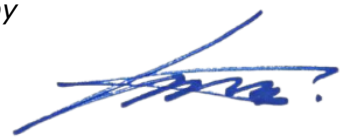
EMC TEST REPORT For RCM

Test Report No.	:	KES-EM-22T0724-R1
Date of Issue	:	Feb. 24, 2023
Product name	:	NETWORK CAMERA
Model/Type No.	:	PNM-C9022RV
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	:	Aug. 17, 2022
Test date	:	Aug. 20, 2022 ~ Aug. 21, 2022
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by



Dong Hun, Jang
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 24, 2022	KES-EM-22T0724	Issued
Feb. 24, 2023	KES-EM-22T0724-R1	Change the Applicant and manufacturer at the request of the customer

TABLE OF CONTENTS

1.0 General Product Description

Main Specifications of EUT are:

	PNM-C9022RV Hanwha Techwin
Video	
Imaging Device	1/2.8" 5M CMOS SENSOR (X4)
Resolution	5120X1568, 3648X1152, 2560X784, 1280X392
Max. Framerate	H.265/H.264: 8.0MP Max. 30fps/25fps(60Hz/50Hz), Max. 20fps(Alpha blending On) MJPEG: 8.0MP Max. 30fps/25fps(60Hz/50Hz)
NETD	None
Pixel Size	None
Min. Illumination	Color: 0.1Lux(F2.0, 1/30sec) BW: 0.01Lux(F2.0, 1/30sec), 0Lux(IR LED on)
Video Out	USB: Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	2.8mm fixed focal (x4)
Max. Aperture Ratio	F2.0
Angular Field of View	H: 209°, V: 60°
Min. Object Distance	5m(16.4ft)
Focus Control	Fixed
Lens Type	None
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	0°~360° / 0°~65° / -
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	WiseNRII(Based on AI engine), SSNR V
Digital Image Stabilization	None
Defog	None
Motion Detection	8ea, 8point Polygonal zones
Privacy Masking	6ea, Rectangular zones - Color : Gray, Green, Red, Blue, Black, White
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	None
Electronic Shutter Speed	Minimum / Maximum / Prefer / Anti flicker (2~1/12,000sec) Auto prefer shutter control(Based on AI engine)
Digital PTZ	None
Video Rotation	Flip, Mirror
Analytics	Classified object type : Person/Vehicle Attributes : Not support Support BestShot Analytics events based on AI engine - Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit) Analytics events - Defocus detection, Motion detection, Tampering, Audio detection, Sound classification, Virtual area(Appear/Disappear)
Business Intelligence	None
Serial Interface	None
Alarm I/O	2 configurable I/O ports
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule
Alarm Events	When alarm trigger occurred - File upload(image) : e-mail/FTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP) - Audio clip playback
Audio Streaming	None
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	WiseIR 15m(49.21ft) (TBD) 4 individual zones with Automatic/Manual level adjustment
IR Illuminator (Optional)	None
IR Radiation angle	None
IR LED	None
IR Wavelength	None
IR Operation	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(10/100/1000BASE-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), WiseStreamⅡ, WiseStreamⅢ(Based on AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate 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, PIM-SM, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)
SIP support (VoIP, Peer-to-peer, SI	None
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2) Device Certificate(Hanwha Techwin Root CA, pre-installed) Secure by default certificate Secure OS/Boot/Storage, Verify firmware forgery 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, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Greek, Hungarian
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot Max. 1TB (512GB * 2)
Memory	4GB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-40°C ~ +55°C(-40°F ~ +131°F) / 0~95% RH(non-condensing) * Start up should be above -30°C
Storage Temperature / Humidity	-30°C ~ +60°C(-22°F ~ +140°F)/ 0~90% RH
Certification	None
Input Voltage	PoE+(IEEE802.3at, Class4), 12VDC
Power Consumption	PoE+: Max 21.2W, typical 10.4W 12VDC: Max 23.5W, typical 11.3W Power redundancy failover
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product Dimensions / Weight	Ø253x170mm(9.96"x6.69"), 2900g(6.39lb)
Compatible Conduit hole / Gangbo	3/4"(M25) / Single, Double, 4"Octagon, Square
Hanging Mount (Dome)	SBP-276HMW
Skin Cover	None
Skin Cover (Dome)	None
Weather Cap (Dome)	SVB-253WCW
Power Module	None
Backbox	None
Certifications & Standards	
Network	None
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 IK10 NEMA 250 type 4X
Video	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	None
Observe (63PPM/ 19PPF)	None
Recognize (125PPM/ 38PPF)	None
Identify (250PPM/ 76PPF)	None

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	PNM-C9022RV	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
DC 12 V Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	Latitude 5300	8C47BE45C060	DELL INC.	-
Notebook Adapter	HA65NM130	-	Chicony Power Technology(Suzhou)Co., Ltd.	-
Micro SD Card	-	-	Sandisck	-
Button Alarm	-	-	-	-
LED Alarm	-	-	-	-
Headset	K550	-	Britz®	-

1.6 External I/O Cabling

■ DC 12 V Adapter Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK CAMERA (EUT)	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	2 Pin (DC Power)	DC 12 V Adapter	2 Pin (DC Power)	1.0	U
	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	3.0	S
	2 Pin (Alarm In)	Button Alarm	2 Pin (Alarm)	3.0	U
	2 Pin (Alarm Out)	LED Alarm	2 Pin (Alarm)	3.0	U
	3.5 ㎜ (Audio In)	Headset	3.5 ㎜	1.8	U
	3.5 ㎜ (Audio Out)	Headset	3.5 ㎜	1.8	U
Notebook	DC Jack	Notebook Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

■ PoE Adapter Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK CAMERA (EUT)	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	RJ-45 (PoE)	PoE Adapter	RJ-45 (PoE)	3.0	S
	2 Pin (Alarm In)	Button Alarm	2 Pin (Alarm)	3.0	U
	2 Pin (Alarm Out)	LED Alarm	2 Pin (Alarm)	3.0	U
	3.5 ㎜ (Audio In)	Headset	3.5 ㎜	1.8	U
	3.5 ㎜ (Audio Out)	Headset	3.5 ㎜	1.8	U
PoE Adapter	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	1.3	U
Notebook	DC Jack	Notebook Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

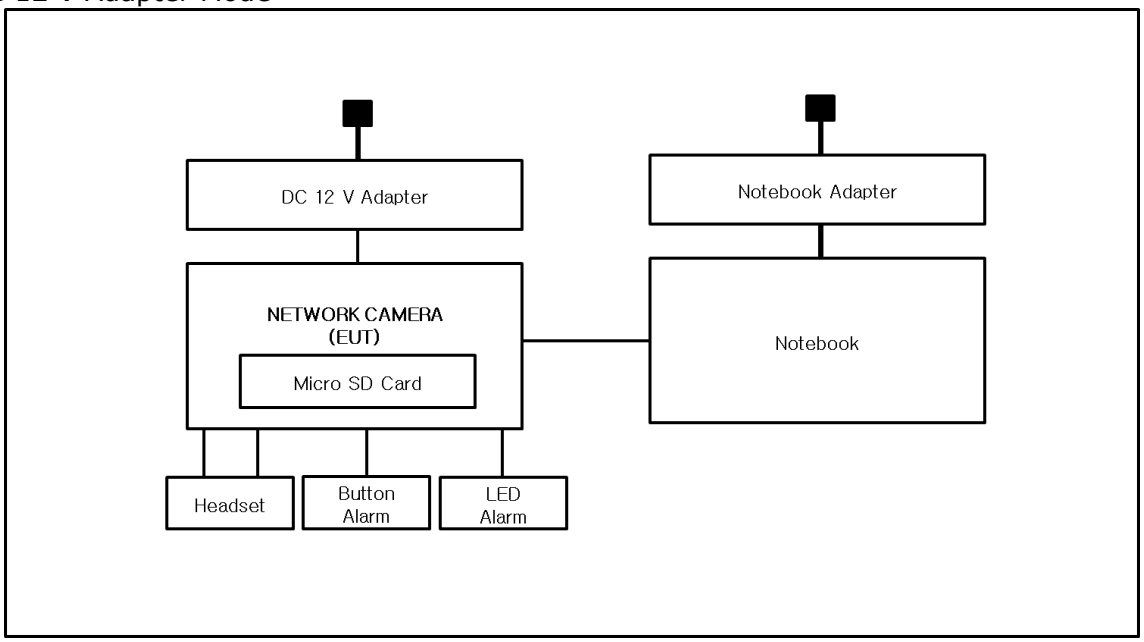
Test Mode	operating
DC 12 V Adapter	Check the Normal Operation status. after testing, check if the recording is normally done on the Micro SD Card
PoE Adapter	

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

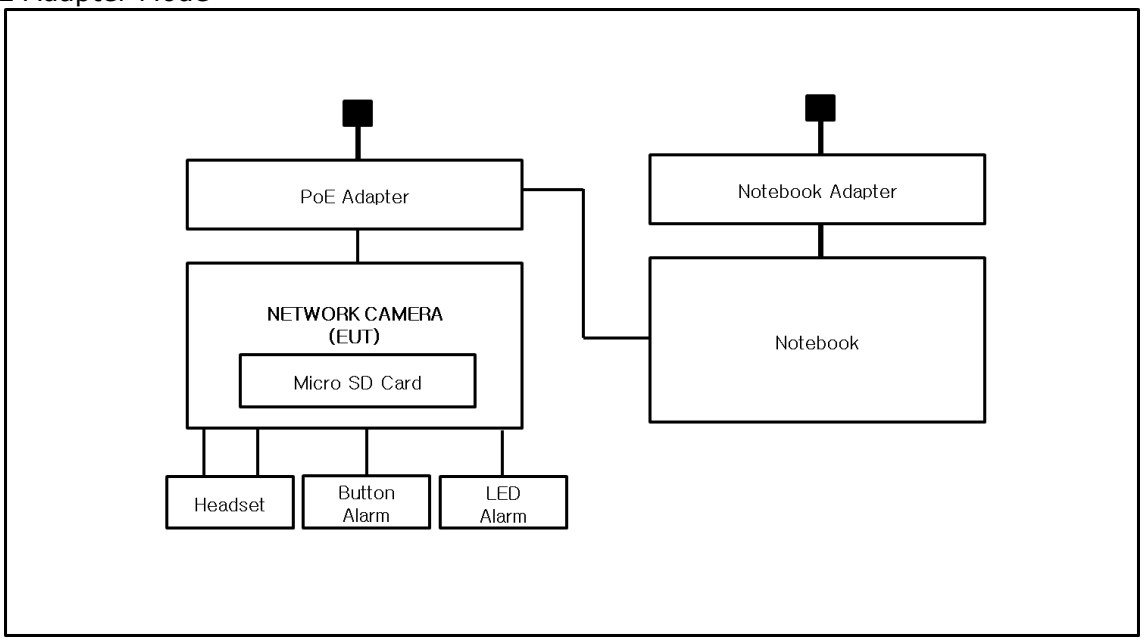
1.8 Configuration

■ AC Main
□ DC Main

■ DC 12 V Adapter Mode



■ PoE Adapter Mode



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, 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

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

2.1 Conducted Emissions at Mains Power Ports

Test Date
Aug. 20, 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	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

Test Conditions
Temperature: (24,4 ± 0,1) ℃
Relative Humidity: (47,5 ± 0,0) % 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.

2.2 Conducted Emissions at Telecommunication Ports

Test Date
Aug. 20, 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	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022
☒	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	03, 07, 2023
☐	CDN	CDNS502A	TESEQ	40431	12, 27, 2022

Test Conditions
Temperature: (24,4 ± 0,1) ℃
Relative Humidity: (47,5 ± 0,0) % 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.

2.3 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Aug. 21, 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, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Test Conditions
Temperature: (24,4 ± 0,1) ℃
Relative Humidity: (45,8 ± 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.

2.4 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Aug. 21, 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
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 03, 2023

Test Conditions
Temperature: (24,6 ± 0,1) ℃
Relative Humidity: (45,5 ± 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.

APPENDIX A – TEST DATA

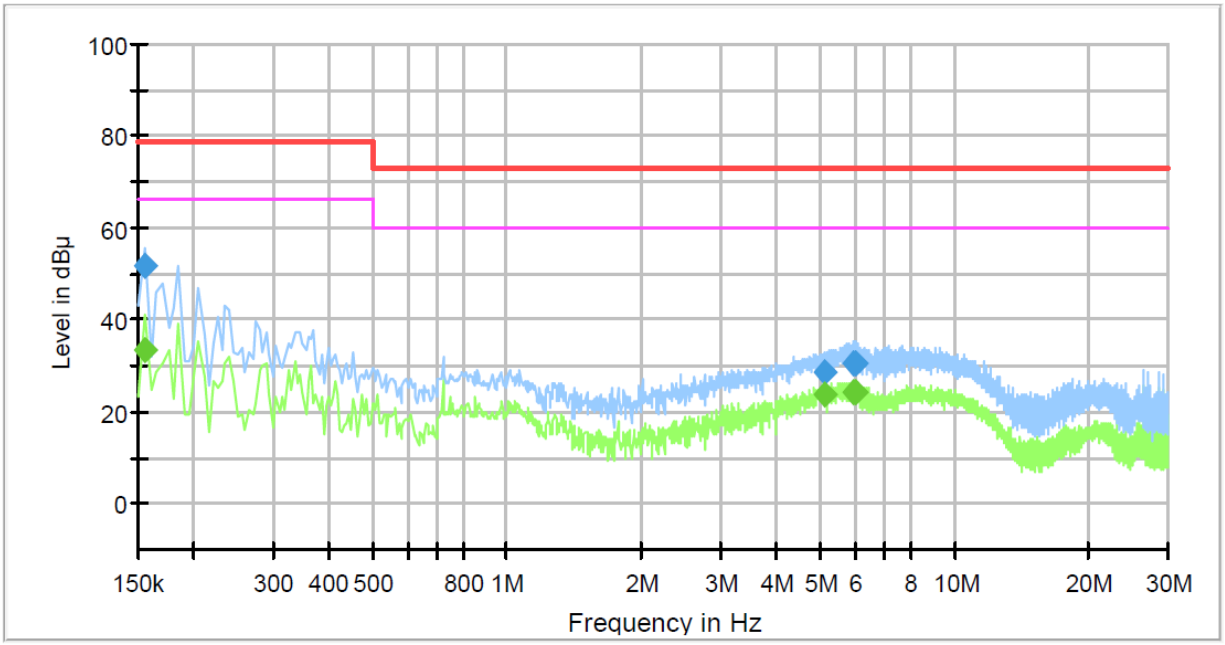
Conducted Emissions at Mains Power Ports

■ DC 12 V Adapter Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-C9022RV
Phase:	
Mode:	DC 12 V Adapter
Operator Name:	KES



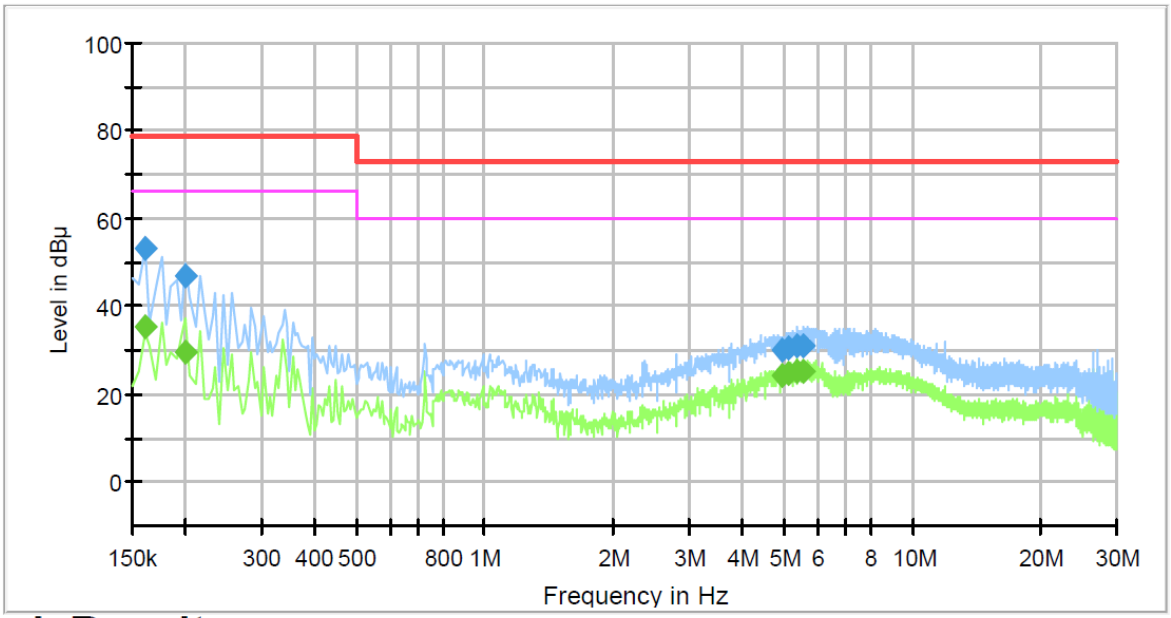
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	33.39	66.00	32.61	1000.0	9.000	L1	19.4
0.155000	51.88	---	79.00	27.12	1000.0	9.000	L1	19.4
5.105000	---	23.62	60.00	36.38	1000.0	9.000	L1	19.6
5.105000	28.80	---	73.00	44.20	1000.0	9.000	L1	19.6
5.935000	---	24.48	60.00	35.52	1000.0	9.000	L1	19.5
5.935000	30.70	---	73.00	42.30	1000.0	9.000	L1	19.5
6.005000	---	24.32	60.00	35.68	1000.0	9.000	L1	19.5
6.005000	30.65	---	73.00	42.35	1000.0	9.000	L1	19.5

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-C9022RV
Phase:	
Mode:	DC 12 V Adapter
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	35.12	66.00	30.88	1000.0	9.000	N	19.4
0.160000	53.26	---	79.00	25.74	1000.0	9.000	N	19.4
0.200000	---	29.39	66.00	36.61	1000.0	9.000	N	19.4
0.200000	46.87	---	79.00	32.13	1000.0	9.000	N	19.4
4.970000	---	24.10	60.00	35.90	1000.0	9.000	N	19.6
4.970000	29.90	---	73.00	43.10	1000.0	9.000	N	19.6
5.105000	---	24.62	60.00	35.38	1000.0	9.000	N	19.6
5.105000	30.43	---	73.00	42.57	1000.0	9.000	N	19.6
5.350000	---	25.17	60.00	34.83	1000.0	9.000	N	19.6
5.350000	30.90	---	73.00	42.10	1000.0	9.000	N	19.6
5.550000	---	25.35	60.00	34.65	1000.0	9.000	N	19.5
5.550000	31.20	---	73.00	41.80	1000.0	9.000	N	19.5

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

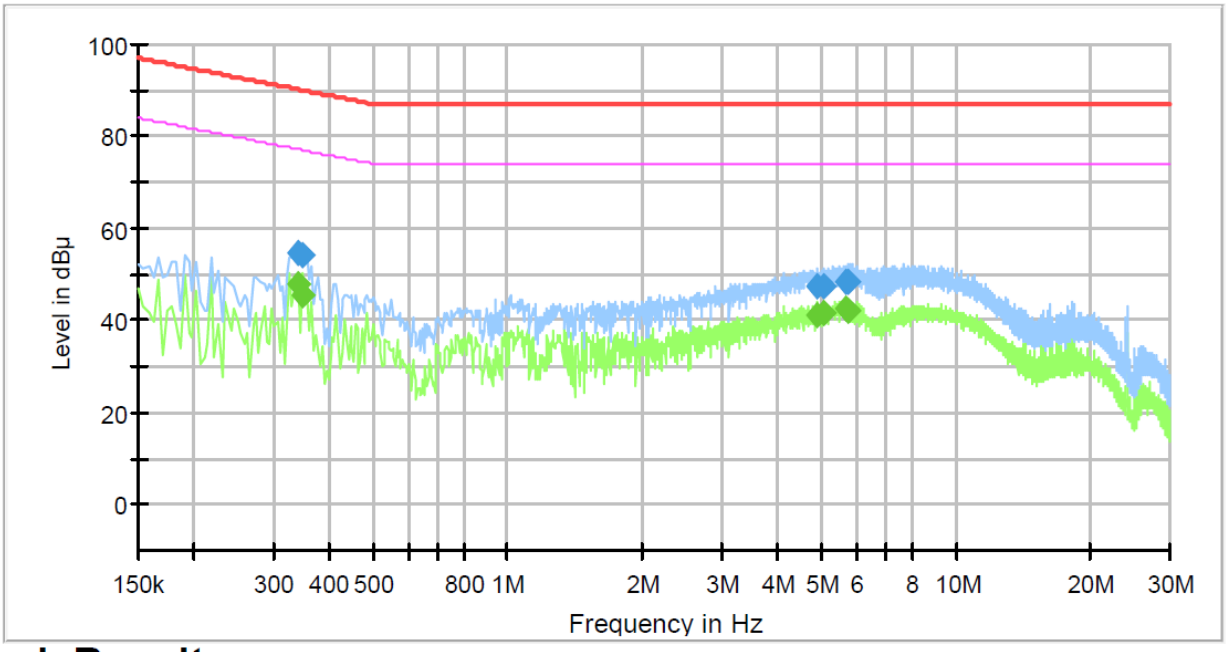
Conducted Emissions at Telecommunication Ports

■ DC 12 V Adapter Mode

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNM-C9022RV
Mode :	DC 12 V Adapter
Speed :	1 000 Mbps
Operator Name:	KES



Final_Result

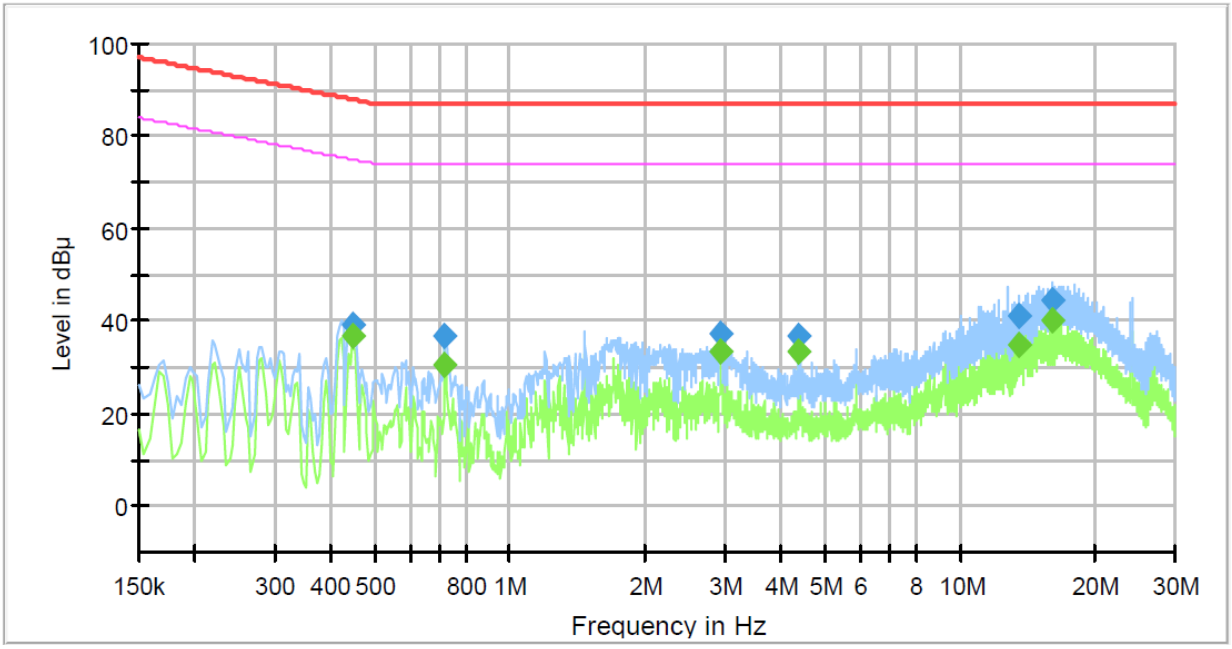
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.342000	---	47.69	77.15	29.46	1000.0	9.000	Single Line	19.3
0.342000	54.44	---	90.15	35.71	1000.0	9.000	Single Line	19.3
0.350000	---	45.45	76.96	31.51	1000.0	9.000	Single Line	19.4
0.350000	54.05	---	89.96	35.91	1000.0	9.000	Single Line	19.4
4.898000	---	41.38	74.00	32.62	1000.0	9.000	Single Line	19.5
4.898000	47.25	---	87.00	39.75	1000.0	9.000	Single Line	19.5
5.062000	---	41.72	74.00	32.28	1000.0	9.000	Single Line	19.5
5.062000	47.51	---	87.00	39.49	1000.0	9.000	Single Line	19.5
5.674000	---	42.46	74.00	31.54	1000.0	9.000	Single Line	19.4
5.674000	48.40	---	87.00	38.60	1000.0	9.000	Single Line	19.4
5.722000	---	42.30	74.00	31.70	1000.0	9.000	Single Line	19.4
5.722000	48.25	---	87.00	38.75	1000.0	9.000	Single Line	19.4

■ PoE Adapter Mode

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	PNM-C9022RV
Mode :	PoE Adapter
Speed :	1 000 Mbps
Operator Name:	KES



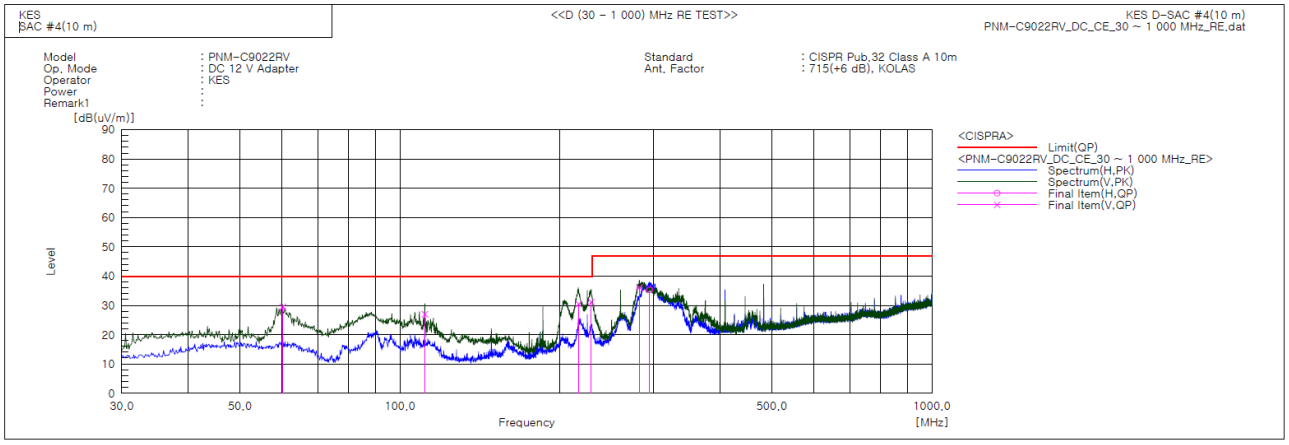
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.446000	---	36.97	74.95	37.98	1000.0	9.000	Single Line	19.5
0.446000	39.42	---	87.95	48.53	1000.0	9.000	Single Line	19.5
0.718000	---	30.64	74.00	43.36	1000.0	9.000	Single Line	19.8
0.718000	36.82	---	87.00	50.18	1000.0	9.000	Single Line	19.8
2.934000	---	33.18	74.00	40.82	1000.0	9.000	Single Line	20.1
2.934000	37.33	---	87.00	49.67	1000.0	9.000	Single Line	20.1
4.398000	---	33.20	74.00	40.80	1000.0	9.000	Single Line	19.6
4.398000	36.90	---	87.00	50.10	1000.0	9.000	Single Line	19.6
13.478000	---	34.83	74.00	39.17	1000.0	9.000	Single Line	19.8
13.478000	41.10	---	87.00	45.90	1000.0	9.000	Single Line	19.8
16.062000	---	40.28	74.00	33.72	1000.0	9.000	Single Line	19.8
16.062000	44.48	---	87.00	42.52	1000.0	9.000	Single Line	19.8

♦ 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))

Radiated Electric Field Emissions(Below 1 ㎓)

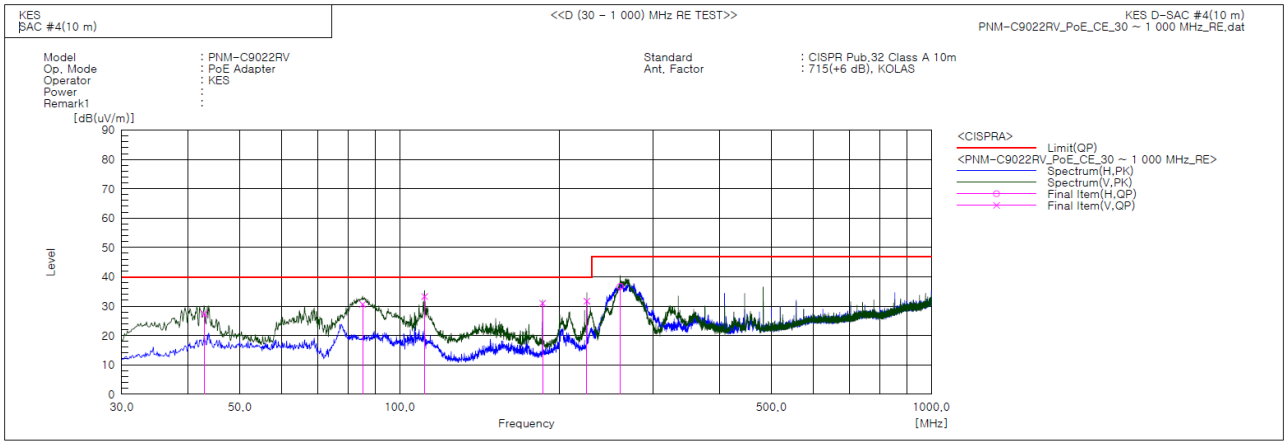
■ DC 12 V Adapter Mode



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	60.215	V	51.5	-22.0	29.5	40.0	10.5	100.0	59.0	
2	111.359	V	49.4	-22.4	27.0	40.0	13.0	100.0	3.0	
3	216.483	V	51.0	-20.5	30.5	40.0	9.5	113.0	193.0	
4	228.850	V	51.1	-20.0	31.1	40.0	8.9	105.0	137.0	
5	281.958	V	54.6	-18.6	36.0	47.0	11.0	100.0	96.0	
6	294.689	H	53.5	-18.2	35.3	47.0	11.7	400.0	355.0	

■ PoE Adapter Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	42.853	V	49.1	-21.7	27.4	40.0	12.6	117.0	308.0	
2	85.169	V	56.7	-26.1	30.6	40.0	9.4	105.0	241.0	
3	111.363	V	55.7	-22.4	33.3	40.0	6.7	100.0	178.0	
4	185.572	V	53.8	-22.8	31.0	40.0	9.0	100.0	349.0	
5	224.968	V	51.9	-20.2	31.7	40.0	8.3	100.0	126.0	
6	259.884	H	55.7	-19.0	36.7	47.0	10.3	400.0	75.0	

♦ Calculation

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

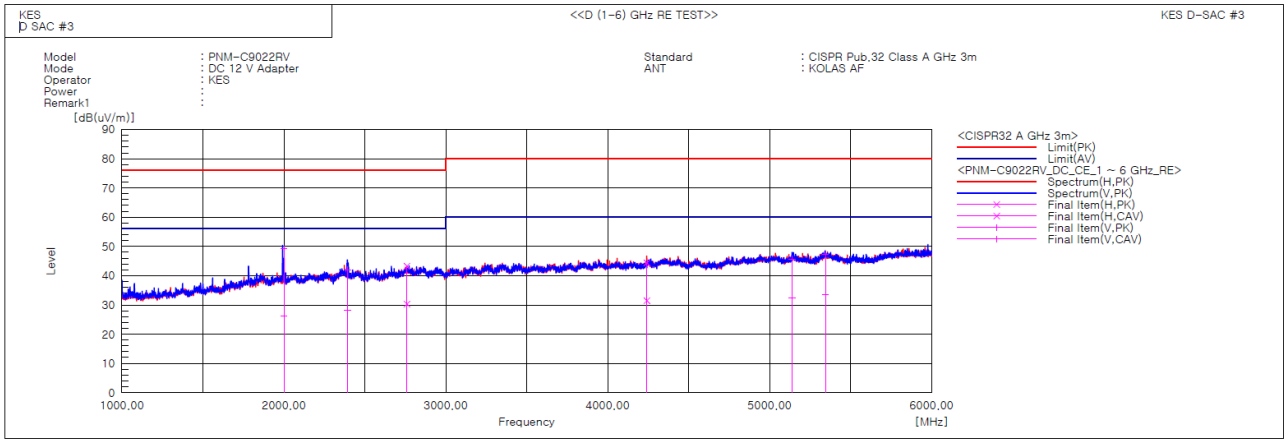
Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

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

Radiated Electric Field Emissions(Above 1 ㎓)

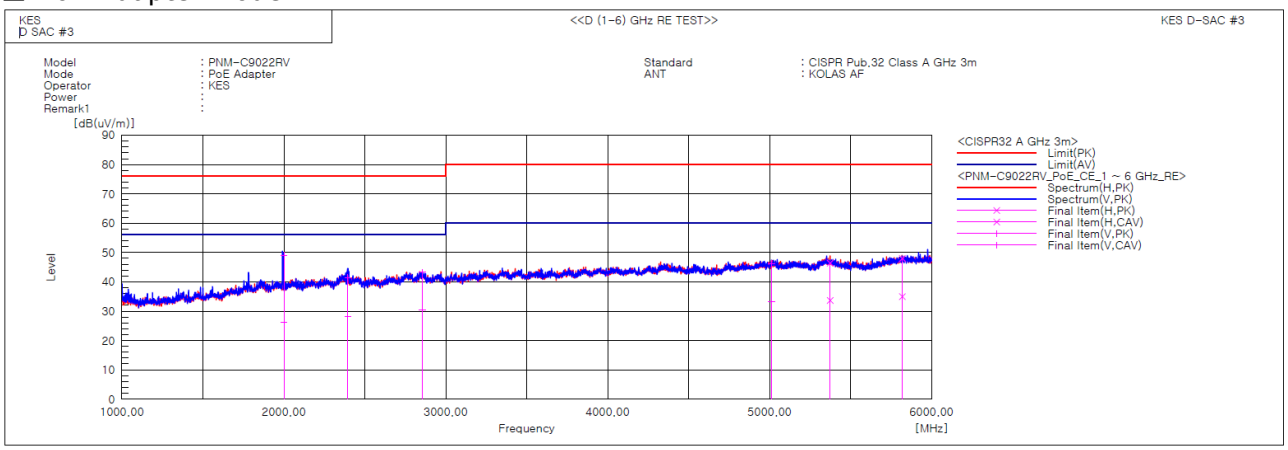
■ DC 12 V Adapter Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	2000.002	V	50.2	27.3	-1.0	49.2	26.3	76.0	56.0	26.8	29.7	100.0	286.1	
2	2392.123	V	40.9	27.0	1.2	42.1	28.2	76.0	56.0	33.9	27.8	100.0	231.6	
3	2760.001	H	40.9	27.9	2.4	43.3	30.3	76.0	56.0	32.7	25.7	100.0	58.5	
4	4241.769	H	38.3	25.4	6.1	44.4	31.5	80.0	60.0	35.6	28.5	100.0	50.5	
5	5138.289	V	36.8	23.6	8.8	45.6	32.4	80.0	60.0	34.4	27.6	100.0	187.3	
6	5344.450	V	37.9	24.1	9.3	47.2	33.4	80.0	60.0	32.8	26.6	100.0	345.3	

■ PoE Adapter Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	2000.041	V	50.1	27.2	-1.0	49.1	26.2	76.0	56.0	26.9	29.8	100.0	277.8	
2	2394.106	V	40.2	27.0	1.2	41.4	28.2	76.0	56.0	34.6	27.8	100.0	103.5	
3	2854.446	V	40.6	27.7	2.6	43.2	30.3	76.0	56.0	32.8	25.7	100.0	181.9	
4	5011.437	V	37.3	24.1	9.0	46.3	33.1	80.0	60.0	33.7	26.9	100.0	3.0	
5	5374.069	H	36.9	24.2	9.5	46.4	33.7	80.0	60.0	33.6	26.3	100.0	8.2	
6	5818.983	H	37.5	24.5	10.5	48.0	35.0	80.0	60.0	32.0	25.0	100.0	5.2	

♦ Calculation

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

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

Test Setup Photos and Configuration

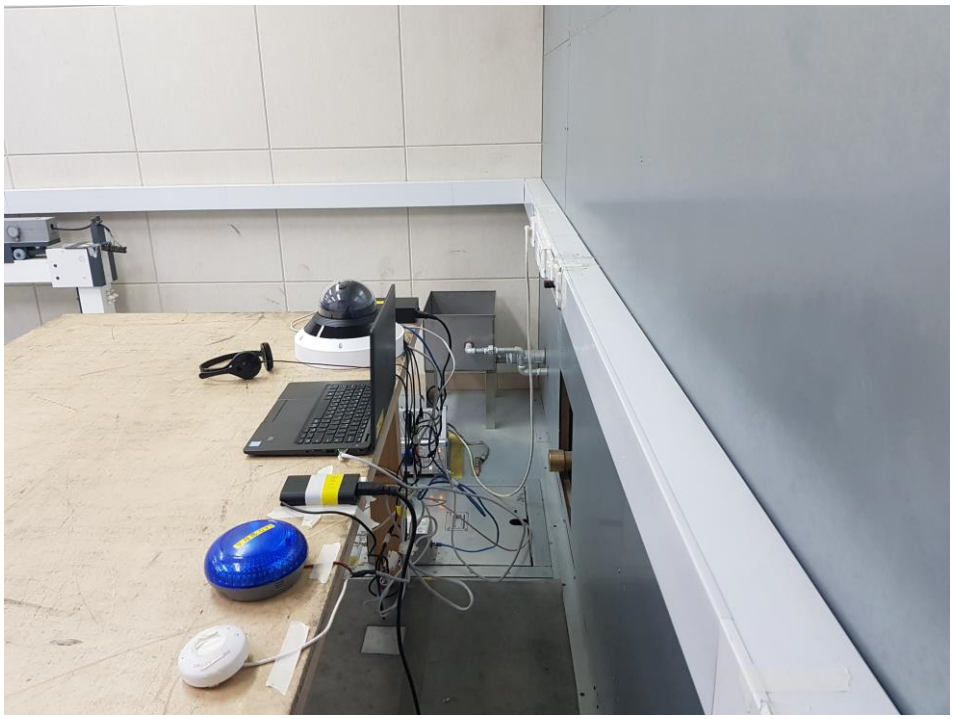
Conducted Emissions at Mains Power Ports

■ DC 12 V Adapter Mode

Conducted Emissions at Telecommunication Ports

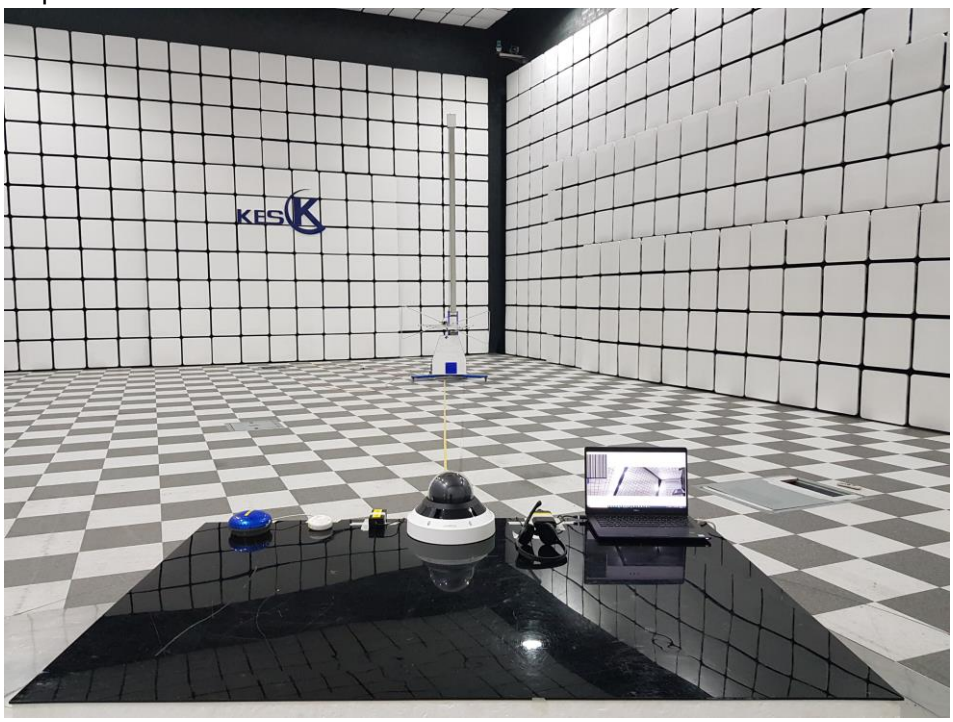
■ DC 12 V Adapter Mode

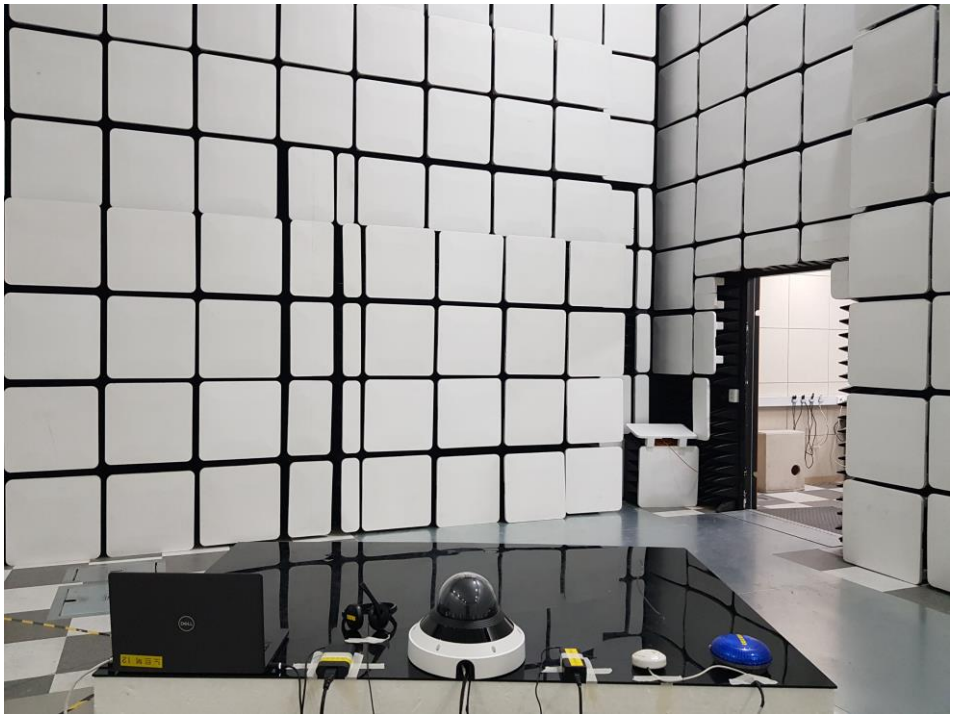
■ PoE Adapter Mode



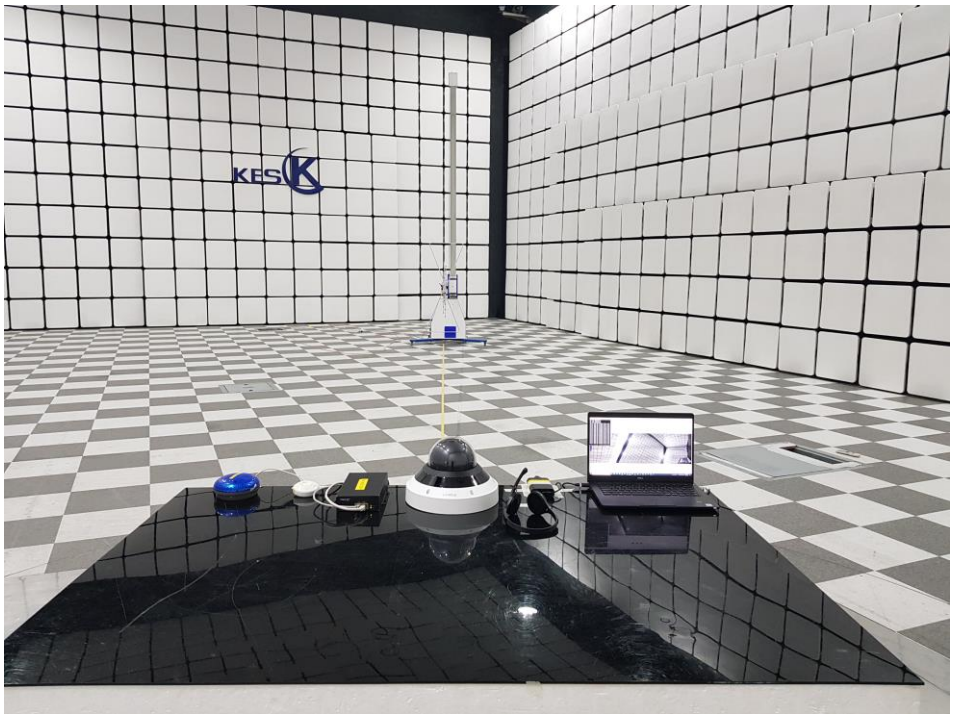
Radiated Electric Field Emissions(Below 1 ㎓)

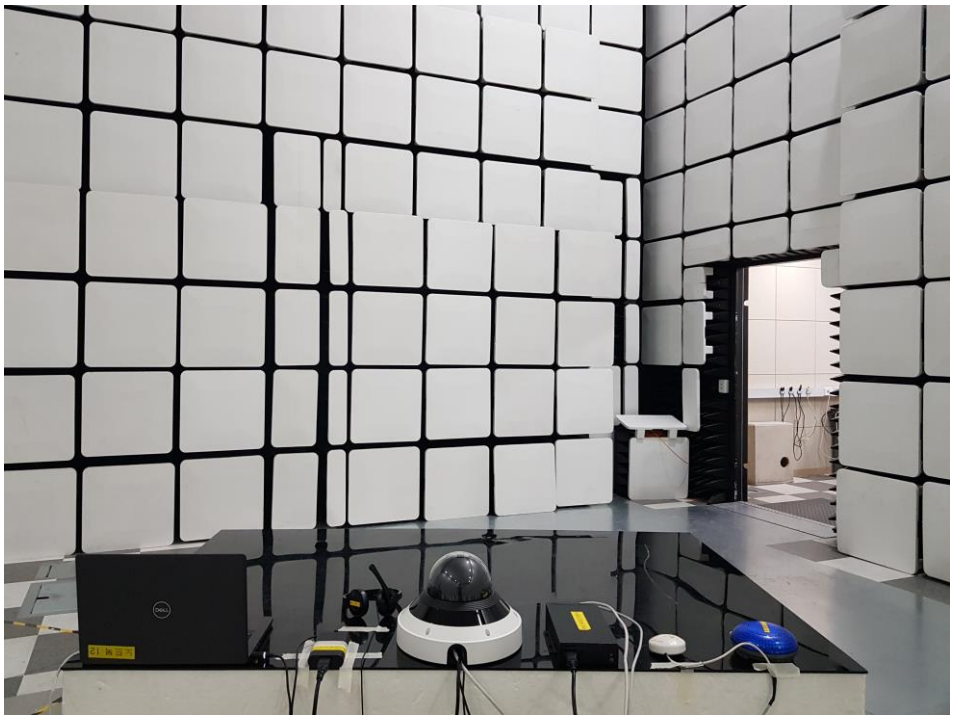
■ DC 12 V Adapter Mode





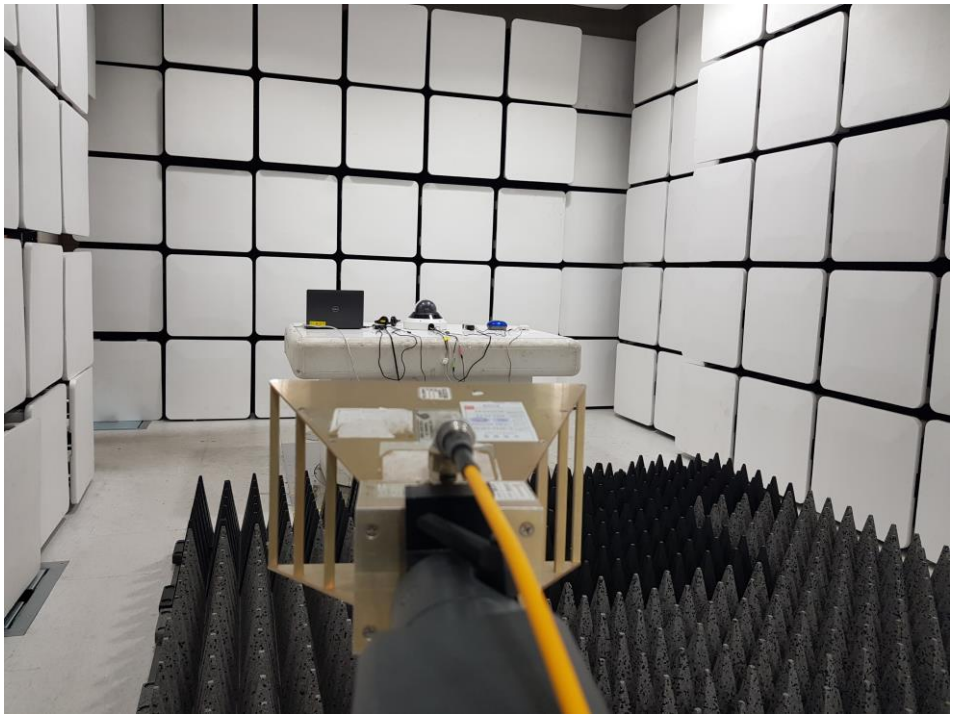
■ PoE Adapter Mode



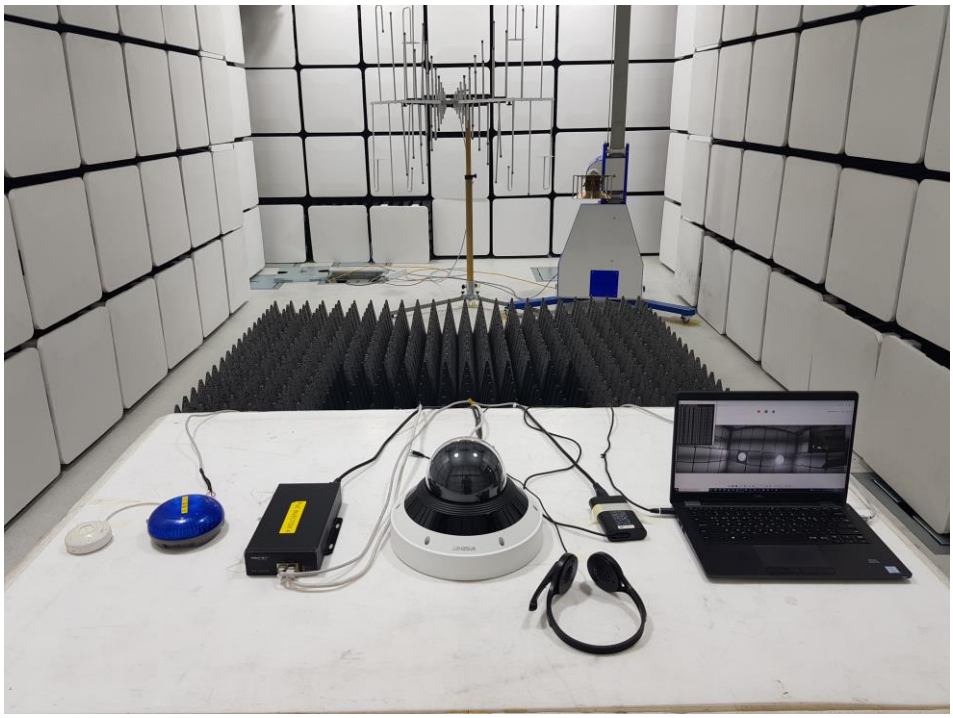


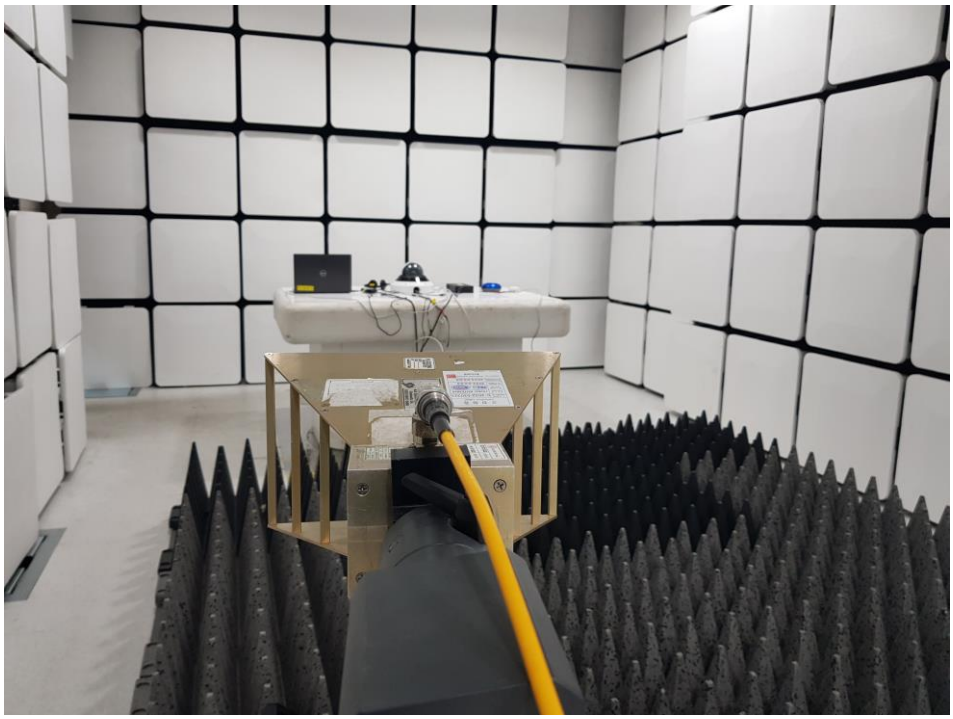
Radiated Electric Field Emissions(Above 1 ㎓)

■ DC 12 V Adapter Mode



■ PoE Adapter Mode

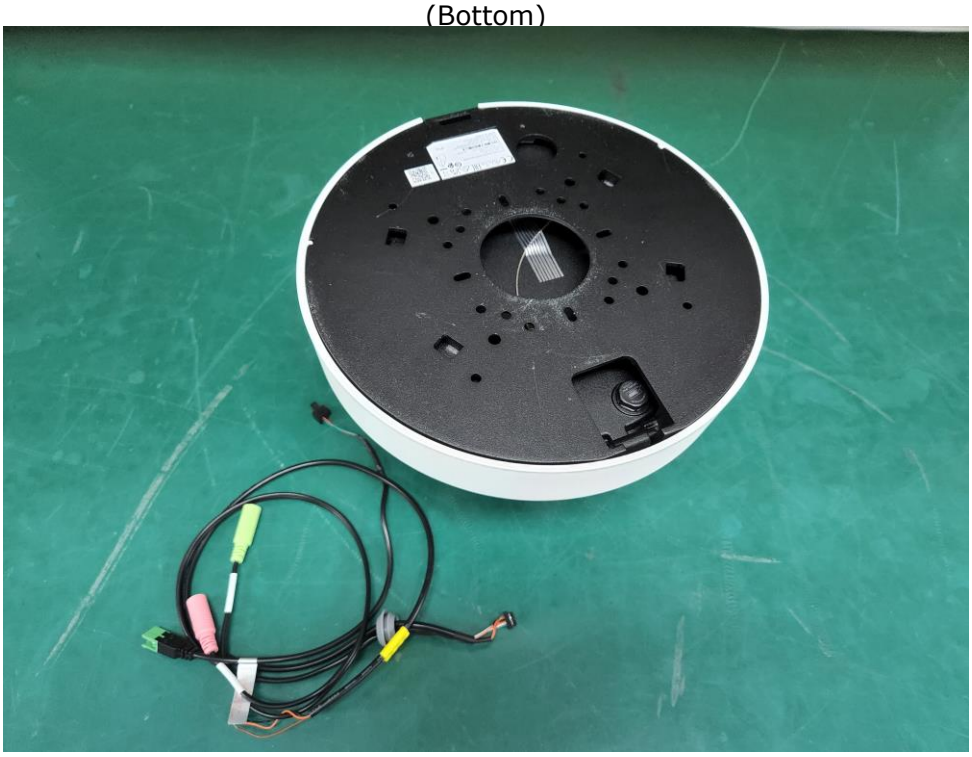




EUT External Photographs

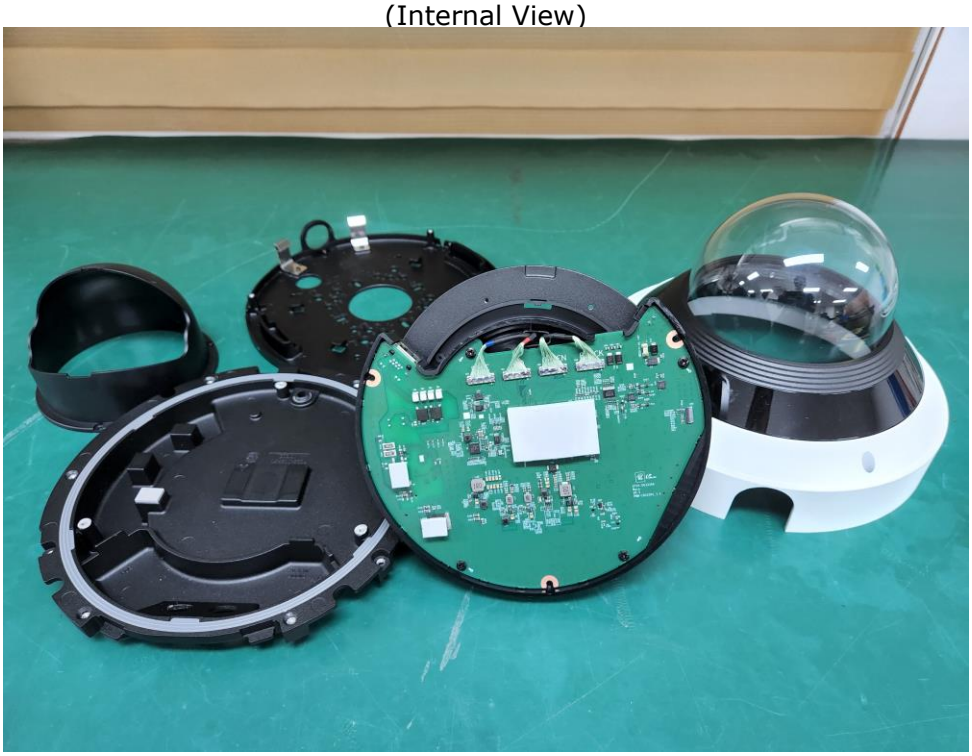
(Top)

(Bottom)



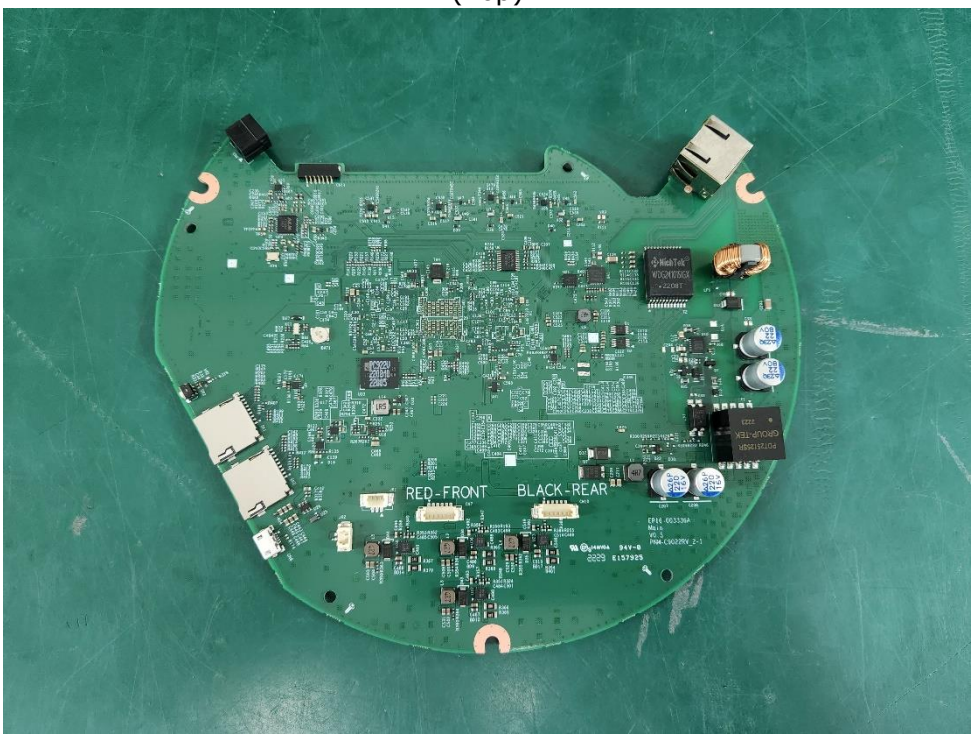
EUT Internal Photographs

(Internal View)



EUT Internal View – Main Board

(Top)



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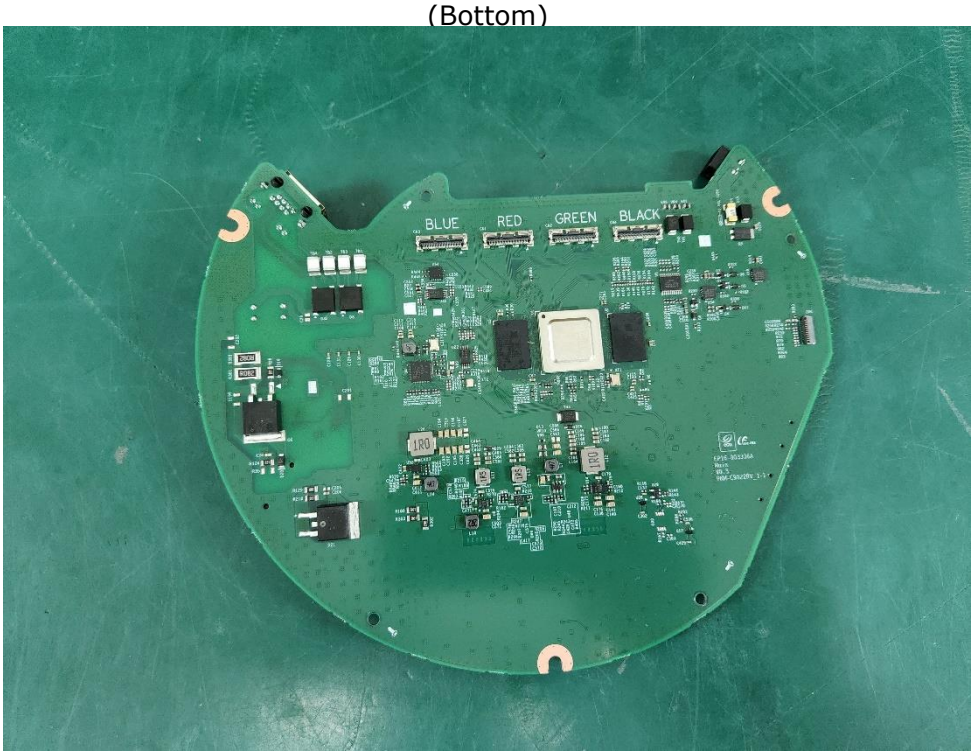


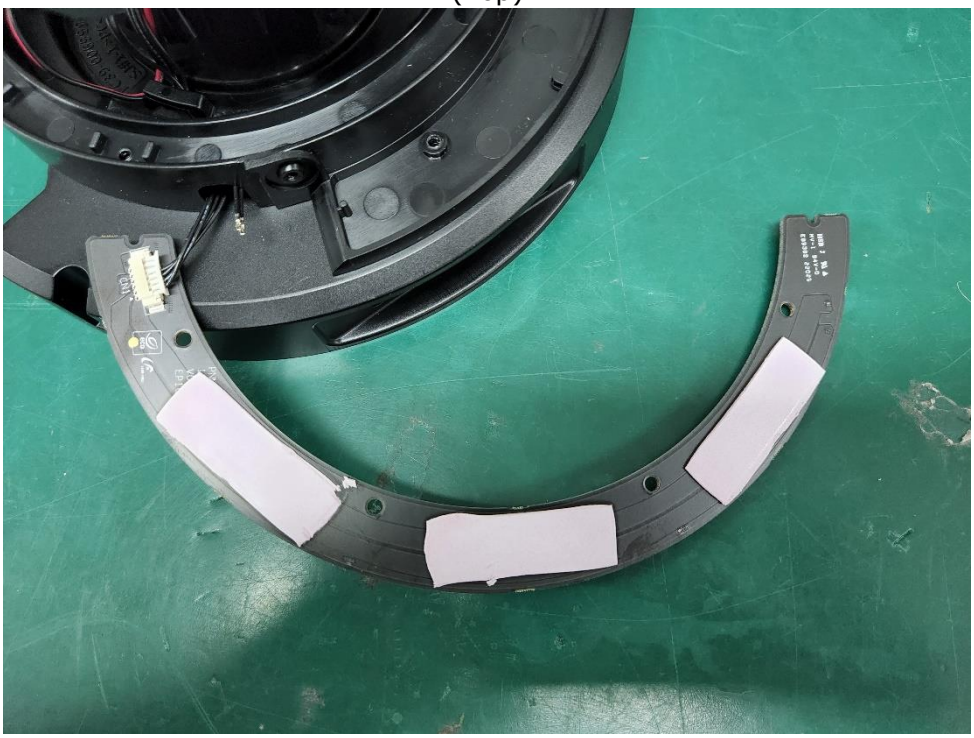
EUT Internal View – Sub Board 1

(Top)

(Bottom)

EUT Internal View – Sub Board 2

(Top)



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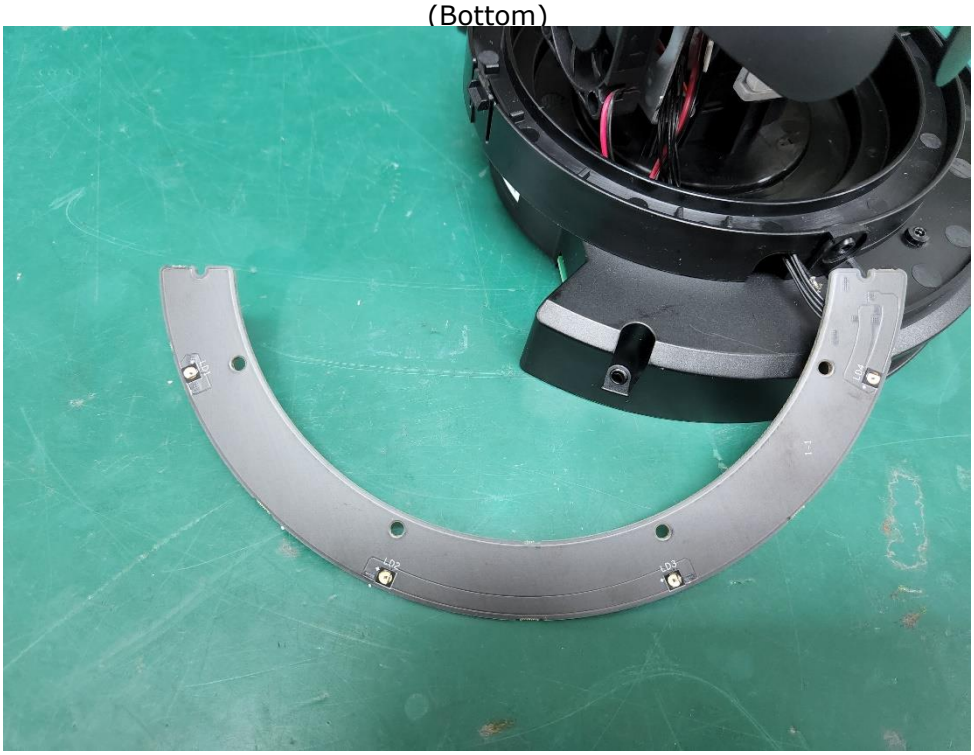
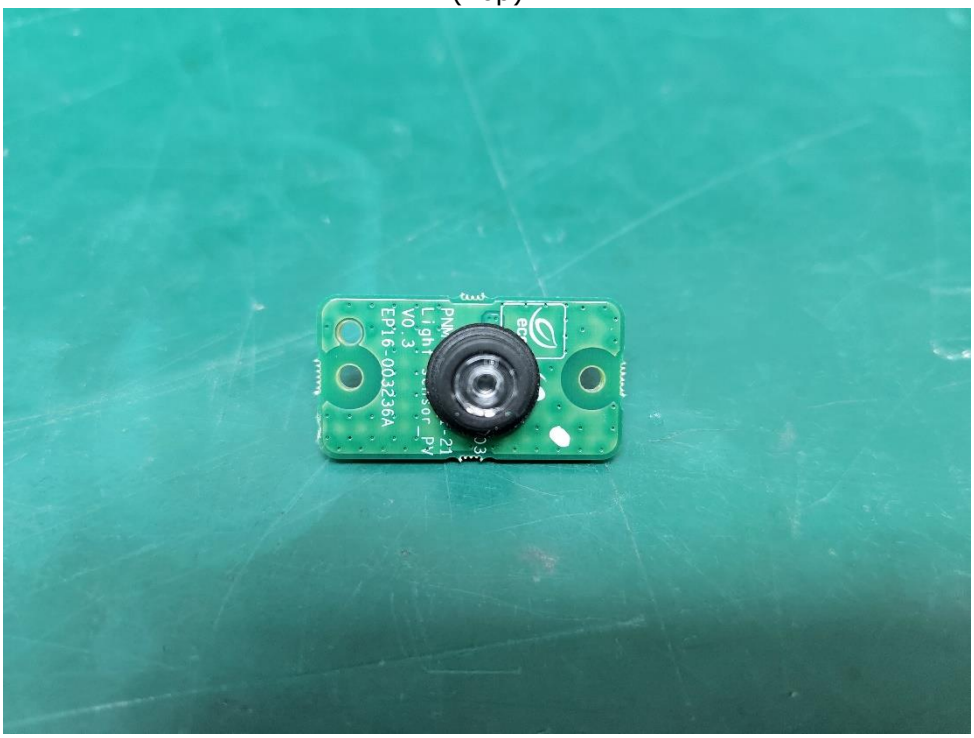


EUT Internal View – Sub Board 3

(Top)



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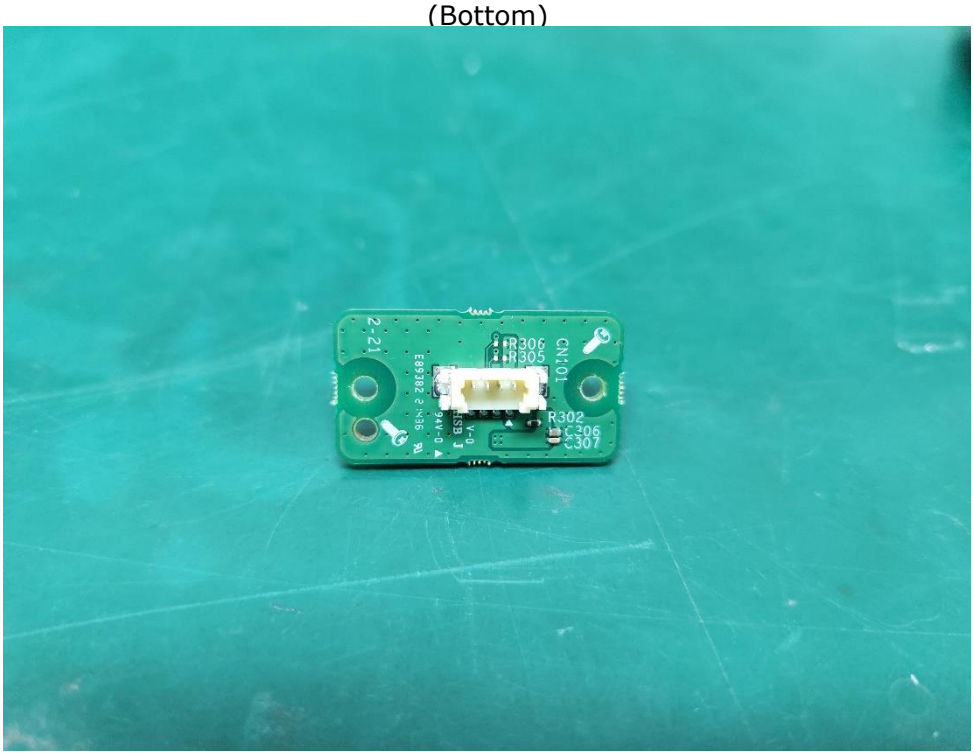
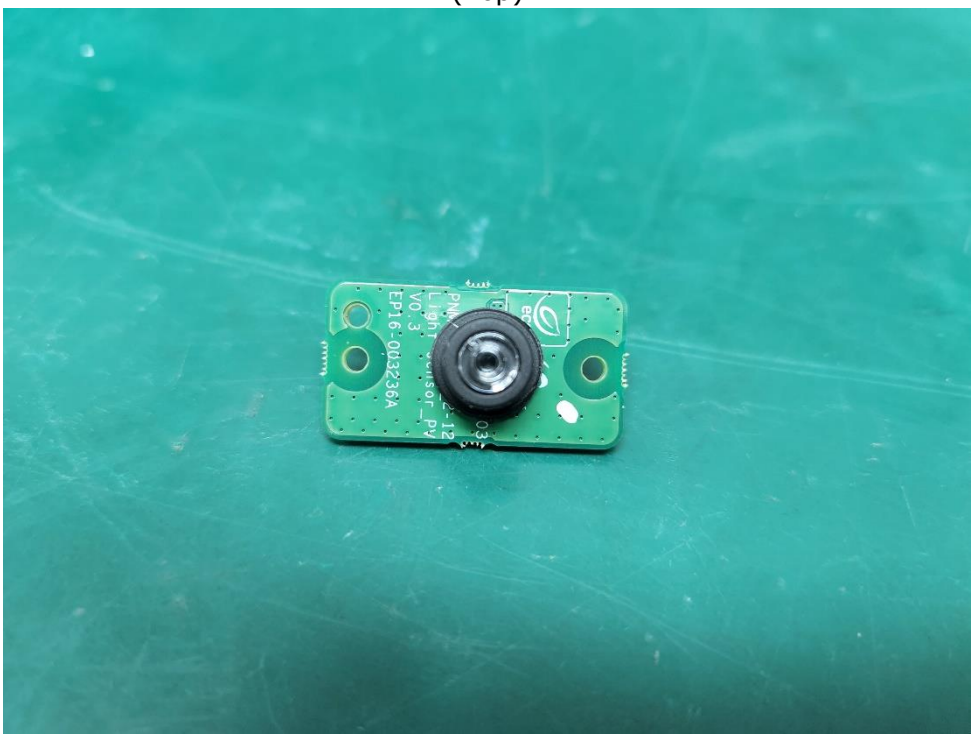


EUT Internal View – Sub Board 4

(Top)



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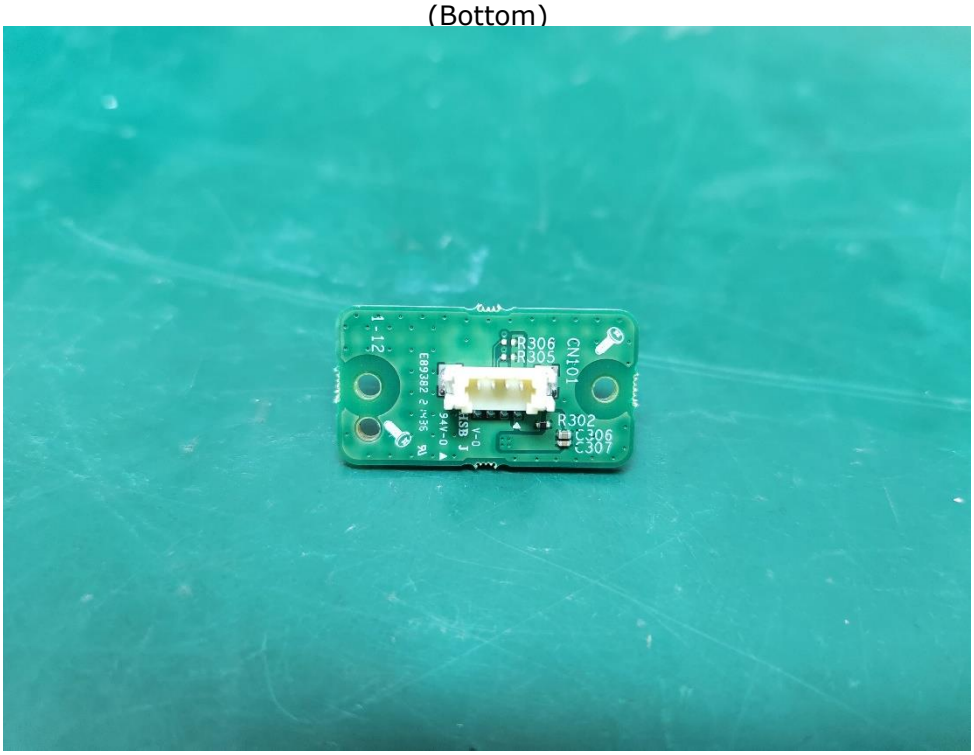
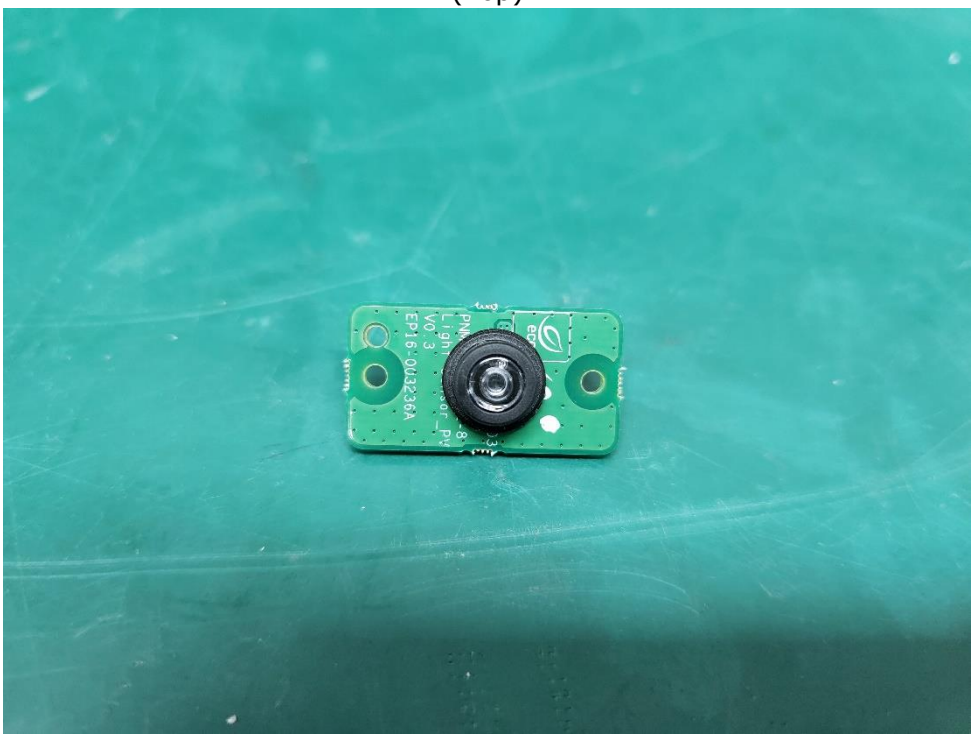


EUT Internal View – Sub Board 5

(Top)



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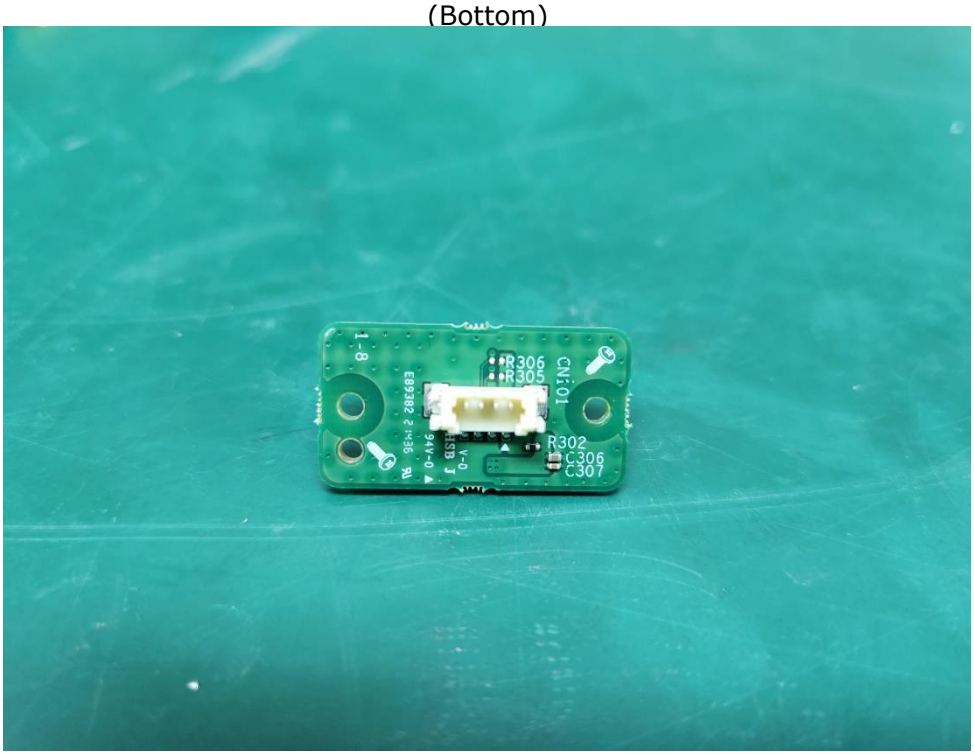
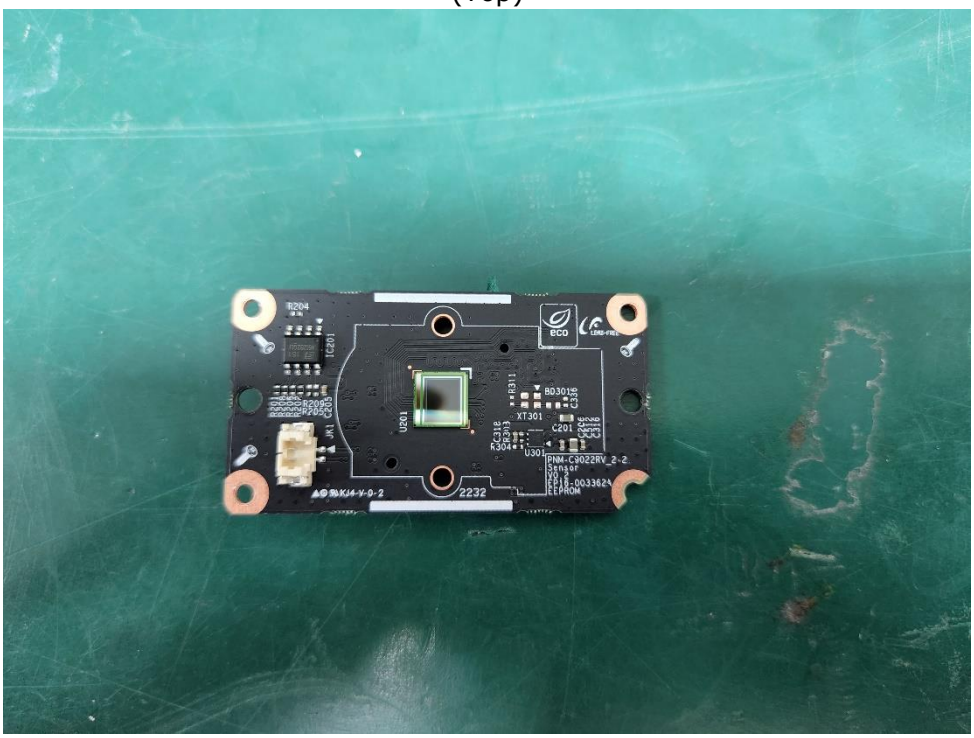


EUT Internal View – Sub Board 6

(Top)



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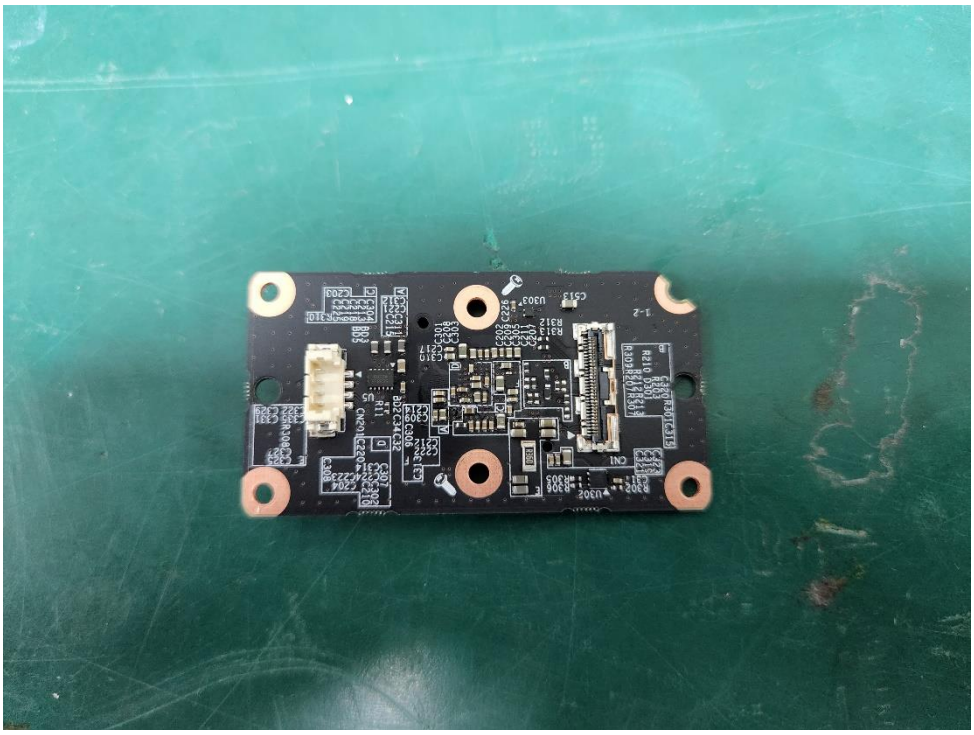
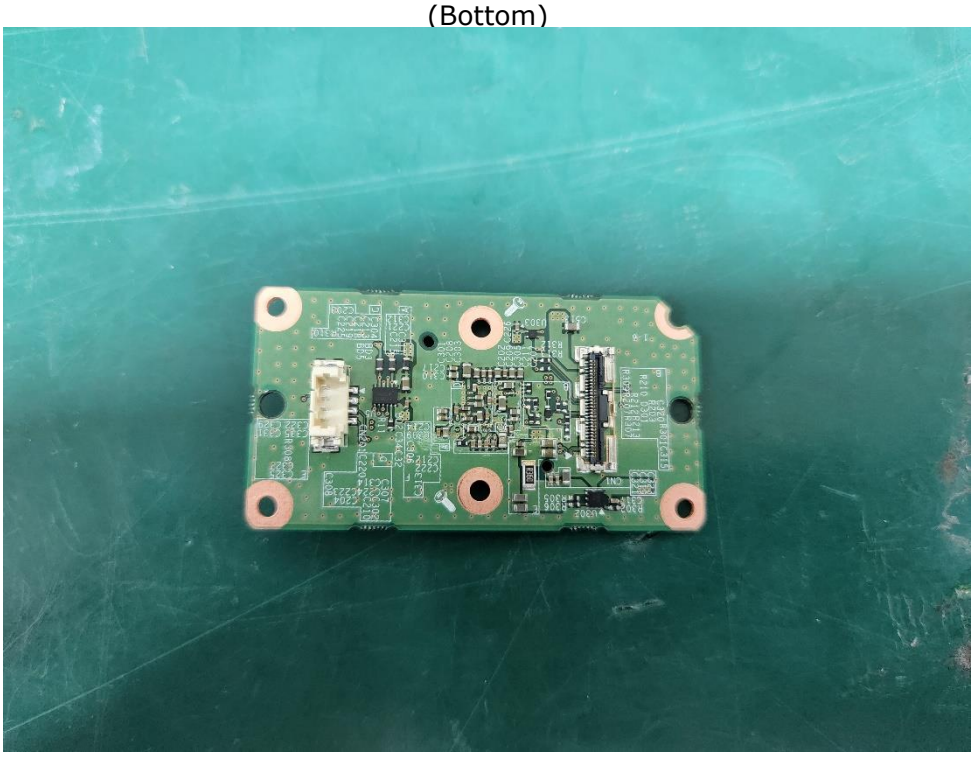


EUT Internal View – Sub Board 7

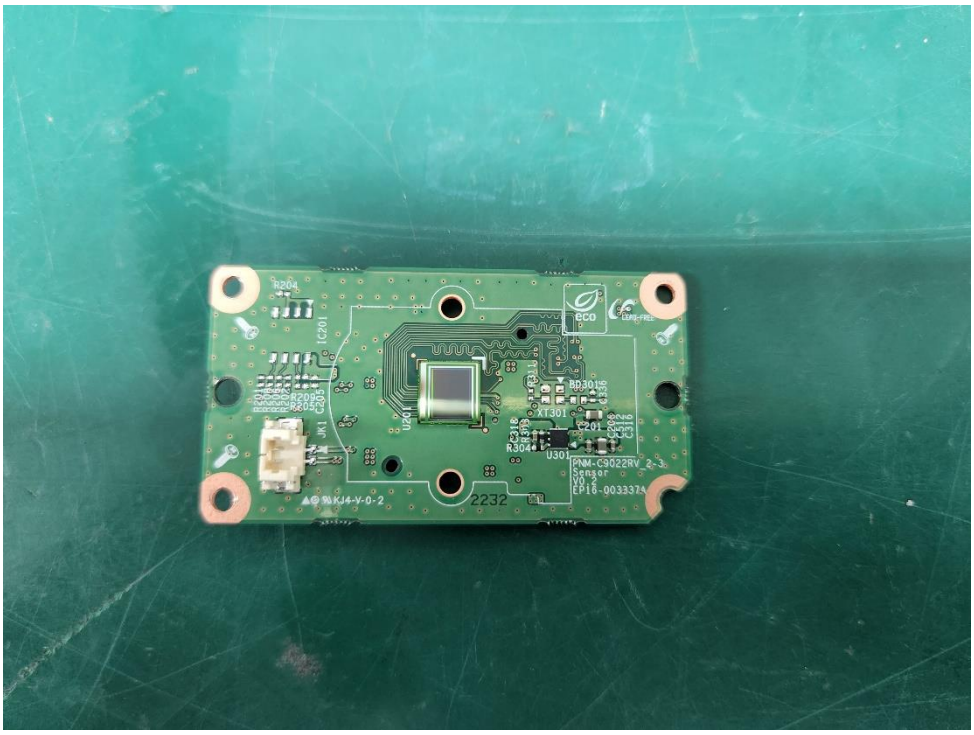
(Top)

(Bottom)



EUT Internal View – Sub Board 8

(Top)



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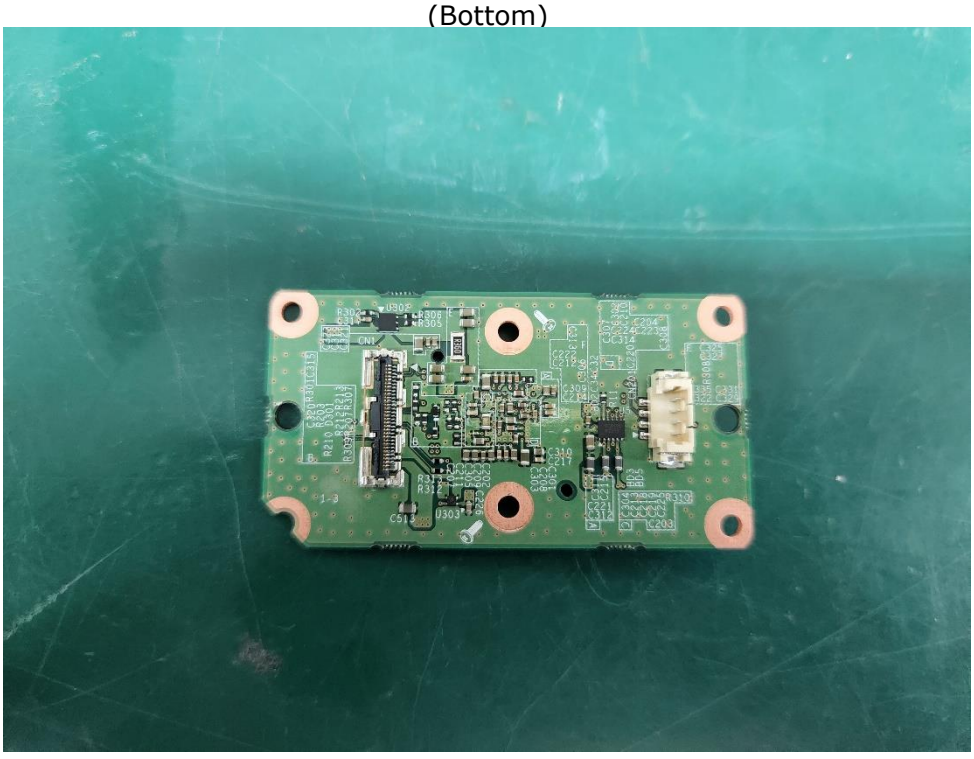
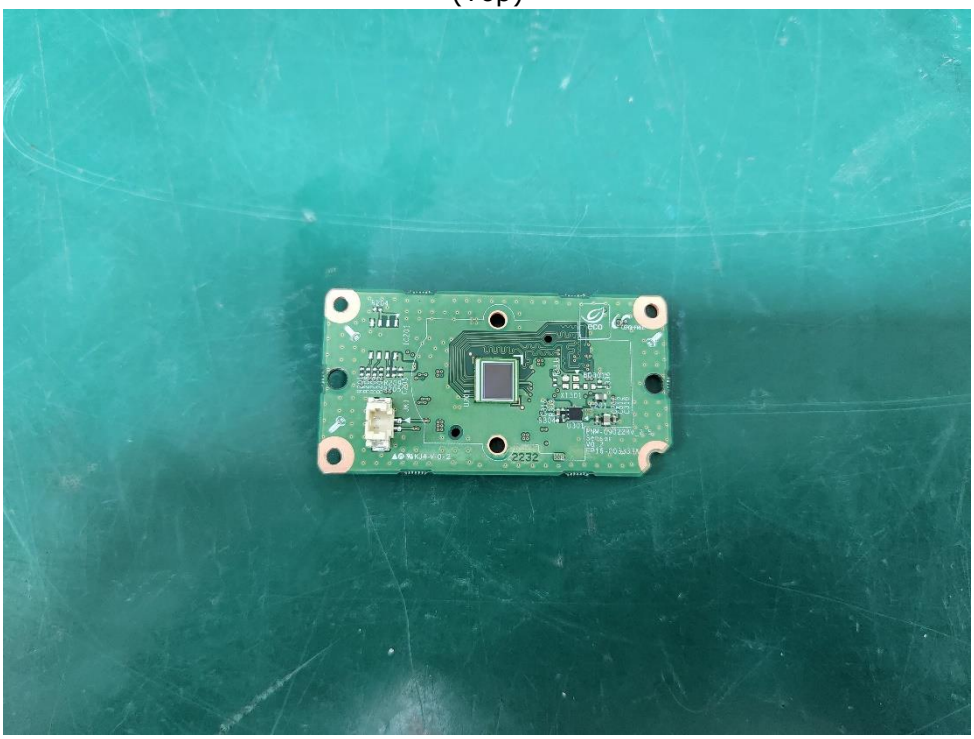


EUT Internal View – Sub Board 9

(Top)



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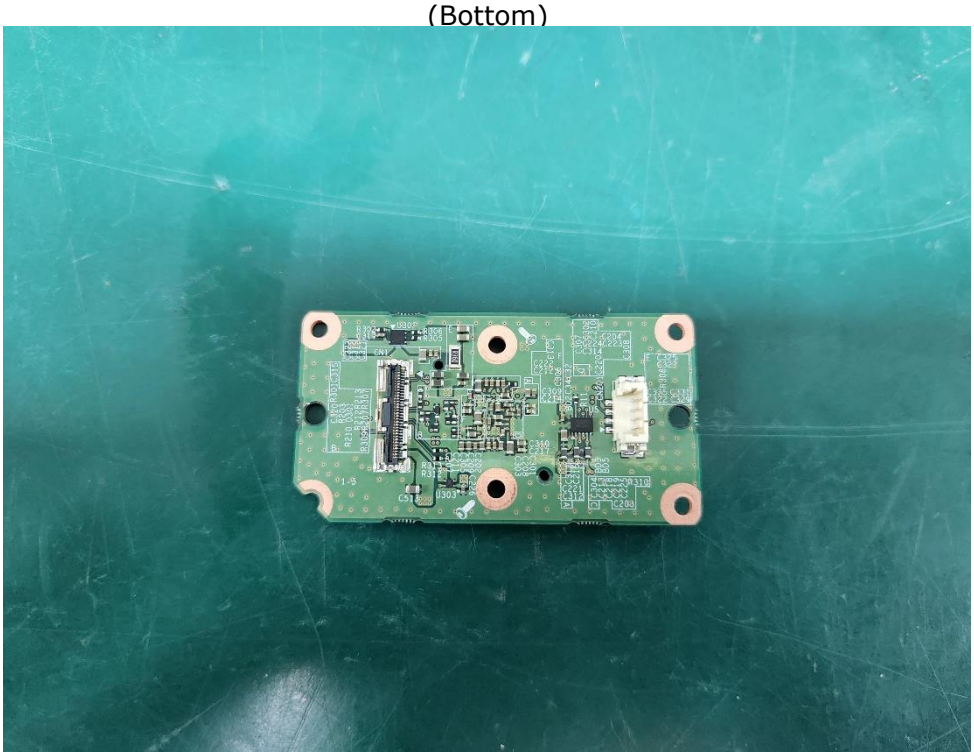
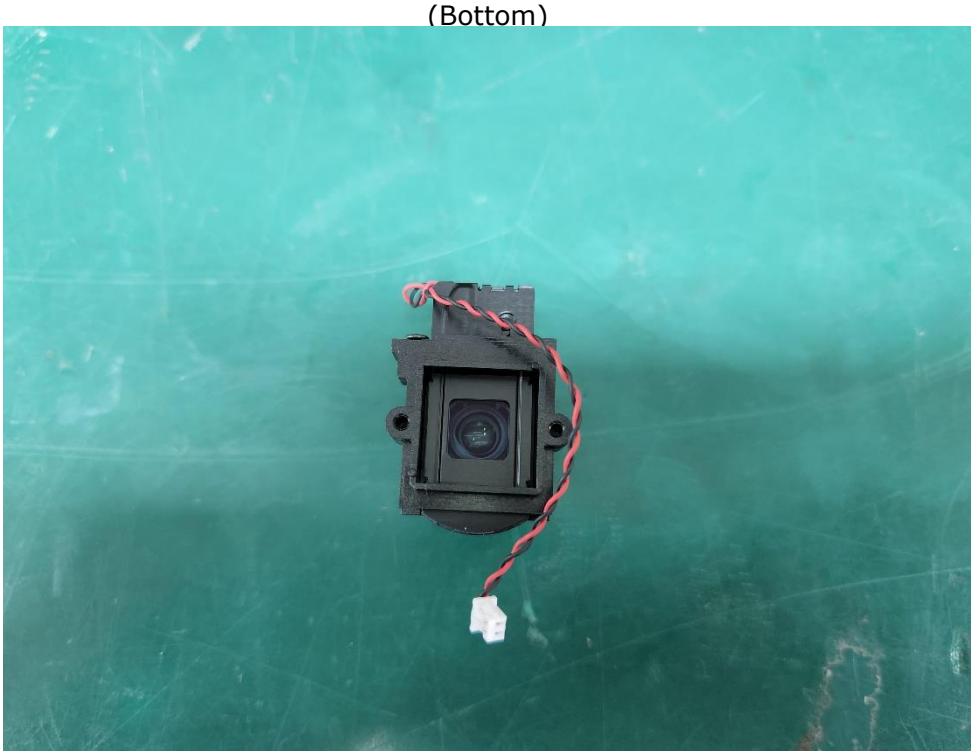


EUT Internal View – Lens 1

(Top)

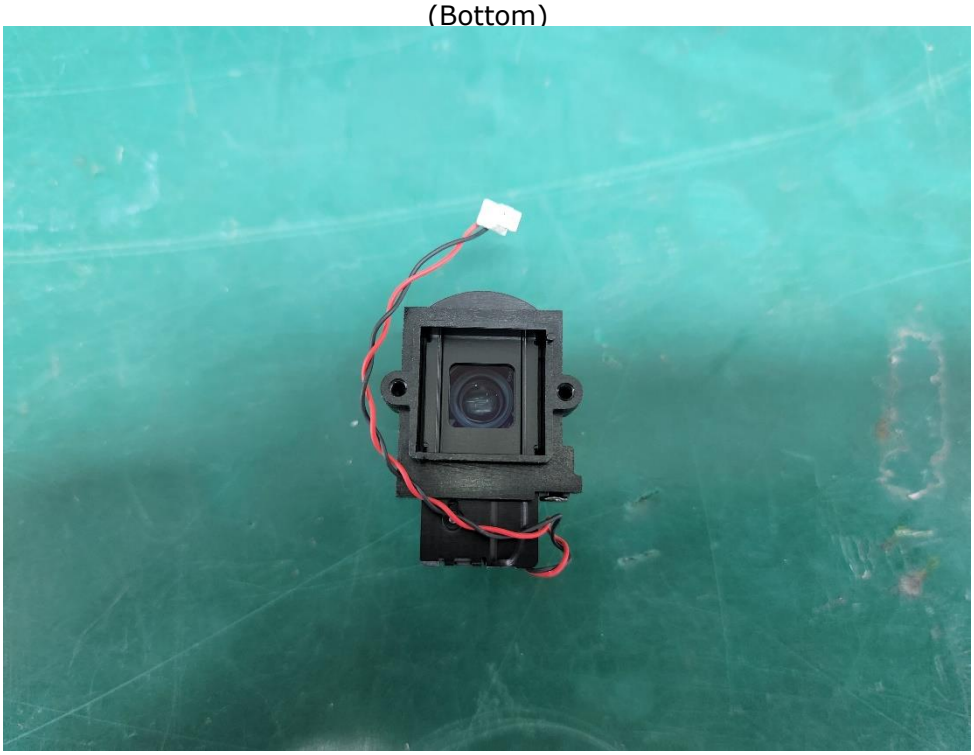
(Bottom)



EUT Internal View – Lens 2

(Top)

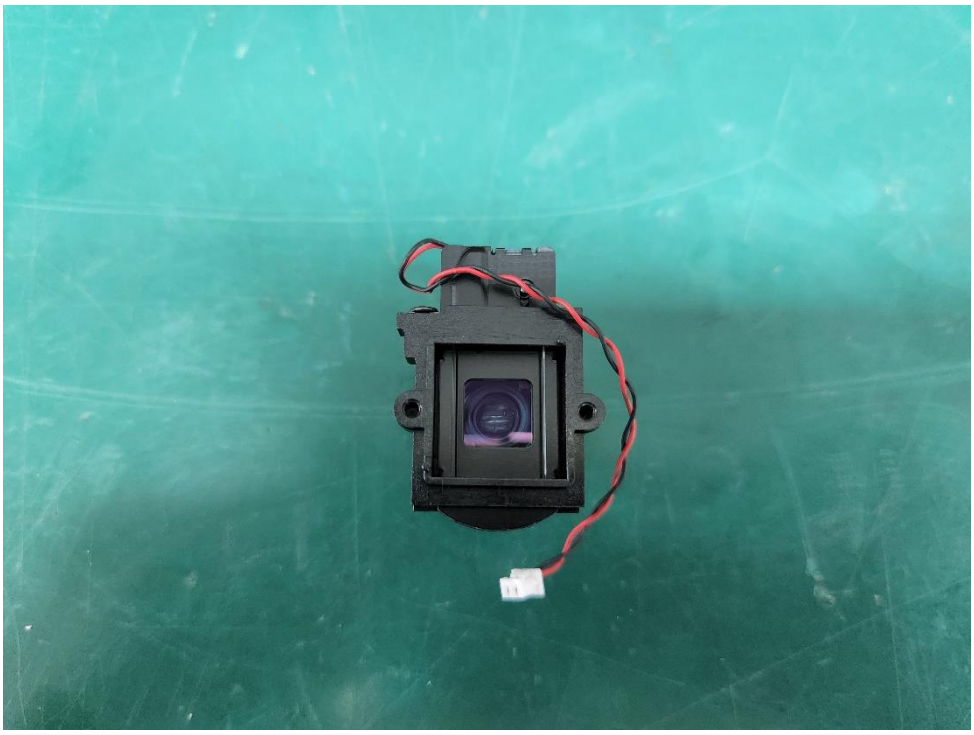
(Bottom)



EUT Internal View – Lens 3

(Top)

(Bottom)



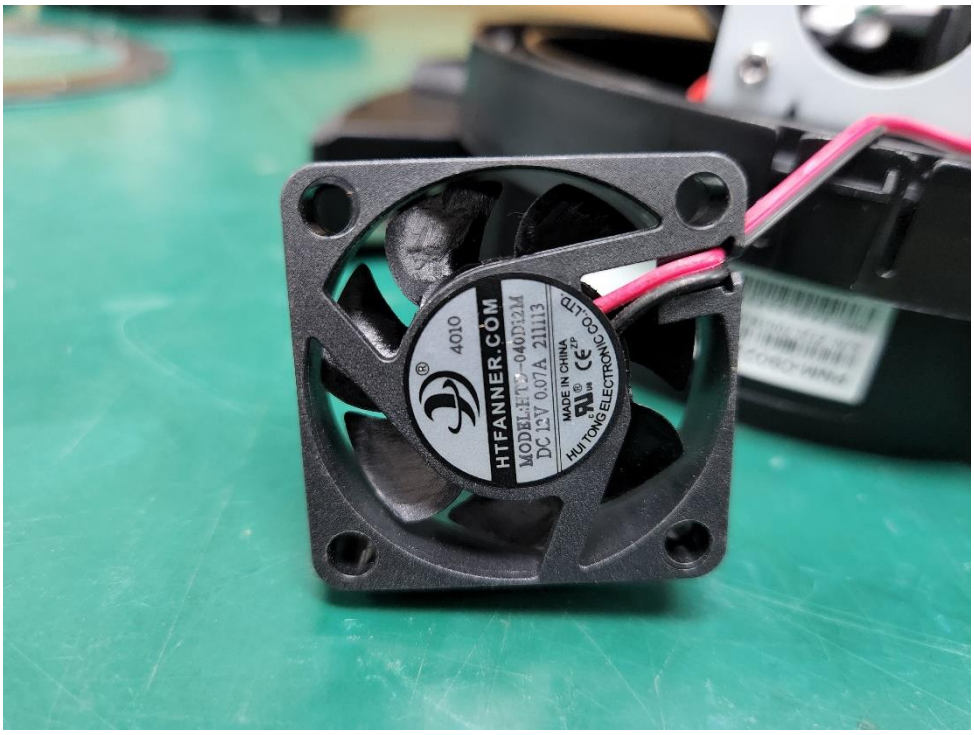
EUT Internal View – Lens 4

(Top)

(Bottom)

EUT Internal View – FAN

(Top)



(Bottom)