



## EMC TEST REPORT For VCCI

Test Report No. : KES-EM-21T0628-R1  
Date of Issue : Feb. 24, 2023  
Product name : NETWORK CAMERA  
Model/Type No. : QNO-7032R  
Variant Model : QNO-7022R, QNO-7012R  
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 : Jun. 23, 2021  
Test date : Jul. 11, 2021 ~ Jul. 12, 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 Ki Man, Kim  
(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
Jul. 21, 2021	KES-EM-21T0628	Issued
Feb. 24, 2023	KES-EM-21T0628-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:

Video	
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 : 0.15Lux (F2.0, 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
Lens	
Focal Length (Zoom Ratio)	6mm fixed focal
Max. Aperture Ratio	F2.0
Angular Field of View	H : 49.0°, V : 27.6°, D : 55.6°
Min. Object Distance	None
Focus Control	Fixed
Lens Type	None
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
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
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SSDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR
Digital Image Stabilization	None
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	Selectable(mic in/line in)

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	Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
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
Radiometry	
Temperature Detect Range	None
Temperature Accuracy	None
Temperature Detection	None
Additional	None
Network	
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)
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)
General	
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
Environmental & Electrical	
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 10.7W, typical 8W 12VDC: Max 9.1W, typical 6.8W
Mechanical	
Color / Material	Dark grey / Aluminum
RAL Code	
Product Dimensions / Weight	Ø70.0 x 246.0mm (Ø2.76 x 9.69"), 700g (1.543 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 100 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	QNO-7032R	-	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-PSE109GBRO-AH	PT1850221049	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	LG15N54	410NZGK015231	LG	-
Notebook Adaptor	ADP-90WH B	84ZW19F1663	DELTA ELECTRONICS(JIANGSU ) LTD.	-
Alarm1	-	-	-	-
Alarm2	-	-	-	-
Micro SD Card	-	-	Sandisk	8 GB
MIC	MP1000	-	-	-

## 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	S
	Slot	Micro SD Card	Slot	-	-
	2 Pin	Alarm1	2 Pin	3.0	-
	2 Pin	Alarm2	2 Pin	3.0	U
	3.5 mm	MIC	3.5 mm	1.7	U
	2 Pin	Adaptor	2 Pin	1.6	U
Notebook	JACK	Notebook Adaptor	JACK	1.7	

\* 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
	Slot	Micro SD Card	Slot	-	-
	2 Pin	Alarm1	2 Pin	3.0	U
	2 Pin	Alarm2	2 Pin	3.0	U
	3.5 mm	MIC	3.5 mm	1.7	U
Notebook	RJ-45 (LAN)	PoE Adaptor	RJ-45 (LAN)	3.5	U
	JACK	Notebook Adaptor	JACK	1.7	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

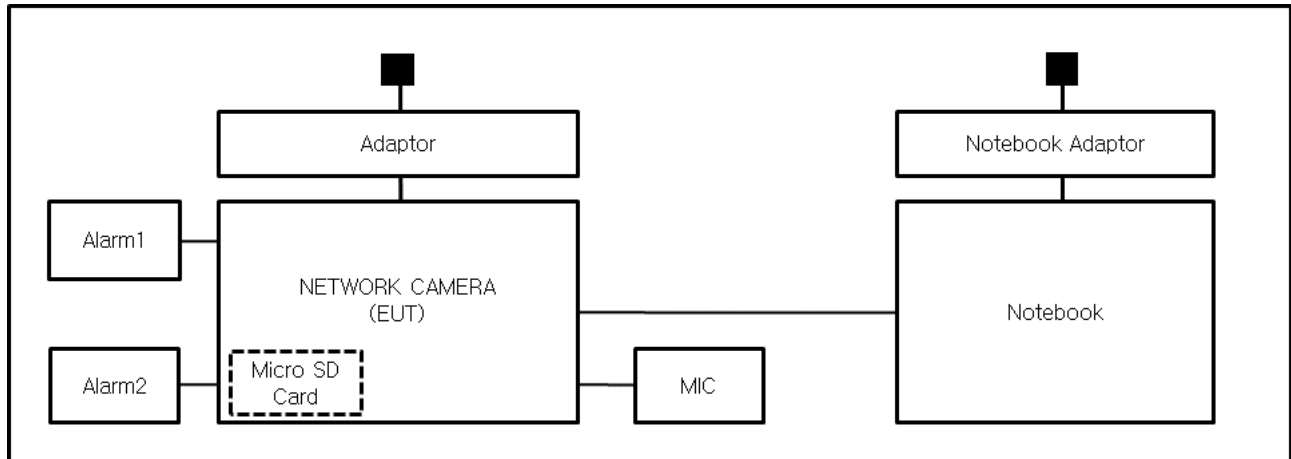
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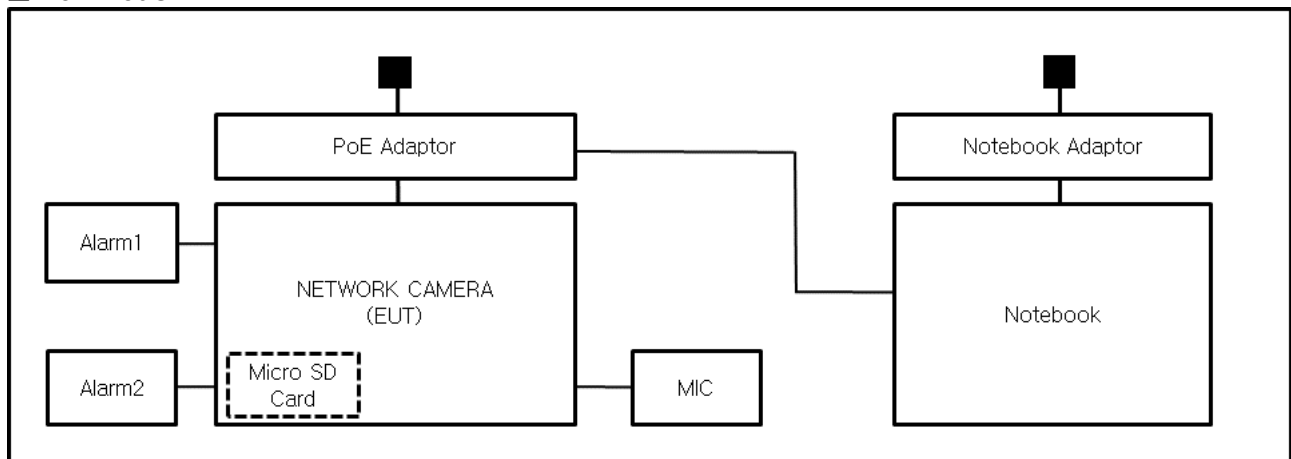
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ DC Mode



### ■ PoE Mode



## 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

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

## 2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1  
☐ Class A

☐ Group 2  
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547 :2009

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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- |   |   |                                  |
|---|---|----------------------------------|
| <input checked="" type="checkbox"/> <b>VCCI-CISPR 32:2016</b> | <input checked="" 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 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                      |   |                                  |
| <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                      |   |                                  |
| <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 Mains Power Ports

### Test Date

Jul. 11, 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 ± 0,1) °C

Relative Humidity: (47,3 ± 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.

## 2.2 Conducted Emissions at Telecommunication Ports

### Test Date

Jul. 11, 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"/>	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	12, 29, 2021

### Test Conditions

Temperature: (25,0 ± 0,2) °C

Relative Humidity: (47,3 ± 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

Jul. 11, 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 ± 0,2) °C  
Relative Humidity: (47,2 ± 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.



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

### Test Date

Jul. 12, 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, 05, 2021
<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: (25,1 ± 0,2) °C

Relative Humidity: (46,8 ± 0,4) % 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.



## APPENDIX A – TEST DATA

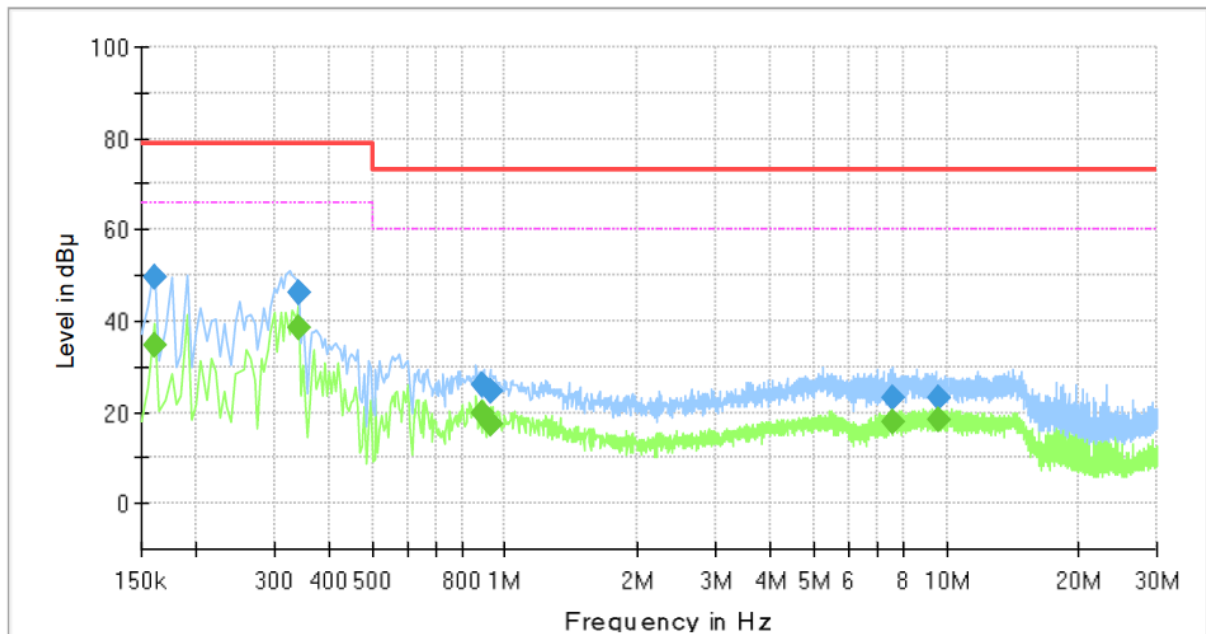
### Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

#### Common Information

Test Description:	Conducted Emission
Model No.:	QNO-7032R
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)
0.160000	---	34.70	66.00	31.30	1000.0	9.000	L1	19.4
0.160000	49.75	---	79.00	29.25	1000.0	9.000	L1	19.4
0.340000	---	38.45	66.00	27.55	1000.0	9.000	L1	19.5
0.340000	46.01	---	79.00	32.99	1000.0	9.000	L1	19.5
0.890000	---	19.88	60.00	40.12	1000.0	9.000	L1	20.1
0.890000	25.99	---	73.00	47.01	1000.0	9.000	L1	20.1
0.925000	---	17.46	60.00	42.54	1000.0	9.000	L1	20.1
0.925000	24.61	---	73.00	48.39	1000.0	9.000	L1	20.1
7.525000	---	17.80	60.00	42.20	1000.0	9.000	L1	19.6
7.525000	23.02	---	73.00	49.98	1000.0	9.000	L1	19.6
9.590000	---	18.36	60.00	41.64	1000.0	9.000	L1	19.8
9.590000	23.14	---	73.00	49.86	1000.0	9.000	L1	19.8

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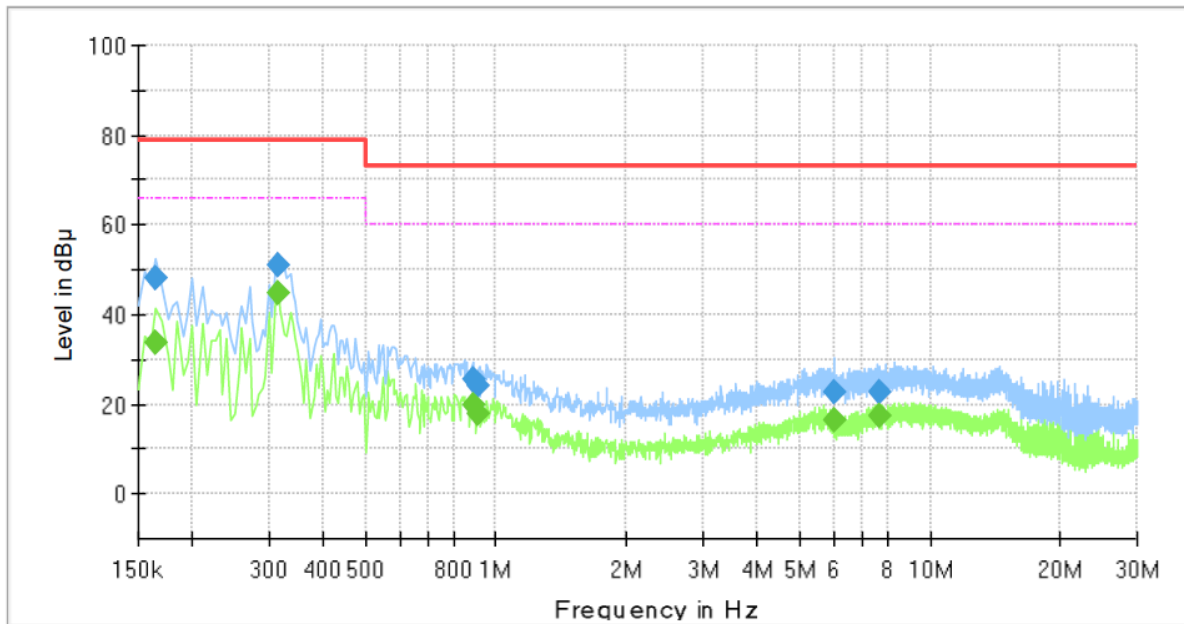
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## NEUTRAL LINE

### Common Information

Test Description:	Conducted Emission
Model No.:	QNO-7032R
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	---	33.77	66.00	32.23	1000.0	9.000	N	19.4
0.165000	48.21	---	79.00	30.79	1000.0	9.000	N	19.4
0.315000	---	44.86	66.00	21.14	1000.0	9.000	N	19.5
0.315000	51.05	---	79.00	27.95	1000.0	9.000	N	19.5
0.885000	---	19.79	60.00	40.21	1000.0	9.000	N	20.0
0.885000	25.63	---	73.00	47.37	1000.0	9.000	N	20.0
0.910000	---	18.06	60.00	41.94	1000.0	9.000	N	20.1
0.910000	24.20	---	73.00	48.80	1000.0	9.000	N	20.1
6.025000	---	16.32	60.00	43.68	1000.0	9.000	N	19.5
6.025000	22.45	---	73.00	50.55	1000.0	9.000	N	19.5
7.660000	---	17.54	60.00	42.46	1000.0	9.000	N	19.6
7.660000	22.88	---	73.00	50.12	1000.0	9.000	N	19.6

#### ◆ 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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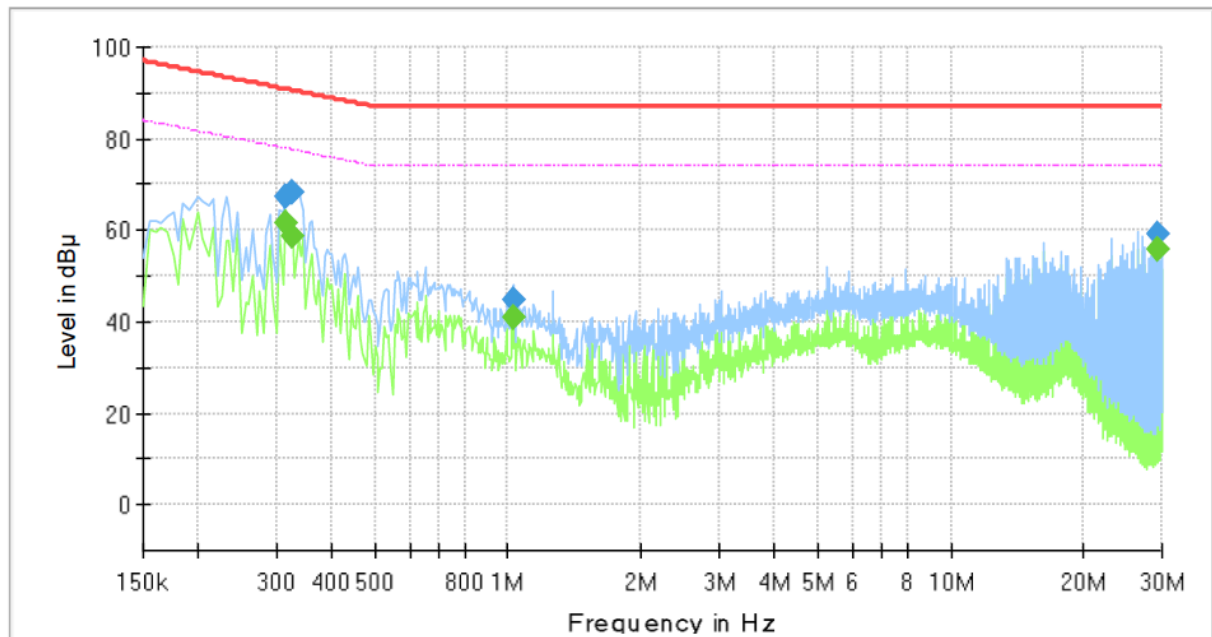
## Conducted Emissions at Telecommunication Ports

■ DC Mode

[100 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	QNO-7032R
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)
0.315000	---	61.58	77.84	16.26	1000.0	9.000	Single Line	19.7
0.315000	67.25	---	90.84	23.59	1000.0	9.000	Single Line	19.7
0.325000	---	58.53	77.58	19.05	1000.0	9.000	Single Line	19.7
0.325000	68.09	---	90.58	22.49	1000.0	9.000	Single Line	19.7
1.025000	---	40.85	74.00	33.15	1000.0	9.000	Single Line	20.0
1.025000	44.90	---	87.00	42.10	1000.0	9.000	Single Line	20.0
29.235000	---	55.79	74.00	18.21	1000.0	9.000	Single Line	20.5
29.235000	59.18	---	87.00	27.82	1000.0	9.000	Single Line	20.5

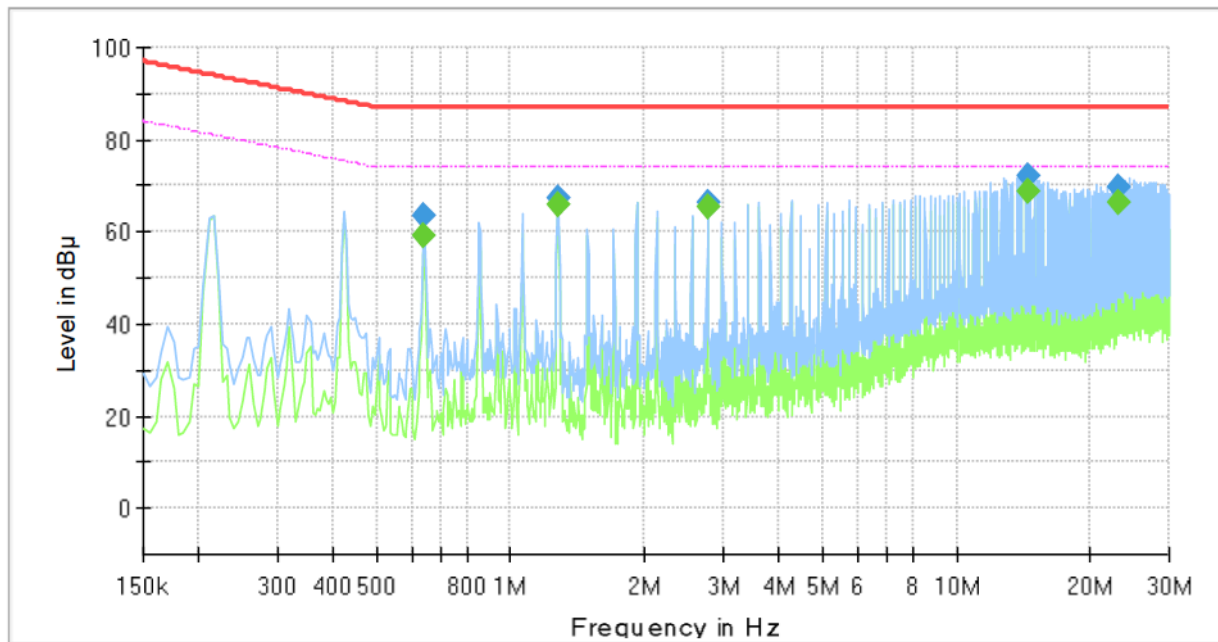
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**PoE Mode**
**[100 Mbps]**
**Common Information**

Test Description:	Telecommunication Emission
Model No.:	QNO-7032R
Mode :	PoE
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)
0.640000	63.51	---	87.00	23.49	1000.0	9.000	Single Line	19.9
0.640000	---	59.04	74.00	14.96	1000.0	9.000	Single Line	19.9
1.275000	67.34	---	87.00	19.66	1000.0	9.000	Single Line	20.1
1.275000	---	65.68	74.00	8.32	1000.0	9.000	Single Line	20.1
2.765000	66.42	---	87.00	20.58	1000.0	9.000	Single Line	20.1
2.765000	---	65.32	74.00	8.68	1000.0	9.000	Single Line	20.1
14.470000	72.01	---	87.00	14.99	1000.0	9.000	Single Line	19.7
14.470000	---	68.97	74.00	5.03	1000.0	9.000	Single Line	19.7
23.195000	---	66.14	74.00	7.86	1000.0	9.000	Single Line	20.1
23.195000	69.59	---	87.00	17.41	1000.0	9.000	Single Line	20.1

**◆ 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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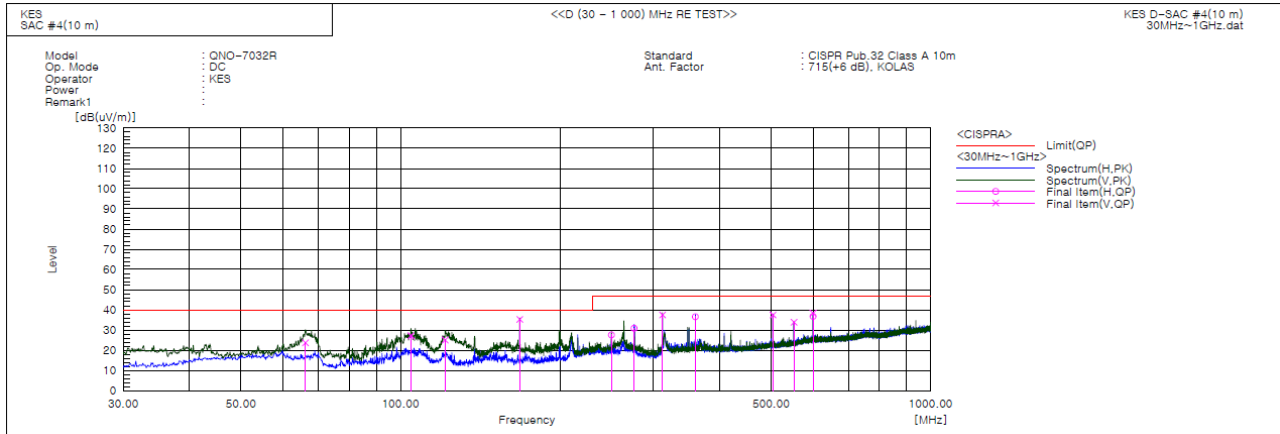
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KES-EM-21T0628-R1

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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	66.133	V	47.3	-23.6	23.7	40.0	16.3	100.0	94.0	
2	104.690	V	49.6	-22.4	27.2	40.0	12.8	171.0	116.0	
3	121.423	V	49.5	-24.4	25.1	40.0	14.9	100.0	251.0	
4	167.861	V	59.5	-24.2	35.3	40.0	4.7	100.0	35.0	
5	249.948	H	46.7	-19.1	27.6	47.0	19.4	400.0	295.0	
6	275.774	H	49.5	-18.6	30.9	47.0	16.1	257.0	92.0	
7	311.906	V	54.7	-17.2	37.5	47.0	9.5	111.0	71.0	
8	359.921	H	51.7	-15.1	36.6	47.0	10.4	219.0	273.0	
9	503.845	V	49.0	-11.5	37.5	47.0	9.5	100.0	348.0	
10	551.860	V	44.2	-10.3	33.9	47.0	13.1	103.0	18.0	
11	599.875	H	45.3	-8.5	36.8	47.0	10.2	189.0	24.0	
12	599.875	V	46.8	-8.5	38.3	47.0	8.7	336.0	338.0	

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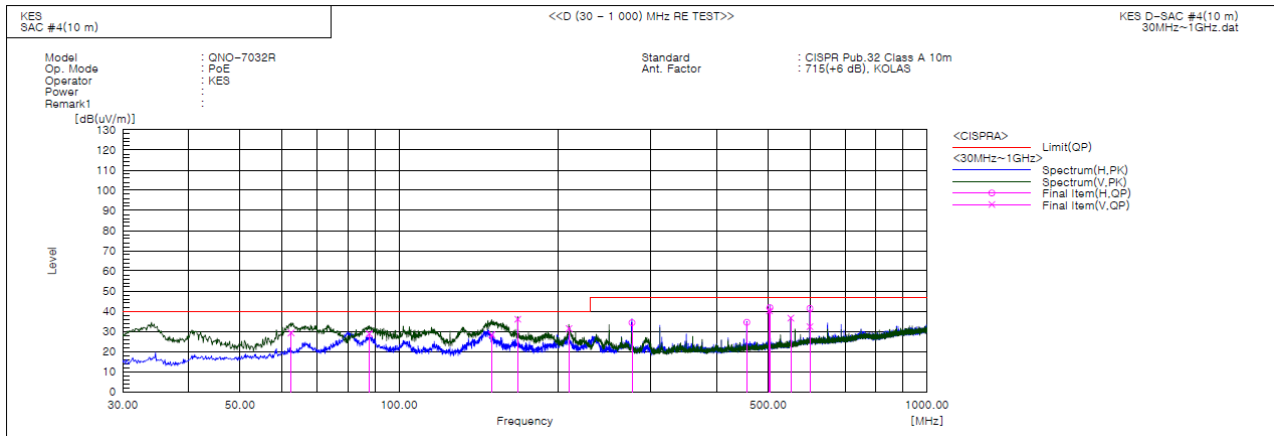


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Report No.:  
KES-EM-21T0628-R1  
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## PoE Mode



## Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP	[dB(1/m)]	QP	QP	QP	[cm]	[deg]	
			[dB(uV)]		[dB(uV/m)]	[dB(uV/m)]	[dB]			
1	62.495	V	51.8	-22.6	29.2	40.0	10.8	142.0	348.0	
2	87.836	V	53.7	-24.9	28.8	40.0	11.2	123.0	239.0	
3	149.916	V	53.4	-25.1	28.3	40.0	11.7	152.0	332.0	
4	167.861	V	60.2	-24.2	36.0	40.0	4.0	100.0	161.0	
5	209.814	V	51.9	-20.5	31.4	40.0	8.6	261.0	41.0	
6	276.138	H	52.9	-18.6	34.3	47.0	12.7	327.0	140.0	
7	455.830	H	47.5	-13.0	34.5	47.0	12.5	236.0	116.0	
8	502.979	V	51.8	-11.6	40.2	47.0	6.8	121.0	183.0	
9	503.845	H	53.2	-11.5	41.7	47.0	5.3	278.0	116.0	
10	551.860	V	46.9	-10.3	36.6	47.0	10.4	172.0	213.0	
11	599.772	V	40.9	-8.5	32.4	47.0	14.6	356.0	127.0	
12	599.875	H	49.9	-8.5	41.4	47.0	5.6	121.0	344.0	

## ◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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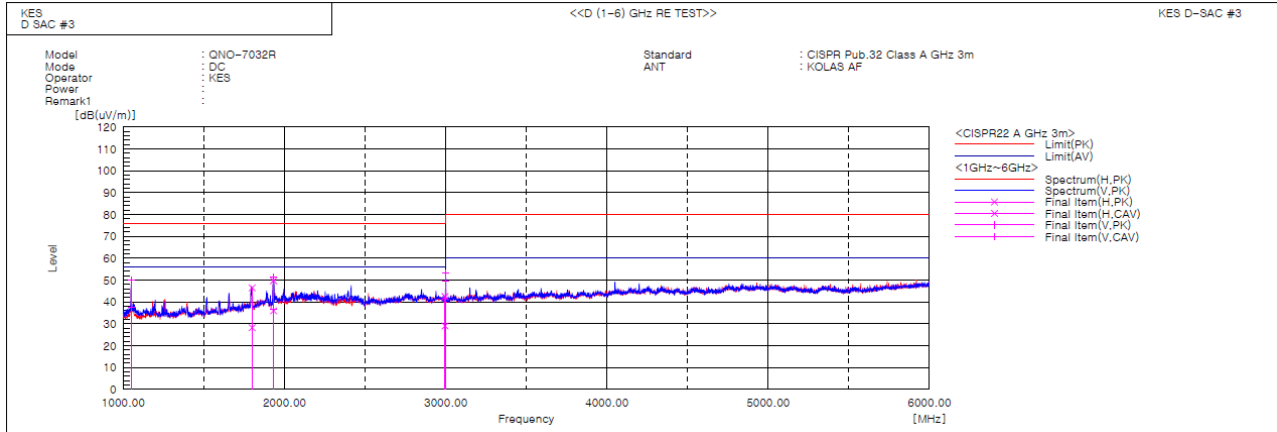
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## Radiated Electric Field Emissions(Above 1 GHz)

### ■ 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	1049.960	V	59.2	46.6	-9.1	50.1	37.5	76.0	56.0	25.9	18.5	100.0	151.0	
2	1799.659	H	49.3	31.1	-2.9	46.4	28.2	76.0	56.0	29.6	27.8	100.0	25.1	
3	1932.000	V	52.9	38.1	-1.3	51.6	36.8	76.0	56.0	24.4	19.2	100.0	251.9	
4	1932.100	H	51.1	37.3	-1.3	49.8	36.0	76.0	56.0	26.2	20.0	100.0	13.9	
5	2995.895	H	40.7	27.3	1.8	42.5	29.1	76.0	56.0	33.5	26.9	100.0	239.8	
6	2999.870	V	51.4	47.9	1.8	53.2	49.7	76.0	56.0	22.8	6.3	100.0	156.6	

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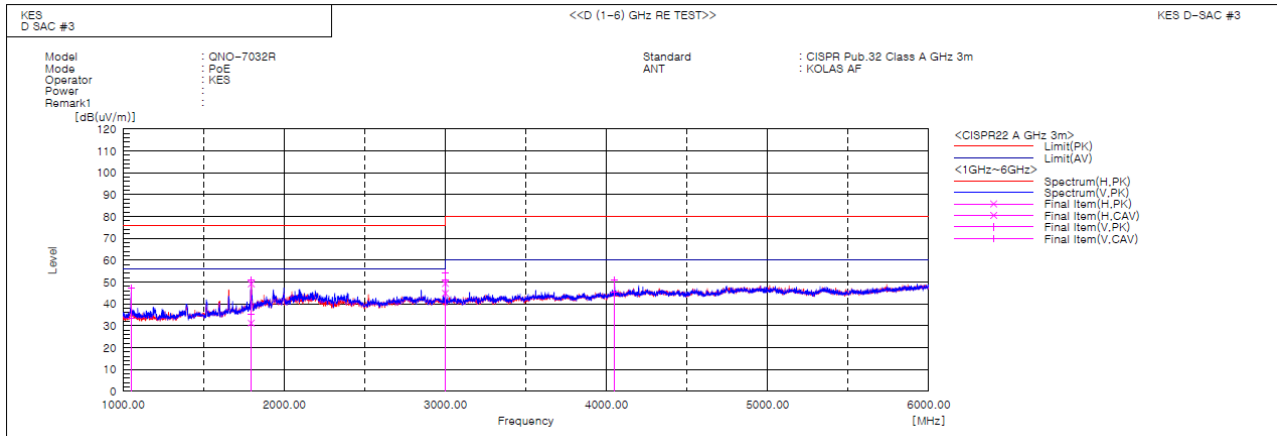
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### ■ PoE Mode



#### 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	1050.240	V	56.4	42.3	-9.1	47.3	33.2	76.0	56.0	28.7	22.8	100.0	222.9	
2	1794.460	V	53.9	38.4	-3.0	50.9	35.4	76.0	56.0	25.1	20.6	100.0	190.7	
3	1795.560	H	52.2	34.3	-3.0	49.2	31.3	76.0	56.0	26.8	24.7	100.0	39.3	
4	3000.120	V	52.2	49.1	1.8	54.0	50.9	80.0	60.0	26.0	9.1	100.0	147.0	
5	3000.170	H	47.6	43.0	1.8	49.4	44.8	80.0	60.0	30.6	15.2	100.0	248.1	
6	4049.910	V	45.0	39.3	6.0	51.0	45.3	80.0	60.0	29.0	14.7	100.0	245.3	

#### ◆ 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 - Preamplifier 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



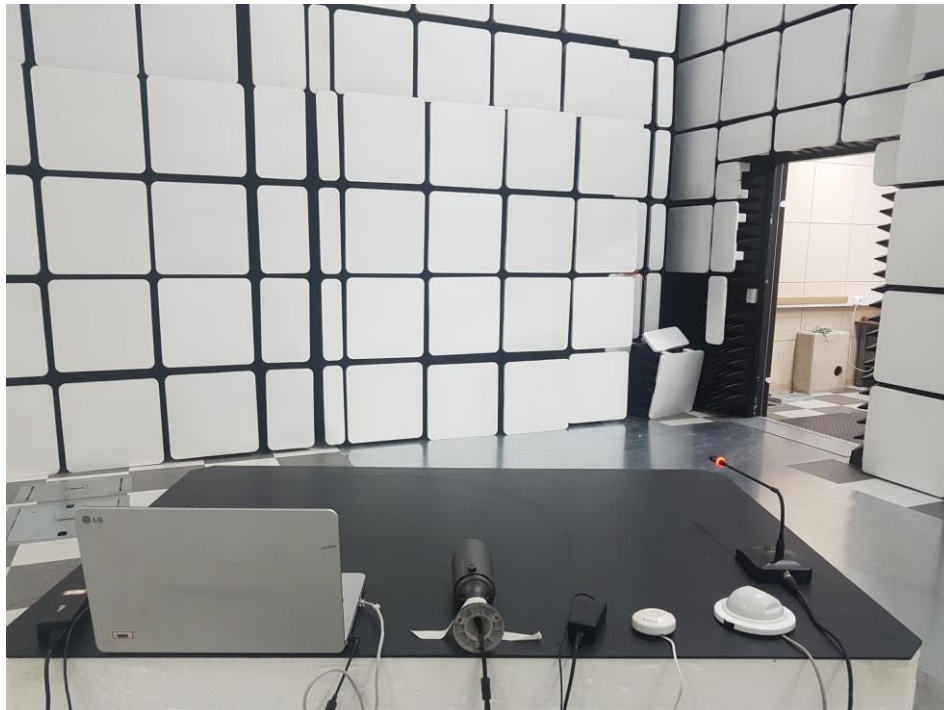
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## ■ PoE Mode



## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



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**■ PoE Mode**

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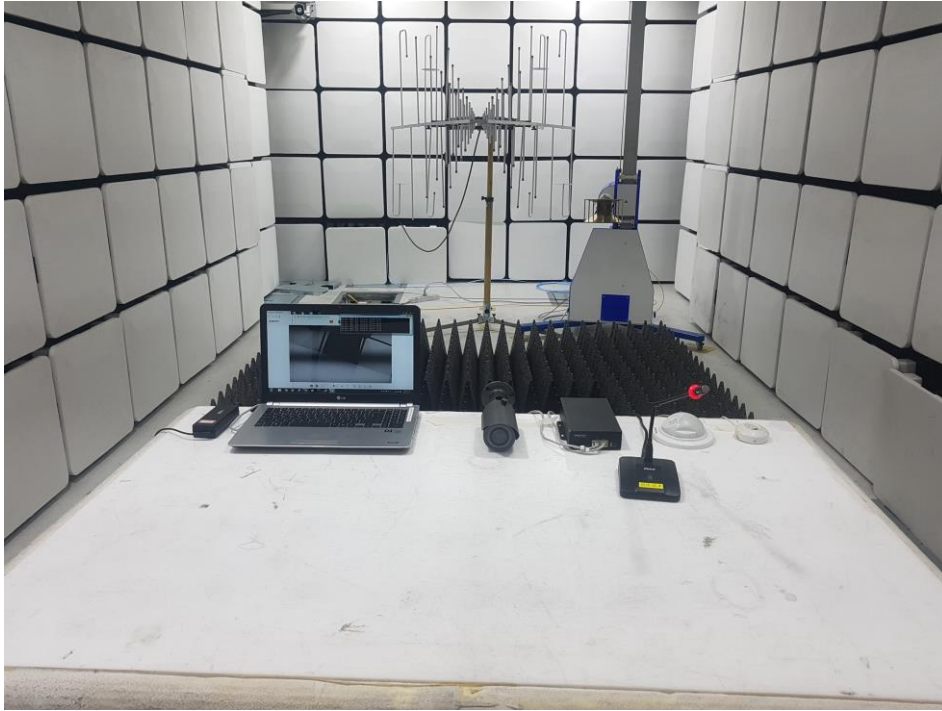
## Radiated Electric Field Emissions(Above 1 GHz)

### ■ DC Mode



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## ■ PoE Mode





## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

(Internal View)



## EUT Internal View – Board 1

(Top)



(Bottom)



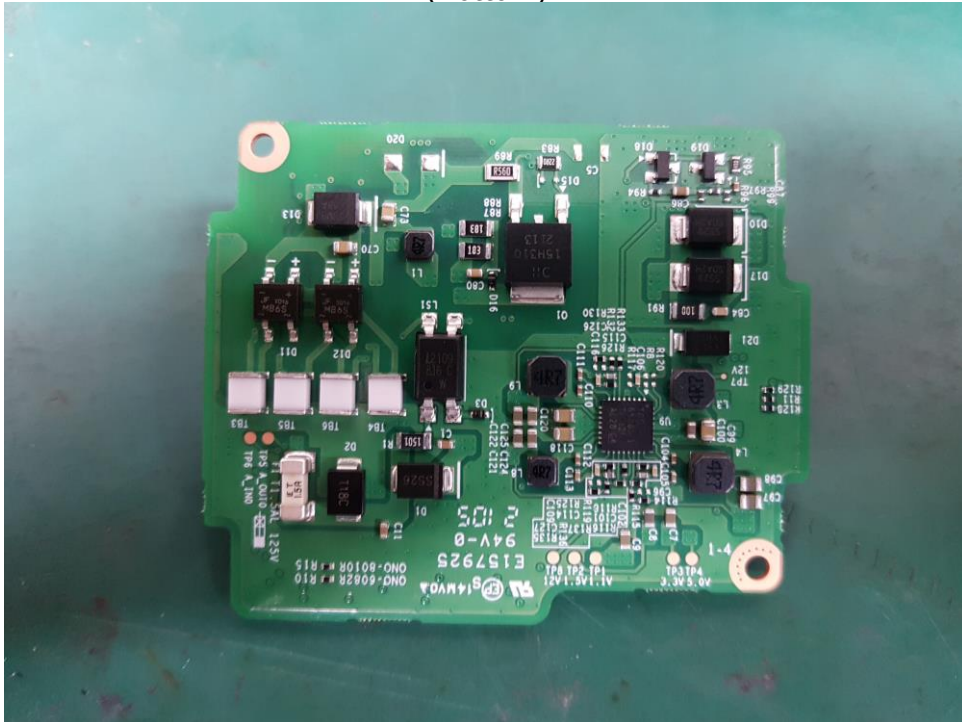
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## EUT Internal View – Board 2

(Top)



(Bottom)

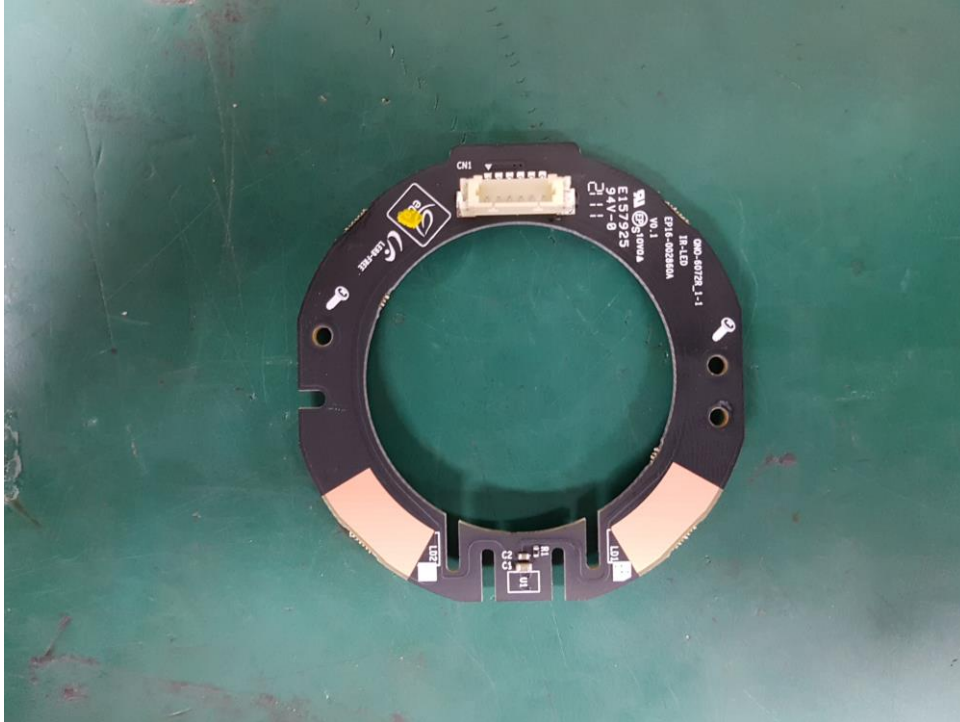


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## EUT Internal View – Board 3

(Top)



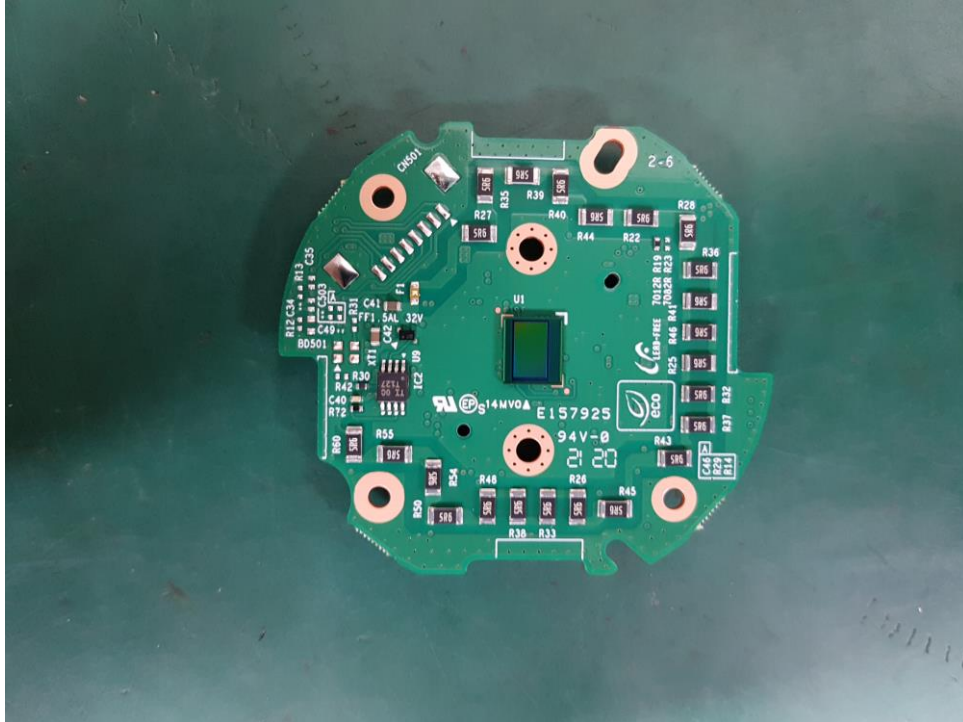
(Bottom)



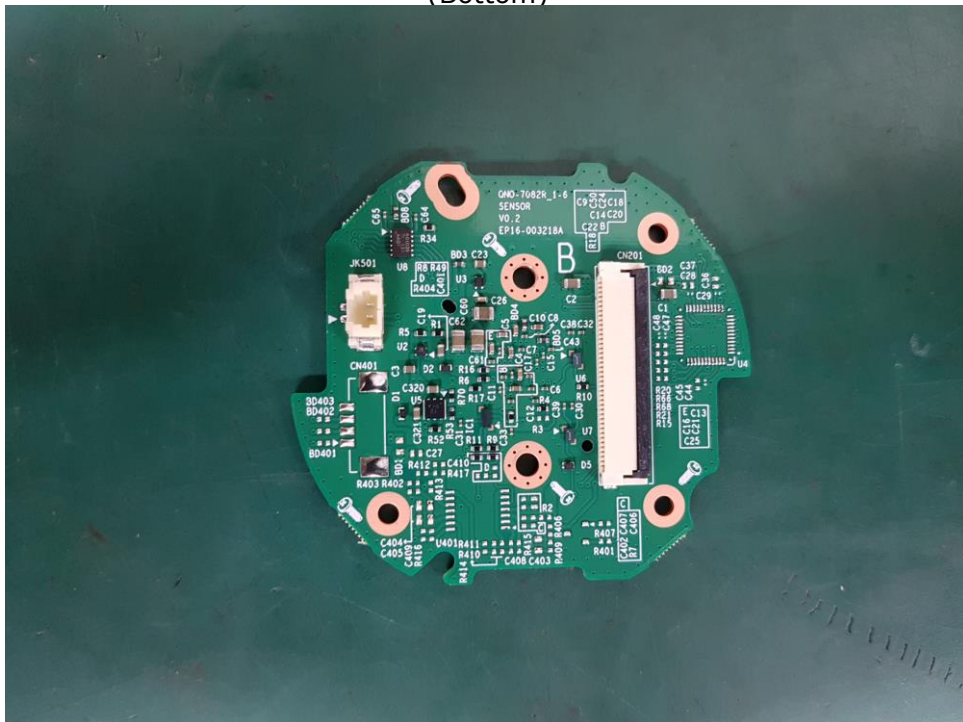
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## EUT Internal View – Board 4

(Top)



(Bottom)



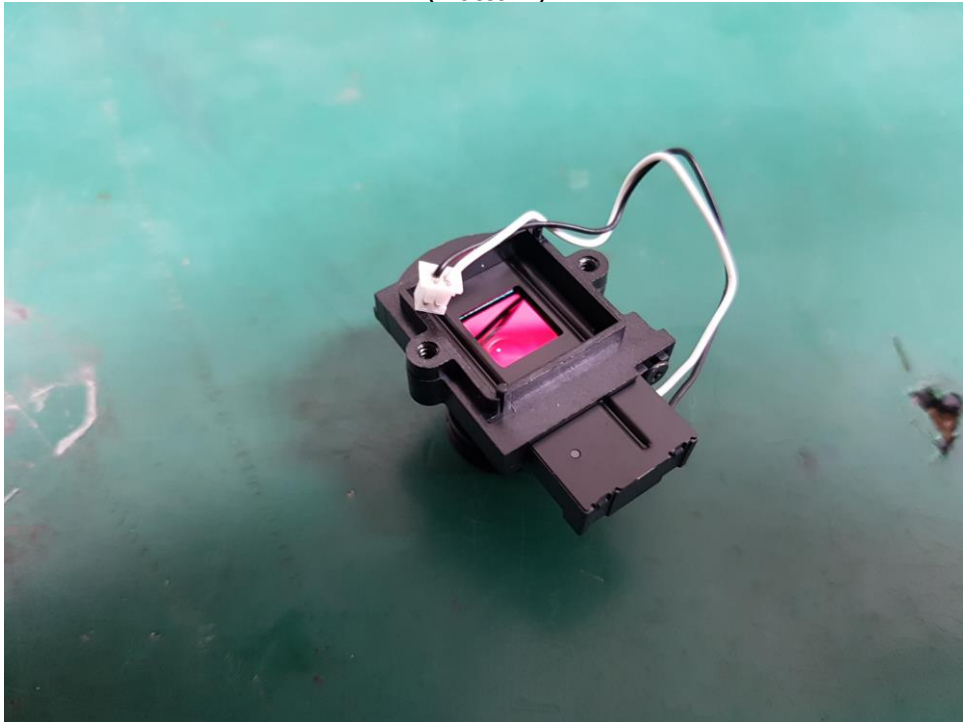
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## EUT Internal View – Lens

(Top)



(Bottom)



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