EMC TEST REPORT For VCCI

Test Report No.	:	KES-E1-17T0060
Date of Issue	:	Jan, 24, 2017
Product name	:	NETWORK CAMERA
Model/Type No.	:	XNV-8040RN
Variant Model	:	-
Applicant	:	Hanwha Techwin Co., Ltd.
Applicant Address	:	Changwon-daero, Seongsan-gu Changwon-si, Gyeongsangnam-do
Manufacturer	:	Hanwha Techwin (Tianjin) Co.,Ltd.
Manufacturer Address	:	No.11 Weiliu Rd,Micro-Electronic Industrial Park, TEDA,Tianjin,300385,People's Republic of China
Date of Receipt	:	Jan, 10, 2017
Test date	:	Jan, 16, 2017 ~ Jan, 17, 2017
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Young Jun, Jo
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 24, 2017	KES-E1-17T0060	Issued

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1.0 General Product Description

Main Specifications of EUT are:

	XNV-8040R
Video	
Imaging Device	1/1.8" 6M CMOS
Total Pixels	3096(H) x 2094(V)
Effective Pixels	2616(H) x 1976(V)
Scanning System	Progressive Scan
Min. Illumination	Color : 0.2 lux(F1.6, 1/30sec) B/W : 0 Lux (IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation USB : Micro USB type B, 1280x720, for installation
Lens	
Focal Length (Zoom Ratio	7.0mm Fixed
Max. Aperture Ratio	F1.6
Angular Field of View	H: 50.7°, V:37.8°, D: 63.8°
Min. Object Distance	0.4m
Focus Control	Manual
Lens Type	Fixed
Mount Type	Board-in type
Pan / Tilt / Rotate	
Pan / Tilt / Rotate range	0° ~ 354° / 0° ~ 67° / 0° ~ 355°
Operational	
IR Viewable Length	30m(98.43ft)
Camera Title	Off / On (Displayed up to 85 characters) - 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	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC(Masking/Dimming), WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Auto(input from fog detection) / Manual / Off
Motion Detection	Off/ On(8ea, 8point Polygonal zones), Handover
Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)
Contrast	level adjustment
LDC	On/Off (5 levels with Min/Max)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital PTZ	24X, 'Digital PTZ(Preset, Group)
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Video & Audio Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog&Dust Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Digital Auto Tracking, Sound Classification, People counting, Heat map, Queue management
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect
Alarm events	File upload via FTP, E-Mail Notification via E-Mail local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers External output DPTZ preset
Audio In	Selectable (Mic IN/Line IN) Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out, Max output level: 1 Vrms

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Pixel Counter	Support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Forma	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	2560 x 1920, 2560 x 1440, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x
Max. Framerate	H.265/H.264 : Max. 30fps at all resolutions Motion JPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
WiseStream II	Support
Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.264/H.265 : CBR or VBR MJPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
Audio Compression Forma	G.711 u-law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC : 48Kbps at 8/16/32/48KHz
Audio Communication	Bi-dierctional (2-Way)
IP	IPv4, IPv6
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, 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 (EAP-TLS, EAP-LEAP)
Streaming Method	Unicast / Multicast
Max. User Access	20 users at Unicast Mode
Edge Storage	SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording
Application Programming I	ONVIF Profile S/G SUNAPI(HTTP API) Open Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	Supported OS: Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 **Non-plugin Webviewer** Supported Browser: Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only) **Plug-in Webviewer** Supported Browser : MS Explore 11, Apple Safari 9 (Mac OS X only)
Central Management Soft	SmartViewer, SSM
Environmental	
Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH *Start up should be done at above -20°C
Storage Temperature / Humidity	-50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP67, IP66
Vandal Resistance	IK10
Electrical	
Input Voltage / Current	DC12V,PoE(IEEE802.3af,Class3)
Power Consumption	Max. 8W(12VDC), Max. 9W(PoE)
Mechanical	
Color / Material	Ivory / Metal
Dimension (WxHxD)	Ø120xH97.5mm(Ø4.72" x 3.84")

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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 ☐ 24 Vac ☒ 12 Vdc ☒ PoE

Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNV-8040RN	-	Hanwha Techwin (Tianjin) Co.,LTd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter	PD-3001GC/AC	RD9356082016964200	Power Dsine	-
Notebook	RV518	HTK991NC600187E	Samsung Electronics Co., Ltd.	-
Notebook Adapter	ADP-60ZH	CNBA4400242ABZ040 8D5432	DELTA ELECTRONICS, INC	-
IPad	A1432	DQXJWFHDF193	APPLE .Inc	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
Alarm	SIP-1201DD D0	C53R67JZ301878 L	SAMSUNG TECHWIN CO., LTD.	-
Micro SD card	-	-	SanDisk	8 GB

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1.6 External I/O Cabling

- DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	Notebook	RJ-45	3.0	U
	Audio OUT	Speaker	Audio IN	1.6	U
	Audio IN	IPad	Audio OUT	1.0	U
	3 pin	Alarm	3 pin	3.0	U
	Micro SD Slot	Micro SD card	Micro SD Slot	-	-

- PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	PoE Adapter	RJ-45	3.0	U
	Audio OUT	Speaker	Audio IN	1.6	U
	Audio IN	IPad	Audio OUT	1.0	U
	3 pin	Alarm	3 pin	3.0	U
	Micro SD Slot	Micro SD card	Micro SD Slot	-	-
PoE Adapter	RJ-45	Notebook	RJ-45	3.0	U

* Unshielded = U, Shielded = S

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1.7 EUT Operating Mode(s)

Test mode	operating
DC 12 V , PoE	E.U.T Monitoring

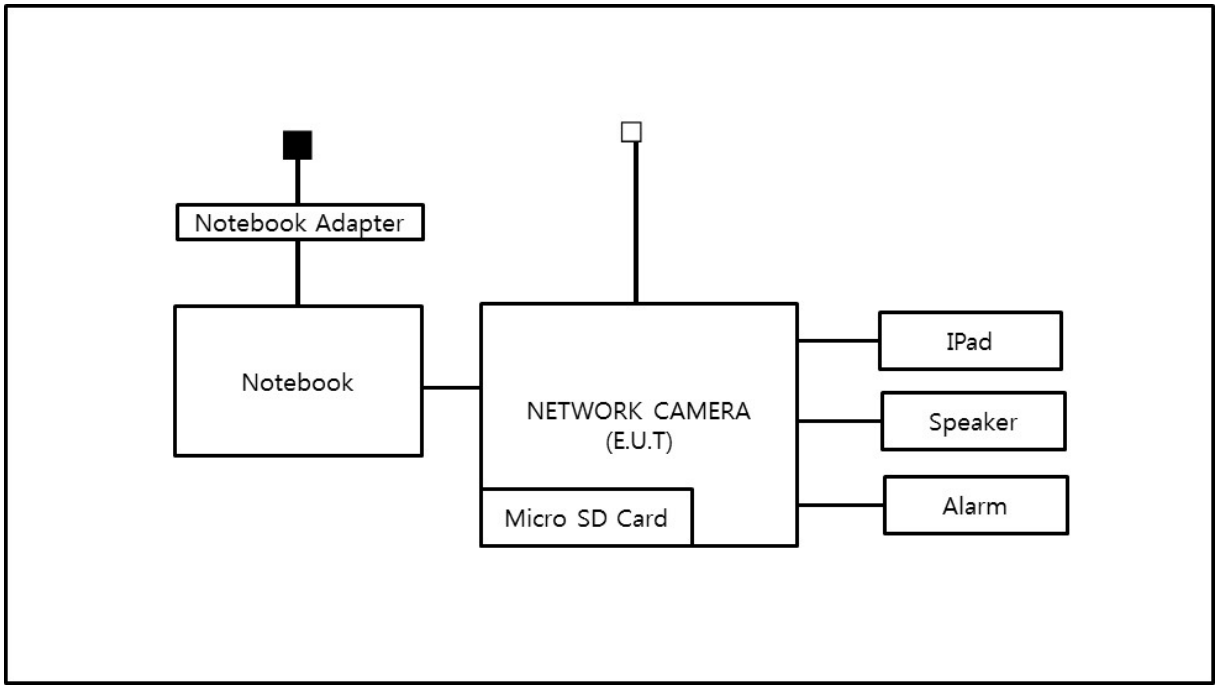
E.U.T Test operating S/W		
Name	Version	Manufacture Company
-	-	-

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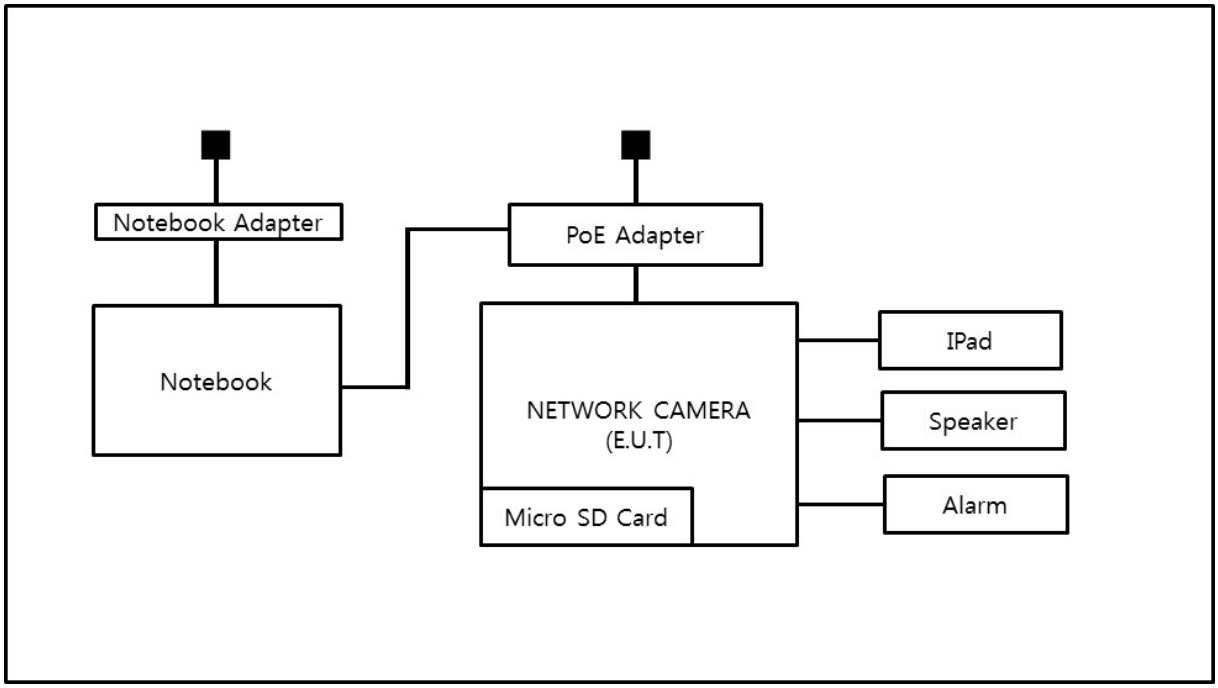
1.8 Configuration

■ AC Main
□ DC Main

- DC 12 V Mode



- PoE Mode



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1.9 Calibration Details of Equipment Used for Measurement

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

1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeoju-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)	KOREA LABORATORY ACCREDITATION SCHEME KOLAS TESTING NO. 489

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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 61547 :2009		
☐ EN 55022:2010	☐ Class A	☐ Class B
☐ EN 55024:2010 +A1:2015		
☐ EN 50130-4:2011 +A1:2014		
☐ EN 61000-3-2:2014		
☐ EN 61000-3-3:2013		
☐ EN 61326-1:2013		

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☒ **VCCI V-3 / 2015.04** ☒ Class A ☐ Class B

☐ **AS/NZS CISPR22:2009 +A1:2010** ☐ Class A ☐ Class B

☐ **47 CFR Part 15, Subpart B**

- ☐ CISPR 22:2009 +A1:2010 ☐ Class A ☐ Class B
- ☐ ANSI C63.4-2009

☐ **IC Regulation ICES-003 : 2016**

- ☐ CAN/CSA CISPR 22-10 ☐ Class A ☐ Class B
- ☐ ANSI C63.4-2014

☐ **RE– Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

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2.1 Conducted Emissions 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	-	SEMITEC	-	-
☐	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions
Temperature: ℃
Relative Humidity: %

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks
N/A Because the E.U.T power is 12 v (dc) power and PoE, limits are not specified.

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2.2 Conducted Emissions at Telecommunication Ports

Test Date
Jan, 16, 2017

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 04, 2017
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	12, 13, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions
Temperature: 24,1 ℃
Relative Humidity: 40,2 %

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Jan, 17, 2017

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 ANT	VULB9163	Schwarzbeck	714	11, 28, 2017
☒	OATS	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions
Temperature: 1,8 ℃
Relative Humidity: 55,0 %

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.4 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Jan, 17, 2017

Test Location
Semi Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 14, 2017
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	Semi Anechoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-
☒	EMI Test S/W	e3	AUDIX	8.083b	-

Test Conditions
Temperature: 23,3 ℃
Relative Humidity: 38,1 %

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Settings
IF Band Width: 1 ㎒

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

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR+ Cable Loss)

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[NEUTRAL]

N/A

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR+ Cable Loss)

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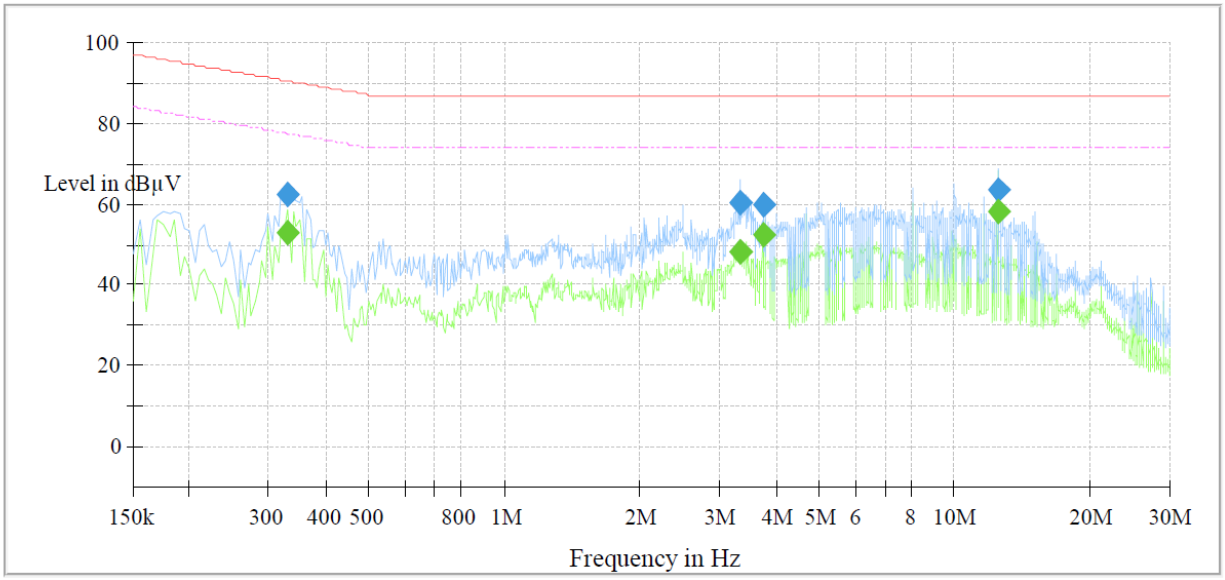
Conducted Emissions at Telecommunication Ports

- DC 12 V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8040RN
Mode	Dc 12v 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)
0.330000	---	53.15	77.45	24.30	1000.0	9.000	Single Line	21.1
0.330000	62.58	---	90.45	27.87	1000.0	9.000	Single Line	21.1
3.340000	---	48.07	74.00	25.93	1000.0	9.000	Single Line	19.8
3.340000	60.36	---	87.00	26.64	1000.0	9.000	Single Line	19.8
3.750000	---	52.43	74.00	21.57	1000.0	9.000	Single Line	19.8
3.750000	59.76	---	87.00	27.24	1000.0	9.000	Single Line	19.8
12.500000	---	58.28	74.00	15.72	1000.0	9.000	Single Line	20.0
12.500000	63.52	---	87.00	23.48	1000.0	9.000	Single Line	20.0

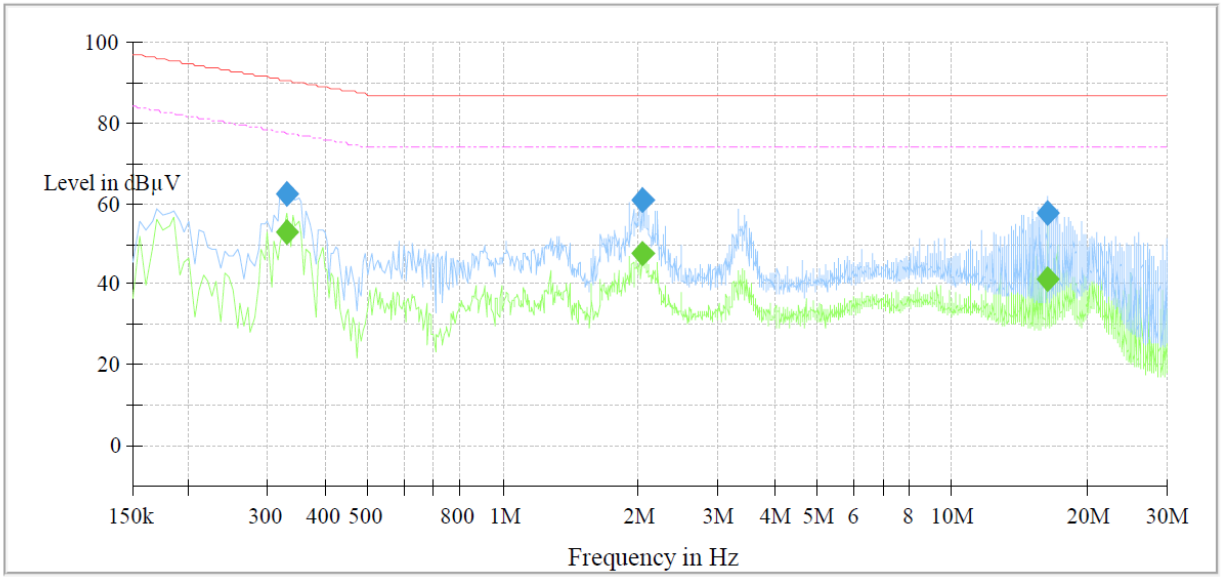
♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (ISN FACTOR+ Cable Loss)

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[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8040RN
Mode	Dc 12v 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)
0.330000	---	52.85	77.45	24.60	1000.0	9.000	Single Line	20.6
0.330000	62.41	---	90.45	28.04	1000.0	9.000	Single Line	20.6
2.040000	---	47.86	74.00	26.14	1000.0	9.000	Single Line	19.4
2.040000	61.05	---	87.00	25.95	1000.0	9.000	Single Line	19.4
16.230000	---	41.26	74.00	32.74	1000.0	9.000	Single Line	19.6
16.230000	57.56	---	87.00	29.44	1000.0	9.000	Single Line	19.6

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (ISN FACTOR+ Cable Loss)

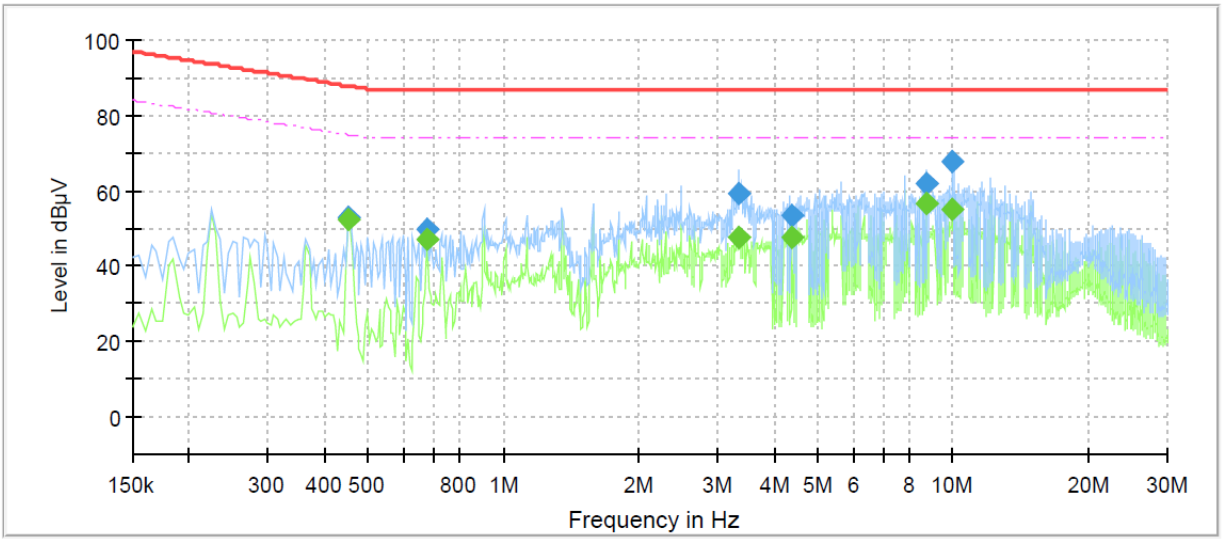
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- PoE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8040RN
Mode	POE 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)
0.450000	---	52.42	74.88	22.46	1000.0	9.000	Single Line	20.9
0.450000	53.09	---	87.88	34.79	1000.0	9.000	Single Line	20.9
0.675000	---	47.04	74.00	26.96	1000.0	9.000	Single Line	20.6
0.675000	49.70	---	87.00	37.30	1000.0	9.000	Single Line	20.6
3.345000	---	47.56	74.00	26.44	1000.0	9.000	Single Line	19.8
3.345000	59.43	---	87.00	27.57	1000.0	9.000	Single Line	19.8
4.400000	---	47.86	74.00	26.14	1000.0	9.000	Single Line	19.8
4.400000	53.46	---	87.00	33.54	1000.0	9.000	Single Line	19.8
8.750000	---	56.67	74.00	17.33	1000.0	9.000	Single Line	19.9
8.750000	62.07	---	87.00	24.93	1000.0	9.000	Single Line	19.9
10.000000	---	55.30	74.00	18.70	1000.0	9.000	Single Line	20.0
10.000000	67.98	---	87.00	19.02	1000.0	9.000	Single Line	20.0

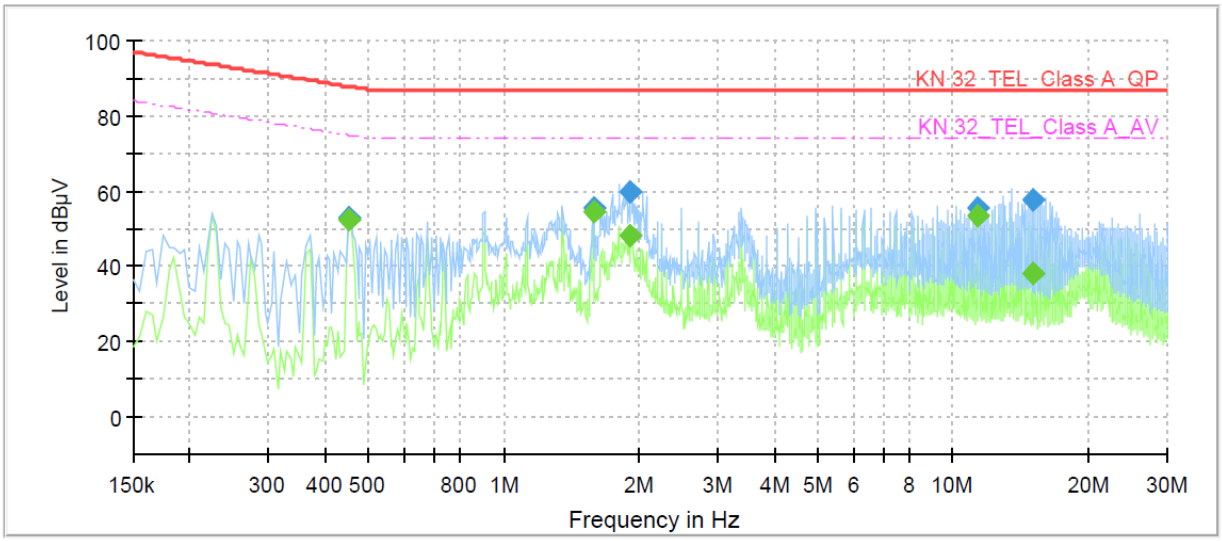
♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (ISN FACTOR+ Cable Loss)

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[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8040RN
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)
0.450000	---	52.48	74.88	22.40	1000.0	9.000	Single Line	20.4
0.450000	53.18	---	87.88	34.70	1000.0	9.000	Single Line	20.4
1.580000	---	54.67	74.00	19.33	1000.0	9.000	Single Line	19.6
1.580000	55.83	---	87.00	31.17	1000.0	9.000	Single Line	19.6
1.910000	---	47.92	74.00	26.08	1000.0	9.000	Single Line	19.5
1.910000	60.05	---	87.00	26.95	1000.0	9.000	Single Line	19.5
11.295000	---	53.34	74.00	20.66	1000.0	9.000	Single Line	19.5
11.295000	55.64	---	87.00	31.36	1000.0	9.000	Single Line	19.5
15.020000	---	38.33	74.00	35.67	1000.0	9.000	Single Line	19.6
15.020000	57.85	---	87.00	29.15	1000.0	9.000	Single Line	19.6

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (ISN FACTOR+ Cable Loss)

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Radiated Electric Field Emissions(Below 1 ㎓)

- DC 12 V Mode

Frequency	Amplitude	ANT Polar. (H/V)	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[㎒]	[dB㎶]		[m]	ANT. [dB/m]	Cable [dB]	[dB㎶/m]	[dB㎶/m]	[dB]
150.01	12.38	H	3.96	7.89	3.57	23.84	40.00	16.16
150.69	18.90	V	1.00	7.91	3.58	30.39	40.00	9.61
225.01	8.57	H	3.75	12.15	4.42	25.14	40.00	14.86
249.99	19.65	H	3.77	12.49	4.72	36.86	47.00	10.14
249.99	21.39	V	1.26	12.49	4.72	38.60	47.00	8.40
300.01	9.04	H	3.17	13.42	5.15	27.61	47.00	19.39
350.01	22.29	H	4.00	14.52	5.64	42.45	47.00	4.55
350.01	13.91	V	1.02	14.52	5.64	34.07	47.00	12.93
500.03	12.60	V	1.00	17.35	7.01	36.96	47.00	10.04

* H : Horizontal, V : Vertical

♦ Calculation
Corrected Amplitude [㏈uV] = Amplitude[㏈uV] + Correction Factor [㏈]
Corrected Amplitude : The Final Value, Amplitude : Reading Value,
Correction Factor : ANT FACTOR + Cable loss

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- PoE Mode

Frequency	Amplitude	ANT Polar. (H/V)	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[㎒]	[dBμV]		[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
135.00	12.35	H	3.52	7.86	3.38	23.59	40.00	16.41
195.71	8.34	H	3.67	11.25	4.07	23.66	40.00	16.34
250.01	22.23	H	4.00	12.49	4.72	39.44	47.00	7.56
251.01	21.06	V	1.00	12.51	4.73	38.30	47.00	8.70
300.00	10.39	H	3.25	13.42	5.15	28.96	47.00	18.04
300.01	11.60	V	2.17	13.42	5.15	30.17	47.00	16.83
349.98	12.24	H	2.38	14.51	5.64	32.39	47.00	14.61
400.00	10.70	V	1.00	15.61	6.17	32.48	47.00	14.52

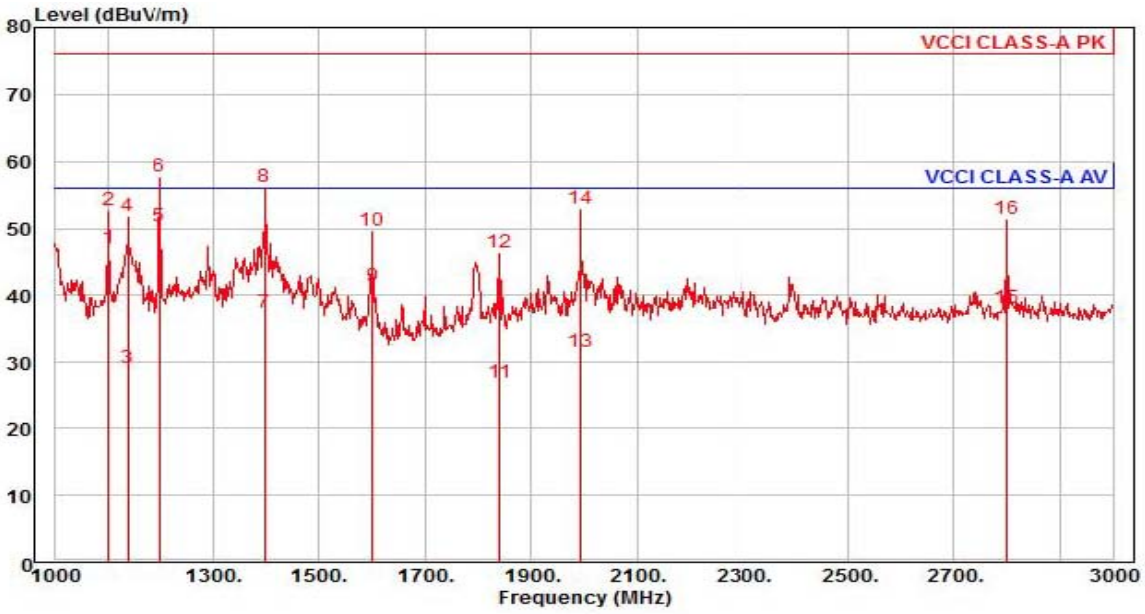
* H : Horizontal, V : Vertical

♦ Calculation
Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]
Corrected Amplitude : The Final Value, Amplitude : Reading Value,
Correction Factor : ANT FACTOR + Cable loss

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Radiated Electric Field Emissions(Above 1 ㎓)

- DC 12 V Mode



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNV-8040RN
Mode : DC 12V
Memo : 1 - 3 GHz

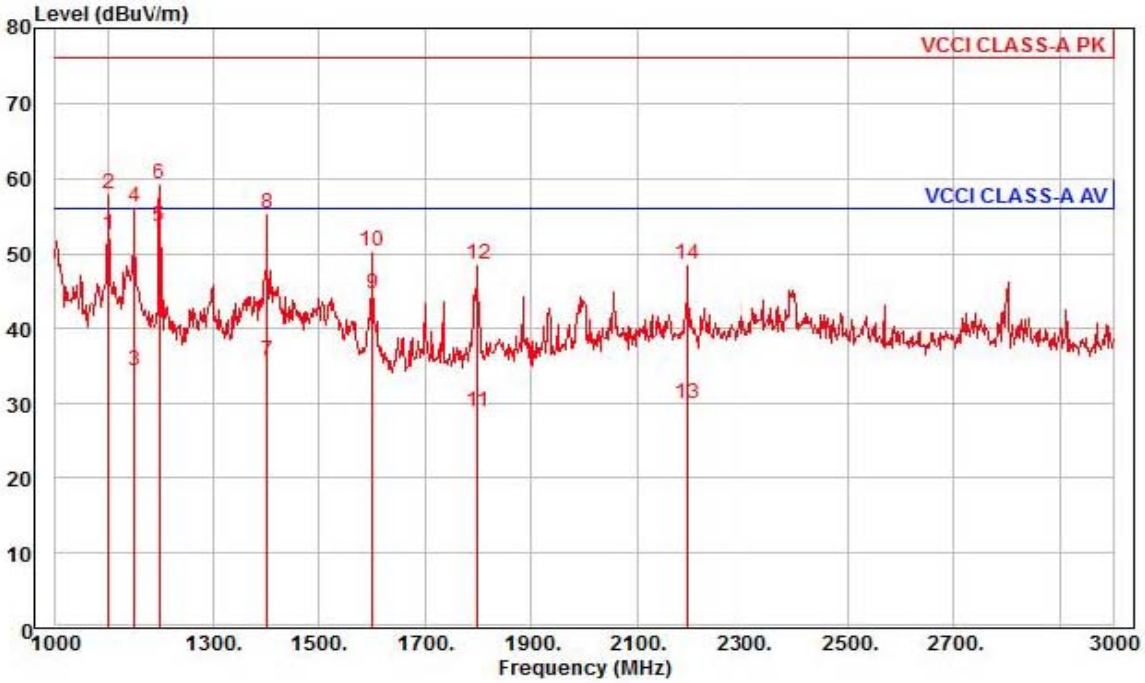
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1100.00	55.71	24.31	6.81	39.85	88	56.00	-9.02	horizontal	Average
2	1100.00	61.56	24.31	6.81	39.85	88	76.00	-23.17	horizontal	Peak
3	1136.00	37.64	24.45	6.93	39.76	329	56.00	-26.74	horizontal	Average
4	1136.00	60.15	24.45	6.93	39.76	329	76.00	-24.23	horizontal	Peak
5 pp	1200.00	58.07	24.70	7.14	39.61	233	56.00	-5.70	horizontal	Average
6 pk	1200.00	65.48	24.70	7.14	39.61	233	76.00	-18.29	horizontal	Peak
7	1398.00	43.34	25.49	7.72	39.13	345	56.00	-18.58	horizontal	Average
8	1398.00	62.20	25.49	7.72	39.13	345	76.00	-19.72	horizontal	Peak
9	1600.00	45.98	26.29	8.31	39.22	163	56.00	-14.64	horizontal	Average
10	1600.00	54.34	26.29	8.31	39.22	163	76.00	-26.28	horizontal	Peak
11	1840.00	30.12	27.24	8.93	39.34	92	56.00	-29.05	horizontal	Average
12	1840.00	49.54	27.24	8.93	39.34	92	76.00	-29.63	horizontal	Peak
13	1994.00	33.82	27.86	9.32	39.41	149	56.00	-24.41	horizontal	Average
14	1994.00	55.16	27.86	9.32	39.41	149	76.00	-23.07	horizontal	Peak
15	2800.00	36.85	29.84	11.23	39.88	284	56.00	-17.96	horizontal	Average
16	2800.00	50.28	29.84	11.23	39.88	284	76.00	-24.53	horizontal	Peak

♦ Calculation

Over Limit [㏈] = (Read Level[㏈uV] + Ant Factor[㏈/m] + Cable Loss [㏈] − Preamp Factor [㏈]) − Limit Line[㏈uV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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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 : XNV-8040RN
Mode : DC 12V
Memo : 1 - 3 GHz

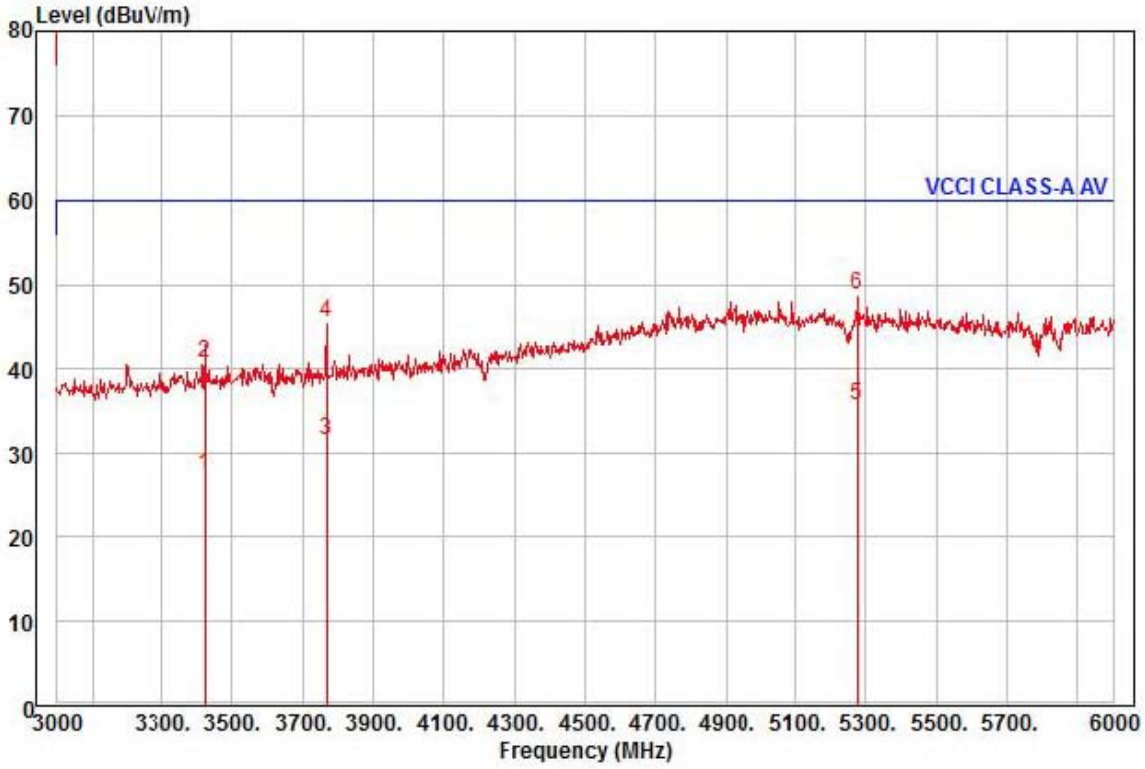
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1100.00	61.21	24.31	6.81	39.85	13	56.00	-3.52	vertical	Average
2	1100.00	66.80	24.31	6.81	39.85	13	76.00	-17.93	vertical	Peak
3	1148.00	42.72	24.50	6.97	39.73	7	56.00	-21.54	vertical	Average
4	1148.00	64.60	24.50	6.97	39.73	7	76.00	-19.66	vertical	Peak
5 pp	1200.00	61.43	24.70	7.14	39.61	13	56.00	-2.34	vertical	Average
6 pk	1200.00	67.06	24.70	7.14	39.61	13	76.00	-16.71	vertical	Peak
7	1402.00	41.65	25.51	7.73	39.13	334	56.00	-20.24	vertical	Average
8	1402.00	61.21	25.51	7.73	39.13	334	76.00	-20.68	vertical	Peak
9	1600.00	49.37	26.29	8.31	39.22	224	56.00	-11.25	vertical	Average
10	1600.00	54.95	26.29	8.31	39.22	224	76.00	-25.67	vertical	Peak
11	1800.00	32.46	27.09	8.83	39.32	129	56.00	-26.94	vertical	Average
12	1800.00	52.10	27.09	8.83	39.32	129	76.00	-27.30	vertical	Peak
13	2196.00	31.23	28.36	9.79	39.41	168	56.00	-26.03	vertical	Average
14	2196.00	49.92	28.36	9.79	39.41	168	76.00	-27.34	vertical	Peak

♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] − Preamp Factor [dB]) − Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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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 : XNV-8040RN
Mode : DC 12V
Memo : 3 - 6 GHz

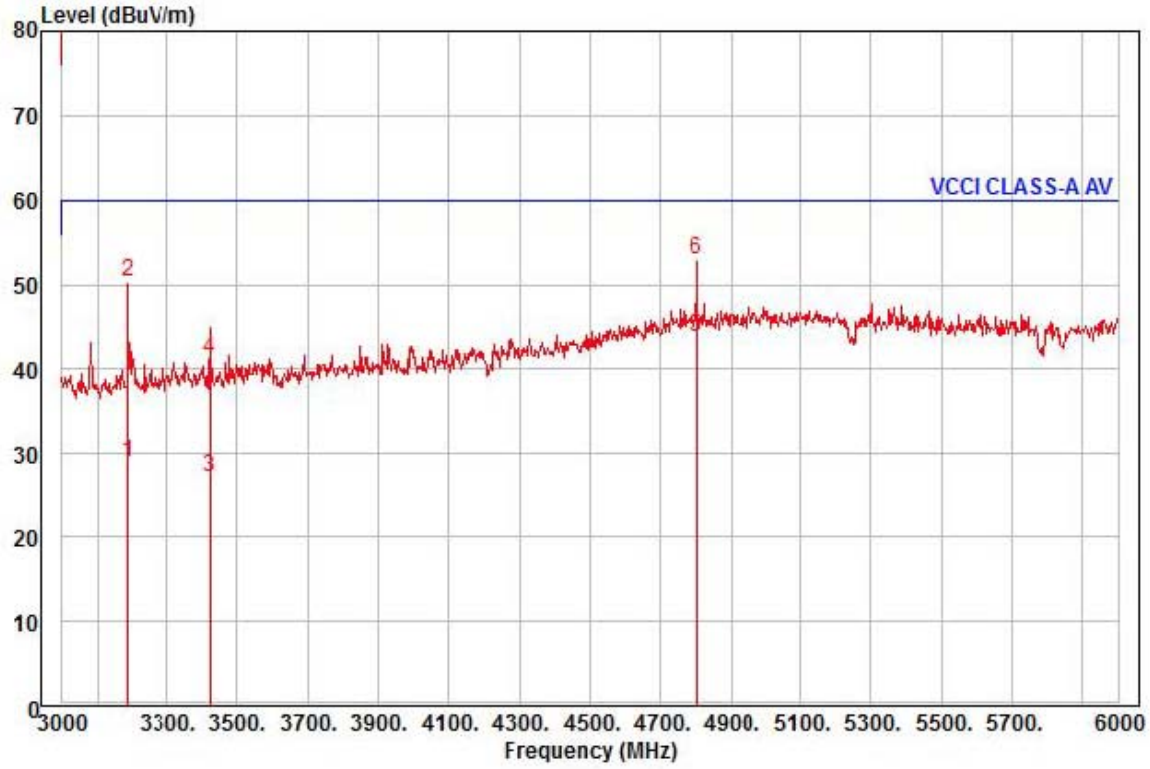
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3423.00	24.64	31.04	12.49	40.76	315	60.00	-32.59	horizontal	Average
2	3423.00	38.05	31.04	12.49	40.76	315	80.00	-39.18	horizontal	Peak
3	3768.00	27.75	31.62	13.12	40.78	319	60.00	-28.29	horizontal	Average
4	3768.00	41.54	31.62	13.12	40.78	319	80.00	-34.50	horizontal	Peak
5 pp	5277.00	23.39	37.16	15.83	40.73	307	60.00	-24.35	horizontal	Average
6 pk	5277.00	36.55	37.16	15.83	40.73	307	80.00	-31.19	horizontal	Peak

♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] − Preamp Factor [dB]) − Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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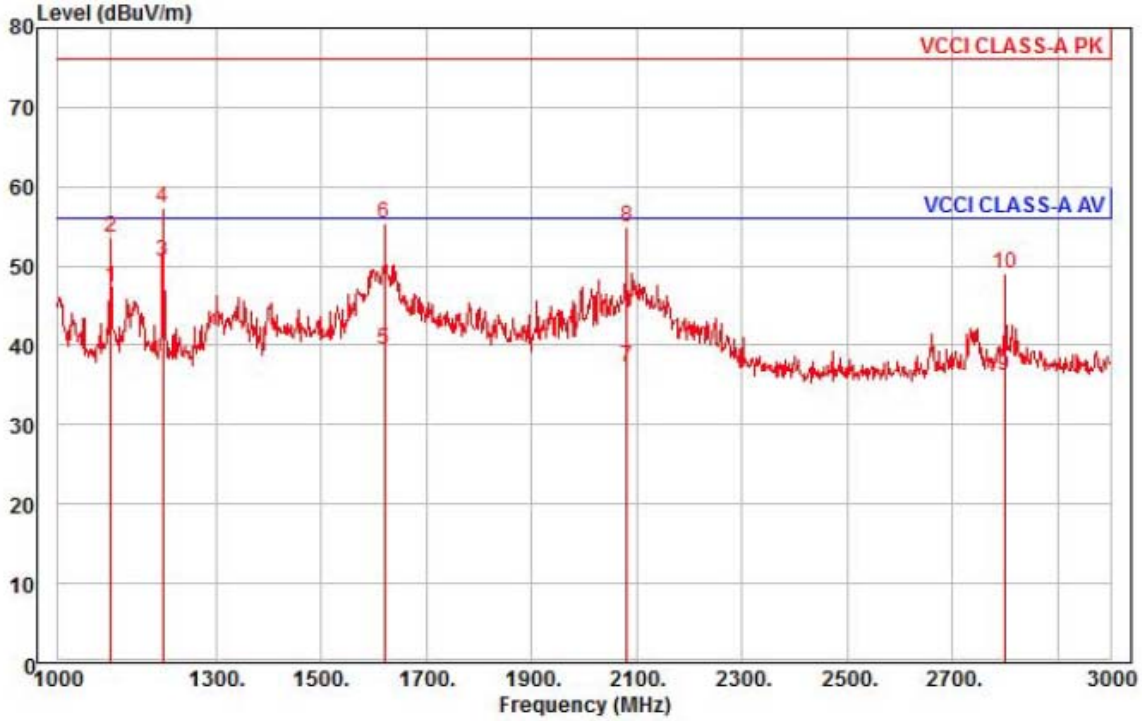
Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNV-8040RN
Mode : DC 12V
Memo : 3 - 6 GHz

	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	3186.00	26.71	30.64	12.03	40.40	215	60.00	-31.02	vertical	Average
2	3186.00	47.99	30.64	12.03	40.40	215	80.00	-29.74	vertical	Peak
3	3423.00	24.54	31.04	12.49	40.76	181	60.00	-32.69	vertical	Average
4	3423.00	38.46	31.04	12.49	40.76	181	80.00	-38.77	vertical	Peak
5 pp	4800.00	32.66	36.58	15.10	40.47	263	60.00	-16.13	vertical	Average
6 pk	4800.00	41.86	36.58	15.10	40.47	263	80.00	-26.93	vertical	Peak

♦ Calculation
Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] − Preamp Factor [dB]) − Limit Line[dBuV]
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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

- 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     : XNV-8040RN
Mode      : POE
Memo      : 1 - 3 GHz
```

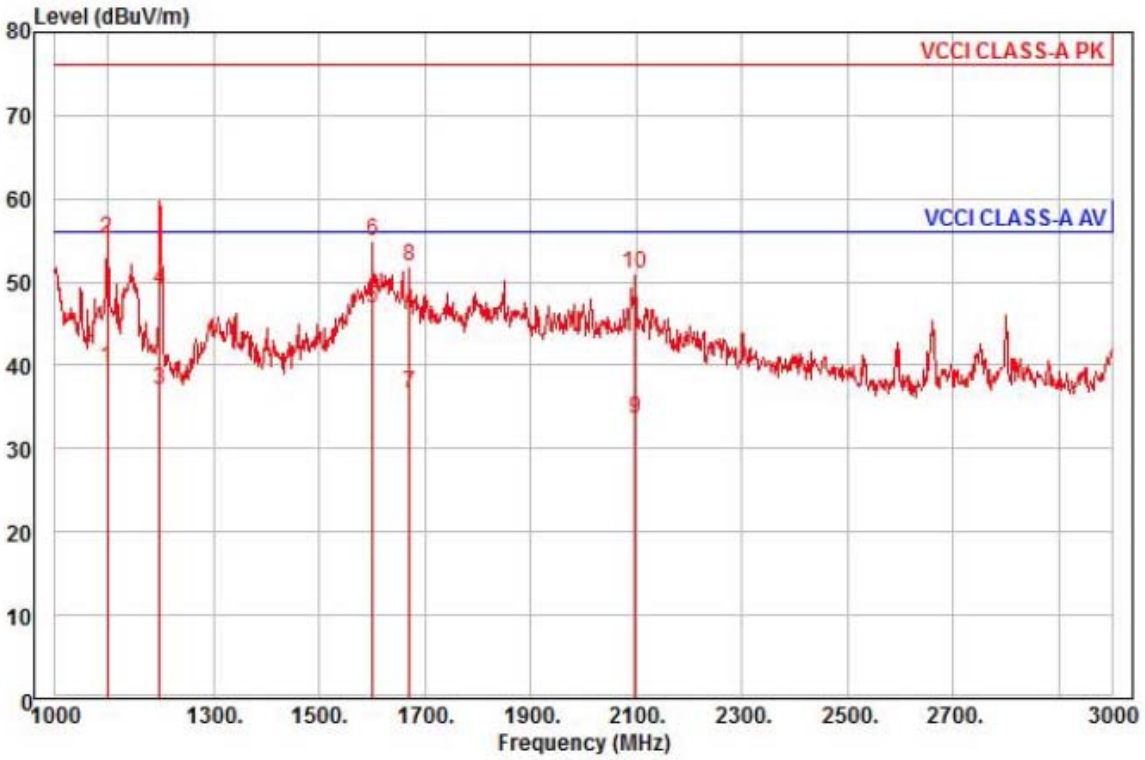
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1100.00	56.12	24.31	6.81	39.85	253	56.00	-8.61	horizontal	Average
2	1100.00	62.40	24.31	6.81	39.85	253	76.00	-22.33	horizontal	Peak
3 pp	1200.00	58.25	24.70	7.14	39.61	270	56.00	-5.52	horizontal	Average
4 pk	1200.00	65.06	24.70	7.14	39.61	270	76.00	-18.71	horizontal	Peak
5	1620.00	44.02	26.37	8.36	39.23	268	56.00	-16.48	horizontal	Average
6	1620.00	59.81	26.37	8.36	39.23	268	76.00	-20.69	horizontal	Peak
7	2080.00	39.08	28.08	9.52	39.41	208	56.00	-18.73	horizontal	Average
8	2080.00	56.70	28.08	9.52	39.41	208	76.00	-21.11	horizontal	Peak
9	2800.00	35.03	29.84	11.23	39.88	3	56.00	-19.78	horizontal	Average
10	2800.00	47.77	29.84	11.23	39.88	3	76.00	-27.04	horizontal	Peak

♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] − Preamp Factor [dB]) − Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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



Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNV-8040RN
Mode : POE
Memo : 1 - 3 GHz

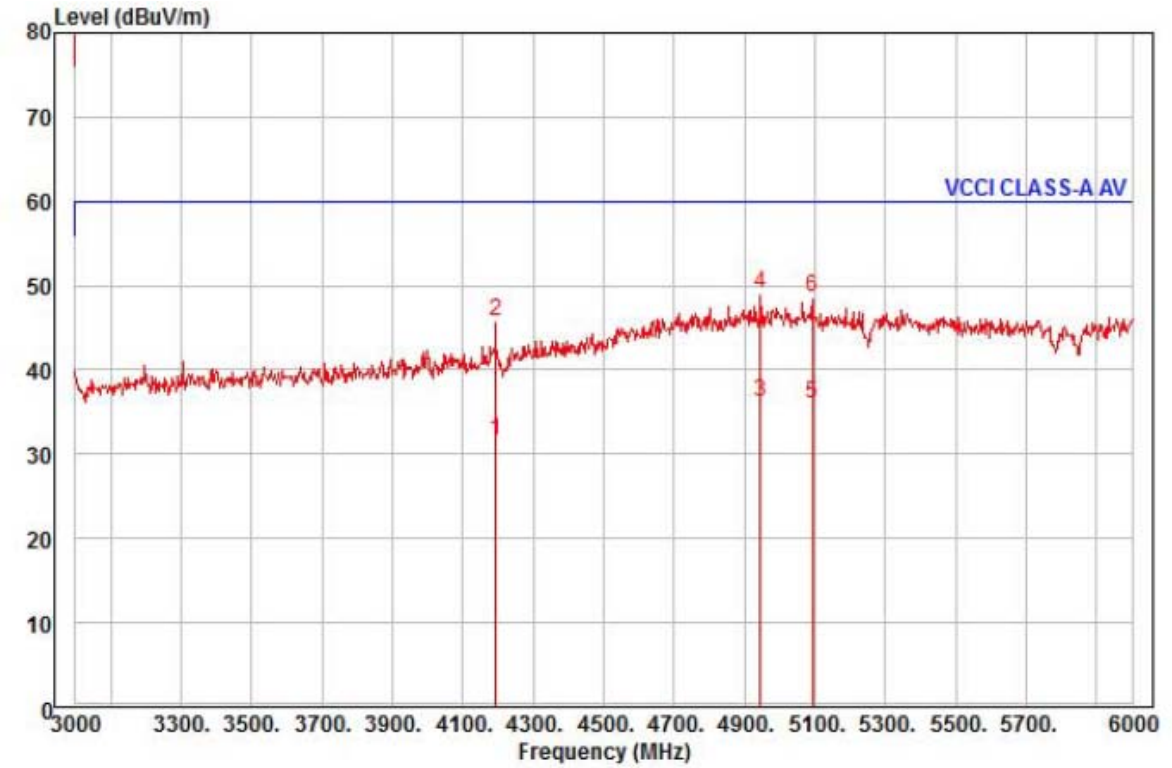
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1098.00	48.35	24.30	6.80	39.85	342	56.00	-16.40	vertical	Average
2 pk	1098.00	63.87	24.30	6.80	39.85	342	76.00	-20.88	vertical	Peak
3	1198.00	44.86	24.70	7.13	39.61	347	56.00	-18.92	vertical	Average
4	1198.00	56.90	24.70	7.13	39.61	347	76.00	-26.88	vertical	Peak
5 pp	1600.00	51.53	26.29	8.31	39.22	223	56.00	-9.09	vertical	Average
6	1600.00	59.57	26.29	8.31	39.22	223	76.00	-21.05	vertical	Peak
7	1670.00	40.82	26.57	8.49	39.26	275	56.00	-19.38	vertical	Average
8	1670.00	56.07	26.57	8.49	39.26	275	76.00	-24.13	vertical	Peak
9	2098.00	35.35	28.12	9.56	39.41	310	56.00	-22.38	vertical	Average
10	2098.00	52.73	28.12	9.56	39.41	310	76.00	-25.00	vertical	Peak

♦ Calculation

Over Limit [㏈] = (Read Level[㏈uV] + Ant Factor[㏈/m] + Cable Loss [㏈] − Preamp Factor [㏈]) − Limit Line[㏈uV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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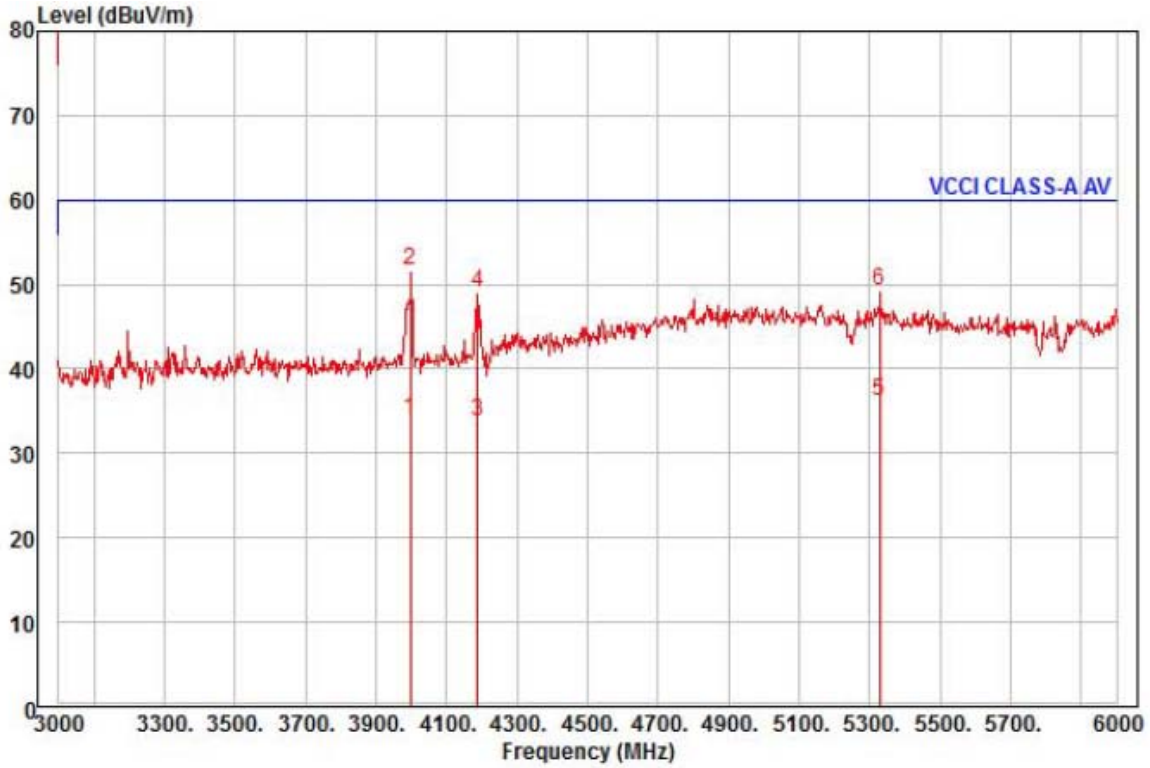


Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNV-8040RN
Mode : POE
Memo : 3 - 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4194.00	25.18	33.12	13.93	40.73	146	60.00	-28.50	horizontal	Average
2	4194.00	39.54	33.12	13.93	40.73	146	80.00	-34.14	horizontal	Peak
3 pp	4944.00	23.82	37.40	15.25	40.33	248	60.00	-23.86	horizontal	Average
4 pk	4944.00	36.67	37.40	15.25	40.33	248	80.00	-31.01	horizontal	Peak
5	5094.00	23.39	37.53	15.50	40.43	308	60.00	-24.01	horizontal	Average
6	5094.00	35.99	37.53	15.50	40.43	308	80.00	-31.41	horizontal	Peak

♦ Calculation
Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] − Preamp Factor [dB]) − Limit Line[dBuV]
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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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 : XNV-8040RN
Mode : POE
Memo : 3 - 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3999.00	29.10	32.01	13.56	40.70	105	60.00	-26.03	vertical	Average
2 pk	3999.00	46.77	32.01	13.56	40.70	105	80.00	-28.36	vertical	Peak
3	4188.00	27.55	33.08	13.92	40.73	191	60.00	-26.18	vertical	Average
4	4188.00	42.68	33.08	13.92	40.73	191	80.00	-31.05	vertical	Peak
5 pp	5328.00	24.05	37.06	15.92	40.81	214	60.00	-23.78	vertical	Average
6	5328.00	37.08	37.06	15.92	40.81	214	80.00	-30.75	vertical	Peak

♦ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] − Preamp Factor [dB]) − Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

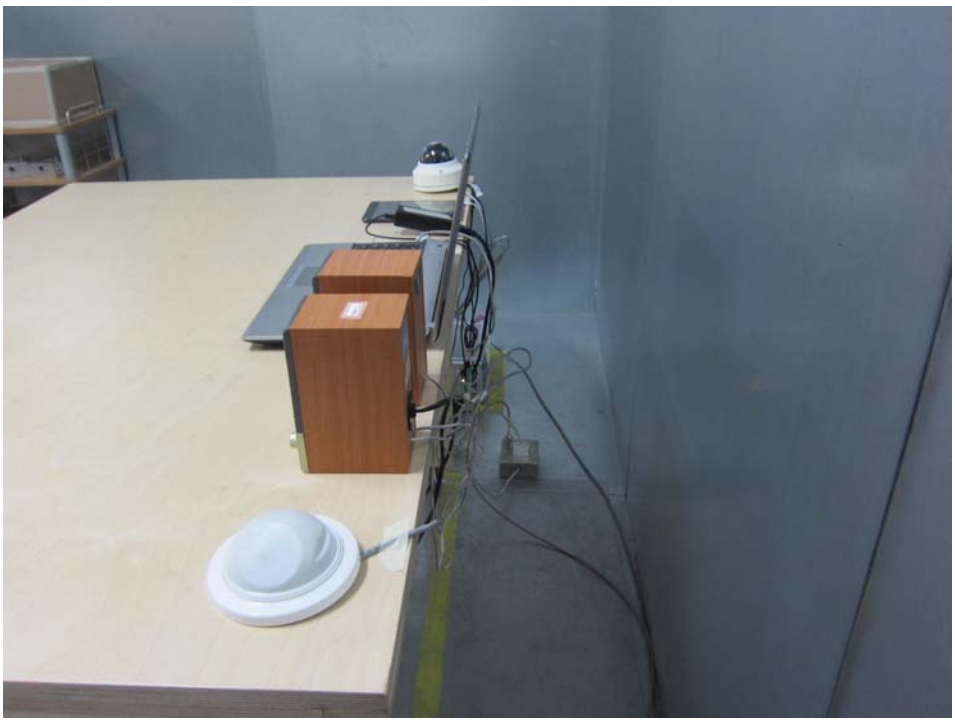
N/A

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Conducted Telecommunication Emissions

- DC 12 V Mode





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- PoE Mode





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Radiated Electric Field Emissions(Below 1 ㎓)

- DC 12 V Mode





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- PoE Mode

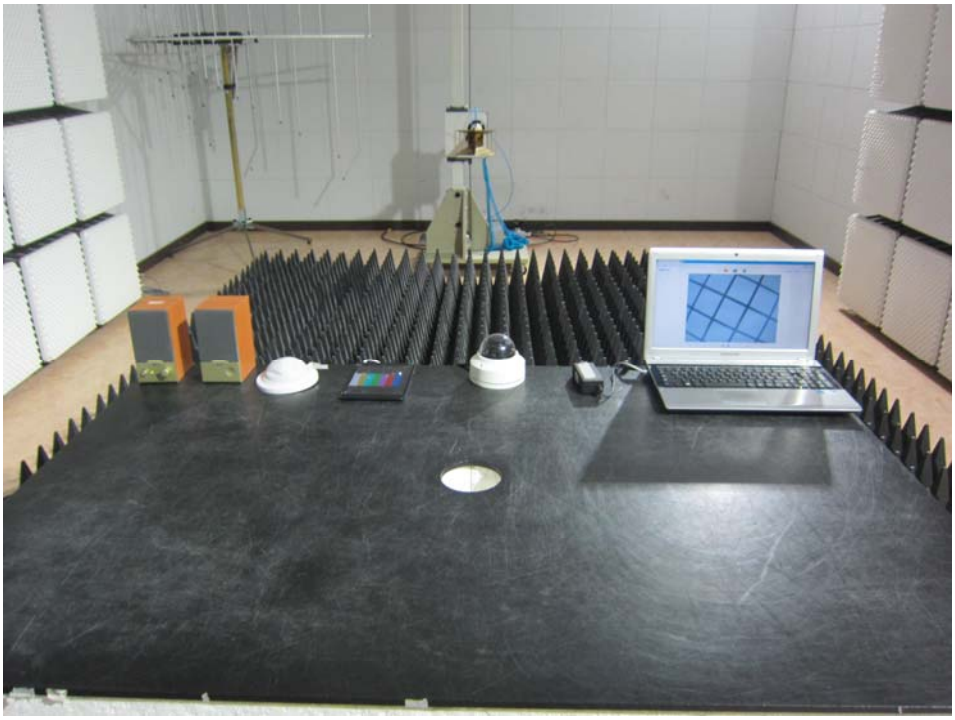




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Radiated Electric Field Emissions(Above 1 ㎓)

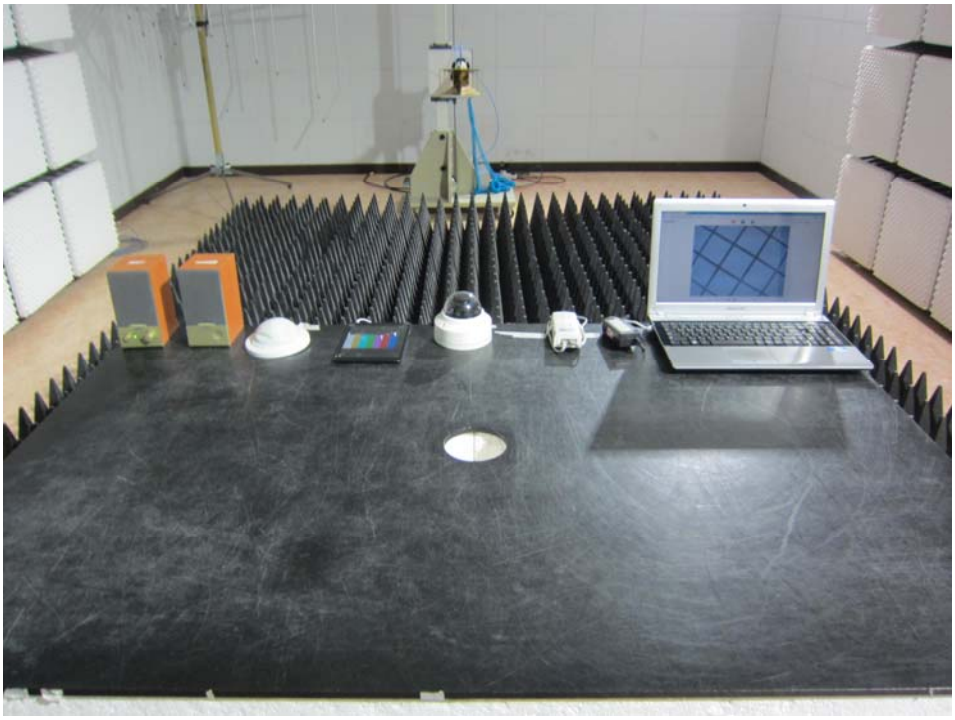
- DC 12 V Mode





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- PoE Mode





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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

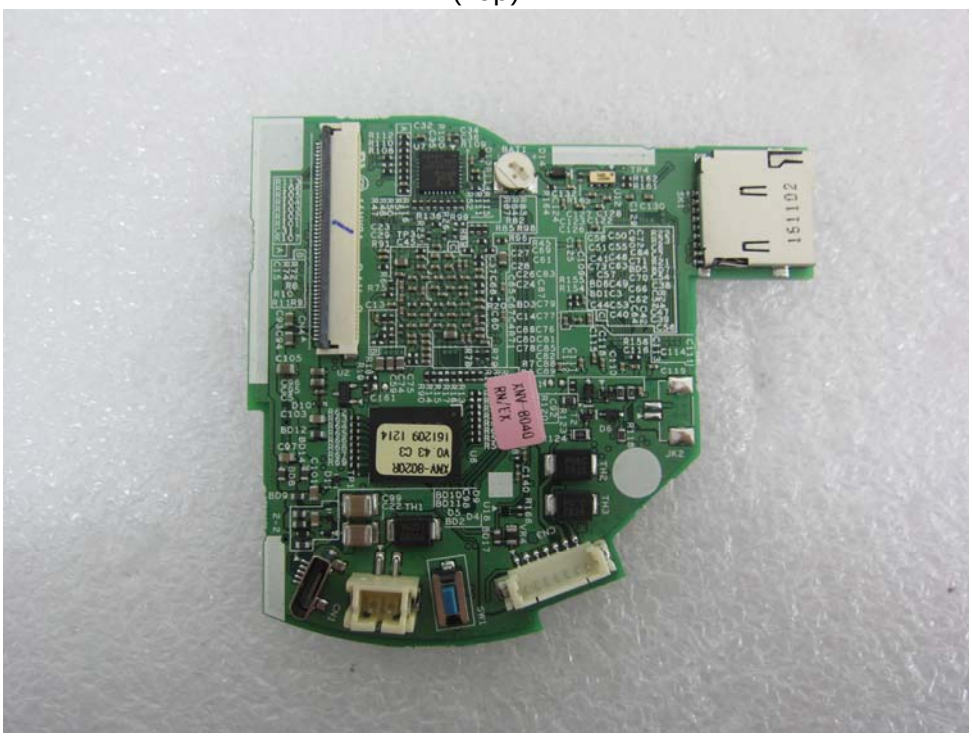
(Internal View)



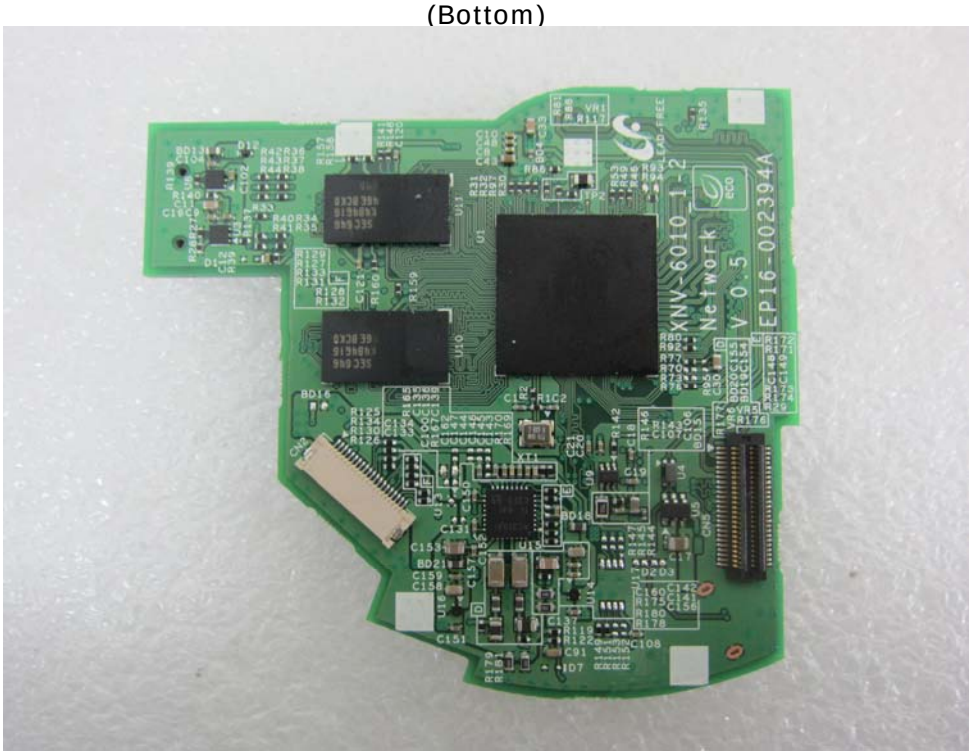
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EUT Internal View – Board 1

(Top)



(Bottom)



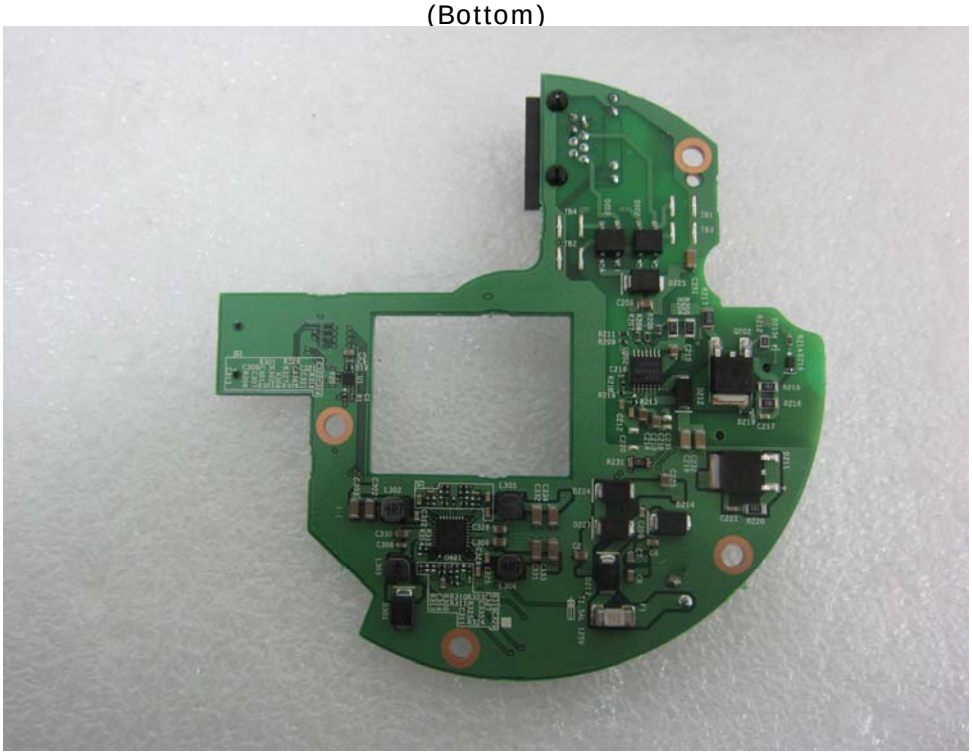
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EUT Internal View – Board 2

(Top)



(Bottom)



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EUT Internal View – board 3

(Top)



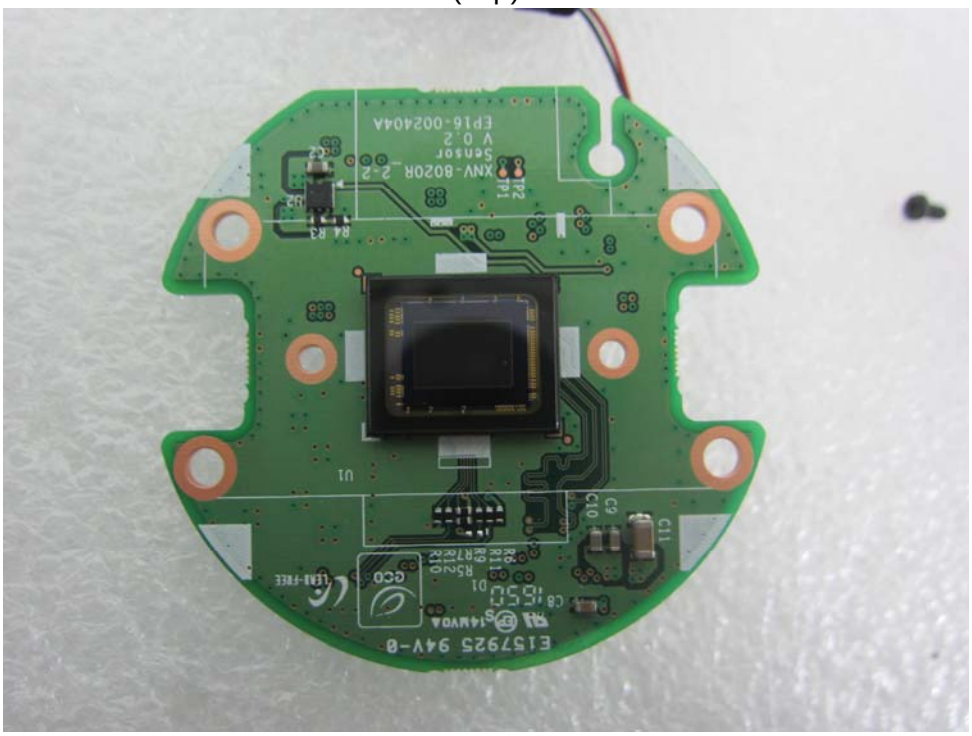
(Bottom)



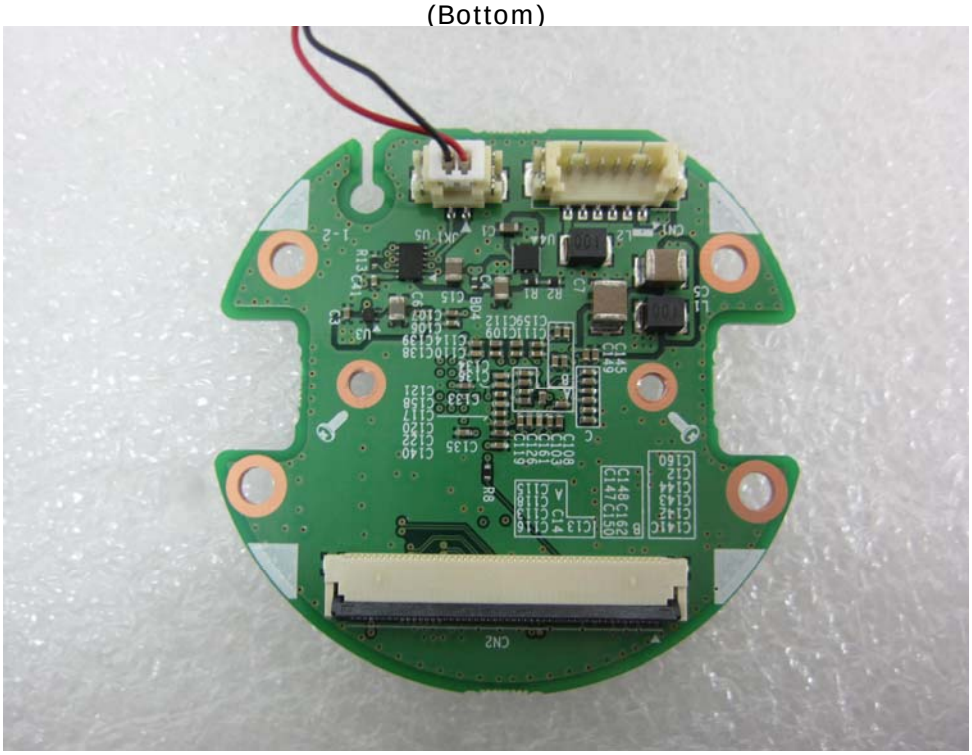
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EUT Internal View – board 4

(Top)



(Bottom)



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