



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-16T0635

Date of Issue : Dec, 12, 2016

Product name : NETWORK CAMERA

Model/Type No. : XND-6010N

Variant Model : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : Changwon-daero, Seongsan-gu Changwon-si, Gyeongsangnam-do

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 : Nov, 30, 2016

Test date : Dec, 06, 2016

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Young Suk, Song
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

**KES Co., Ltd.**

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 12, 2016	KES-E1-16T0635	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/2.8" 2M CMOS (IMX291)
Total Pixels	1945(H) x 1109(V) 2.16M
Effective Pixels	1945(H) x 1097(V) 2.13M
Scanning System	Progressive Scan
Min. Illumination	Color : 0.07 lux (TBD)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation USB : Micro USB type B, 1920 x 1080(TBD), for installation
Lens	
Focal Length (Zoom Ratio)	2.5mm Fixed
Max. Aperture Ratio	F2.0
Angular Field of View	H: 139°, V:73°, D: 167°
Min. Object Distance	0.4m
Focus Control	Manual
Lens Type	Fixed
Mount Type	Board-in type(M12)
Pan / Tilt / Rotate	
Pan / Tilt / Rotate range	0° ~ 354° / 0° ~ 85°(TBD) / 0° ~ 355°
Operational	
IR LED	Non-IR
Viewable Length	-
Camera Title	Off / On (Displayed up to 55 characters) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 6), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC(Masking/Dimming), WDR(Seamless transition TBD)
Wide Dynamic Range	150dB(TBD)
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&Dust detection) / Manual / Off
Motion Detection	Yes(8ea, 4point Polygonal zones)
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 →TBD)
Digital PTZ	24X, Digital PTZ(Preset, Group)
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Intelligent Video Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog&Dust Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Motion Detection, Digital Auto Tracking, Sound Classification, Heatmap, People counting, Queue management
Alarm I/O	Input 1ea / Output 1ea

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Remote Control Interface	-
RS-485 Protocol	-
Alarm Triggers	Alarm Input, Motion Detection, Intelligent Video 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), Built-in MIC. Max output level : 1Vrms Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out, Max output level: 1 Vrms
Fan / Heater	-
Pixel Counter	Support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x450, 720x576, 640x480, 640x360, 320x240, 320x180
Max. Framerate	H.265/H.264 : Max. 60fps at all resolutions Motion JPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
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, with WiseStream MJPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
Audio Compression Format	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-directional (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 Encryption 기능구현
Streaming Method	Streaming Method
Max. User Access	20 users at Unicast Mode(TBD)
Edge Storage	SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - (TBD) Redundant recording - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording
Application Programming	ONVIF Profile S/G SUNAPI(HTTP API) Open Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Danish, Portuguese, Czech, Polish, Turkish, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek, Norsk, Finnish

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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 Soft	SmartViewer, SSM
Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C (-14°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	-
Vandal Resistance	IK08
Electrical	
Input Voltage / Current	DC12V,PoE(IEEE802.3af,Class3)
Power Consumption	TBD
Mechanical	
Color / Material	Ivory / Plastic
Dimension (WxHxD)	φ110xH86mm
Weight	TBD

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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	XND-6010N	-	Hanwha Techwin 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	X56K	HN11N5151FJ0045W	HANSUNG	-
Notebook Adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Phone	A1530	-	APPLE	-
MIC	CMK-303	-	CAMAC	1.7 m
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	1.6 m
Alarm	-	-	-	-



1.6 External I/O Cabling

- DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45	Notebook	RJ-45	3.0	U
	7 Pin	MIC	3.5 mm	1.7	U
		Speaker	3.5 mm	1.6	U
		Alarm	2 pin	2.5	U
Notebook	Audio in	Phone	Audio out	1.7	U

- POE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45 (POE)	POE Adapter	RJ-45 (POE)	3.0	U
	7 Pin	MIC	3.5 mm	1.7	U
		Speaker	3.5 mm	1.6	U
		Alarm	2 pin	2.5	U
Notebook	Audio in	Phone	Audio out	1.7	U
	RJ-45 (DATA)	POE Adapter	RJ-45 (DATA)	3.0	U

* Unshielded = U, Shielded = S



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1.7 EUT Operating Mode(s)

operating
E.U.T Monitoring , Ping test, 1 kHz

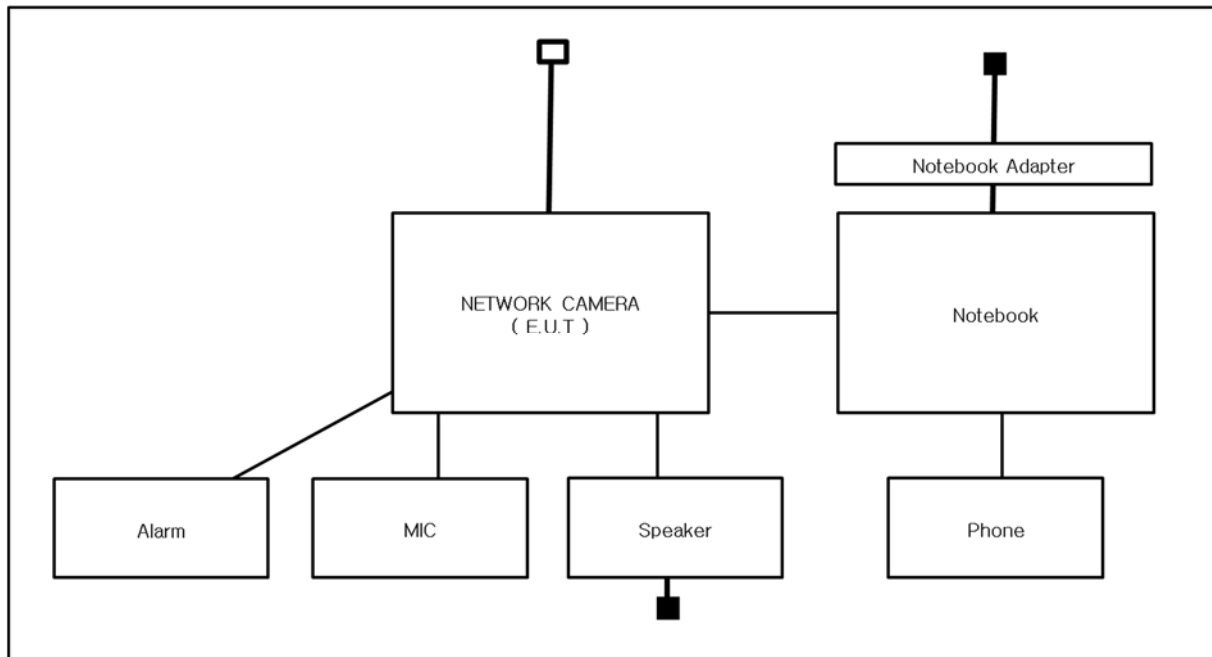
E.U.T Test operating S/W		
Name	Version	Manufacture Company
SmartViewer	-	Hanwha Techwin Co., Ltd.

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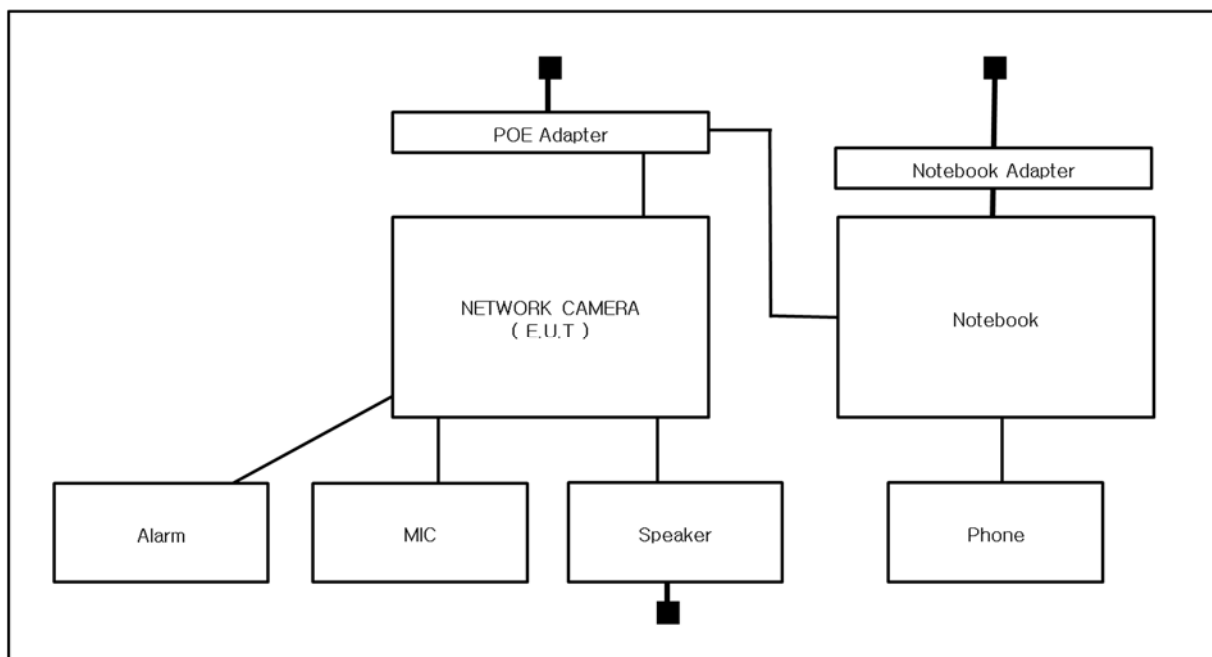
1.8 Configuration

■ 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 473-21 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 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: °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

N/A : 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

Dec, 06, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 04, 2017
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 11, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions

Temperature: 16,9 °C

Relative Humidity: 45,3 %

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

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Dec, 06, 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 ANT	VULB 9163	Schwarzbeck	9163-713	05, 15, 2017
☒	OATS	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	N/A	N/A	N/A	N/A

Test Conditions

Temperature: 4,4 °C
Relative Humidity: 39,0 %

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

Dec, 06, 2016

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: 16,9 °C

Relative Humidity: 45,3 %

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

◆ 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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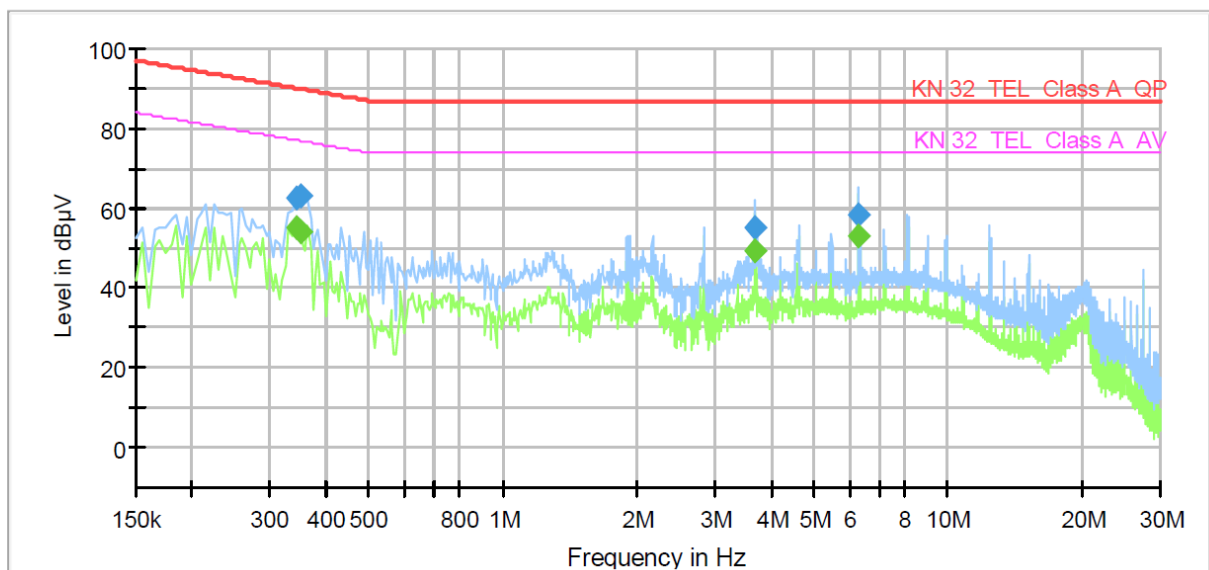
Conducted Emissions at Telecommunication Ports

- DC 12 V Mode

[10 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XND-6010N
Mode: DC 12V_10M
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.345000	---	55.20	77.08	21.88	1000.0	9.000	Single Line	10.1
0.345000	62.38	---	90.08	27.70	1000.0	9.000	Single Line	10.1
0.350000	---	54.14	76.96	22.82	1000.0	9.000	Single Line	10.1
0.350000	62.81	---	89.96	27.15	1000.0	9.000	Single Line	10.1
3.695000	---	49.14	74.00	24.86	1000.0	9.000	Single Line	10.2
3.695000	55.12	---	87.00	31.88	1000.0	9.000	Single Line	10.2
6.305000	---	52.82	74.00	21.18	1000.0	9.000	Single Line	10.1
6.305000	58.30	---	87.00	28.70	1000.0	9.000	Single Line	10.1

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

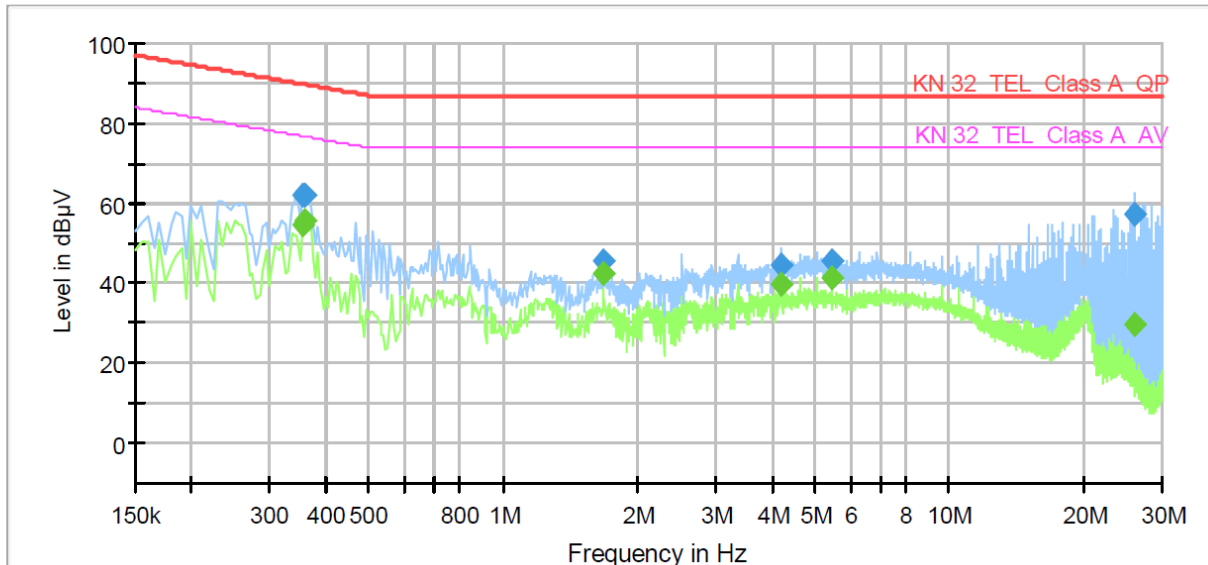
Corr. : Correction values (ISN FACTOR+ Cable Loss)



[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XND-6010N
Mode: DC 12V_100M
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.355000	---	54.43	76.84	22.41	1000.0	9.000	Single Line	9.6
0.355000	62.03	---	89.84	27.81	1000.0	9.000	Single Line	9.6
0.360000	---	55.70	76.73	21.03	1000.0	9.000	Single Line	9.6
0.360000	62.03	---	89.73	27.70	1000.0	9.000	Single Line	9.6
1.680000	---	42.30	74.00	31.70	1000.0	9.000	Single Line	9.7
1.680000	45.46	---	87.00	41.54	1000.0	9.000	Single Line	9.7
4.195000	---	39.74	74.00	34.26	1000.0	9.000	Single Line	9.6
4.195000	44.72	---	87.00	42.28	1000.0	9.000	Single Line	9.6
5.460000	---	41.35	74.00	32.65	1000.0	9.000	Single Line	9.6
5.460000	45.42	---	87.00	41.58	1000.0	9.000	Single Line	9.6
26.015000	---	29.66	74.00	44.34	1000.0	9.000	Single Line	9.5
26.015000	57.07	---	87.00	29.93	1000.0	9.000	Single Line	9.5

◆ Calculation

QuasiPeak [dBμV] / CAverage [dBμV] = Reading Value [dBμV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

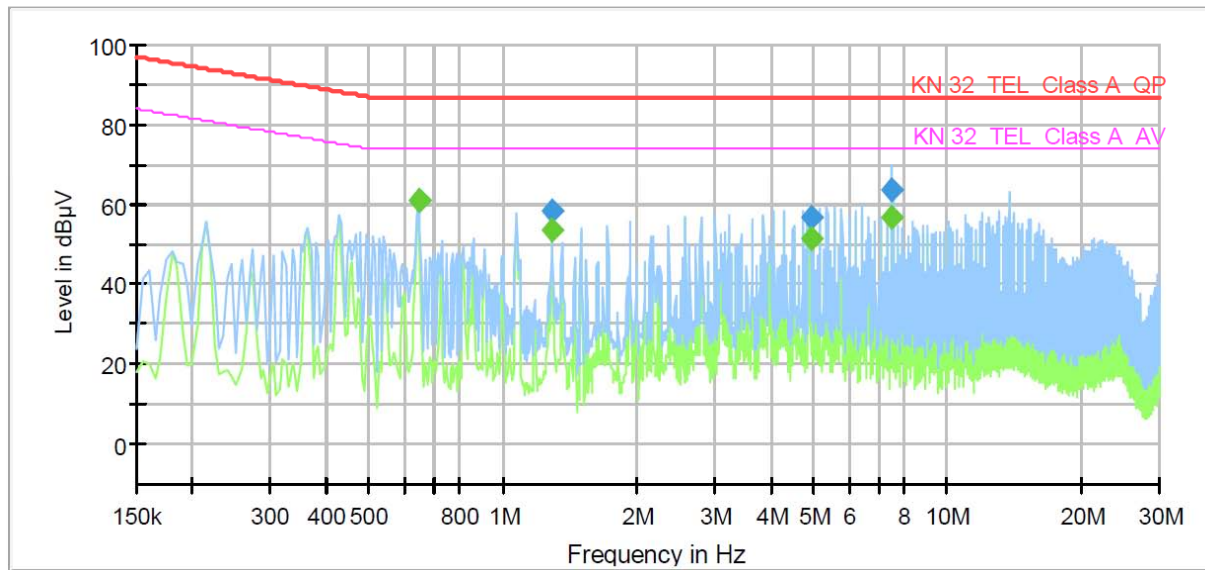
Corr. : Correction values (ISN FACTOR+ Cable Loss)

- POE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XND-6010N
Mode	POE_10M
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	---	60.96	74.00	13.04	1000.0	9.000	Single Line	10.1
0.645000	61.04	---	87.00	25.96	1000.0	9.000	Single Line	10.1
1.290000	---	53.38	74.00	20.62	1000.0	9.000	Single Line	10.2
1.290000	58.35	---	87.00	28.65	1000.0	9.000	Single Line	10.2
4.935000	---	51.09	74.00	22.91	1000.0	9.000	Single Line	10.1
4.935000	56.49	---	87.00	30.51	1000.0	9.000	Single Line	10.1
7.500000	---	56.71	74.00	17.29	1000.0	9.000	Single Line	10.0
7.500000	63.37	---	87.00	23.63	1000.0	9.000	Single Line	10.0

◆ Calculation

QuasiPeak [dBμV] / CAverage [dBμV] = Reading Value [dBμV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (ISN FACTOR+ Cable Loss)

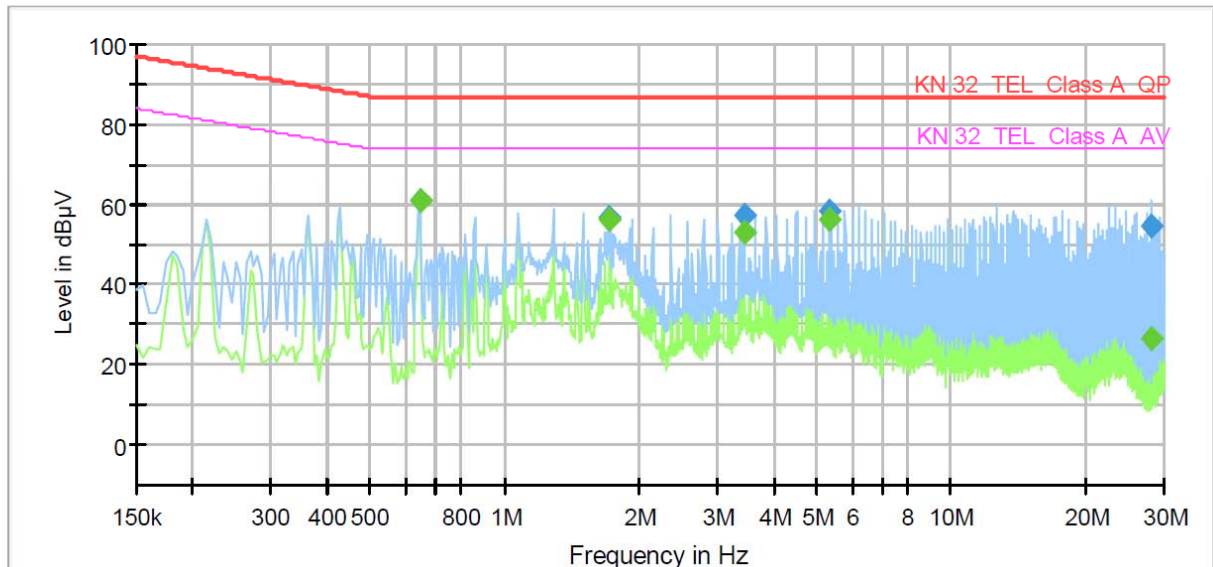
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The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XND-6010N
Mode: POE_100M
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	---	60.90	74.00	13.10	1000.0	9.000	Single Line	9.6
0.645000	61.00	---	87.00	26.00	1000.0	9.000	Single Line	9.6
1.715000	---	55.90	74.00	18.10	1000.0	9.000	Single Line	9.7
1.715000	56.74	---	87.00	30.26	1000.0	9.000	Single Line	9.7
3.435000	---	52.92	74.00	21.08	1000.0	9.000	Single Line	9.7
3.435000	57.35	---	87.00	29.65	1000.0	9.000	Single Line	9.7
5.365000	---	56.18	74.00	17.82	1000.0	9.000	Single Line	9.6
5.365000	58.19	---	87.00	28.81	1000.0	9.000	Single Line	9.6
28.215000	---	26.27	74.00	47.73	1000.0	9.000	Single Line	9.5
28.215000	54.38	---	87.00	32.62	1000.0	9.000	Single Line	9.5

◆ 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)



Radiated Electric Field Emissions(Below 1 GHz)

- DC 12 V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
148.35	12.60	H	2.63	8.14	3.55	24.29	40.00	15.71
155.04	12.23	V	1.25	8.38	3.63	24.24	40.00	15.76
224.95	13.98	H	2.31	11.85	4.42	30.25	40.00	9.75
375.27	11.90	V	2.08	15.13	5.91	32.94	47.00	14.06
449.04	11.78	H	3.01	16.39	6.79	34.96	47.00	12.04
489.70	14.95	V	1.85	16.96	6.96	38.87	47.00	8.13
505.33	16.87	H	1.69	17.22	7.05	41.14	47.00	5.86
542.32	17.70	V	1.87	18.03	7.34	43.07	47.00	3.93

* H : Horizontal, V : Vertical

◆ Calculation

Corrected Amplitude [dB μ V] = Amplitude[dB μ V] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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Test report No.:
KES-E1-16T0635
Page (25) of (45)

- 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]
146.45	13.25	H	2.60	8.07	3.53	24.85	40.00	15.15
152.28	13.02	V	1.25	8.28	3.60	24.90	40.00	15.10
221.02	11.95	H	2.33	11.77	4.37	28.09	40.00	11.91
270.54	12.01	H	1.89	12.81	4.90	29.72	47.00	17.28
375.24	11.90	V	1.27	15.13	5.91	32.94	47.00	14.06
425.69	16.20	H	3.02	16.06	6.49	38.75	47.00	8.25
491.65	12.95	V	3.19	16.98	6.97	36.90	47.00	10.10
542.29	17.06	V	2.07	18.03	7.34	42.43	47.00	4.57

* H : Horizontal, V : Vertical

◆ Calculation

Corrected Amplitude [dB μ V] = Amplitude[dB μ V] + Correction Factor [dB]

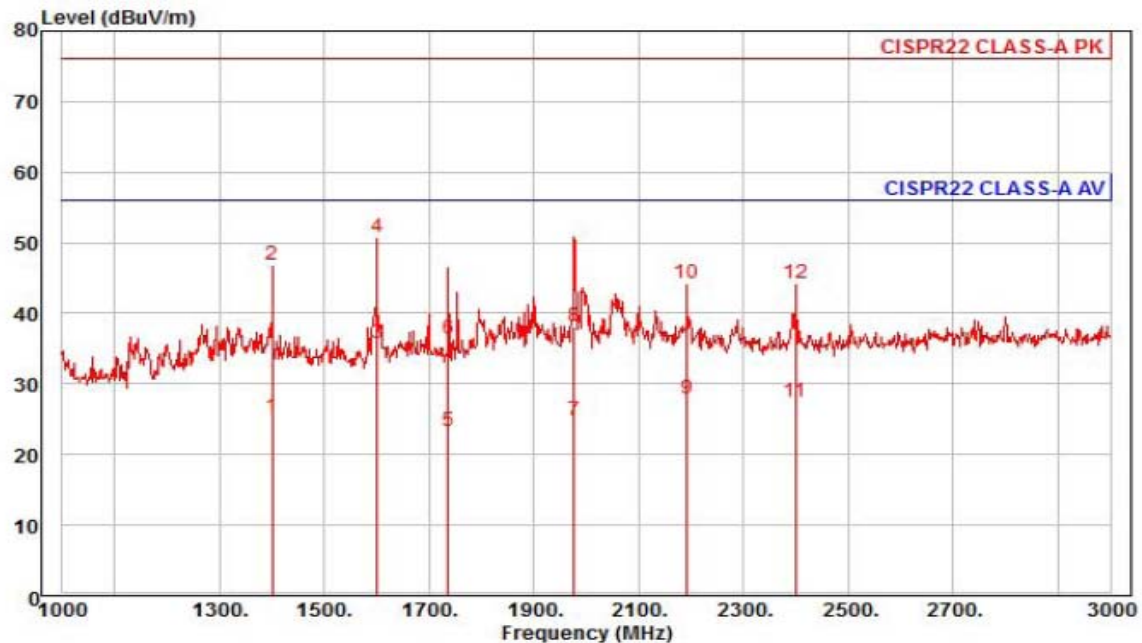
Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V Mode



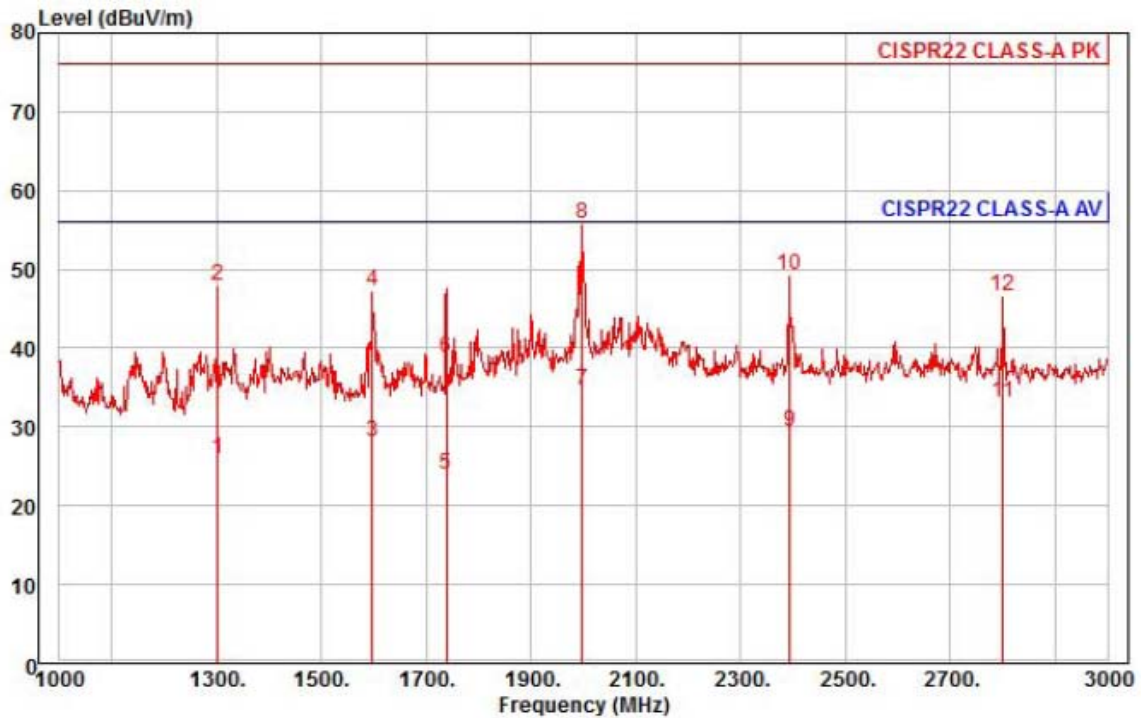
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : DC 12V
Memo : 1 ~ 3 GHz

	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	1400.00	31.18	25.50	7.72	39.13	100	56.00	-30.73	horizontal	Average
2	1400.00	52.78	25.50	7.72	39.13	100	76.00	-29.13	horizontal	Peak
3 pp	1600.00	40.40	26.29	8.31	39.22	195	56.00	-20.22	horizontal	Average
4 pk	1600.00	55.35	26.29	8.31	39.22	195	76.00	-25.27	horizontal	Peak
5	1736.00	27.17	26.83	8.66	39.29	1	56.00	-32.63	horizontal	Average
6	1736.00	40.29	26.83	8.66	39.29	1	76.00	-39.51	horizontal	Peak
7	1976.00	27.16	27.78	9.27	39.40	87	56.00	-31.19	horizontal	Average
8	1976.00	40.42	27.78	9.27	39.40	87	76.00	-37.93	horizontal	Peak
9	2192.00	29.10	28.35	9.78	39.41	258	56.00	-28.18	horizontal	Average
10	2192.00	45.51	28.35	9.78	39.41	258	76.00	-31.77	horizontal	Peak
11	2400.00	27.79	28.86	10.32	39.42	153	56.00	-28.45	horizontal	Average
12	2400.00	44.53	28.86	10.32	39.42	153	76.00	-31.71	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



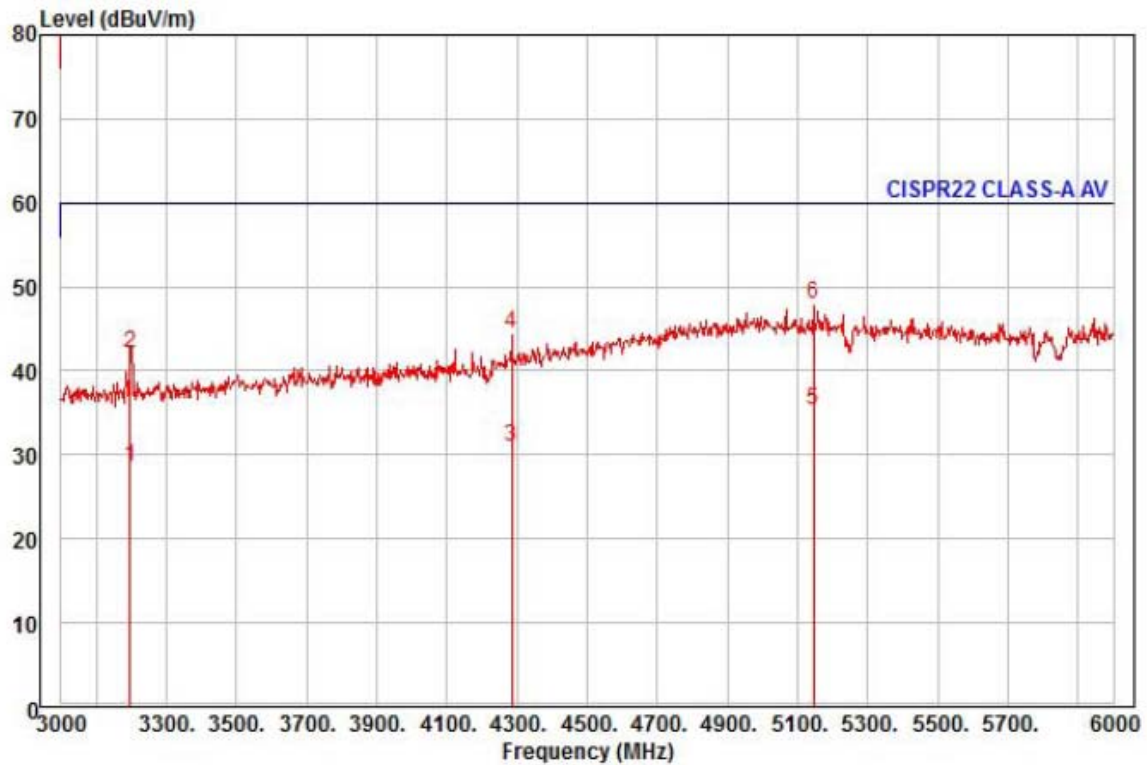
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : DC 12V
Memo : 1 ~ 3 GHz

	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	1302.00	32.81	25.11	7.44	39.37	81	56.00	-30.01	vertical	Average
2	1302.00	54.69	25.11	7.44	39.37	81	76.00	-28.13	vertical	Peak
3	1598.00	32.73	26.28	8.31	39.22	329	56.00	-27.90	vertical	Average
4	1598.00	51.91	26.28	8.31	39.22	329	76.00	-28.72	vertical	Peak
5	1738.00	27.84	26.84	8.67	39.29	151	56.00	-31.94	vertical	Average
6	1738.00	42.49	26.84	8.67	39.29	151	76.00	-37.29	vertical	Peak
7 av	1998.00	36.92	27.87	9.33	39.41	351	56.00	-21.29	vertical	Average
8 pp	1998.00	58.01	27.87	9.33	39.41	351	76.00	-20.20	vertical	Peak
9	2394.00	29.63	28.85	10.31	39.42	104	56.00	-26.63	vertical	Average
10	2394.00	49.61	28.85	10.31	39.42	104	76.00	-26.65	vertical	Peak
11	2800.00	32.00	29.84	11.23	39.88	321	56.00	-22.81	vertical	Average
12	2800.00	45.53	29.84	11.23	39.88	321	76.00	-29.28	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



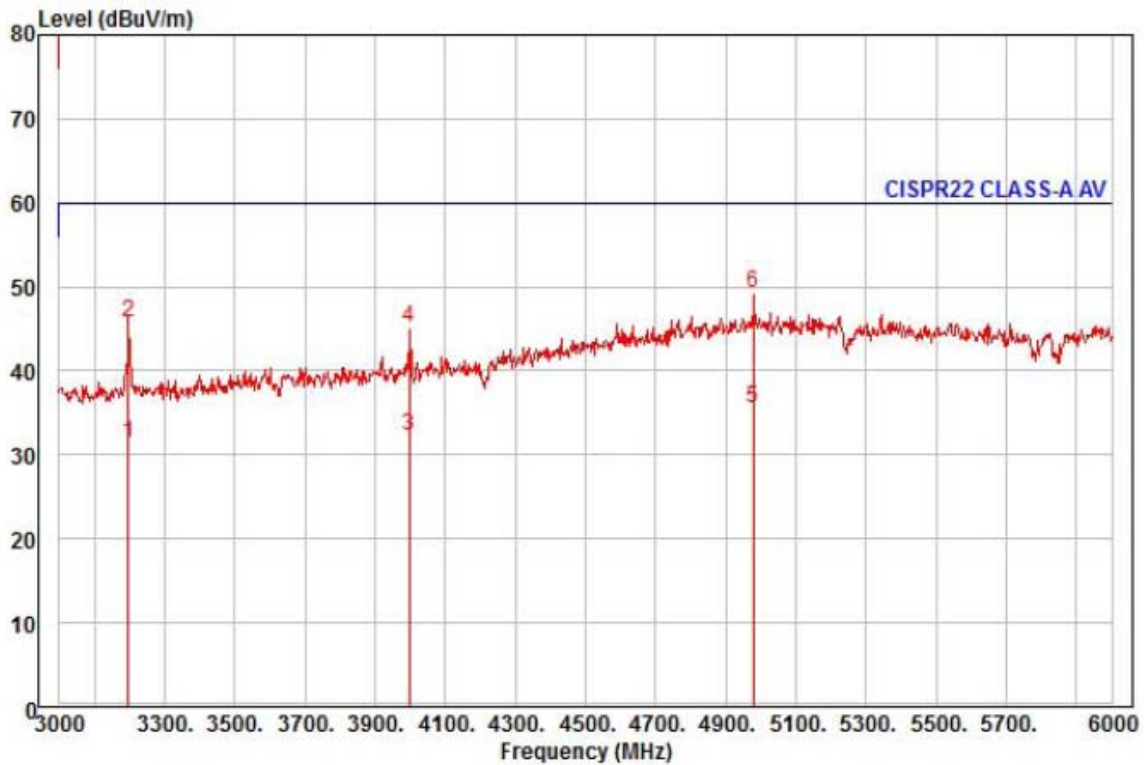
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : DC 12V
Memo : 3 ~ 6 GHz

	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	3198.00	26.28	30.66	12.05	40.41	308	60.00	-31.42	horizontal	Average
2	3198.00	39.88	30.66	12.05	40.41	308	80.00	-37.82	horizontal	Peak
3	4284.00	24.05	33.63	14.08	40.74	80	60.00	-28.98	horizontal	Average
4	4284.00	37.61	33.63	14.08	40.74	80	80.00	-35.42	horizontal	Peak
5 pp	5145.00	22.90	37.43	15.60	40.51	157	60.00	-24.58	horizontal	Average
6 pk	5145.00	35.39	37.43	15.60	40.51	157	80.00	-32.09	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



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : DC 12V
Memo : 3 ~ 6 GHz

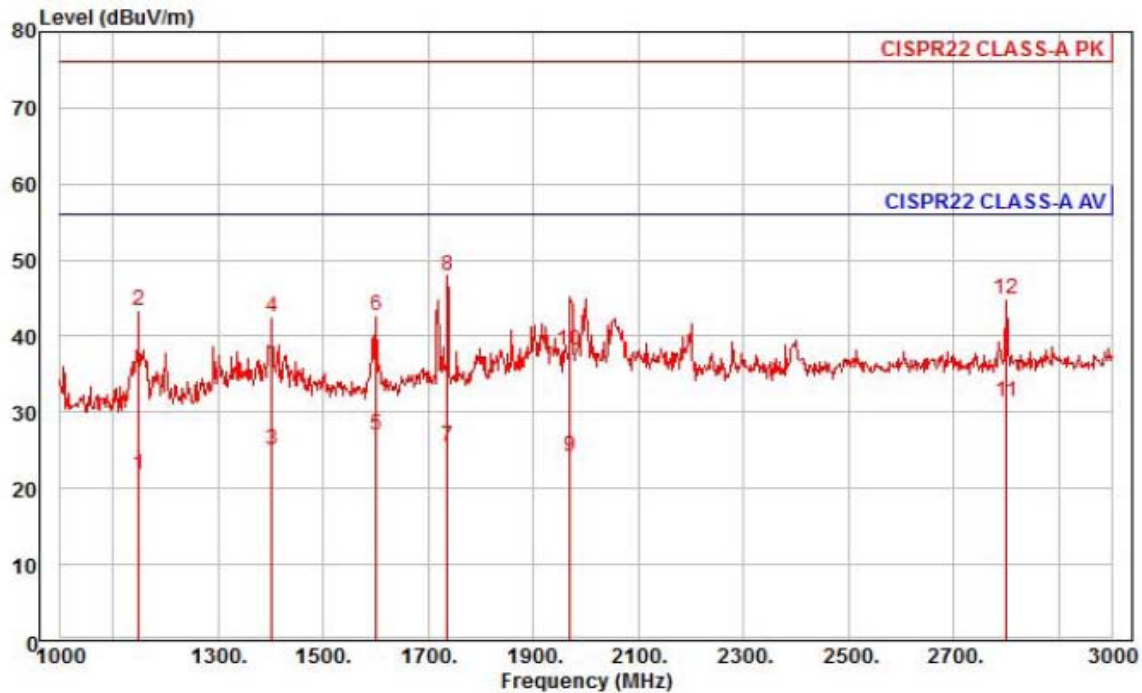
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3198.00	29.11	30.66	12.05	40.41	317	60.00	-28.59	vertical	Average
2	3198.00	43.40	30.66	12.05	40.41	317	80.00	-34.30	vertical	Peak
3	3999.00	27.39	32.01	13.56	40.70	106	60.00	-27.74	vertical	Average
4	3999.00	40.29	32.01	13.56	40.70	106	80.00	-34.84	vertical	Peak
5 pp	4980.00	23.02	37.61	15.29	40.29	61	60.00	-24.37	vertical	Average
6 pk	4980.00	36.61	37.61	15.29	40.29	61	80.00	-30.78	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

- POE Mode



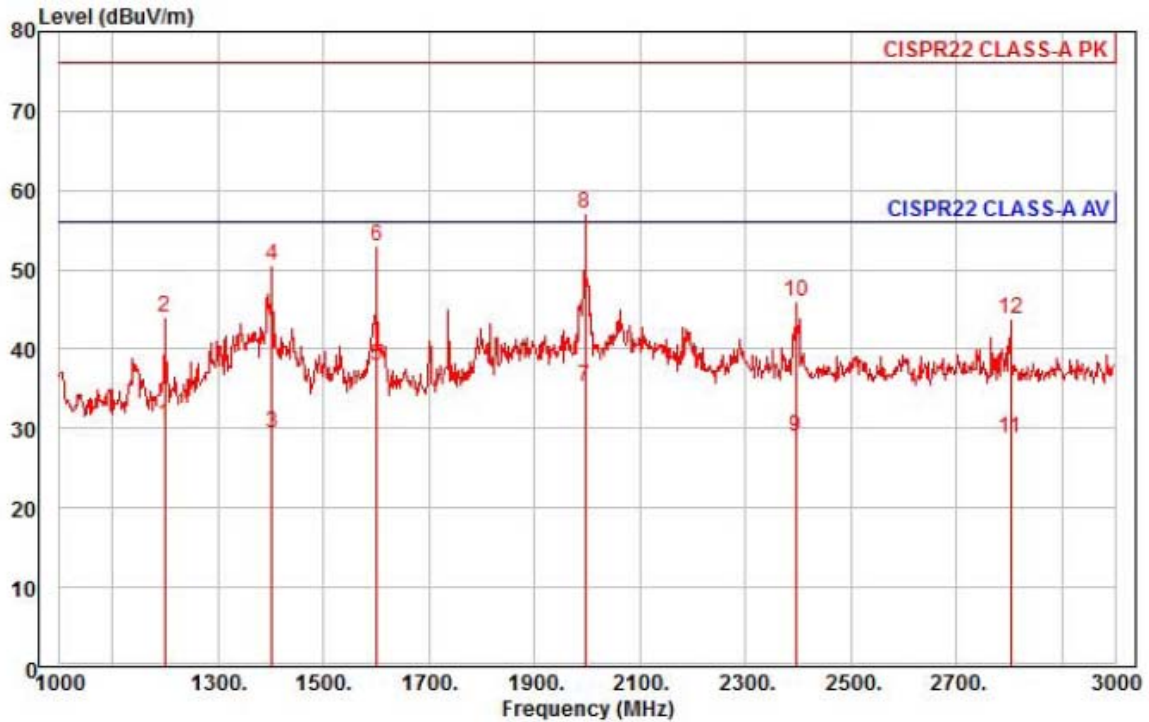
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : POE
Memo : 1 ~ 3 GHz

	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	1148.00	29.96	24.50	6.97	39.73	16	56.00	-34.30	horizontal	Average
2	1148.00	51.70	24.50	6.97	39.73	16	76.00	-32.56	horizontal	Peak
3	1402.00	30.91	25.51	7.73	39.13	316	56.00	-30.98	horizontal	Average
4	1402.00	48.33	25.51	7.73	39.13	316	76.00	-33.56	horizontal	Peak
5	1600.00	31.62	26.29	8.31	39.22	183	56.00	-29.00	horizontal	Average
6	1600.00	47.25	26.29	8.31	39.22	183	76.00	-33.37	horizontal	Peak
7	1736.00	29.30	26.83	8.66	39.29	130	56.00	-30.50	horizontal	Average
8 pk	1736.00	51.81	26.83	8.66	39.29	130	76.00	-27.99	horizontal	Peak
9	1970.00	26.56	27.76	9.26	39.40	169	56.00	-31.82	horizontal	Average
10	1970.00	40.58	27.76	9.26	39.40	169	76.00	-37.80	horizontal	Peak
11 pp	2800.00	30.18	29.84	11.23	39.88	141	56.00	-24.63	horizontal	Average
12	2800.00	43.67	29.84	11.23	39.88	141	76.00	-31.14	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



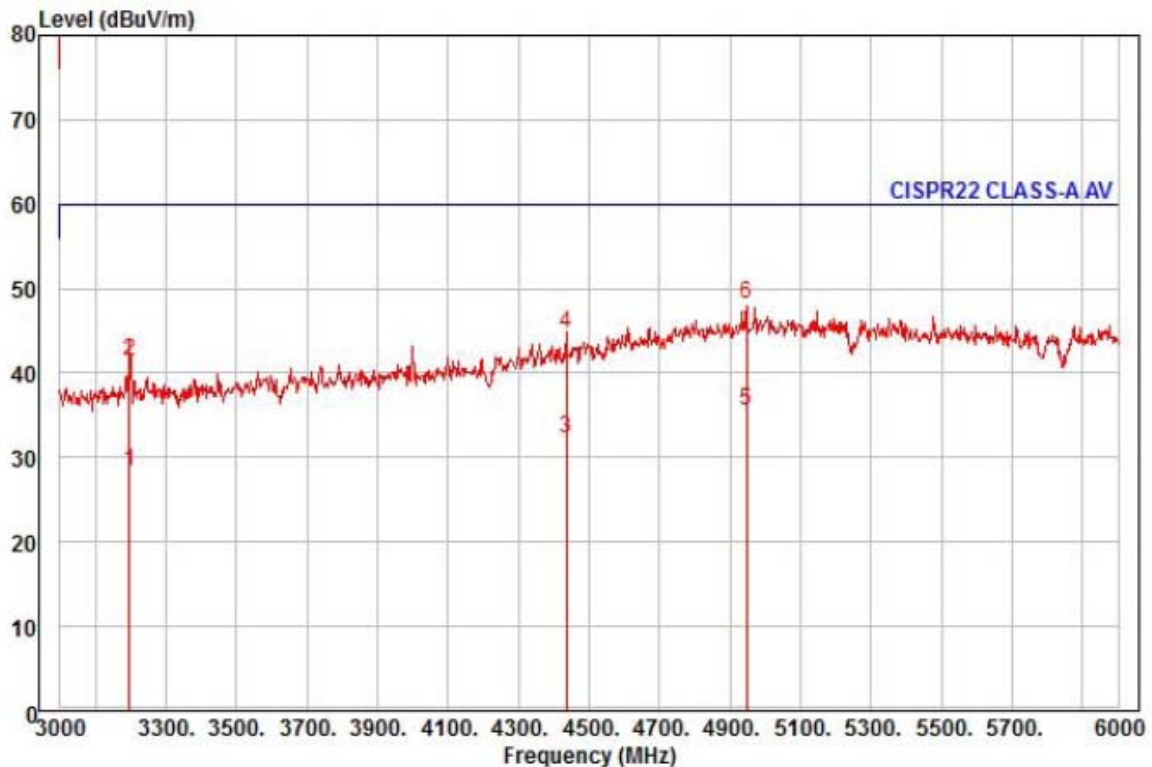
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : POE
Memo : 1 ~ 3 GHz

	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	1200.00	38.23	24.70	7.14	39.61	1	56.00	-25.54	vertical	Average
2	1200.00	51.86	24.70	7.14	39.61	1	76.00	-31.91	vertical	Peak
3	1402.00	35.41	25.51	7.73	39.13	9	56.00	-26.48	vertical	Average
4	1402.00	56.50	25.51	7.73	39.13	9	76.00	-25.39	vertical	Peak
5 pp	1600.00	42.60	26.29	8.31	39.22	355	56.00	-18.02	vertical	Average
6	1600.00	57.61	26.29	8.31	39.22	355	76.00	-23.01	vertical	Peak
7	1996.00	37.47	27.86	9.33	39.41	1	56.00	-20.75	vertical	Average
8 pk	1996.00	59.32	27.86	9.33	39.41	1	76.00	-18.90	vertical	Peak
9	2396.00	29.20	28.85	10.31	39.42	261	56.00	-27.06	vertical	Average
10	2396.00	46.35	28.85	10.31	39.42	261	76.00	-29.91	vertical	Peak
11	2802.00	27.57	29.84	11.24	39.88	118	56.00	-27.23	vertical	Average
12	2802.00	42.54	29.84	11.24	39.88	118	76.00	-32.26	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



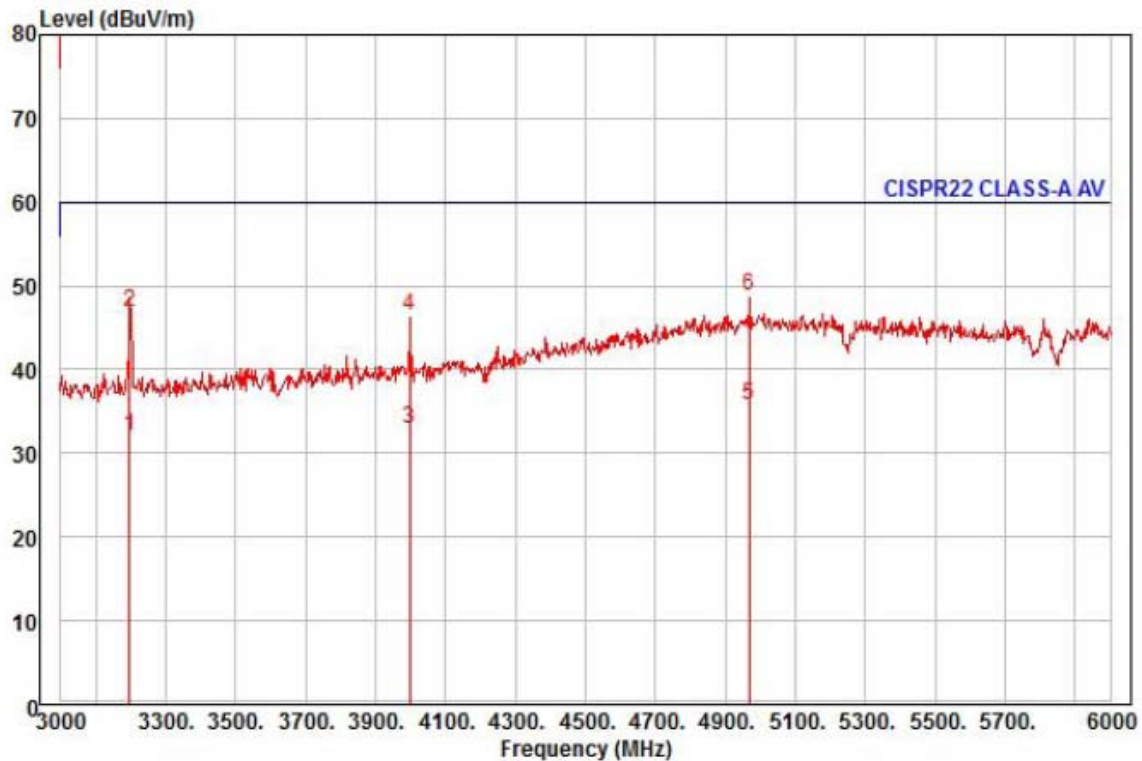
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
Mode : POE
Memo : 3 ~ 6 GHz

	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	3198.00	26.03	30.66	12.05	40.41	169	60.00	-31.67	horizontal	Average
2	3198.00	39.12	30.66	12.05	40.41	169	80.00	-38.58	horizontal	Peak
3	4437.00	24.14	34.51	14.34	40.76	9	60.00	-27.77	horizontal	Average
4	4437.00	36.60	34.51	14.34	40.76	9	80.00	-35.31	horizontal	Peak
5 pp	4947.00	23.09	37.42	15.26	40.32	233	60.00	-24.55	horizontal	Average
6 pk	4947.00	35.91	37.42	15.26	40.32	233	80.00	-31.73	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



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XND-6010N
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	3198.00	29.67	30.66	12.05	40.41	30	60.00	-28.03	vertical	Average
2	3198.00	44.51	30.66	12.05	40.41	30	80.00	-33.19	vertical	Peak
3	3999.00	28.01	32.01	13.56	40.70	199	60.00	-27.12	vertical	Average
4	3999.00	41.67	32.01	13.56	40.70	199	80.00	-33.46	vertical	Peak
5 pp	4968.00	23.24	37.54	15.28	40.30	318	60.00	-24.24	vertical	Average
6 pk	4968.00	36.27	37.54	15.28	40.30	318	80.00	-31.21	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



Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

Conducted Telecommunication Emissions

- DC 12 V Mode



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- POE Mode



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Radiated Electric Field Emissions(Below 1 GHz)

- DC 12 V Mode



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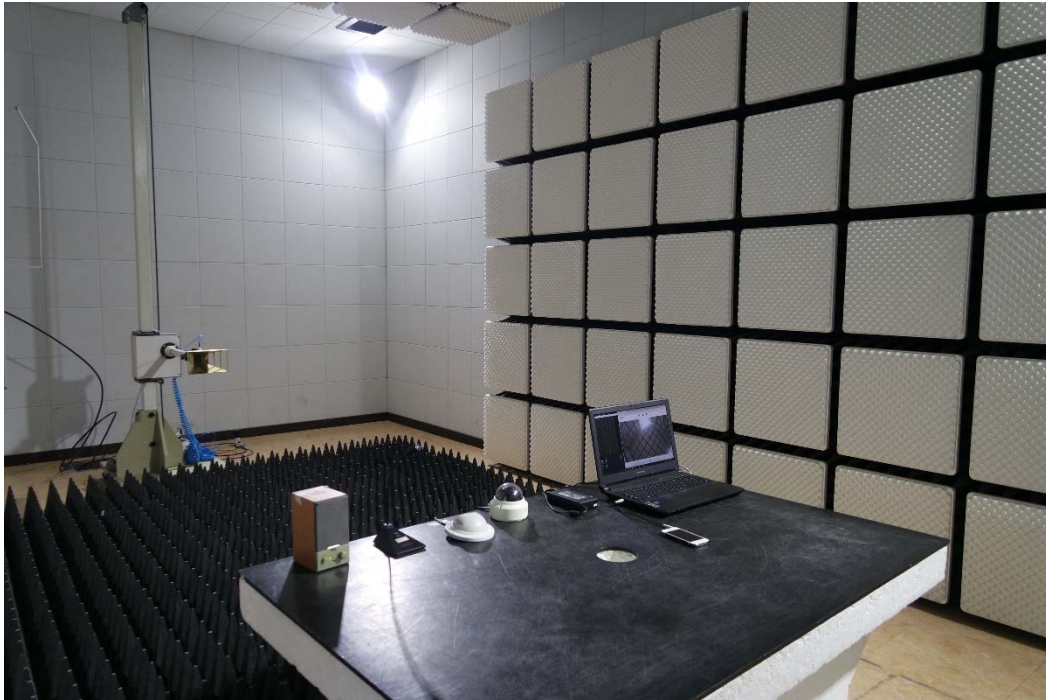
- POE Mode



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Radiated Electric Field Emissions(Above 1 GHz)

- 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)



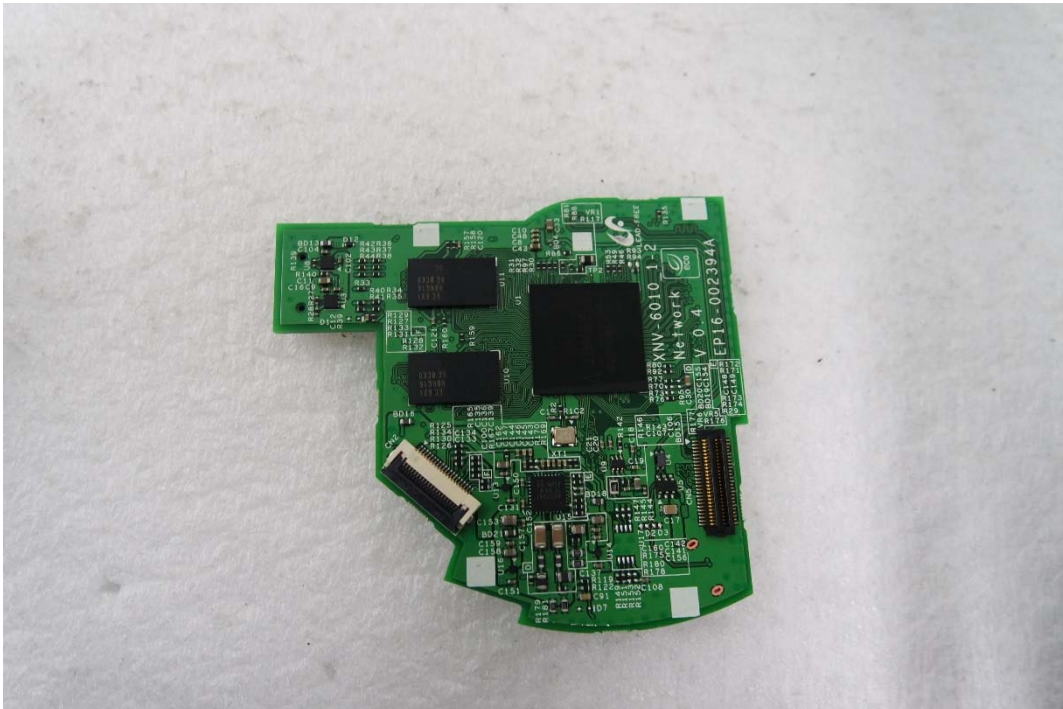
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EUT Internal View – Main Board

(Top)



(Bottom)



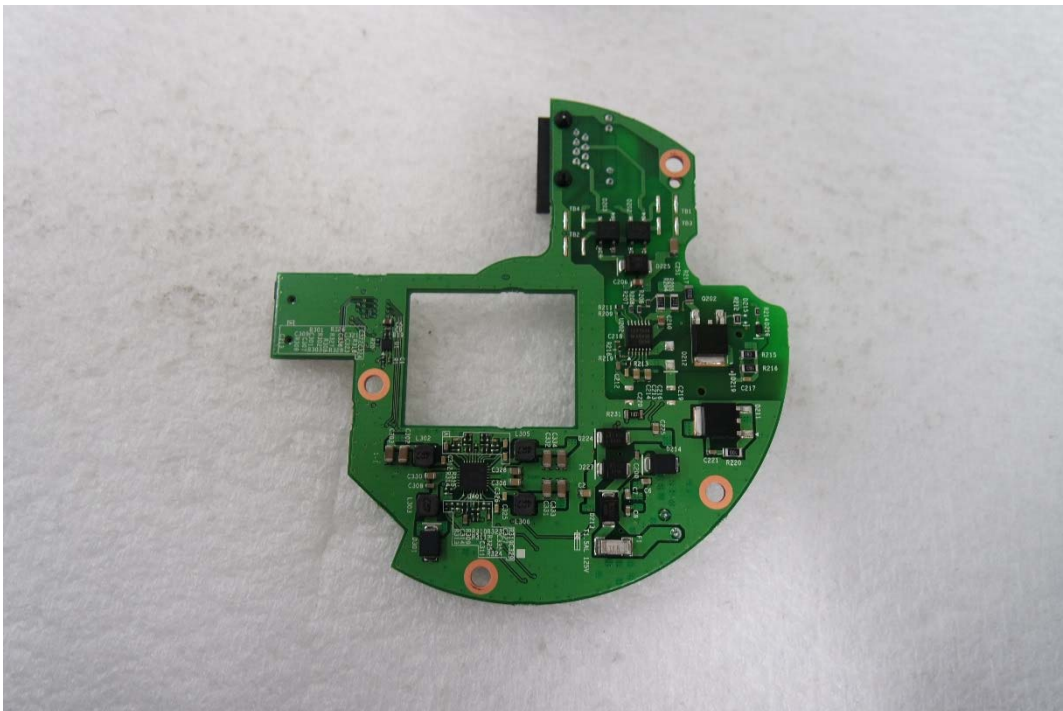
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EUT Internal View – Sub Board

(Top)



(Bottom)



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EUT Internal View – Lens

(Top)



(Bottom)



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