

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-21T0868-R1

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# EMC TEST REPORT

Test Report No. : KES-EM-21T0868-R1

Date of Issue : Feb. 24, 2023

Product name : NETWORK CAMERA

Model/Type No. : QNO-7082R

Variant Model : -

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)

Equipment authorization : **Supplier's Declaration of Conformity**

Date of Receipt : Aug. 27, 2021

Test date : Sep. 02, 2021 ~ Sep. 04, 2021

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

Tested by

Dae Hyun, Kim  
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. 16, 2021	KES-EM-21T0868	Issued
Feb. 24, 2023	KES-EM-21T0868-R1	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:

<b>Video</b>	
Imaging Device	1/3" CMOS
Resolution	2560 x 1440, 1920 x 1080, 1280 x 960, 1280 x 720, 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. 30fps at 4M all resolutions, MJPEG : Max. 15fps
NETD	None
Pixel Size	None
Min. Illumination	Color : 0.1Lux (F1.6, 1/30sec) B/W : 0Lux (IR LED On)
Video Out	CVBS : 1.0 Vpp/75Ω composite, 720x480(N), 720x576(P) for installation
Video Transmission Distance	None
<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 : 98.6°(Wide) ~ 30.8°(Tele), V : 52.3°(Wide) ~ 17.3°(Tele), D : 115.7°(Wide) ~ 35.3°(Tele)
Min. Object Distance	None
Focus Control	Simple focus
Lens Type	None
Mount Type	None
Optional Lens	None
<b>Pan / Tilt / Rotate</b>	
Pan / Tilt / Rotate Range	None
Pan Range	None
Pan Speed	None
Tilt Range	None
Tilt Speed	None
Rotate Range	None
Sequence	None
Preset Accuracy	None
<b>Operational</b>	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR
Digital Image Stabilization	None

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Defog	None
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)
Digital PTZ	None
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	Defocus detection, Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line
Business Intelligence	None
Serial Interface	None
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, Handover
Audio In	Line in
Audio Out	None
IR Viewable Length	30m (98.42ft)
IR Illuminator (Optional)	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
<b>Radiometry</b>	
Temperature Detect Range	None
Temperature Accuracy	None
Temperature Detection	None
Additional	None
<b>Network</b>	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression	H.265/H.264 : Main/High, MJPEG
Audio Compression	G.711 u-law / G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz, G.726 16Kbps, 24Kbps, 32Kbps, 40Kbps
Smart Codec	Manual (5ea area), WiseStream II
Video Quality Adjustment	H.265/H.264 : Target bitrate level control, MJPEG : Quality level control
Bitrate Control	H.264/H.265 : CBR or VBR MJPEG : VBR
Streaming	Unicast (6 users) / Multicast Multiple streaming (Up to 3 profiles)

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Protocol	IPv4, IPv6, 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, LLDP
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication
Application Programming Interface	ONVIF Profile S/G/T, SUNAPI (HTTP API)
<b>General</b>	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	
Edge Storage	Micro SD/SDHC/SDXC 1slot 128GB
Memory	512MB RAM, 256MB Flash
<b>Environmental &amp; Electrical</b>	
Operating Temperature / Humidity	-40°C~+55°C (-40°F~+131°F) / Less than 95% RH * Start up should be done at -30°C or above
Storage Temperature / Humidity	-40°C~+60°C (-40°F~+140°F) / Less than 95% RH
Certification	IP66, IK10
Input Voltage	PoE(IEEE802.3af, Class3), 12VDC
Power Consumption	PoE: Max 11.4W, typical 8W 12VDC: Max 9.6W, typical 7W
<b>Mechanical</b>	
Color / Material	Dark grey / Aluminum
RAL Code	
Product Dimensions / Weight	Ø78.0 x 259.8mm (Ø3.07 x 10.23"), 900g (1.984 lb)

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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(DC Adapter Input power) ☒ PoE

## 1.2 Variant Model Differences

Not applicable

## 1.3 Device Modifications

Not applicable

## 1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	QNO-7082R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter	PT-PSE109GBRO-AH-S	-	Dongguan PROCET Network Technology Co., Ltd	-
DC Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
Notebook	LG15N54	507NZET040180	LG Electronics Ltd	-
Notebook Adapter	PA-1900-14	OF4A263348701 J247	LITE-ON TECHNOLOGY COPORATION	-
Micro SD Card	-	-	SanDisk	-
Button Alarm	-	-	-	-
Multi Metter	DM-1010	-	DONG HWA	-
Mic	CMK-303	-	CAMAC	-
SmartPhone	A1429	-	Apple	-

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## 1.6 External I/O Cabling

### ■ DC Adapter Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	DC Jack (2 Pin)	DC Adapter	DC Jack (2 Pin)	0.8	U
	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	3.5	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	Alarm In (2 Pin)	Button Alarm	2 Pin	3.0	U
	Alarm Out (2 Pin)	Multi Metter	2 Pin	3.5	U
	Audio In (3.5 mm)	Mic	3.5 mm	1.8	U
Mic	-	SmartPhone	-	-	-
Notebook	DC Jack	Notebook Adapter	DC Jack	2.5	S

\* Unshielded=U, Shielded=S

### ■ PoE Adapter 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)	3.5	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	Alarm In (2 Pin)	Button Alarm	2 Pin	3.0	U
	Alarm Out (2 Pin)	Multi Metter	2 Pin	3.5	U
	Audio In (3.5 mm)	Mic	3.5 mm	1.8	U
PoE Adapter	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	1.5	U
Mic	-	SmartPhone	-	-	-
Notebook	DC Jack	Notebook Adapter	DC Jack	2.5	S

\* Unshielded=U, Shielded=S



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## 1.7 EUT Operating Mode(s)

Test Mode	operating
DC Adapter Mode / PoE Adapter Mode	Checked that the camera video output was working properly in the web viewer and used the ping test to verify that the network behavior was working properly.

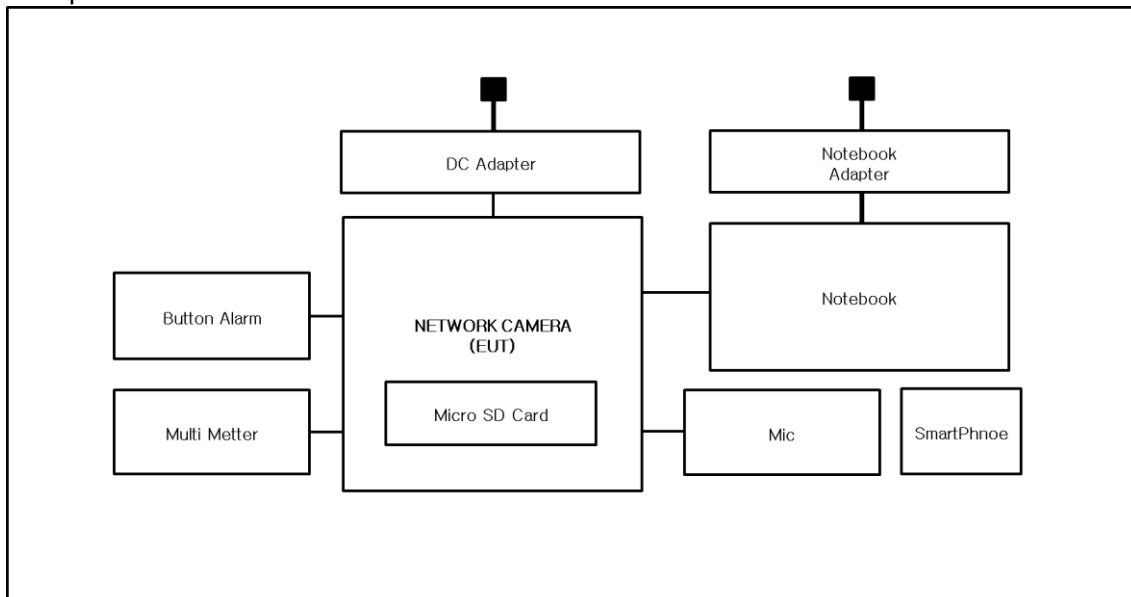
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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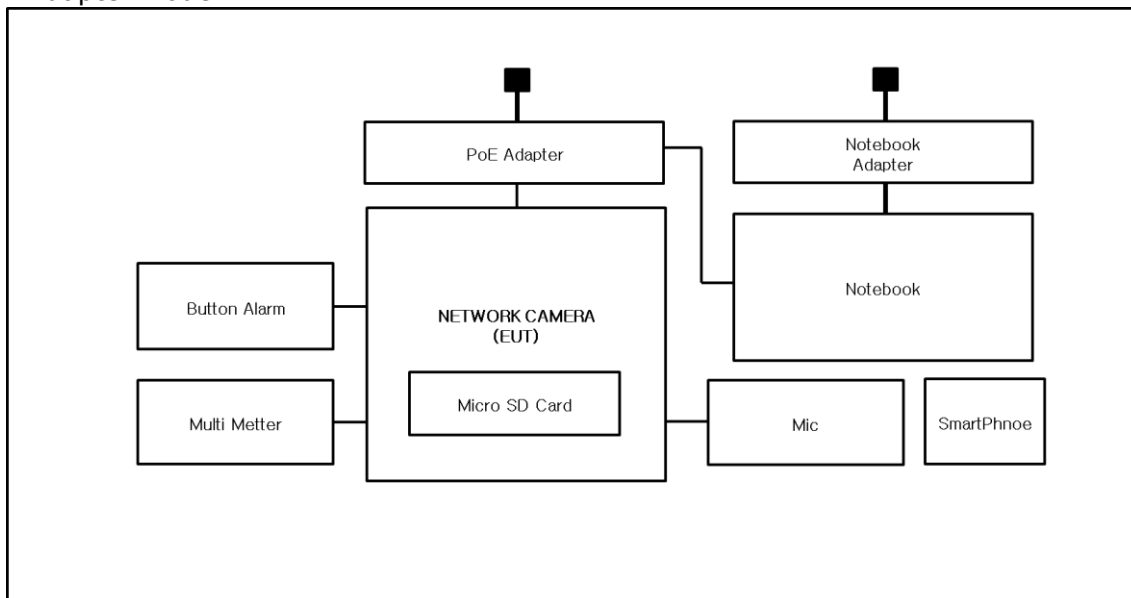
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ DC Adapter Mode



### ■ PoE Adapter 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, 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

	Agency	Scope of Accreditation	Logo
KOREA	<b>RRA</b>	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	<b>KOLAS</b>	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	<b>FCC</b>	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	<b>ISED</b>	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	<b>VCCI</b>	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	<b>TÜV SÜD</b>	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 type="checkbox"/> <b>AS/NZS CISPR32:2015</b>                       | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input checked="" 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 checked="" type="checkbox"/> ANSI C63.4-2017                       | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> <b>IC Regulation ICES-003 Issue 7</b> |   |                                  |
| <input checked="" type="checkbox"/> CAN/CSA CISPR 32-17                   | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2017                                  | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>RE- Directive 2014/53/EU</b>                  |   |                                  |
| <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                       |   |                                  |
| <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**

Sep. 02, 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: (25,0  $\pm$  0,2) °CRelative Humidity: (49,4  $\pm$  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 Radiated Electric Field Emissions(Below 1 GHz)

**Test Date**

Sep. 04, 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: (24,4 ± 0,3) °C

Relative Humidity: (49,9 ± 0,4) % 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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## 2.3 Radiated Electric Field Emissions(Above 1 GHz)

### Test Date

Sep. 03, 2021

### Test Location

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"/>	PREAMPLIFIER	8449B	AGILENT	3008A01742	12, 29, 2021
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 10, 2022
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021

### Test Conditions

Temperature: (24,4 ± 0,2) °C

Relative Humidity: (49,9 ± 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.



## APPENDIX A – TEST DATA

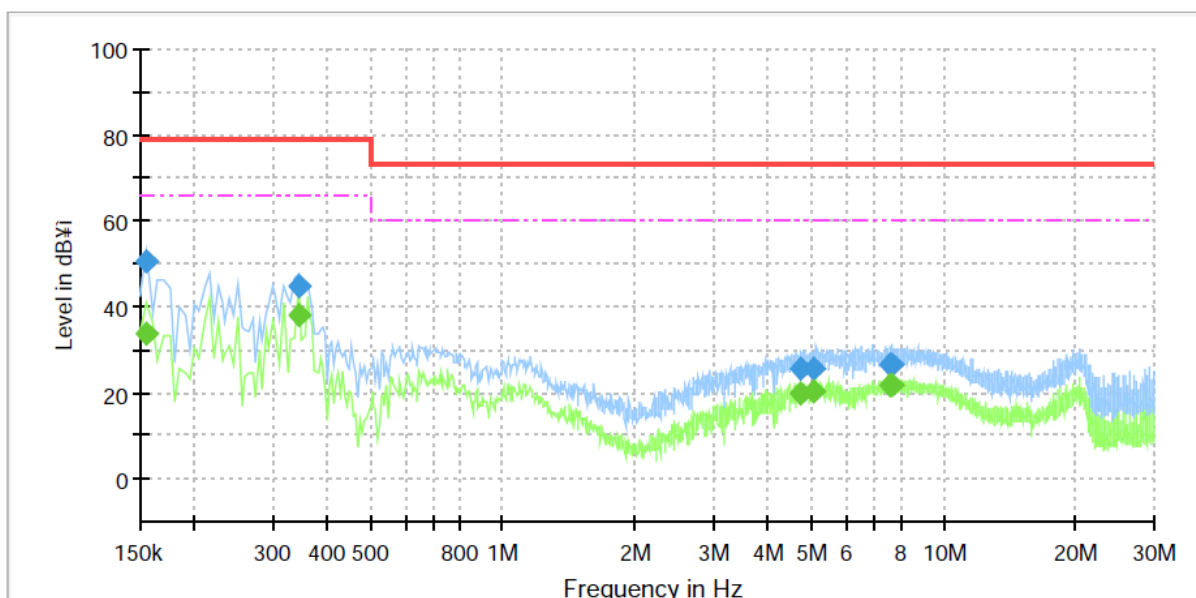
### Conducted Emissions at Mains Power Ports

#### ■ DC Adapter Mode

#### HOT LINE

#### Common Information

Test Description:	Conducted Emission
Model No.:	QNO-7082R
Phase:	
Mode:	DC Adapter
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	---	33.80	66.00	32.20	1000.0	9.000	L1	19.5
0.155000	50.42	---	79.00	28.58	1000.0	9.000	L1	19.5
0.345000	---	37.98	66.00	28.02	1000.0	9.000	L1	19.6
0.345000	44.78	---	79.00	34.22	1000.0	9.000	L1	19.6
4.735000	---	19.98	60.00	40.02	1000.0	9.000	L1	19.7
4.735000	25.34	---	73.00	47.66	1000.0	9.000	L1	19.7
5.095000	---	20.35	60.00	39.65	1000.0	9.000	L1	19.7
5.095000	25.70	---	73.00	47.30	1000.0	9.000	L1	19.7
7.535000	---	21.63	60.00	38.37	1000.0	9.000	L1	19.6
7.535000	26.34	---	73.00	46.66	1000.0	9.000	L1	19.6
7.635000	---	21.66	60.00	38.34	1000.0	9.000	L1	19.6
7.635000	26.35	---	73.00	46.65	1000.0	9.000	L1	19.6

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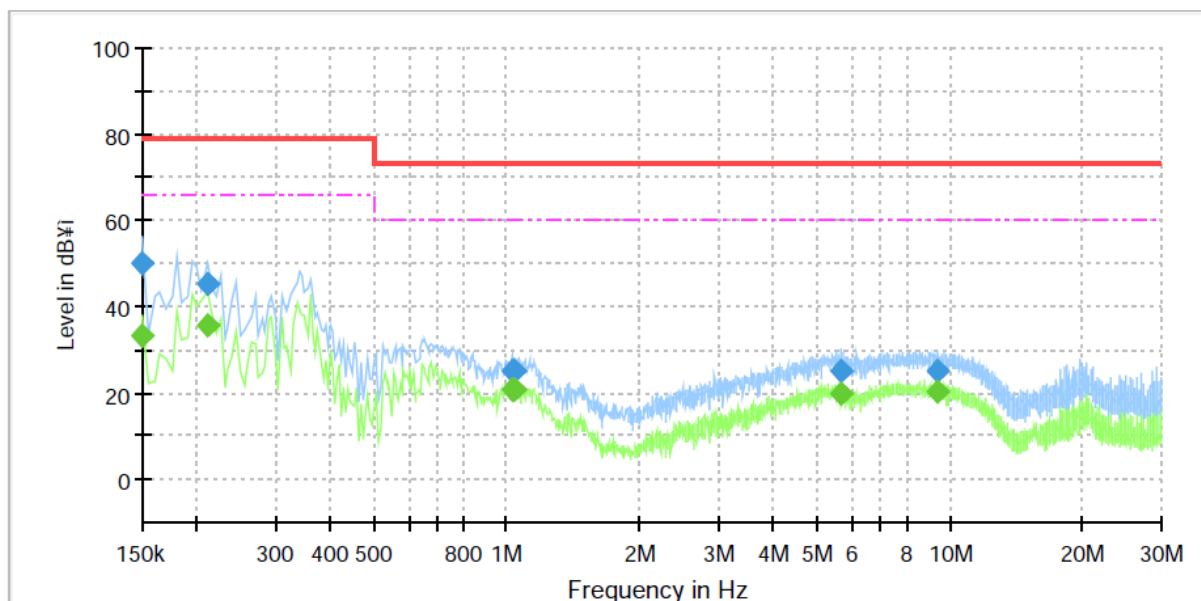
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## NEUTRAL LINE

## Common Information

Test Description:	Conducted Emission
Model No.:	QNO-7082R
Phase:	
Mode:	DC Adapter
Operator Name:	KES



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	33.18	66.00	32.82	1000.0	9.000	N	19.4
0.150000	50.21	---	79.00	28.79	1000.0	9.000	N	19.4
0.210000	---	35.76	66.00	30.24	1000.0	9.000	N	19.5
0.210000	45.15	---	79.00	33.85	1000.0	9.000	N	19.5
1.025000	---	20.60	60.00	39.40	1000.0	9.000	N	20.1
1.025000	25.23	---	73.00	47.77	1000.0	9.000	N	20.1
1.035000	---	20.80	60.00	39.20	1000.0	9.000	N	20.1
1.035000	25.26	---	73.00	47.74	1000.0	9.000	N	20.1
5.675000	---	19.82	60.00	40.18	1000.0	9.000	N	19.6
5.675000	25.00	---	73.00	48.00	1000.0	9.000	N	19.6
9.405000	---	20.37	60.00	39.63	1000.0	9.000	N	19.8
9.405000	24.97	---	73.00	48.03	1000.0	9.000	N	19.8

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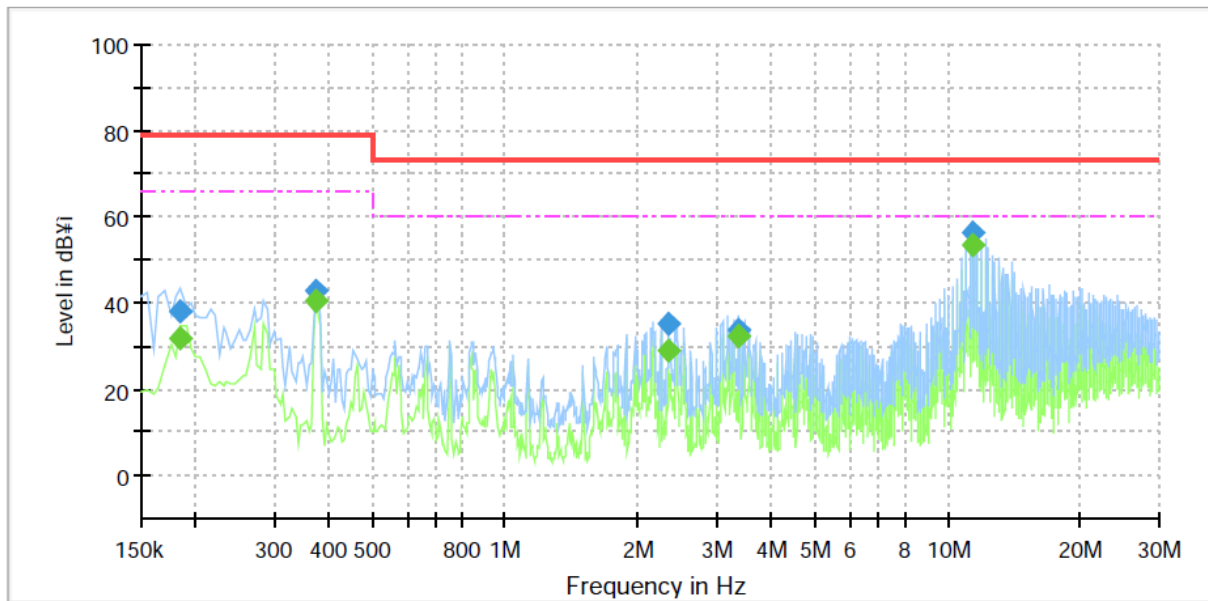
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### ■ PoE Adapter Mode

#### HOT LINE

## Common Information

Test Description: Conducted Emission  
Model No.: QNO-7082R  
Phase:  
Mode: PoE Adapter  
Operator Name: KES



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.185000	---	31.95	66.00	34.05	1000.0	9.000	L1	19.5
0.185000	38.06	---	79.00	40.94	1000.0	9.000	L1	19.5
0.375000	---	40.57	66.00	25.43	1000.0	9.000	L1	19.6
0.375000	42.60	---	79.00	36.40	1000.0	9.000	L1	19.6
2.340000	---	28.67	60.00	31.33	1000.0	9.000	L1	20.3
2.340000	35.02	---	73.00	37.98	1000.0	9.000	L1	20.3
3.380000	---	32.10	60.00	27.90	1000.0	9.000	L1	20.1
3.380000	33.80	---	73.00	39.20	1000.0	9.000	L1	20.1
11.450000	---	53.35	60.00	6.65	1000.0	9.000	L1	20.0
11.450000	56.29	---	73.00	16.71	1000.0	9.000	L1	20.0

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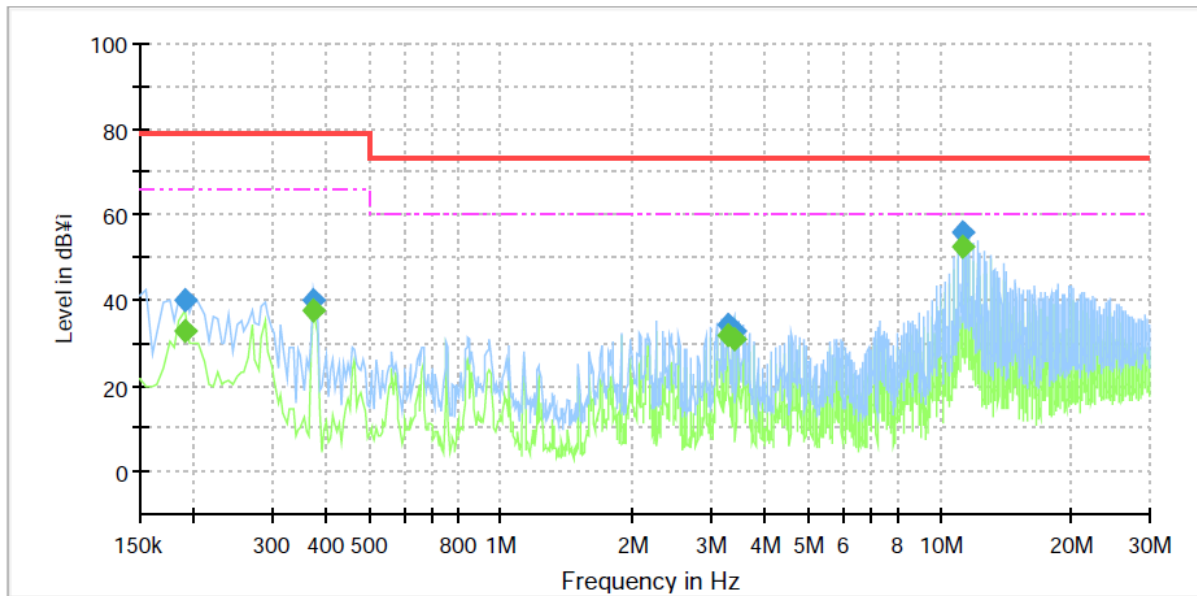
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## NEUTRAL LINE

## Common Information

Test Description:	Conducted Emission
Model No.:	QNO-7082R
Phase:	
Mode:	PoE Adapter
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	---	32.87	66.00	33.13	1000.0	9.000	N	19.4
0.190000	39.80	---	79.00	39.20	1000.0	9.000	N	19.4
0.375000	---	37.76	66.00	28.24	1000.0	9.000	N	19.6
0.375000	39.79	---	79.00	39.21	1000.0	9.000	N	19.6
3.295000	---	31.65	60.00	28.35	1000.0	9.000	N	20.1
3.295000	34.18	---	73.00	38.82	1000.0	9.000	N	20.1
3.385000	---	30.61	60.00	29.39	1000.0	9.000	N	20.1
3.385000	32.55	---	73.00	40.45	1000.0	9.000	N	20.1
11.220000	---	52.24	60.00	7.76	1000.0	9.000	N	20.0
11.220000	55.79	---	73.00	17.21	1000.0	9.000	N	20.0

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

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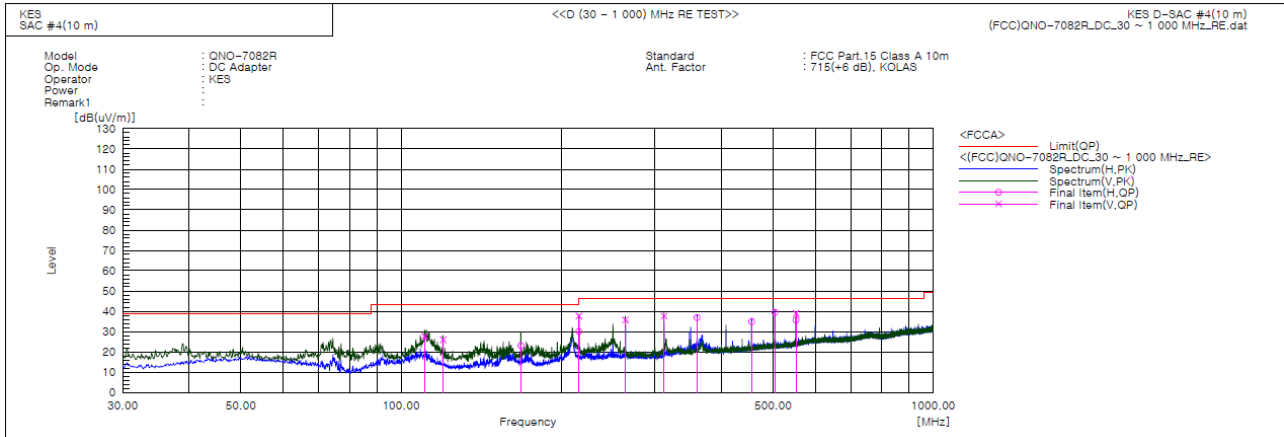
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## Radiated Electric Field Emissions(Below 1 GHz)

- 47 CFR Part 15, Subpart B

### ■ DC Adapter 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	110.753	V	50.1	-22.3	27.8	43.5	15.7	124.0	71.0	
2	119.968	V	50.1	-24.1	26.0	43.5	17.5	116.0	103.0	
3	167.983	H	47.3	-24.2	23.1	43.5	20.4	386.0	194.0	
4	215.876	V	58.1	-20.4	37.7	43.5	5.8	100.0	199.0	
5	215.876	H	50.5	-20.4	30.1	43.5	13.4	392.0	213.0	
6	263.891	V	54.6	-18.8	35.8	46.5	10.7	108.0	358.0	
7	311.906	V	54.9	-17.2	37.7	46.5	8.8	100.0	319.0	
8	359.921	H	52.0	-15.1	36.9	46.5	9.6	246.0	247.0	
9	455.830	H	47.8	-12.9	34.9	46.5	11.6	400.0	95.0	
10	503.845	H	50.9	-11.5	39.4	46.5	7.1	400.0	118.0	
11	551.860	V	49.2	-10.2	39.0	46.5	7.5	133.0	199.0	
12	551.860	H	46.0	-10.2	35.8	46.5	10.7	291.0	322.0	

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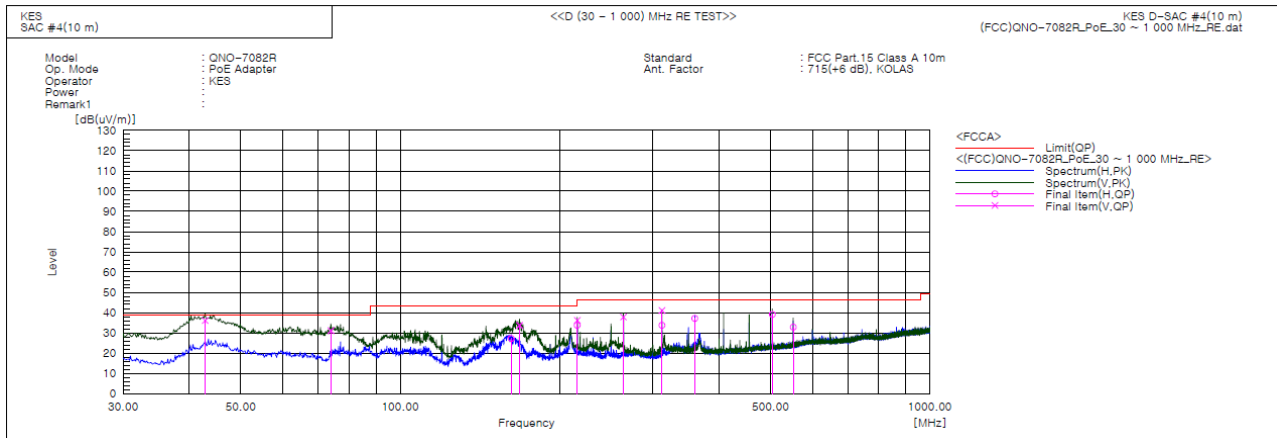
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### PoE Adapter Mode



### 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	42.853	V	57.9	-21.8	36.1	39.0	2.9	129.0	11.0	
2	74.014	V	57.6	-26.5	31.1	39.0	7.9	105.0	288.0	
3	162.041	H	51.6	-24.4	27.2	43.5	16.3	400.0	298.0	
4	167.989	V	57.9	-24.2	33.7	43.5	9.8	100.0	30.0	
5	215.825	V	56.6	-20.4	36.2	43.5	7.3	137.0	333.0	
6	215.869	H	54.1	-20.4	33.7	43.5	9.8	400.0	162.0	
7	263.896	V	56.7	-18.8	37.9	46.5	8.6	100.0	272.0	
8	311.896	V	58.3	-17.2	41.1	46.5	5.4	103.0	321.0	
9	311.906	H	50.9	-17.2	33.7	46.5	12.8	388.0	98.0	
10	359.921	H	52.2	-15.1	37.1	46.5	9.4	296.0	252.0	
11	503.845	H	50.6	-11.5	39.1	46.5	7.4	359.0	113.0	
12	551.860	H	43.0	-10.2	32.8	46.5	13.7	337.0	233.0	

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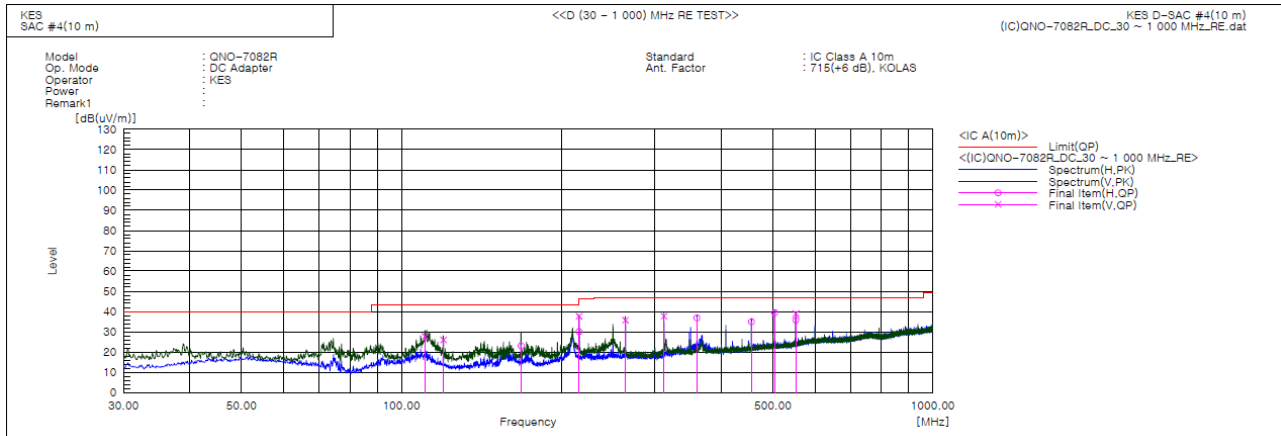
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## - IC Regulation ICES-003 Issue 7

### ■ DC Adapter 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	110.753	V	50.1	-22.3	27.8	43.5	15.7	124.0	71.0	
2	119.968	V	50.1	-24.1	26.0	43.5	17.5	116.0	103.0	
3	167.983	H	47.3	-24.2	23.1	43.5	20.4	386.0	194.0	
4	215.876	V	58.1	-20.4	37.7	43.5	5.8	100.0	199.0	
5	215.876	H	50.5	-20.4	30.1	43.5	13.4	392.0	213.0	
6	263.891	V	54.6	-18.8	35.8	47.0	11.2	108.0	358.0	
7	311.906	V	54.9	-17.2	37.7	47.0	9.3	100.0	319.0	
8	359.921	H	52.0	-15.1	36.9	47.0	10.1	246.0	247.0	
9	455.830	H	47.8	-12.9	34.9	47.0	12.1	400.0	95.0	
10	503.845	H	50.9	-11.5	39.4	47.0	7.6	400.0	118.0	
11	551.860	V	49.2	-10.2	39.0	47.0	8.0	133.0	199.0	
12	551.860	H	46.0	-10.2	35.8	47.0	11.2	291.0	322.0	

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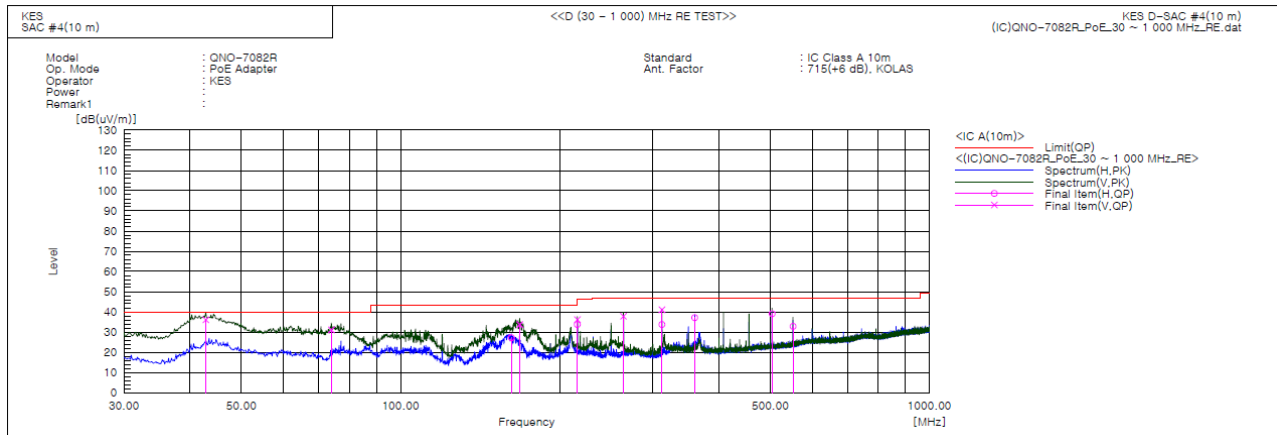
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### ■ PoE Adapter Mode



### 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	42.853	V	57.9	-21.8	36.1	40.0	3.9	129.0	11.0	
2	74.014	V	57.6	-26.5	31.1	40.0	8.9	105.0	288.0	
3	162.041	H	51.6	-24.4	27.2	43.5	16.3	400.0	298.0	
4	167.989	V	57.9	-24.2	33.7	43.5	9.8	100.0	30.0	
5	215.825	V	56.6	-20.4	36.2	43.5	7.3	137.0	333.0	
6	215.869	H	54.1	-20.4	33.7	43.5	9.8	400.0	162.0	
7	263.896	V	56.7	-18.8	37.9	47.0	9.1	100.0	272.0	
8	311.896	V	58.3	-17.2	41.1	47.0	5.9	103.0	321.0	
9	311.906	H	50.9	-17.2	33.7	47.0	13.3	388.0	98.0	
10	359.921	H	52.2	-15.1	37.1	47.0	9.9	296.0	252.0	
11	503.845	H	50.6	-11.5	39.1	47.0	7.9	359.0	113.0	
12	551.860	H	43.0	-10.2	32.8	47.0	14.2	337.0	233.0	

### ◆ Calculation - SAC #4(10 m)

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

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

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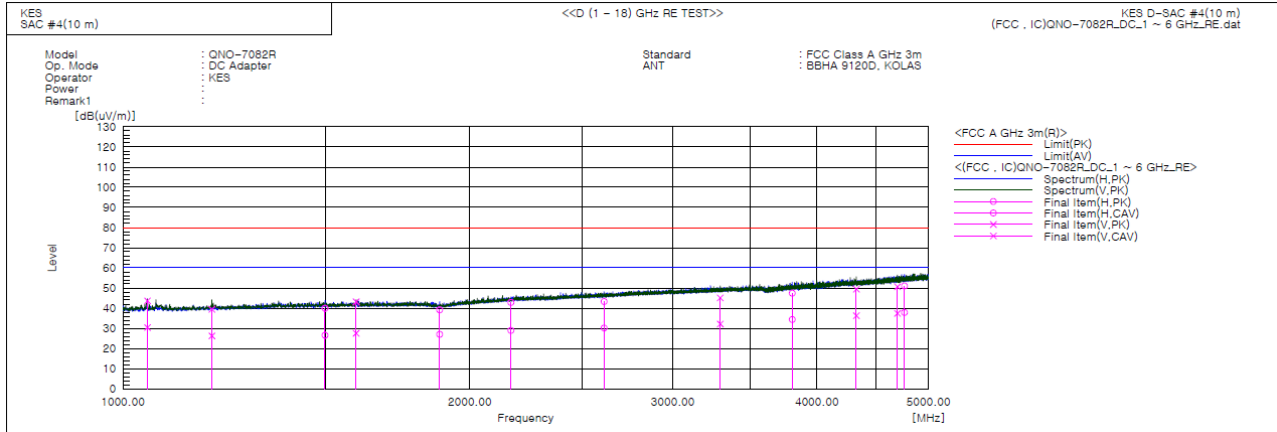
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## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Adapter 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	1050.125	V	47.6	34.3	-3.9	43.7	30.4	80.0	60.0	36.3	29.6	135.0	277.0	
2	1194.264	V	42.2	29.1	-2.8	39.4	26.3	80.0	60.0	40.6	33.7	100.0	266.0	
3	1497.519	H	40.9	27.6	-1.0	39.9	26.6	80.0	60.0	40.1	33.4	389.0	103.0	
4	1593.133	V	43.7	28.1	-0.5	43.2	27.6	80.0	60.0	36.8	32.4	127.0	262.0	
5	1882.524	H	38.2	26.0	1.0	39.2	27.0	80.0	60.0	40.8	33.0	324.0	4.0	
6	2170.712	H	40.2	26.4	2.6	42.8	29.0	80.0	60.0	37.2	31.0	400.0	240.0	
7	2614.936	H	38.3	25.2	5.0	43.3	30.2	80.0	60.0	36.7	29.8	357.0	267.0	
8	3298.095	V	37.2	24.3	7.9	45.1	32.2	80.0	60.0	34.9	27.8	355.0	281.0	
9	3808.255	H	37.1	24.1	10.3	47.4	34.4	80.0	60.0	32.6	25.6	169.0	82.0	
10	4328.036	V	36.8	23.6	12.7	49.5	36.3	80.0	60.0	30.5	23.7	198.0	54.0	
11	4698.591	V	36.2	22.9	14.5	50.7	37.4	80.0	60.0	29.3	22.6	248.0	199.0	
12	4765.174	H	36.2	23.1	14.8	51.0	37.9	80.0	60.0	29.0	22.1	259.0	348.0	

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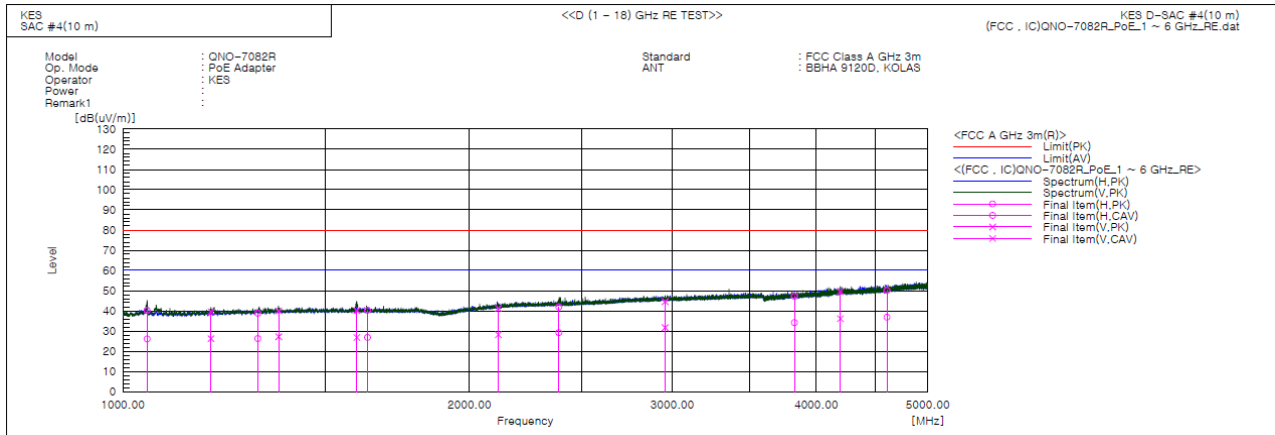
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### PoE Adapter Mode



#### 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	1049.593	H	44.2	30.0	-3.9	40.3	26.1	80.0	60.0	39.7	33.9	374.0	149.0	
2	1192.426	V	42.4	29.2	-2.9	39.5	26.3	80.0	60.0	40.5	33.7	112.0	272.0	
3	1309.663	H	40.9	28.4	-2.1	38.8	26.3	80.0	60.0	41.2	33.7	400.0	123.0	
4	1365.711	V	41.7	28.9	-1.7	40.0	27.2	80.0	60.0	40.0	32.8	137.0	294.0	
5	1596.525	V	40.6	27.2	-0.4	40.2	26.8	80.0	60.0	39.8	33.2	100.0	276.0	
6	1631.144	H	40.6	27.1	-0.3	40.3	26.8	80.0	60.0	39.7	33.2	291.0	350.0	
7	2118.433	V	39.0	25.9	2.3	41.3	28.2	80.0	60.0	38.7	31.8	151.0	131.0	
8	2390.821	H	38.1	25.4	3.8	41.9	29.2	80.0	60.0	38.1	30.8	400.0	108.0	
9	2957.092	V	38.0	25.1	6.6	44.6	31.7	80.0	60.0	35.4	28.3	122.0	353.0	
10	3829.792	H	36.8	23.8	10.4	47.2	34.2	80.0	60.0	32.8	25.8	255.0	53.0	
11	4196.612	V	37.3	23.8	12.3	49.6	36.1	80.0	60.0	30.4	23.9	100.0	119.0	
12	4607.381	H	36.1	22.9	14.0	50.1	36.9	80.0	60.0	29.9	23.1	400.0	298.0	

#### ◆ 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

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## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

#### ■ DC Adapter Mode



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**■ PoE Adapter Mode**

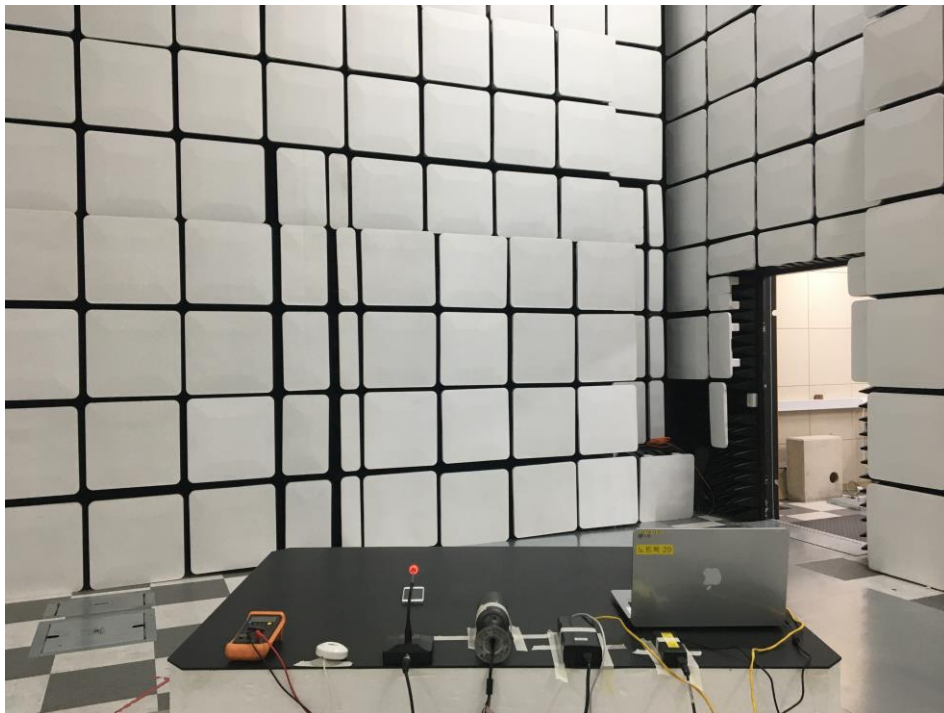


## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Adapter Mode



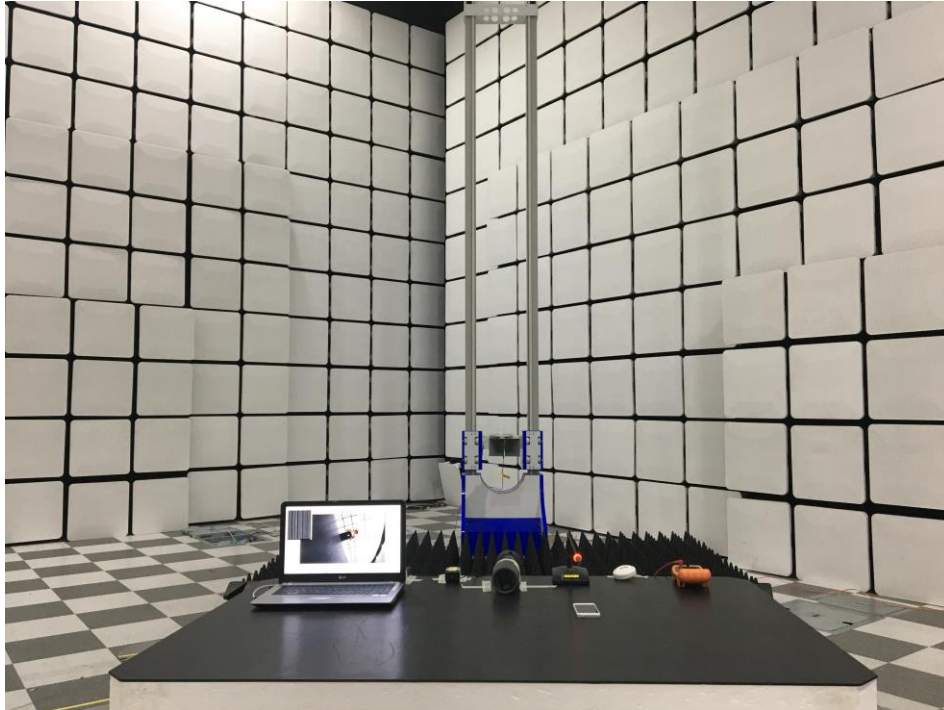
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**■ PoE Adapter Mode**

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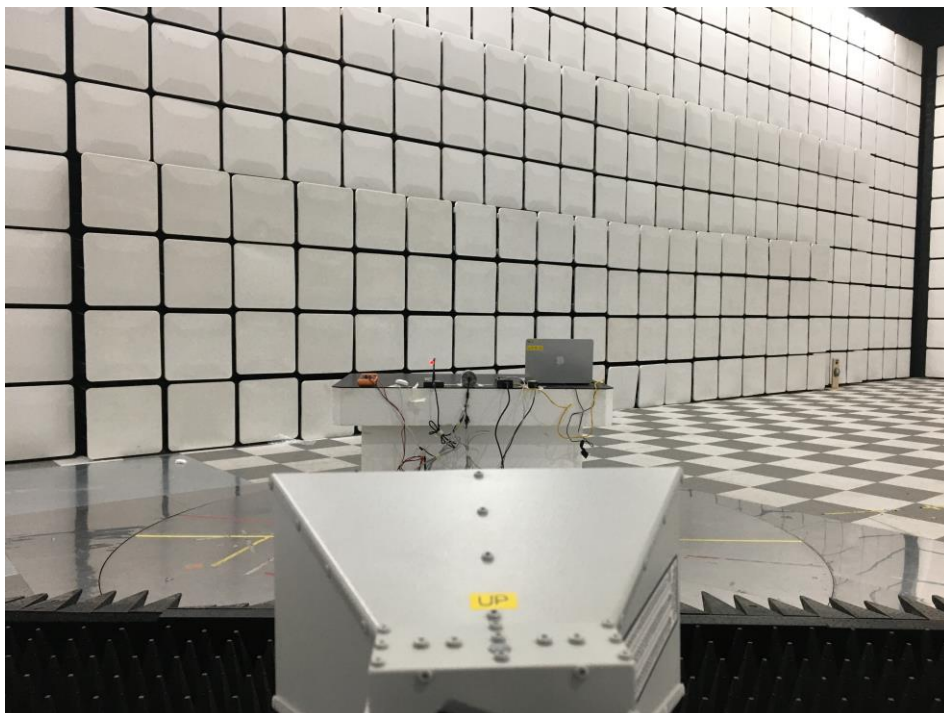
## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Adapter Mode



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**■ PoE Adapter Mode**

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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

(Internal View)



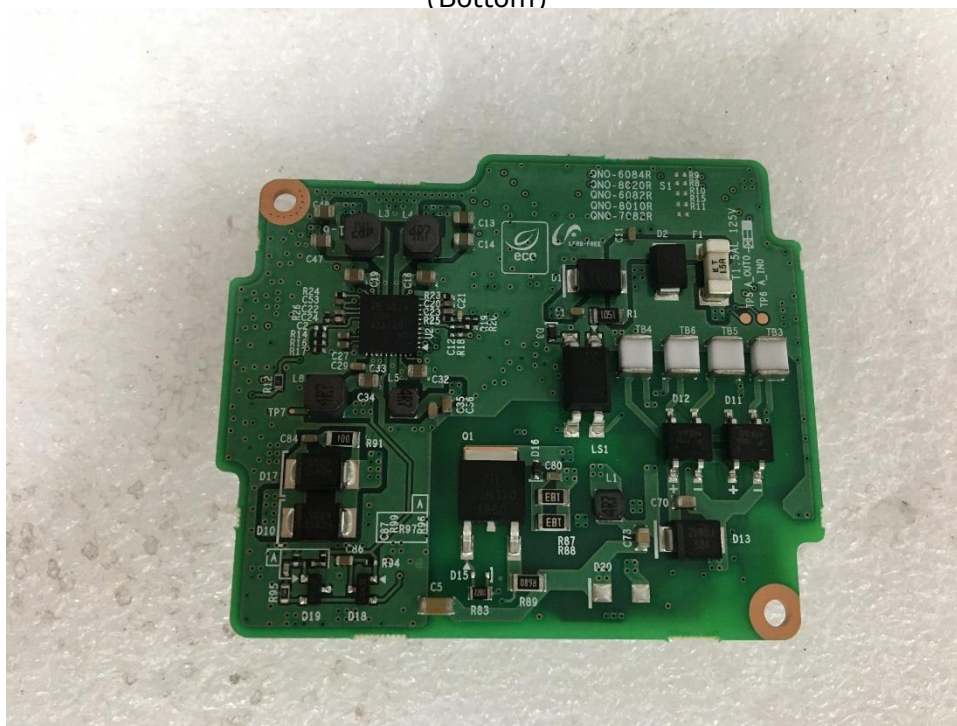
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## EUT Internal View – Board 1

(Top)



(Bottom)



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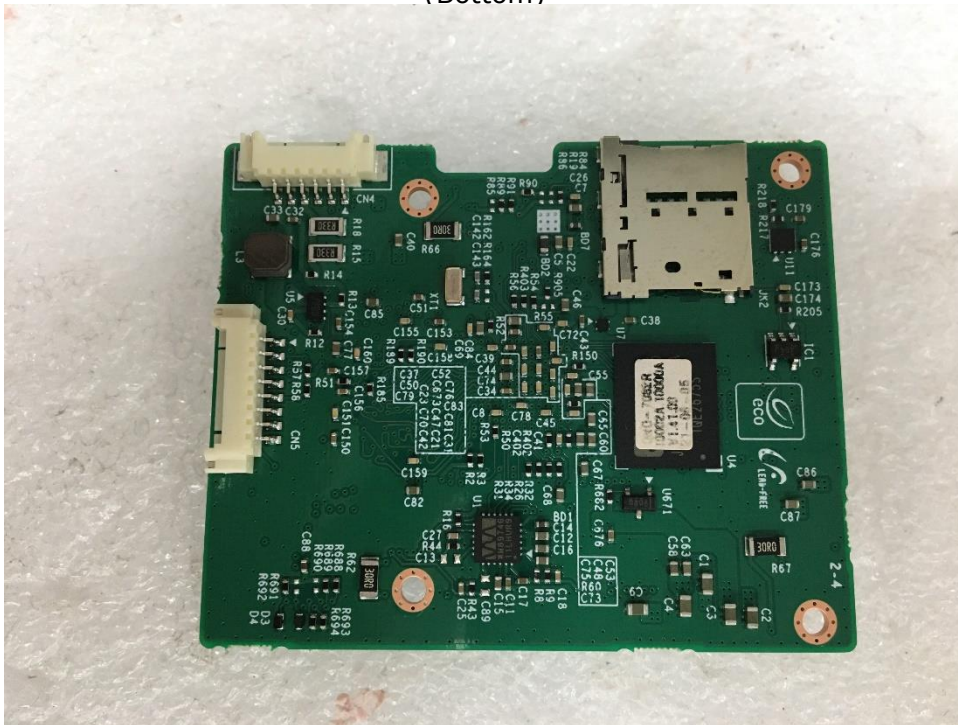


## EUT Internal View – Board 2

(Top)



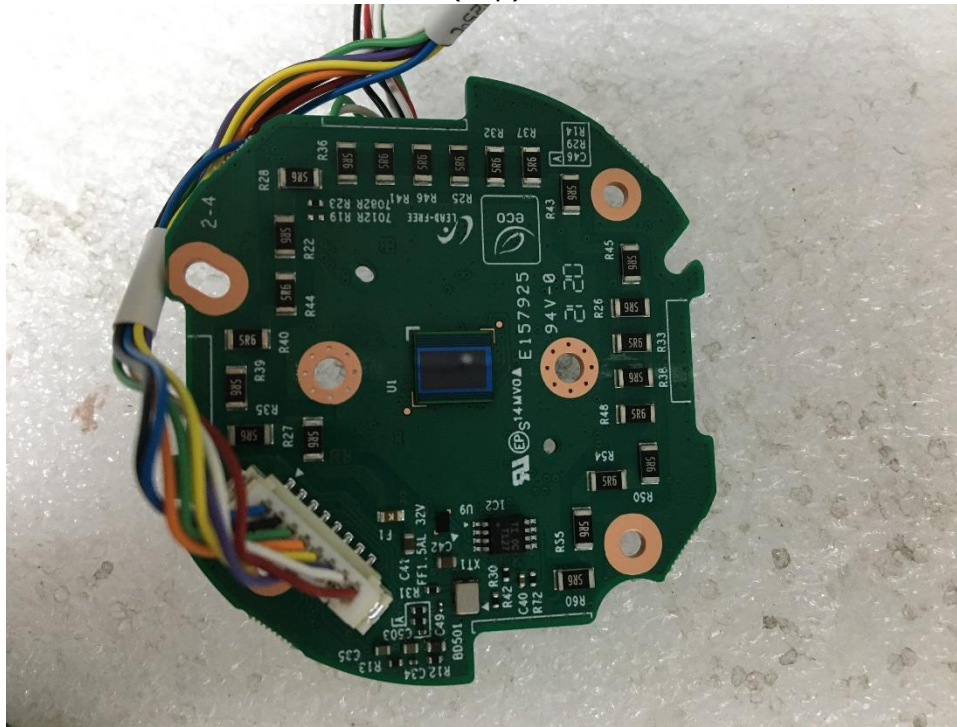
(Bottom)



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## EUT Internal View – Board 3

(Top)



(Bottom)



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## EUT Internal View – Board 4

(Top)



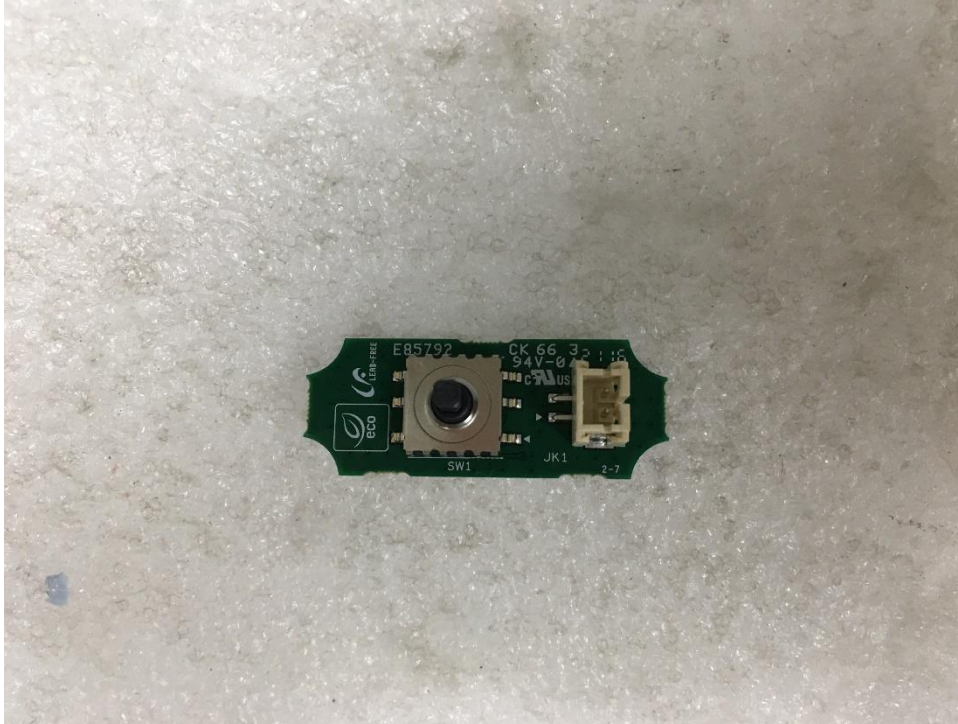
(Bottom)



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**EUT Internal View – Board 5**

(Top)



(Bottom)



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## 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.