EMC TEST REPORT For IC

Test Report No.	:	KES-E1-17T0099-R2
Date of Issue	:	Feb. 24, 2023
Product name	:	NETWORK CAMERA
Model/Type No.	:	XNO-6020R
Variant Model	:	XNO-6010R
Applicant	:	Hanwha Vision Co., Ltd
Applicant Address	:	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	1. HANWHA VISION VIETNAM COMPANY LIMITED 2. D-TECH CO.,LTD.
Manufacturer Address	:	1. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam 2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)
Date of Receipt	:	Jan, 20, 2017
Test date	:	Feb. 01, 2017
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by
Dae Hyun, Kim
EMC Test Engineer

Reviewed by
Dong-Hun, Jang
EMC Technical Manager

Tested by Yung Suk, Song
(Retired person)
Proxy signature : Dae Hyun, Kim

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 07, 2017	KES-E1-17T0099	Issued
Nov. 15, 2021	KES-E1-17T0099-R1	- Applicant Address/Manufacturer change at customer's request - Deletion of model name "N" - IC Regulation ICES-003 Issue 7 Update ANSI C63.4-2014 or ANSI C63.4-2014 amended as per ANSI C63.4a-2017
Feb. 24, 2023	KES-E1-17T0099-R2	Change the Applicant and manufacturer at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

	XNO-6020R
Video	
Imaging Device	1/2.8" 2M CMOS
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 : 0.015 lux(F1.4, 1/30sec) B/W : 0Lux(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)	4mm Fixed
Max. Aperture Ratio	F1.4
Angular Field of View	H: 88.6°, V:47.5°, D: 104.8°
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	150dB
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	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), 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
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, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264 : Max. 60fps 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 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-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 Interfa	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 Software	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, NEMA 4X
Vandal Resistance	IK10
Electrical	
Input Voltage / Current	12VDC ± 10%, PoE(IEEE802.3af)
Power Consumption	Max. 7.8W(12VDC), Max. 8.8W(PoE)
Mechanical	
Color / Material	Dark Gray / Aluminum

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

Variant Model	Difference
XNO-6010R	No circuit and hardware changes. Simple sales place distinction. different model.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNO-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	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	CE, RE
Notebook Adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	CE, RE
Notebook	LG15N54	506NZGK000615	LG	POE CE
Notebook Adapter	PA-1650-43(65W)	OF58U63849302Y609	LG	POE CE
Phone	A1530	-	APPLE	-
MIC	CMK-303	-	CAMAC	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
Alarm	-	-	-	-
SD card	-	-	SanDisk	-

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 ㎜	1.7	U
		Speaker	3.5 ㎜	1.6	U
		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
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 ㎜	1.7	U
		Speaker	3.5 ㎜	1.6	U
		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
Notebook	Audio in	Phone	Audio out	1.7	U
	RJ-45 (DATA)	POE Adapter	RJ-45 (DATA)	3.0	U

* Unshielded = U, Shielded = S

1.7 EUT Operating Mode(s)

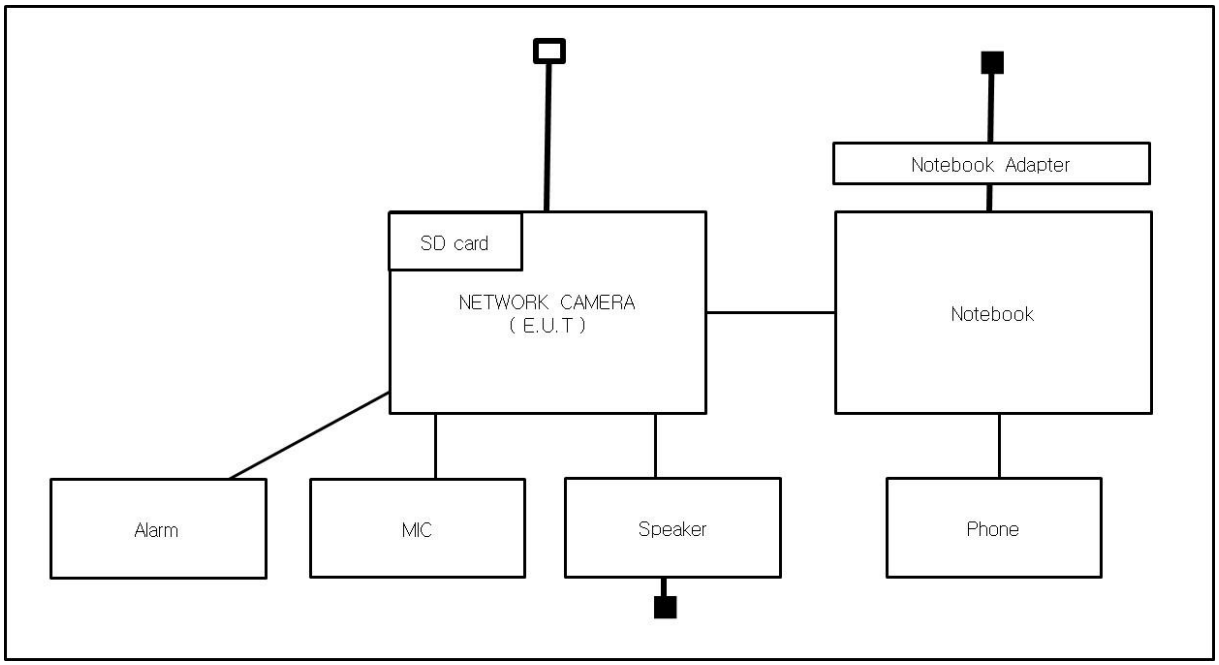
Test mode	operating
DC, POE	E.U.T Monitoring, 1 ㎑, Ping Test

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

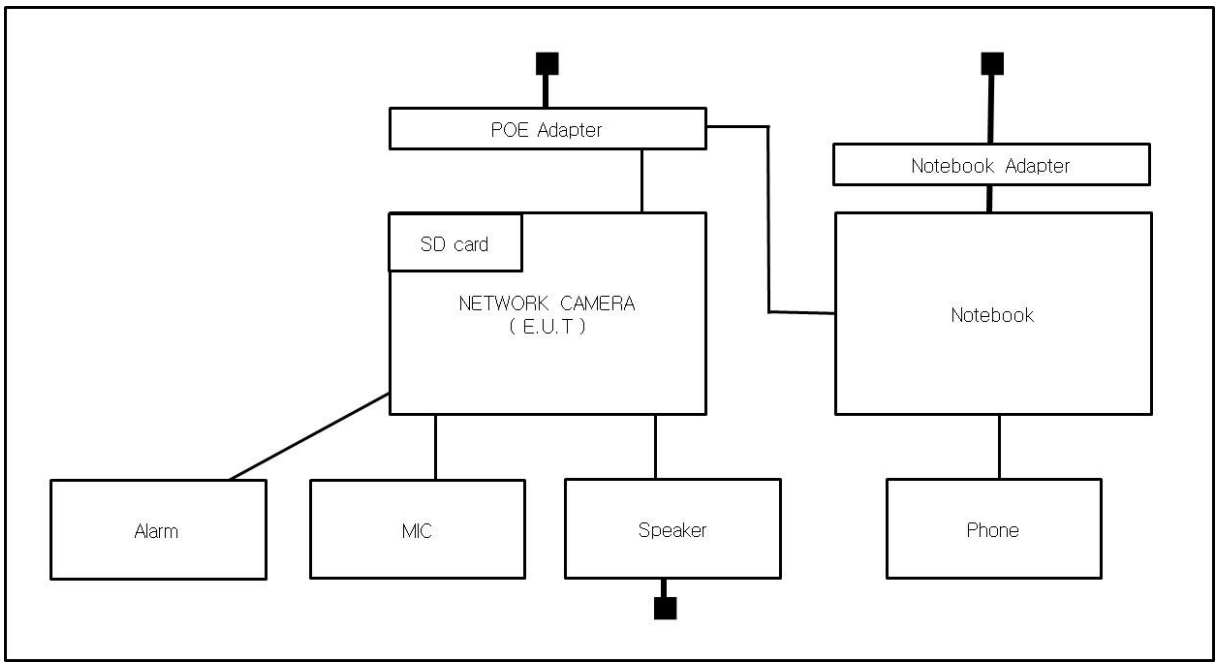
1.8 Configuration

■ AC Main
□ DC Main

- DC 12V 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, Yeoju-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	**RRA**	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
International	**KOLAS**	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KT489
USA	**FCC**	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	KR0100
Canada	**ISED**	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	23298
JAPAN	**VCCI**	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	C-20136, T-20137, R-20181, G-20176
Europe	**TÜV SÜD**	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	CARAT 001633 0004

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

☐ **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 C63.4a-2017 ☐ Class A ☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

- ☒ CAN/CSA-CISPR 32:27 ☒ Class A ☐ Class B
- ☐ ANSI C63.4a-2017 ☐ Class A ☐ Class B

☐ **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

2.1 Conducted Emissions Mains Power Ports

Test Date
Feb, 01, 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
☒	Electro wave Shieldroom	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions
Temperature: 24,7 ℃
Relative Humidity: 35,1 %

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.

2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Feb, 01, 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 Antenna	VULB9163	Schwarzbeck	714	11, 28, 2018
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions
Temperature: 2,2 ℃
Relative Humidity: 40,0 %

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.

2.3 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Feb, 01, 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: 24,7 ℃
Relative Humidity: 35,1 %

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.

APPENDIX A – TEST DATA

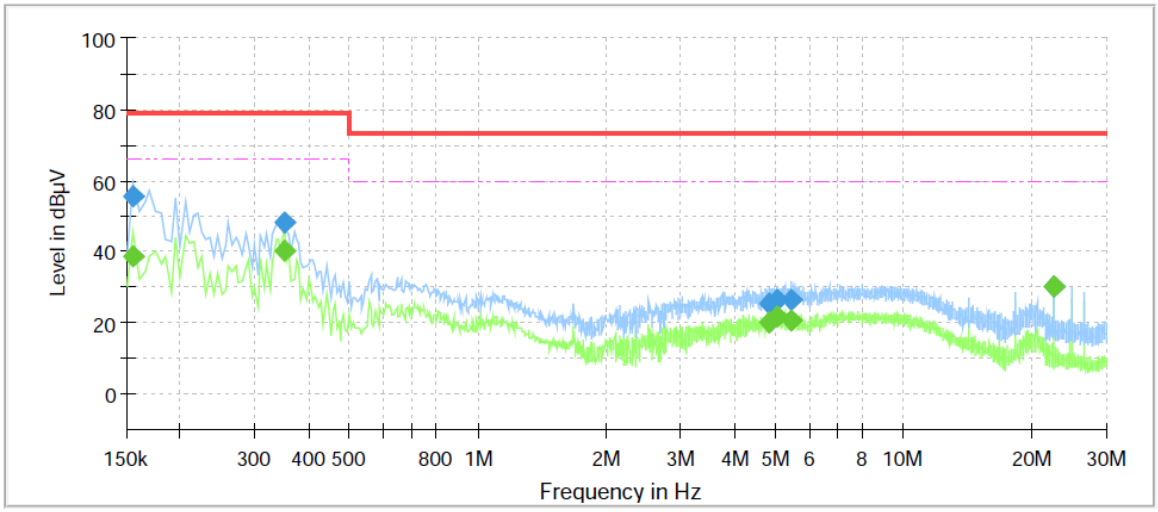
Conducted Emissions at Mains Power Ports

- DC 12V Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNO-6020R
Mode	DC 12 V_H
Operator Name:	KES



Final_Result

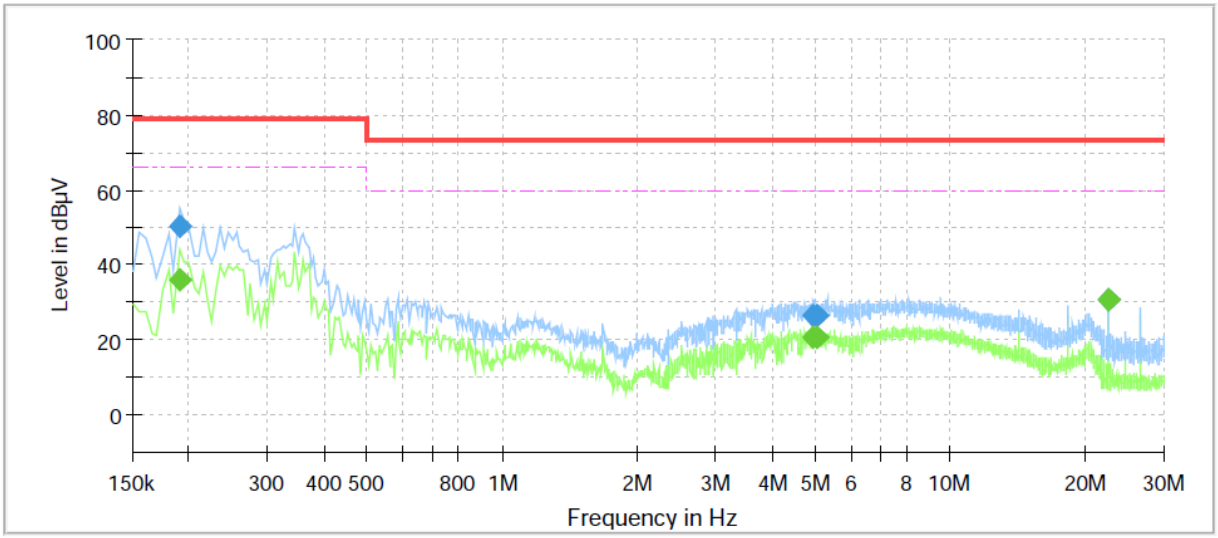
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	38.49	66.00	27.51	1000.0	9.000	L1	21.1
0.155000	55.81	---	79.00	23.19	1000.0	9.000	L1	21.1
0.350000	---	40.42	66.00	25.58	1000.0	9.000	L1	20.8
0.350000	48.15	---	79.00	30.85	1000.0	9.000	L1	20.8
4.840000	---	19.92	60.00	40.08	1000.0	9.000	L1	19.8
4.840000	25.36	---	73.00	47.64	1000.0	9.000	L1	19.8
5.040000	---	21.52	60.00	38.48	1000.0	9.000	L1	19.8
5.040000	26.68	---	73.00	46.32	1000.0	9.000	L1	19.8
5.460000	---	20.79	60.00	39.21	1000.0	9.000	L1	19.8
5.460000	26.31	---	73.00	46.69	1000.0	9.000	L1	19.8
22.530000	---	30.12	60.00	29.88	1000.0	9.000	L1	20.3
22.530000	30.40	---	73.00	42.60	1000.0	9.000	L1	20.3

♦ 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)

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	XNO-6020R
Mode	DC 12 V_N
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	---	35.81	66.00	30.19	1000.0	9.000	N	20.9
0.190000	50.29	---	79.00	28.71	1000.0	9.000	N	20.9
4.925000	---	20.61	60.00	39.39	1000.0	9.000	N	19.8
4.925000	26.39	---	73.00	46.61	1000.0	9.000	N	19.8
5.040000	---	20.92	60.00	39.08	1000.0	9.000	N	19.8
5.040000	26.27	---	73.00	46.73	1000.0	9.000	N	19.8
22.530000	---	30.48	60.00	29.52	1000.0	9.000	N	20.3
22.530000	30.71	---	73.00	42.29	1000.0	9.000	N	20.3

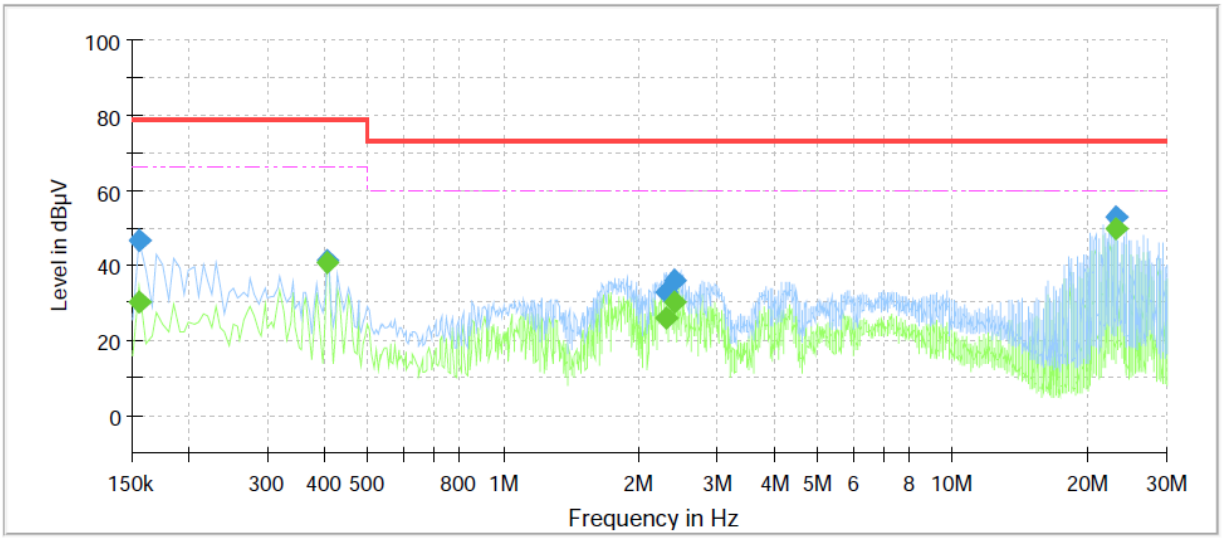
♦ Calculation
QuasiPeak[㏈uV] / CAverage [㏈uV] = Reading Value[㏈uV] + Corr. [㏈]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR+ Cable Loss)

- PoE Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNO-6020RN
Mode	PoE L1
Operator Name:	KES



Final_Result

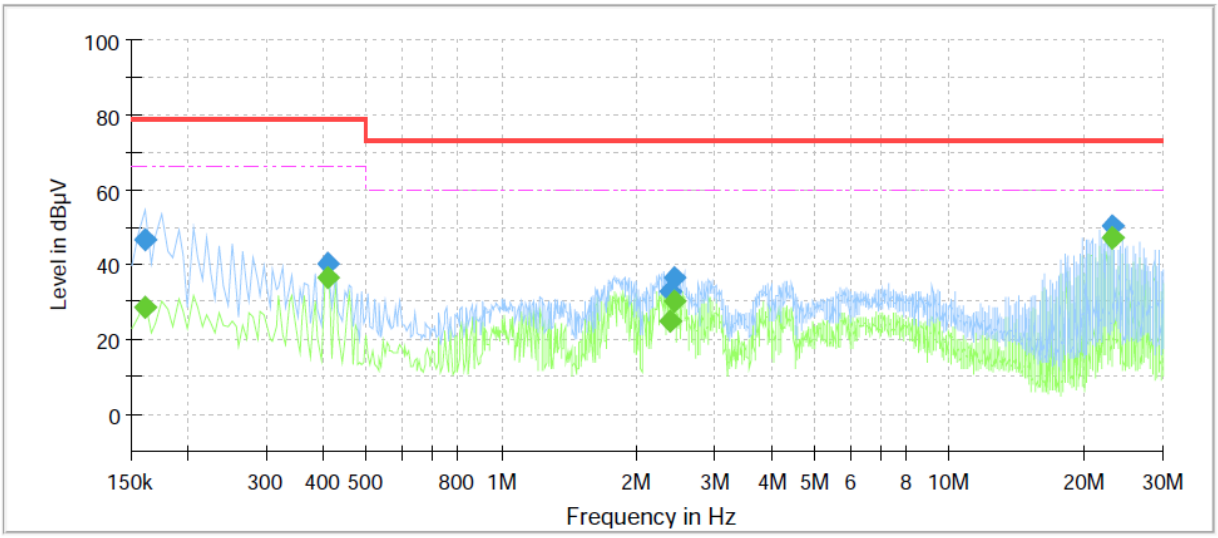
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	30.11	66.00	35.89	1000.0	9.000	L1	21.0
0.155000	46.43	---	79.00	32.57	1000.0	9.000	L1	21.0
0.405000	---	40.55	66.00	25.45	1000.0	9.000	L1	20.6
0.405000	41.55	---	79.00	37.45	1000.0	9.000	L1	20.6
2.310000	---	26.06	60.00	33.94	1000.0	9.000	L1	19.8
2.310000	32.71	---	73.00	40.29	1000.0	9.000	L1	19.8
2.405000	---	29.99	60.00	30.01	1000.0	9.000	L1	19.8
2.405000	36.16	---	73.00	36.84	1000.0	9.000	L1	19.8
23.130000	---	49.94	60.00	10.06	1000.0	9.000	L1	20.4
23.130000	52.96	---	73.00	20.04	1000.0	9.000	L1	20.4

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

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	XNO-6020RN
Mode	PoE N
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	28.56	66.00	37.44	1000.0	9.000	N	21.0
0.160000	46.51	---	79.00	32.49	1000.0	9.000	N	21.0
0.410000	---	36.66	66.00	29.34	1000.0	9.000	N	20.6
0.410000	40.03	---	79.00	38.97	1000.0	9.000	N	20.6
2.380000	---	25.05	60.00	34.95	1000.0	9.000	N	19.8
2.380000	32.85	---	73.00	40.15	1000.0	9.000	N	19.8
2.435000	---	29.96	60.00	30.04	1000.0	9.000	N	19.8
2.435000	36.44	---	73.00	36.56	1000.0	9.000	N	19.8
23.130000	---	46.87	60.00	13.13	1000.0	9.000	N	20.2
23.130000	50.36	---	73.00	22.64	1000.0	9.000	N	20.2

♦ 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)

Radiated Electric Field Emissions(Below 1 ㎓)

- DC 12V 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]
133.61	10.84	H	3.98	7.95	3.35	22.14	40.00	17.86
200.19	9.98	H	4.00	11.81	4.12	25.91	40.00	14.09
351.65	9.17	V	1.03	14.55	5.66	29.38	47.00	17.62
466.84	9.28	V	1.04	16.77	6.87	32.92	47.00	14.08
483.24	10.14	H	3.94	17.06	6.94	34.14	47.00	12.86
566.31	17.33	V	1.00	18.66	7.54	43.53	47.00	3.47
133.61	10.84	H	3.98	7.95	3.35	22.14	40.00	17.86
200.19	9.98	H	4.00	11.81	4.12	25.91	40.00	14.09

* 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

- PoE Mode

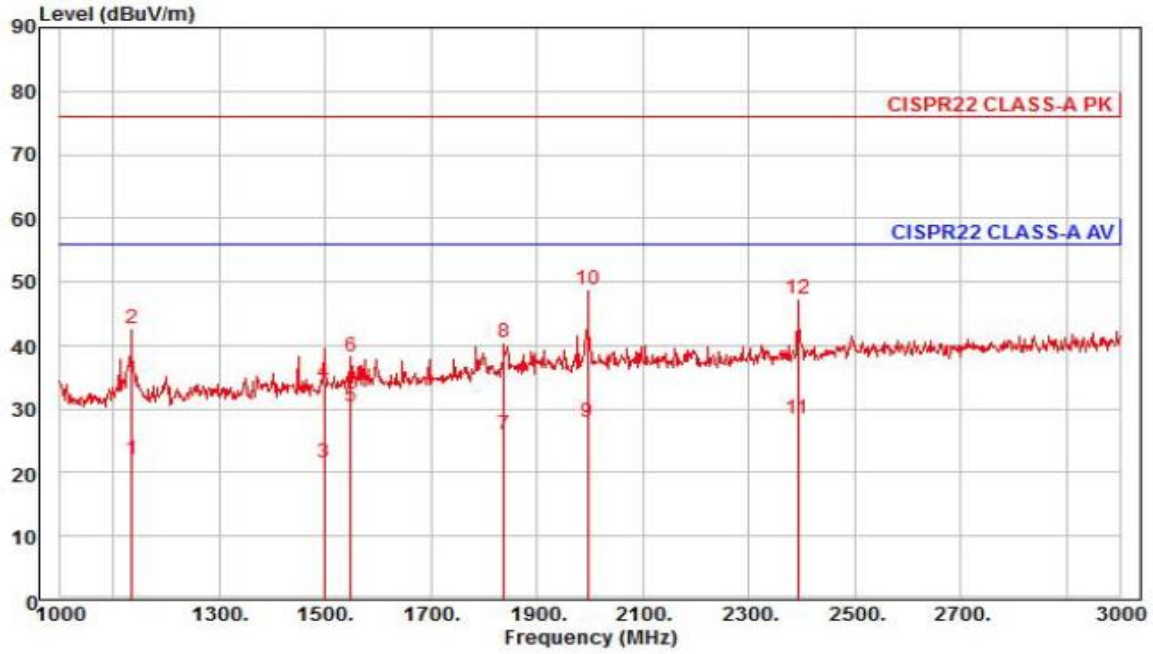
Frequency	Amplitude	ANT Polar. (H/V)	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[㎒]	[dBμV]		[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
241.84	9.74	V	1.03	12.38	4.62	26.74	47.00	20.26
330.27	8.86	H	3.99	14.08	5.45	28.39	47.00	18.61
467.94	8.73	H	3.96	16.79	6.87	32.39	47.00	14.61
566.33	17.59	V	1.01	18.66	7.54	43.79	47.00	3.21
615.19	9.34	H	3.95	19.37	7.93	36.64	47.00	10.36
859.64	9.14	V	1.04	22.00	9.77	40.91	47.00	6.09

* 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

Radiated Electric Field Emissions(Above 1 ㎓)

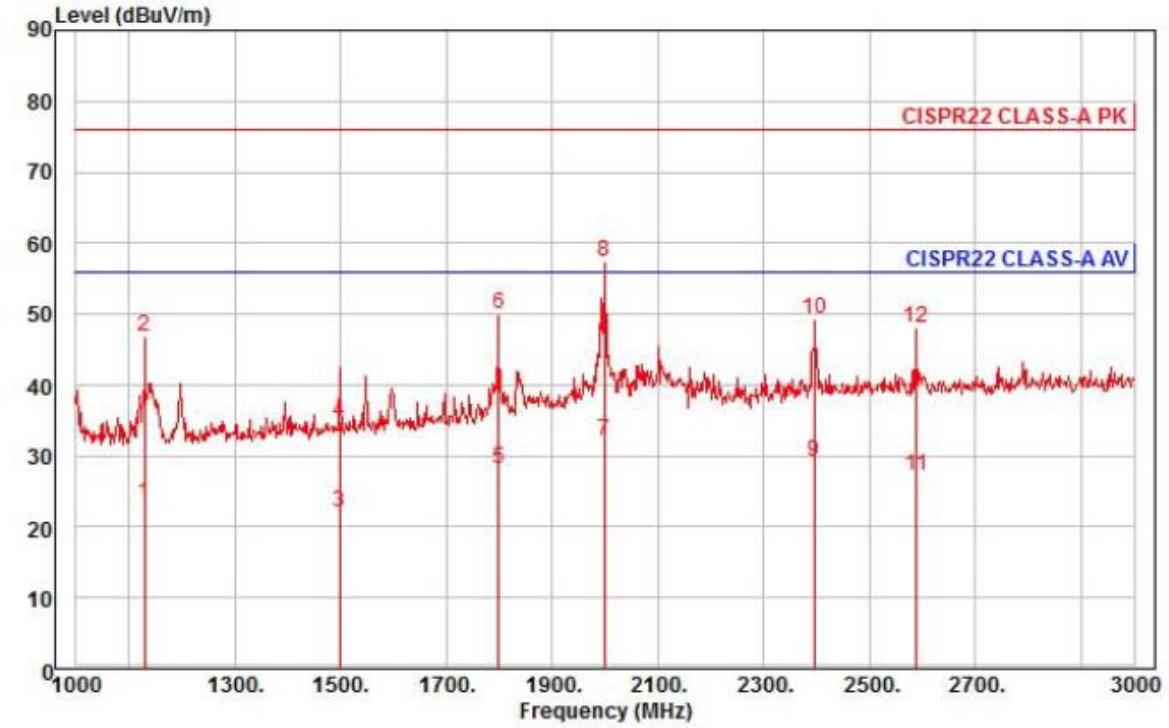
- DC 12V Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-6020RN
Mode : DC 12 V
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	1134.00	30.59	24.44	6.92	39.77	28	56.00	-33.82	horizontal	Average
2	1134.00	51.13	24.44	6.92	39.77	28	76.00	-33.28	horizontal	Peak
3	1498.00	26.87	25.89	8.01	39.18	315	56.00	-34.41	horizontal	Average
4	1498.00	39.45	25.89	8.01	39.18	315	76.00	-41.83	horizontal	Peak
5 pp	1548.00	35.47	26.09	8.16	39.20	297	56.00	-25.48	horizontal	Average
6	1548.00	43.28	26.09	8.16	39.20	297	76.00	-37.67	horizontal	Peak
7	1838.00	29.28	27.24	8.92	39.33	213	56.00	-29.89	horizontal	Average
8	1838.00	43.58	27.24	8.92	39.33	213	76.00	-35.59	horizontal	Peak
9	1996.00	30.24	27.86	9.33	39.41	26	56.00	-27.98	horizontal	Average
10 pk	1996.00	51.03	27.86	9.33	39.41	26	76.00	-27.19	horizontal	Peak
11	2392.00	28.74	28.84	10.30	39.42	54	56.00	-27.54	horizontal	Average
12	2392.00	47.65	28.84	10.30	39.42	54	76.00	-28.63	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



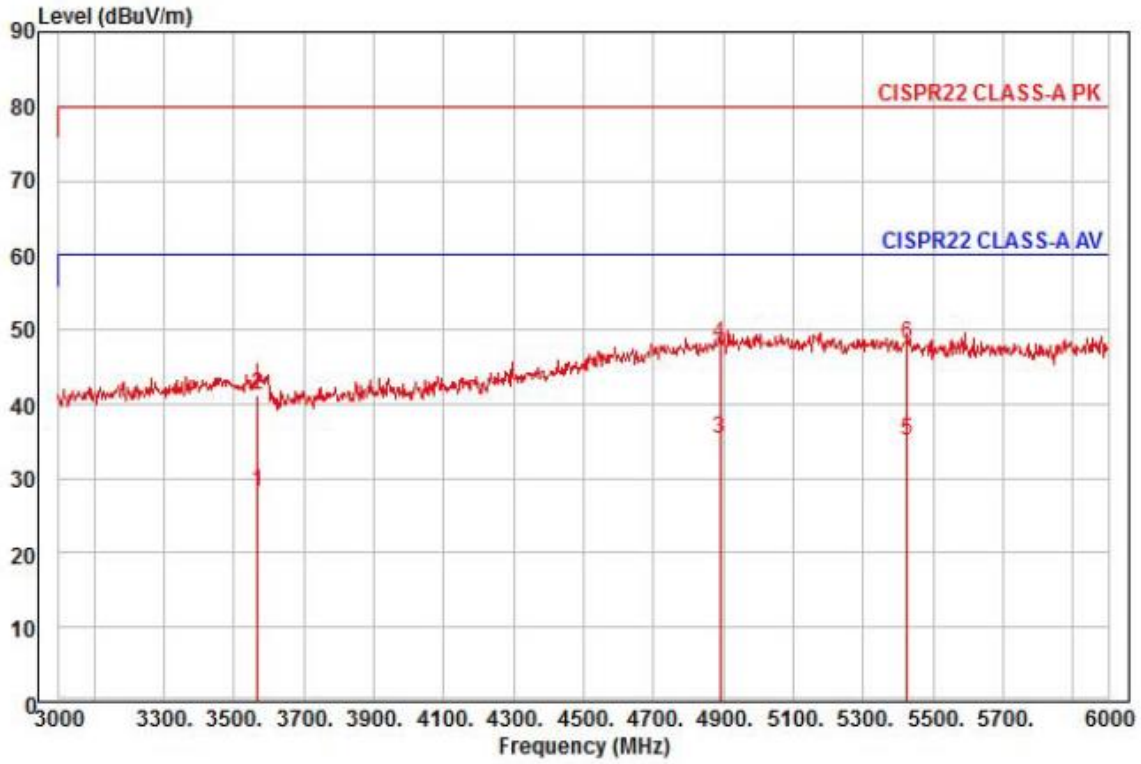
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-6020RN
Mode : DC 12 V
Memo : 1 ~ 3 GHz

	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	1130.00	31.78	24.43	6.91	39.78	111	56.00	-32.66	vertical	Average
2	1130.00	55.33	24.43	6.91	39.78	111	76.00	-29.11	vertical	Peak
3	1498.00	27.38	25.89	8.01	39.18	360	56.00	-33.90	vertical	Average
4	1498.00	40.10	25.89	8.01	39.18	360	76.00	-41.18	vertical	Peak
5	1800.00	31.51	27.09	8.83	39.32	85	56.00	-27.89	vertical	Average
6	1800.00	53.31	27.09	8.83	39.32	85	76.00	-26.09	vertical	Peak
7 av	2000.00	34.41	27.88	9.34	39.41	351	56.00	-23.78	vertical	Average
8 pp	2000.00	59.68	27.88	9.34	39.41	351	76.00	-18.51	vertical	Peak
9	2396.00	29.44	28.85	10.31	39.42	45	56.00	-26.82	vertical	Average
10	2396.00	49.45	28.85	10.31	39.42	45	76.00	-26.81	vertical	Peak
11	2588.00	26.76	29.32	10.72	39.64	156	56.00	-28.84	vertical	Average
12	2588.00	47.55	29.32	10.72	39.64	156	76.00	-28.05	vertical	Peak

♦ Calculation

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

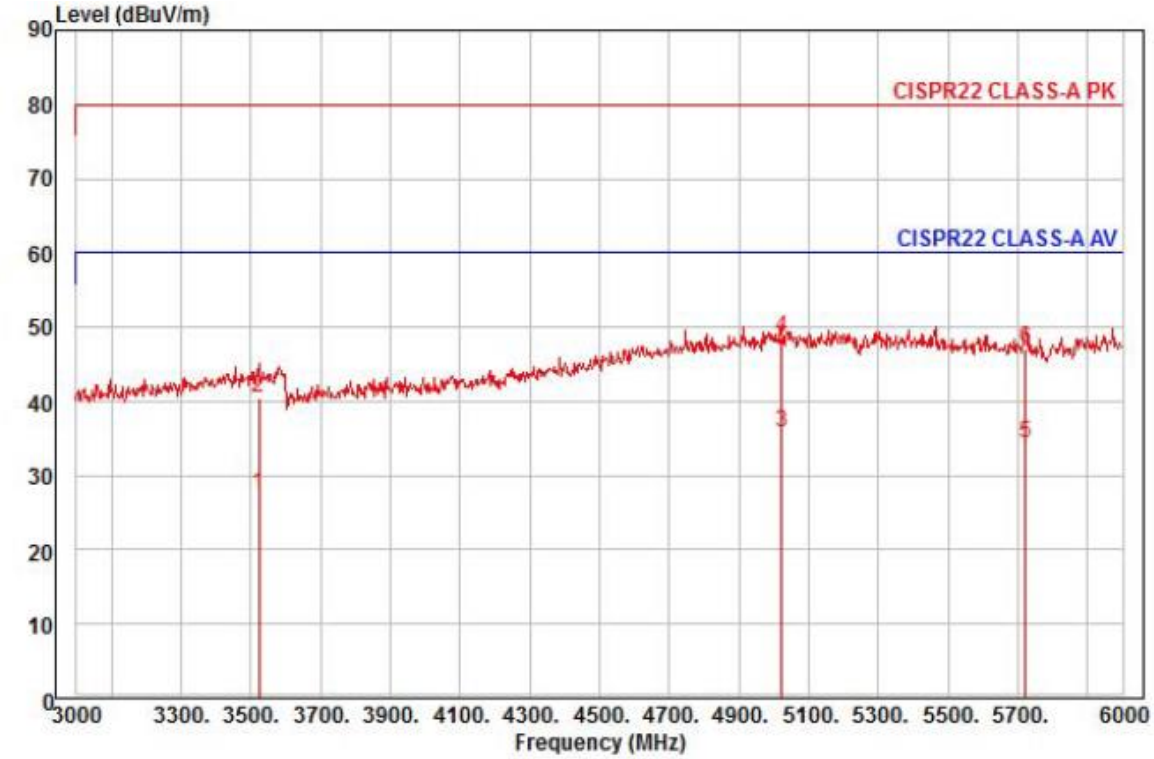
Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor, Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-6020RN
Mode : DC 12 V
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	3567.00	24.94	31.28	12.75	40.86	243	60.00	-31.89	horizontal	Average
2	3567.00	38.10	31.28	12.75	40.86	243	80.00	-38.73	horizontal	Peak
3 pp	4890.00	23.51	37.09	15.20	40.38	204	60.00	-24.58	horizontal	Average
4	4890.00	36.24	37.09	15.20	40.38	204	80.00	-31.85	horizontal	Peak
5	5424.00	23.21	36.86	16.07	40.97	144	60.00	-24.83	horizontal	Average
6 pk	5424.00	36.22	36.86	16.07	40.97	144	80.00	-31.82	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

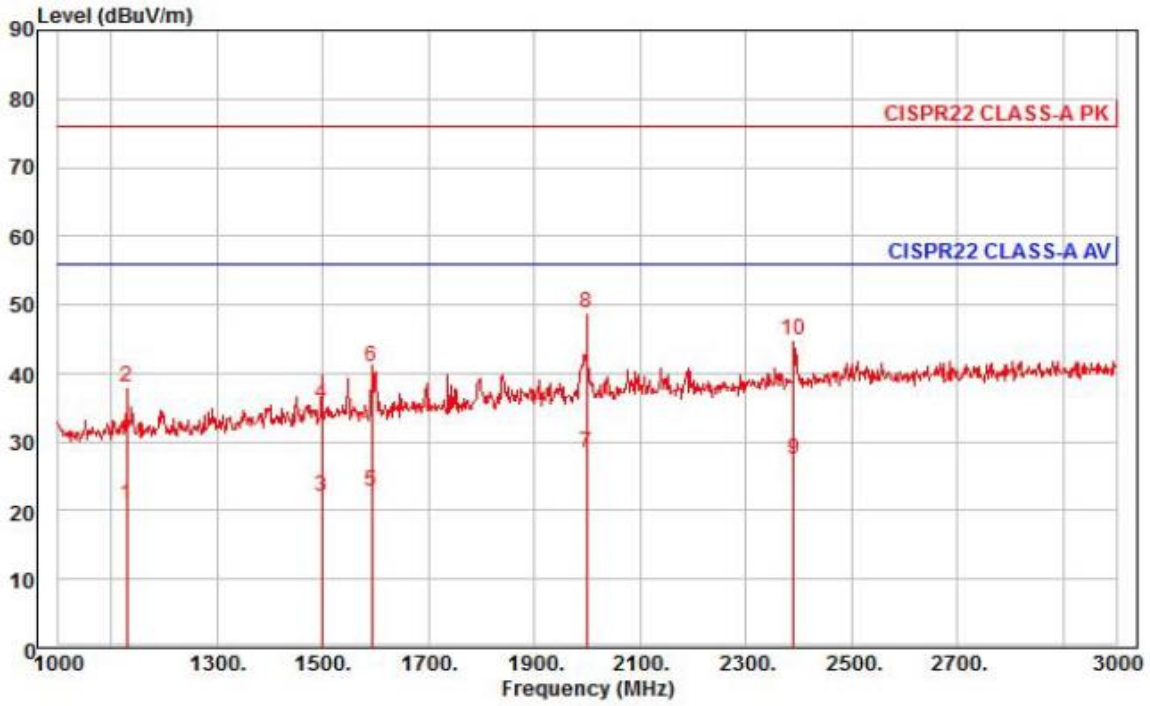


Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-6020RN
Mode : DC 12 V
Memo : 3 ~ 6 GHz

	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	3522.00	24.35	31.21	12.67	40.87	124	60.00	-32.64	vertical	Average
2	3522.00	37.34	31.21	12.67	40.87	124	80.00	-39.65	vertical	Peak
3 pp	5022.00	23.08	37.68	15.36	40.31	213	60.00	-24.19	vertical	Average
4 pk	5022.00	35.90	37.68	15.36	40.31	213	80.00	-31.37	vertical	Peak
5	5721.00	22.27	36.26	16.56	40.80	128	60.00	-25.71	vertical	Average
6	5721.00	35.07	36.26	16.56	40.80	128	80.00	-32.91	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

- PoE Mode

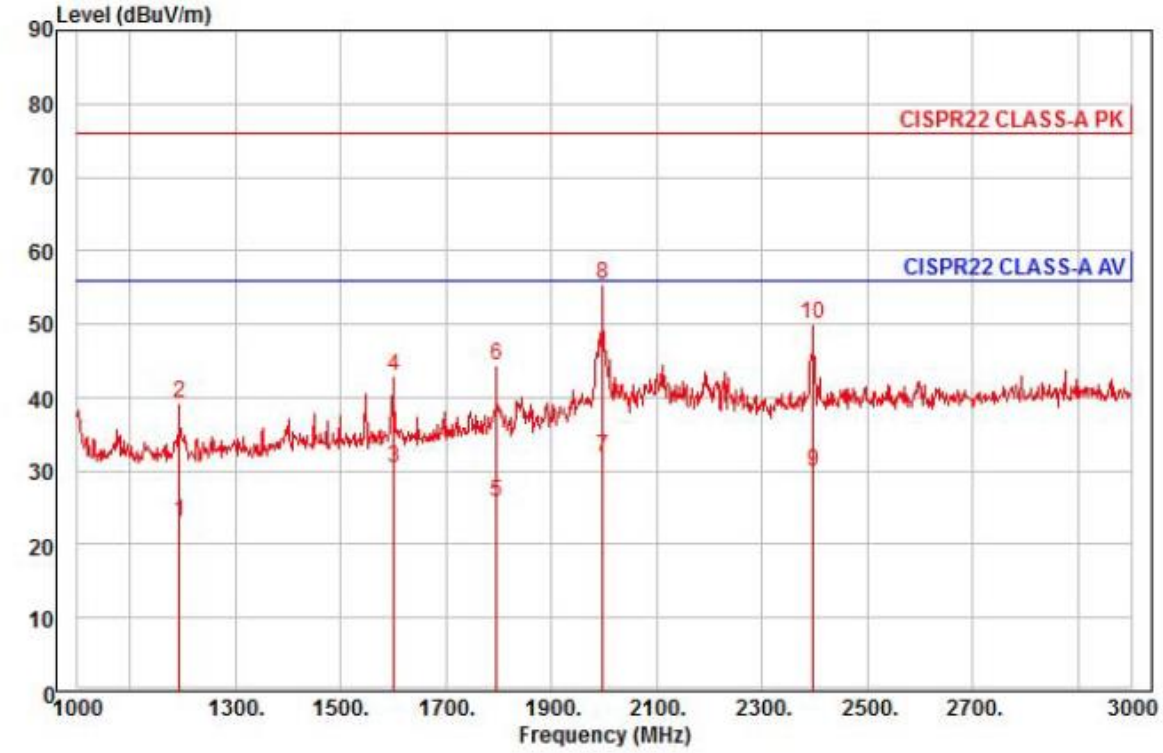


Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-6020RN
Mode : POE
Memo : 1 ~ 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1130.00	29.39	24.43	6.91	39.78	97	56.00	-35.05	horizontal	Average
2	1130.00	46.42	24.43	6.91	39.78	97	76.00	-38.02	horizontal	Peak
3	1498.00	27.23	25.89	8.01	39.18	232	56.00	-34.05	horizontal	Average
4	1498.00	40.75	25.89	8.01	39.18	232	76.00	-40.53	horizontal	Peak
5	1592.00	27.48	26.26	8.29	39.22	100	56.00	-33.19	horizontal	Average
6	1592.00	45.51	26.26	8.29	39.22	100	76.00	-35.16	horizontal	Peak
7 av	2000.00	30.56	27.88	9.34	39.41	173	56.00	-27.63	horizontal	Average
8 pp	2000.00	51.10	27.88	9.34	39.41	173	76.00	-27.09	horizontal	Peak
9	2390.00	27.64	28.84	10.30	39.42	139	56.00	-28.64	horizontal	Average
10	2390.00	45.26	28.84	10.30	39.42	139	76.00	-31.02	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



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-6020RN
Mode : POE
Memo : 1 ~ 3 GHz

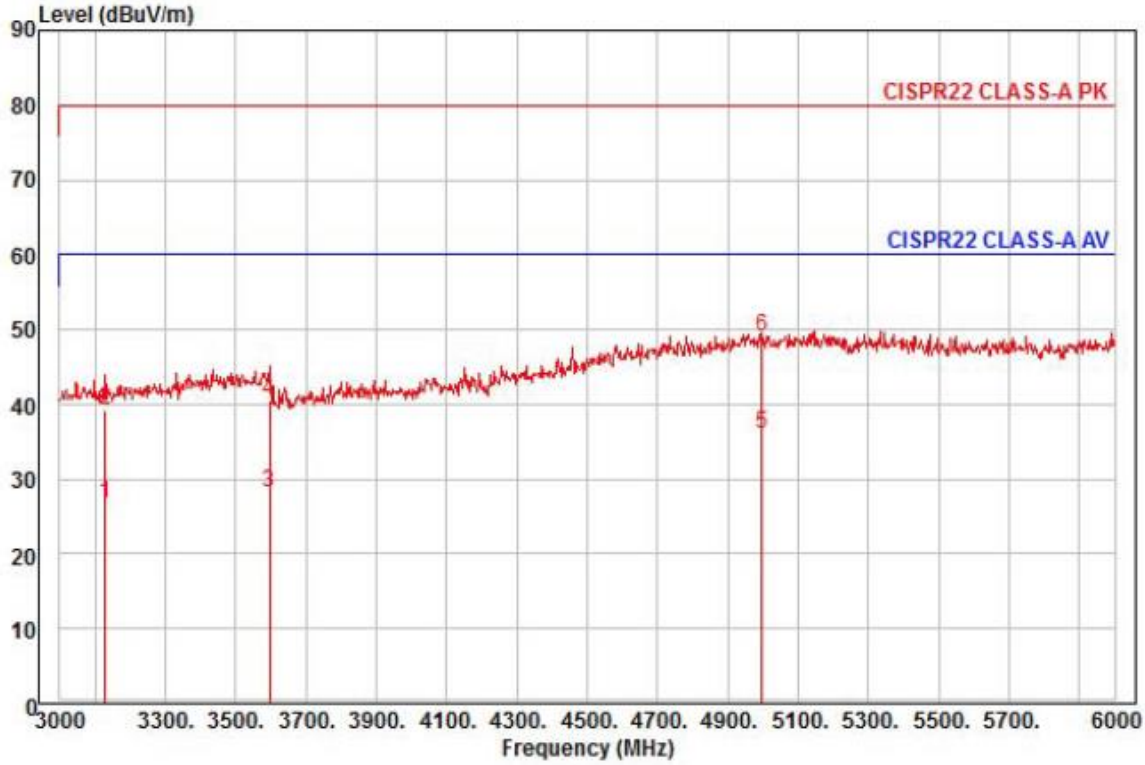
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1194.00	30.77	24.68	7.12	39.62	264	56.00	-33.05	vertical	Average
2	1194.00	47.02	24.68	7.12	39.62	264	76.00	-36.80	vertical	Peak
3	1600.00	34.95	26.29	8.31	39.22	315	56.00	-25.67	vertical	Average
4	1600.00	47.64	26.29	8.31	39.22	315	76.00	-32.98	vertical	Peak
5	1796.00	29.28	27.07	8.82	39.31	9	56.00	-30.14	vertical	Average
6	1796.00	47.80	27.07	8.82	39.31	9	76.00	-31.62	vertical	Peak
7 av	1998.00	34.15	27.87	9.33	39.41	9	56.00	-24.06	vertical	Average
8 pp	1998.00	57.72	27.87	9.33	39.41	9	76.00	-20.49	vertical	Peak
9	2398.00	30.24	28.86	10.32	39.42	52	56.00	-26.00	vertical	Average
10	2398.00	50.31	28.86	10.32	39.42	52	76.00	-25.93	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




```
Site      : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
          : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project   :
Model     : XNO-6020RN
Mode      : POE
Memo      : 3 ~ 6 GHz
```

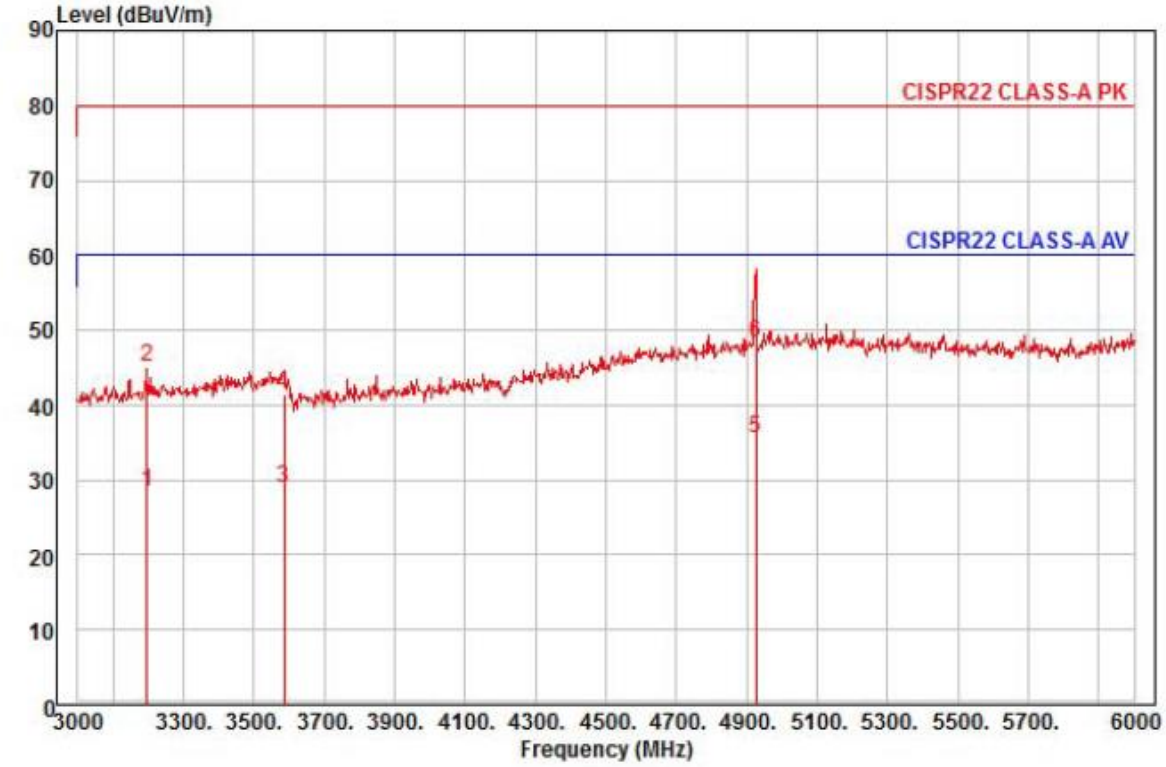
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3129.00	24.44	30.55	11.93	40.31	360	60.00	-33.39	horizontal	Average
2	3129.00	37.04	30.55	11.93	40.31	360	80.00	-40.79	horizontal	Peak
3	3597.00	24.85	31.33	12.80	40.85	7	60.00	-31.87	horizontal	Average
4	3597.00	37.29	31.33	12.80	40.85	7	80.00	-39.43	horizontal	Peak
5 pp	4998.00	23.32	37.71	15.31	40.27	167	60.00	-23.93	horizontal	Average
6 pk	4998.00	36.26	37.71	15.31	40.27	167	80.00	-30.99	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



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

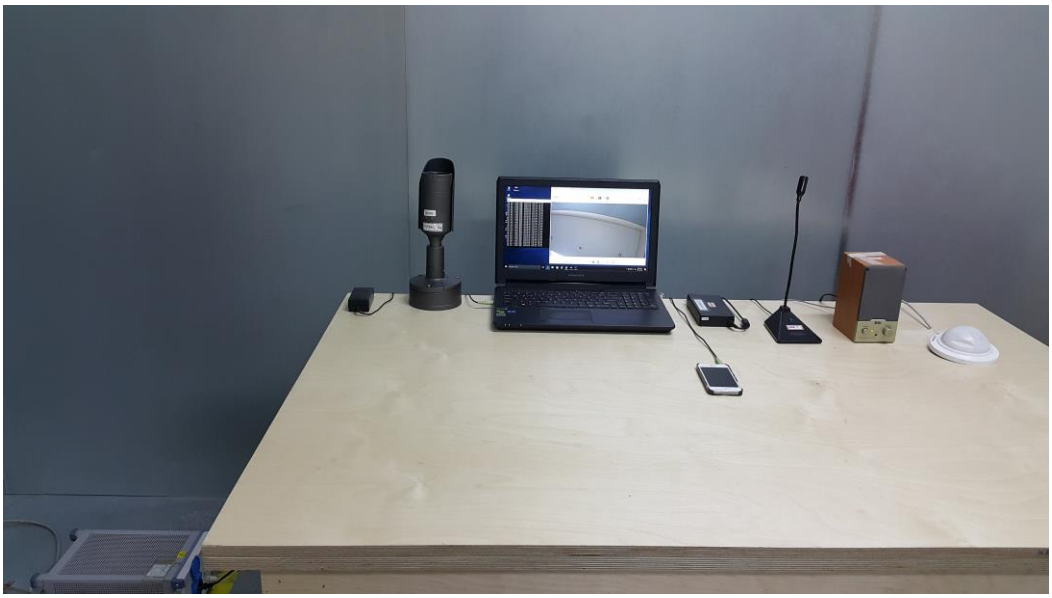
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3198.00	26.25	30.66	12.05	40.41	223	60.00	-31.45	vertical	Average
2	3198.00	42.89	30.66	12.05	40.41	223	80.00	-34.81	vertical	Peak
3	3585.00	25.63	31.31	12.78	40.85	294	60.00	-31.13	vertical	Average
4	3585.00	38.28	31.31	12.78	40.85	294	80.00	-38.48	vertical	Peak
5 pp	4926.00	23.29	37.30	15.24	40.34	201	60.00	-24.51	vertical	Average
6 pk	4926.00	36.20	37.30	15.24	40.34	201	80.00	-31.60	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

Test Setup Photos and Configuration
Conducted Voltage Emissions

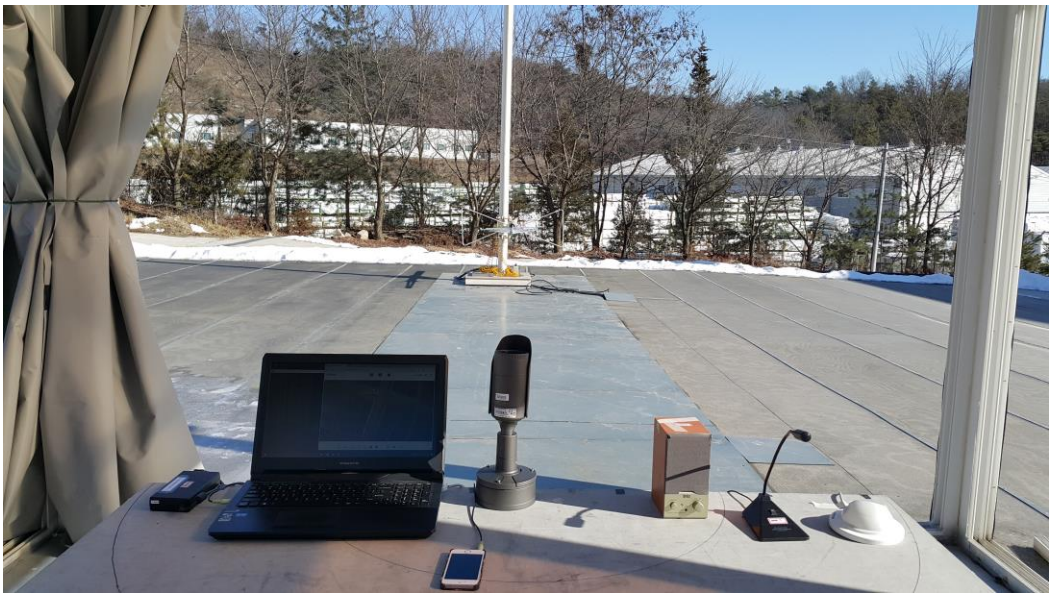
- DC 12V Mode



- PoE Mode

Radiated Electric Field Emissions(Below 1 ㎓)

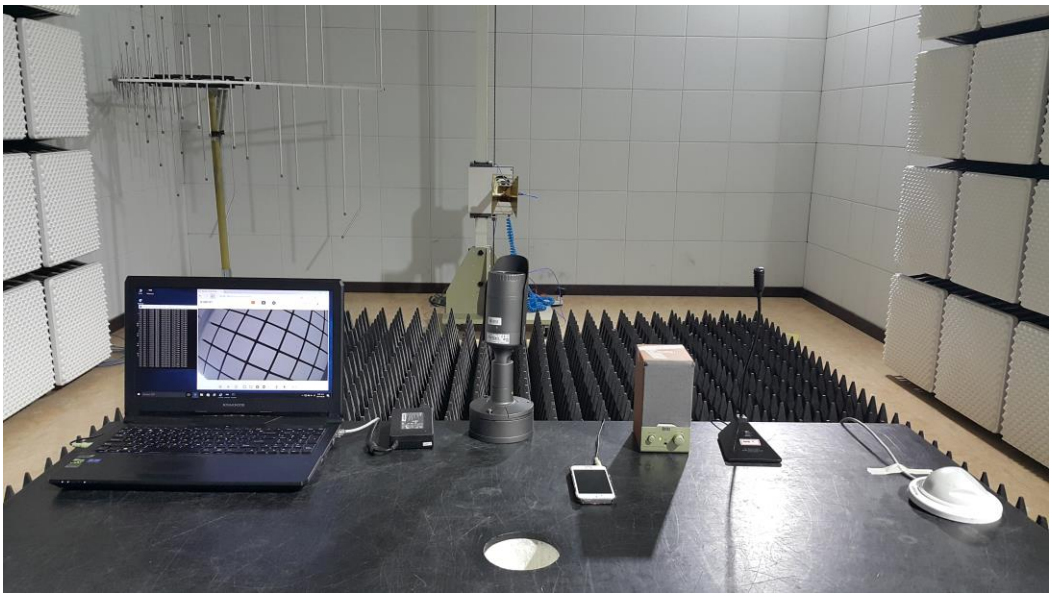
- DC 12V Mode



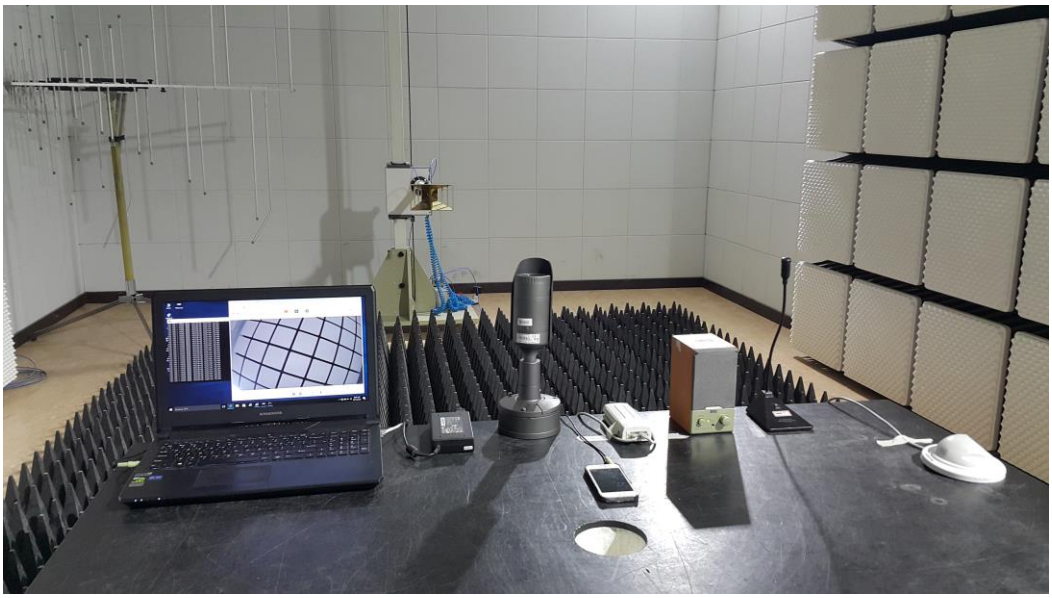
- PoE Mode

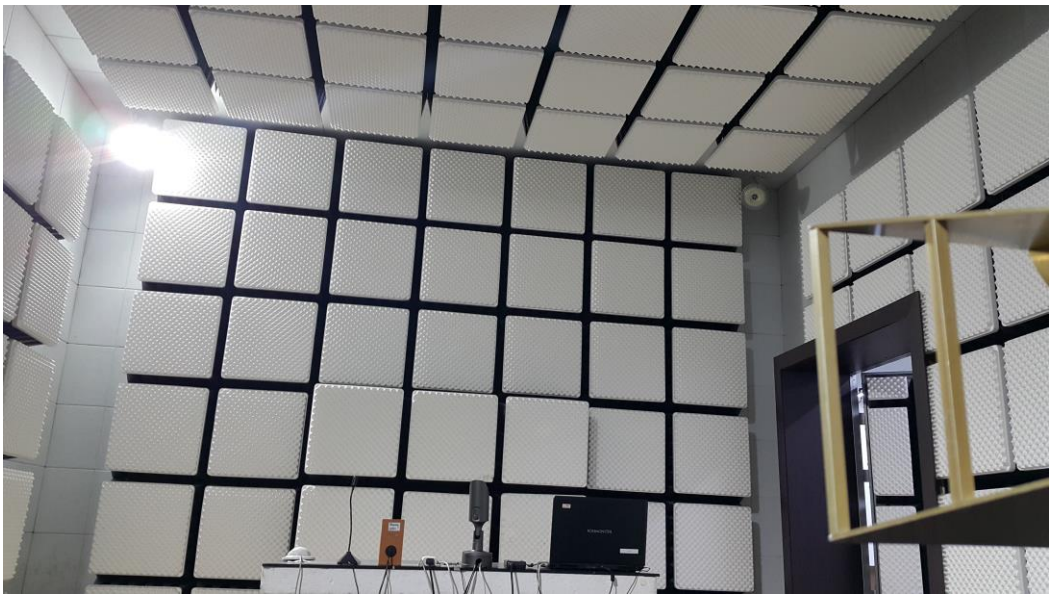
Radiated Electric Field Emissions(Above 1 ㎓)

- DC 12V Mode



- PoE Mode





EUT External Photographs

(Top)

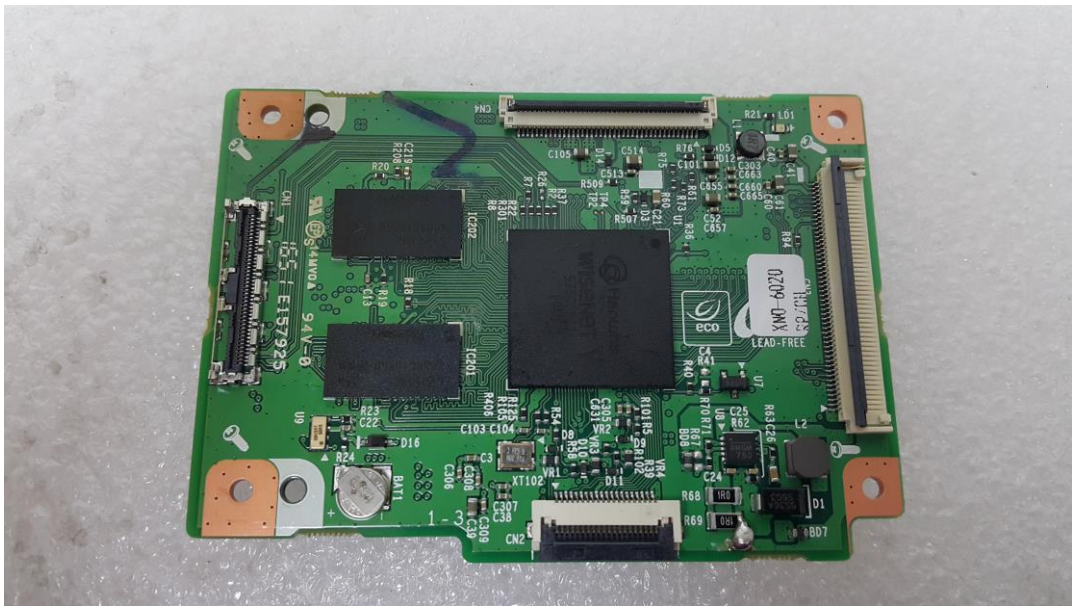
(Bottom)

EUT Internal Photographs

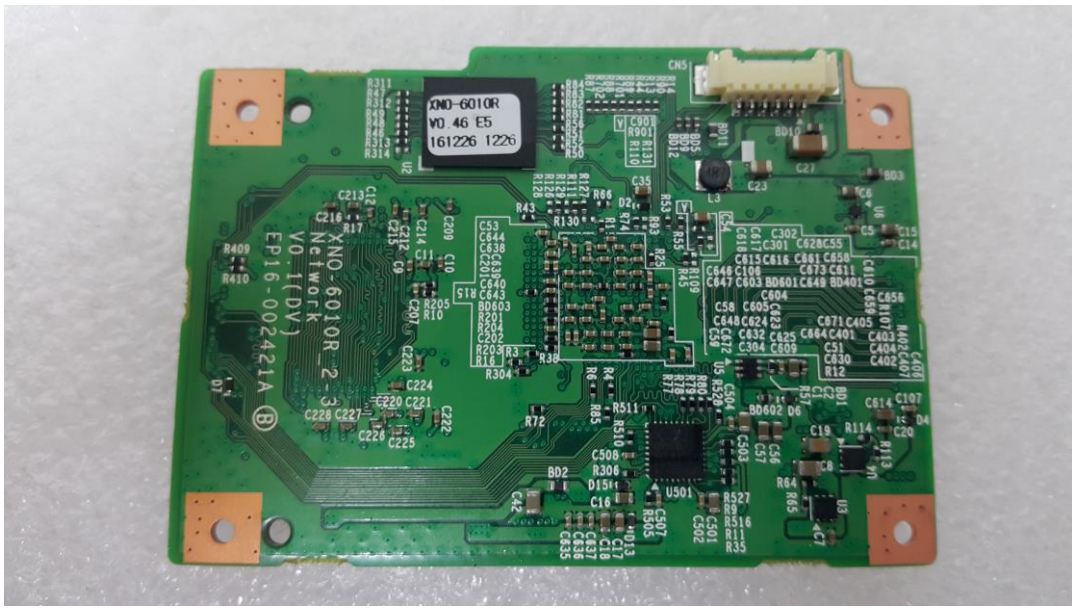
(Internal View)

EUT Internal View – Main Board

(Top)



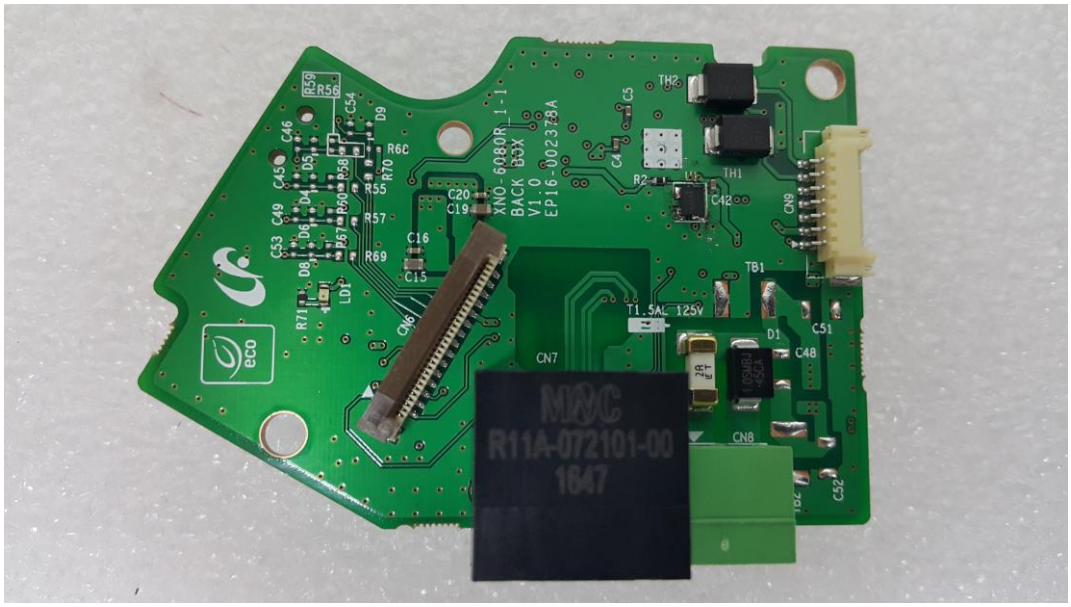
(Bottom)



EUT Internal View – Sub Board 1

(Top)

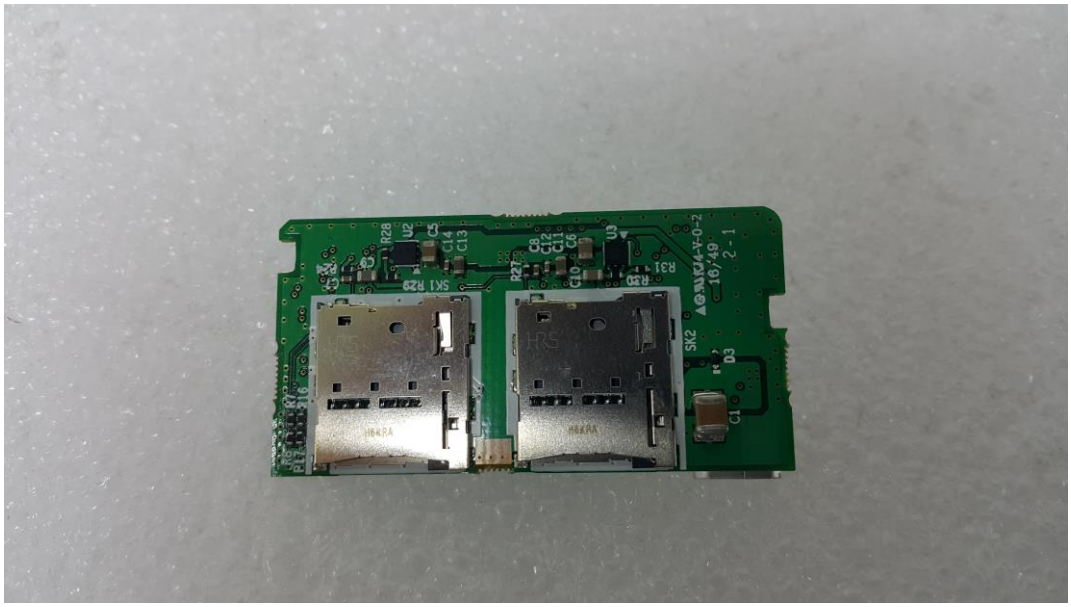
(Bottom)



EUT Internal View – Sub Board 2

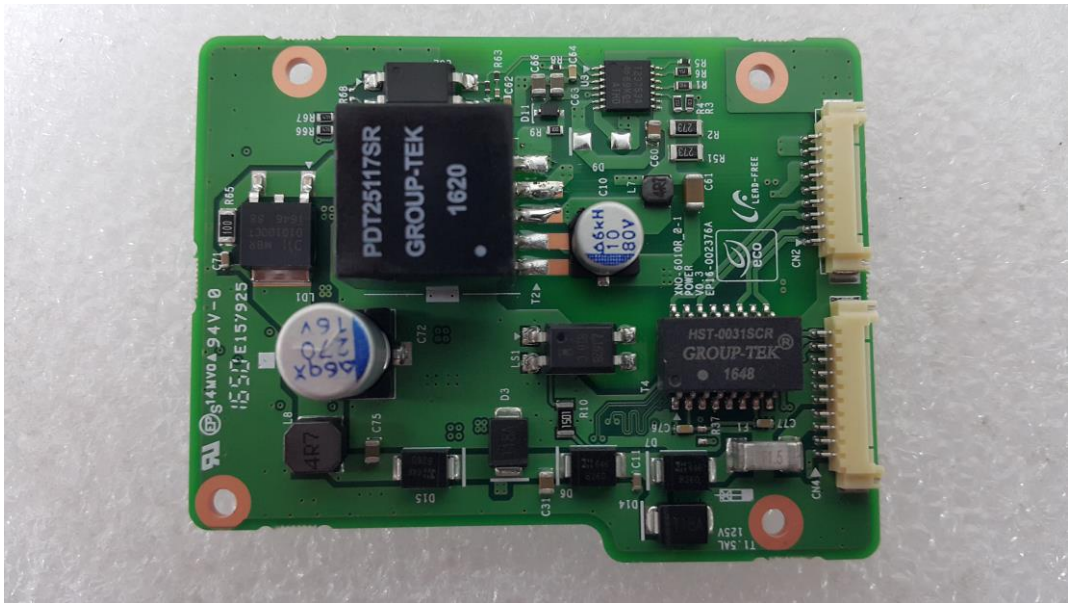
(Top)

(Bottom)

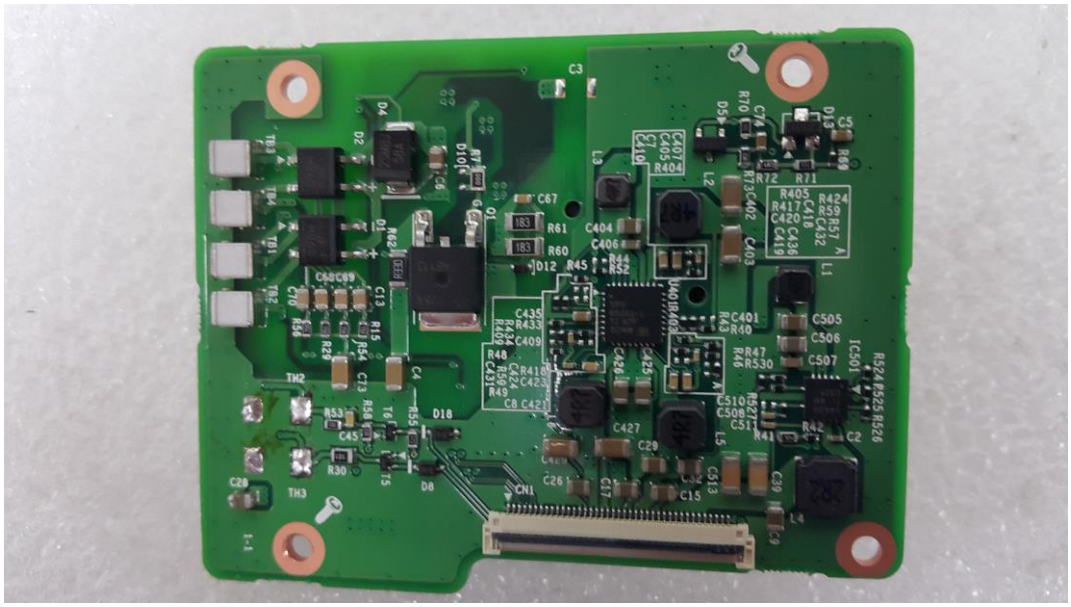


EUT Internal View – Sub Board 3

(Top)

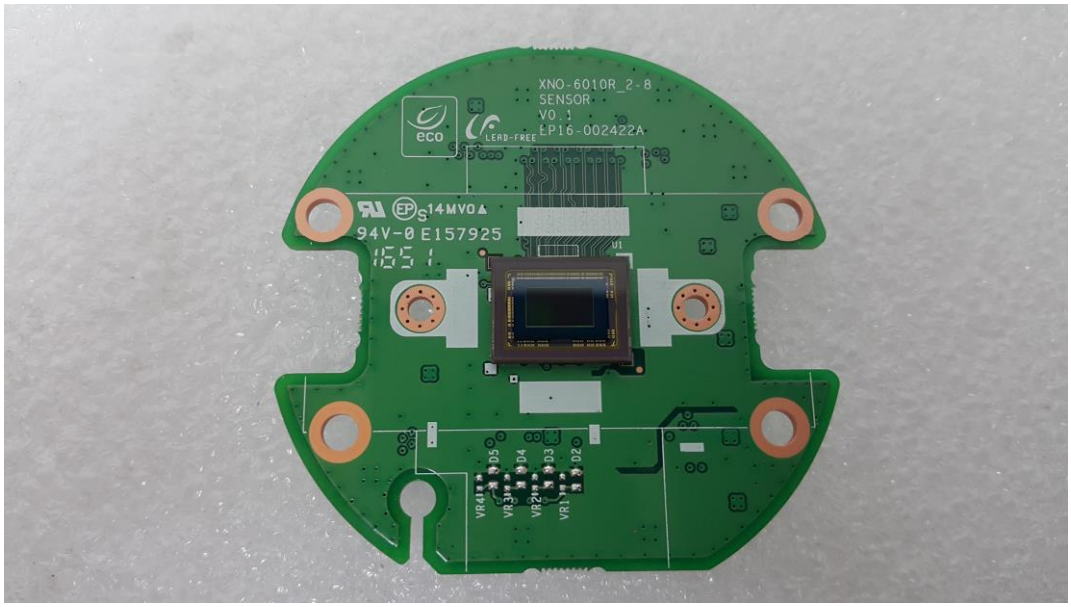


(Bottom)

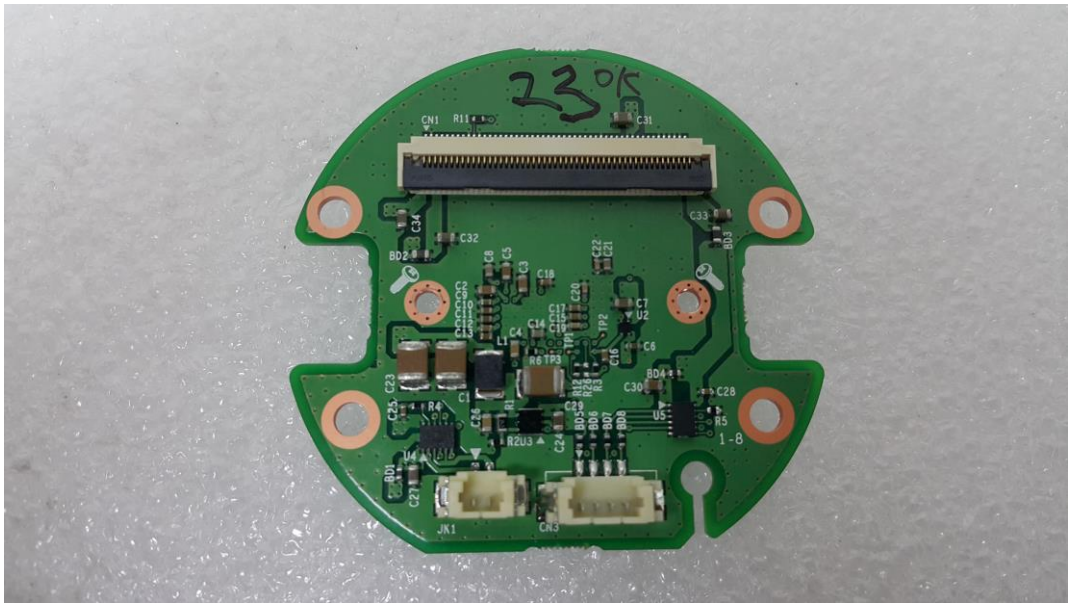


EUT Internal View – Lens Board

(Top)

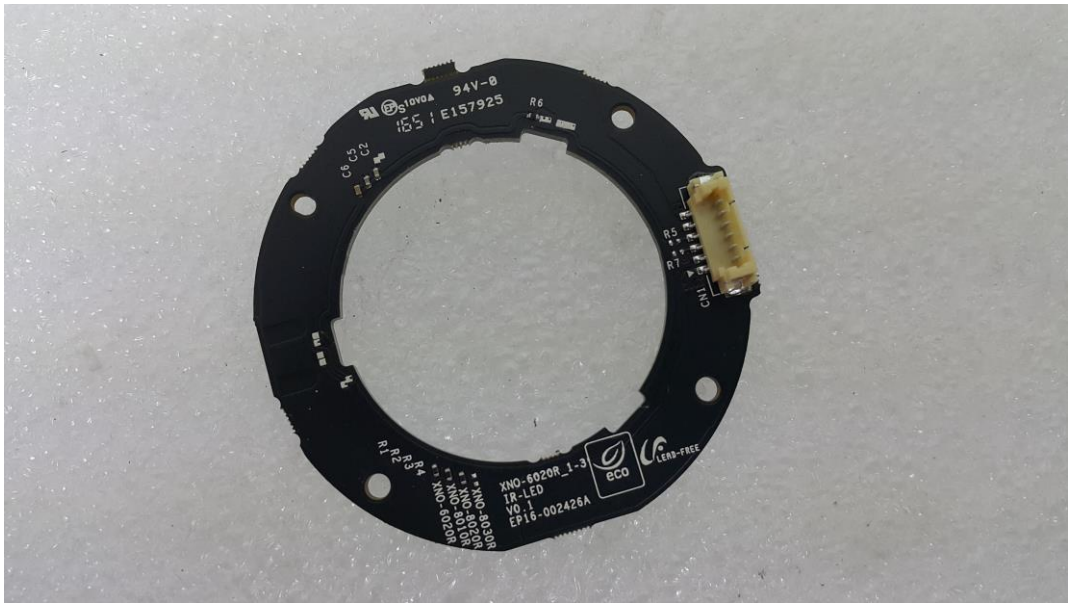


(Bottom)

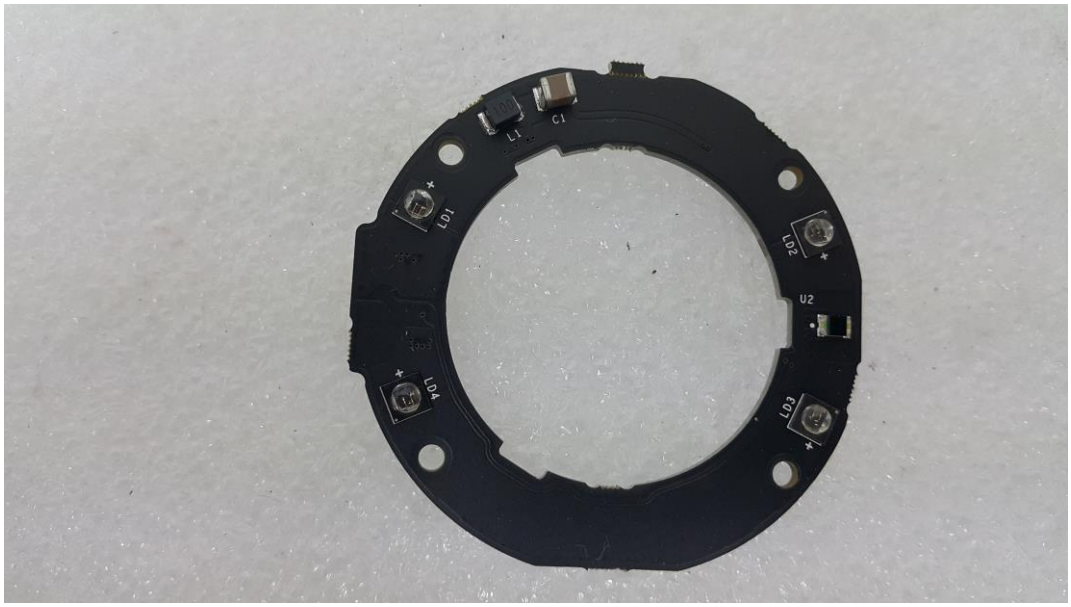


EUT Internal View – LED Board

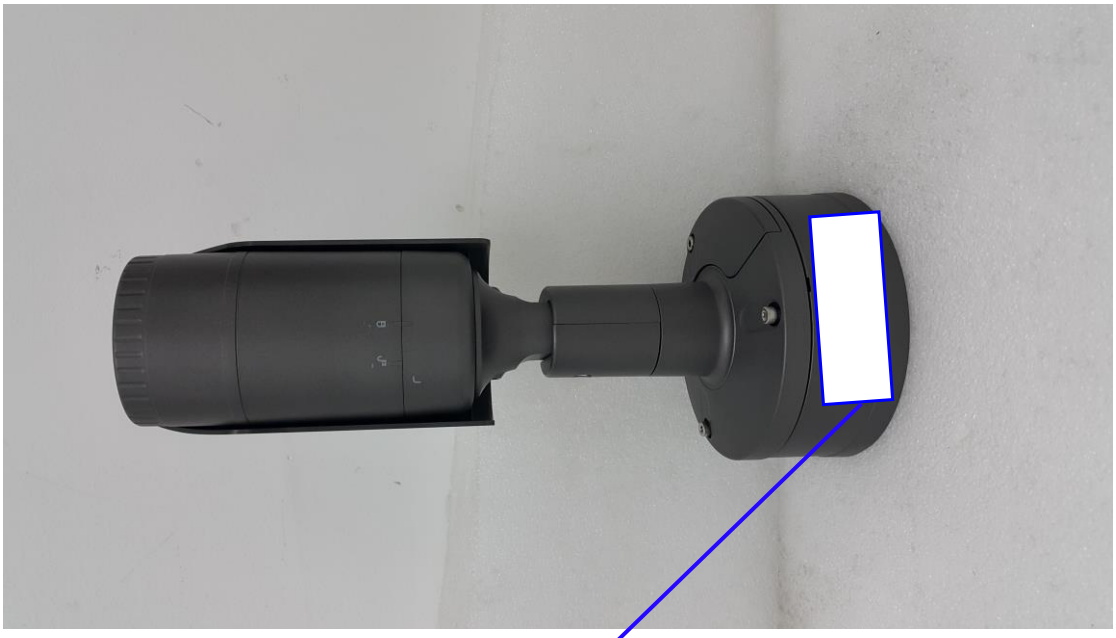
(Top)



(Bottom)



Label Photographs



CAN ICES-3 (A)/NMB-3(A)

[LABEL VIEW]