



EMC TEST REPORT

Test Report No. : KES-EM-21T0921
Date of Issue : Sep. 30, 2021
Product name : NETWORK CAMERA
Model/Type No. : QND-6022R
Variant Model : QND-6032R, QND-6012R, AND-2020R, AND-2010R, KND-L2012R,
QND-6012R1, QND-6032R1, QND-6022R1
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA TECHWIN SECURITY VIETNAM CO., LTD.
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)
Equipment authorization : **Supplier's Declaration of Conformity**
Date of Receipt : Sep. 08, 2021
Test date : Sep. 17, 2021 ~ Sep. 18, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Eun Gu, Jeon
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Sep. 30, 2021	KES-EM-21T0921	Issued

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1.0 General Product Description

Main Specifications of EUT are:

video

image pickup device	1/2.8" 2MP CMOS
resolution	1920x1080, 1280x960, 1280x720, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
maximum frame rate	H.265/H.264: Up to 30fps/25fps (60Hz/50Hz) MJPEG: Up to 15fps/12fps (60Hz/50Hz)
Minimum Illumination	Color: 0.03Lux (F1.6, 1/30sec) B & W: 0Lux (IR LED on)
video output	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation

lens

focal length	4mm fixed focus lens
maximum aperture ratio	F1.6
angle of view	H: 87.6° / V: 46.4° / D: 104.5°
focus control	fixed focus

Pan / Tilt / Rotate

Pan/Tilt/Rotation Range	0°~350° / 0°~67° / 0°~355°
-------------------------	----------------------------

camera function

camera title	Up to 85 characters
Day & Night	automatic (electronic)
backlight compensation	BLC, WDR, SSDR
Wide Dynamic Range	120dB
noise removal	SSNR
motion detection	4, polygon support
Privacy Features	6, square support
Gain Control	support
white balance	ATW / AWC / Manual / Indoor / Outdoor

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LDC (Lens Distortion Correction)	support
electronic shutter	Min / Max / Anti-flicker (1/5 to 1/12,000 sec)
image rotation	Up/Down Reversal, Left/Right Reversal, Corridor View (90°/270°)
Intelligent Analytics	Defocus detection, direction detection, motion detection, entrance detection, tampering, virtual line
Alarm input/output	1 input / 1 output
alarm trigger	Intelligent analysis, network disconnection, alarm input
alarm event	File transfer and upload via FTP and E-Mail Notification via E-Mail Recording to SD/SDHC/SDXC or NAS when an alarm trigger occurs External alarm output

camera function

camera title	Up to 85 characters
Day & Night	automatic (electronic)
backlight compensation	BLC, WDR, SDR
Wide Dynamic Range	120dB
noise removal	SSNR
motion detection	4, polygon support
Privacy Features	6, square support
Gain Control	support
white balance	ATW / AWC / Manual / Indoor / Outdoor
LDC (Lens Distortion Correction)	support
electronic shutter	Min / Max / Anti-flicker (1/5 to 1/12,000 sec)
image rotation	Up/Down Reversal, Left/Right Reversal, Corridor View (90°/270°)
Intelligent Analytics	Defocus detection, direction detection, motion detection, entrance detection, tampering, virtual line
Alarm input/output	1 input / 1 output
alarm trigger	Intelligent analysis, network disconnection, alarm input
alarm event	File transfer and upload via FTP and E-Mail Notification via E-Mail Recording to SD/SDHC/SDXC or NAS when an alarm trigger occurs External alarm output

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audio input	built-in microphone
night visibility	20m
network	
Ethernet	RJ-45(10/100BASE-T)
video compression	H.265/H.264: Main/High, MJPEG
audio compression	G.711 u-law / G.726 선택가능 G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps
smart compression	WiseStream II
bitrate control	H.264/H.265: CBR or VBR MJPEG: VBR
streaming	Unicast (up to 6 people) / Multicast multi-streaming (up to 3 profiles)
protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP
security	HTTPS(SSL) authentication method Digest authentication method IP address filtering User access log recording 802.1X authentication method (EAP-TLS, EAP-LEAP)
application interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform

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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.

☒ AC 120 V, 60 Hz ☒ PoE

1.2 Variant Model Differences

Addition of derivative models for place of sale management.

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	QND-6022R	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
PoE Adaptor	GS728TPP	-	NETGEAR	-
Notebook	P98F004	21599158359	DELL INC.	-
Notebook Adapter	LA240PM190	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Button Alarm	-	-	-	-
Alarm	-	-	-	-
Micro SD Card	-	-	Sandisk	8 GB



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)	RJ-45	Notebook	RJ-45	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
	Alarm In	Button Alarm	Alarm Out	3.0	U
	Alarm Out	Alarm	Alarm In	3.0	U
	2 Pin	Adapter	Line	1.5	U
Notebook	DC Jack	Notebook Adapter	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 Adapter	RJ-45	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
	Alarm In	Button Alarm	Alarm Out	3.0	U
	Alarm Out	Alarm	Alarm In	3.0	U
Notebook	RJ-45	PoE Adapter	RJ-45	1.5	U
	DC Jack	Notebook Adapter	DC Jack	1.6	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test Mode	operating
DC	EUT Monitoring, Ping Test
PoE	

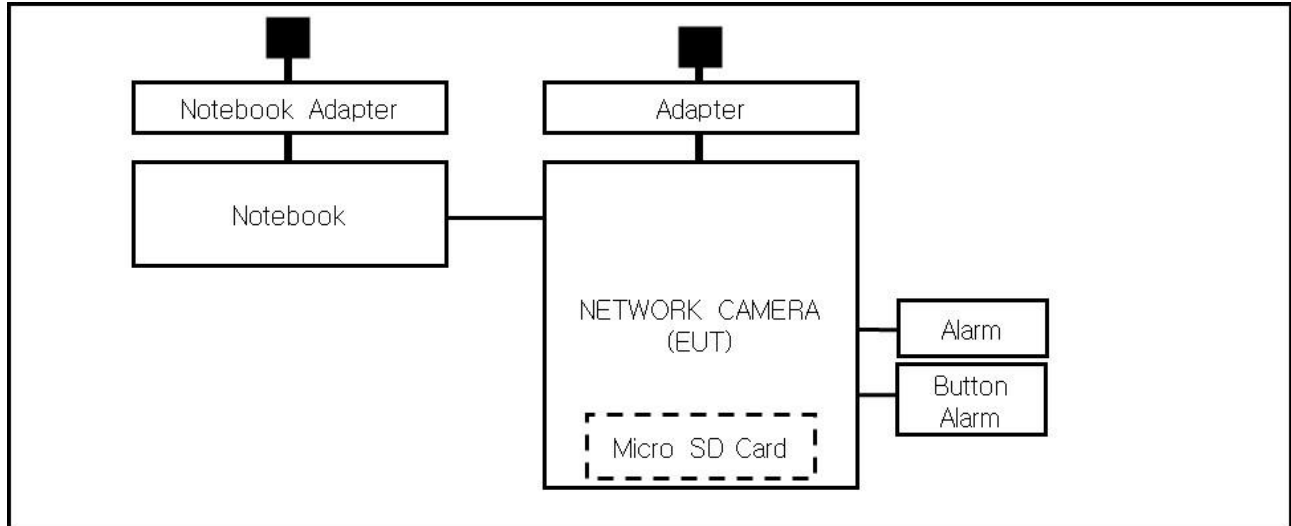
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Techwin Co., Ltd.

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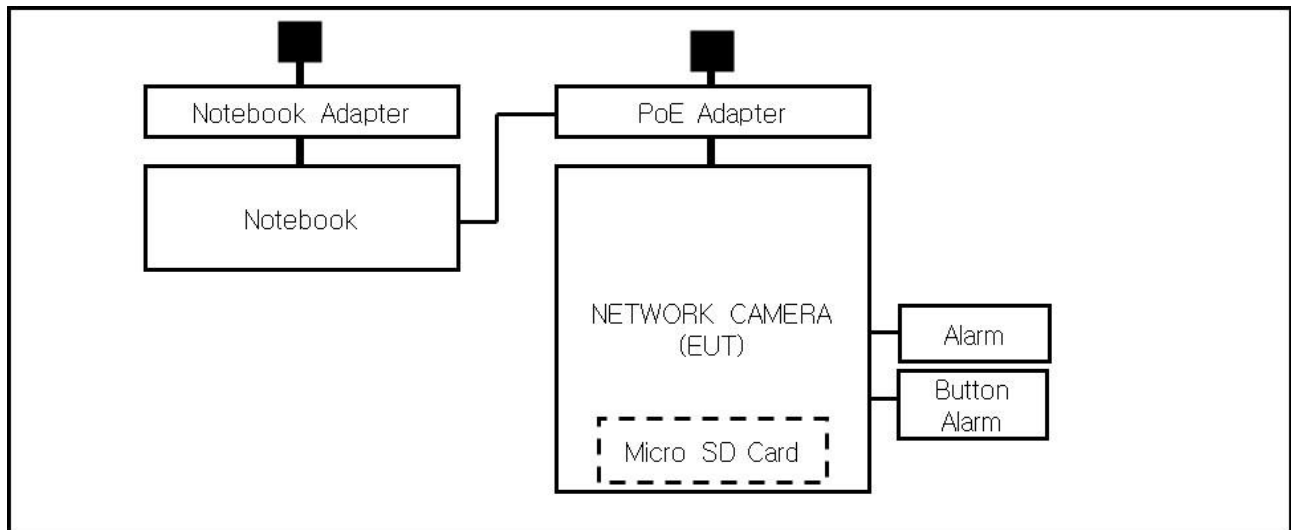
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

N/A

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. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 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 , 10 m Open Area 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, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
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-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area 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 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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-
- | | | |
|---|---|----------------------------------|
| ☐ VCCI-CISPR 32:2016 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR32:2015 | ☐ Class A | ☐ Class B |
| ☒ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☒ ANSI C63.4-2017 | ☒ Class A | ☐ Class B |
| ☒ IC Regulation ICES-003 Issue 7 | | |
| ☒ CAN/CSA CISPR 32-17 | ☒ Class A | ☐ Class B |
| ☐ ANSI C63.4-2017 | ☐ 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 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Sep. 17, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions

Temperature: (24,0 ± 0,1) °C

Relative Humidity: (49,9 ± 0,1) % 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

Sep. 18, 2021

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Temperature: (24,2 ± 0,1) °C

Relative Humidity: (49,8 ± 0,2) % 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

Sep. 18, 2021

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.120	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	04, 01, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 21, 2022

Test Conditions

Temperature: (24,6 ± 0,2) °C

Relative Humidity: (51,0 ± 0,2) % 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.



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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

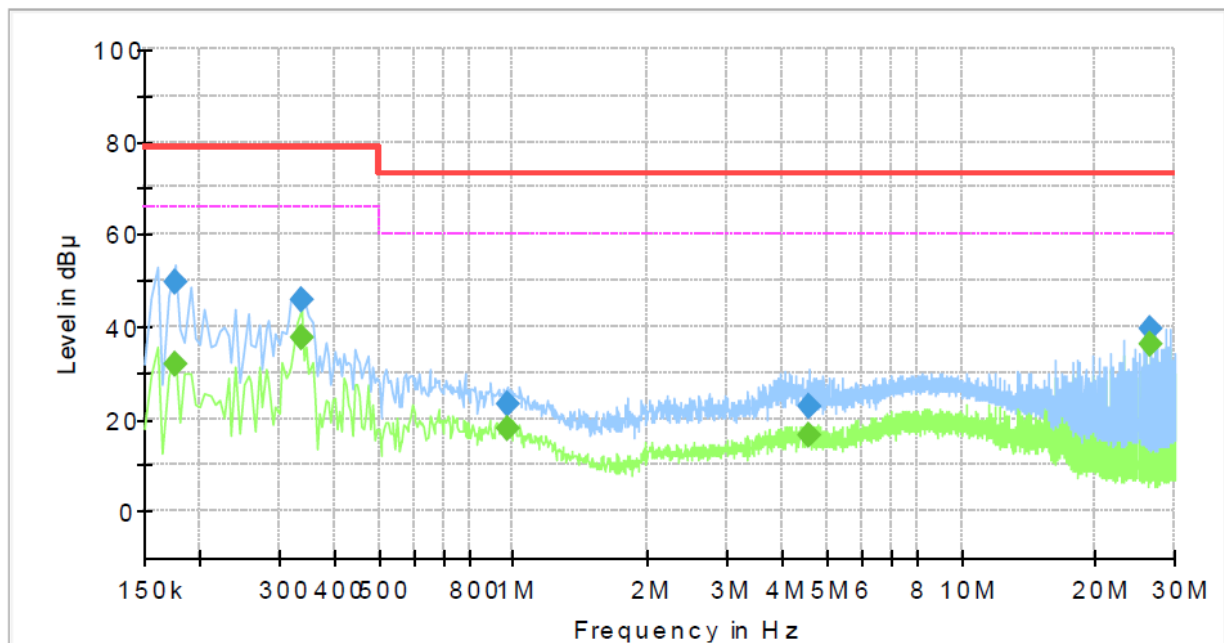
Conducted Emission

QND-6022R

L1

DC

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Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.175000	---	31.69	66.00	34.31	1000.0	9.000	L1	19.5
0.175000	49.71	---	79.00	29.29	1000.0	9.000	L1	19.5
0.335000	---	37.70	66.00	28.30	1000.0	9.000	L1	19.6
0.335000	45.50	---	79.00	33.50	1000.0	9.000	L1	19.6
0.970000	---	18.09	60.00	41.91	1000.0	9.000	L1	20.1
0.970000	23.07	---	73.00	49.93	1000.0	9.000	L1	20.1
4.595000	---	16.42	60.00	43.58	1000.0	9.000	L1	19.8
4.595000	22.87	---	73.00	50.13	1000.0	9.000	L1	19.8
26.610000	---	36.32	60.00	23.68	1000.0	9.000	L1	20.2
26.610000	39.45	---	73.00	33.55	1000.0	9.000	L1	20.2

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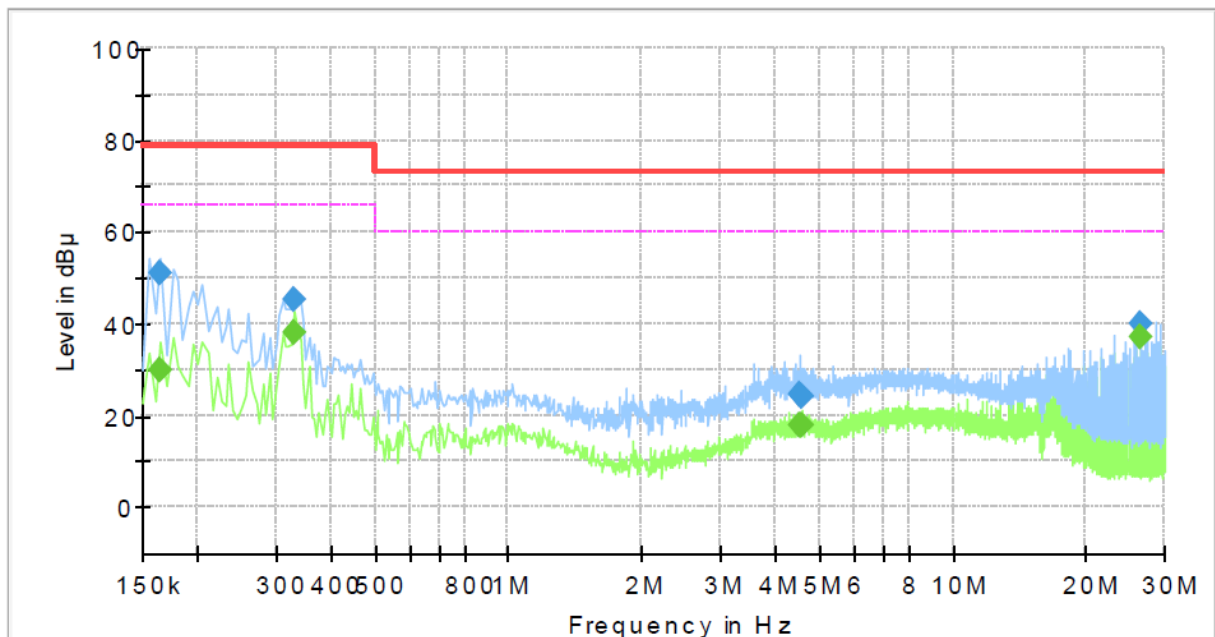
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NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: QND-6022R
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)
0.165000	---	29.82	66.00	36.18	1000.0	9.000	N	19.4
0.165000	50.94	---	79.00	28.06	1000.0	9.000	N	19.4
0.330000	---	38.19	66.00	27.81	1000.0	9.000	N	19.6
0.330000	45.38	---	79.00	33.62	1000.0	9.000	N	19.6
4.540000	---	17.95	60.00	42.05	1000.0	9.000	N	19.8
4.540000	24.53	---	73.00	48.47	1000.0	9.000	N	19.8
4.570000	---	17.88	60.00	42.12	1000.0	9.000	N	19.8
4.570000	24.28	---	73.00	48.72	1000.0	9.000	N	19.8
26.610000	---	37.02	60.00	22.98	1000.0	9.000	N	20.3
26.610000	40.14	---	73.00	32.86	1000.0	9.000	N	20.3

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■ PoE Mode

HOT LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

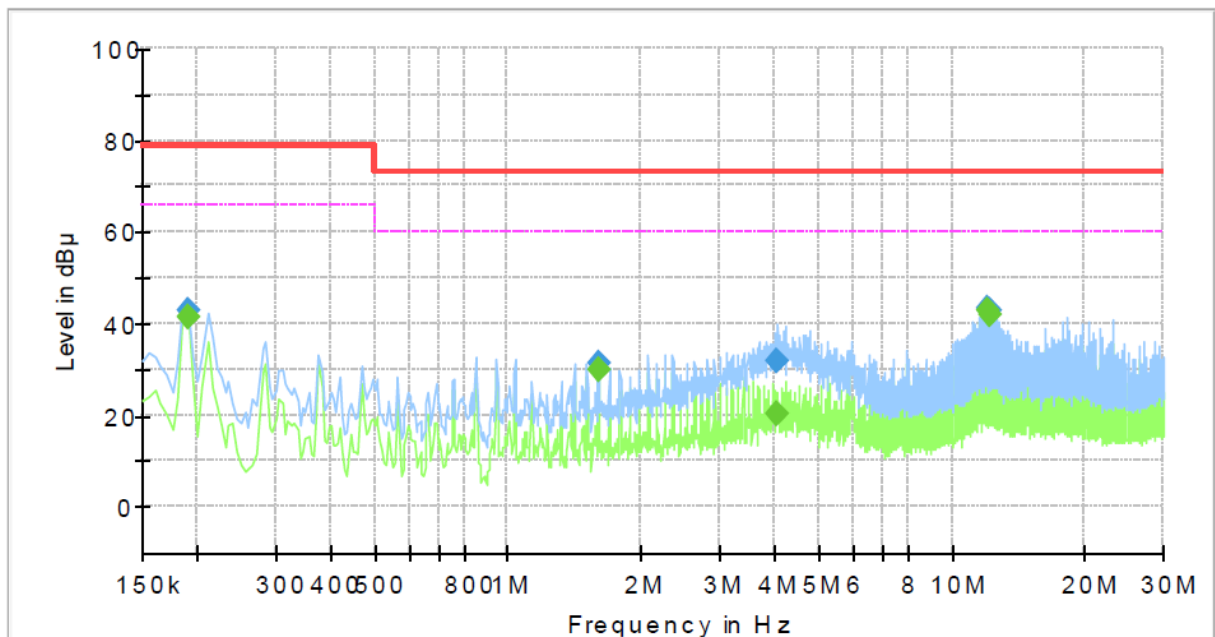
Conducted Emission

QND-6022R

L1

PoE

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Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	---	41.41	66.00	24.59	1000.0	9.000	L1	19.5
0.190000	42.84	---	79.00	36.16	1000.0	9.000	L1	19.5
1.600000	---	29.87	60.00	30.13	1000.0	9.000	L1	20.3
1.600000	31.12	---	73.00	41.88	1000.0	9.000	L1	20.3
4.060000	---	20.50	60.00	39.50	1000.0	9.000	L1	19.9
4.060000	31.82	---	73.00	41.18	1000.0	9.000	L1	19.9
12.035000	---	42.85	60.00	17.15	1000.0	9.000	L1	20.0
12.035000	43.24	---	73.00	29.76	1000.0	9.000	L1	20.0
12.130000	---	42.11	60.00	17.89	1000.0	9.000	L1	20.0
12.130000	42.70	---	73.00	30.30	1000.0	9.000	L1	20.0

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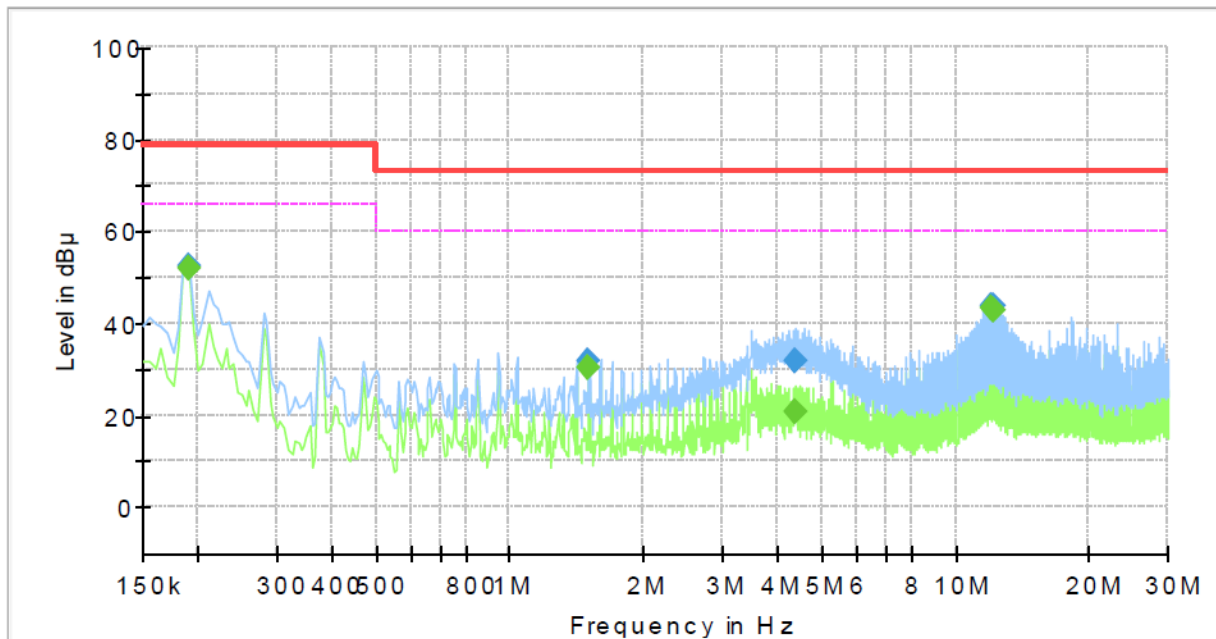
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	QND-6022R
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)
0.190000	---	51.89	66.00	14.11	1000.0	9.000	N	19.4
0.190000	52.55	---	79.00	26.45	1000.0	9.000	N	19.4
1.505000	---	30.21	60.00	29.79	1000.0	9.000	N	20.2
1.505000	31.79	---	73.00	41.21	1000.0	9.000	N	20.2
4.355000	---	20.76	60.00	39.24	1000.0	9.000	N	19.8
4.355000	31.78	---	73.00	41.22	1000.0	9.000	N	19.8
12.035000	---	43.49	60.00	16.51	1000.0	9.000	N	20.0
12.035000	43.96	---	73.00	29.04	1000.0	9.000	N	20.0
12.130000	---	42.97	60.00	17.03	1000.0	9.000	N	20.0
12.130000	43.67	---	73.00	29.33	1000.0	9.000	N	20.0

◆ 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 (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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Report No.:

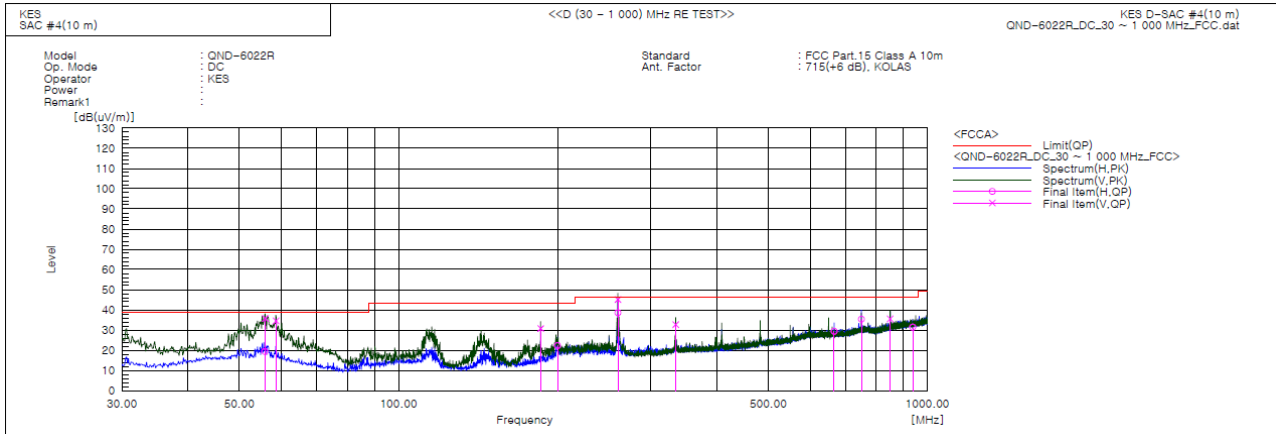
KES-EM-21T0921

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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	55.858	H	40.2	-20.8	19.4	39.0	19.6	369.0	162.0	
2	55.972	V	56.6	-20.8	35.8	39.0	3.2	132.0	139.0	
3	58.644	V	55.6	-21.0	34.6	39.0	4.4	122.0	227.0	
4	185.582	V	51.9	-21.1	30.8	43.5	12.7	129.0	200.0	
5	199.751	H	41.4	-19.1	22.3	43.5	21.2	384.0	239.0	
6	259.896	V	62.0	-16.9	45.1	46.5	1.4	146.0	70.0	
7	259.896	H	55.5	-16.9	38.6	46.5	7.9	399.0	143.0	
8	334.114	V	46.1	-13.4	32.7	46.5	13.8	142.0	6.0	
9	666.352	H	33.5	-4.1	29.4	46.5	17.1	392.0	220.0	
10	749.993	H	37.1	-1.7	35.4	46.5	11.1	379.0	35.0	
11	850.051	V	36.1	-0.5	35.6	46.5	10.9	152.0	219.0	
12	937.588	H	30.4	1.0	31.4	46.5	15.1	384.0	325.0	

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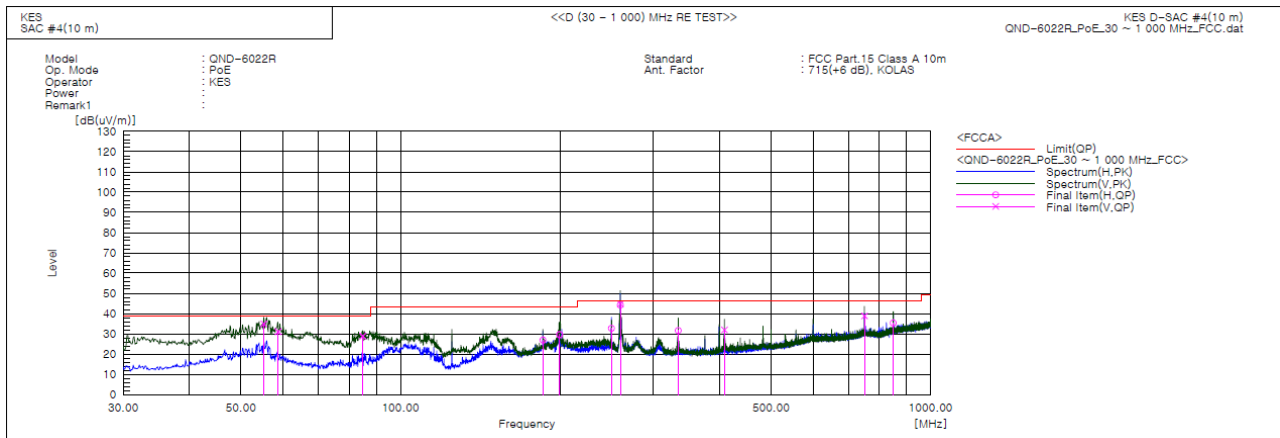
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PoE Mode



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	55.224	V	55.6	-20.7	34.9	39.0	4.1	149.0	132.0	
2	58.755	V	52.1	-21.0	31.1	39.0	7.9	144.0	90.0	
3	84.832	V	54.2	-25.3	28.9	39.0	10.1	121.0	196.0	
4	185.584	H	48.0	-21.1	26.9	43.5	16.6	394.0	259.0	
5	199.652	H	48.7	-19.1	29.6	43.5	13.9	391.0	275.0	
6	249.967	H	49.9	-17.2	32.7	46.5	13.8	382.0	126.0	
7	259.895	V	61.8	-16.9	44.9	46.5	1.6	116.0	341.0	
8	259.902	H	61.1	-16.9	44.2	46.5	2.3	391.0	149.0	
9	334.129	H	45.0	-13.4	31.6	46.5	14.9	398.0	232.0	
10	408.339	V	43.5	-11.5	32.0	46.5	14.5	162.0	173.0	
11	749.989	V	40.6	-1.7	38.9	46.5	7.6	132.0	212.0	
12	850.056	H	35.9	-0.5	35.4	46.5	11.1	374.0	267.0	

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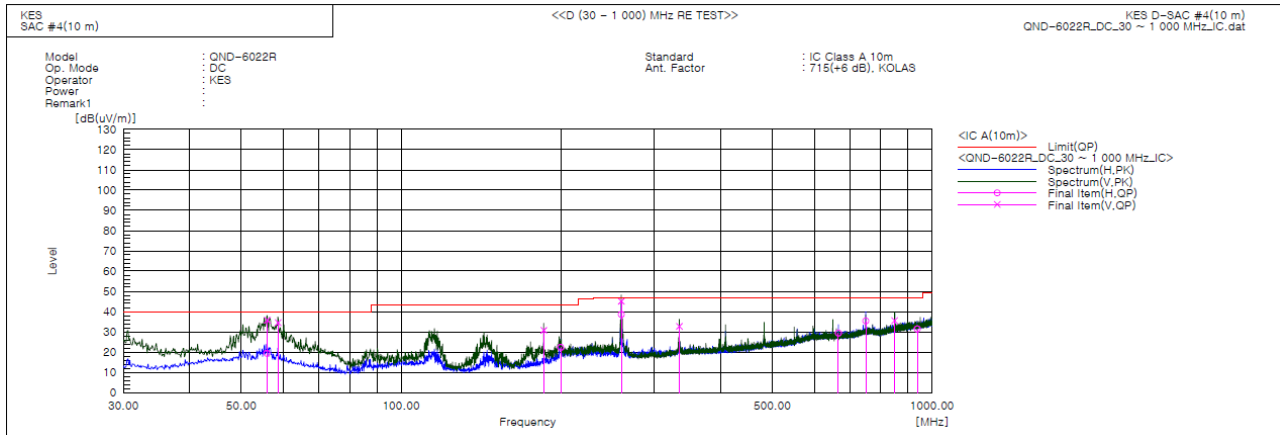
Report No.:

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- 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	55.858	H	40.2	-20.8	19.4	40.0	20.6	369.0	162.0	
2	55.972	V	56.6	-20.8	35.8	40.0	4.2	132.0	139.0	
3	58.644	V	55.6	-21.0	34.6	40.0	5.4	122.0	227.0	
4	185.582	V	51.9	-21.1	30.8	43.5	12.7	129.0	200.0	
5	199.751	H	41.4	-19.1	22.3	43.5	21.2	384.0	239.0	
6	259.896	V	62.0	-16.9	45.1	47.0	1.9	146.0	70.0	
7	259.896	H	55.5	-16.9	38.6	47.0	8.4	399.0	143.0	
8	334.114	V	46.1	-13.4	32.7	47.0	14.3	142.0	6.0	
9	666.352	H	33.5	-4.1	29.4	47.0	17.6	392.0	220.0	
10	749.993	H	37.1	-1.7	35.4	47.0	11.6	379.0	35.0	
11	850.051	V	36.1	-0.5	35.6	47.0	11.4	152.0	219.0	
12	937.588	H	30.4	1.0	31.4	47.0	15.6	384.0	325.0	

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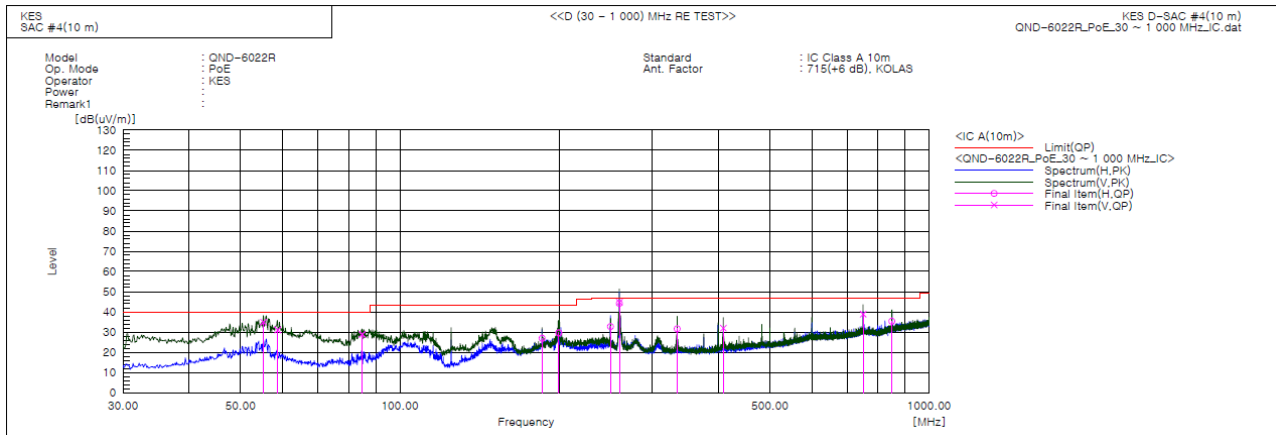
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PoE Mode



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	55.224	V	55.6	-20.7	34.9	40.0	5.1	149.0	132.0	
2	58.755	V	52.1	-21.0	31.1	40.0	8.9	144.0	90.0	
3	84.832	V	54.2	-25.3	28.9	40.0	11.1	121.0	196.0	
4	185.584	H	48.0	-21.1	26.9	43.5	16.6	394.0	259.0	
5	199.652	H	48.7	-19.1	29.6	43.5	13.9	391.0	275.0	
6	249.967	H	49.9	-17.2	32.7	47.0	14.3	382.0	126.0	
7	259.895	V	61.8	-16.9	44.9	47.0	2.1	116.0	341.0	
8	259.902	H	61.1	-16.9	44.2	47.0	2.8	391.0	149.0	
9	334.129	H	45.0	-13.4	31.6	47.0	15.4	398.0	232.0	
10	408.339	V	43.5	-11.5	32.0	47.0	15.0	162.0	173.0	
11	749.989	V	40.6	-1.7	38.9	47.0	8.1	132.0	212.0	
12	850.056	H	35.9	-0.5	35.4	47.0	11.6	374.0	267.0	

◆ Calculation – SAC #4(10 m)

Result(QP) [dB(μ V/m)] = (Reading(QP)[dB(μ V)] + c.f[dB(1/m)])

Margin(QP)[dB] = Limit[dB(μ V/m)] - Result(QP) [dB(μ V/m)]

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

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

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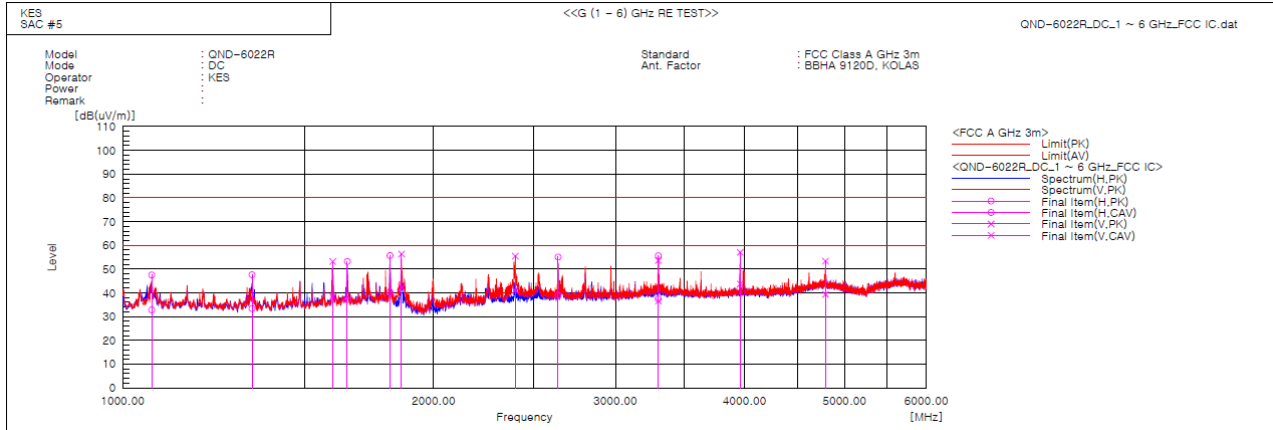
Report No.:

KES-EM-21T0921

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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	1066.892	H	55.1	40.4	-7.6	47.5	32.8	80.0	60.0	32.5	27.2	334.0	247.4	
2	1334.379	H	53.8	39.6	-6.2	47.6	33.4	80.0	60.0	32.4	26.6	378.0	238.6	
3	1597.559	V	58.1	43.2	-4.9	53.2	38.3	80.0	60.0	26.8	21.7	117.0	29.5	
4	1650.419	H	57.9	41.8	-4.7	53.2	37.1	80.0	60.0	26.8	22.9	322.0	154.2	
5	1815.227	H	59.7	44.4	-4.0	55.7	40.4	80.0	60.0	24.3	19.6	379.0	35.3	
6	1861.881	V	60.2	46.1	-3.8	56.4	42.3	80.0	60.0	23.6	17.7	121.0	256.1	
7	2399.392	V	57.6	43.2	-2.1	55.5	41.1	80.0	60.0	24.5	18.9	161.0	178.5	
8	2640.019	H	56.1	39.9	-1.0	55.1	38.9	80.0	60.0	24.9	21.1	335.0	32.8	
9	3300.392	V	52.9	35.9	0.7	53.6	36.6	80.0	60.0	26.4	23.4	144.0	0.9	
10	3300.823	H	54.9	36.7	0.7	55.6	37.4	80.0	60.0	24.4	22.6	361.0	225.1	
11	3960.656	V	55.1	41.8	2.0	57.1	43.8	80.0	60.0	22.9	16.2	115.0	5.1	
12	4791.890	V	48.1	34.1	5.3	53.4	39.4	80.0	60.0	26.6	20.6	151.0	148.6	

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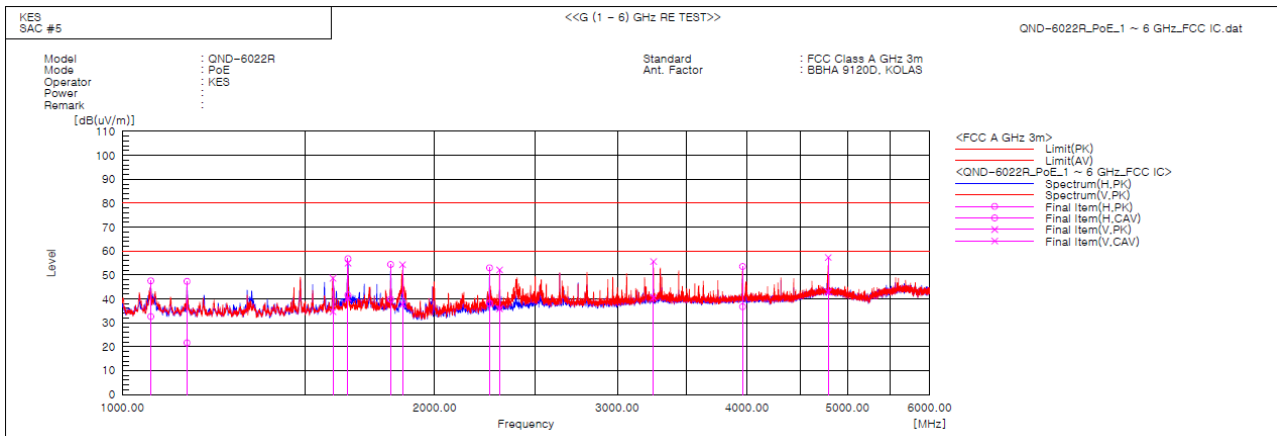
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PoE Mode



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	1065.652	H	55.1	40.2	-7.6	47.5	32.6	80.0	60.0	32.5	27.4	378.0	252.2	
2	1154.381	H	54.4	28.7	-7.1	47.3	21.6	80.0	60.0	32.7	38.4	341.0	328.5	
3	1596.311	V	53.5	39.5	-4.9	48.6	34.6	80.0	60.0	31.4	25.4	115.0	104.0	
4	1650.119	H	61.5	46.3	-4.7	56.8	41.6	80.0	60.0	23.2	18.4	388.0	336.0	
5	1650.339	V	59.6	45.0	-4.7	54.9	40.3	80.0	60.0	25.1	19.7	121.0	29.0	
6	1814.393	H	58.4	43.8	-4.0	54.4	39.8	80.0	60.0	25.6	20.2	351.0	344.7	
7	1862.531	V	58.1	41.6	-3.8	54.3	37.8	80.0	60.0	25.7	22.2	144.0	256.6	
8	2259.388	H	55.6	40.7	-2.6	53.0	38.1	80.0	60.0	27.0	21.9	365.0	28.7	
9	2310.651	V	54.5	38.3	-2.4	52.1	35.9	80.0	60.0	27.9	24.1	111.0	317.7	
10	3250.193	V	54.9	39.8	0.7	55.6	40.5	80.0	60.0	24.4	19.5	145.0	171.0	
11	3960.492	H	51.5	34.7	2.0	53.5	36.7	80.0	60.0	26.5	23.3	333.0	52.7	
12	4788.785	V	52.1	37.7	5.2	57.3	42.9	80.0	60.0	22.7	17.1	155.0	215.1	

Calculation

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

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

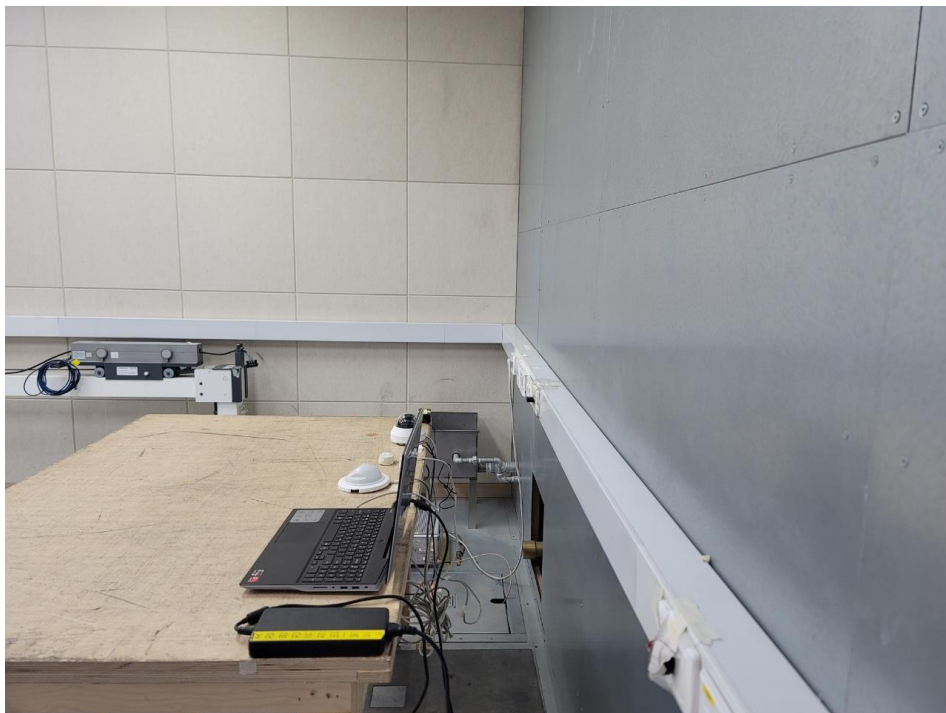
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

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

Test Setup Photos and Configuration

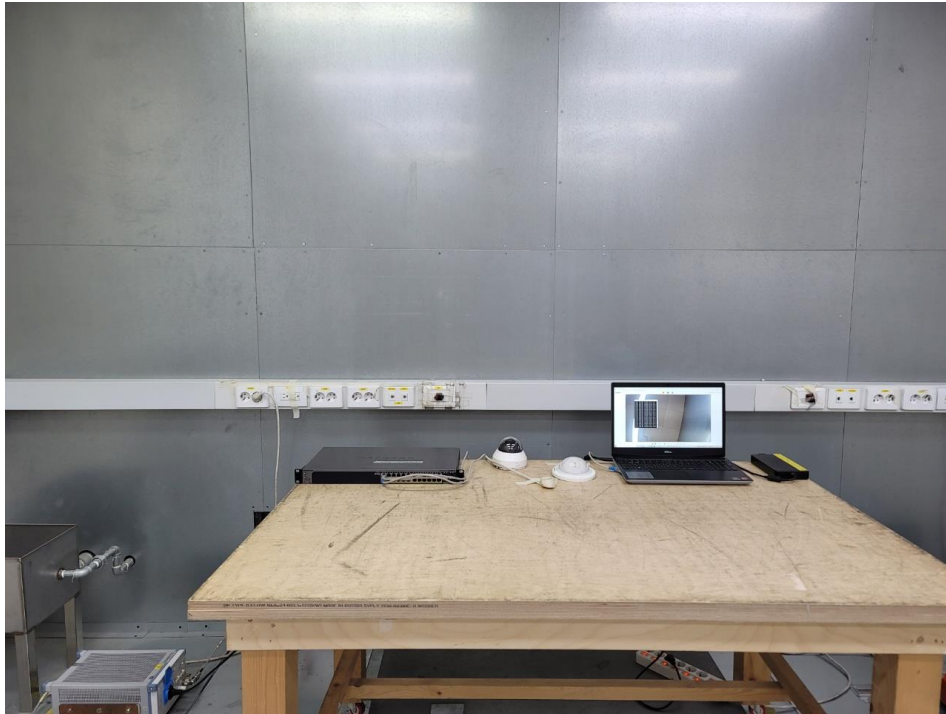
Conducted Emissions at Mains Power Ports

■ DC Mode



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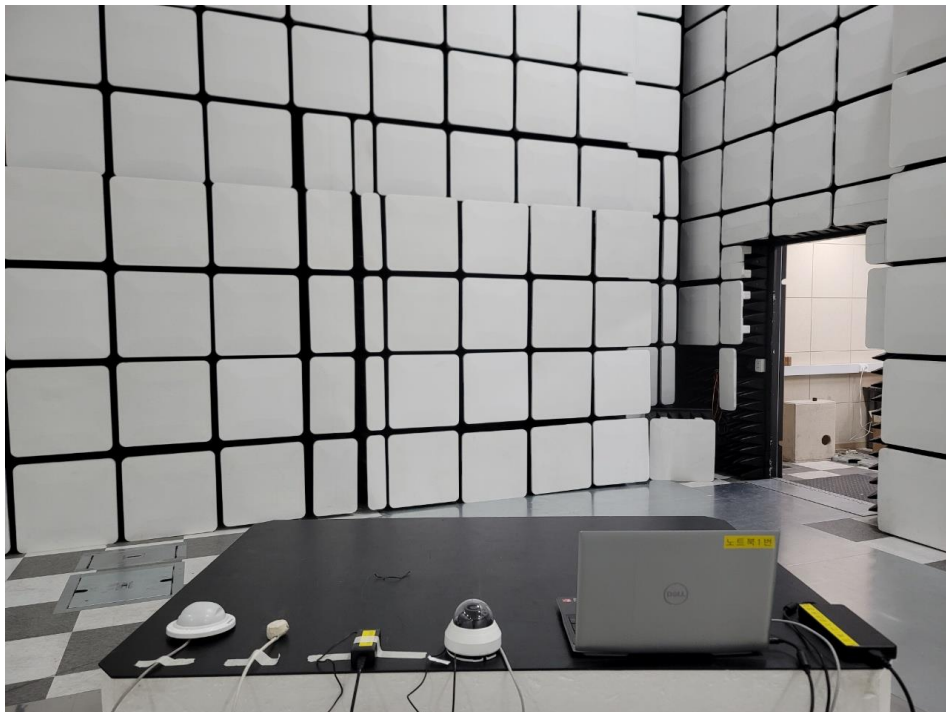
■ PoE Mode



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Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



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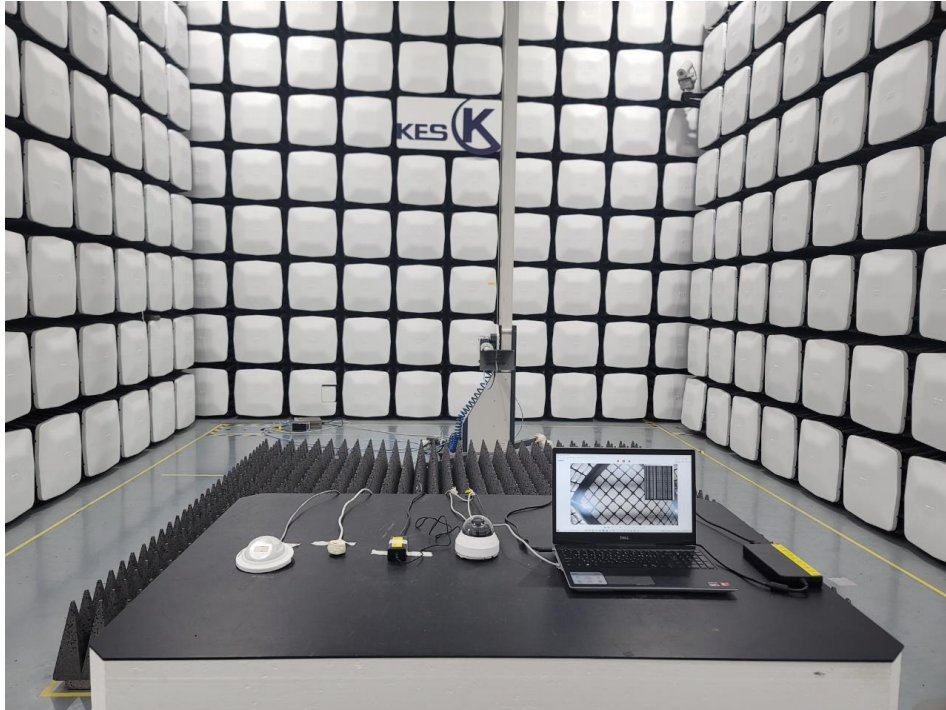
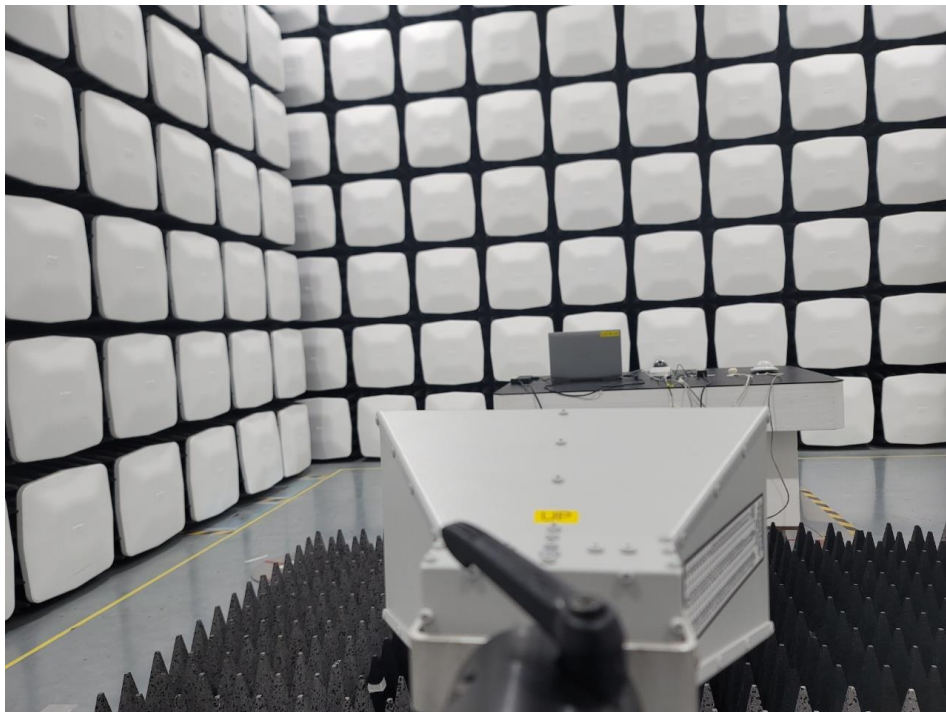
■ PoE Mode



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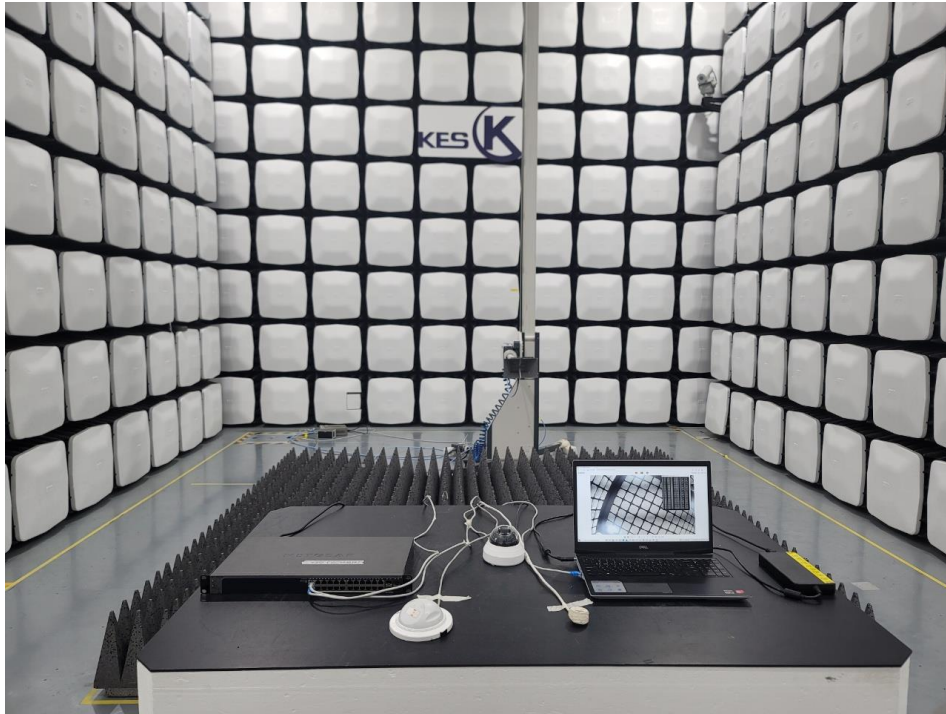
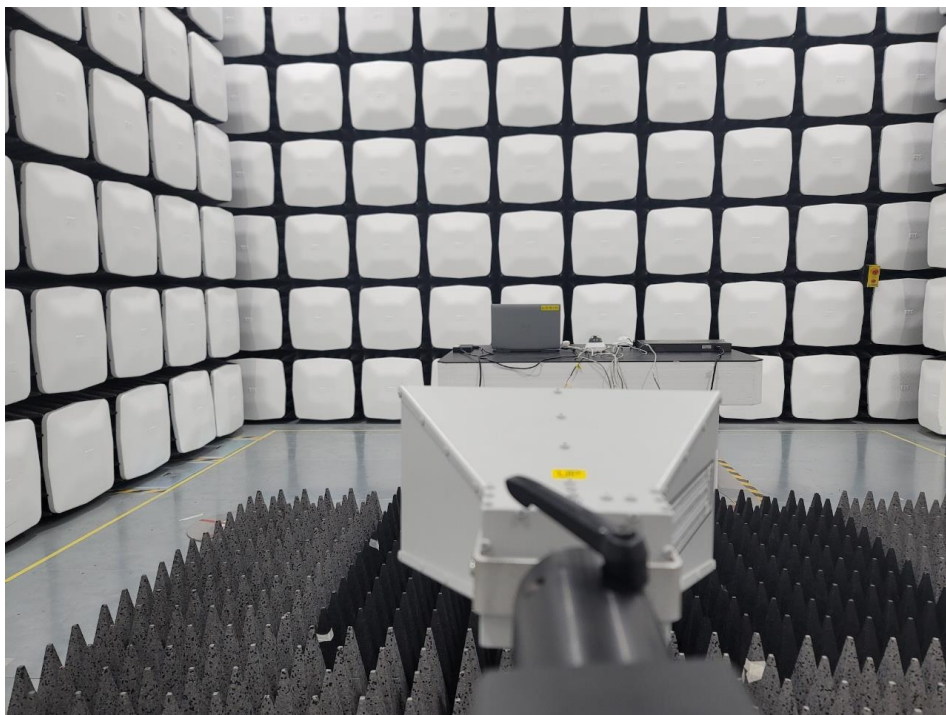
Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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■ PoE Mode



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

(Internal View)



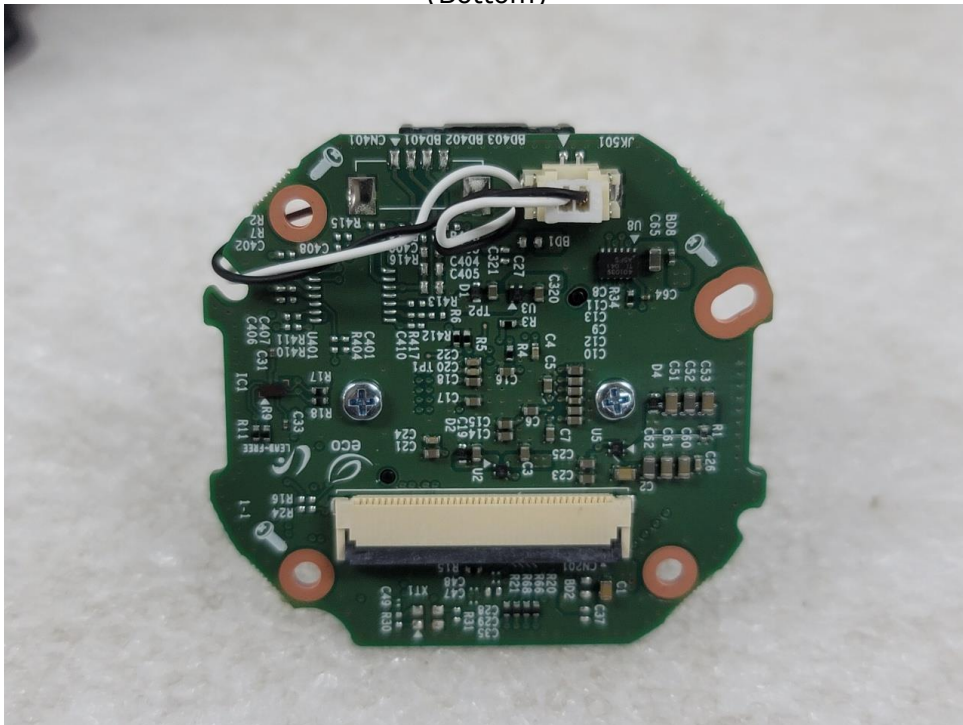
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EUT Internal View – Board 1

(Top)



(Bottom)



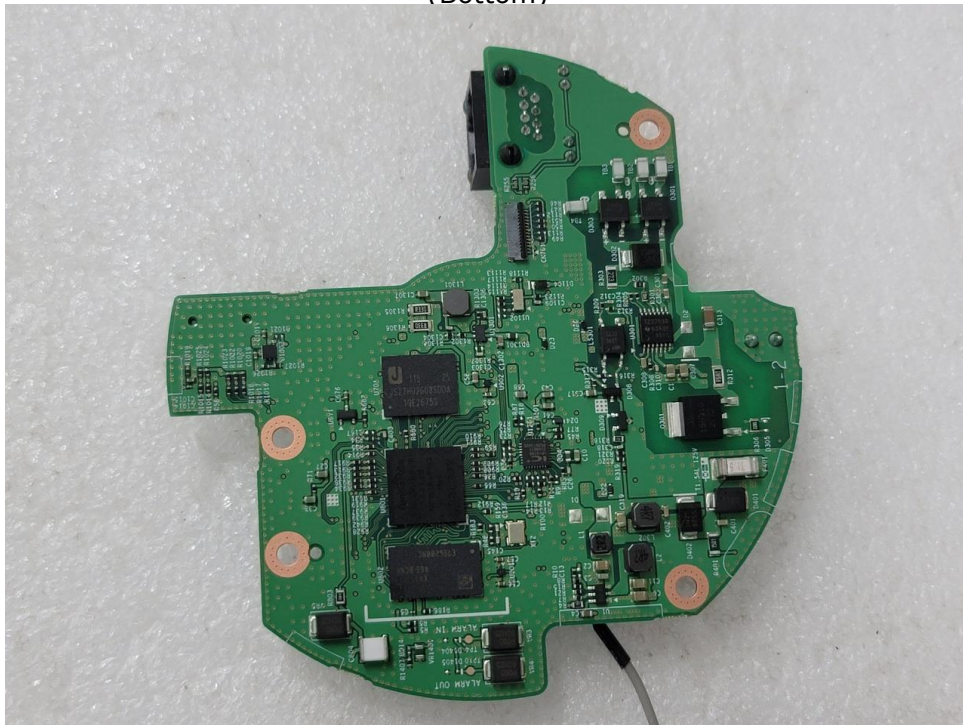
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EUT Internal View – Board 2

(Top)

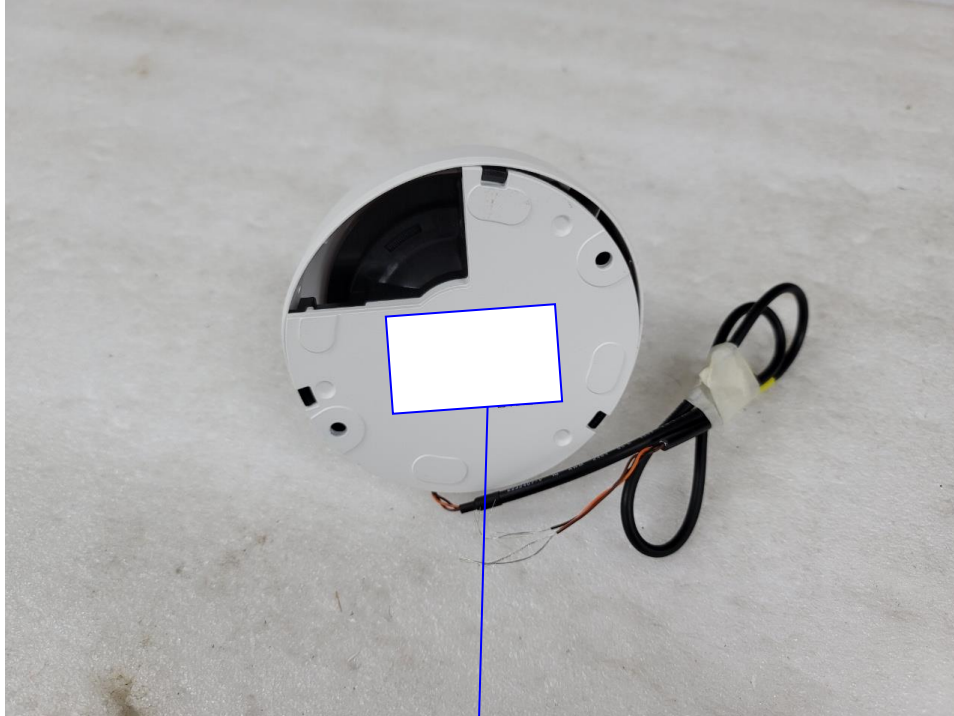


(Bottom)



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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.