



# TEST REPORT



Report No. : KES-EM-22T0084-R2

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**KES Co., Ltd.**

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Gyeonggi-do, 14057, Korea

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## 1. Client

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,  
Gyeonggi-do, Republic of Korea

## 2. Sample Description

Product name : NETWORK CAMERA

Model/Type No. : XNP-6120H

Variant Model : XNP-6120HW

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)

3. Equipment authorization : Supplier's Declaration of Conformity

4. Date of Receipt : Dec. 14, 2023

5. Test date : Jan. 05, 2022 ~ Jan. 06, 2022

6. Date of Issue : Jan. 08, 2024

7. Test Results : In Compliance

Tested by

Reviewed by

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Min Seong, Kim  
EMC Test Engineer

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Dong-Hun, Jang  
EMC Technical Manager

Tested by Ki Man, Kim  
(Retries person)  
Proxy signature : Min Seong, Kim

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

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website ([www.kes.co.kr](http://www.kes.co.kr)).



## REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 19, 2022	KES-EM-22T0084	Issued
Feb. 24, 2023	KES-EM-22T0084-R1	Change the Applicant and manufacturer at the request of the customer
Jan. 08, 2024	KES-EM-22T0084-R2	Reissuance due to the addition of a derivative

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## 1.0 General Product Description

### Main Specifications of EUT are:

VIDEO	
Imaging Device	1/2.8" 2.16M CMOS
Total Pixels	1,945(H) x 1,109(V), 2.16M
Effective Pixels	1,945(H) x 1,097(V), 2.13M
Scanning System	Progressive
Min. Illumination	Color : 0.03 Lux (F1.6, 1/30sec), B/W : 0.003 Lux (F1.6, 1/30sec)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vpp / 75Ω composite, 720 x 480(N), 720 x 576(P), for Installation USB : Micro USB Type B, 1280 x 720 for Installation
LENS	
Focal Length (Zoom Ratio)	5.2 ~ 62.4mm (Optical 12X)
Max. Aperture Ratio	F1.6 (Wide) ~ F3.0 (Tele)
Angular Field of View	H : 54.58° (Wide) ~ 5.30° (Tele) / V : 32.19° (Wide) ~ 3.00° (Tele)
Min. Object Distance	1.5m (4.92ft) (Wide), 2.1m (6.89ft) (Tele)
Focus Control	Auto / Manual / One shot AF
Lens / Mount Type	DC Auto Iris / Board-in Type
PAN/TILT/ROTATE	
Pan / Tilt Range	360° Endless / 190° (-5° ~ 185°)
Pan Speed	Preset : 350°/sec, Manual : 0.024°/sec ~ 200°/sec
Tilt Speed	Preset : 350°/sec, Manual : 0.024°/sec ~ 200°/sec
Sequence / Preset Accuracy	Preset (300 ea), Swing, Group (6 ea), Trace, Tour (1 ea), Auto Run, Schedule / ±0.2°
Azimuth	Yes (E / W / S / N / NE / NW / SE / SW)
Auto Tracking	Support
OPERATIONAL	
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 / Schedule
Backlight Compensation	Off / BLC / HLC / WDR
Wide Dynamic Range	150dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNRV (2D + 3D Noise filter) (Off / On)
Digital Image Stabilization	Off / On (Built-in Gyro)
Defog	Auto / Manual / Off
Motion Detection	Off / On (8ea, Polygonal)
Privacy Masking	Off / On (24 Zones of Rectangle zone) - Color : Grey / Green / Red / Blue / Black / White - Zoom ratio option for mask mode - Mosaic option
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (included Mercury & Sodium)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital Zoom	32x
Flip / Mirror	Off / On
Video & Audio Analytics	Tampering, Loitering, Directional Detection, Fog Detection, Virtual Line, Enter/Exit, (Dis) Appear, Audio Detection, Face Detection, Motion Detection Sound Classification
Serial Interface	RS-485 - Samsung-T/E, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell
Alarm I/O	Input 1ea / Output 1ea (Relay type)
Alarm Triggers	Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect
Alarm Events	File upload via FTP and E-Mail, Notification via E-Mail, TCP and HTTP, local storage (SD/SDHC/SDXC) or NAS recording at Alarm Triggers, External output, Preset
Pixel Counter	Support



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<b>NETWORK</b>	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265 / H.264 (MPEG-4 part 10/AVC), Motion JPEG
Resolution	1920 x 1080, 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 240
Max. Framerate	H.265 / H.264 : Max 60fps at all resolutions, Motion JPEG : Max. 30fps at all resolutions
Smart Codec	Manual mode (Area-Based : 5ea)
WiseStreamII	Support
Video Quality Adjustment	H.265 / H.264 / MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.265 / H.264 : CBR or VBR, Motion JPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
Audio In	Selectable (Mic IN / Line IN) Supply voltage : 2.5VDC (4mA), Input impedance: approx. 2K Ohm
Audio Out	Line out (3.5mm mono jack), Max output level : 1 Vrms
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 16KHz
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 Method	Unicast / Multicast
Max. User Access	20 users at Unicast Mode
Edge Storage	Micro 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 Interface	ONVIE profile S/G, SUNAPI 2.0 (HTTP API), Wisenet Open Platform
Webpage Language	English, French, German, Spanish, Italian, Chinese, Russian, Japanese, Swedish, Portuguese, Turkish, Polish, Czech, Dutch, Hungary, Greek
Web Viewer	Supported OS : Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12 Plug-in Free Webviewer - Supported Browser : Google Chrome, MS Edge, Mozilla Firefox (Window 64bit only), Apple Safari 10 (Mac OS X only) Plug-in Webviewer - Supported Browser : MS Explore 11, Apple Safari 10 (Mac OS X only)
Central Management Software	SmartViewer, SSM
<b>ENVIRONMENTAL</b>	
Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP66
Vandal Resistance	IK10
<b>ELECTRICAL</b>	
Input Voltage / Current	12V DC, PoE
Power Consumption	12W
<b>MECHANICAL</b>	
Color / Material	Ivory / Aluminum
Dimensions (WxH)	Ø168.0 x 161.5mm (Ø6.61" x 6.36")
Weight	1.9 kg (4.19 lb)



## 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.

- ☒ AC 120 V, 60 Hz (DC Adapter Input Power)
- ☒ AC 120 V, 60 Hz (PoE Adapter Input Power)

## 1.2 Variant Model Differences

Simple color change

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNP-6120H	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT



## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adaptor	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
PoE Adaptor	PT-PSE106GBR-AH-S	-	Dongguan PROCET Network Technology Co., Ltd	-
Notebook	HSN-Q07C	5CD8367KND	HP	-
Notebook Adaptor	HSTNN-CA40	WFTKU0ERLB4QC H	HP	-
Smartphone	LG-SU760	108KPQJ0186212	LG	-
Headset	K550	-	Britz®	-
Alarm1	-	-	-	-
Alarm2	-	-	-	-
Controller	SPC-1010	-	SamSung Techwin Co.,Ltd.	-
Controller Adaptor	AP-12005A	-	A-power.	-
Micro SD Card1	-	-	SanDisk	-
Micro SD Card2	-	-	SanDisk	-



## 1.6 External I/O Cabling

### ■ DC Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	2 Pin	Adaptor	2 Pin	1.2	U
	RJ-45	Notebook	RJ-45	3.0	U
	3.5 mm	Headset	3.5 mm	1.7	U
	3.5 mm		3.5 mm	1.7	U
	RS-485	Controller	RS-485	3.0	U
	SLOT	Micro SD Card1	SLOT	-	-
	SLOT	Micro SD Card2	SLOT	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
Notebook	DC Jack	Notebook Adaptor	DC Jack	1.2	U
	3.5 mm	Smartphone	3.5 mm	1.0	U
Controller	DC Jack	Controller Adaptor	DC Jack	1.6	U

\* Unshielded=U, Shielded=S





## ■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	PoE Adaptor	RJ-45 (PoE)	3.0	U
	3.5 mm	Headset	3.5 mm	1.7	U
	3.5 mm		3.5 mm	1.7	U
	RS-485	Controller	RS-485	3.0	U
	SLOT	Micro SD Card1	SLOT	-	-
	SLOT	Micro SD Card2	SLOT	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
Notebook	DC Jack	Notebook Adaptor	DC Jack	1.2	U
	3.5 mm	Smartphone	3.5 mm	1.0	U
	RJ-45 (LAN)	PoE Adaptor	RJ-45 (LAN)	3.0	U
Controller	DC Jack	Controller Adaptor	DC Jack	1.6	U

\* Unshielded=U, Shielded=S

## 1.7 EUT Operating Mode(s)

Test Mode	operating
DC Mode	- EUT Monitoring, Ping Test - After the test, the Micro SD Card was checked to see if it was recorded normally.
PoE Mode	

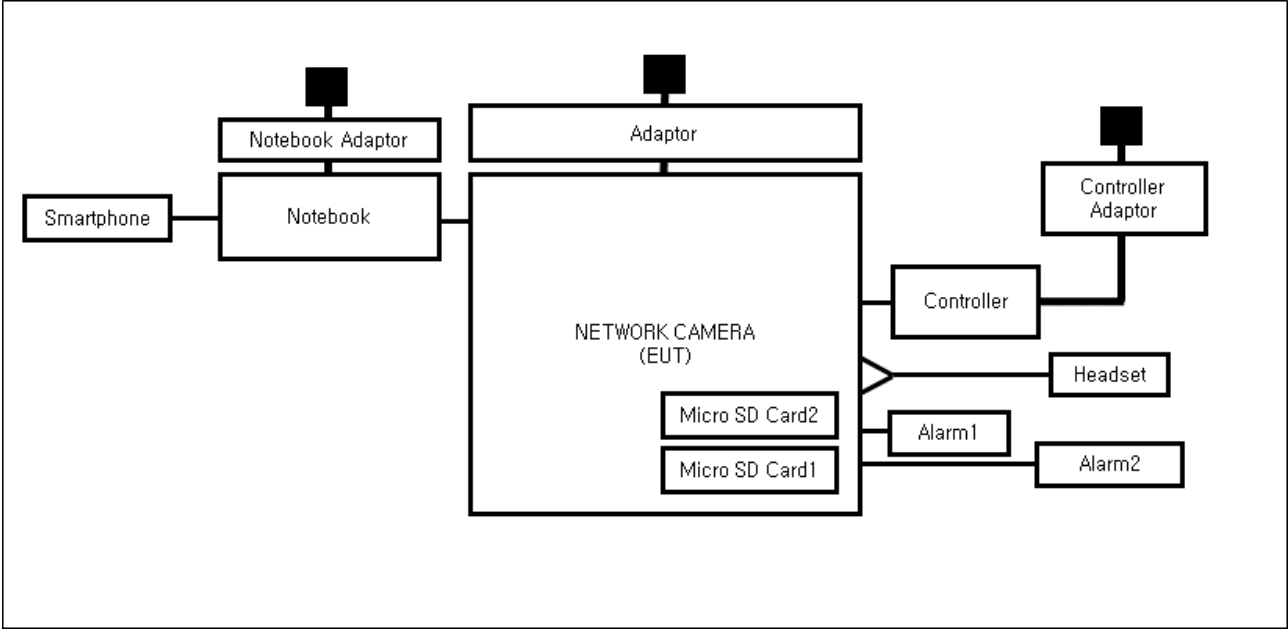
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd



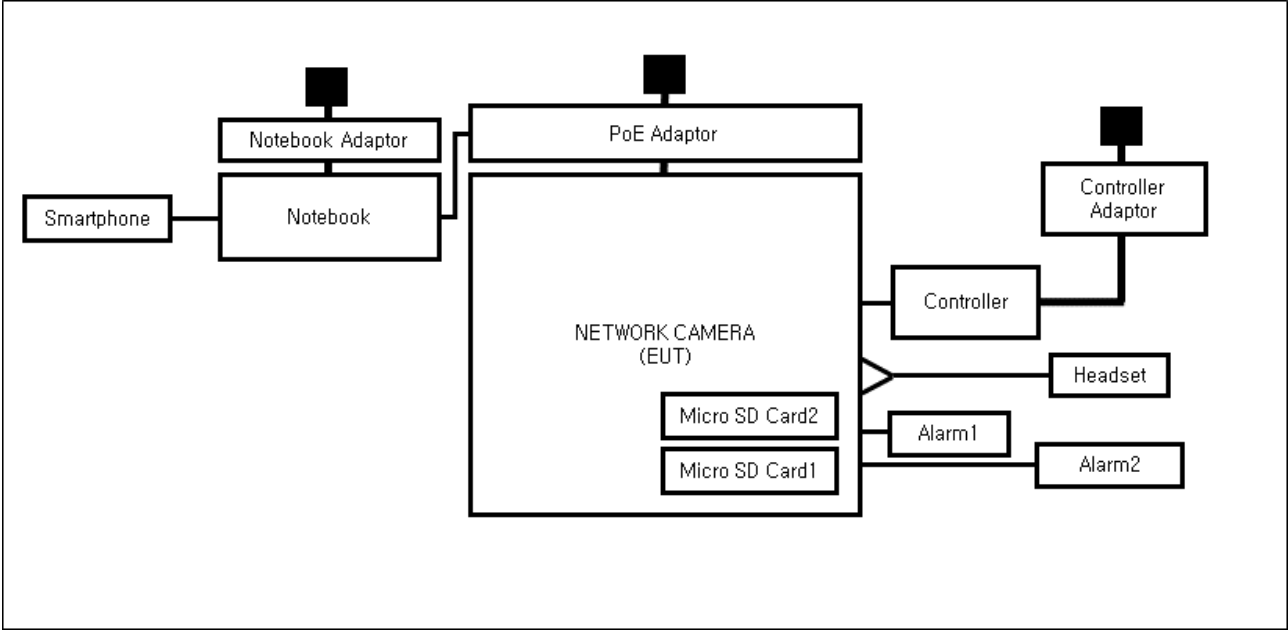
1.8 Configuration

■ AC Main  
□ DC Main

■ DC Mode



■ PoE Mode



**1.9 Remarks when standards applied**

USB, VIDEO port is not tested because it is an unused port.





**1.10 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.

**1.11 Test Facility**

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-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

**1.12 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:

☒ **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 32:17

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B





## 2.1 Conducted Emissions at Mains Power Ports

**Test Date**

Jan. 05, 2022

**Test Location**

Electro wave Shieldroom #6

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 27, 2022
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

**Test Conditions**

Temperature: (23,1 ± 0,2) °C

Relative Humidity: (44,0 ± 0,3) % R.H.

**Frequency Range of Measurement**

150 kHz to 30 MHz

**Instrument Settings**

IF Band Width: 9 kHz

**Test Results**

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

**Remarks**See Appendix A for test data.



## 2.2 Radiated Electric Field Emissions(Below 1 GHz)

**Test Date**

Jan. 05, 2022

**Test Location**☐ OPEN AREA TEST SITE #2☒ SEMI ANECHOIC CHAMBER #4(10m)**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2022
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 10, 2022

**Test Conditions**

Temperature: (23,0 ± 0,2) °C

Relative Humidity: (43,1 ± 0,3) % R.H.

**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.



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

**Test Date**

Jan. 06, 2022

**Test Location**

SEMI ANECHOIC CHAMBER #5

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.120	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	04, 01, 2022
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 16, 2022
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	HP	3008A00538	06, 21, 2022

**Test Conditions**

Temperature: (22,1 ± 0,3) °C

Relative Humidity: (43,1 ± 0,4) % R.H.

**Frequency Range of Measurement**

1 GHz to 5 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

■ DC Mode

HOT LINE

### Common Information

Test Description:

Conducted Emission

Model No.:

XNP-6120H

Phase:

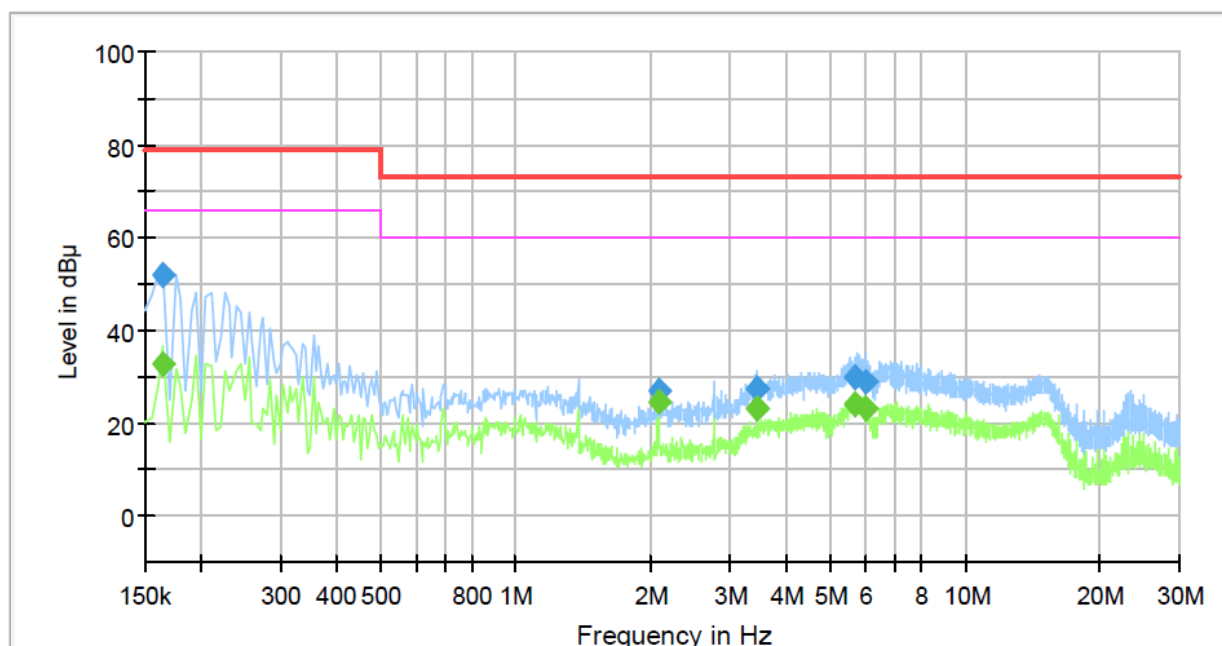
L1

Mode:

DC

Operator Name:

KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	32.93	66.00	33.07	1000.0	9.000	L1	19.5
0.165000	51.84	---	79.00	27.16	1000.0	9.000	L1	19.5
2.075000	---	24.59	60.00	35.41	1000.0	9.000	L1	20.3
2.075000	26.79	---	73.00	46.21	1000.0	9.000	L1	20.3
3.455000	---	23.19	60.00	36.81	1000.0	9.000	L1	20.1
3.455000	27.52	---	73.00	45.48	1000.0	9.000	L1	20.1
5.710000	---	24.34	60.00	35.66	1000.0	9.000	L1	19.6
5.710000	29.98	---	73.00	43.02	1000.0	9.000	L1	19.6
6.020000	---	22.97	60.00	37.03	1000.0	9.000	L1	19.5
6.020000	28.71	---	73.00	44.29	1000.0	9.000	L1	19.5

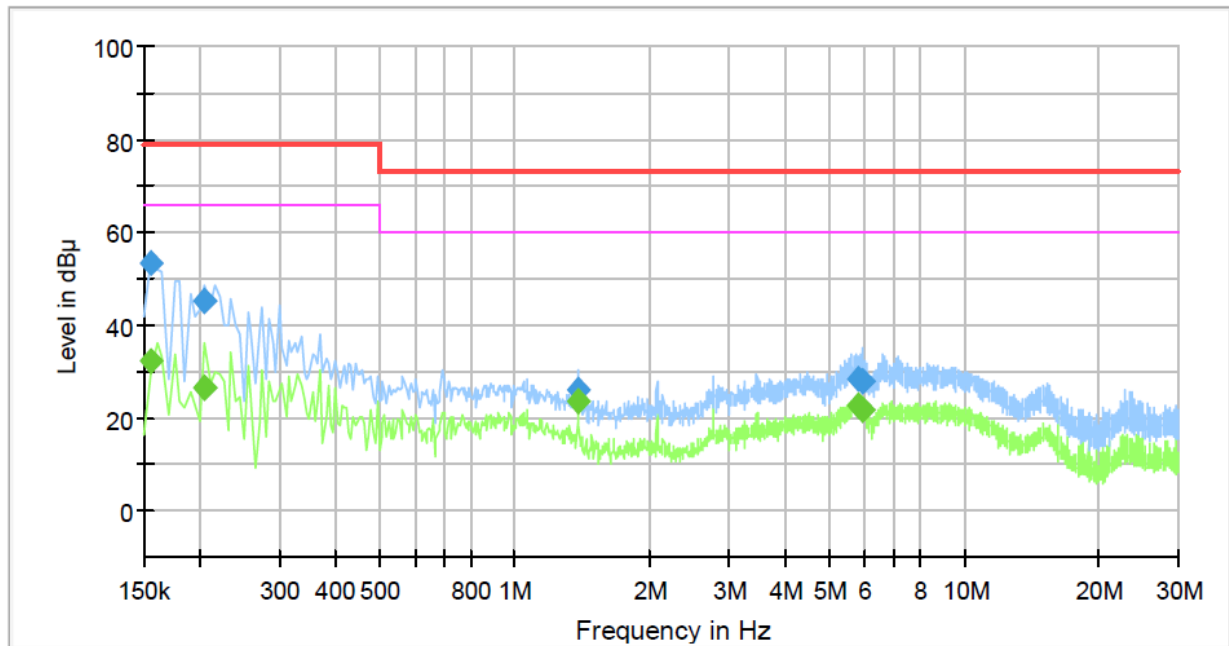




## NEUTRAL LINE

**Common Information**

Test Description: Conducted Emission  
Model No.: XNP-6120H  
Phase: N  
Mode: DC  
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	---	32.27	66.00	33.73	1000.0	9.000	N	19.4
0.155000	53.20	---	79.00	25.80	1000.0	9.000	N	19.4
0.205000	---	26.58	66.00	39.42	1000.0	9.000	N	19.5
0.205000	45.38	---	79.00	33.62	1000.0	9.000	N	19.5
1.385000	---	23.59	60.00	36.41	1000.0	9.000	N	20.2
1.385000	26.17	---	73.00	46.83	1000.0	9.000	N	20.2
5.790000	---	22.61	60.00	37.39	1000.0	9.000	N	19.6
5.790000	28.49	---	73.00	44.51	1000.0	9.000	N	19.6
5.965000	---	21.49	60.00	38.51	1000.0	9.000	N	19.5
5.965000	27.90	---	73.00	45.10	1000.0	9.000	N	19.5

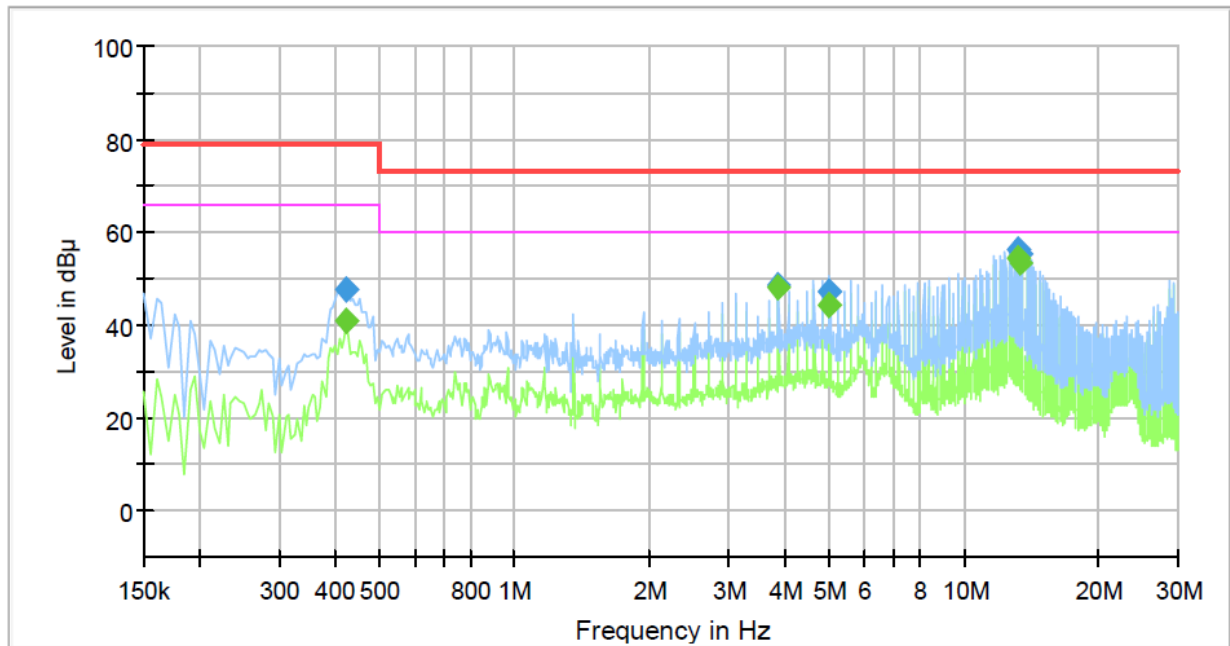


## ■ PoE Mode

## HOT LINE

**Common Information**

Test Description: Conducted Emission  
Model No.: XNP-6120H  
Phase: L1  
Mode: PoE  
Operator Name: KES

**Final Result**

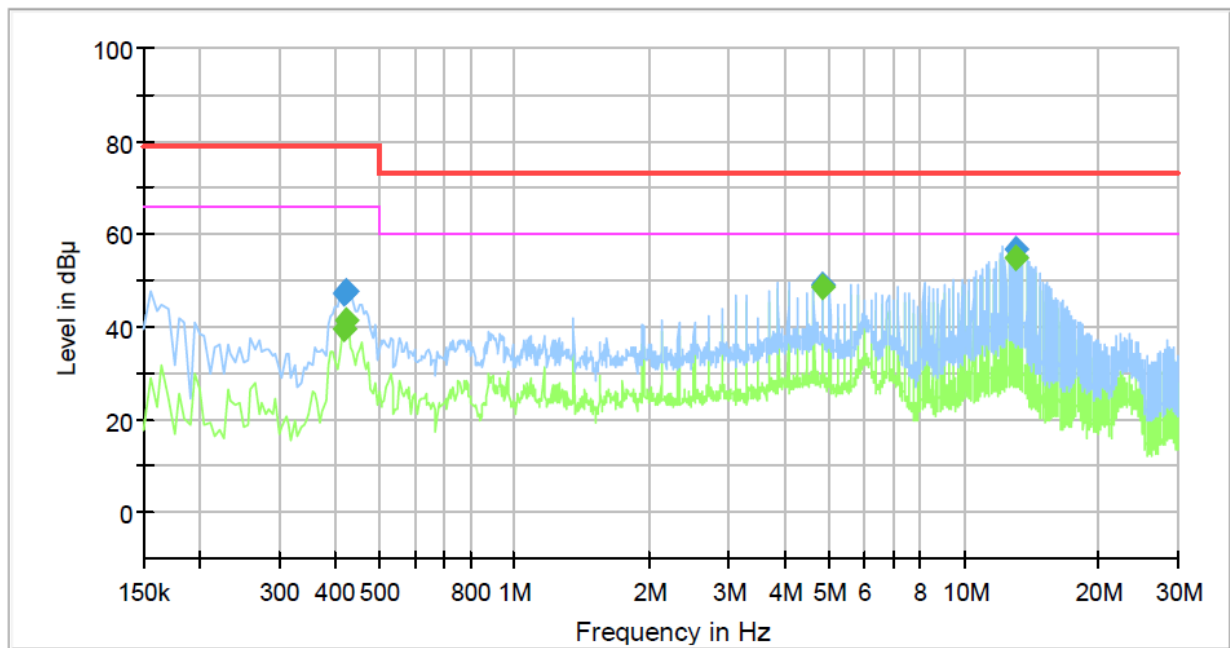
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.425000	---	41.01	66.00	24.99	1000.0	9.000	L1	19.7
0.425000	47.58	---	79.00	31.42	1000.0	9.000	L1	19.7
3.875000	---	48.06	60.00	11.94	1000.0	9.000	L1	20.0
3.875000	48.77	---	73.00	24.23	1000.0	9.000	L1	20.0
5.040000	---	44.34	60.00	15.66	1000.0	9.000	L1	19.7
5.040000	47.06	---	73.00	25.94	1000.0	9.000	L1	19.7
13.180000	---	54.33	60.00	5.67	1000.0	9.000	L1	20.0
13.180000	56.51	---	73.00	16.49	1000.0	9.000	L1	20.0
13.375000	---	53.34	60.00	6.66	1000.0	9.000	L1	20.0
13.375000	55.26	---	73.00	17.74	1000.0	9.000	L1	20.0



## NEUTRAL LINE

**Common Information**

Test Description: Conducted Emission  
Model No.: XNP-6120H  
Phase: N  
Mode: PoE  
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.420000	---	39.62	66.00	26.38	1000.0	9.000	N	19.7
0.420000	47.05	---	79.00	31.95	1000.0	9.000	N	19.7
0.425000	---	41.57	66.00	24.43	1000.0	9.000	N	19.7
0.425000	47.47	---	79.00	31.53	1000.0	9.000	N	19.7
4.845000	---	48.56	60.00	11.44	1000.0	9.000	N	19.7
4.845000	49.26	---	73.00	23.74	1000.0	9.000	N	19.7
12.985000	---	54.78	60.00	5.22	1000.0	9.000	N	20.0
12.985000	56.78	---	73.00	16.22	1000.0	9.000	N	20.0

## ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

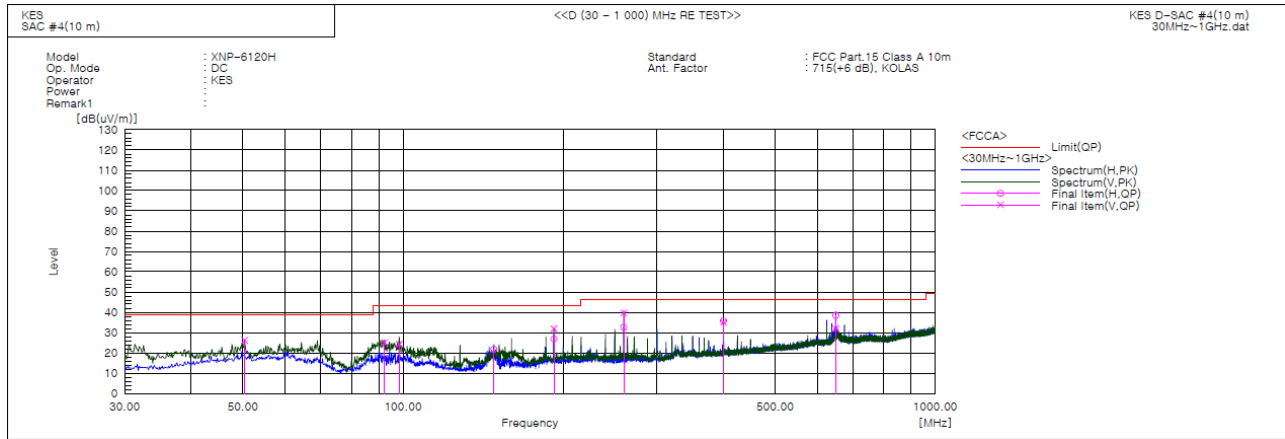
Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Radiated Electric Field Emissions(Below 1 GHz)**

- 47 CFR Part 15, Subpart B

## ■ DC Mode

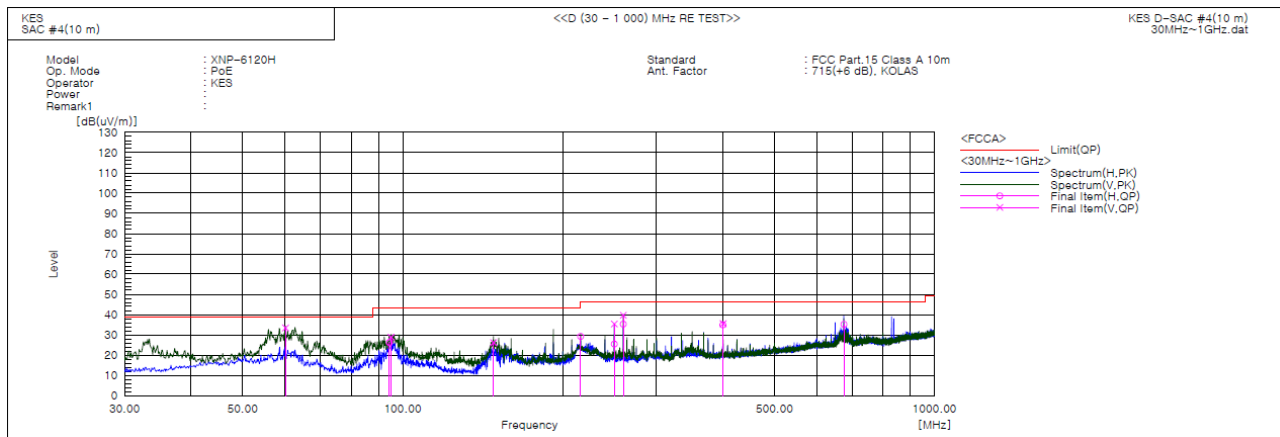


## Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	50.370	V	47.1	-20.9	26.2	39.0	12.8	144.0	213.0	
2	92.323	V	48.9	-23.7	25.2	43.5	18.3	132.0	79.0	
3	98.385	V	46.9	-22.6	24.3	43.5	19.2	100.0	137.0	
4	148.098	H	47.0	-25.2	21.8	43.5	21.7	332.0	333.0	
5	191.990	H	48.5	-21.7	26.8	43.5	16.7	400.0	167.0	
6	191.994	V	53.6	-21.7	31.9	43.5	11.6	102.0	317.0	
7	259.886	V	58.6	-18.9	39.7	46.5	6.8	112.0	359.0	
8	259.890	H	51.5	-18.9	32.6	46.5	13.9	312.0	190.0	
9	400.055	V	49.0	-14.0	35.0	46.5	11.5	378.0	3.0	
10	400.058	H	49.8	-14.0	35.8	46.5	10.7	205.0	272.0	
11	650.073	H	46.5	-8.1	38.4	46.5	8.1	221.0	0.0	
12	650.082	V	40.1	-8.1	32.0	46.5	14.5	148.0	258.0	



## ■ PoE Mode



## Final Result

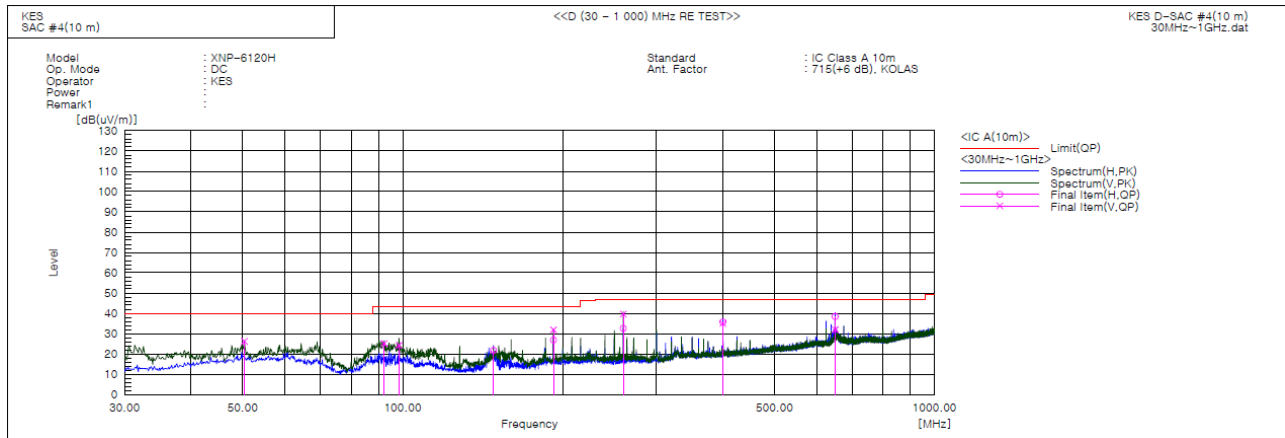
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	60.191	V	55.4	-21.9	33.5	39.0	5.5	114.0	94.0	
2	94.384	H	49.8	-23.5	26.3	43.5	17.2	325.0	15.0	
3	95.111	V	52.2	-23.3	28.9	43.5	14.6	121.0	80.0	
4	148.098	V	51.4	-25.2	26.2	43.5	17.3	146.0	75.0	
5	215.998	H	49.6	-20.4	29.2	43.5	14.3	367.0	352.0	
6	249.948	H	44.6	-19.1	25.5	46.5	21.0	331.0	83.0	
7	249.954	V	54.5	-19.1	35.4	46.5	11.1	121.0	183.0	
8	259.890	V	58.6	-18.9	39.7	46.5	6.8	117.0	191.0	
9	259.896	H	54.2	-18.9	35.3	46.5	11.2	400.0	196.0	
10	400.055	H	48.9	-14.0	34.9	46.5	11.6	235.0	126.0	
11	400.064	V	49.6	-14.0	35.6	46.5	10.9	164.0	285.0	
12	675.050	H	43.0	-7.8	35.2	46.5	11.3	400.0	352.0	



Report No. : KES-EM-22T0084-R2

- IC Regulation ICES-003 Issue 7

## ■ DC Mode

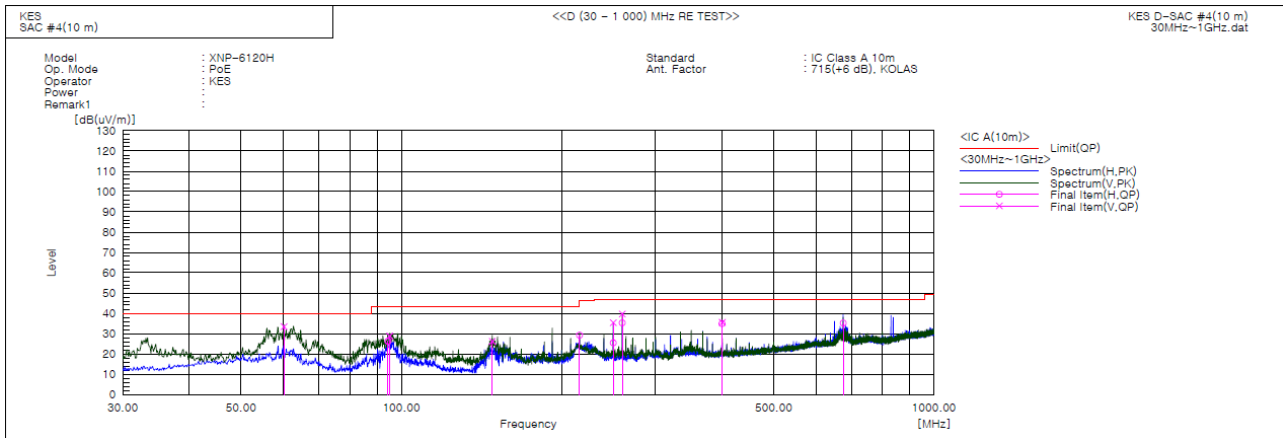


## Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	50.370	V	47.1	-20.9	26.2	40.0	13.8	144.0	213.0	
2	92.323	V	48.9	-23.7	25.2	43.5	18.3	132.0	79.0	
3	98.385	V	46.9	-22.6	24.3	43.5	19.2	100.0	137.0	
4	148.098	H	47.0	-25.2	21.8	43.5	21.7	332.0	333.0	
5	191.990	H	48.5	-21.7	26.8	43.5	16.7	400.0	167.0	
6	191.994	V	53.6	-21.7	31.9	43.5	11.6	102.0	317.0	
7	259.886	V	58.6	-18.9	39.7	47.0	7.3	112.0	359.0	
8	259.890	H	51.5	-18.9	32.6	47.0	14.4	312.0	190.0	
9	400.055	V	49.0	-14.0	35.0	47.0	12.0	378.0	3.0	
10	400.058	H	49.8	-14.0	35.8	47.0	11.2	205.0	272.0	
11	650.073	H	46.5	-8.1	38.4	47.0	8.6	221.0	0.0	
12	650.082	V	40.1	-8.1	32.0	47.0	15.0	148.0	258.0	



## ■ PoE Mode



## Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	60.191	V	55.4	-21.9	33.5	40.0	6.5	114.0	94.0	
2	94.384	H	49.8	-23.5	26.3	43.5	17.2	325.0	15.0	
3	95.111	V	52.2	-23.3	28.9	43.5	14.6	121.0	80.0	
4	148.098	V	51.4	-25.2	26.2	43.5	17.3	146.0	75.0	
5	215.998	H	49.6	-20.4	29.2	43.5	14.3	367.0	352.0	
6	249.948	H	44.6	-19.1	25.5	47.0	21.5	331.0	83.0	
7	249.954	V	54.5	-19.1	35.4	47.0	11.6	121.0	183.0	
8	259.890	V	58.6	-18.9	39.7	47.0	7.3	117.0	191.0	
9	259.896	H	54.2	-18.9	35.3	47.0	11.7	400.0	196.0	
10	400.055	H	48.9	-14.0	34.9	47.0	12.1	235.0	126.0	
11	400.064	V	49.6	-14.0	35.6	47.0	11.4	164.0	285.0	
12	675.050	H	43.0	-7.8	35.2	47.0	11.8	400.0	352.0	

## ◆ Calculation – SAC #4(10 m)

$$\text{Result(QP)} [\text{dB}(\mu\text{V/m})] = (\text{Reading(QP)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$
$$\text{Margin(QP)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V/m})] - \text{Result(QP)} [\text{dB}(\mu\text{V/m})]$$

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

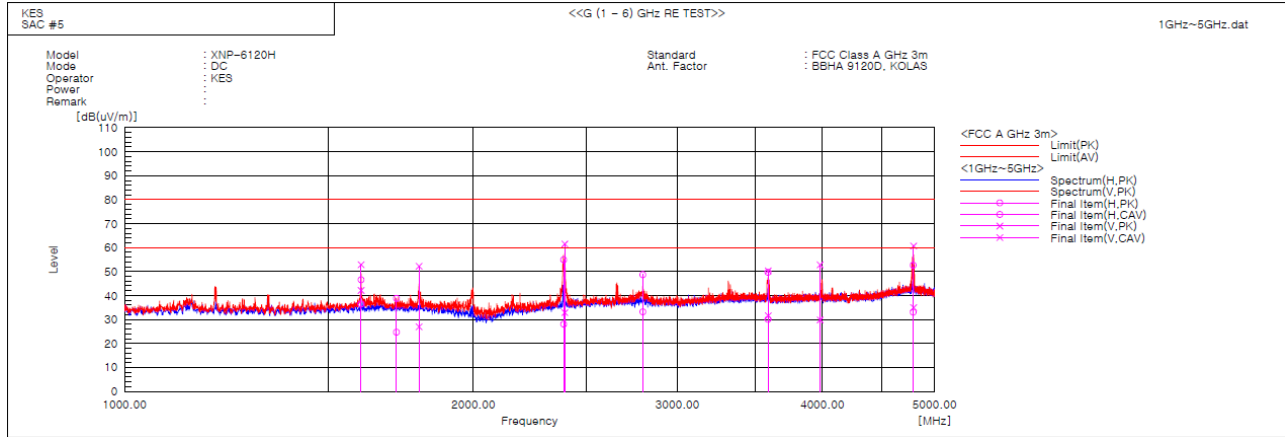
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value





## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Mode



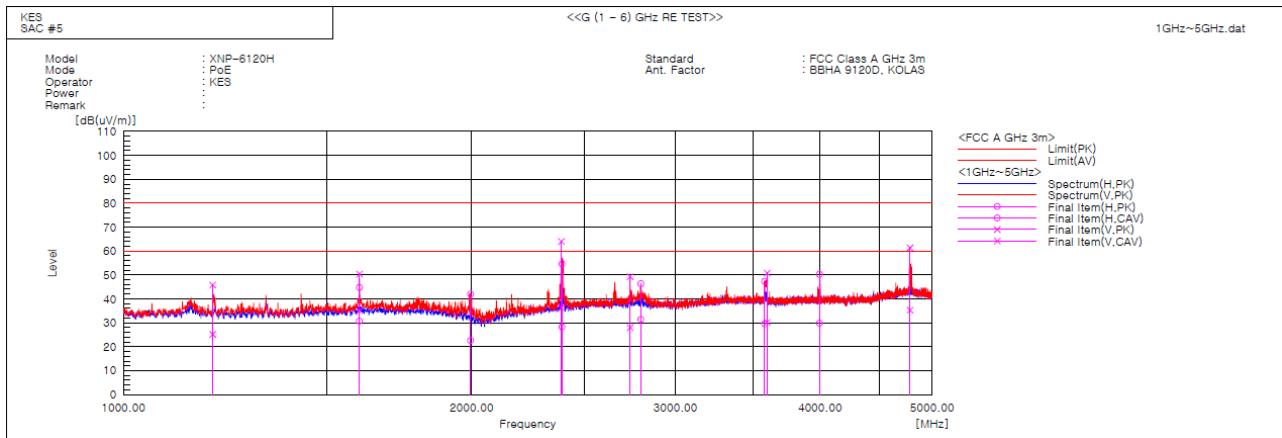
### Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1600.000	V	57.8	47.1	-4.9	52.9	42.2	80.0	60.0	27.1	17.8	121.0	2.3	
2	1600.050	H	51.5	41.4	-4.9	46.6	36.5	80.0	60.0	33.4	23.5	189.0	329.3	
3	1716.250	H	43.3	29.2	-4.5	38.8	24.7	80.0	60.0	41.2	35.3	251.0	337.4	
4	1795.000	V	56.4	31.1	-4.1	52.3	27.0	80.0	60.0	27.7	33.0	345.0	208.0	
5	2393.125	H	56.9	30.1	-2.0	54.9	28.1	80.0	60.0	25.1	31.9	221.0	112.4	
6	2398.128	V	63.5	34.9	-2.0	61.5	32.9	80.0	60.0	18.5	27.1	100.0	188.1	
7	2800.000	H	49.0	33.5	-0.3	48.7	33.2	80.0	60.0	31.3	26.8	145.0	20.3	
8	3590.000	H	48.8	29.2	0.9	49.7	30.1	80.0	60.0	30.3	29.9	167.0	254.4	
9	3592.500	V	49.4	30.7	0.9	50.3	31.6	80.0	60.0	29.7	28.4	223.0	225.6	
10	3981.875	V	50.8	27.9	2.0	52.8	29.9	80.0	60.0	27.2	30.1	400.0	194.7	
11	4791.875	H	47.5	27.9	5.2	52.7	33.1	80.0	60.0	27.3	26.9	142.0	259.6	
12	4795.000	V	55.5	29.8	5.2	60.7	35.0	80.0	60.0	19.3	25.0	355.0	153.3	





## ■ PoE Mode



## Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1194.375	V	52.8	32.2	-7.0	45.8	25.2	80.0	60.0	34.2	34.8	156.0	202.6	
2	1599.375	V	55.3	39.9	-4.9	50.4	35.0	80.0	60.0	29.6	25.0	125.0	171.3	
3	1599.379	H	49.7	35.6	-4.9	44.8	30.7	80.0	60.0	35.2	29.3	221.0	334.2	
4	1995.000	H	45.5	26.1	-3.5	42.0	22.6	80.0	60.0	38.0	37.4	267.0	119.3	
5	2390.000	V	66.0	38.3	-2.0	64.0	36.3	80.0	60.0	16.0	23.7	112.0	21.9	
6	2393.750	H	56.6	30.3	-2.0	54.6	28.3	80.0	60.0	25.4	31.7	100.0	340.0	
7	2740.625	V	49.8	28.5	-0.5	49.3	28.0	80.0	60.0	30.7	32.0	101.0	21.9	
8	2800.000	H	46.7	31.7	-0.3	46.4	31.4	80.0	60.0	33.6	28.6	146.0	58.3	
9	3583.125	H	46.5	28.7	0.9	47.4	29.6	80.0	60.0	32.6	30.4	332.0	58.3	
10	3600.000	V	49.9	29.4	0.9	50.8	30.3	80.0	60.0	29.2	29.7	117.0	210.2	
11	3996.250	H	48.3	27.9	2.0	50.3	29.9	80.0	60.0	29.7	30.1	251.0	58.3	
12	4783.750	V	56.3	30.2	5.1	61.4	35.3	80.0	60.0	18.6	24.7	400.0	160.8	

## ◆ Calculation

Result(PK/CAV) [dB(μV/m)] = (Reading(PK/CAV)[dB(μV)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(μV/m)] - Result(PK/CAV) [dB(μV/m)]

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

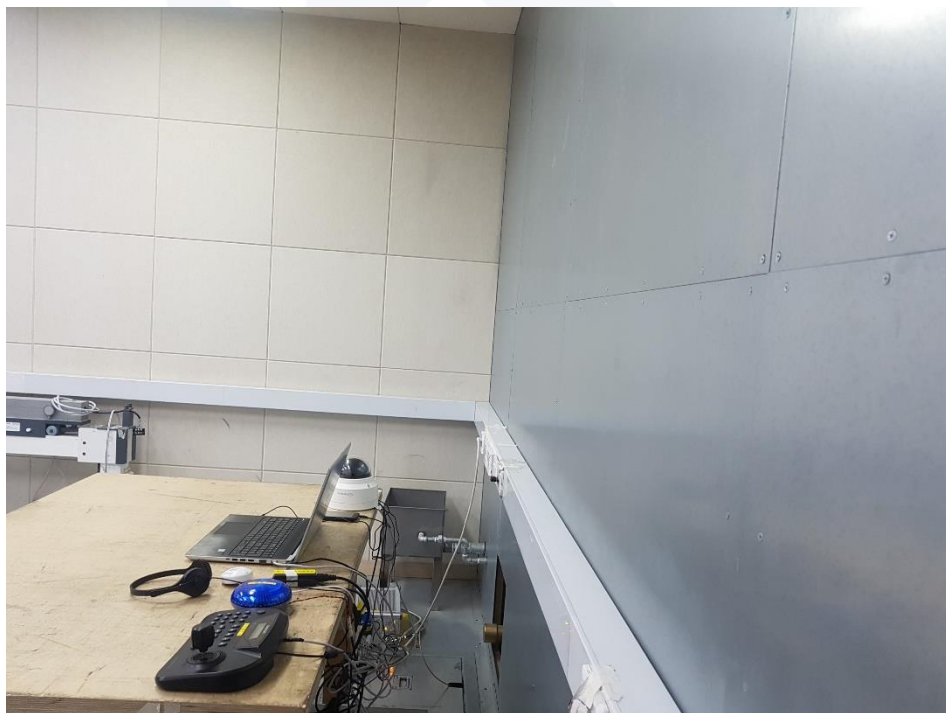
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value



## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

#### ■ DC Mode





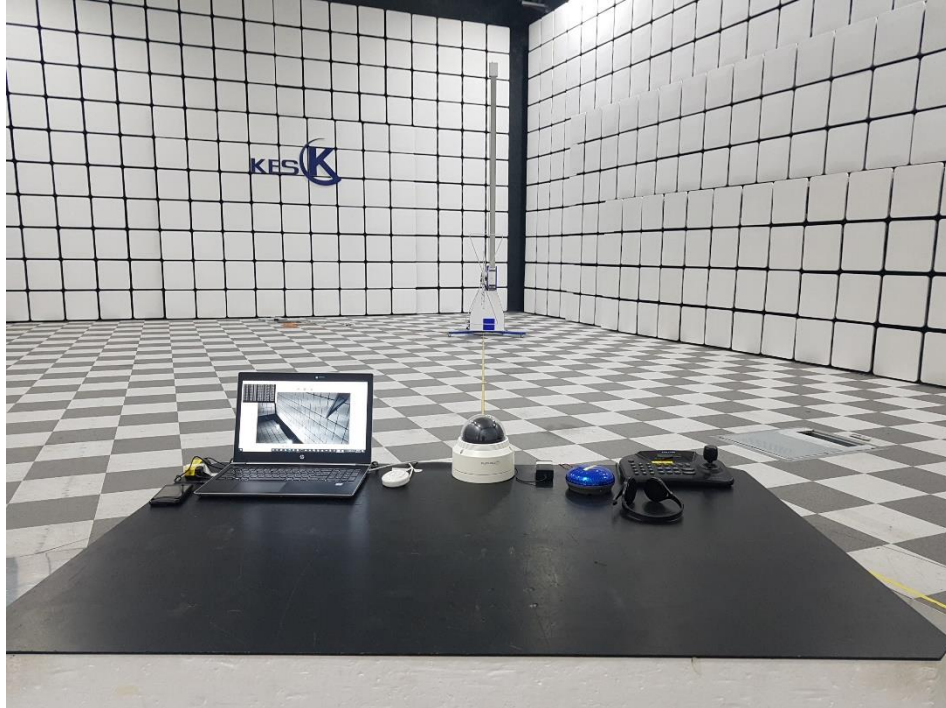
■ PoE Mode





## Radiated Electric Field Emissions(Below 1 GHz)

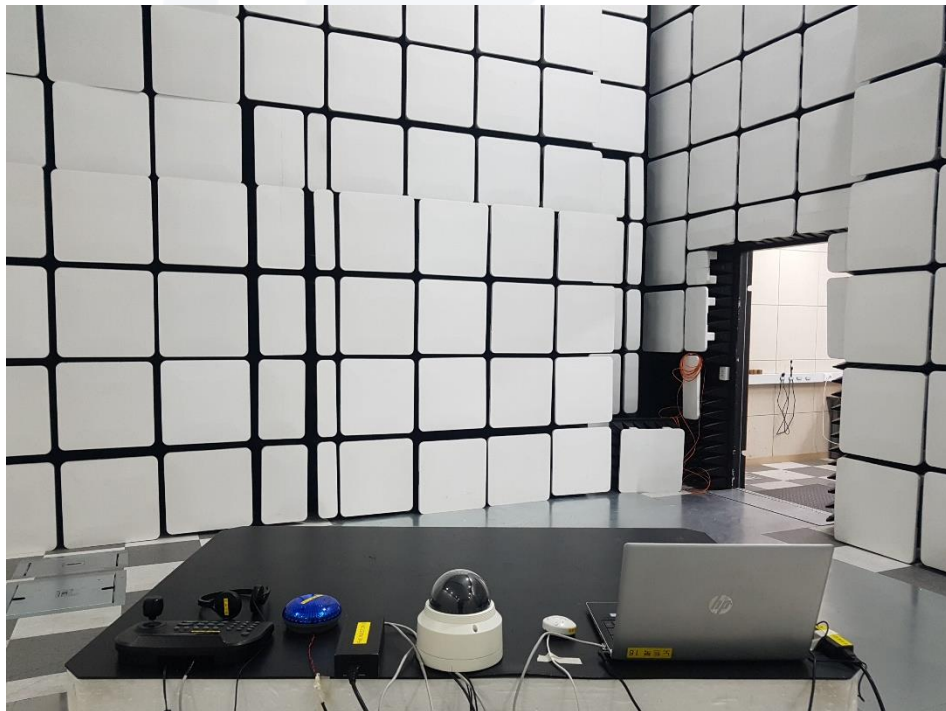
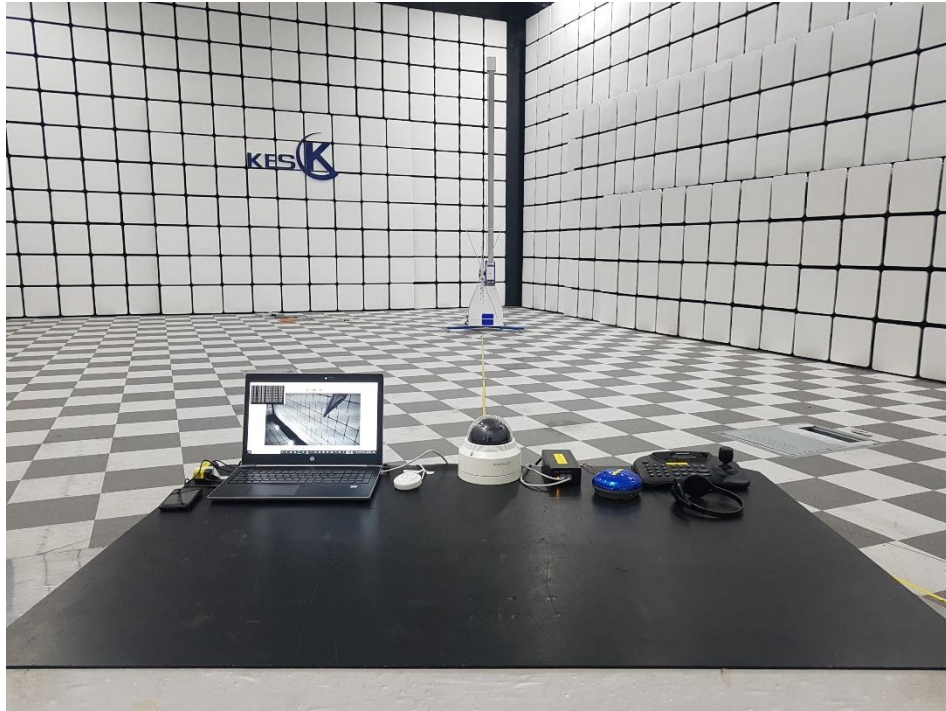
### ■ DC Mode







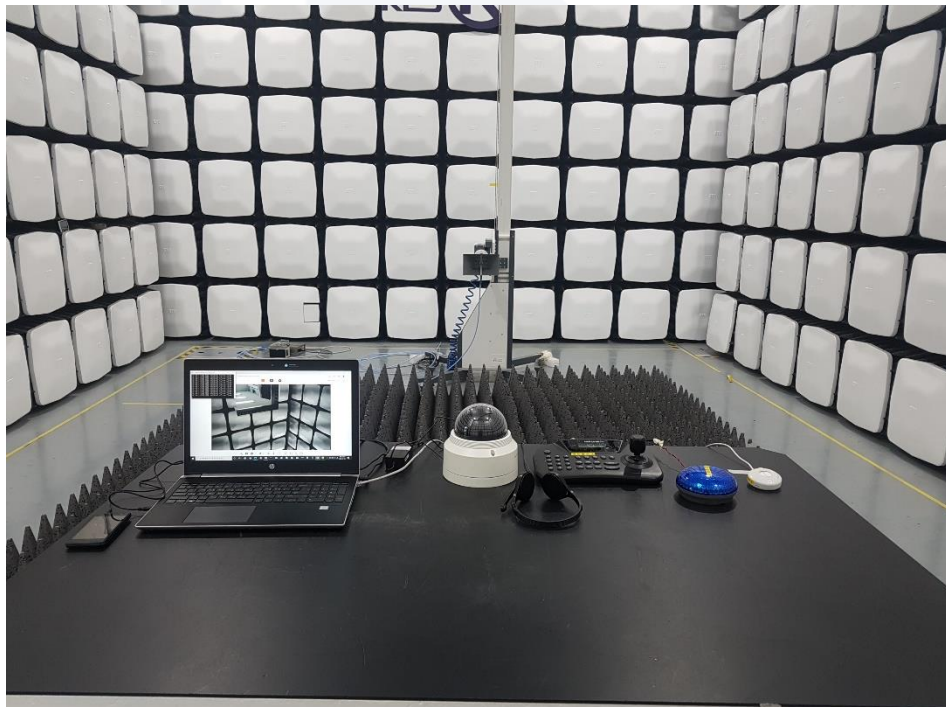
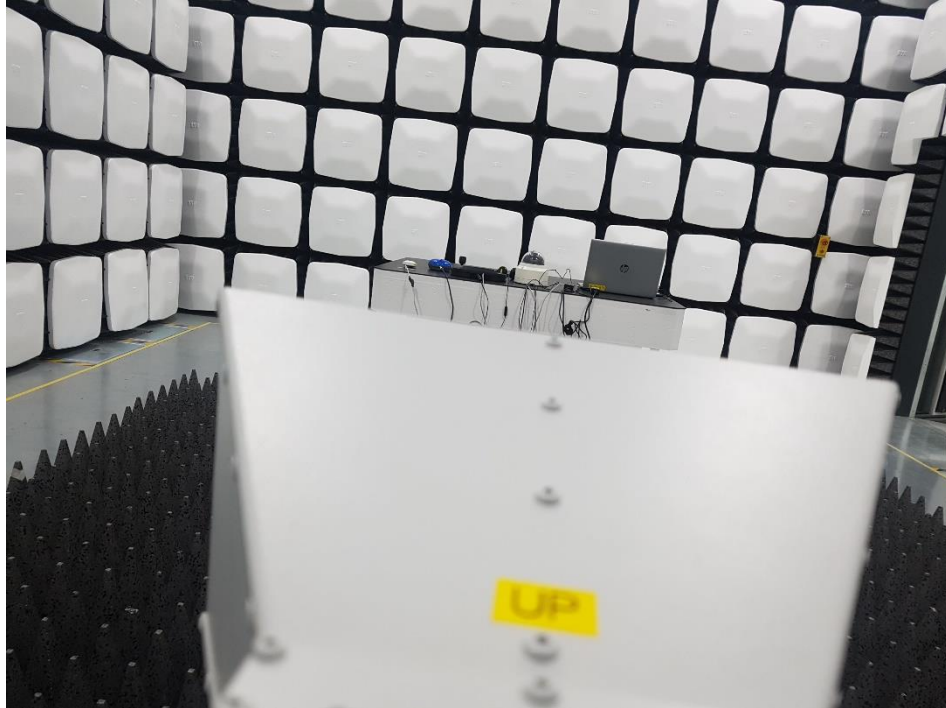
■ PoE Mode





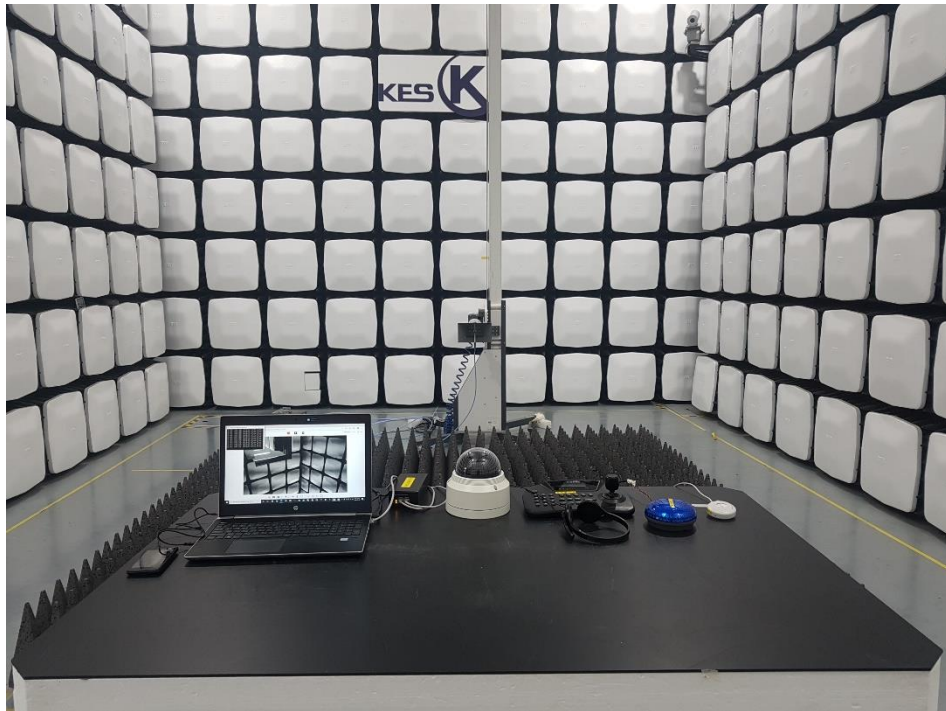
## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Mode





■ PoE Mode







## EUT External Photographs

(Top)



(Bottom)

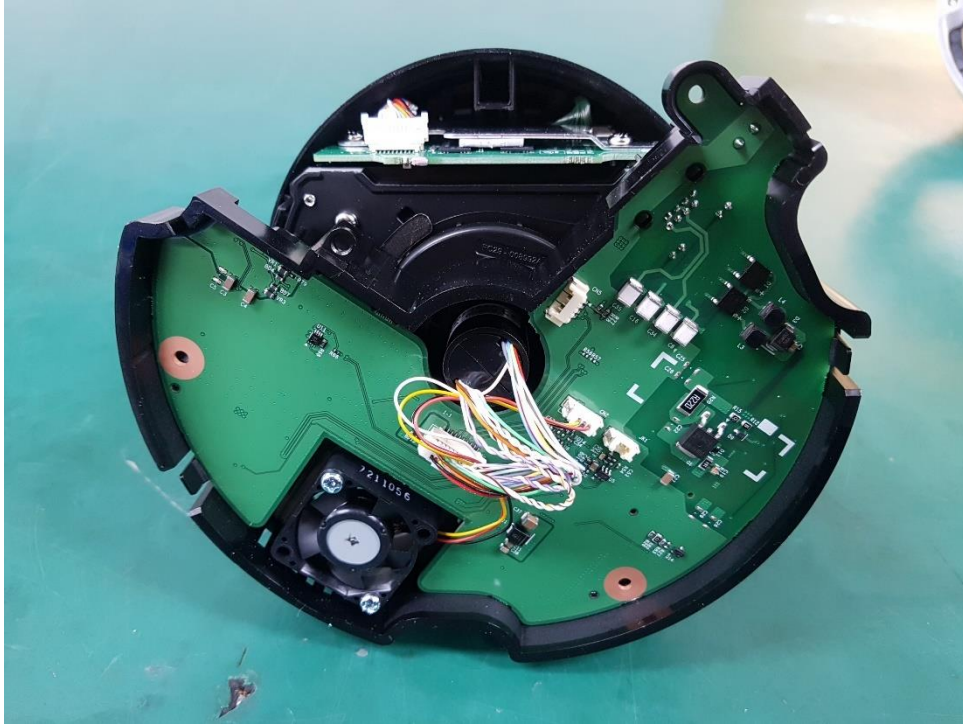






## EUT Internal Photographs

(Internal View)



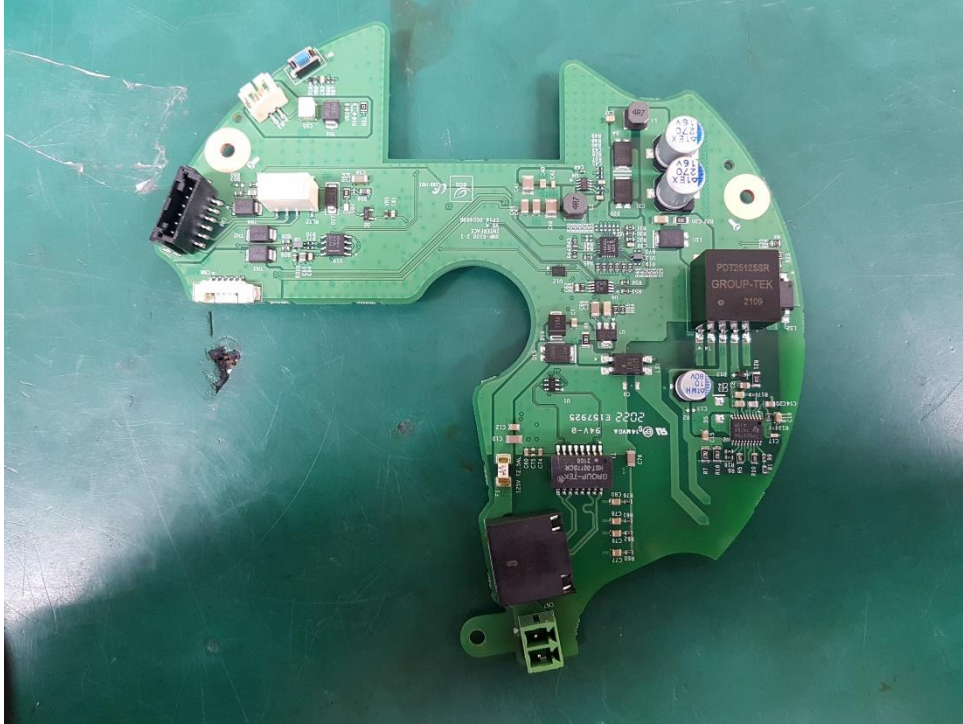
---

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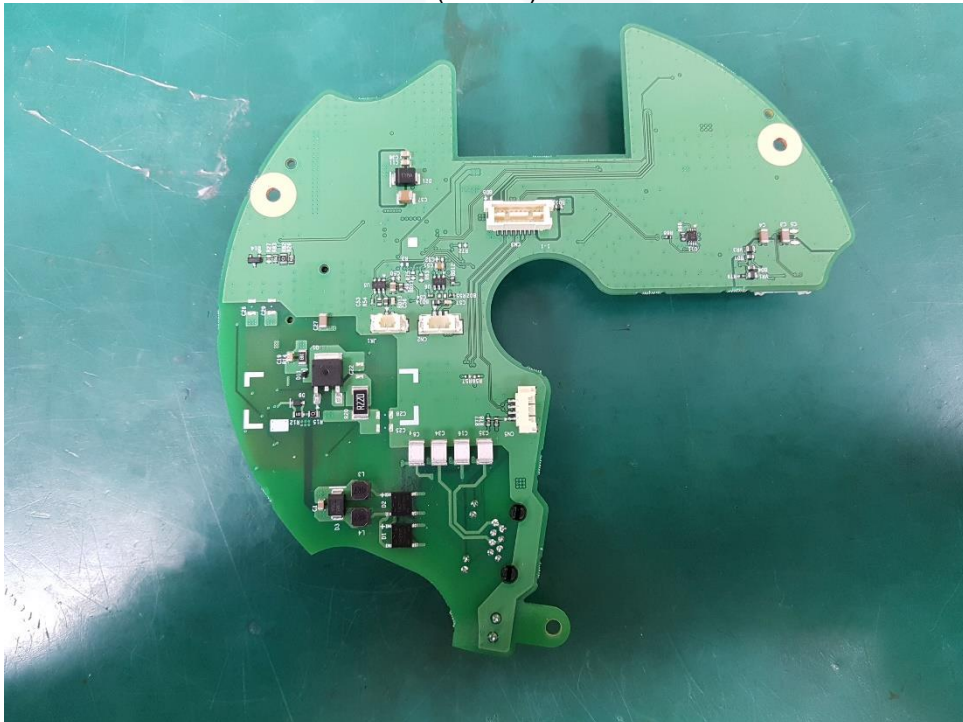


## EUT Internal View – Board 1

(Top)



(Bottom)



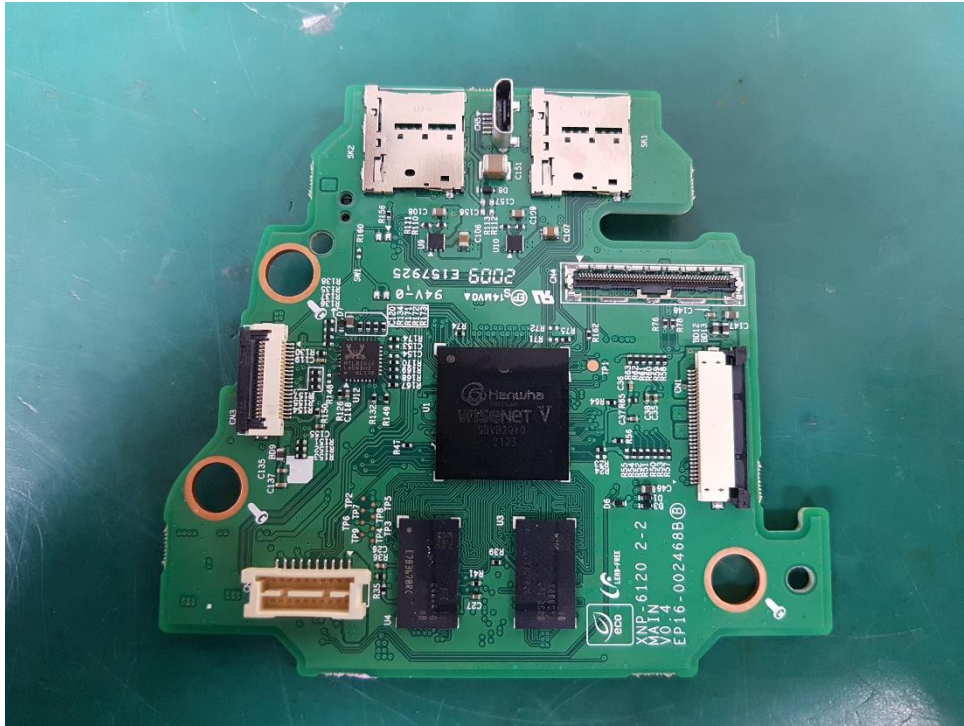
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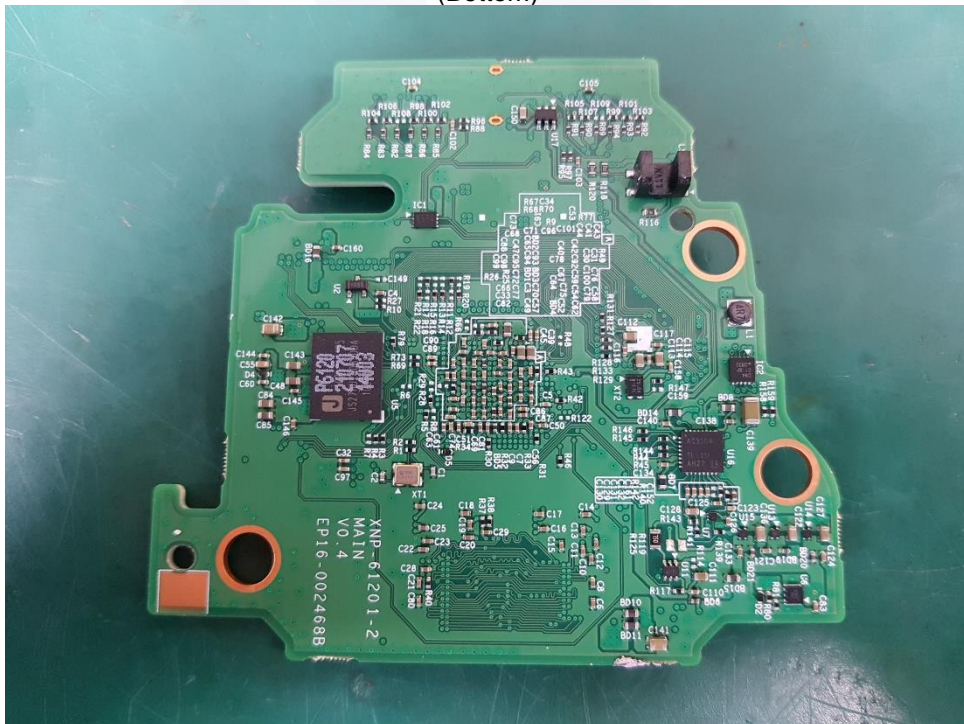


## EUT Internal View – Board 2

(Top)



(Bottom)



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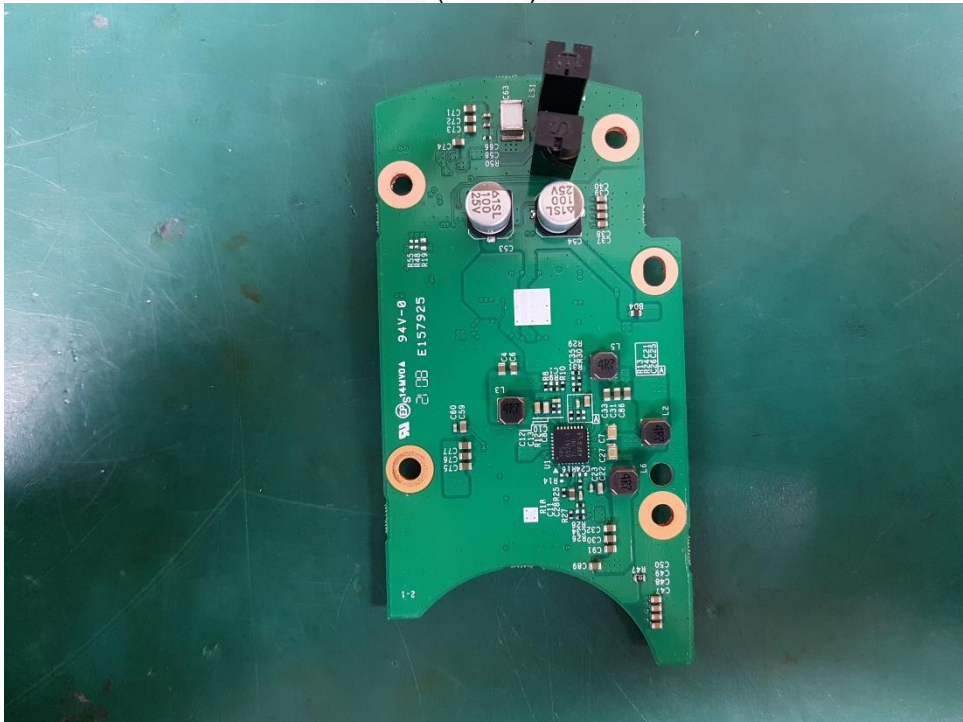


## EUT Internal View – Board 3

(Top)



(Bottom)



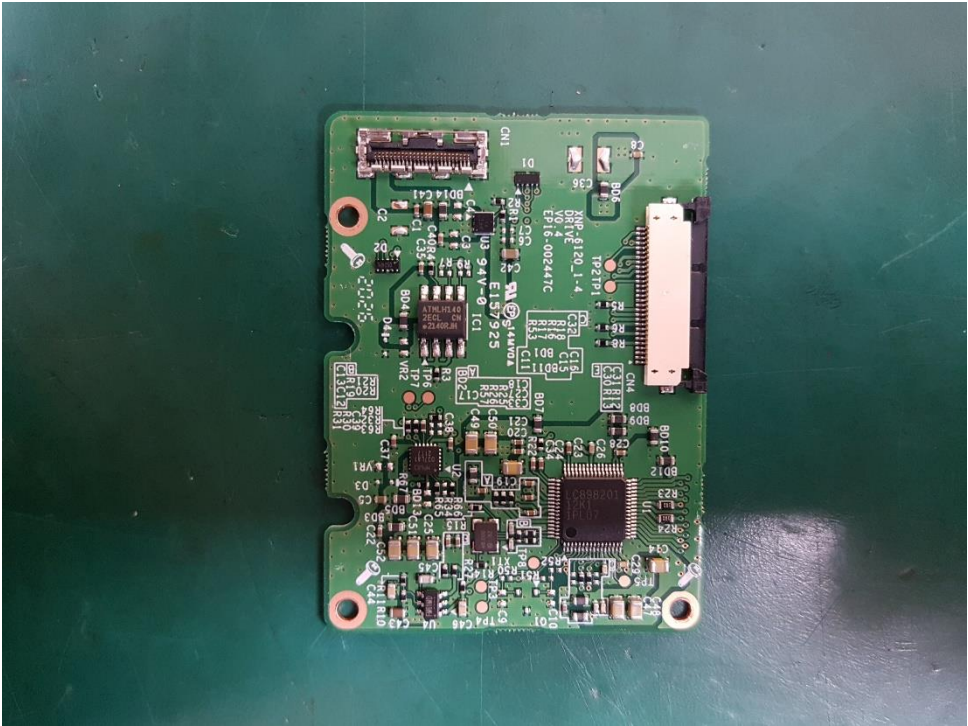
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EUT Internal View – Board 4

(Top)



(Bottom)



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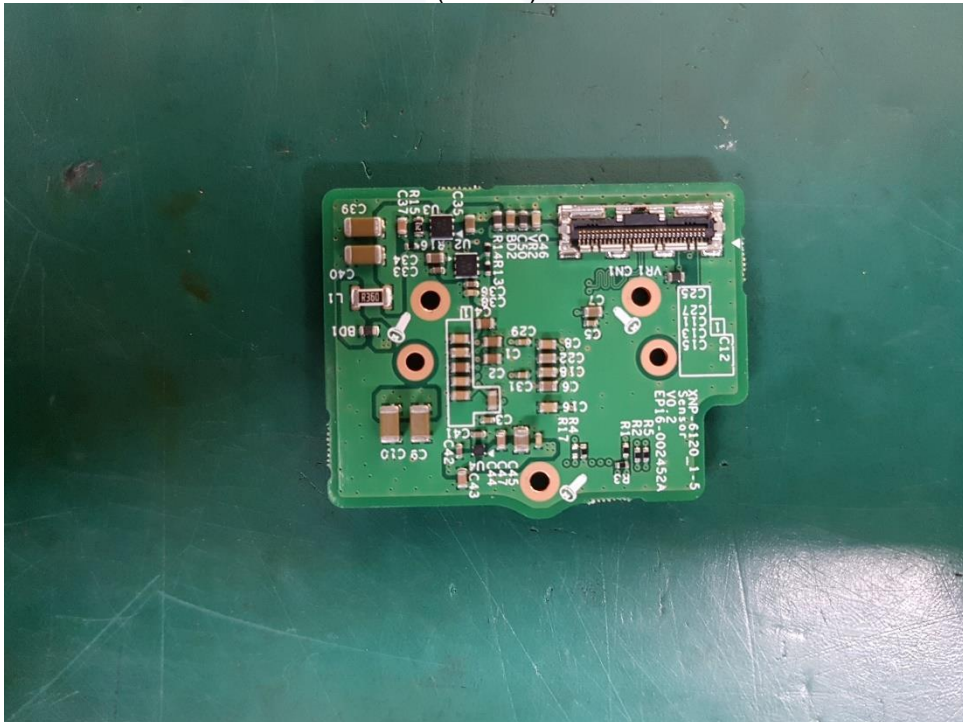


## EUT Internal View – Board 5

(Top)



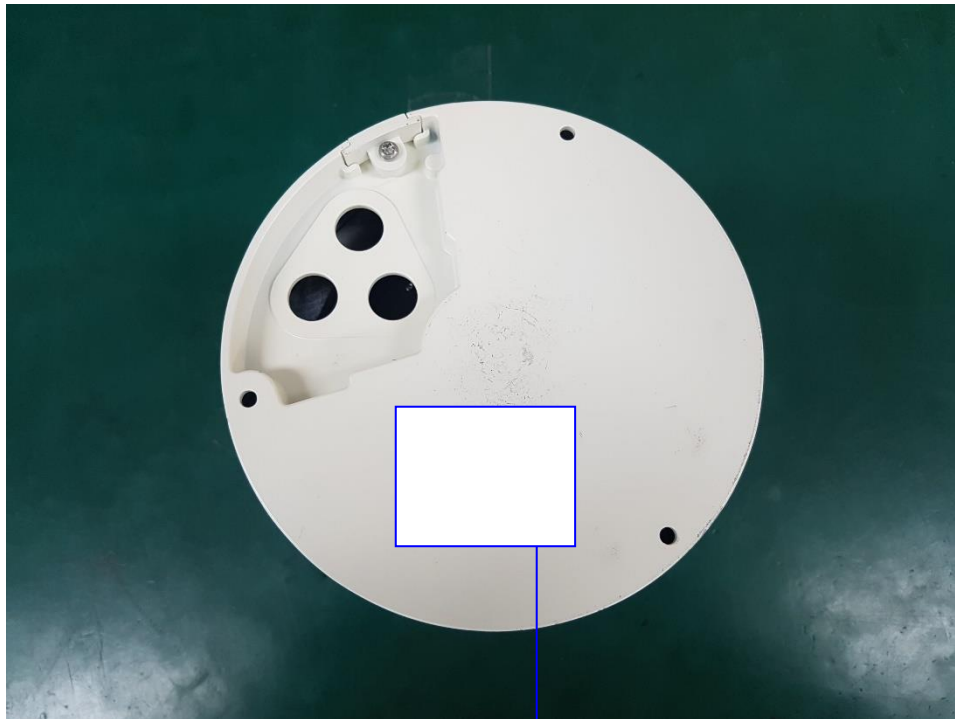
(Bottom)



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The authenticity of the test report, contact shchoi@kes.co.kr



### Label Photographs



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

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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