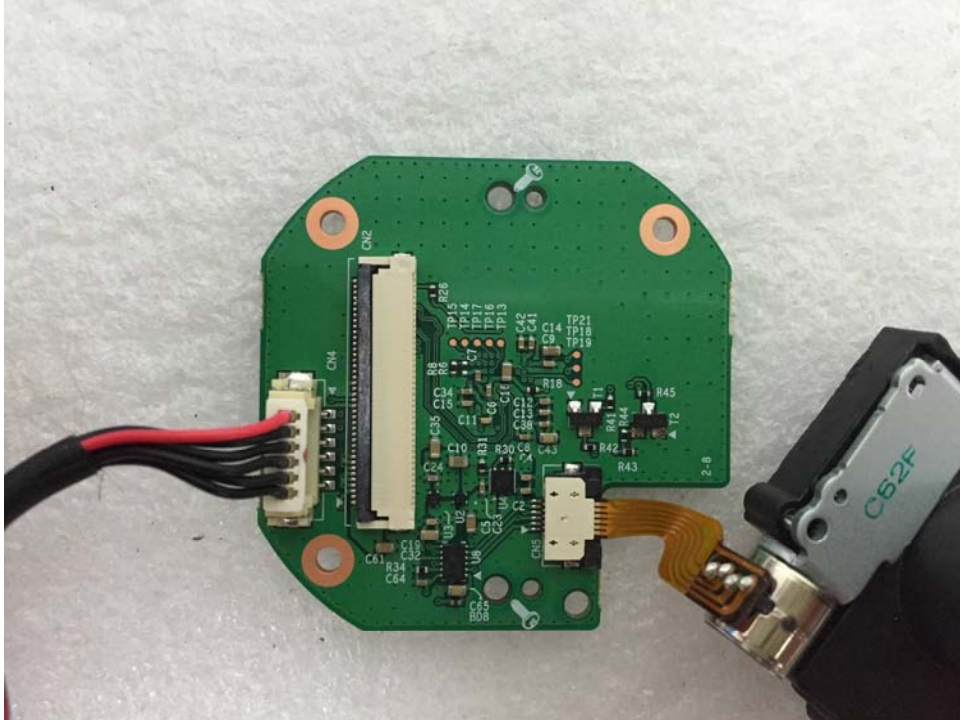
(Bottom)



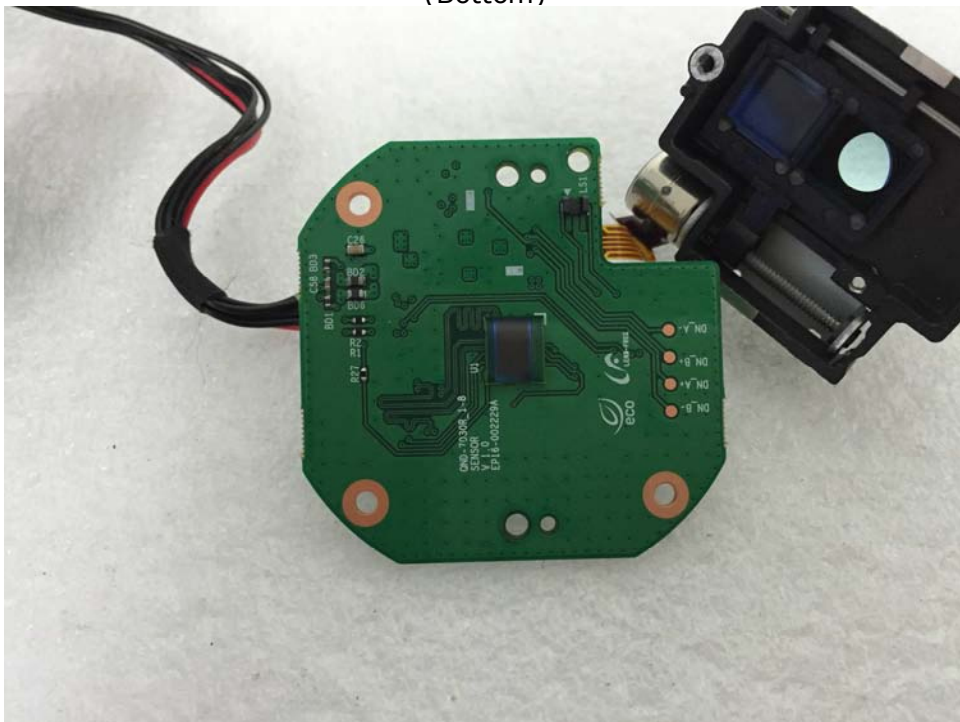
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## Main Board EUT Internal View – Sub Board2

(Top)



(Bottom)



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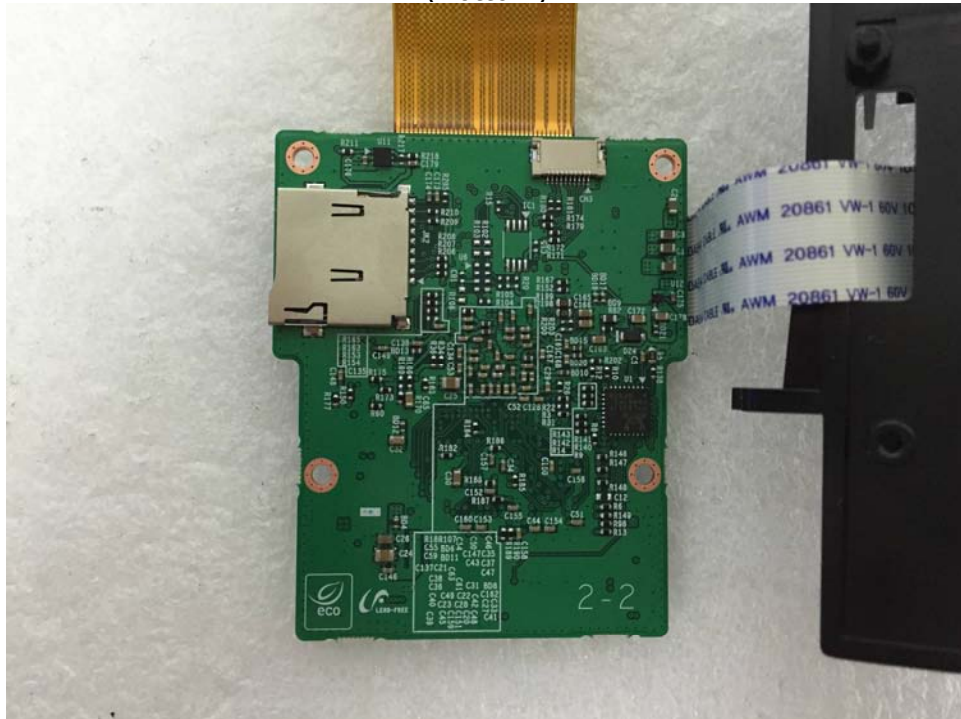


## Main Board EUT Internal View – Sub Board3

(Top)



(Bottom)



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