



EMC TEST REPORT For RCM

Test Report No. : KES-EM-23T0012-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : MGC-D8080LI
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)
Date of Receipt : Nov. 08, 2022
Test date : Dec. 03, 2022 ~ Dec. 05, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Hyun, Won
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
Jan. 04, 2023	KES-EM-23T0012	Issued
Feb. 24, 2023	KES-EM-23T0012-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:

SoC	CV2S88
Sensor	IMX335(1/2.8)
Lens	3.3~10.3mm(3.1x) motorized varifocal
Video	
Imaging Device	1/2.8" 5MP CMOS
Resolution	2592x1944, 2560x1440, 2048x1536, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
Max. Framerate	HL265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.05 Lux (F1.6, 1/30sec), BW: 0.005 Lux (F1.6, 1/30sec)
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) USB: Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	3.3~10.3mm(3.1x) motorized varifocal
Max. Aperture Ratio	F1.6(Wide) ~ F3.3(Tele)
Angular Field of View	H: 96.9°(Wide) ~ 28.5°(Tele) V: 69.9°(Wide) ~ 21.4°(Tele) D: 130.7°(Wide) ~ 35.6°(Tele)
Min. Object Distance	0.5m(1.64ft)
Focus Control	Simple focus
Lens Type	DC auto iris
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	Tilt: -10° ~ -35°
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, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	WiseNR II (Based on AI engine), SSNRV
Digital Image Stabilization	None
Defog	None
Motion Detection	8ea, polygonal zones
Privacy Masking	6ea, rectangle zones - Color: Black/Gray/White
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) Auto prefer shutter control based on AI engine
Digital PTZ	None
Video Rotation	None

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Analytics	- Parking guidance and license plate recognition based on AI engine (1) Parking spot detection / Parking area occupancy detection / LPR - Parking spot detection: 4 cars - Parking area occupancy detection: Occupied / Vacant - LPR: 4 cars (2) LED - Color: Green, Red, Blue, Pink, Skyblue, Purple - Analytics events based on AI engine(NPU) : Object detection, Line crossing, IVA Area - Analytics events : Defocus detection, Motion detection, Tampering, Audio detection, Sound classification
Business Intelligence	None
Serial Interface	None
Alarm I/O	2 configurable I/O ports
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	When alarm trigger occurred - File upload via FTP and e-mail - Notification via e-mail - SD/SDHC/SDXC or NAS recording - Alarm output - Handover - Audio playback - LED control(Parking guidance only)
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	None
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	Metal shielded RJ-45(10/100/1000 BASE-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 AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(Sea area), WiseStreamII, WiseStreamIII(Based on AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Quality level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 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, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)

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Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin Root CA, pre-installed) TPM 2.0 with FIPS 140-2 level2
Application Programming Interface	ONVIF Profile S/G/T/M SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 1slot 512GB
Memory	4096MB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-40°C ~ +50°C/ Less than 95% RH *Start up should be above at -35°C
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP66, IK08, NEMA 4X
Input Voltage	PoE+(IEEE802.3at), 12VDC
Power Consumption	PoE 53V : Max. 18.5W / Typ. 15.0W DC 12V : Max. 16.5W / Typ. 13.5W Power redundancy failover
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product dimensions / weight	W215 x D 135 x H 111 [mm] / 1086g
Conduit hole	None
Hanging mount(Dome)	TBD
Skin cover(Dome)	None
Weather cap(Dome)	None
Power module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 45.9m(150.7ft) / Tele: 204.1m(669.7ft)
Observe (63PPM/ 19PPF)	Wide: 18.4m(60.3ft) / Tele: 81.6m(267.9ft)
Recognize (125PPM/ 38PPF)	Wide: 9.2m(30.2ft) / Tele: 40.8m(133.9ft)
Identify (250PPM/ 76PPF)	Wide: 4.6m(15.1ft) / Tele: 20.4m(67.0ft)
Certifications & Standards	
EMC	FCC 47 CFR 15 Subpart B Class A ICES-3(A)/NMB-3(A) CE/UKCA - EN 55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3 VCCI CISPR 32 Class A RCM AS/NZS CISPR 32 Class A KS C 9832 Class A , KS C 9835
Safety	UL 62368-1, CAN/CSA C22.2 NO: 62368-1 IEC/EN 62471
Environment	IEC/EN 63000 IEC/EN 60529 IP66, IEC/EN 62262 IK08 NEMA 250 type 4X

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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

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	MGC-D8080LI	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Adapter	PT-PSE109GBRO- AH-S	-	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	Latitude 5300	8C47BE45C060	Wistron Corporation	-
Notebook Adapter	HA65NM130	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Alarm	PRO-SL		SENSOR PRO	-
Headset	HD 202	-	SENNHEISER	-
Mic	MP1000	-	-	-
SmartPhone	Galaxy S21	SM-G991N	Samsung Electronics Co., Ltd	-
Micro SD Card	-	-	TKR	8 GB



1.6 External I/O Cabling

■ DC Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
CAMERA MODULE (EUT)	2 Pin	AC/DC Adapter	2 Pin	1.8	U
	RJ-45 (LAN)	Notebook	RJ-45	4.0	U
	2 Pin (Alarm OUT)	Alarm	2 Pin	3.0	U
	3.5 mm (Audio OUT)	Headset	3.5 mm	2.8	U
	3.5 mm (Audio IN)	Mic	3.5 mm	1.7	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
Notebook	3.5 mm	SmartPhone	USB Type C	1.5	U
	DC Jack	Notebook Adapter	DC Jack	1.8	S

* 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	4.0	U
	2 Pin (Alarm OUT)	Alarm	2 Pin	3.0	U
	3.5 mm (Audio OUT)	Headset	3.5 mm	2.8	U
	3.5 mm (Audio IN)	Mic	3.5 mm	1.7	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
PoE Adapter	RJ-45	Notebook	RJ-45	2.0	U
Notebook	3.5 mm	SmartPhone	3.5 mm	1.5	U
	DC Jack	Notebook Adapter	DC Jack	1.8	S

* Unshielded=U, Shielded=S



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1.7 EUT Operating Mode(s)

Test Mode	operating
- DC Mode	Check the Normal Operation status. after testing, check if the recording is normally done on the Micro SD Card
- PoE Mode	

EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	-

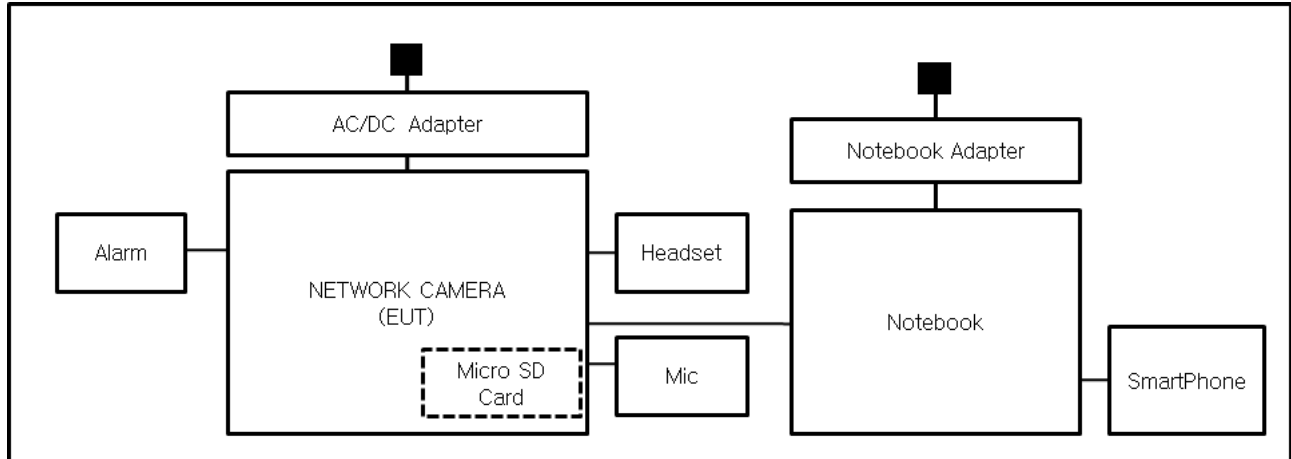
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1.8 Configuration

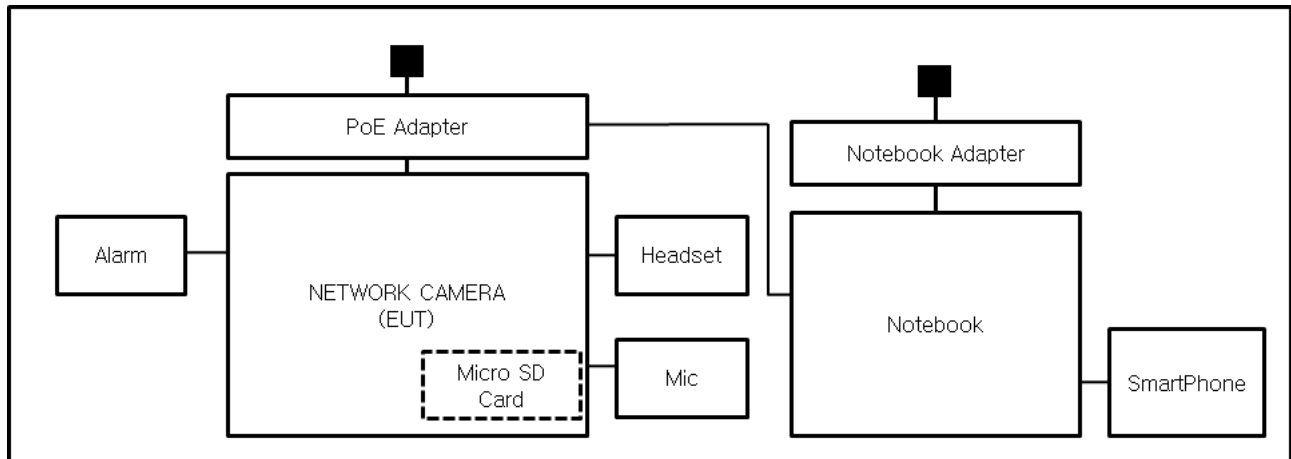
■ AC Main

□ DC Main

■ DC Mode



■ PoE Mode



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1.9 Remarks when standards applied

The USB, VIDEO ports were excluded from the test as administrator ports.

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



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2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **AS/NZS CISPR 32:2015 AMD 1:2020**

☒ Class A

☐ Class B

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Dec. 05, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023

Test Conditions

Temperature: (22,3 ± 0,1) °C

Relative Humidity: (44,8 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Dec. 05, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	11, 22, 2023

Test Conditions

Temperature: (22,3 ± 0,1) °C

Relative Humidity: (44,8 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Dec. 03, 2022

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Test Conditions

Temperature: (21,8 ± 0,1) °C
Relative Humidity: (45,3 ± 0,1) % 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

Dec. 03, 2022

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESR7	R & S	101190	08, 01, 2023
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 01, 2023
☒	ATTENUATOR	8491A	HP	35496	03, 08, 2023
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 03, 2023

Test Conditions

Temperature: (22,0 ± 0,1) °C

Relative Humidity: (45,7 ± 0,1) % 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.:

MGC-D8080LI

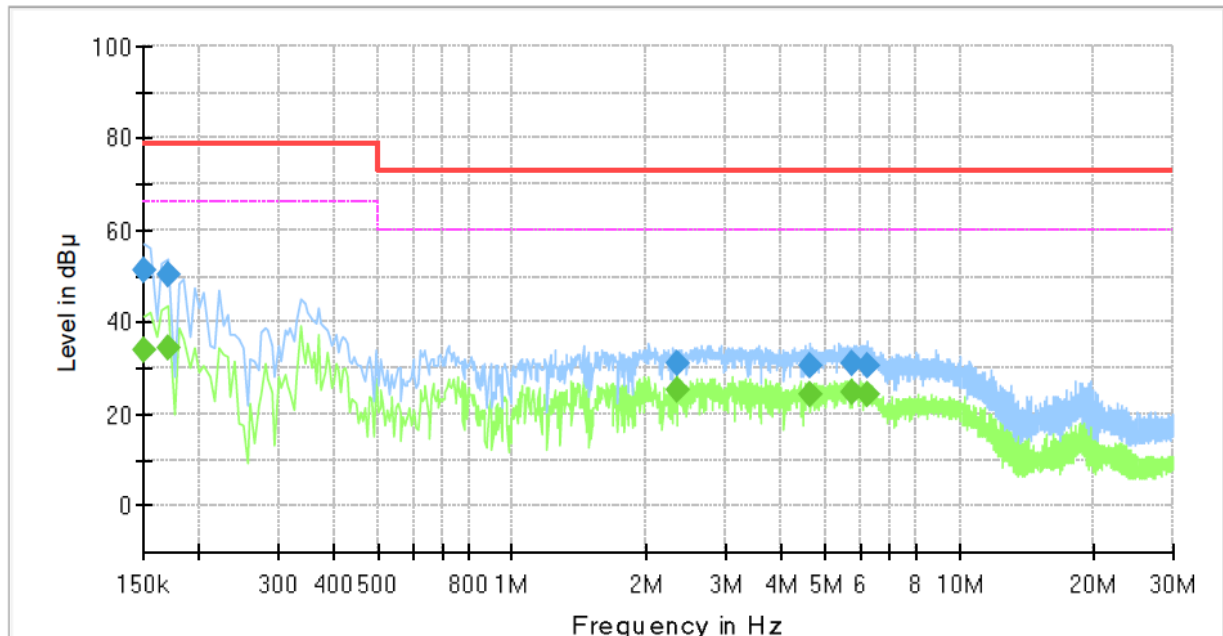
Phase:

Mode:

DC_H

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	---	33.98	66.00	32.02	1000.0	9.000	L1	19.5
0.150000	51.06	---	79.00	27.94	1000.0	9.000	L1	19.5
0.170000	---	34.45	66.00	31.55	1000.0	9.000	L1	19.5
0.170000	50.26	---	79.00	28.74	1000.0	9.000	L1	19.5
2.330000	---	25.03	60.00	34.97	1000.0	9.000	L1	20.3
2.330000	31.03	---	73.00	41.97	1000.0	9.000	L1	20.3
4.645000	---	24.23	60.00	35.77	1000.0	9.000	L1	19.8
4.645000	30.31	---	73.00	42.69	1000.0	9.000	L1	19.8
5.730000	---	24.95	60.00	35.05	1000.0	9.000	L1	19.6
5.730000	30.81	---	73.00	42.19	1000.0	9.000	L1	19.6
6.205000	---	24.29	60.00	35.71	1000.0	9.000	L1	19.6
6.205000	30.48	---	73.00	42.52	1000.0	9.000	L1	19.6

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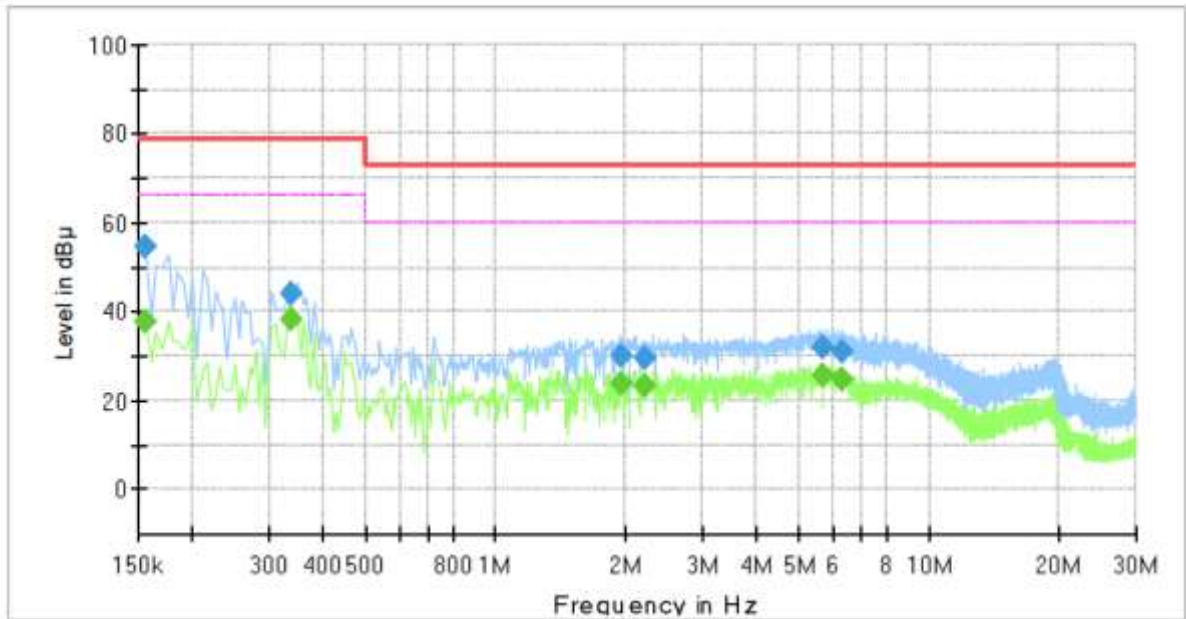
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	MGC-D8080LI
Phase:	
Mode:	DC_N
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	---	37.73	66.00	28.27	1000.0	9.000	N	19.4
0.155000	54.42	---	79.00	24.58	1000.0	9.000	N	19.4
0.335000	---	38.25	66.00	27.75	1000.0	9.000	N	19.6
0.335000	44.02	---	79.00	34.98	1000.0	9.000	N	19.6
1.950000	---	23.64	60.00	36.36	1000.0	9.000	N	20.3
1.950000	30.12	---	73.00	42.88	1000.0	9.000	N	20.3
2.210000	---	23.22	60.00	36.78	1000.0	9.000	N	20.3
2.210000	29.75	---	73.00	43.25	1000.0	9.000	N	20.3
5.665000	---	25.62	60.00	34.38	1000.0	9.000	N	19.6
5.665000	31.75	---	73.00	41.25	1000.0	9.000	N	19.6
6.295000	---	24.84	60.00	35.16	1000.0	9.000	N	19.6
6.295000	31.03	---	73.00	41.97	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

[1 000 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

MGC-D8080LI

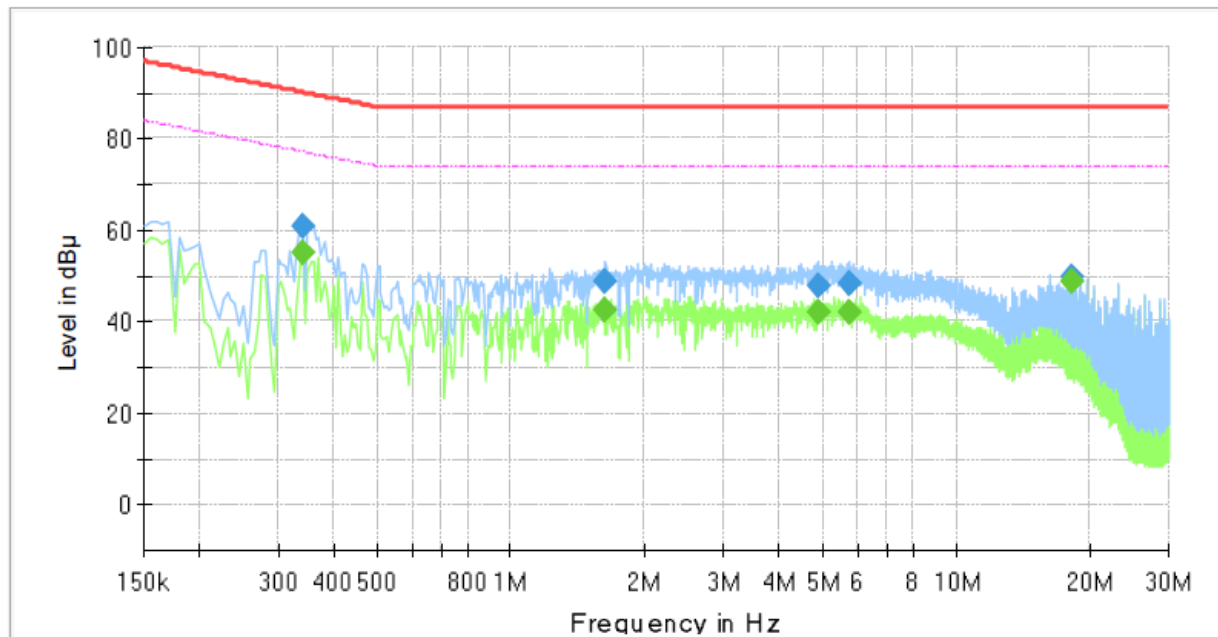
Mode :

DC_ 1 000 Mbps

Speed :

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.340000	---	55.35	77.20	21.85	1000.0	9.000	Single Line	19.7
0.340000	61.12	---	90.20	29.08	1000.0	9.000	Single Line	19.7
1.630000	---	42.59	74.00	31.41	1000.0	9.000	Single Line	20.1
1.630000	48.67	---	87.00	38.33	1000.0	9.000	Single Line	20.1
4.915000	---	42.00	74.00	32.00	1000.0	9.000	Single Line	19.4
4.915000	48.13	---	87.00	38.87	1000.0	9.000	Single Line	19.4
5.720000	---	42.22	74.00	31.78	1000.0	9.000	Single Line	19.3
5.720000	48.26	---	87.00	38.74	1000.0	9.000	Single Line	19.3
18.245000	---	48.98	74.00	25.02	1000.0	9.000	Single Line	19.8
18.245000	49.86	---	87.00	37.14	1000.0	9.000	Single Line	19.8

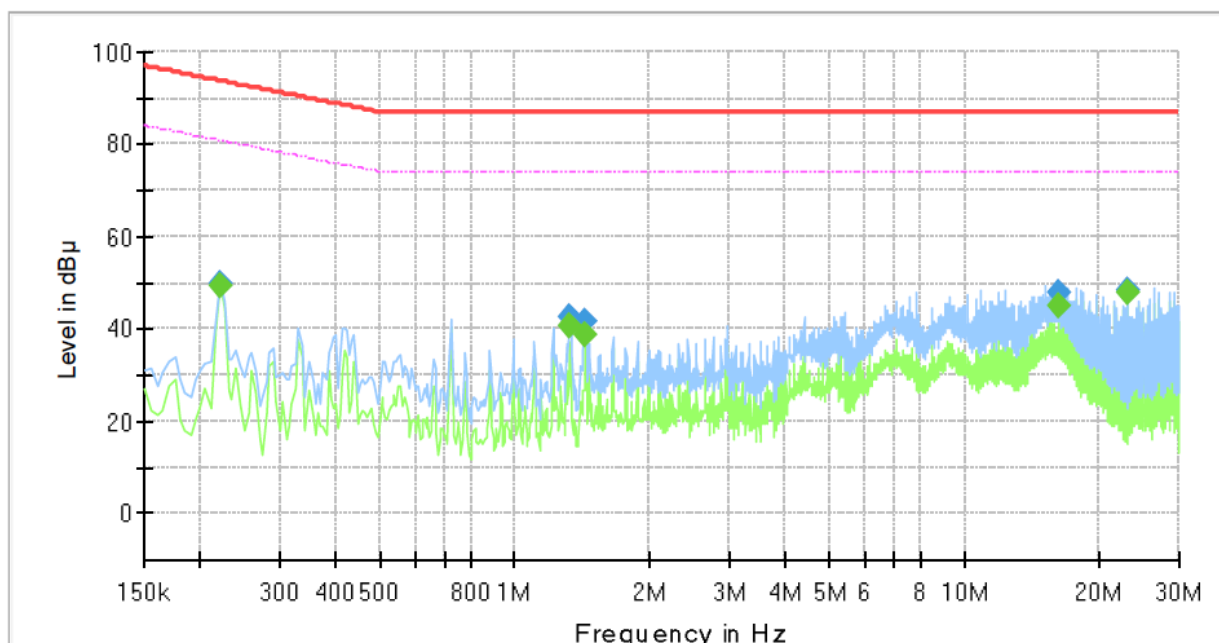
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PoE Mode
[1 000 Mbps]
Common Information

Test Description: Telecommunication Emission
Model No.: MGC-D8080LI
Mode : PoE_ 1 000 Mbps
Speed :
Operator Name: KES


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.220000	---	49.52	80.82	31.30	1000.0	9.000	Single Line	19.7
0.220000	49.66	---	93.82	44.16	1000.0	9.000	Single Line	19.7
1.325000	---	40.53	74.00	33.47	1000.0	9.000	Single Line	20.0
1.325000	42.66	---	87.00	44.34	1000.0	9.000	Single Line	20.0
1.435000	---	38.82	74.00	35.18	1000.0	9.000	Single Line	20.0
1.435000	41.49	---	87.00	45.51	1000.0	9.000	Single Line	20.0
16.225000	---	44.80	74.00	29.20	1000.0	9.000	Single Line	19.6
16.225000	47.95	---	87.00	39.05	1000.0	9.000	Single Line	19.6
23.130000	---	47.91	74.00	26.09	1000.0	9.000	Single Line	19.9
23.130000	48.43	---	87.00	38.57	1000.0	9.000	Single Line	19.9

◆ 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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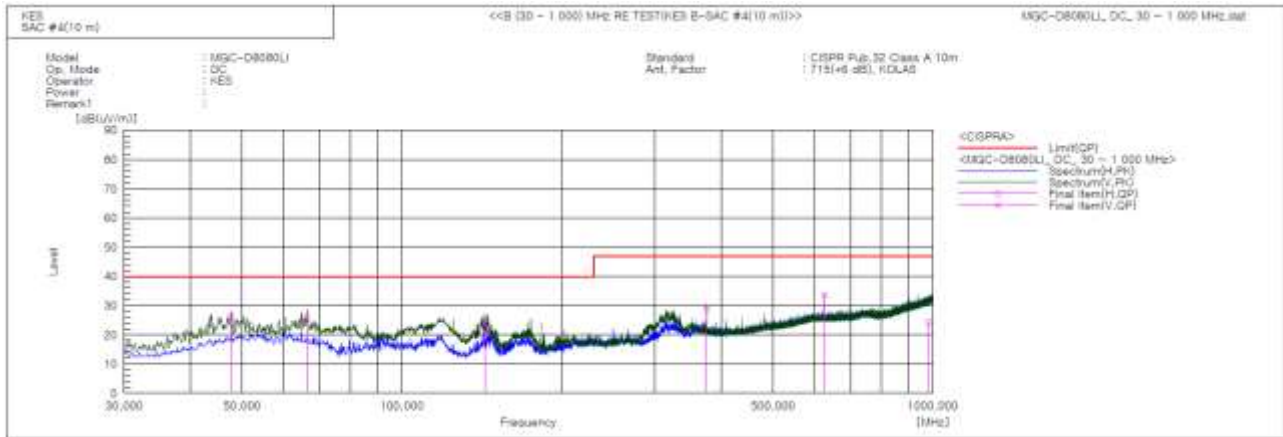
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Radiated Electric Field Emissions(Below 1 GHz)

■ 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	47.703	V	46.8	-20.6	26.2	40.0	13.8	146.0	301.0	
2	66.254	V	48.8	-23.2	25.6	40.0	14.4	102.0	242.0	
3	143.248	V	48.7	-25.0	23.7	40.0	16.3	155.0	89.0	
4	143.291	H	44.9	-25.0	19.9	40.0	20.1	400.0	318.0	
5	374.956	H	42.7	-14.0	28.7	47.0	18.3	298.0	99.0	
6	625.095	V	41.2	-7.6	33.6	47.0	13.4	129.0	209.0	
7	981.934	H	26.2	-2.0	24.2	47.0	22.8	384.0	285.0	



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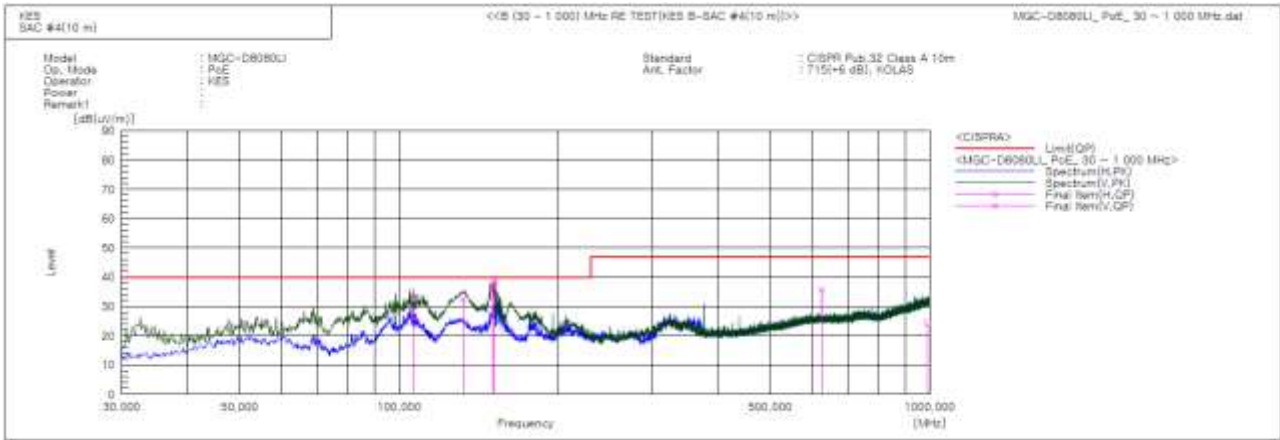
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-23T0012-R1

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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	106.630	H	48.7	-22.3	26.4	40.0	13.6	394.0	156.0	
2	106.710	V	55.0	-22.3	32.7	40.0	7.3	106.0	97.0	
3	132.214	V	57.4	-24.9	32.5	40.0	7.5	128.0	112.0	
4	149.916	V	61.7	-24.9	36.8	40.0	3.2	120.0	275.0	
5	151.493	H	57.1	-24.9	32.2	40.0	7.8	386.0	67.0	
6	151.569	V	62.8	-24.9	37.9	40.0	2.1	100.0	264.0	
7	624.974	V	43.3	-7.6	35.7	47.0	11.3	119.0	208.0	
8	991.391	H	26.0	-1.7	24.3	47.0	22.7	400.0	271.0	

◆ 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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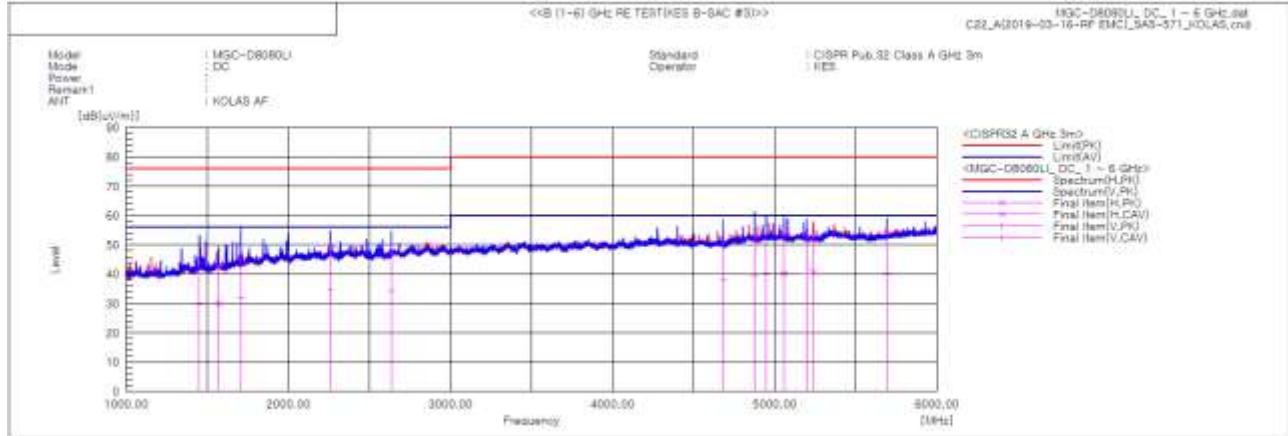
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Radiated Electric Field Emissions(Above 1 GHz)

■ 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	1452.240	V	44.0	30.5	-0.3	43.7	30.2	76.0	56.0	32.3	25.8	100.0	354.0	
2	1570.973	H	42.2	29.5	0.4	42.6	29.9	76.0	56.0	33.4	26.1	100.0	236.7	
3	1707.503	V	42.8	29.6	2.1	44.9	31.7	76.0	56.0	31.1	24.3	100.0	342.9	
4	2258.892	V	42.4	29.1	5.6	48.0	34.7	76.0	56.0	28.0	21.3	100.0	327.7	
5	2635.266	V	40.7	27.7	6.6	47.3	34.3	76.0	56.0	28.7	21.7	100.0	350.8	
6	4681.007	V	39.5	26.0	12.1	51.6	38.1	80.0	60.0	28.4	21.9	100.0	327.7	
7	4874.240	V	39.1	25.9	13.8	52.9	39.7	80.0	60.0	27.1	20.3	100.0	7.3	
8	4948.185	V	40.4	26.0	14.3	54.7	40.3	80.0	60.0	25.3	19.7	100.0	29.4	
9	5057.547	H	39.8	25.9	14.4	54.2	40.3	80.0	60.0	25.8	19.7	100.0	288.1	
10	5059.204	V	39.3	25.9	14.4	53.7	40.3	80.0	60.0	26.3	19.7	100.0	3.2	
11	5197.345	V	38.9	25.7	14.3	53.2	40.0	80.0	60.0	26.8	20.0	100.0	354.4	
12	5238.295	H	39.6	26.3	14.4	54.0	40.7	80.0	60.0	26.0	19.3	100.0	254.8	
13	5691.381	V	39.1	25.1	15.2	54.3	40.3	80.0	60.0	25.7	19.7	100.0	349.1	



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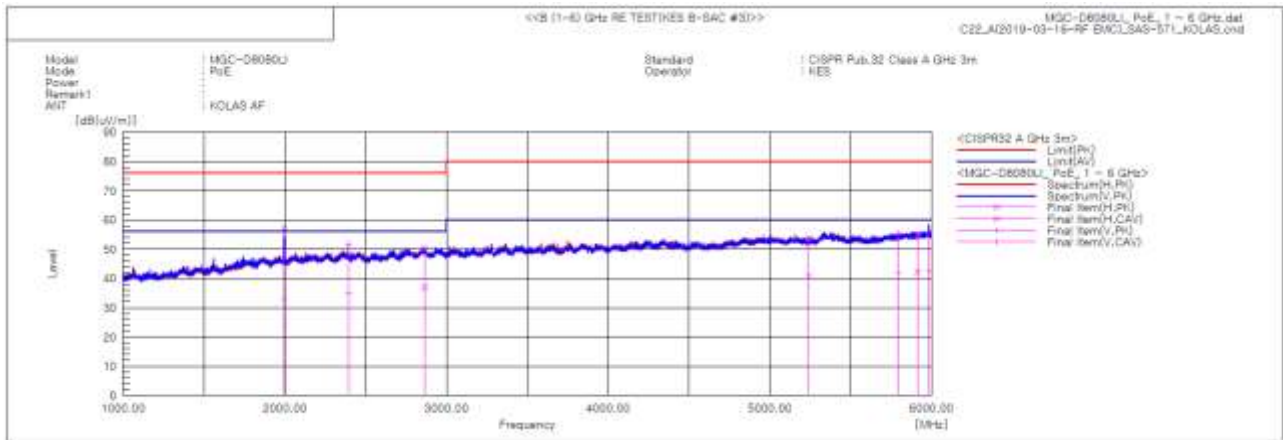
3701, 40, Simin-daero 365beon-gil,
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Report No.:

KES-EM-23T0012-R1

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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	1993.320	V	52.7	28.6	4.6	57.3	33.2	76.0	56.0	18.7	22.8	100.0	345.5	
2	2392.261	V	45.5	29.0	6.3	51.8	35.3	76.0	56.0	24.2	20.7	100.0	278.8	
3	2864.836	H	42.4	29.2	7.8	50.2	37.0	76.0	56.0	25.8	19.0	100.0	11.7	
4	5242.547	H	39.5	26.4	14.4	53.9	40.8	80.0	60.0	26.1	19.2	100.0	89.4	
5	5794.482	V	39.2	25.9	15.9	55.1	41.8	80.0	60.0	24.9	18.2	100.0	170.1	
6	5913.575	H	38.9	26.0	16.2	55.1	42.2	80.0	60.0	24.9	17.8	100.0	273.0	
7	5982.342	V	39.0	26.1	16.3	55.3	42.4	80.0	60.0	24.7	17.6	100.0	112.8	

◆ Calculation

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

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

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

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

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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

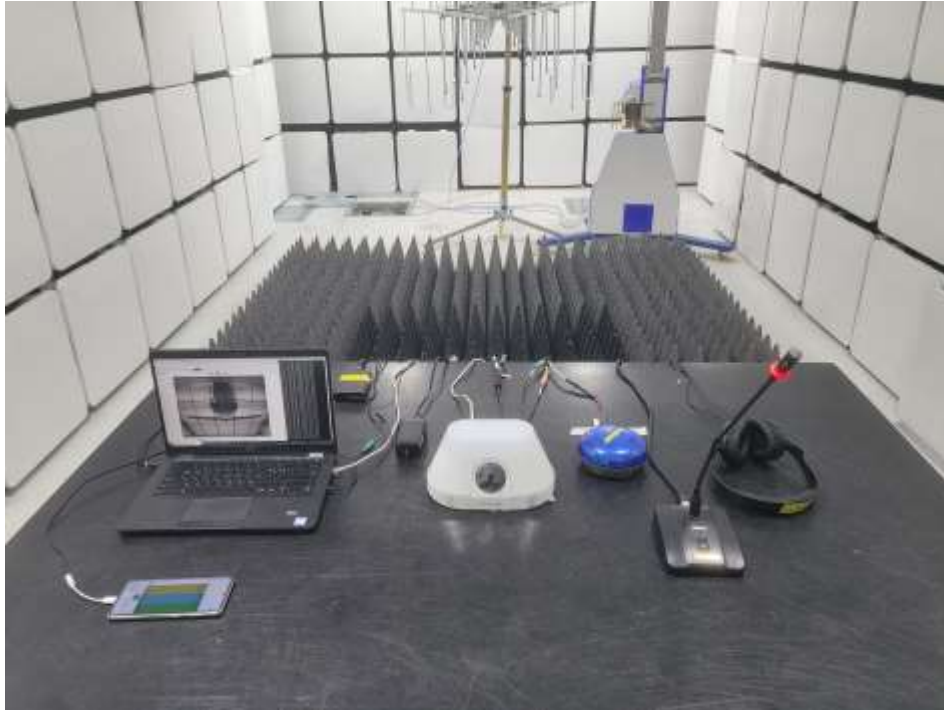


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■ PoE Mode

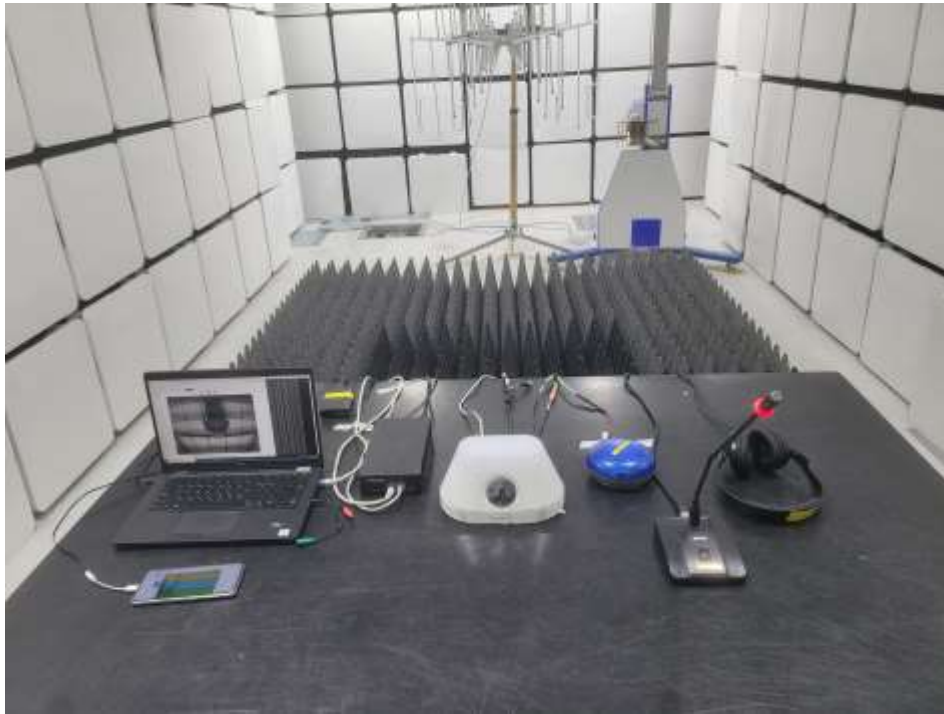
Radiated Electric Field Emissions(Above 1 GHz)

■ 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 – Main Board

(Top)



(Bottom)



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EUT Internal View – Board

(Top)



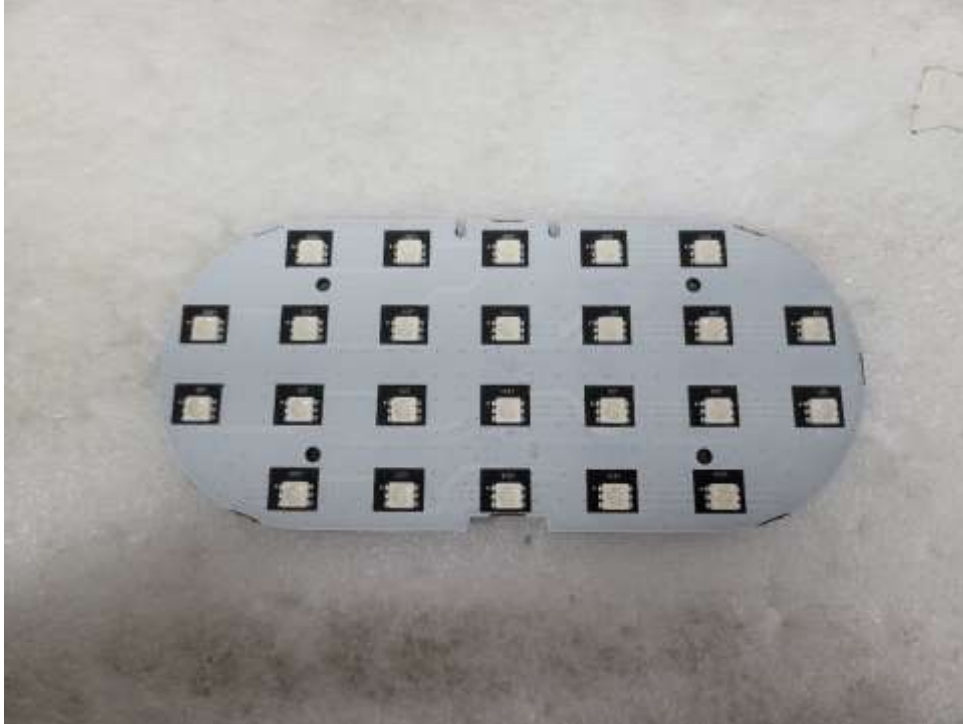
(Bottom)



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EUT Internal View – LED Board

(Top)



(Bottom)



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EUT Internal View – Lens

(Top)



(Bottom)



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EUT Internal View – Lens Board

(Top)



(Bottom)



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