

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-21T0959-R1

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## EMC TEST REPORT For RCM

Test Report No. : KES-EM-21T0959-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : QNO-6082R  
Variant Model : QNO-6072R, QNO-6082R1, QNO-6072R1  
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 : Aug. 18, 2021  
Test date : Aug. 25, 2021  
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Sung Keun, Park  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager

Tested by In Han, Kang  
(Retired person)  
Proxy signature : SungKeun, Park

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
Oct. 06, 2021	KES-EM-21T0959	Issued
Feb. 24, 2023	KES-EM-21T0959-R1	Change the Applicant and manufacturer at the request of the customer, Adding a Simple Variant Model on Customer Request

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## 1.0 General Product Description

### Main Specifications of EUT are:

<b>Video</b>	
Imaging Device	1/2.8" 2MP CMOS
Effective Pixels	1920(H)x1080(V)
Min. Illumination	Color: 0.03Lux(F1.6, 1/30sec) BW: 0Lux(IR LED on)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation
<b>Lens</b>	
Focal Length (Zoom Ratio)	3.2~10mm(3.1x) motorized varifocal
Max. Aperture Ratio	F1.6(Wide)~F2.9(Tele)
Angular Field of View	H: 109.0°(Wide)~33.2°(Tele) / V: 57.4°(Wide)~18.7°(Tele) / D: 132.0°(Wide)~38.0°(Tele)
Focus Control	Simple focus
Lens Type	DC auto iris
<b>Operational</b>	
IR Viewable Length	30m(98.42ft)
Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SSDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR
Motion Detection	4ea, polygonal zones
Privacy Masking	6ea, rectangular zones
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec)
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	Defocus detection, Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
<b>Network</b>	
Ethernet	RJ-45(10/100BASE-T)
Video Compression	H.265/H.264: Main/High, MJPEG
Resolution	1920x1080, 1280x960, 1280x720, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 15fps/12fps(60Hz/50Hz)

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Smart Codec	WiseStream II
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(6 users) / Multicast Multiple streaming(Up to 3 profiles)
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), 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) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP)
Edge Storage	Micro SD/SDHC/SDXC 1slot 128GB
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
Web Viewer	Supported OS: Windows 7, 8.1, 10, Mac OSx10.12, 10.13, 10.14 Recommended Browser: Google Chrome Supported Browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OSxonly)
Memory	512MB RAM, 256MB Flash
<b>Environmental</b>	
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	-30°C ~ +60°C(-22°F ~ +140°F) / Less than 90% RH
Certification	IP66, IK10
<b>Electrical</b>	
Input Voltage	PoE(IEEE802.3af, Class3), 12VDC
Power Consumption	PoE: Max 7.40W, typical 5.40W 12VDC: Max 6.50W, typical 4.80W
<b>Mechanical</b>	
Color / Material	Dark grey / Aluminum
Product dimensions / weight	Ø78.0x259.8mm(Ø3.07x10.23"), 900g(1.98 lb)
<b>DORI</b>	
Detect (25PPM/ 8PPF)	Wide: 27.4m(89.85ft) / Tele: 128.8m(422.56ft)
Observe (63PPM/ 19PPF)	Wide: 11.0m(35.94ft) / Tele: 51.5m(169.02ft)
Recognize (125PPM/ 38PPF)	Wide: 5.5m(17.97ft) / Tele: 25.8m(84.51ft)
Identify (250PPM/ 76PPF)	Wide: 2.7m(8.99ft) / Tele: 12.9m(42.26ft)

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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 240 V, 50 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	QNO-6082R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	2ACB022F	-	Channel Well Technology(Guangzhou) Co., Ltd.	-
PoE Adaptor	PT-PSE109GBRO	-	-	-
Notebook	P95G001	8KM8HT2	Wistron Infocom (Chengdu) Company Limited	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Button alarm	-	-	-	-
Multimeter	-	-	-	-
Micro SD Card	-	-	Sandisk	8 GB
Mic	MP1000	-	-	-

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## 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 (LAN)	Notebook	RJ-45 (LAN)	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
	2 Pin	Button alarm	2 Pin	3.0	U
	2 Pin	Multimeter	2 Pin	3.0	U
	3.5 mm	Mic	3.5 mm	1.4	U
	2 Pin	Adapter	2 Pin	1.6	U
Notebook	DC Jack	Notebook Adapter	DC Jack	1.4	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 Adapter	RJ-45 (PoE)	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
	2 Pin	Button alarm	2 Pin	3.0	U
	2 Pin	Multimeter	2 Pin	3.0	U
	3.5 mm	Mic	3.5 mm	1.4	U
Notebook	RJ-45 (LAN)	PoE Adapter	RJ-45 (LAN)	1.0	U
	DC Jack	Notebook Adapter	DC Jack	1.4	U

\* Unshielded=U, Shielded=S

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## 1.7 EUT Operating Mode(s)

Test Mode	operating
DC Mode	EUT Monitoring, Ping Test
PoE Mode	

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

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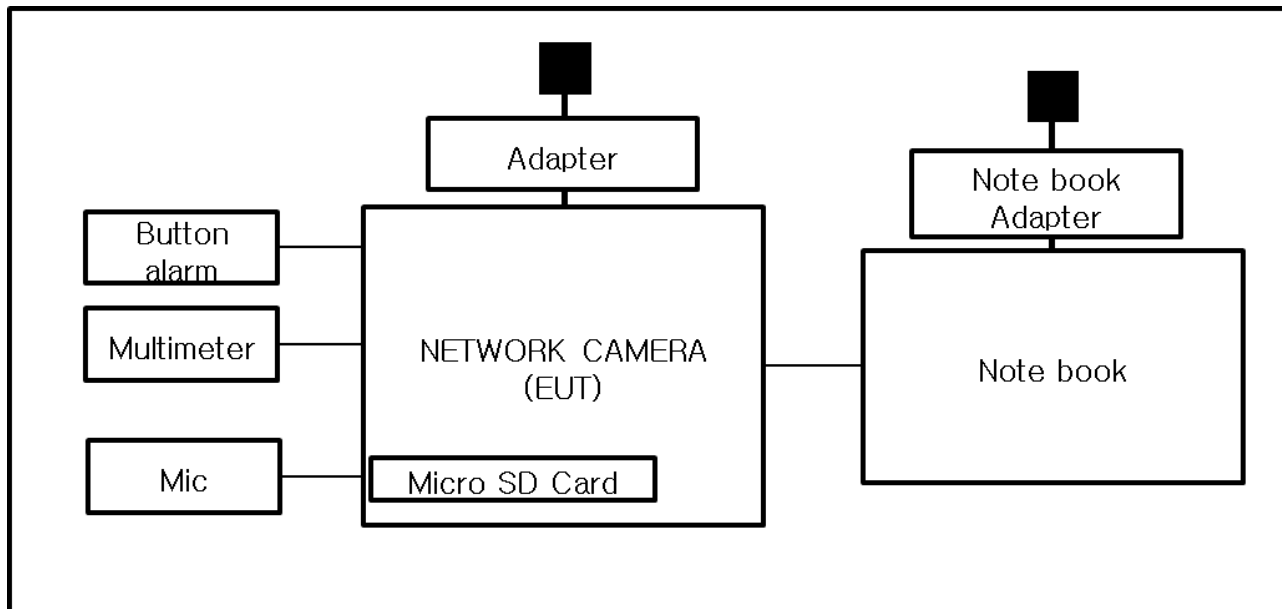


## 1.8 Configuration

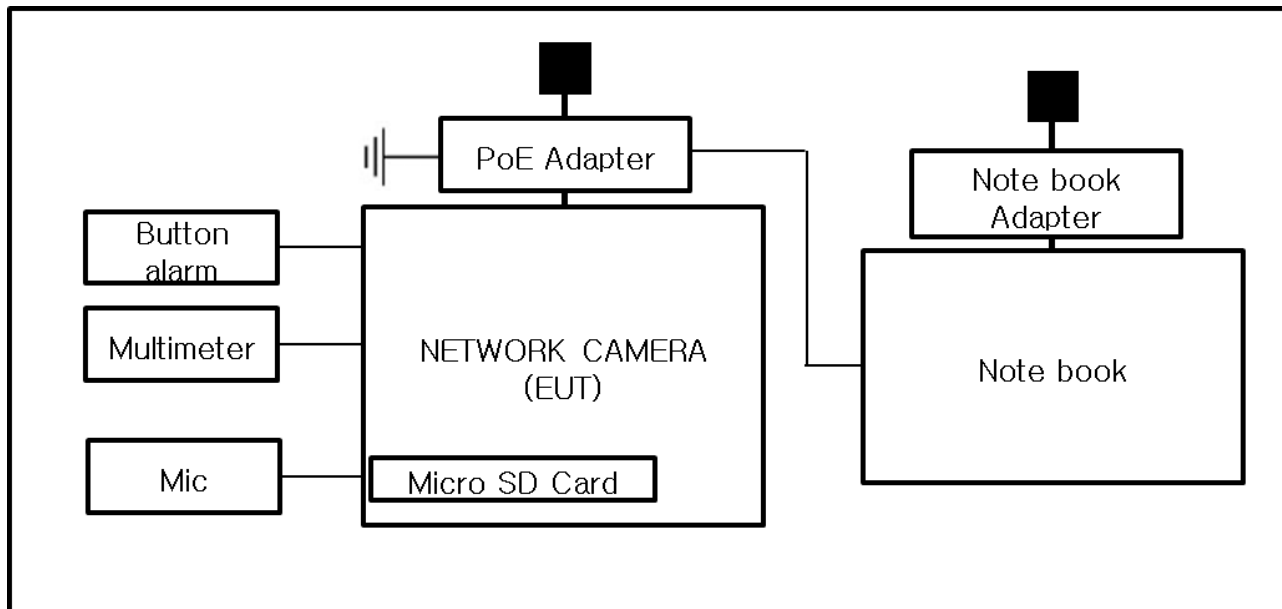
■ AC Main

□ DC Main

### ■ DC Mode



### ■ PoE Mode



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## 1.9 Remarks when standards applied

VIDEO ports are not used and have not been tested.







## 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:

☐ **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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- 
- |  |   |                                  |
|--|---|----------------------------------|
| <input type="checkbox"/> <b>VCCI-CISPR 32:2016</b>             | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> <b>AS/NZS CISPR32:2015</b> | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <br>   |   |                                  |
| <input type="checkbox"/> <b>47 CFR Part 15, Subpart B</b>      |   |                                  |
| <input type="checkbox"/> CISPR 22:2009 +A1:2010                | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2009                       |   |                                  |
| <br>   |   |                                  |
| <input type="checkbox"/> <b>IC Regulation ICES-003 : 2016</b>  |   |                                  |
| <input type="checkbox"/> CAN/CSA CISPR 22-10                   | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2014                       |   |                                  |
| <br>   |   |                                  |
| <input type="checkbox"/> <b>RE- Directive 2014/53/EU</b>       |   |                                  |
| <br>   |   |                                  |
| <input type="checkbox"/> EN 301 489-1 V1.9.2                   |   |                                  |
| <input type="checkbox"/> Equipment for fixed use               |   |                                  |
| <input type="checkbox"/> Equipment for vehicular use           |   |                                  |
| <input type="checkbox"/> Equipment for portable use            |   |                                  |
| <br>   |   |                                  |
| <input type="checkbox"/> EN 301 489-3 V1.6.1                   |   |                                  |
| <input type="checkbox"/> EN 301 489-17 V2.2.1                  |   |                                  |
| <input type="checkbox"/> EN 60945:2002                         |   |                                  |

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## 2.1 Conducted Emissions at Mains Power Ports

**Test Date**

Aug. 25, 2021

**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	01, 15, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 29, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

**Test Conditions**

Temperature: (24,8 ± 0,1) °C

Relative Humidity: (49,2 ± 0,2) % 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.

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## 2.2 Conducted Emissions at Telecommunication Ports

**Test Date**

Aug. 25, 2021

**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	01, 15, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 29, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021
<input checked="" type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 30, 2021
<input type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 30, 2021
<input type="checkbox"/>	CDN	CDNS502A	TESEQ	40431	

**Test Conditions**

Temperature: (24,8 ± 0,1) °C

Relative Humidity: (49,2 ± 0,2) % 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.- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.

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

### Test Date

Aug. 25, 2021

### 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, 25, 2021
<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: (24,3 ± 0,1) °C  
Relative Humidity: (49,1 ± 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.

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

**Test Date**

Aug. 25, 2021

**Test Location**

SEMI ANECHOIC CHAMBER #3

**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	ESR7	R & S	101190	08, 03, 2022
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 10, 2022
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

**Test Conditions**

Temperature: (24,5 ± 0,1) °C

Relative Humidity: (49,3 ± 0,2) % R.H.

**Frequency Range of Measurement**

1 GHz to 6 GHz

**Instrument Settings**

IF Band Width: 1 MHz

**Test Results**

The requirements are:

- ☒ PASS  
☐ NOT PASS  
☐ NOT APPLICABLE

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

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## APPENDIX A – TEST DATA

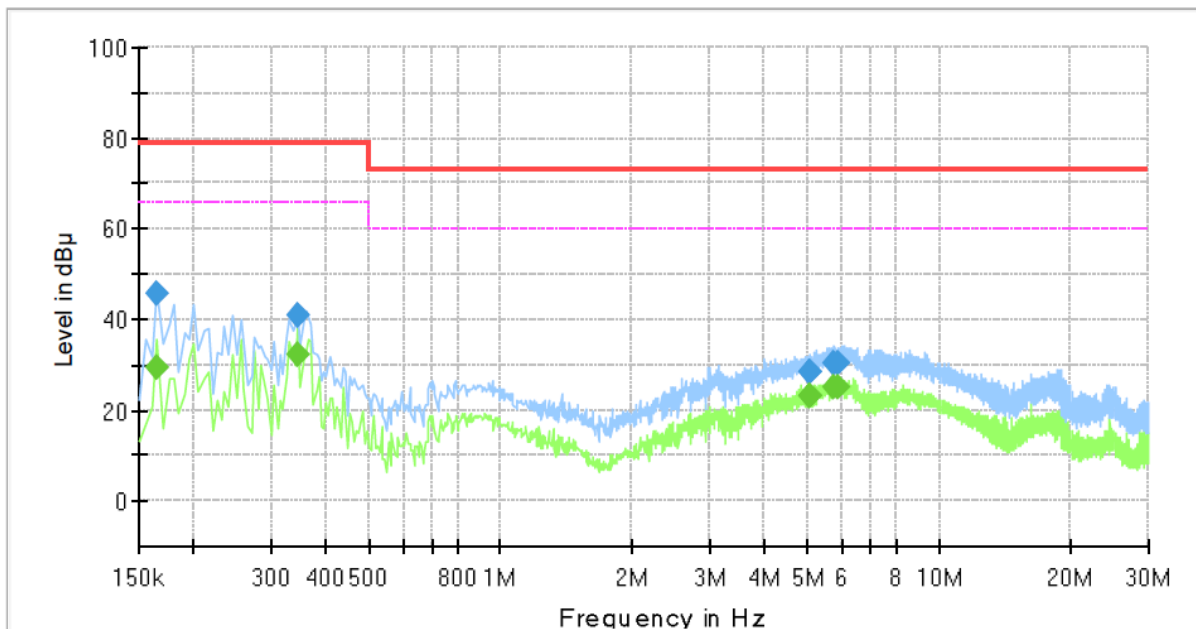
### Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

#### Common Information

Test Description:	Conducted Emission
Model No.:	QNO-6082R
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	---	29.60	66.00	36.40	1000.0	9.000	L1	19.5
0.165000	45.58	---	79.00	33.42	1000.0	9.000	L1	19.5
0.345000	---	32.33	66.00	33.67	1000.0	9.000	L1	19.6
0.345000	41.07	---	79.00	37.93	1000.0	9.000	L1	19.6
5.065000	---	23.10	60.00	36.90	1000.0	9.000	L1	19.7
5.065000	28.38	---	73.00	44.62	1000.0	9.000	L1	19.7
5.070000	---	23.15	60.00	36.85	1000.0	9.000	L1	19.7
5.070000	28.33	---	73.00	44.67	1000.0	9.000	L1	19.7
5.780000	---	25.10	60.00	34.90	1000.0	9.000	L1	19.6
5.780000	30.15	---	73.00	42.85	1000.0	9.000	L1	19.6
5.880000	---	25.29	60.00	34.71	1000.0	9.000	L1	19.6
5.880000	30.42	---	73.00	42.58	1000.0	9.000	L1	19.6

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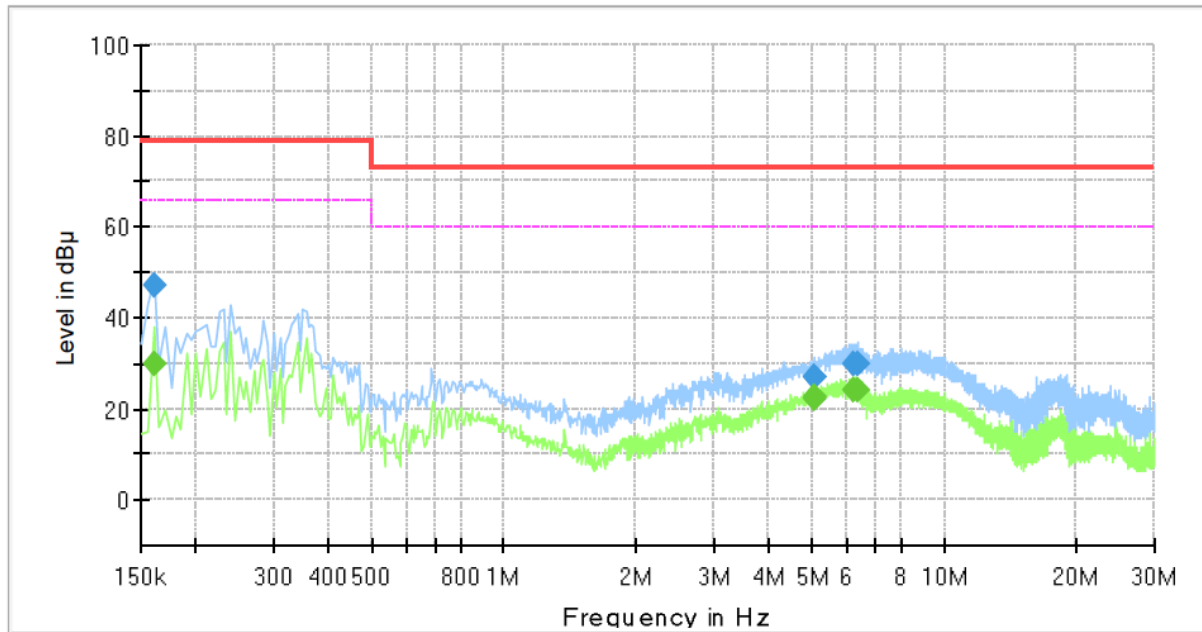
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## NEUTRAL LINE

### Common Information

Test Description:	Conducted Emission
Model No.:	QNO-6082R
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)
0.160000	---	30.03	66.00	35.97	1000.0	9.000	N	19.4
0.160000	47.24	---	79.00	31.76	1000.0	9.000	N	19.4
5.065000	---	22.40	60.00	37.60	1000.0	9.000	N	19.7
5.065000	26.93	---	73.00	46.07	1000.0	9.000	N	19.7
5.080000	---	22.62	60.00	37.38	1000.0	9.000	N	19.7
5.080000	27.16	---	73.00	45.84	1000.0	9.000	N	19.7
6.215000	---	24.13	60.00	35.87	1000.0	9.000	N	19.5
6.215000	29.72	---	73.00	43.28	1000.0	9.000	N	19.5
6.345000	---	23.91	60.00	36.09	1000.0	9.000	N	19.5
6.345000	29.63	---	73.00	43.37	1000.0	9.000	N	19.5

#### ◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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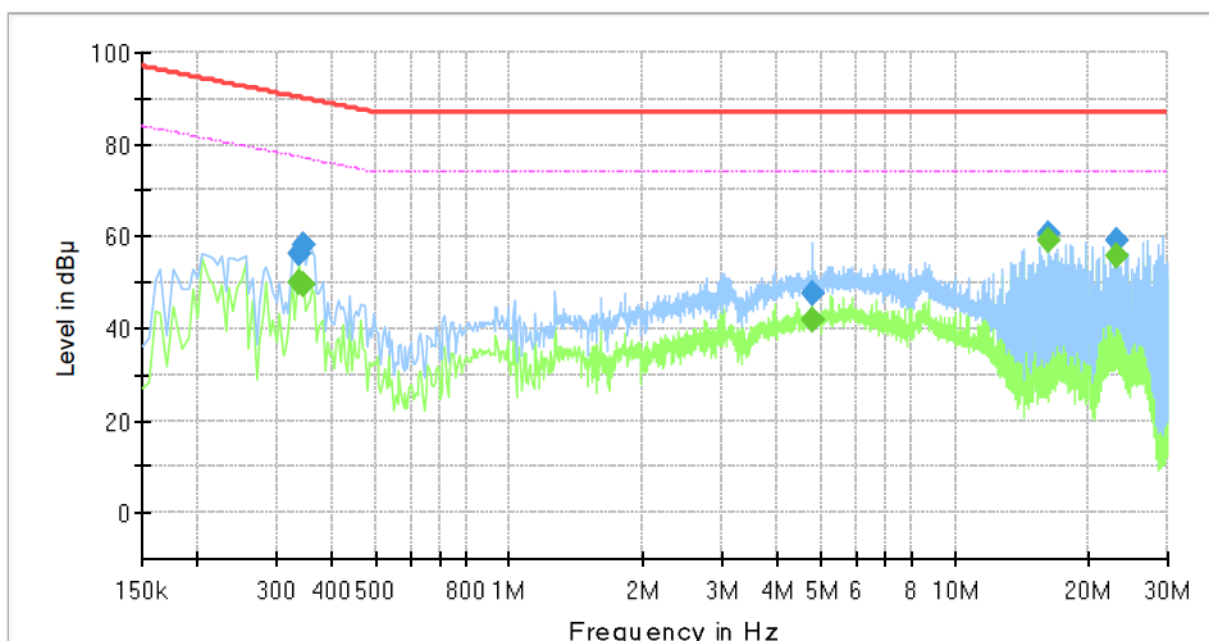
## Conducted Emissions at Telecommunication Ports

■ DC Mode

[100 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	QNO-6082R
Mode :	DC
Speed :	100 Mbps
Operator Name:	KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.335000	---	49.90	77.33	27.43	1000.0	9.000	Single Line	19.7
0.335000	56.47	---	90.33	33.86	1000.0	9.000	Single Line	19.7
0.345000	---	49.42	77.08	27.66	1000.0	9.000	Single Line	19.7
0.345000	58.08	---	90.08	32.00	1000.0	9.000	Single Line	19.7
4.785000	---	42.01	74.00	31.99	1000.0	9.000	Single Line	19.6
4.785000	47.72	---	87.00	39.28	1000.0	9.000	Single Line	19.6
16.230000	---	59.15	74.00	14.85	1000.0	9.000	Single Line	19.8
16.230000	60.79	---	87.00	26.21	1000.0	9.000	Single Line	19.8
23.130000	---	55.72	74.00	18.28	1000.0	9.000	Single Line	20.2
23.130000	59.19	---	87.00	27.81	1000.0	9.000	Single Line	20.2

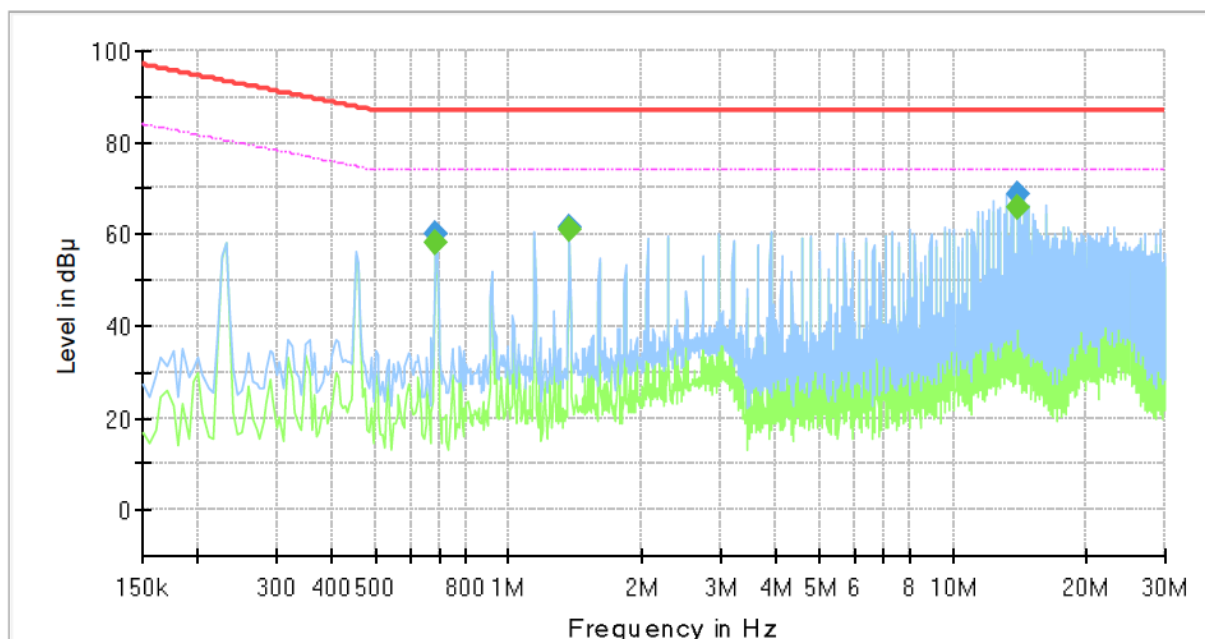
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**PoE Mode**
**[100 Mbps]**
**Common Information**

Test Description:	Telecommunication Emission
Model No.:	QNO-6082R
Mode :	
Speed :	100 Mbps
Operator Name:	KES


**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.685000	---	58.23	74.00	15.77	1000.0	9.000	Single Line	20.0
0.685000	59.97	---	87.00	27.03	1000.0	9.000	Single Line	20.0
1.370000	---	61.10	74.00	12.90	1000.0	9.000	Single Line	20.1
1.370000	61.62	---	87.00	25.38	1000.0	9.000	Single Line	20.1
13.940000	---	65.74	74.00	8.26	1000.0	9.000	Single Line	19.8
13.940000	68.71	---	87.00	18.29	1000.0	9.000	Single Line	19.8

**◆ Calculation**

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



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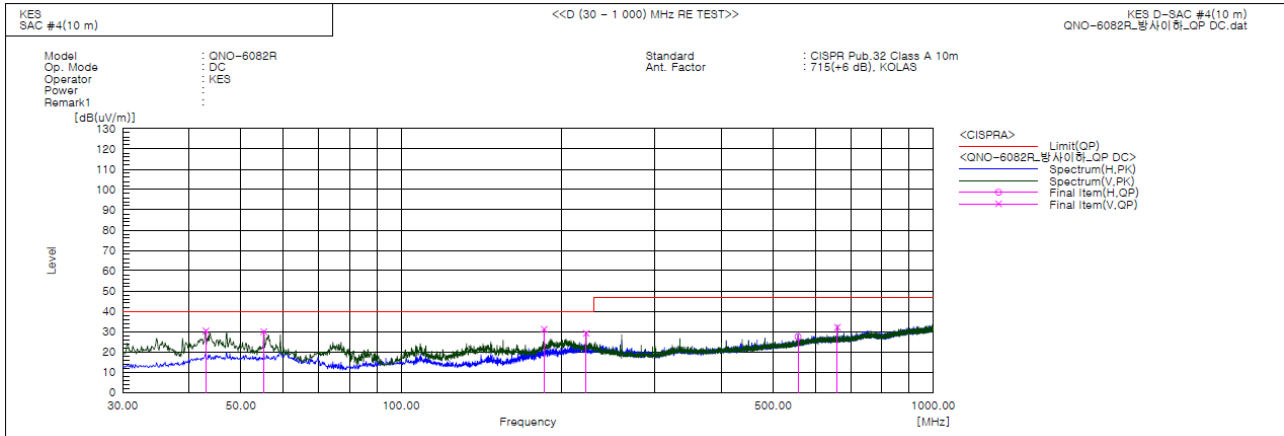
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## Radiated Electric Field Emissions(Below 1 GHz)

### ■ 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	42.974	V	52.1	-21.8	30.3	40.0	9.7	102.0	30.0	
2	55.220	V	51.4	-21.4	30.0	40.0	10.0	105.0	90.0	
3	185.564	V	53.8	-22.6	31.2	40.0	8.8	109.0	15.0	
4	222.666	V	49.2	-20.1	29.1	40.0	10.9	117.0	346.0	
5	556.831	H	37.5	-10.0	27.5	47.0	19.5	296.0	230.0	
6	660.015	V	39.9	-7.8	32.1	47.0	14.9	111.0	15.0	

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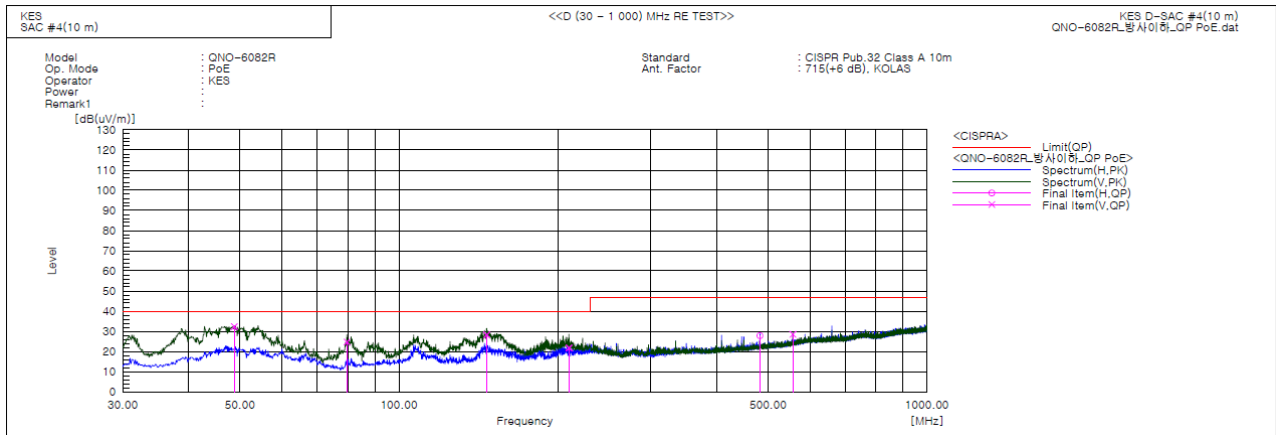
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### PoE Mode



### 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	48.794	V	53.5	-21.1	32.4	40.0	7.6	104.0	313.0	
2	79.713	V	52.4	-27.7	24.7	40.0	15.3	109.0	246.0	
3	146.643	V	53.4	-25.2	28.2	40.0	11.8	102.0	206.0	
4	209.814	V	42.4	-20.6	21.8	40.0	18.2	113.0	42.0	
5	482.626	H	40.0	-12.1	27.9	47.0	19.1	279.0	274.0	
6	556.953	V	38.5	-10.0	28.5	47.0	18.5	110.0	25.0	

### ◆ Calculation

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

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

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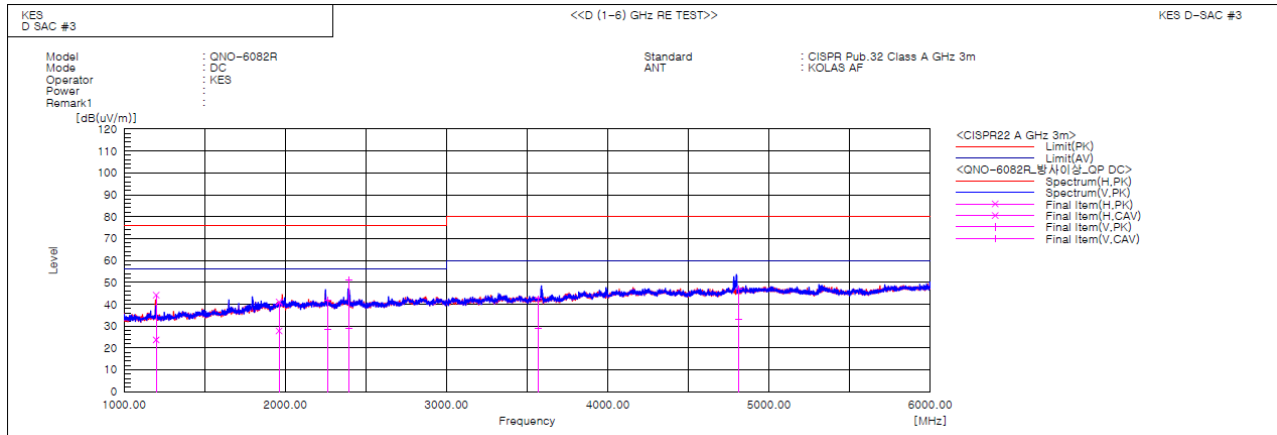
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## Radiated Electric Field Emissions(Above 1 GHz)

### 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	1198.360	H	52.6	32.2	-8.5	44.1	23.7	76.0	56.0	31.9	32.3	100.0	95.3	
2	1961.454	H	42.3	29.0	-1.3	41.0	27.7	76.0	56.0	35.0	28.3	100.0	8.0	
3	2265.177	V	42.1	28.6	-0.2	41.9	28.4	76.0	56.0	34.1	27.6	100.0	10.4	
4	2393.919	V	50.7	28.8	0.2	50.9	29.0	76.0	56.0	25.1	27.0	100.0	217.7	
5	3569.304	V	39.5	26.0	3.0	42.5	29.0	80.0	60.0	37.5	31.0	100.0	61.1	
6	4814.107	V	38.7	25.2	8.0	46.7	33.2	80.0	60.0	33.3	26.8	100.0	142.8	

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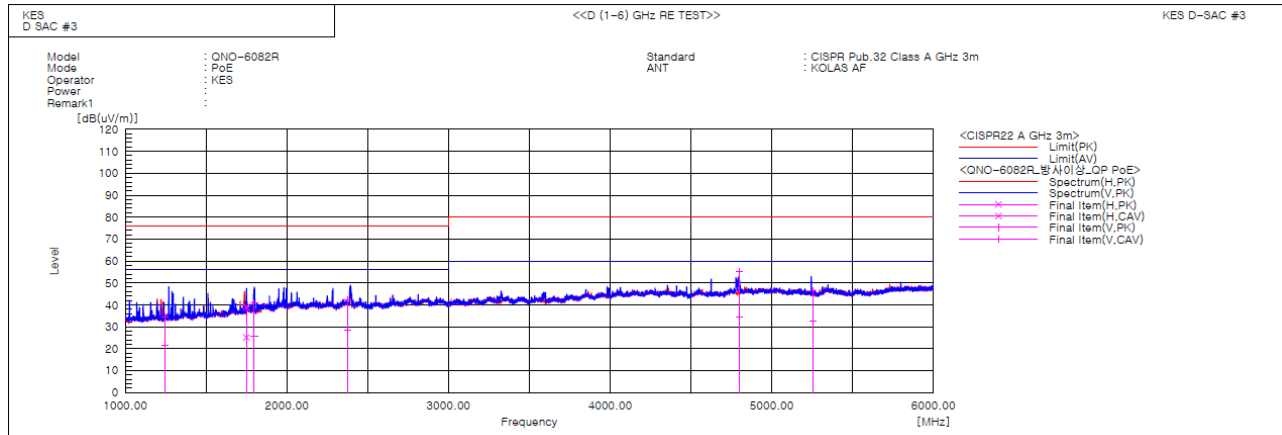
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### PoE Mode



#### 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	1245.065	V	42.4	29.5	-8.1	34.3	21.4	76.0	56.0	41.7	34.6	100.0	259.3	
2	1749.478	H	42.6	28.9	-3.7	38.9	25.2	76.0	56.0	37.1	30.8	100.0	200.0	
3	1798.050	V	43.9	28.7	-3.1	40.8	25.6	76.0	56.0	35.2	30.4	100.0	109.6	
4	2376.233	V	42.2	28.4	0.2	42.4	28.6	76.0	56.0	33.6	27.4	100.0	339.7	
5	4798.519	V	47.3	26.3	7.9	55.2	34.2	80.0	60.0	24.8	25.8	100.0	36.9	
6	5255.368	V	38.1	24.6	8.2	46.3	32.8	80.0	60.0	33.7	27.2	100.0	258.4	

#### ◆ Calculation

Result(PK/CAV) [dB( $\mu$ V/m)] = (Reading(PK/CAV)[dB( $\mu$ V)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB( $\mu$ V/m)] - Result(PK/CAV) [dB( $\mu$ V/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

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## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

#### ■ DC Mode



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## Conducted Emissions at Telecommunication Ports

### ■ DC Mode



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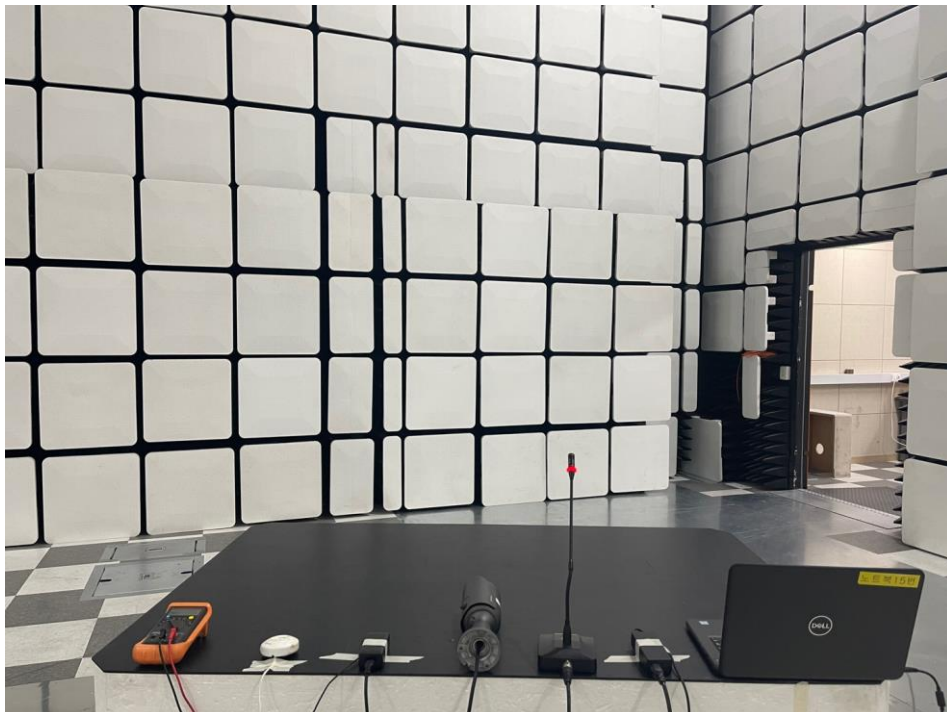
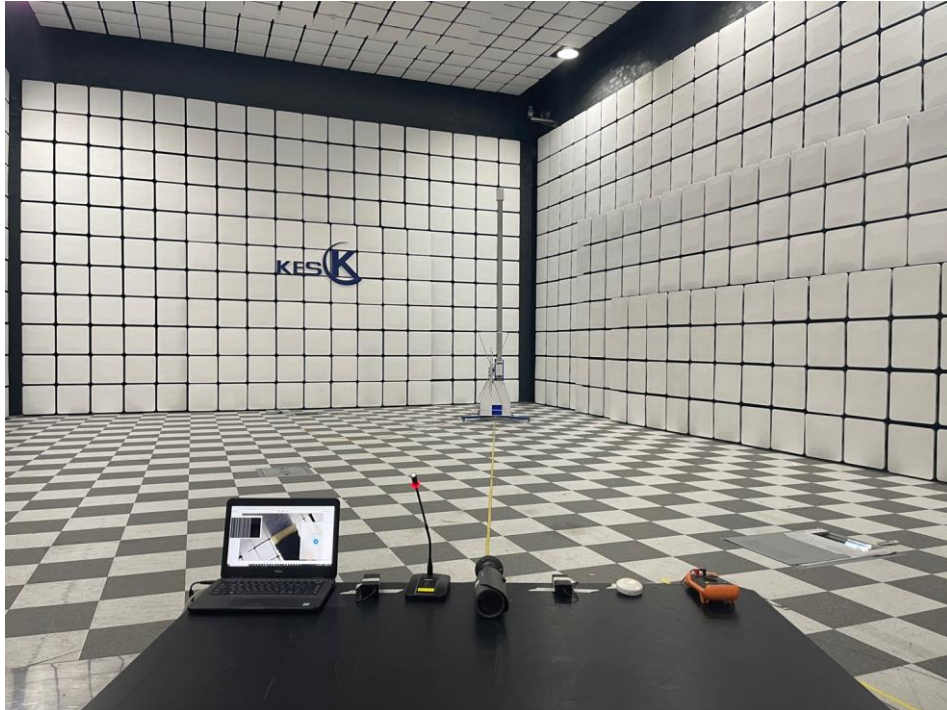
## ■ PoE Mode





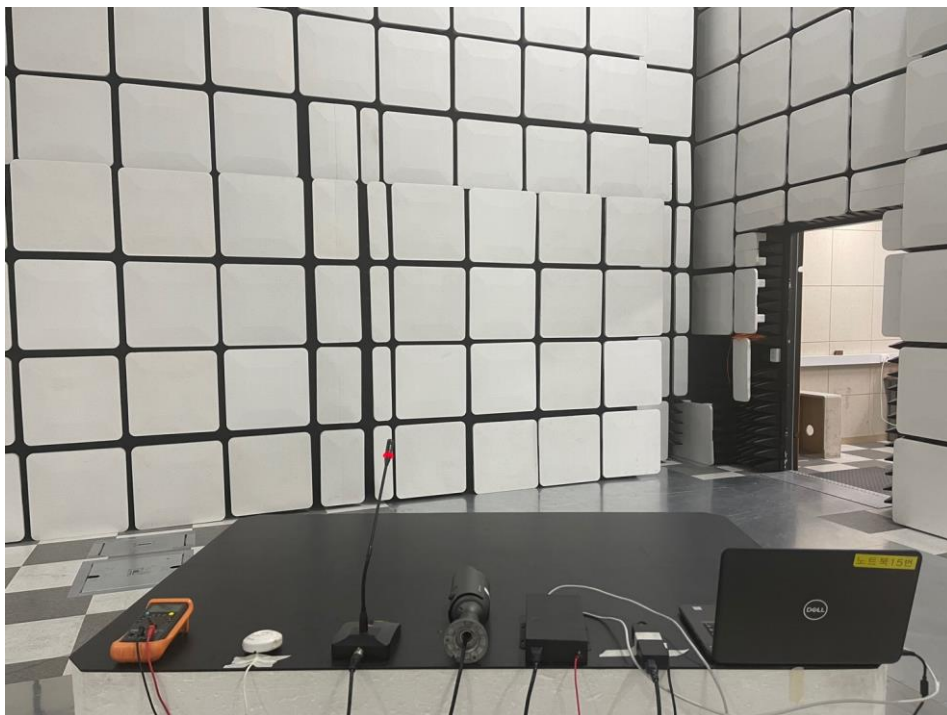
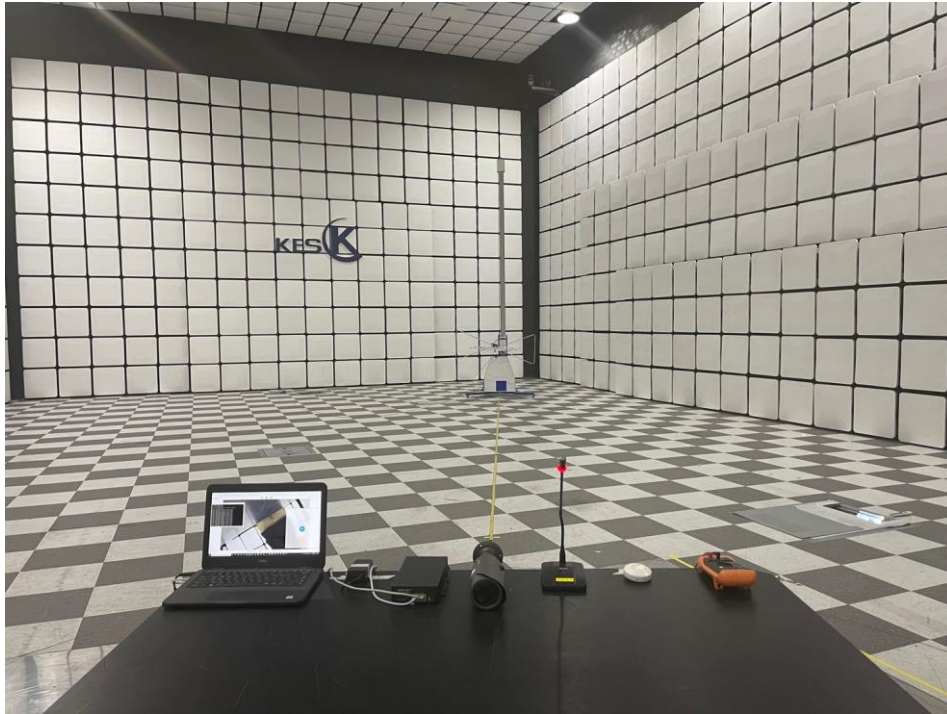
## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



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## ■ PoE Mode



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## Radiated Electric Field Emissions(Above 1 GHz)

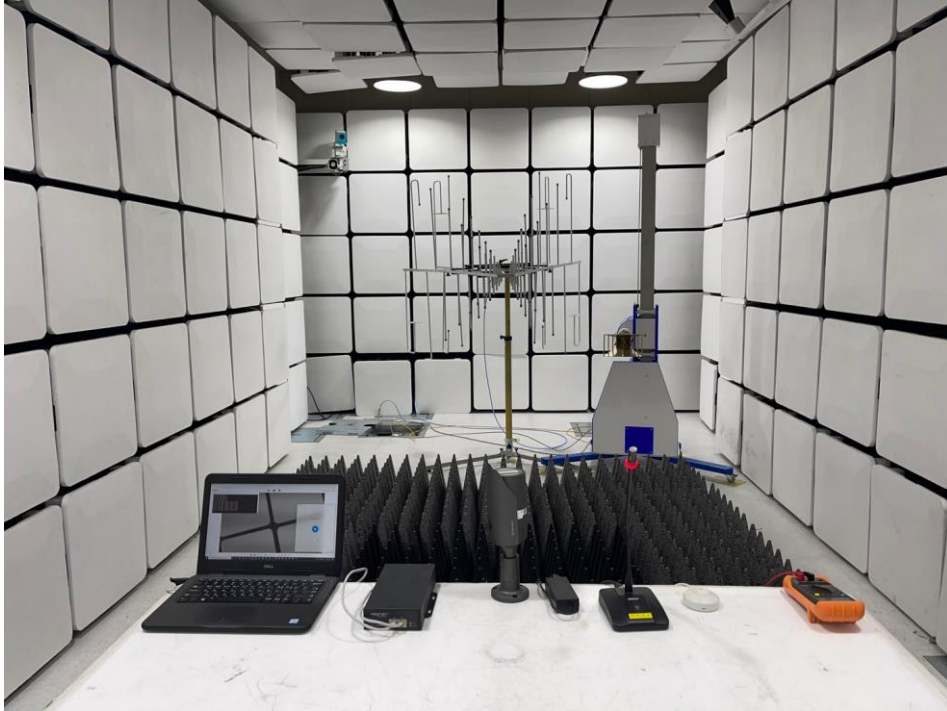
### ■ DC Mode



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## ■ PoE Mode



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## EUT External Photographs

(Top)



(Bottom)



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## **EUT Internal Photographs**

(Internal View)

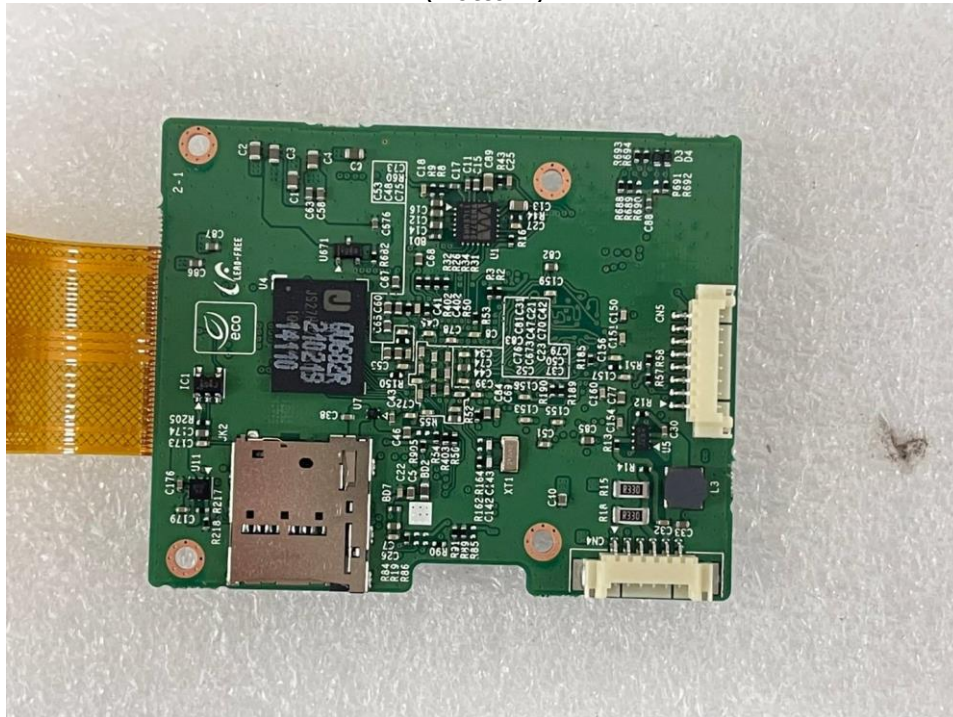


## EUT Internal View – Main Board 1

(Top)



(Bottom)



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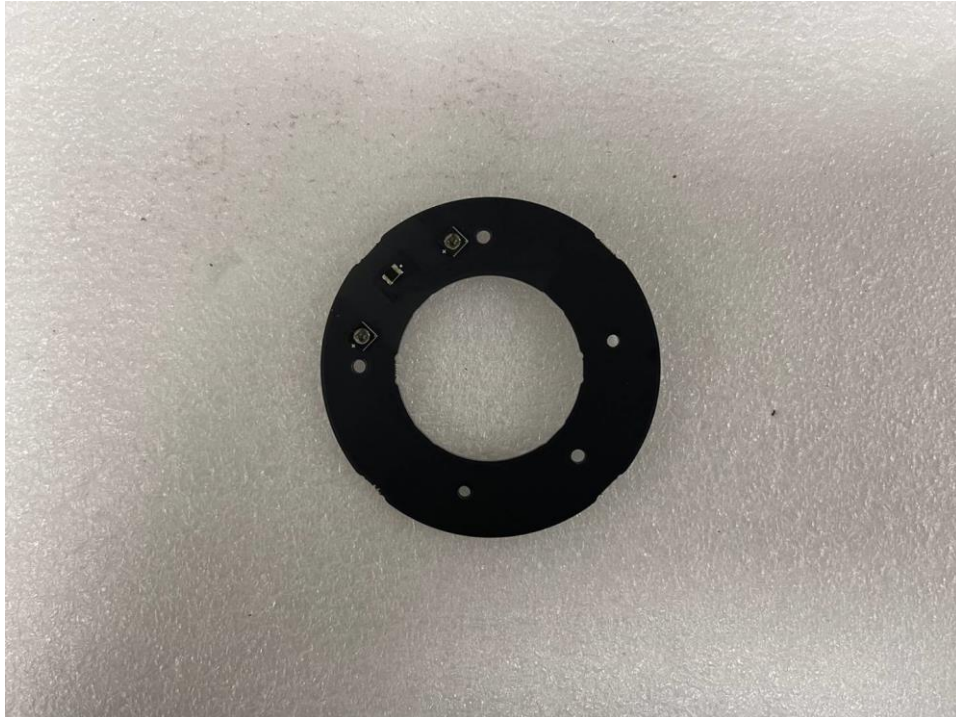


**EUT Internal View – Sub Board 1**

(Top)



(Bottom)



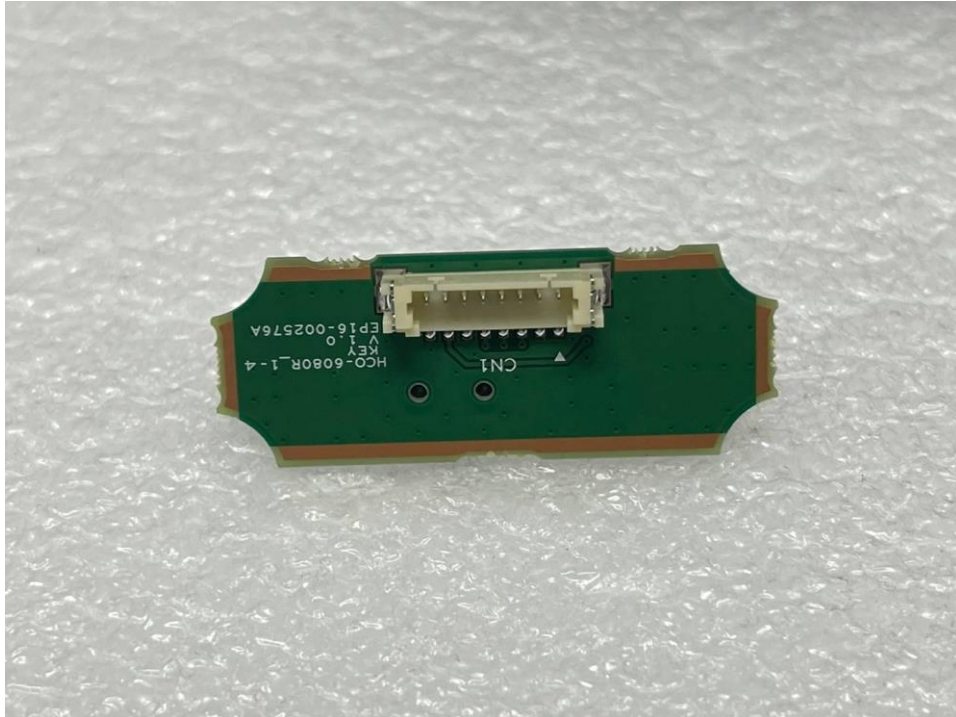
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## EUT Internal View – Sub Board 2

(Top)



(Bottom)



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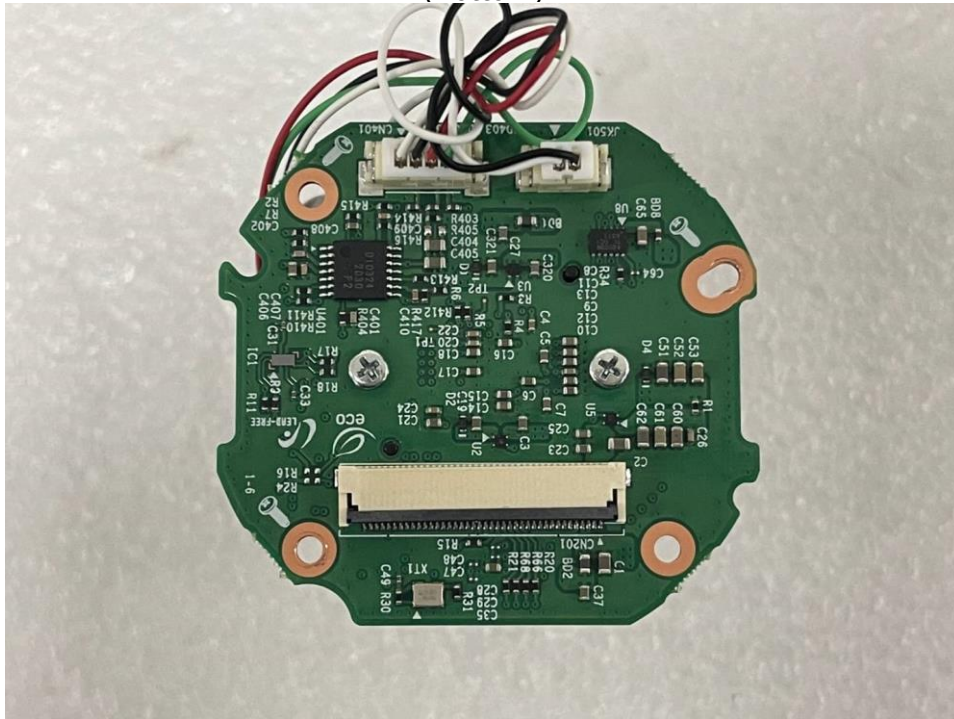


## EUT Internal View – Sub Board 3

(Top)



(Bottom)



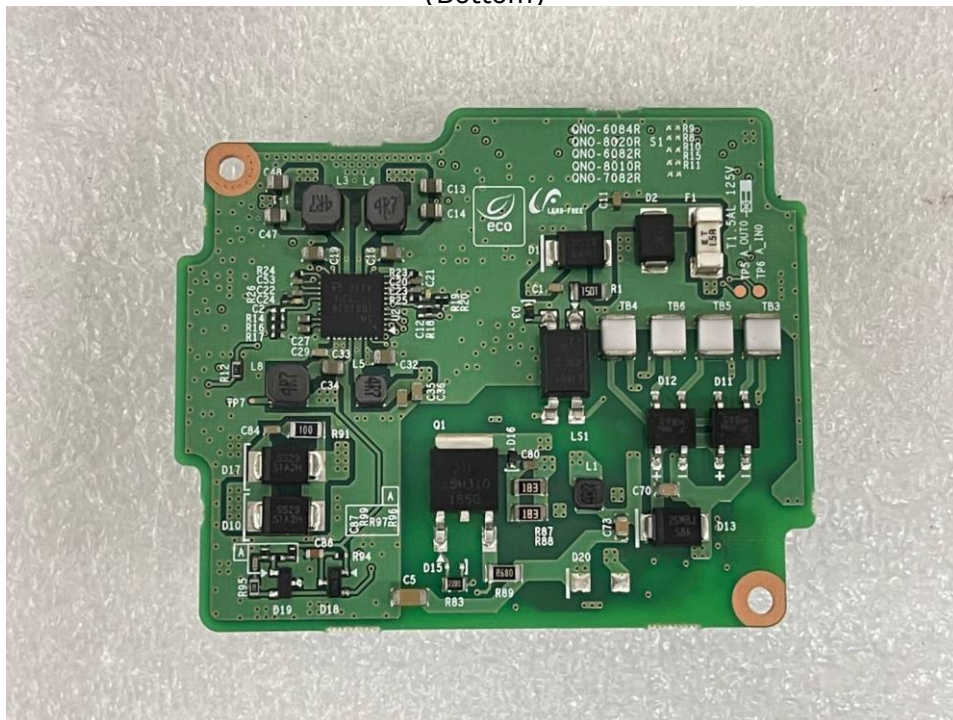
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## EUT Internal View – Sub Board 4

(Top)



(Bottom)



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