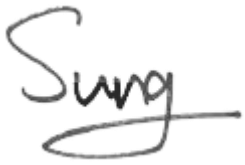
EMC TEST REPORT

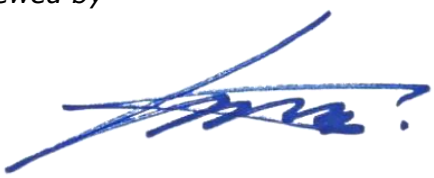
Test Report No.	:	KES-EM-22T1012-R1
Date of Issue	:	Feb. 24, 2023
Product name	:	NETWORK CAMERA
Model/Type No.	:	MGC-F9010LI
Variant Model	:	-
Applicant	:	Hanwha Vision Co., Ltd
Applicant Address	:	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	1. HANWHA 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. 02, 2022 ~ Dec. 06, 2022
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by



Sung Keun, Park
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
Dec. 27, 2022	KES-EM-22T1012	Issued
Feb. 24, 2023	KES-EM-22T1012-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:

ITEM	MGC-F9010LI
SoC	CV2S88
Sensor	IMX226
Lens	1.29mm fixed focal
Video	
Imaging Device	1/1.7" 12MP CMOS(IMX226)
Resolution	Original view(1:1): 3008x3008, 2048x2048, 800x800 Dewarping View: 2048x1152, 640x360 ※1CH Original view, 2~3CH Dewarping View
Max. Framerate	H.265/H.264: Max. 20fps@3008x3008 MJPEG: Max. 20fps@3008x3008
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.32 Lux (F2.4, 1/30sec)
Video Out	USB: Micro USB Type B(800x800)
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	1.29mm fixed focal
Max. Aperture Ratio	F2.4
Angular Field of View	H: 190° / V: 190° / D: 190°
Min. Object Distance	0.5m(1.64ft)
Focus Control	Simple focus
Lens Type	None
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	

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Pan / Tilt / Rotate Range	Rotate : +/- 180°
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(Electrical)
Backlight Compensation	BLC,DWDR,SSDR
Wide Dynamic Range	60dB
Digital Noise Reduction	WiseNR Ⅱ(Based on AI engine), SSNR Ⅴ
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	None
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec) Auto prefer shutter control based on AI engine
Digital PTZ	Support
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: 6 cars(3 cars on each side) · Parking area occupancy detection: Occupied / Vacant · LPR: 6 cars(3 cars on each side) (2) LED · Color: Green, Red, Blue, Pink, Skyblue, Purple · LED Integrated(1ea)/Seprated(2ea) mode - 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 - 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

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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/Baseline/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(5ea area), WiseStream Ⅱ, WiseStream Ⅲ(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 per each channel)
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/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	None
Memory	4096MB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-40°C ~ +55°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 95% RH
Certification	IP66, IK08, NEMA 4X
Input Voltage	PoE+(IEEE802.3at), 12VDC
Power Consumption	PoE 53V : Max. 20.0W / Typ. 16.5W DC 12V : Max. 18.0W / Typ. 15.0W Power redundancy failover
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product dimensions / weight	Φ200mm * H80mm / 1550g
Conduit hole	None
Hanging mount(Dome)	TBD

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Skin cover(Dome)	None
Weather cap(Dome)	None
Power module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	36.3m(119.0ft)
Observe (63PPM/ 19PPF)	14.5m(47.6ft)
Recognize (125PPM/ 38PPF)	7.3m(23.8ft)
Identify (250PPM/ 76PPF)	3.6m(11.9ft)
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 230 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-F9010LI	-	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 Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	LG15N54	503NZWY038929	LG Electronics	-
Notebook Adapter	PA-1900-14	OF2R263348701 7764	LITE-ON TECHNOLOGY COPORATION	-
LED Alarm	-	-	-	-
Smartphone	SHV-E330S	-	SAMSUNG	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-

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1.6 External I/O Cabling

■ Adapter 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
	Alarm	LED Alarm	Alarm	3.0	U
	Audio IN	Smarphone	3.5 mm	1.7	U
	Audio OUT	Speaker	3.5 mm	1.7	U
	DC Jack	Adapter	DC Jack	1.6	U
Notebook	DC Jack	Notebook Adapter	DC Jack	1.7	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
	Alarm	LED Alarm	Alarm	3.0	U
	Audio IN	Smarphone	3.5 mm	1.7	U
	Audio OUT	Speaker	3.5 mm	1.7	U
Notebook	RJ-45 (LAN)	PoE Adapter	RJ-45 (LAN)	3.5	U
	DC Jack	Notebook Adapter	DC Jack	1.7	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

Test Mode	operating
ADAPTER, PoE Mode	1. Check the camera video output on the laptop 2. Check if the network status is operating normally during PING TEST 3. Check if the 1KHz tone played by the smartphone is normally output from the speaker 4. check the normal operation of the LED Alarm.

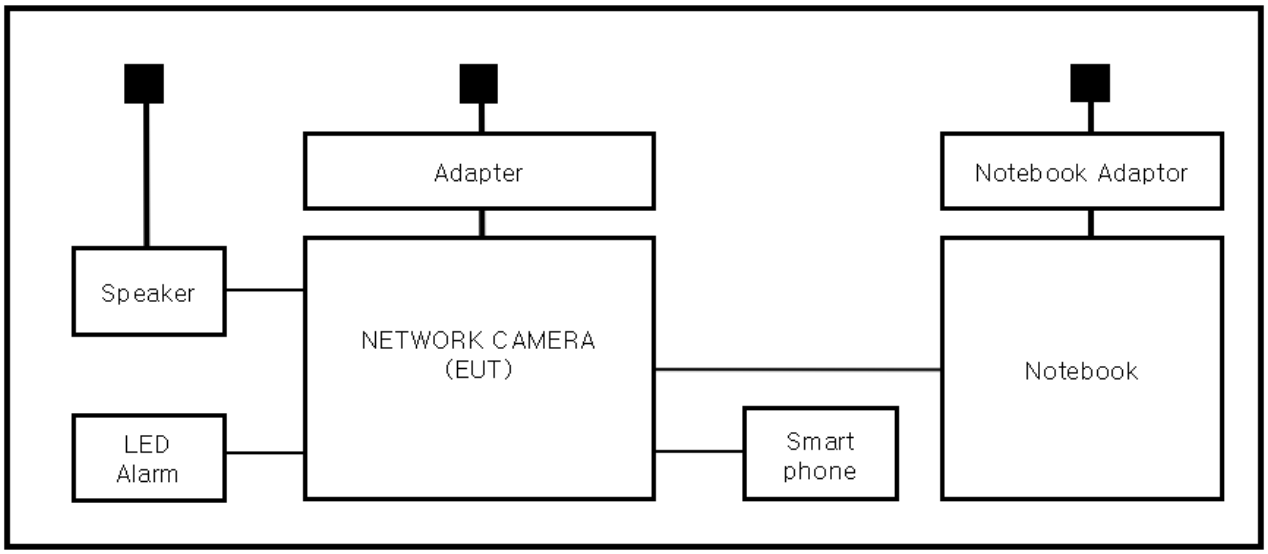
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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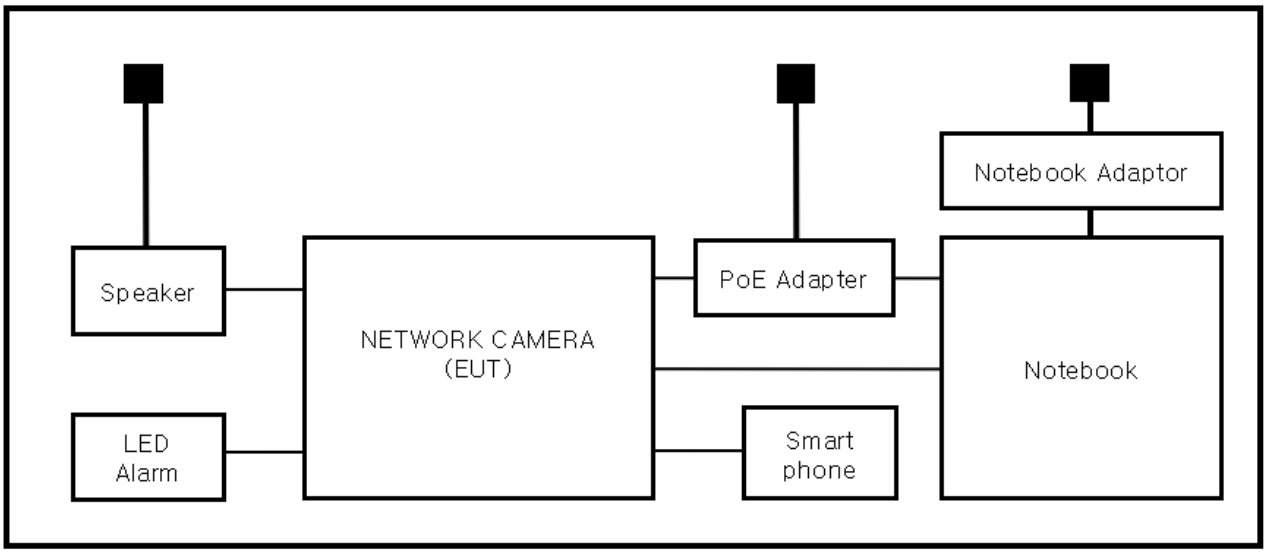
1.8 Configuration

■ AC Main
□ DC Main

■ Adapter Mode



■ PoE Mode



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1.9 Remarks when standards applied

The USB port was excluded from the test as a Management port.

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, Yeoju-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:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A11:2020 ☒ Class A ☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☒ **EMC – Regulations 2016**

☒ EN 55032:2015/A11:2020 ☒ Class A ☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

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2.1 Conducted Emissions at Mains Power Ports

Test Date
Dec. 02, 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: (23,0 ± 0,1) ℃
Relative Humidity: (45,2 ± 0,1) % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

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
Dec. 02, 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
☐	CDN	CDNS502A	TESEQ	40431	11, 10, 2023

Test Conditions
Temperature: (23,0 ± 0,1) ℃
Relative Humidity: (45,2 ± 0,1) % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

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 ㎓)

Test Date
Dec. 02, 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: (22,0 ± 0,1) ℃
Relative Humidity: (45,2 ± 0,1) % R.H.

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

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 ㎓)

Test Date
Dec. 02, 2022

Test Location
SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	03, 31, 2023
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 08, 2023
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 02, 2023
☒	ATTENUATOR	8491B	HP	23094	04, 21, 2023

Test Conditions
Temperature: (22,0 ± 0,1) ℃
Relative Humidity: (46,5 ± 0,1) % R.H.

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Settings
IF Band Width: 1 ㎒

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
- See Appendix A for test data.
- The Average of the test data is the cispr average result.

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2.5 Harmonic Current Emissions

Test Date
Dec. 06, 2022

Test Location
Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2023
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions
Temperature: (22,5 ± 0,1) ℃
Relative Humidity: (46,5 ± 0,1) % R.H.

Classification of Equipment for Harmonic Current Emissions
☒ Class A
☐ Class B
☐ Class C(Below 25 W)
☐ Class C(Above 25 W)
☐ Class D

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.6 Voltage Fluctuations and Flicker

Test Date
Dec. 06, 2022

Test Location
Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2023
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions
Temperature: (22,5 ± 0,1) ℃
Relative Humidity: (46,5 ± 0,1) % R.H.

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:
EN 50130-4:2011 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus

becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test

report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

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Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any

change in outputs, which could be interpreted by associated equipment as a change.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any

change in outputs, which could be interpreted by associated equipment as a change,

and no such flickering of indicators oeuvres at U = 130 dBμV.

For component of CCTV systems, where the status is monitored by observing the TV picture,

then deterioration of the picture is allowed at U = 140 dBμV, providing:

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable settings etc.)

(b) at U = 130 dBμV, any deterioration of the picture is so minor that the system could

still be used; and

(c) there in no observable deterioration of the picture at U = 120 dBμV.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual

change in the EUT or any change in outputs, which could be interpreted by associated equipment

as a change. The EUT shall meet the acceptance criteria for the functional test, after the conditioning.

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3.1 Electrostatic Discharge

Reference Standard
EN 61000-4-2:2009

Test Date
Dec. 03, 2022

Test Location
EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	02, 24, 2023
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (22,4 ± 0,1) ℃
Relative Humidity: (45,0 ± 0,1) % R.H.
Atmospheric Pressure: (100,9 ± 0,0) kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:

Contact	Air	HCP	VCP
☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

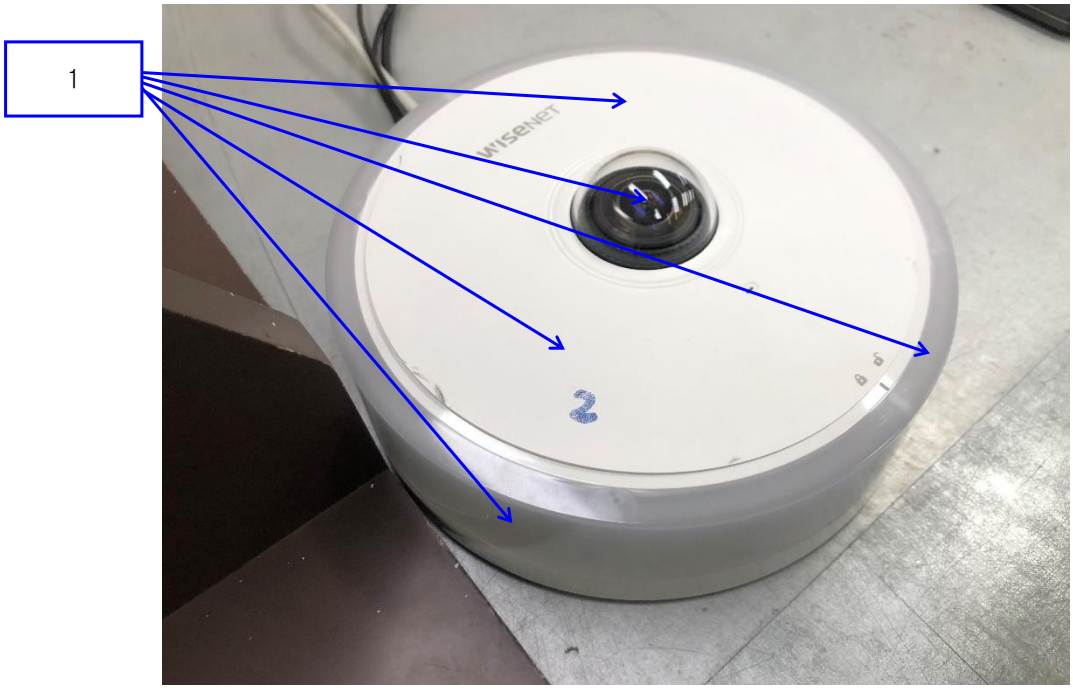
Required Performance Criteria: ☒ Complied

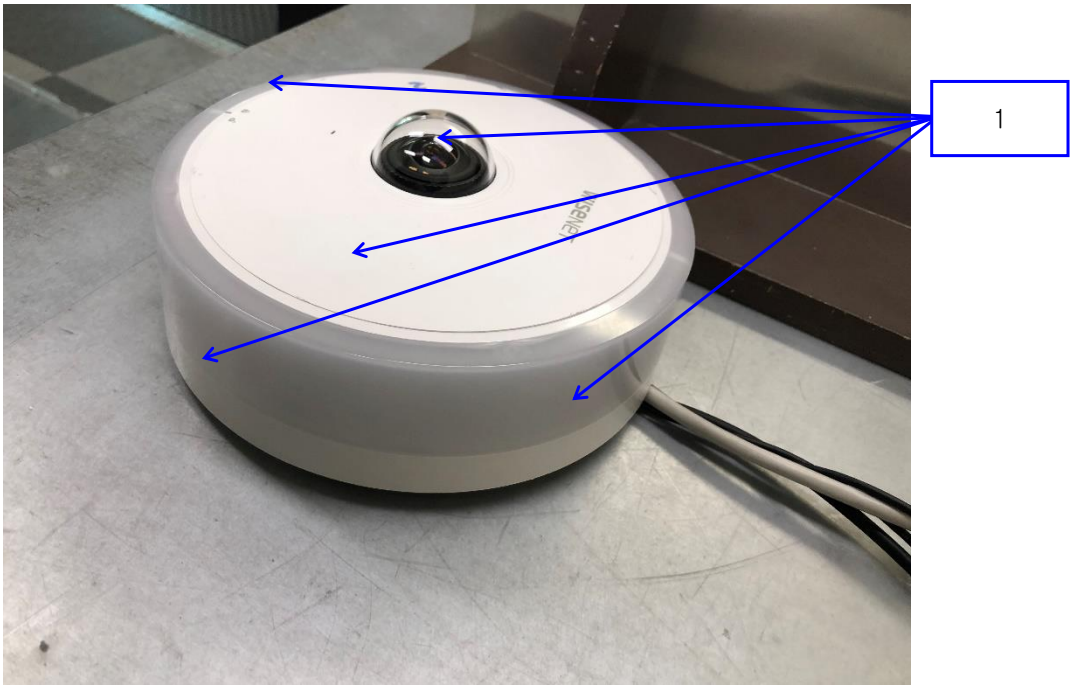
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Location of Discharge:

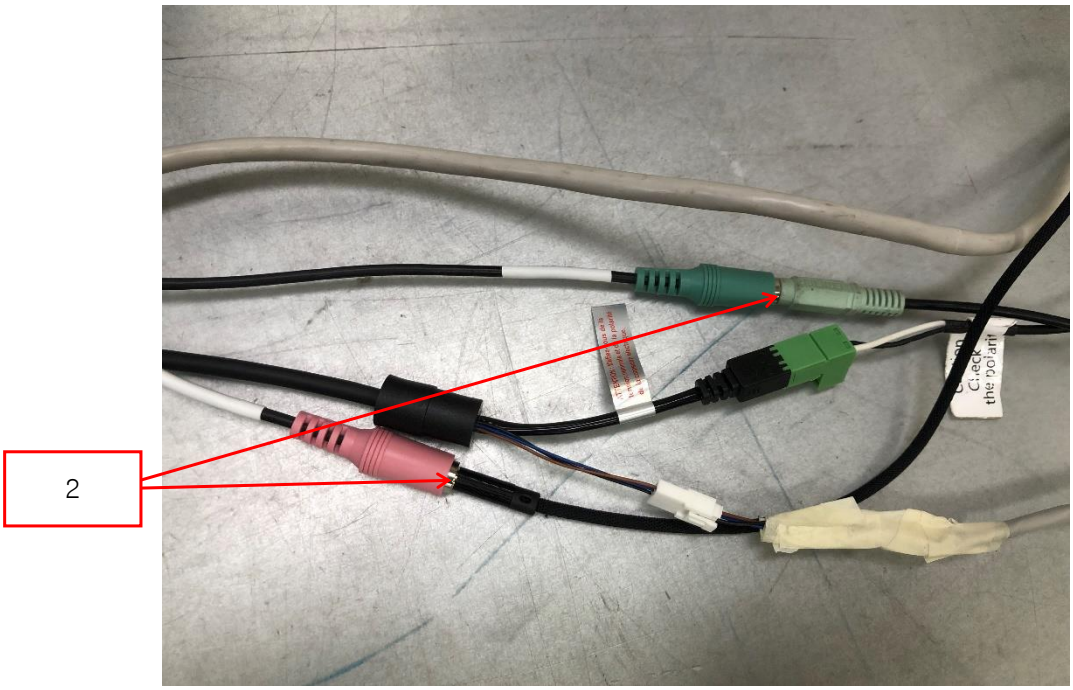
Air
Contact

■ Adapter Mode



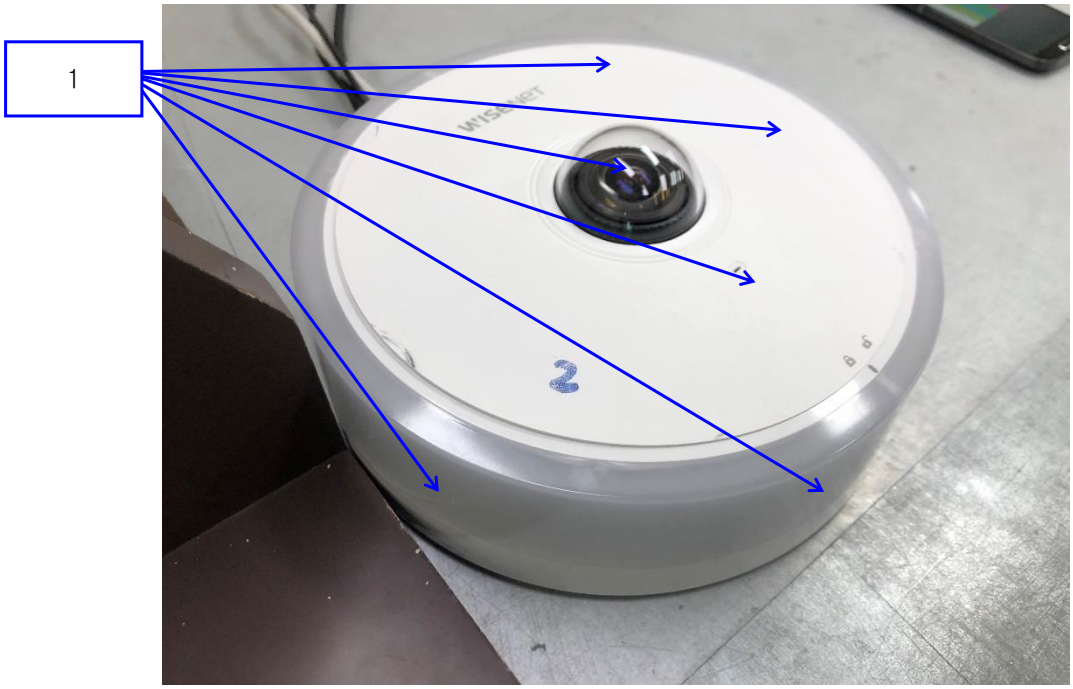


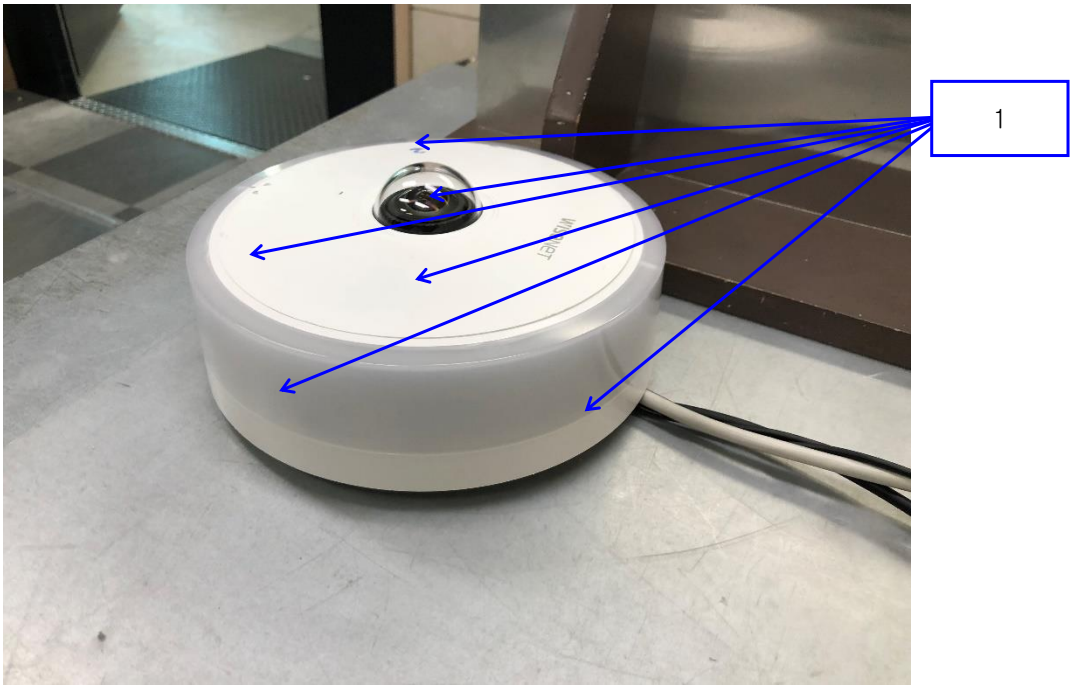
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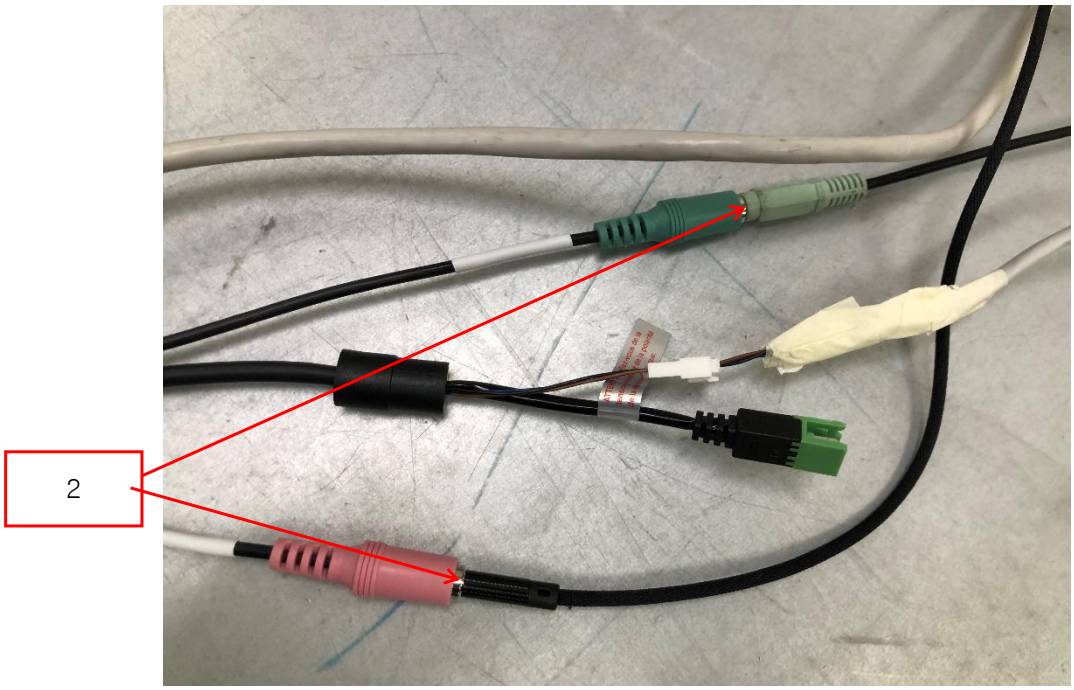
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■ PoE Mode





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Test Data

■ Adapter Mode

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Air Discharge	Complied	-
2	Ports	Contact Discharge	Complied	-

■ PoE Mode

Indirect Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Enclosure	Air Discharge	Complied	-
2	Ports	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

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3.2 Radiated Electric Field Immunity

Reference Standard
EN IEC 61000-4-3:2020

Test Date
Dec. 05, 2022

Test Location
EMS-RS: ☐ SEMI ANECHOIC CHAMBER #2 ☒ SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 01, 2023
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	03, 31, 2023
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	04, 04, 2023
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	04, 04, 2023
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 03, 2023

Test Conditions

Temperature: (22,5 ± 0,1) ℃
Relative Humidity: (44,6 ± 0,1) % R.H.
Atmospheric Pressure: (100,9 ± 0,1) kPa

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Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

# of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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Test Data

■ Adapter Mode

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

■ PoE Mode

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

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3.3 Electrical Fast Transients/Bursts

Reference Standard
EN 61000-4-4:2012

Test Date
Dec. 03, 2022

Test Location
EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 28, 2023

Test Conditions

Temperature: (22,4 ± 0,1) ℃
Relative Humidity: (45,0 ± 0,1) % R.H.
Atmospheric Pressure: (100,9 ± 0,0) ㎪

Test Specifications

Pulse Amplitude & Polarity: (AC Power Lines)	☐ ± 1.0 ㎸ ☐ ± 4.0 ㎸	☒ ± 2.0 ㎸
Pulse Amplitude & Polarity: (Other supply / Signal Lines)	☐ ± 0.5 ㎸ ☐ ± 2.0 ㎸	☒ ± 1.0 ㎸
Burst Period:	☒ 300 ㎳	☐ 2 s
Repetition Rate:	☐ 5 ㎑	☒ 100 ㎑
Duration of Test Voltage:	☒ ≥ 1 min	
Required Performance Criteria:	☒ Complied	

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Test Data

■ Adapter Mode

☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (㎸)	(-) Burst (㎸)
L	Complied	Complied
N	Complied	Complied
PE	-	-
L – N	Complied	Complied
L – PE	-	-
N – PE	-	-
L – N – PE	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (㎸)	(-) Burst (㎸)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (㎸)	(-) Burst (㎸)
RJ-45	Complied	Complied
Alarm	Complied	Complied

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■ PoE Mode

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (㎸)	(-) Burst (㎸)
-	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (㎸)	(-) Burst (㎸)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (㎸)	(-) Burst (㎸)
RJ-45	Complied	Complied
Alarm	Complied	Complied

Note: "Blank" = Not performed
Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

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3.4 Surge Transients

Reference Standard
EN 61000-4-5:2014/A1:2017

Test Date
Dec. 03, 2022

Test Location
EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 28, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 29, 2023

Test Conditions

Temperature: (22,4 ± 0,1) ℃
Relative Humidity: (45,0 ± 0,1) % R.H.
Atmospheric Pressure: (100,9 ± 0,1) ㎪

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Test Specifications

AC Power Lines

Source Impedance: 12 ohm for common Mode and 2 ohm for differential Mode

Surge Amplitude : Common Mode
☐ (0,5 / 1,0 / 2,0) kV
Differential Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 surges per angle

Angle: ☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity: ☒ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Other supply / Signal Lines

Source Impedance: 42 ohm for common Mode
Surge Amplitude: Common Mode
☒ (0,5 / 1,0) kV

Number of Surges: ☒ 5 Surges

Polarity: ☒ Positive & Negative

Repetition Rate: ☐ 1 surge per min ☒ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

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Test Data

■ Adapter Mode

☒ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (㎸)	(-) Surge (㎸)
L – N	Complied	Complied

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (㎸)	(-) Surge (㎸)
L – PE	-	-
N – PE	-	-

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (㎸)	(-) Surge (㎸)
RJ-45	CDN	Complied	Complied
	LINE	Complied	Complied

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■ PoE Mode
☐ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (㎸)	(-) Surge (㎸)
-	-	-

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (㎸)	(-) Surge (㎸)
-	-	-

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (㎸)	(-) Surge (㎸)
RJ-45	CDN	Complied	Complied
	LINE	Complied	Complied

Note:"Blank" = Not performed
Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

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3.5 Conducted Disturbance

Reference Standard
EN 61000-4-6:2014

Test Date
Dec. 06, 2022

Test Location
EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.12	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 10, 2023
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 10, 2023
☒	CDN	CDN M016	TESEQ	43694	11, 10, 2023
☒	CDN	CDN M016	TESEQ	43697	11, 10, 2023
☒	CDN	CDN T8RJ45	EM TEST	0909-09	08, 01, 2023
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 14, 2023

Test Conditions

Temperature: (22,0 ± 0,1) ℃
Relative Humidity: (45,1 ± 0,1) % R.H.
Atmospheric Pressure: (100,8 ± 0,1) kPa

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Test Specifications

Frequency range:	☒ 150 ㎑ to 100 ㎒	☐ 150 ㎑ to 80 ㎒
Voltage Level:	☐ 1 Vrms ☒ 10 Vrms	☐ 3 Vrms
Modulation:	☒ AM, 80 %, 1 ㎑ sine wave ☒ PM, 1 ㎐ (0,5 s ON : 0,5 s OFF)	
Frequency step:	☒ 1 % step	
Dwell Time:	☐ 1 s	☒ 3 s
Required Performance Criteria:	☒ Complied	

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Test Data

■ Adapter Mode

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N	CDN	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied
Alarm	Clamp	Complied

■ PoE Mode

☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN	Complied
Alarm	Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Observations:
Complied – No degradation of function

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria

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3.6 Voltage Dips and Short Interruptions

Reference Standard
EN IEC 61000-4-11:2020

Test Date
Dec. 03, 2022

Test Location
EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 29, 2023
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 29, 2023

Test Conditions

Temperature: (22,4 ± 0,1) ℃
Relative Humidity: (45,0 ± 0,1) % R.H.
Atmospheric Pressure: (100,9 ± 0,0) kPa

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Test Specifications & Observations/Remarks

■ Adapter Mode

- Voltage Dips and Short Interruptions

Test Level	Duration [in period/ms (50 ㎐)]	Results
☒ 20 % dip	☒ 250 / 5 000	Complied
☒ 30 % dip	☒ 25 / 500	Complied
☒ 60 % dip	☒ 10 / 200	Complied
☒ 100 % dip	☒ 250 / 5 000	Degradation

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	Complied
☒ Unom - 15 %	☒ 195.5 V (ac)	Complied

Observations:
Complied – No degradation of function
Degradation - See "Remarks "

Test Results

☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☐ NOT APPLICABLE

Remarks

During the test, EUT was turned off but after the test, it was recovered without operator's intervention.

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APPENDIX A – TEST DATA

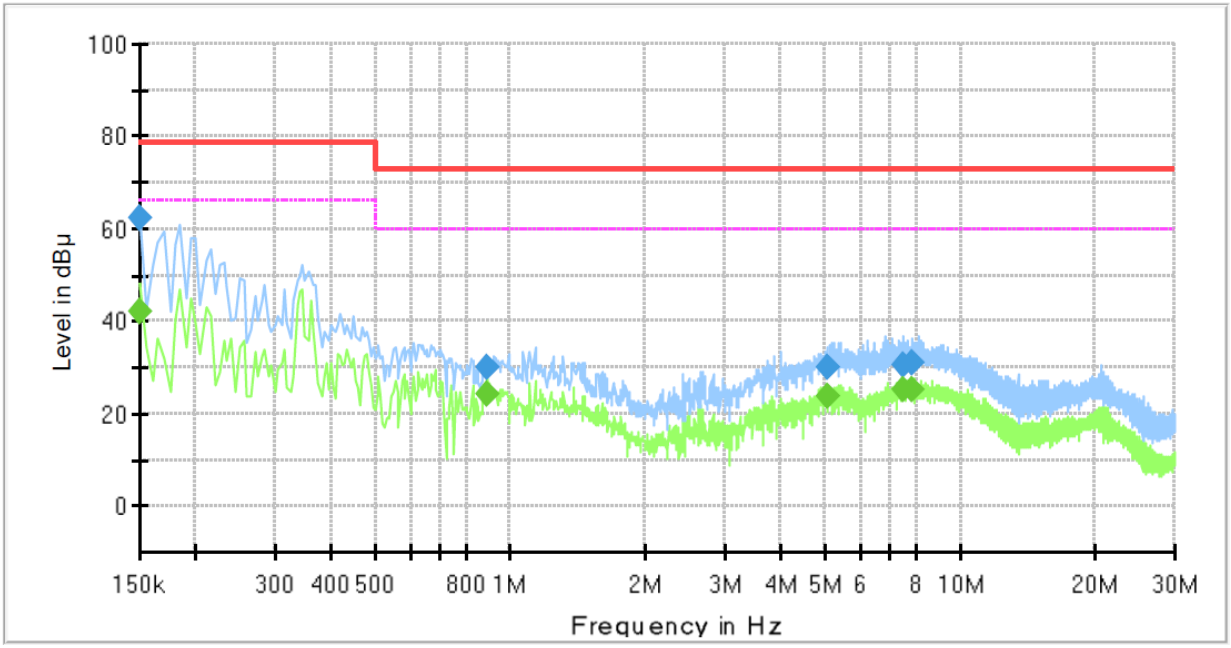
Conducted Emissions at Mains Power Ports

■ Adapter Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	MGC-F9010LI
Phase:	L1
Mode:	ADAPTER
Operator Name:	KES



Final_Result

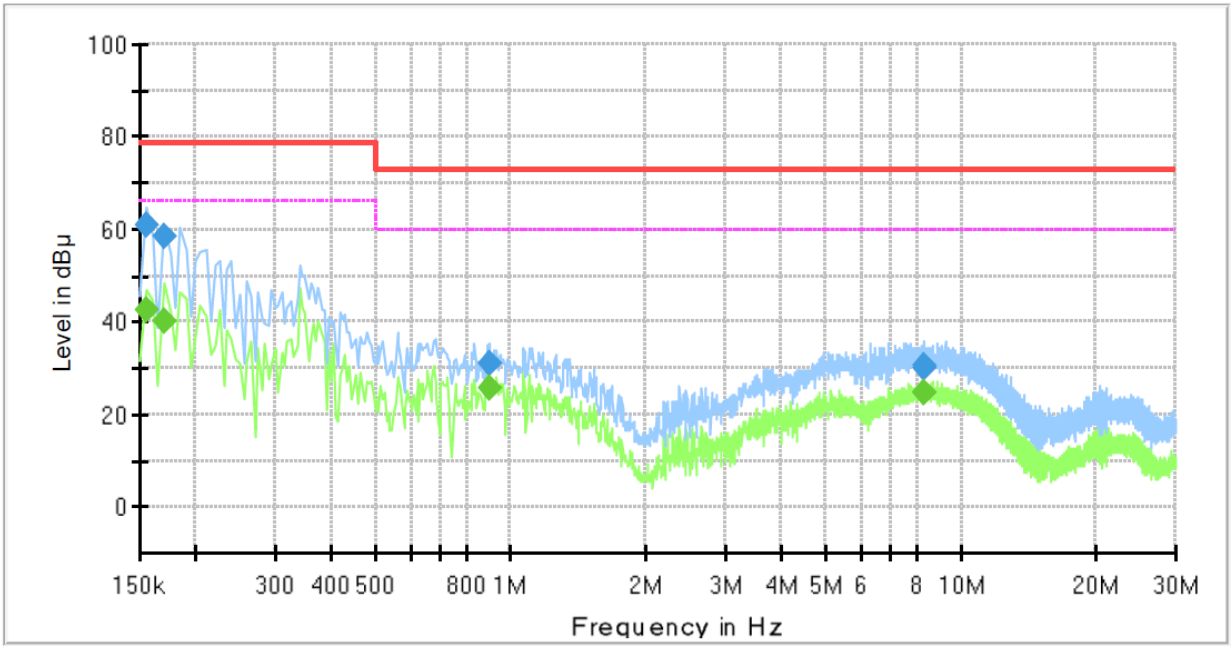
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	42.28	66.00	23.72	1000.0	9.000	L1	19.5
0.150000	62.14	---	79.00	16.86	1000.0	9.000	L1	19.5
0.890000	---	24.24	60.00	35.76	1000.0	9.000	L1	20.1
0.890000	29.86	---	73.00	43.14	1000.0	9.000	L1	20.1
5.065000	---	23.64	60.00	36.36	1000.0	9.000	L1	19.7
5.065000	29.92	---	73.00	43.08	1000.0	9.000	L1	19.7
7.460000	---	24.98	60.00	35.02	1000.0	9.000	L1	19.6
7.460000	30.73	---	73.00	42.27	1000.0	9.000	L1	19.6
7.835000	---	25.16	60.00	34.84	1000.0	9.000	L1	19.6
7.835000	30.80	---	73.00	42.20	1000.0	9.000	L1	19.6

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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	MGC-F9010LI
Phase:	N
Mode:	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	---	42.48	66.00	23.52	1000.0	9.000	N	19.4
0.155000	61.04	---	79.00	17.96	1000.0	9.000	N	19.4
0.170000	---	40.35	66.00	25.65	1000.0	9.000	N	19.4
0.170000	58.47	---	79.00	20.53	1000.0	9.000	N	19.4
0.895000	---	25.52	60.00	34.48	1000.0	9.000	N	20.1
0.895000	31.13	---	73.00	41.87	1000.0	9.000	N	20.1
8.275000	---	24.86	60.00	35.14	1000.0	9.000	N	19.7
8.275000	30.41	---	73.00	42.59	1000.0	9.000	N	19.7
8.285000	---	24.76	60.00	35.24	1000.0	9.000	N	19.7
8.285000	30.23	---	73.00	42.77	1000.0	9.000	N	19.7

♦ 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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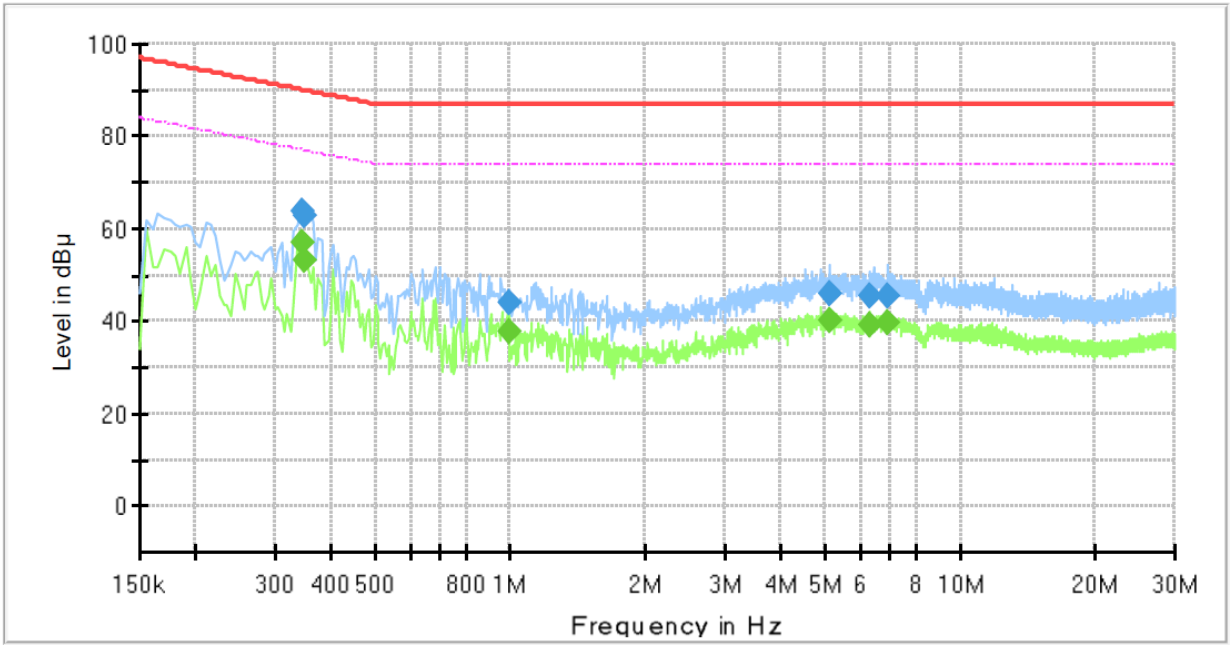
Conducted Emissions at Telecommunication Ports

■ Adapter Mode

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	MGC-F9010LI
Mode :	ADAPTER
Speed :	1 000 Mbps
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.345000	---	57.23	77.08	19.85	1000.0	9.000	Single Line	19.7
0.345000	64.01	---	90.08	26.07	1000.0	9.000	Single Line	19.7
0.350000	---	53.37	76.96	23.59	1000.0	9.000	Single Line	19.7
0.350000	62.97	---	89.96	26.99	1000.0	9.000	Single Line	19.7
0.990000	---	37.90	74.00	36.10	1000.0	9.000	Single Line	19.9
0.990000	44.16	---	87.00	42.84	1000.0	9.000	Single Line	19.9
5.120000	---	40.11	74.00	33.89	1000.0	9.000	Single Line	19.4
5.120000	46.11	---	87.00	40.89	1000.0	9.000	Single Line	19.4
6.285000	---	39.43	74.00	34.57	1000.0	9.000	Single Line	19.3
6.285000	45.52	---	87.00	41.48	1000.0	9.000	Single Line	19.3
6.905000	---	39.77	74.00	34.23	1000.0	9.000	Single Line	19.3
6.905000	45.42	---	87.00	41.58	1000.0	9.000	Single Line	19.3

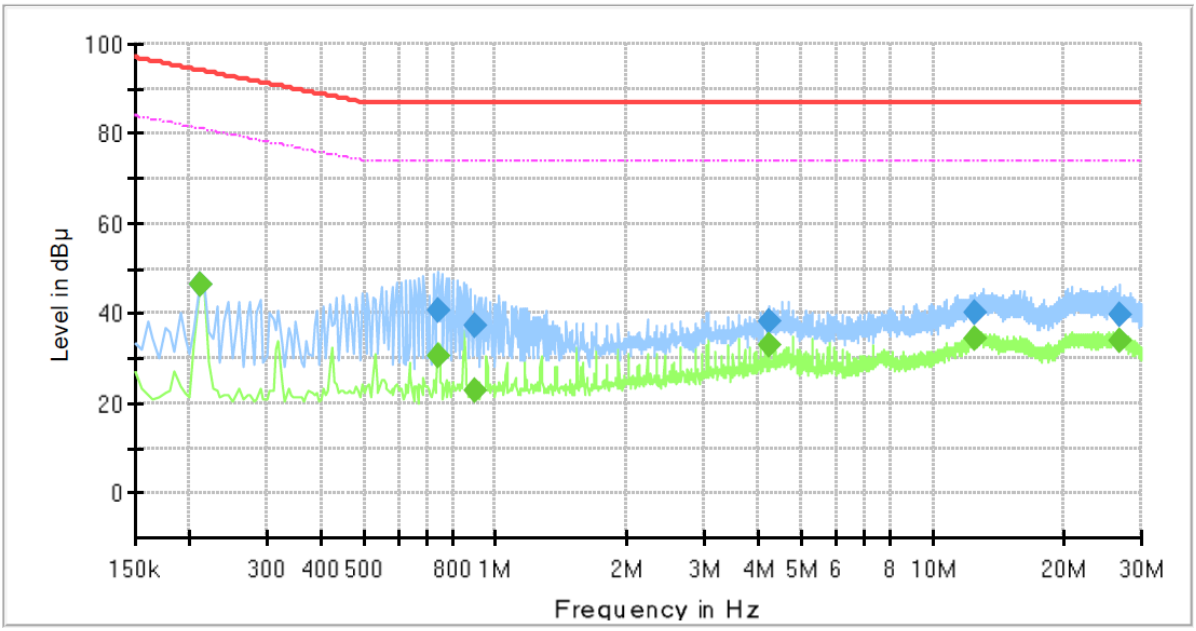
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■ PoE Mode

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	MGC-F9010LI
Mode :	PoE
Speed :	1 000 Mbps
Operator Name:	KES



Final_Result

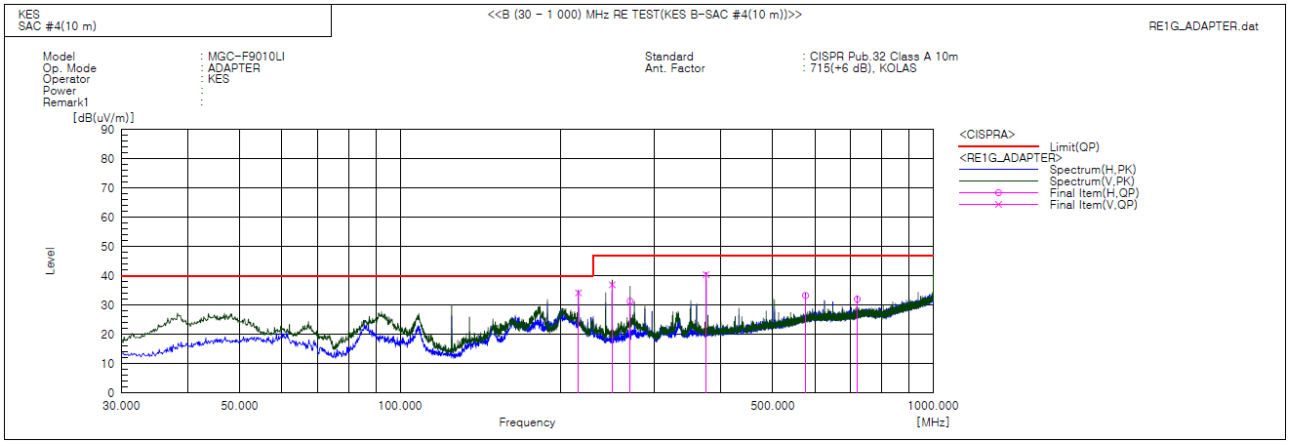
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.210000	---	46.24	81.21	34.97	1000.0	9.000	Single Line	19.7
0.210000	46.54	---	94.21	47.67	1000.0	9.000	Single Line	19.7
0.740000	---	30.39	74.00	43.61	1000.0	9.000	Single Line	19.9
0.740000	40.81	---	87.00	46.19	1000.0	9.000	Single Line	19.9
0.900000	---	22.94	74.00	51.06	1000.0	9.000	Single Line	20.0
0.900000	37.16	---	87.00	49.84	1000.0	9.000	Single Line	20.0
4.240000	---	33.09	74.00	40.91	1000.0	9.000	Single Line	19.6
4.240000	38.06	---	87.00	48.94	1000.0	9.000	Single Line	19.6
12.500000	---	34.41	74.00	39.59	1000.0	9.000	Single Line	19.7
12.500000	40.13	---	87.00	46.87	1000.0	9.000	Single Line	19.7
26.880000	---	34.11	74.00	39.89	1000.0	9.000	Single Line	20.0
26.880000	39.81	---	87.00	47.19	1000.0	9.000	Single Line	20.0

♦ Calculation
QuasiPeak[㏈uV] / CAverage [㏈uV] = Reading Value[㏈uV] + Corr. [㏈]
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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Radiated Electric Field Emissions(Below 1 ㎓)

■ Adapter Mode

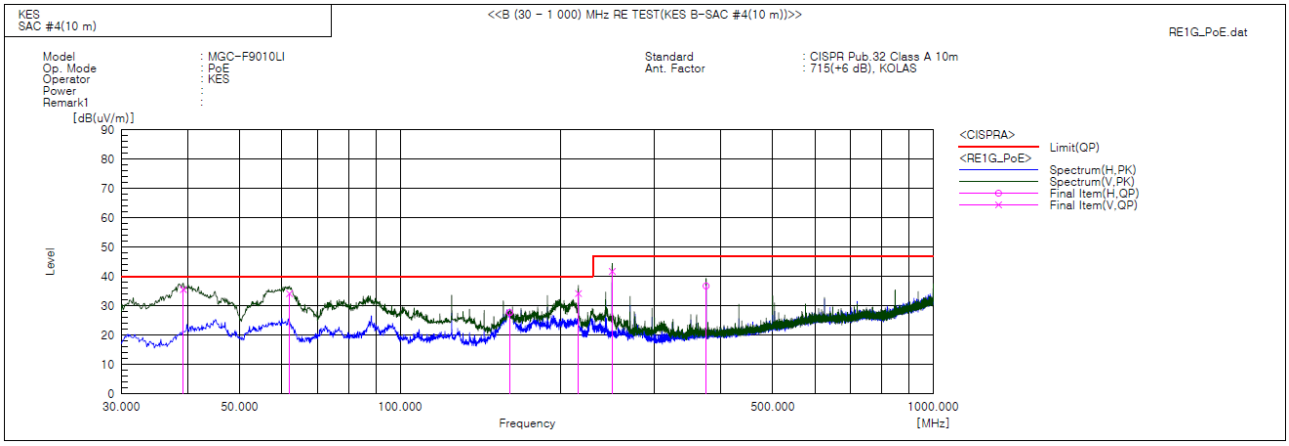


Final Result

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	215.998	V	54.0	-19.8	34.2	40.0	5.8	171.0	144.0	
2	249.948	V	55.7	-18.8	36.9	47.0	10.1	209.0	226.0	
3	269.954	H	49.7	-18.4	31.3	47.0	15.7	315.0	312.0	
4	374.956	V	54.4	-14.0	40.4	47.0	6.6	211.0	95.0	
5	575.989	H	41.7	-8.4	33.3	47.0	13.7	244.0	66.0	
6	720.034	H	38.6	-6.6	32.0	47.0	15.0	132.0	35.0	

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■ PoE Mode



Final Result

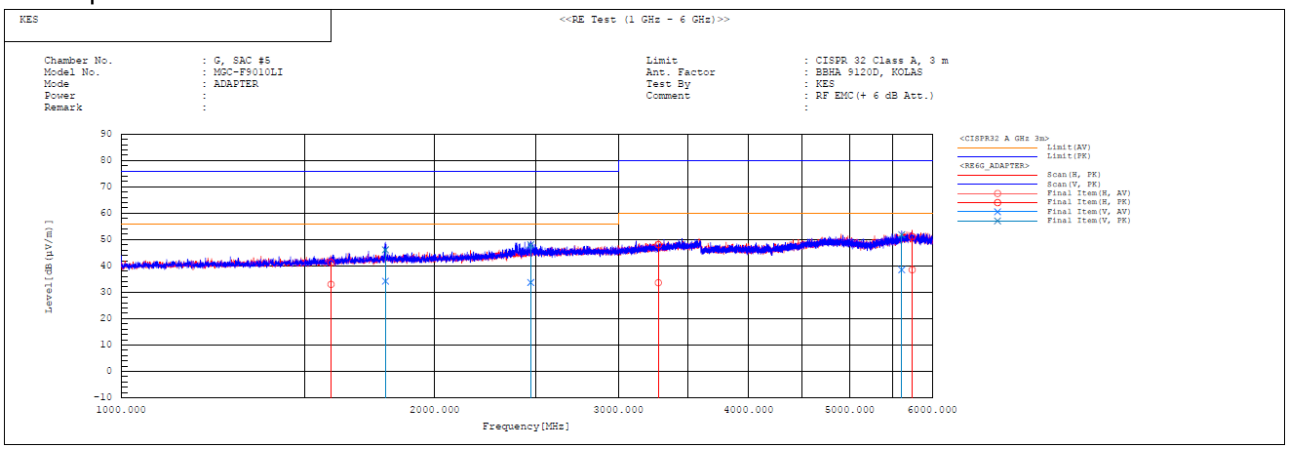
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	39.215	V	58.1	-22.6	35.5	40.0	4.5	105.0	300.0	
2	62.010	V	56.1	-22.0	34.1	40.0	5.9	142.0	125.0	
3	160.586	H	52.3	-24.6	27.7	40.0	12.3	396.0	64.0	
4	215.998	V	54.0	-19.8	34.2	40.0	5.8	197.0	6.0	
5	249.948	V	60.5	-18.8	41.7	47.0	5.3	261.0	40.0	
6	374.956	H	50.7	-14.0	36.7	47.0	10.3	274.0	23.0	

♦ Calculation – SEMI ANECHOIC CHAMBER #4(10 m)
Result(QP) [dB(㎶/m)] = (Reading(QP)[dB(㎶)] + c.f[dB(1/m)]
Margin(QP)[dB] = Limit[dB(㎶/m)] - Result(QP) [dB(㎶/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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Radiated Electric Field Emissions(Above 1 ㎓)

■ Adapter Mode

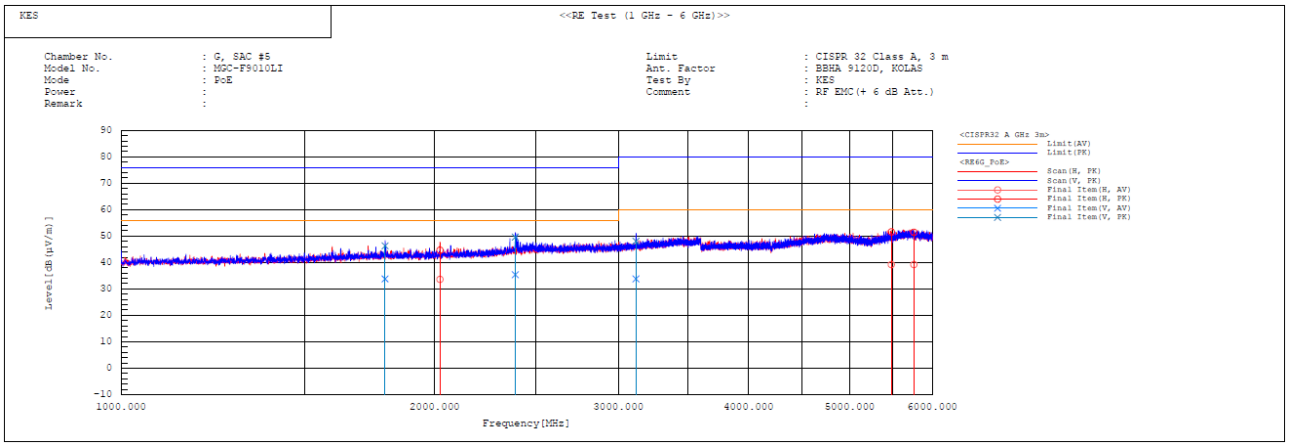


Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1590.241	H	32.8	41.1	0.2	33.0	41.3	56.0	76.0	23.0	34.7	100.0	143.8	
2	1793.493	V	33.0	44.9	1.2	34.2	46.1	56.0	76.0	21.8	29.9	100.0	180.8	
3	2472.369	V	30.3	44.6	3.4	33.7	48.0	56.0	76.0	22.3	28.0	100.0	167.2	
4	3277.198	H	28.2	42.7	5.4	33.6	48.1	60.0	80.0	26.4	31.9	100.0	285.1	
5	5609.799	V	26.9	40.2	11.6	38.5	51.8	60.0	80.0	21.5	28.2	100.0	125.0	
6	5739.708	H	26.5	39.1	12.0	38.5	51.1	60.0	80.0	21.5	28.9	100.0	329.5	

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■ PoE Mode



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1792.426	V	32.6	45.1	1.2	33.8	46.3	56.0	76.0	22.2	29.7	100.0	193.6	
2	2023.114	H	31.6	42.7	2.0	33.6	44.7	56.0	76.0	22.4	31.3	100.0	45.6	
3	2389.057	V	32.2	46.4	3.2	35.4	49.6	56.0	76.0	20.6	26.4	100.0	171.4	
4	3119.171	V	28.6	42.9	5.2	33.8	48.1	60.0	80.0	26.2	31.9	100.0	246.4	
5	5481.894	H	27.5	39.9	11.7	39.2	51.6	60.0	80.0	20.8	28.4	100.0	257.1	
6	5760.889	H	27.1	39.4	12.1	39.2	51.5	60.0	80.0	20.8	28.5	100.0	178.2	

♦ 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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Harmonic Current Emissions and Voltage Fluctuations and Flicker

■ Adapter Mode

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	0.057			
2	0.004	0.338	1.080	n/a
3	0.051	2.224	2.300	PASS
4	0.005	1.135	0.430	n/a
5	0.051	4.497	1.140	PASS
6	0.005	1.580	0.300	n/a
7	0.050	6.435	0.770	PASS
8	0.005	2.018	0.230	n/a
9	0.046	11.397	0.400	PASS
10	0.005	2.455	0.184	n/a
11	0.042	12.838	0.330	PASS
12	0.004	2.890	0.153	n/a
13	0.039	18.485	0.210	PASS
14	0.004	3.329	0.131	n/a
15	0.035	23.179	0.150	PASS
16	0.004	3.652	0.115	n/a
17	0.031	23.305	0.132	PASS
18	0.004	4.004	0.102	n/a
19	0.027	22.752	0.118	PASS
20	0.004	4.332	0.092	n/a
21	0.023	14.432	0.161	PASS
22	0.004	4.673	0.084	n/a
23	0.019	13.190	0.147	PASS
24	0.004	4.941	0.077	n/a
25	0.016	11.956	0.135	PASS
26	0.004	5.192	0.071	n/a
27	0.013	10.787	0.125	PASS
28	0.004	5.460	0.066	n/a
29	0.011	9.454	0.116	PASS
30	0.003	5.603	0.061	n/a
31	0.009	8.629	0.109	PASS
32	0.003	5.761	0.058	n/a
33	0.008	7.987	0.102	PASS
34	0.003	5.815	0.054	n/a
35	0.008	7.968	0.096	PASS
36	0.003	5.883	0.051	n/a
37	0.007	7.830	0.091	PASS
38	0.003	5.850	0.048	n/a
39	0.007	7.951	0.087	PASS
40	0.003	5.742	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.
* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	0.059			
2	0.004	0.267	1.620	n/a
3	0.053	1.529	3.450	PASS
4	0.006	0.887	0.645	PASS
5	0.053	3.089	1.710	PASS
6	0.006	1.225	0.450	PASS
7	0.051	4.416	1.155	PASS
8	0.005	1.573	0.345	PASS
9	0.047	7.825	0.600	PASS
10	0.005	1.922	0.276	PASS
11	0.044	8.789	0.495	PASS
12	0.005	2.279	0.230	PASS
13	0.040	12.614	0.315	PASS
14	0.005	2.584	0.197	PASS
15	0.036	15.803	0.225	PASS
16	0.005	2.858	0.173	n/a
17	0.031	15.842	0.199	PASS
18	0.005	3.135	0.153	n/a
19	0.027	15.399	0.178	PASS
20	0.005	3.380	0.138	n/a
21	0.023	14.616	0.161	PASS
22	0.005	3.665	0.125	n/a
23	0.020	13.321	0.147	PASS
24	0.004	3.904	0.115	n/a
25	0.016	12.095	0.135	PASS
26	0.004	4.016	0.106	n/a
27	0.014	10.968	0.125	PASS
28	0.004	4.302	0.099	n/a
29	0.011	9.621	0.116	PASS
30	0.004	4.338	0.092	n/a
31	0.010	8.843	0.109	PASS
32	0.004	4.510	0.086	n/a
33	0.008	8.247	0.102	PASS
34	0.004	4.504	0.081	n/a
35	0.008	8.279	0.096	PASS
36	0.003	4.553	0.077	n/a
37	0.008	8.233	0.091	PASS
38	0.003	4.533	0.073	n/a
39	0.007	8.417	0.087	PASS
40	0.003	4.397	0.069	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.
* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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Test Data - Voltage Fluctuations

Maximum Flicker results

■ Adapter Mode

Flicker Measurements					
	Plt	**Max Pst**	**Max Dc**	**Max Dmax**	**Max Tmax**
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

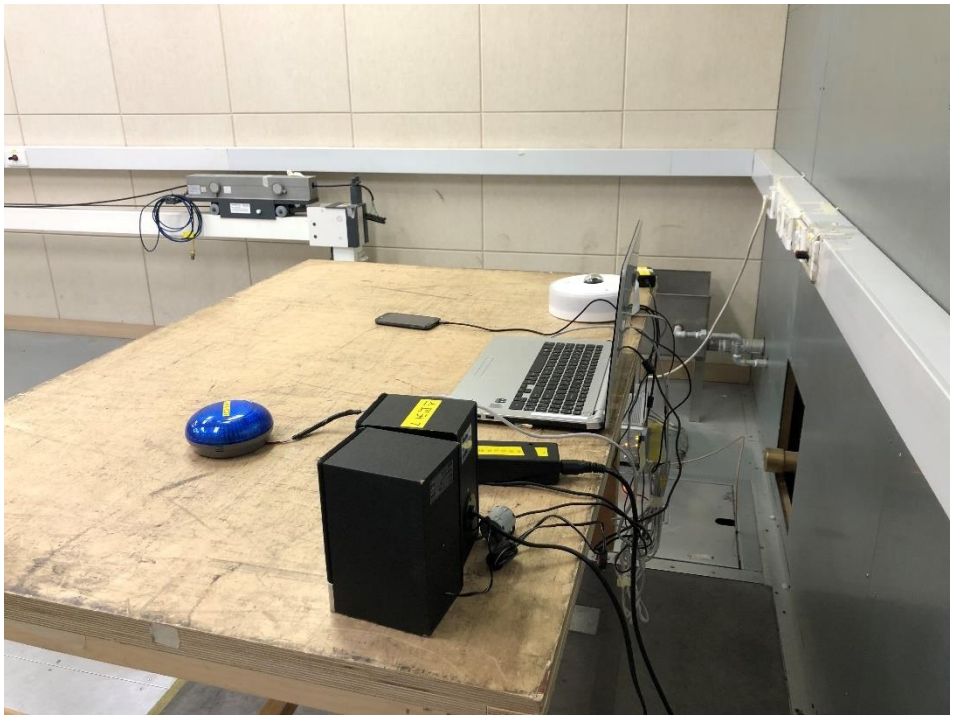
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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ Adapter Mode





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Conducted Emissions at Telecommunication Ports

■ Adapter Mode





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■ PoE Mode

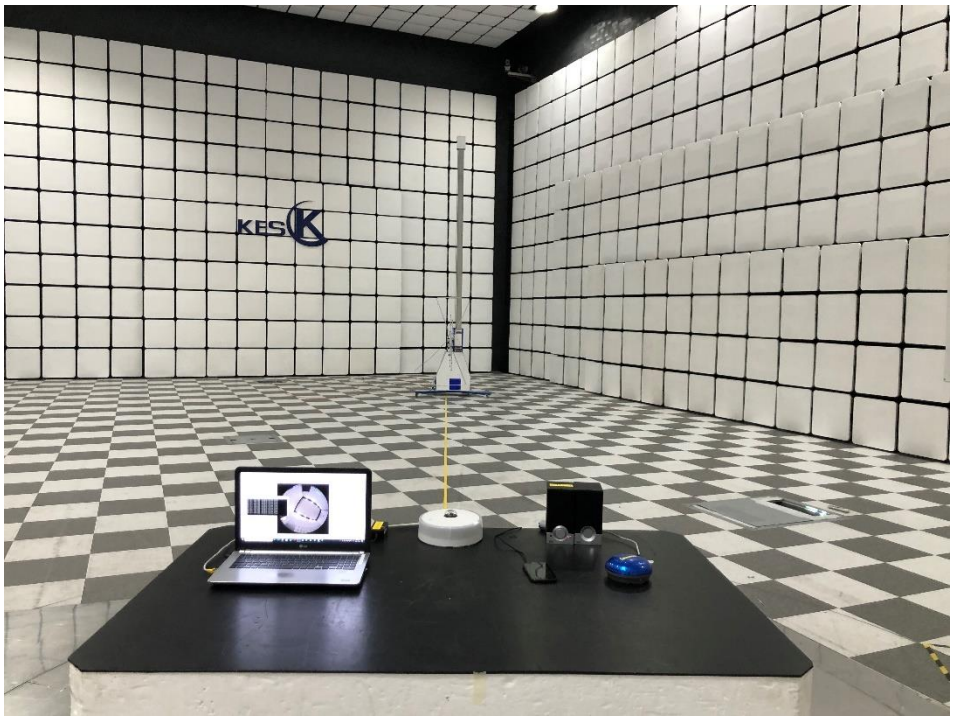


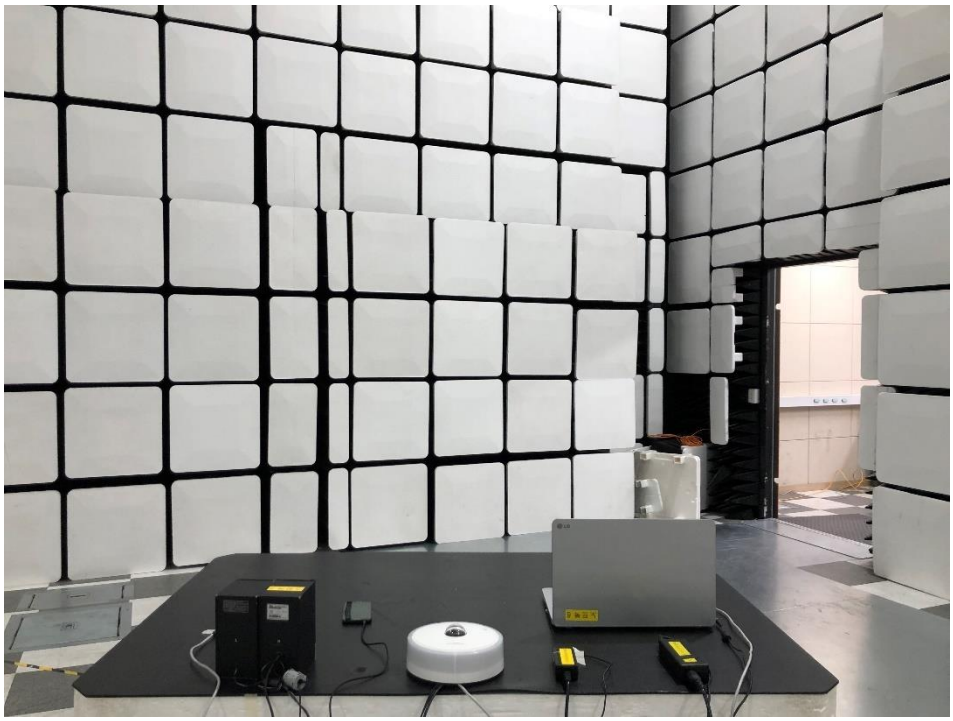


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Radiated Electric Field Emissions(Below 1 ㎓)

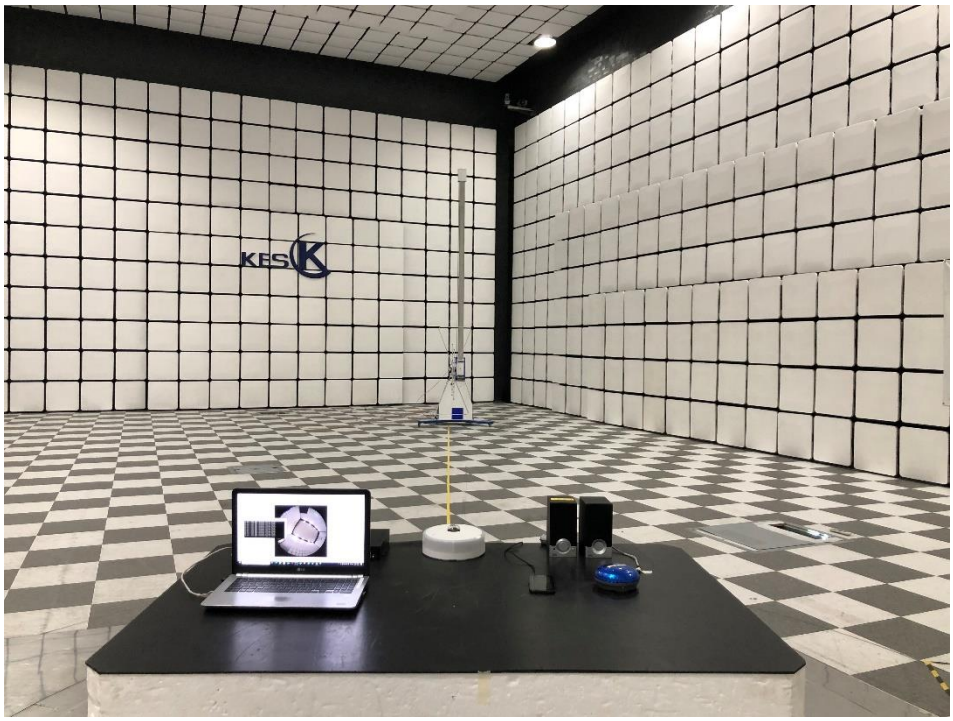
■ Adapter Mode

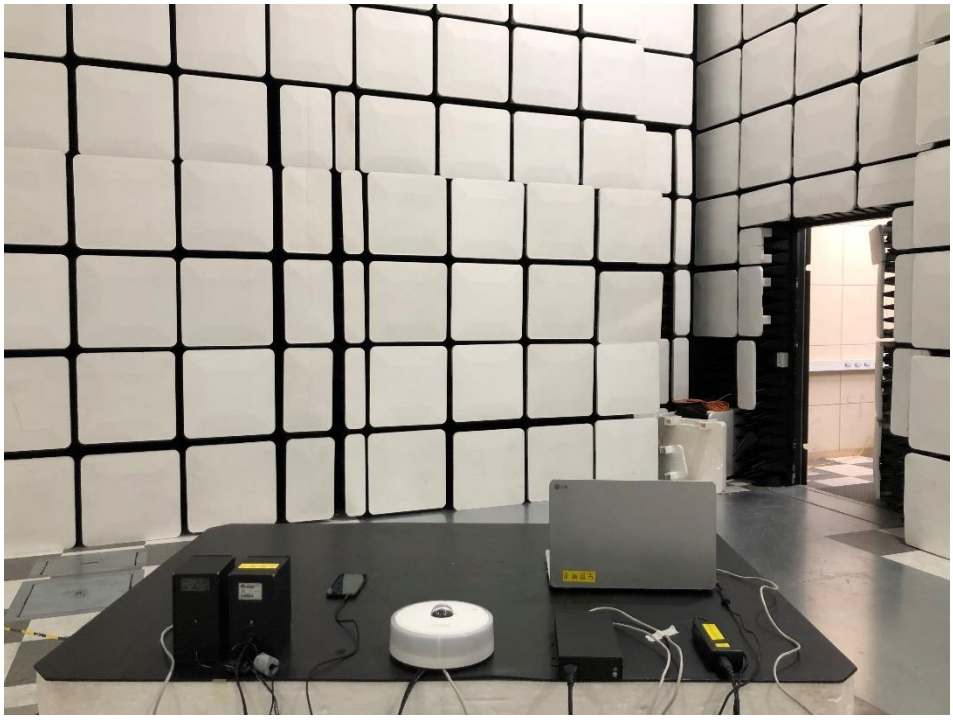




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■ PoE Mode

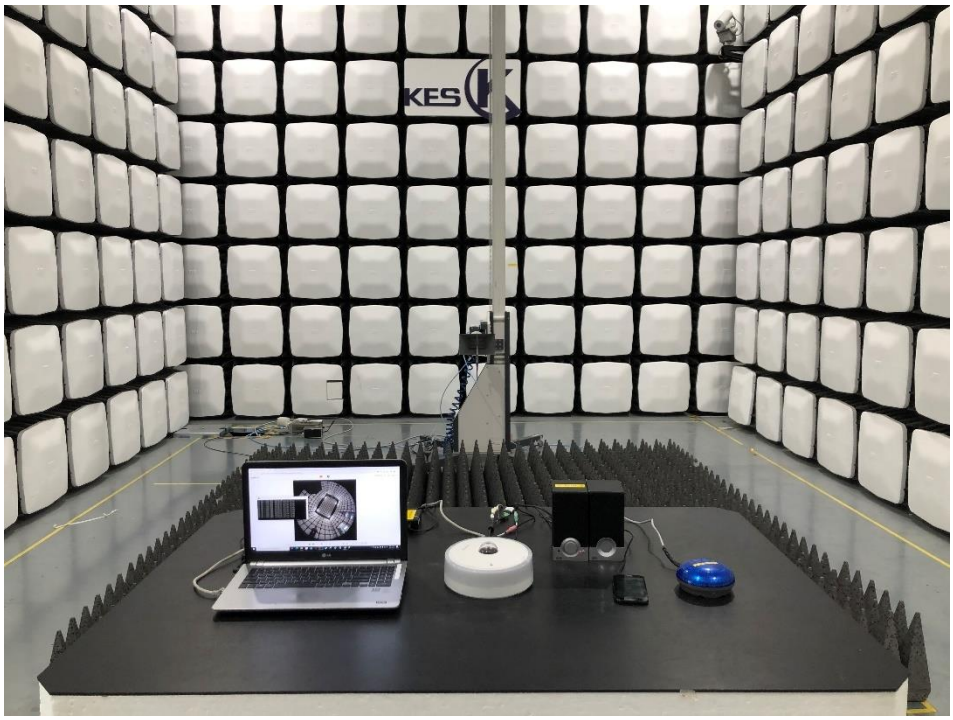


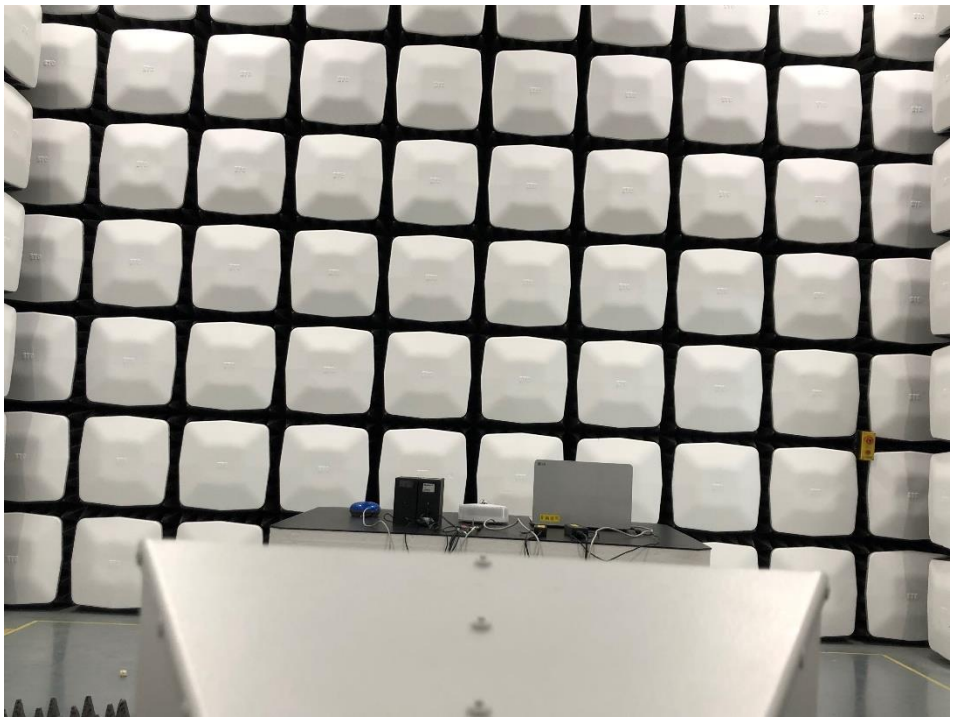


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Radiated Electric Field Emissions(Above 1 ㎓)

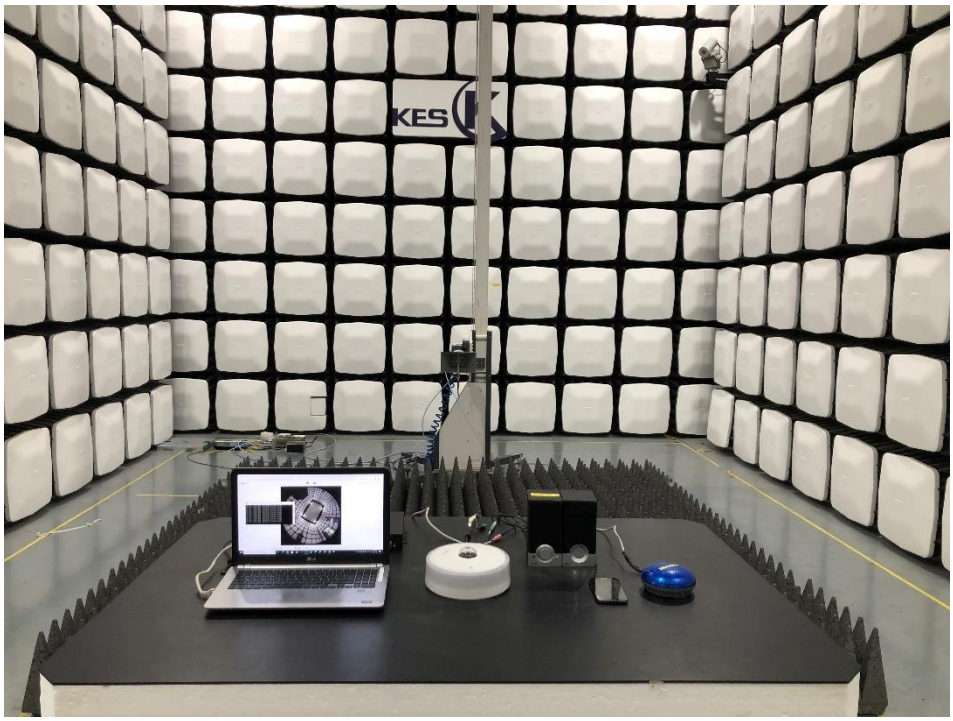
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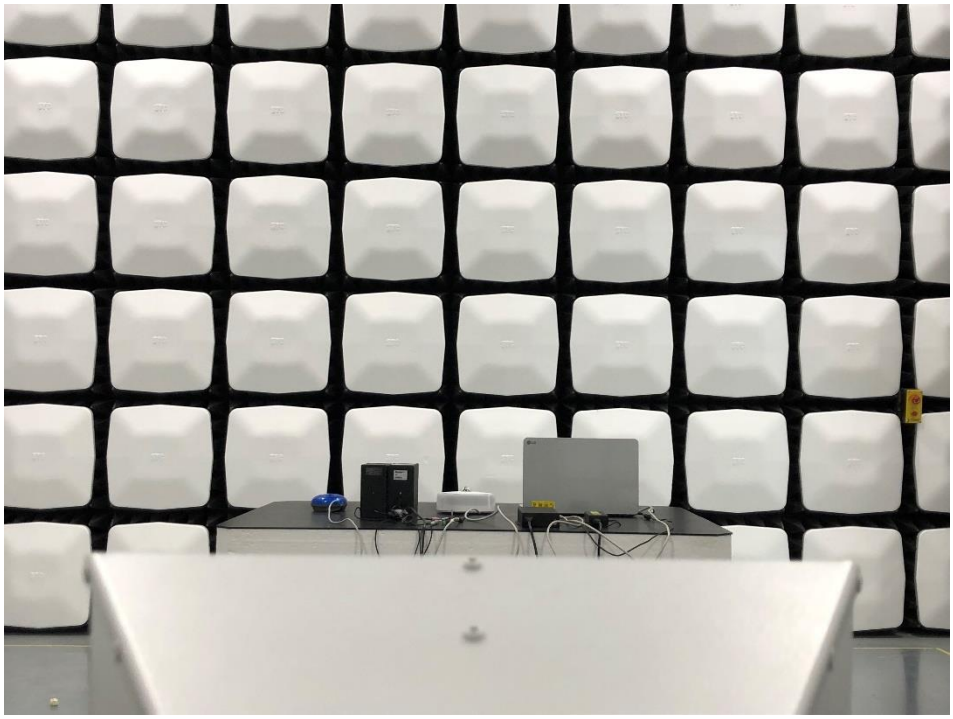




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■ PoE Mode

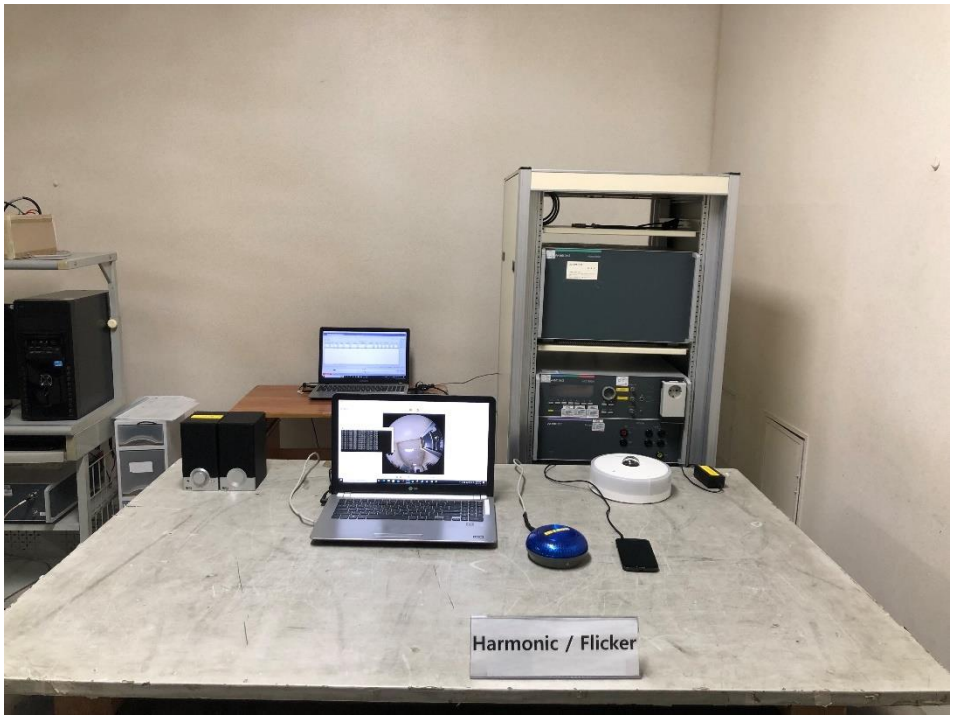




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Harmonic Current Emissions and Voltage Fluctuations and Flicker

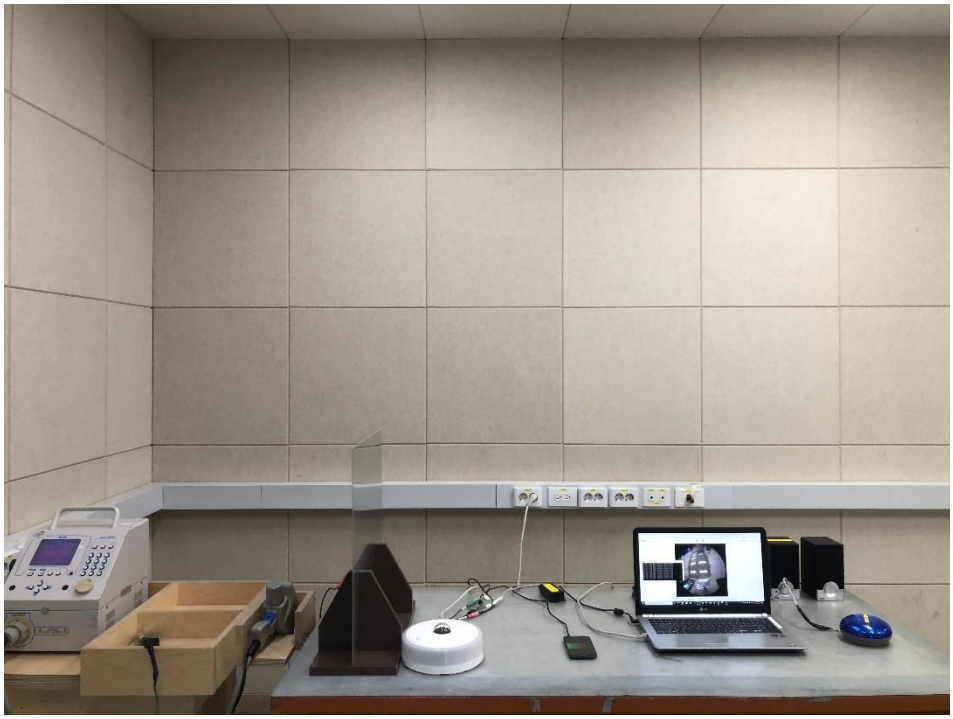
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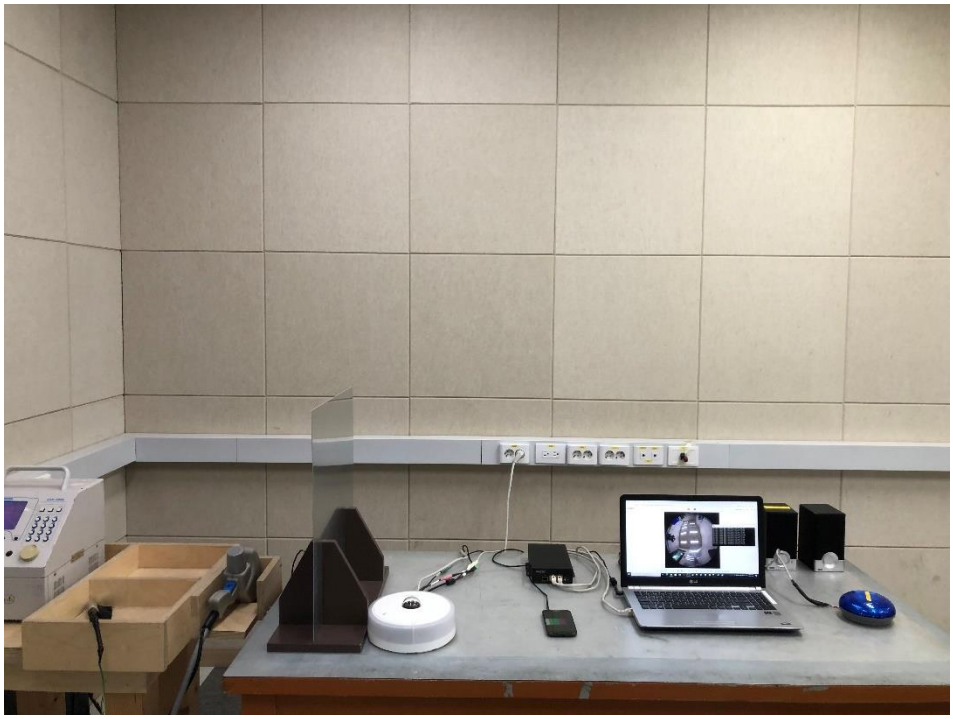
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Electrostatic Discharge

■ Adapter Mode



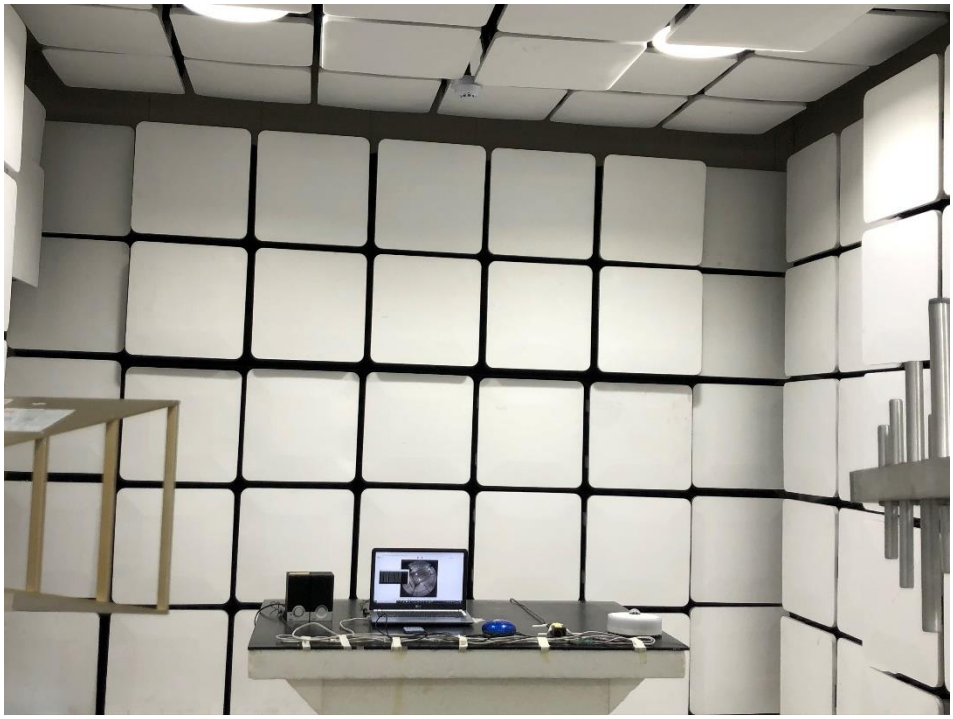
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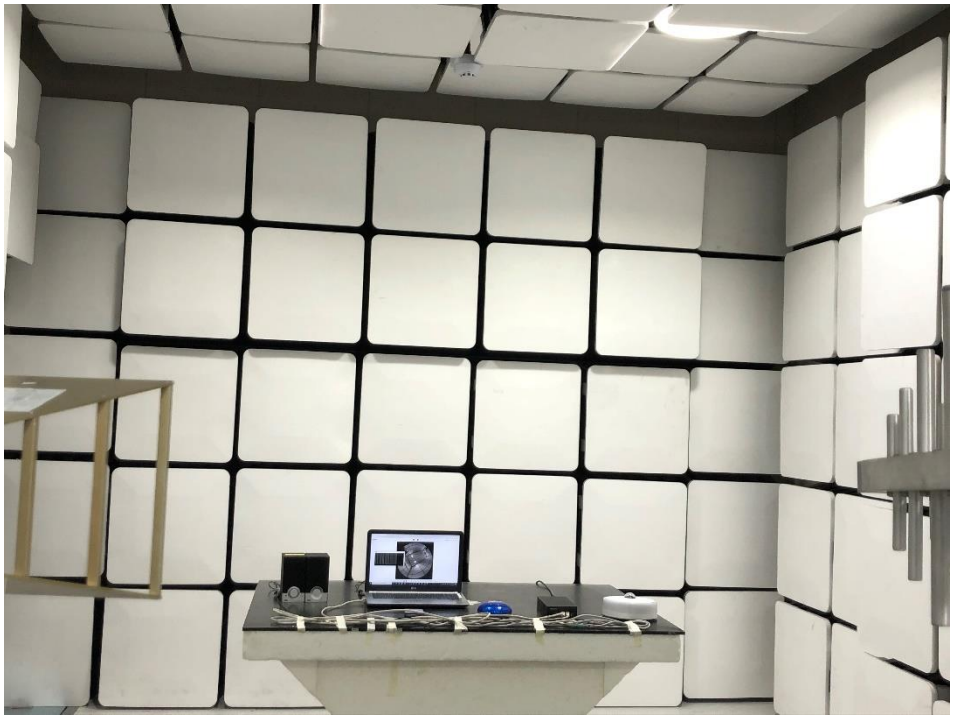
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Radiated Electric Field Immunity

■ Adapter Mode



■ PoE Mode



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Electrical Fast Transients/Bursts

■ Adapter Mode



■ PoE Mode



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Surge Transients

■ Adapter Mode



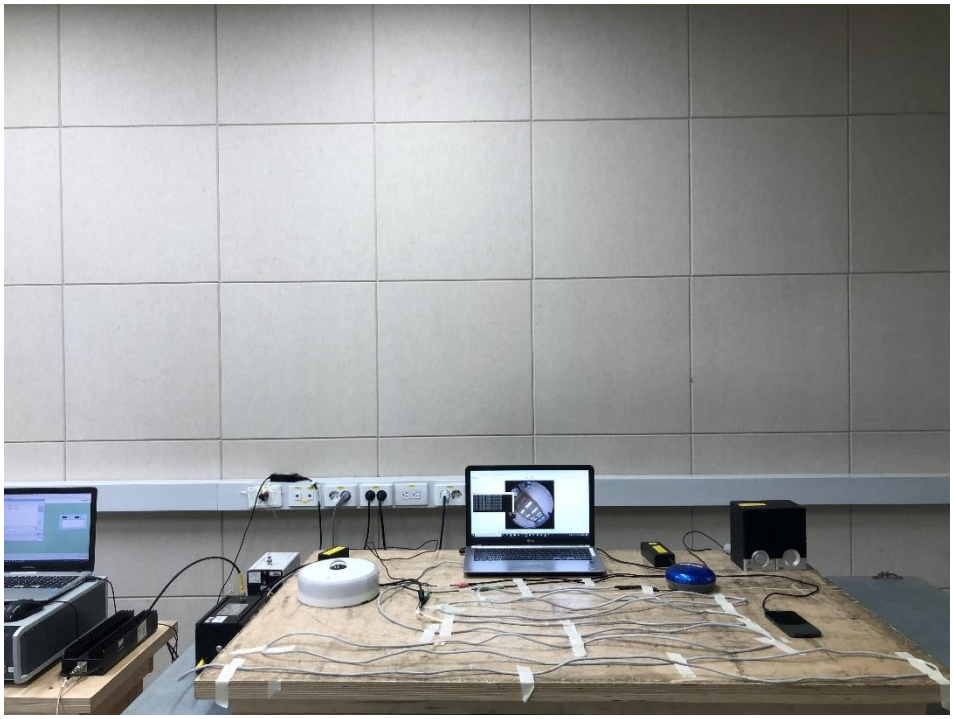
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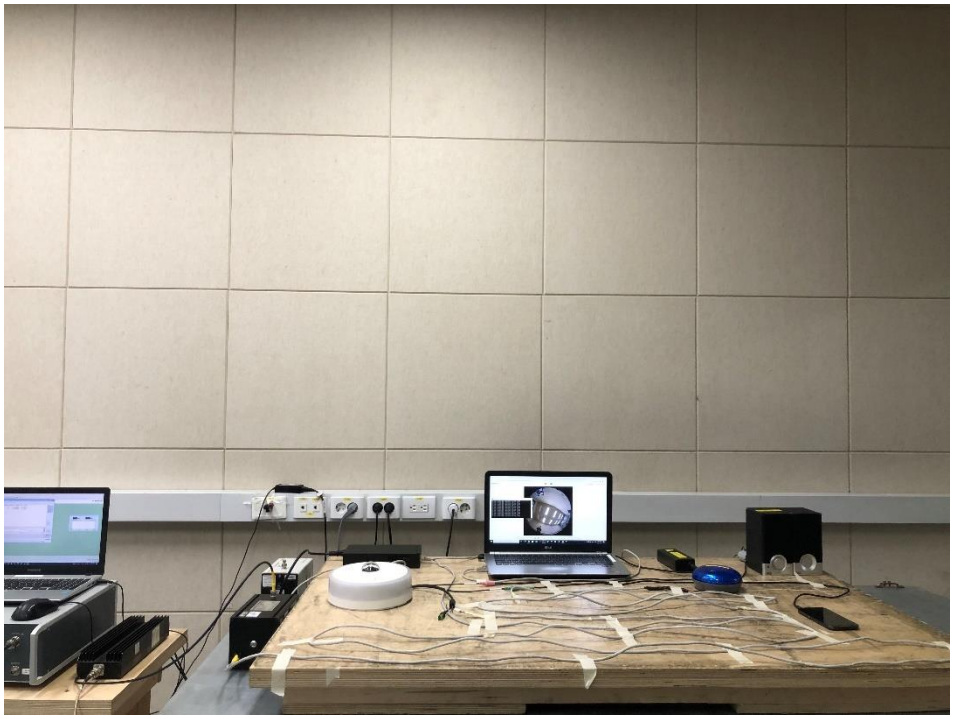
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Conducted Disturbance

■ Adapter Mode



■ PoE Mode



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Voltage Dips and Short Interruptions

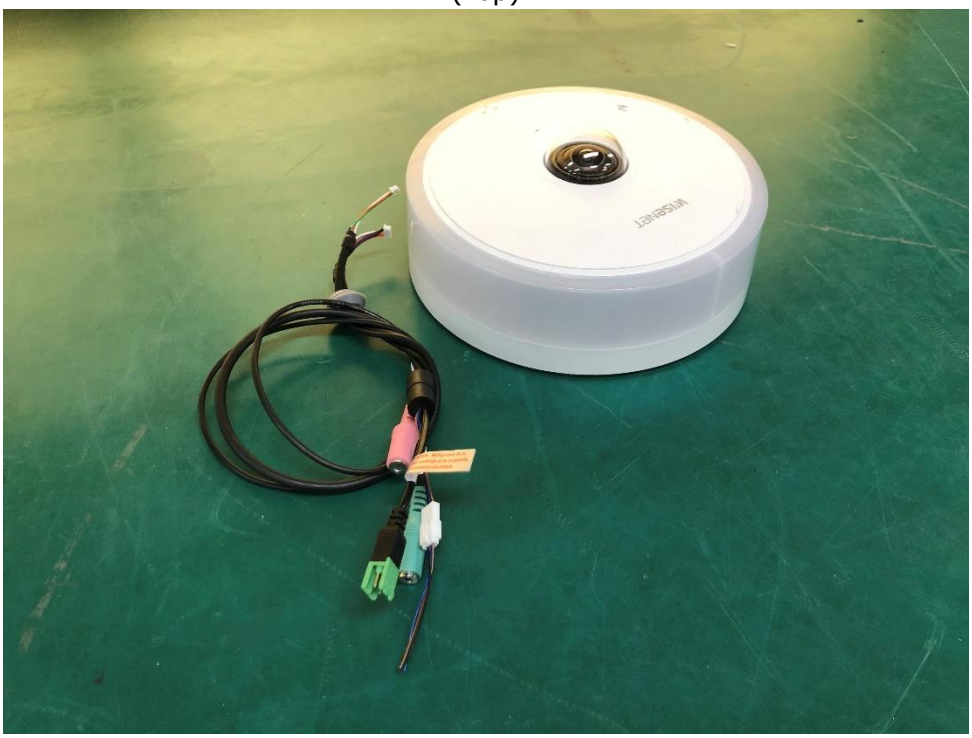
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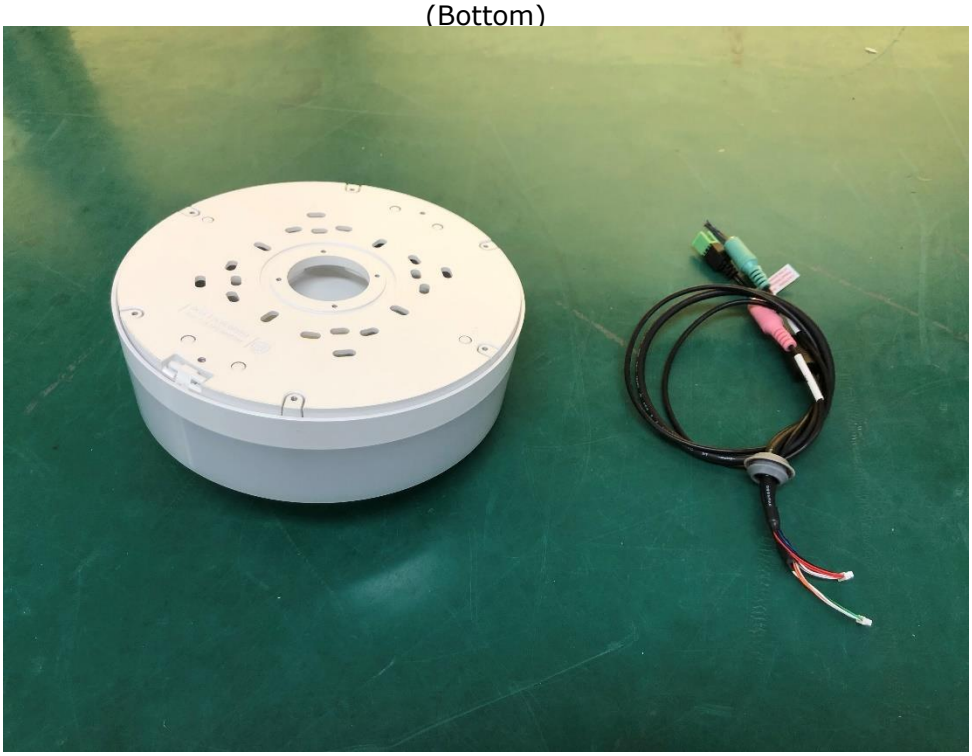
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EUT External Photographs

(Top)



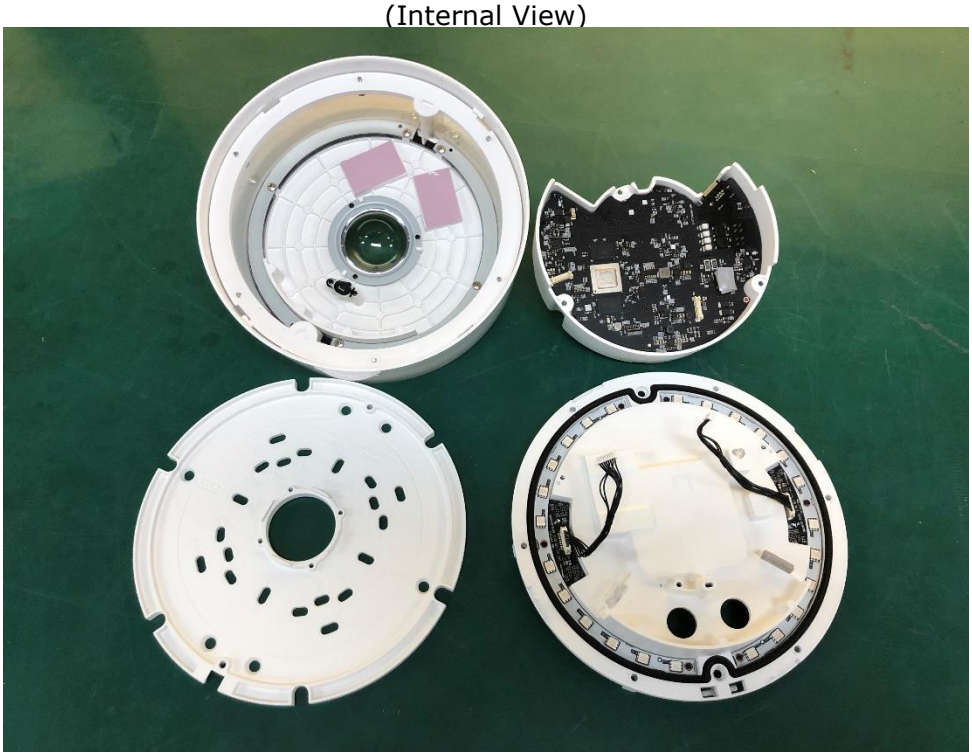
(Bottom)



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EUT Internal Photographs

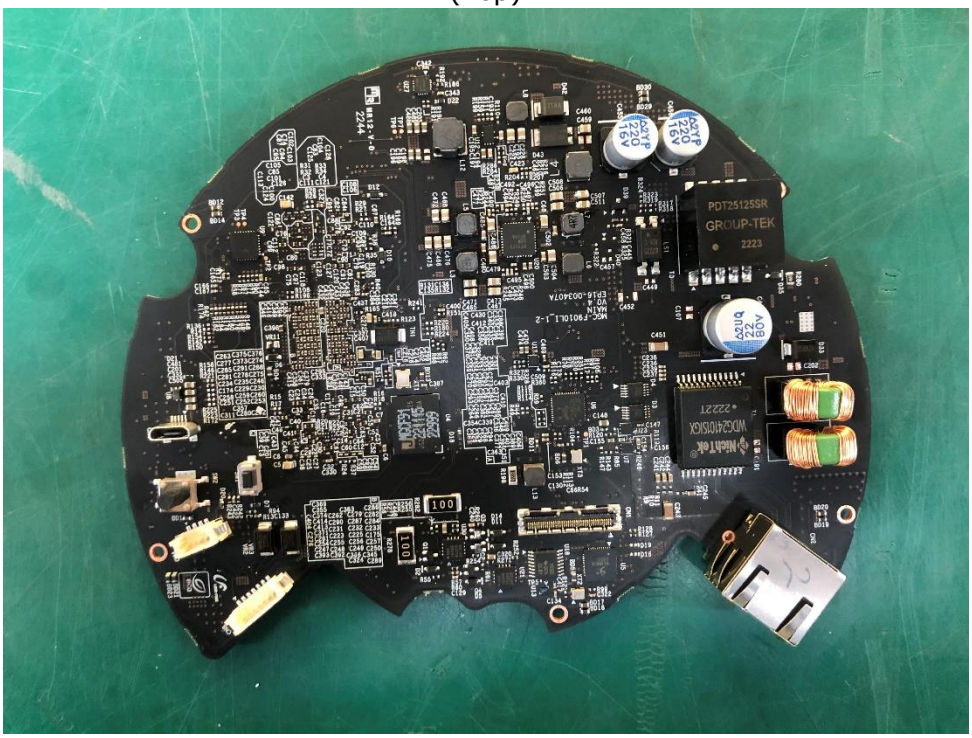
(Internal View)



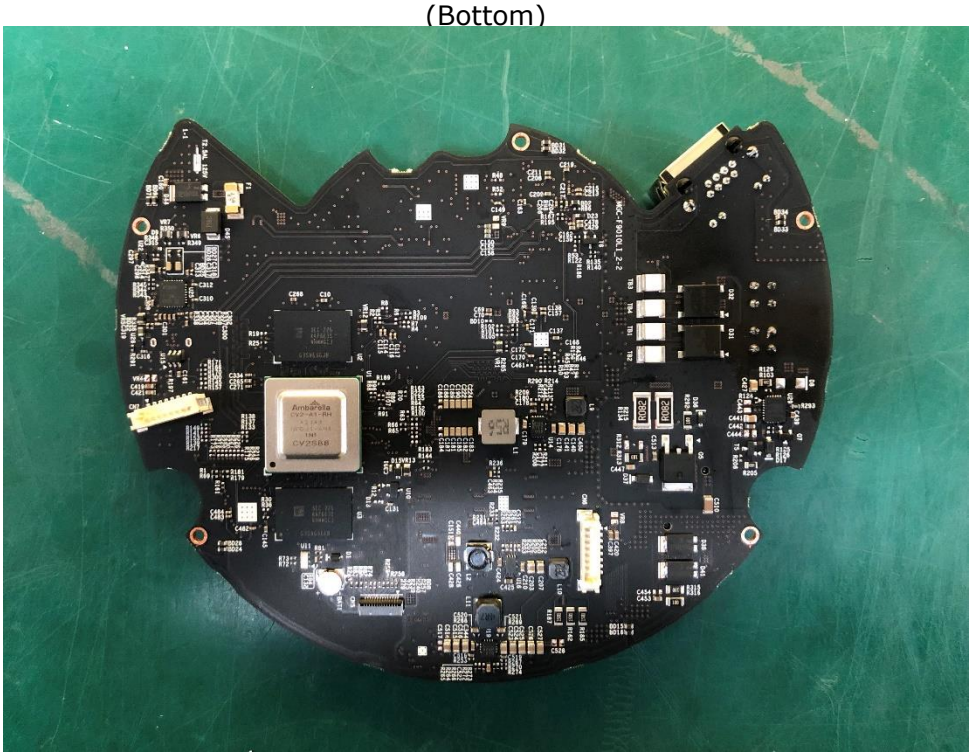
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EUT Internal View – Main Board

(Top)



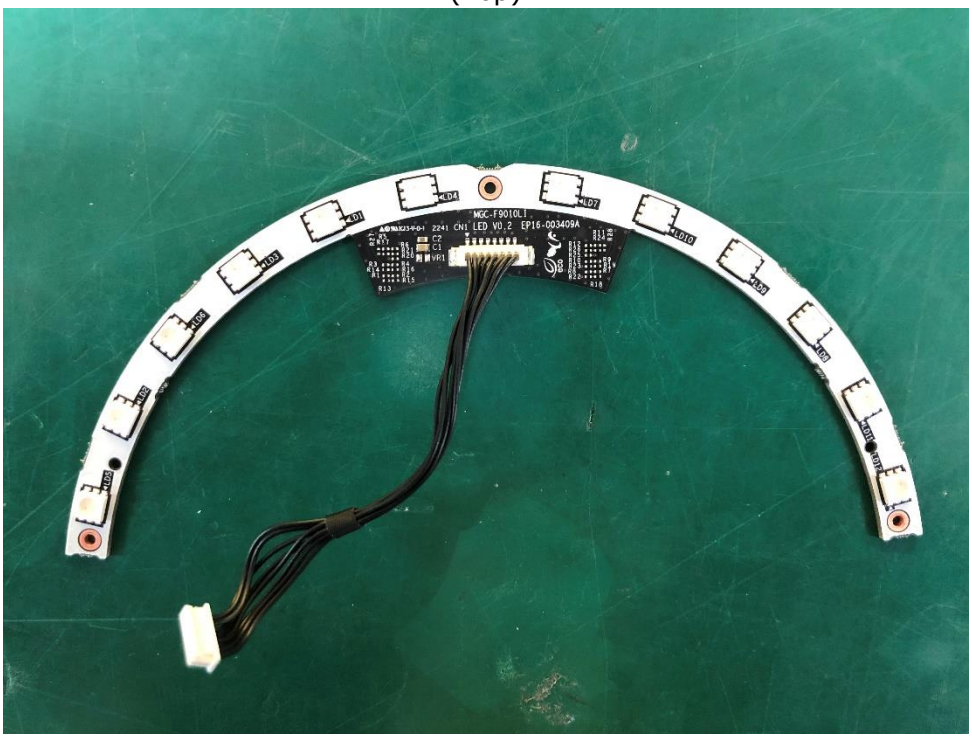
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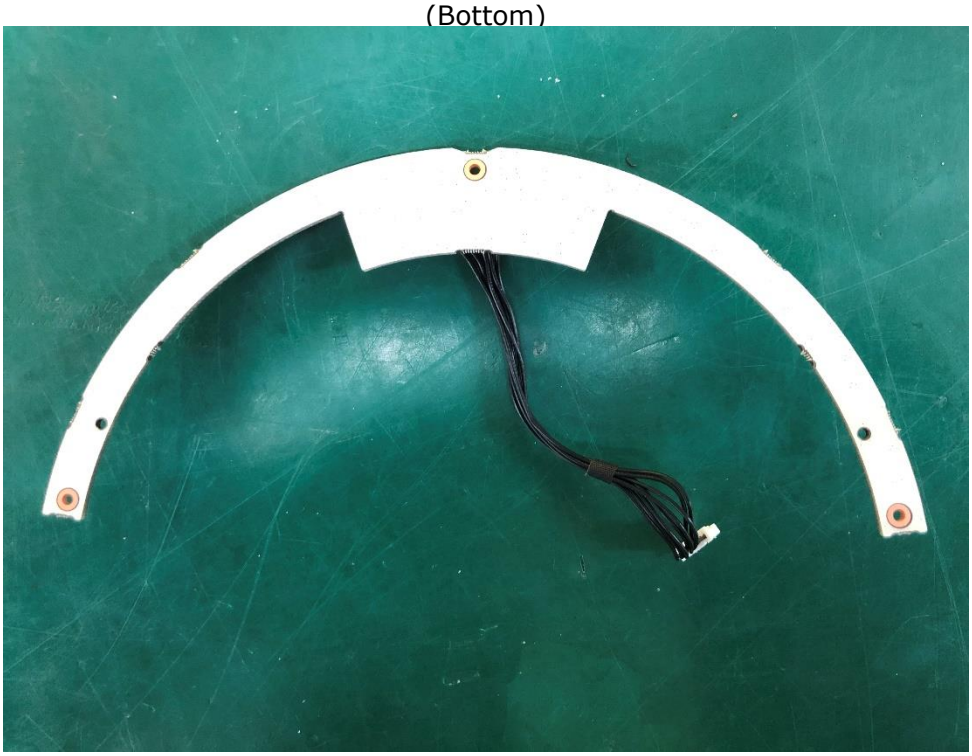
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EUT Internal View – LED Board x2

(Top)



(Bottom)



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EUT Internal View – Lens

(Top)

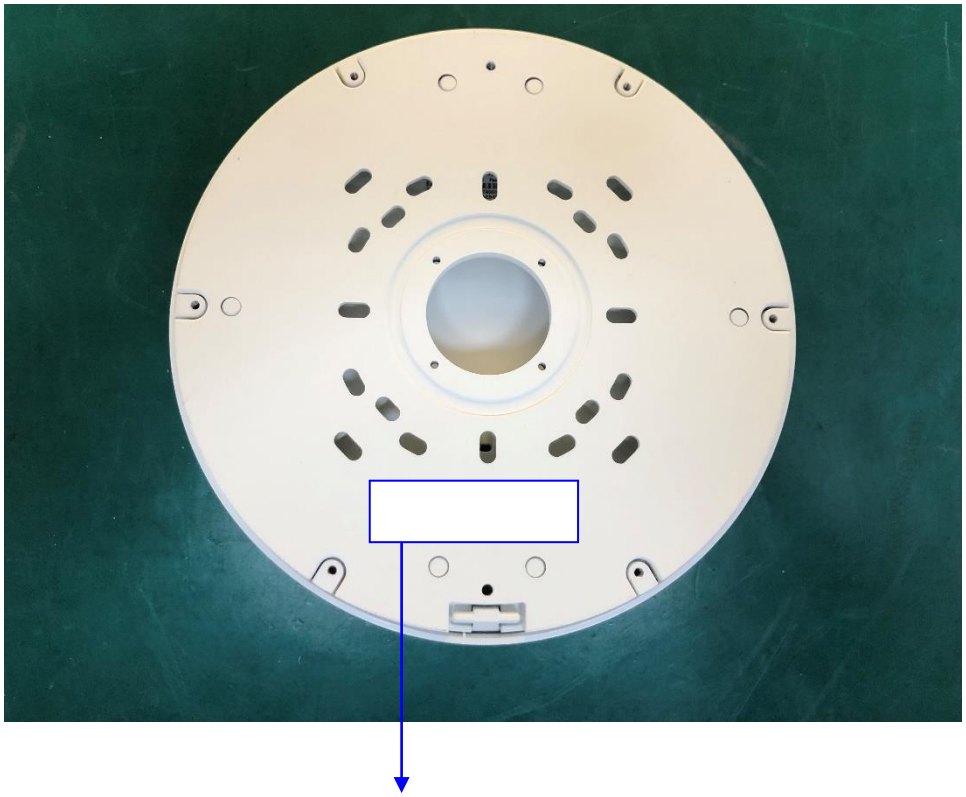


(Bottom)



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Label and Location



NETWORK CAMERA

Model No : MGC-F9010LI

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

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