EMC TEST REPORT

Test Report No.	:	KES-EM-21T0246-R1
Date of Issue	:	Feb. 24, 2023
Product name	:	NETWORK THERMAL CAMERA
Model/Type No.	:	TNO-3050T
Variant Model	:	TNO-3040T
Applicant	:	Hanwha Vision Co., Ltd
Applicant Address	:	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	1. HANWHA VISION VIETNAM COMPANY LIMITED 2. D-TECH CO.,LTD.
Manufacturer Address	:	1. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam 2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)
Equipment authorization	:	**Supplier's Declaration of Conformity**
Date of Receipt	:	Mar. 22, 2021
Test date	:	Apr. 05, 2021 ~ Apr. 06, 2021
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Hyo Jin, 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
Apr. 16, 2021	KES-EM-21T0246	Issued
Feb. 24, 2023	KES-EM-21T0246-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:

Video	
Imaging Device	Uncooled micro bolometer
Resolution	320x240
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
NETD	< 60mK
Pixel Size	12 ㎛
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation
Lens	
Focal Length (Zoom Ratio)	35mm fixed focal
Max. Aperture Ratio	F1.0
Angular Field of View	H: 6.3°, V: 4.7°, D: 7.8°
Min. Object Distance	51m
Focus Control	Fixed
Operational	
Camera Title	Displayed up to 85 characters
Digital Image Stabilization	Support(built-in gyro sensor)
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, polygonal zones - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Video Rotation	Flip, Mirror, Hallway view(90˚/270˚)
Analytics	Directional detection, Motion detection, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Temperature ditection, Sound classification, Shock detection
Alarm I/O	Input 1ea / Output 2ea
Alarm Triggers	Analytics, Network disconnect, Alarm input

Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output Handover
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
Color palettes	Whitehot, Blackhot, Rainbow, Rainbow2, Sepia, Red, Iron, Custom
Network	
Ethernet	RJ-45(10/100BASE-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
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 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
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)

Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Edge Storage	Micro SD/SDHC/SDXC 1slot 256GB
Memory	1024MB RAM, 256MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-40°C ~ +60°C (-40°F ~ +140°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH
Certification	IP66, NEMA4X
Input Voltage	PoE(IEEE802.3af, Class3), 24VAC, 12VDC
Power Consumption	PoE: Max. 8.7W, typical 7.5W 12VDC: Max. 7.8W, typical 6.7W 24VAC: Max. 9.2W, typical 8.0W
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product dimensions / weight	Φ147.51x375.3mm(58.07x147.76") / 3124g(6.89 lb)

1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

☒ AC 120 V, 60 Hz ☒ PoE

1.2 Variant Model Differences

Addition of derivative models for place of sale management

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK THERMAL CAMERA	TNO-3050T	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC Adapter	DRL-246000AC	-	Dream Electronics Co., Ltd.	-
DC Adapter	FSP060-DIBAN2	-	FSP GROUP INC.	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	LG15N54	410NZGK015231	LG Electronics Co., Ltd.	-
Notebook Adapter	ADP-90WH B	84ZW19F1663	DELTA ELECTRONICS(JIANGSU) LTD.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Alarm	-	-	-	-
Button Alarm	-	-	-	-
Smartphone	A1586	-	APPLE .Inc	-
Micro SD Card	-	-	SanDisk	4 GB

1.6 External I/O Cabling

■ DC / AC Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK THERMAL CAMERA (EUT)	RJ-45	Notebook	RJ-45	3.0	U
	Audio Out	Speaker	3.5 ㎜	1.4	U
	Audio In	MIC	3.5 ㎜	1.4	U
	Alarm Out	Alarm	Alarm In	2.8	U
	Alarm In	Button Alarm	Alarm Out	2.6	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
Notebook	3.5 ㎜	Smartphone	3.5 ㎜	0.5	U

* Unshielded=U, Shielded=S

■ PoE Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
NETWORK THERMAL CAMERA (EUT)	RJ-45	PoE Adapter	RJ-45	3.0	U
	Audio Out	Speaker	3.5 ㎜	1.4	U
	Audio In	MIC	3.5 ㎜	1.4	U
	Alarm Out	Alarm	Alarm In	2.8	U
	Alarm In	Button Alarm	Alarm Out	2.6	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
Notebook	RJ-45	PoE Adapter	RJ-45	3.0	U
	3.5 ㎜	Smartphone	3.5 ㎜	0.5	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

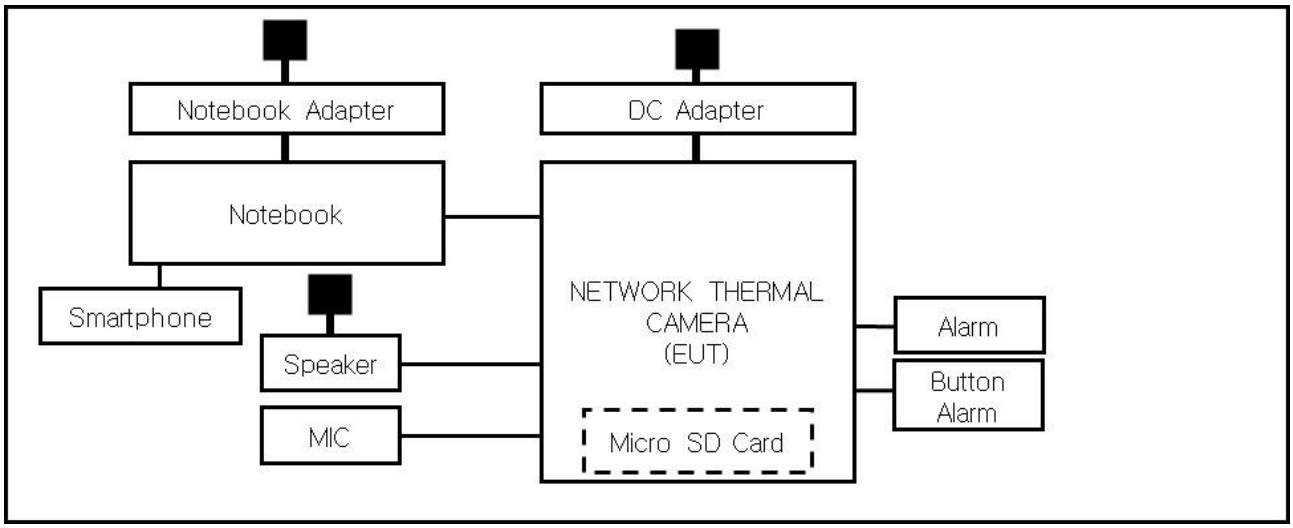
Test Mode	operating
DC Mode, AC Mode, PoE Mode	After placing the test equipment and peripheral devices as shown in the layout below, the tests were conducted while checking the 1KHz output from the smartphone, the camera video output from the notebook and verifying that they were operating normally while PING TEST.

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

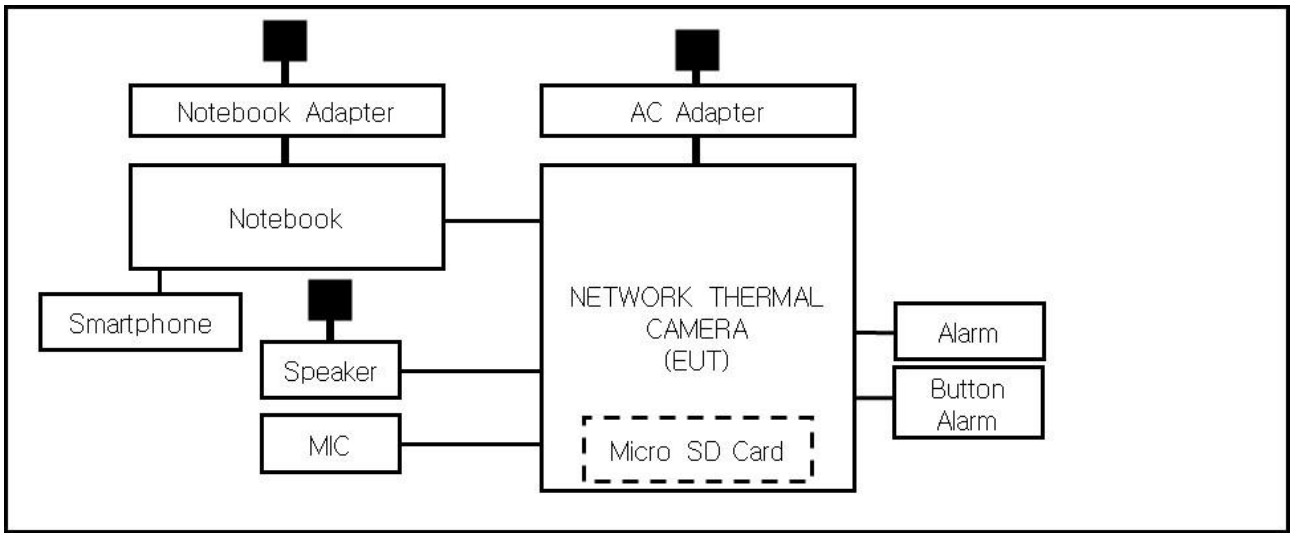
1.8 Configuration

■ AC Main
□ DC Main

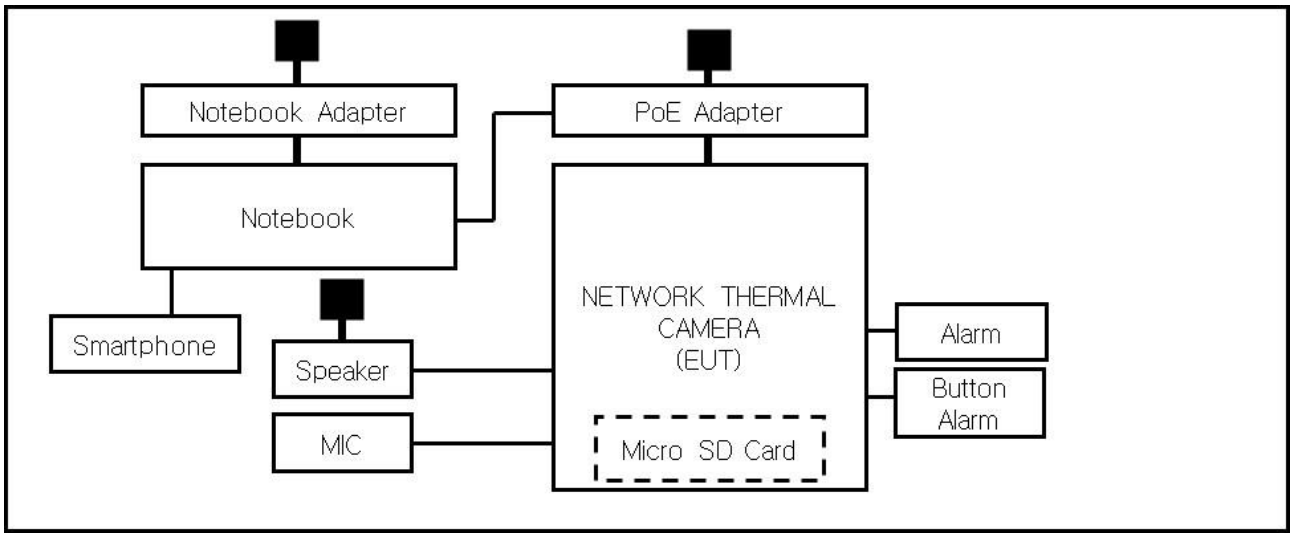
■ DC Mode



■ AC Mode



■ PoE Mode



1.9 Remarks when standards applied

The USB port and VIDEO port are excluded for testing as the Firmware update.

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:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010 ☐ Group 1 ☐ Class A ☐ Group 2 ☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015 ☐ Class A ☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013

☐ **VCCI-CISPR 32:2016**	☐ Class A	☐ Class B
☐ **AS/NZS CISPR32:2015**	☐ Class A	☐ Class B
☒ **47 CFR Part 15, Subpart B**		
☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B
☒ ANSI C63.4-2017	☒ Class A	☐ Class B
☐ **IC Regulation ICES-003 Issue 7**		
☐ CAN/CSA CISPR 32:17	☐ Class A	☐ Class B
☐ ANSI C63.4-2017	☐ Class A	☐ Class B

☐ **RE– Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

2.1 Conducted Emissions at Mains Power Ports

Test Date
Apr. 05, 2021

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	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions
Temperature: (24,1 ± 0,2) ℃
Relative Humidity: (45,4 ± 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.

2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Apr. 06, 2021

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	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions
Temperature: (23,5 ± 0,2) ℃
Relative Humidity: (44,7 ± 0,4) % 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.

2.3 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Apr. 06, 2021

Test Location
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	04, 01, 2022
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	12, 19, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021

Test Conditions
Temperature: (24,1 ± 0,3) ℃
Relative Humidity: (45,2 ± 0,3) % R.H.

Frequency Range of Measurement
1 ㎓ to 5 ㎓

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

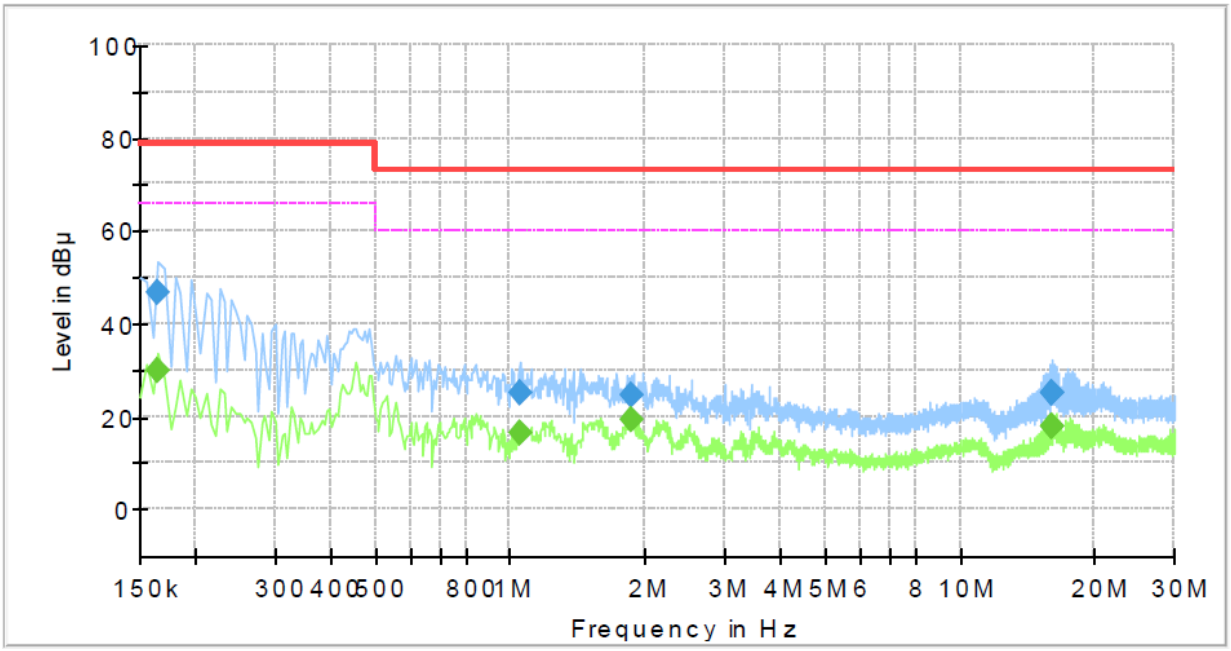
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNO-3050T
Phase:	L1
Mode:	DC
Operator Name:	KES



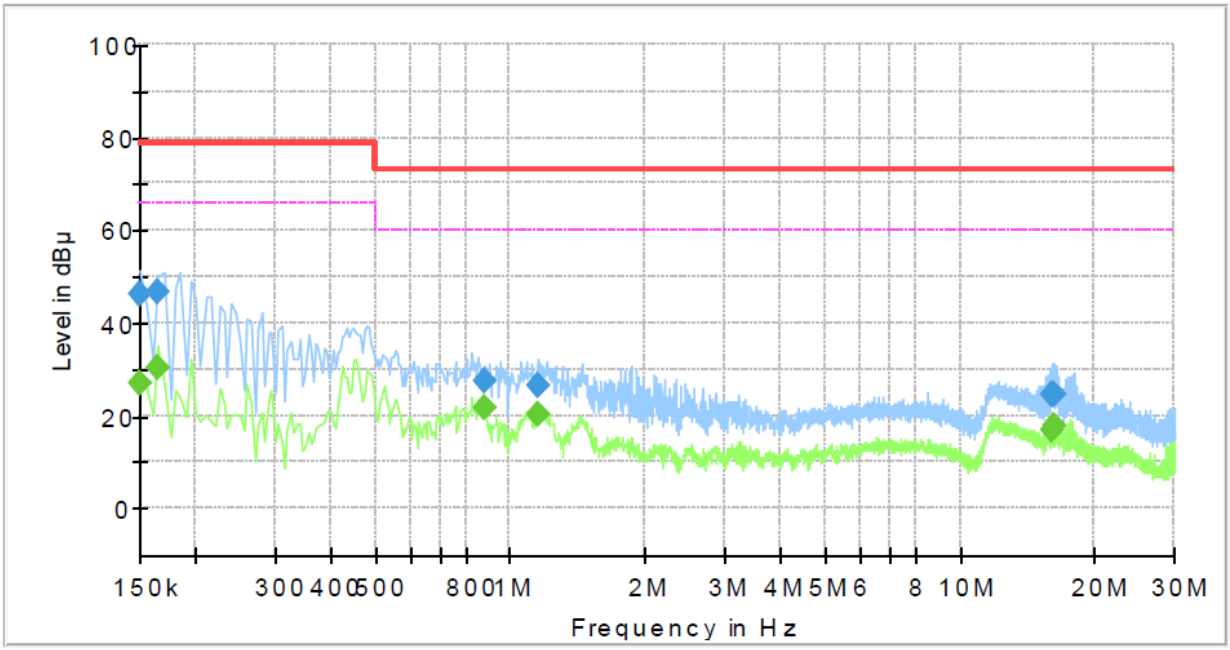
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	30.01	66.00	35.99	1000.0	9.000	L1	19.4
0.165000	46.76	---	79.00	32.24	1000.0	9.000	L1	19.4
1.050000	---	16.55	60.00	43.45	1000.0	9.000	L1	20.0
1.050000	25.30	---	73.00	47.70	1000.0	9.000	L1	20.0
1.855000	---	19.08	60.00	40.92	1000.0	9.000	L1	20.2
1.855000	24.36	---	73.00	48.64	1000.0	9.000	L1	20.2
16.010000	---	17.81	60.00	42.19	1000.0	9.000	L1	19.9
16.010000	25.07	---	73.00	47.93	1000.0	9.000	L1	19.9
16.070000	---	17.97	60.00	42.03	1000.0	9.000	L1	19.9
16.070000	25.15	---	73.00	47.85	1000.0	9.000	L1	19.9

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNO-3050T
Phase:	N
Mode:	DC
Operator Name:	KES



Final_Result

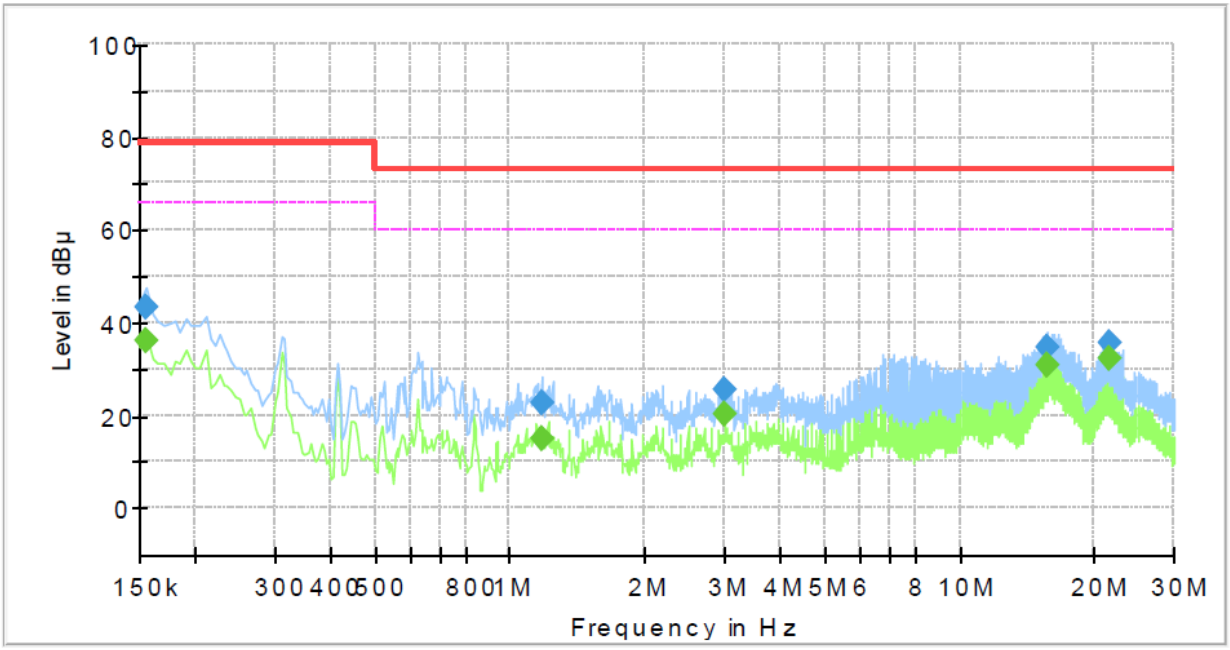
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	26.96	66.00	39.04	1000.0	9.000	N	19.4
0.150000	46.12	---	79.00	32.88	1000.0	9.000	N	19.4
0.165000	---	30.40	66.00	35.60	1000.0	9.000	N	19.4
0.165000	46.77	---	79.00	32.23	1000.0	9.000	N	19.4
0.880000	---	21.60	60.00	38.40	1000.0	9.000	N	20.0
0.880000	27.43	---	73.00	45.57	1000.0	9.000	N	20.0
1.150000	---	20.43	60.00	39.57	1000.0	9.000	N	20.0
1.150000	26.31	---	73.00	46.69	1000.0	9.000	N	20.0
15.965000	---	17.12	60.00	42.88	1000.0	9.000	N	19.9
15.965000	24.35	---	73.00	48.65	1000.0	9.000	N	19.9
16.155000	---	17.63	60.00	42.37	1000.0	9.000	N	19.9
16.155000	24.60	---	73.00	48.40	1000.0	9.000	N	19.9

■ AC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNO-3050T
Phase:	L1
Mode:	AC
Operator Name:	KES



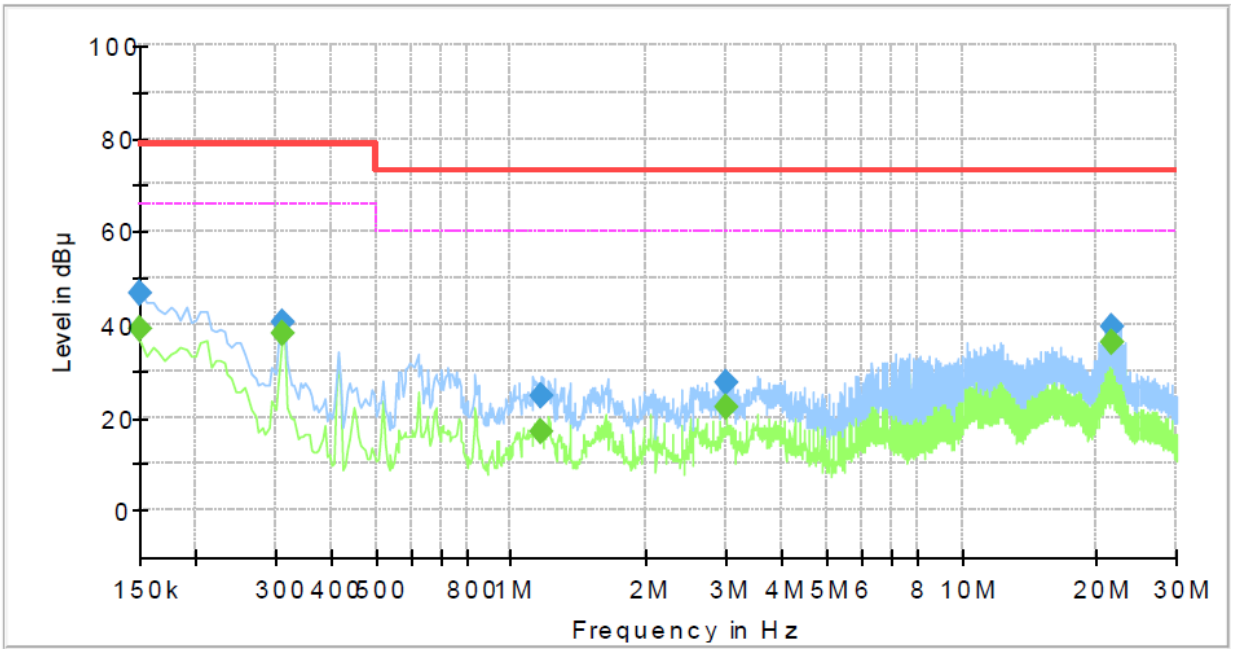
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	36.26	66.00	29.74	1000.0	9.000	L1	19.4
0.155000	43.43	---	79.00	35.57	1000.0	9.000	L1	19.4
1.175000	---	15.16	60.00	44.84	1000.0	9.000	L1	20.0
1.175000	22.57	---	73.00	50.43	1000.0	9.000	L1	20.0
3.010000	---	20.18	60.00	39.82	1000.0	9.000	L1	20.0
3.010000	25.51	---	73.00	47.49	1000.0	9.000	L1	20.0
15.670000	---	30.74	60.00	29.26	1000.0	9.000	L1	19.9
15.670000	34.90	---	73.00	38.10	1000.0	9.000	L1	19.9
21.660000	---	32.15	60.00	27.85	1000.0	9.000	L1	20.2
21.660000	35.58	---	73.00	37.42	1000.0	9.000	L1	20.2

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	TNO-3050T
Phase:	N
Mode:	AC
Operator Name:	KES



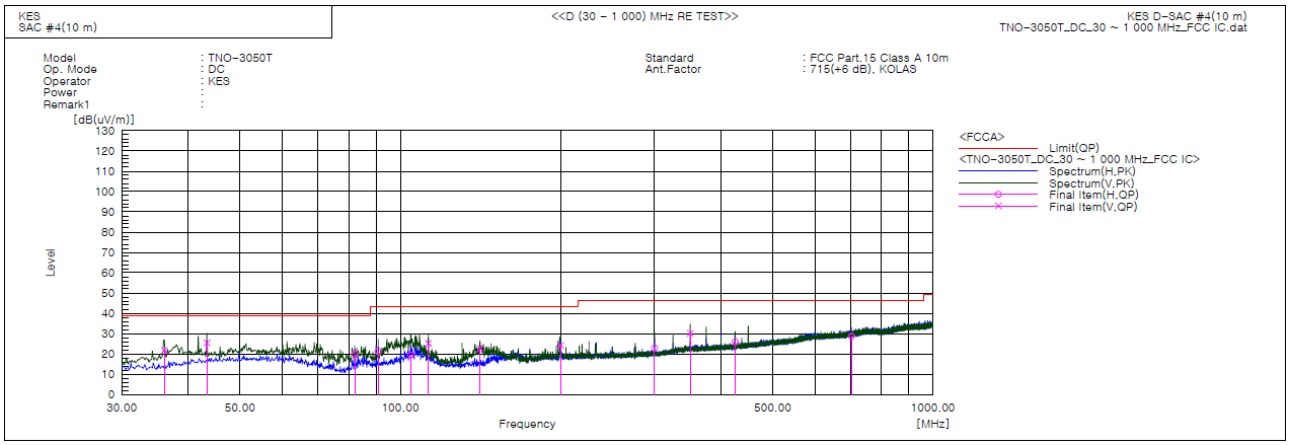
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	39.07	66.00	26.93	1000.0	9.000	N	19.4
0.150000	46.65	---	79.00	32.35	1000.0	9.000	N	19.4
0.310000	---	38.13	66.00	27.87	1000.0	9.000	N	19.5
0.310000	40.26	---	79.00	38.74	1000.0	9.000	N	19.5
1.170000	---	17.10	60.00	42.90	1000.0	9.000	N	20.0
1.170000	24.36	---	73.00	48.64	1000.0	9.000	N	20.0
3.010000	---	22.02	60.00	37.98	1000.0	9.000	N	20.0
3.010000	27.31	---	73.00	45.69	1000.0	9.000	N	20.0
21.660000	---	35.94	60.00	24.06	1000.0	9.000	N	20.2
21.660000	39.26	---	73.00	33.74	1000.0	9.000	N	20.2

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

Radiated Electric Field Emissions(Below 1 ㎓)

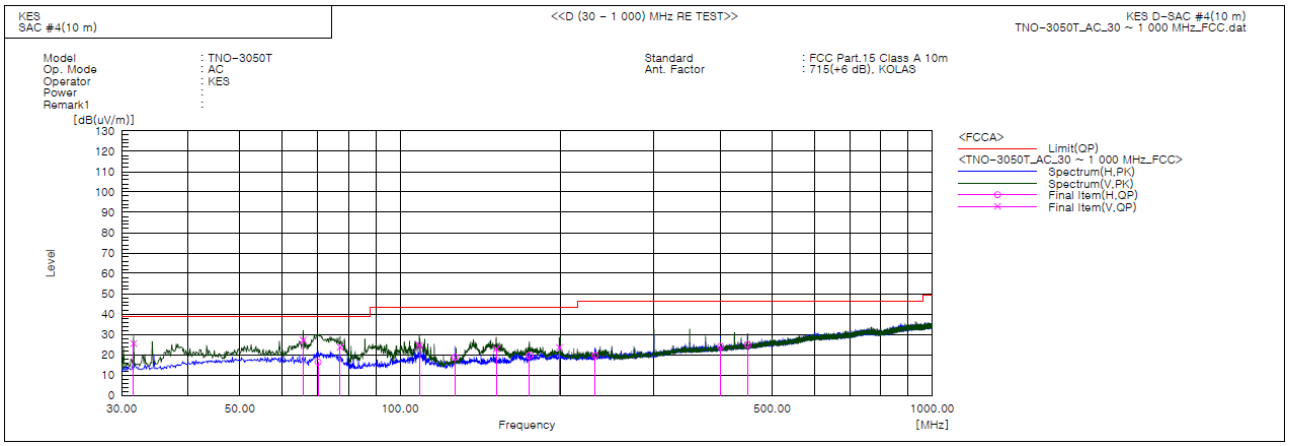
■ DC Mode



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	36.083	V	46.5	-24.7	21.8	39.0	17.2	114.0	344.0	
2	43.357	V	47.2	-21.7	25.5	39.0	13.5	151.0	122.0	
3	82.158	H	47.2	-27.3	19.9	39.0	19.1	384.0	300.0	
4	90.881	H	45.3	-24.0	21.3	43.5	22.2	351.0	106.0	
5	104.683	H	41.8	-22.4	19.4	43.5	24.1	355.0	350.0	
6	112.936	V	47.7	-22.5	25.2	43.5	18.3	135.0	285.0	
7	141.194	V	48.0	-25.3	22.7	43.5	20.8	154.0	243.0	
8	199.889	V	45.0	-20.8	24.2	43.5	19.3	145.0	235.0	
9	300.054	H	40.8	-17.9	22.9	46.5	23.6	356.0	309.0	
10	349.994	V	45.5	-15.3	30.2	46.5	16.3	135.0	187.0	
11	425.056	H	39.6	-13.7	25.9	46.5	20.6	367.0	220.0	
12	702.832	H	35.8	-7.2	28.6	46.5	17.9	351.0	42.0	

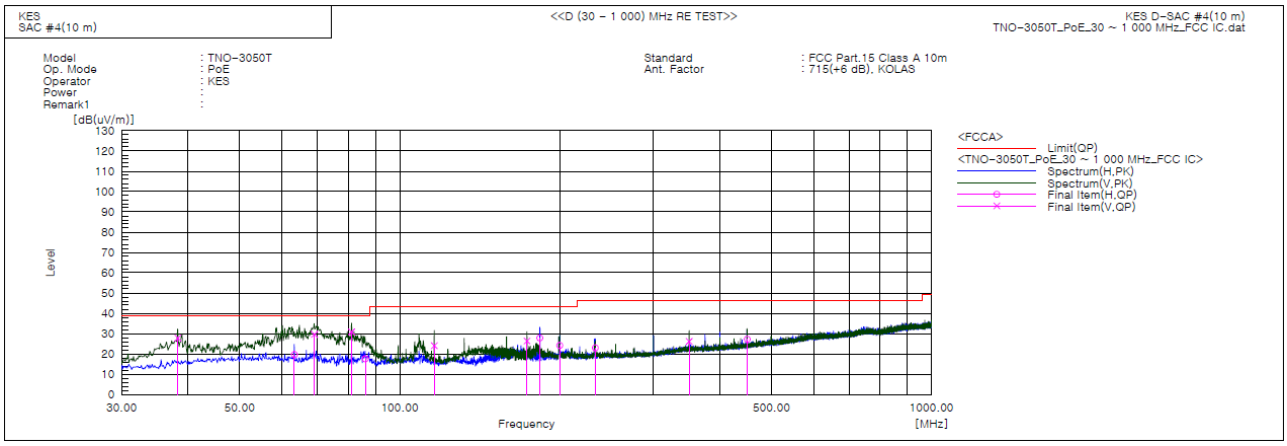
■ AC Mode



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	31.593	V	50.7	-25.2	25.5	39.0	13.5	134.0	265.0	
2	65.783	V	50.7	-23.5	27.2	39.0	11.8	151.0	73.0	
3	70.156	H	41.3	-24.9	16.4	39.0	22.6	351.0	215.0	
4	77.191	V	51.1	-27.4	23.7	39.0	15.3	142.0	30.0	
5	108.732	V	47.0	-22.4	24.6	43.5	18.9	131.0	240.0	
6	126.773	H	43.8	-25.0	18.8	43.5	24.7	351.0	224.0	
7	151.633	V	47.8	-25.0	22.8	43.5	20.7	141.0	259.0	
8	175.013	H	43.4	-23.8	19.6	43.5	23.9	357.0	15.0	
9	199.173	V	44.4	-20.8	23.6	43.5	19.9	126.0	232.0	
10	232.392	H	39.4	-19.7	19.7	46.5	26.8	389.0	283.0	
11	400.093	H	38.5	-14.3	24.2	46.5	22.3	391.0	68.0	
12	450.045	H	38.0	-13.1	24.9	46.5	21.6	361.0	147.0	

■ PoE Mode



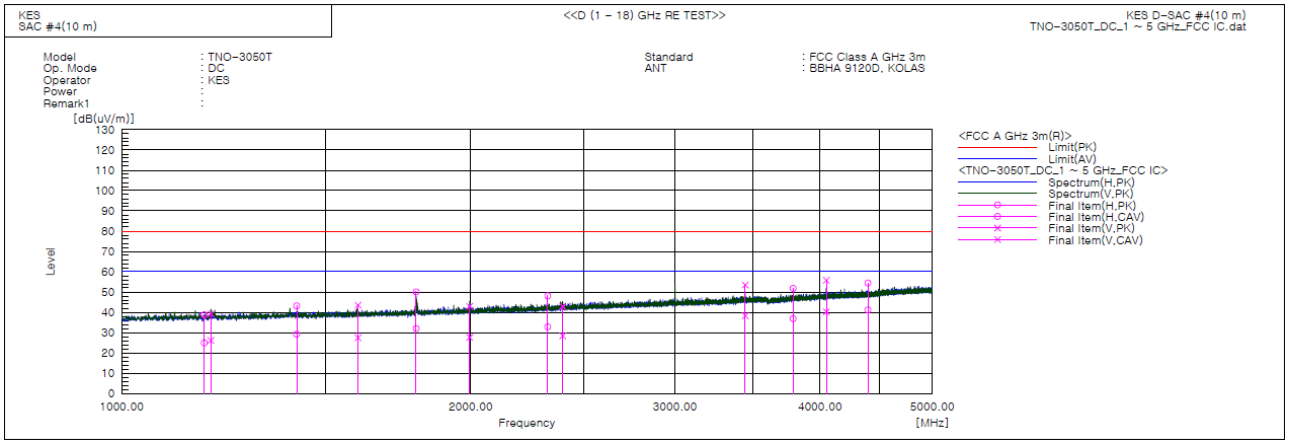
Final Result

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	38.271	V	51.5	-23.6	27.9	39.0	11.1	141.0	66.0	
2	63.373	H	42.5	-22.8	19.7	39.0	19.3	351.0	123.0	
3	69.073	V	54.2	-24.5	29.7	39.0	9.3	122.0	115.0	
4	81.175	V	58.4	-27.5	30.9	39.0	8.1	141.0	240.0	
5	86.155	H	43.2	-25.6	17.6	39.0	21.4	353.0	134.0	
6	116.093	V	47.3	-23.2	24.1	43.5	19.4	135.0	293.0	
7	173.451	V	50.3	-23.9	26.4	43.5	17.1	112.0	293.0	
8	183.384	H	50.9	-23.0	27.9	43.5	15.6	344.0	119.0	
9	199.881	H	45.0	-20.8	24.2	43.5	19.3	331.0	69.0	
10	233.131	H	42.7	-19.7	23.0	46.5	23.5	383.0	88.0	
11	349.956	V	41.5	-15.3	26.2	46.5	20.3	116.0	182.0	
12	450.045	H	40.3	-13.1	27.2	46.5	19.3	395.0	157.0	

♦ Calculation – SAC #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

Radiated Electric Field Emissions(Above 1 ㎓)

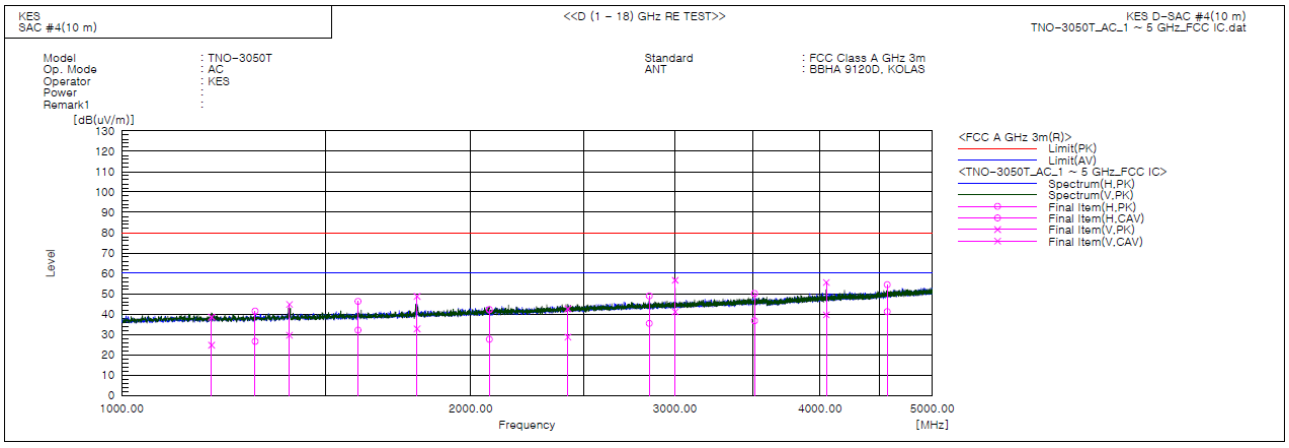
■ DC Mode



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	1178.080	H	43.2	29.3	-4.4	38.8	24.9	80.0	60.0	41.2	35.1	100.0	46.0	
2	1193.521	V	43.6	30.5	-4.3	39.3	26.2	80.0	60.0	40.7	33.8	114.0	170.0	
3	1415.314	H	46.1	32.1	-2.9	43.2	29.2	80.0	60.0	36.8	30.8	391.0	144.0	
4	1598.512	V	45.6	29.5	-2.0	43.6	27.5	80.0	60.0	36.4	32.5	112.0	178.0	
5	1794.511	H	51.3	33.2	-1.2	50.1	32.0	80.0	60.0	29.9	28.0	378.0	178.0	
6	1995.525	V	43.1	27.9	-0.2	42.9	27.7	80.0	60.0	37.1	32.3	112.0	205.0	
7	2329.415	H	46.6	31.3	1.5	48.1	32.8	80.0	60.0	31.9	27.2	361.0	310.0	
8	2400.111	V	41.1	26.6	1.8	42.9	28.4	80.0	60.0	37.1	31.6	125.0	258.0	
9	3448.515	V	47.8	32.6	5.7	53.5	38.3	80.0	60.0	26.5	21.7	116.0	205.0	
10	3792.190	H	44.4	29.5	7.4	51.8	36.9	80.0	60.0	28.2	23.1	391.0	29.0	
11	4050.231	V	47.1	31.6	8.7	55.8	40.3	80.0	60.0	24.2	19.7	151.0	251.0	
12	4399.500	H	44.7	31.5	9.7	54.4	41.2	80.0	60.0	25.6	18.8	100.0	205.0	

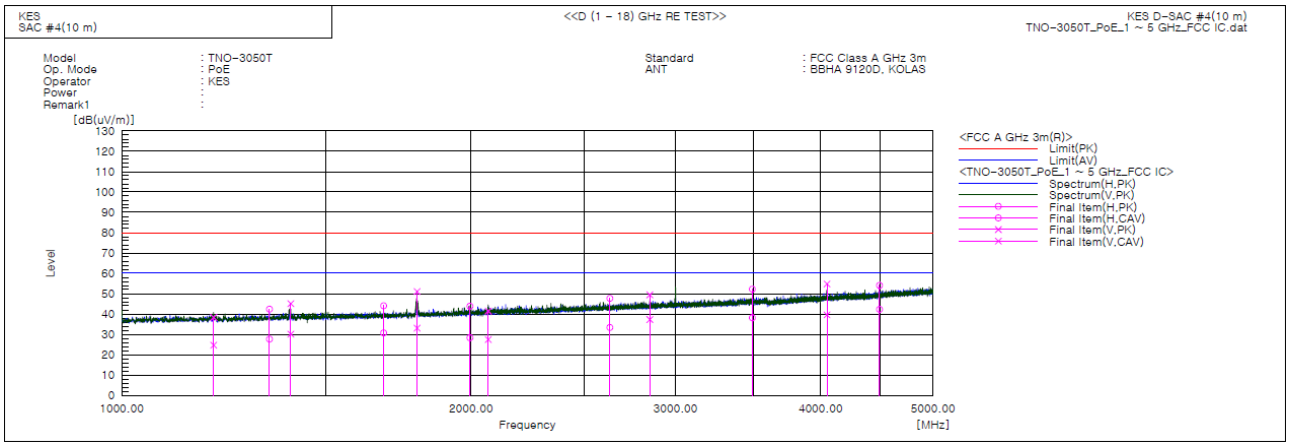
■ AC Mode



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle	Remark
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]	
1	1195.025	V	42.7	28.9	-4.2	38.5	24.7	80.0	60.0	41.5	35.3	112.0	163.0	
2	1303.512	H	45.1	30.2	-3.6	41.5	26.6	80.0	60.0	38.5	33.4	100.0	30.0	
3	1395.210	V	47.8	32.6	-3.0	44.8	29.6	80.0	60.0	35.2	30.4	141.0	289.0	
4	1598.531	H	48.2	34.1	-2.0	46.2	32.1	80.0	60.0	33.8	27.9	381.0	42.0	
5	1797.524	V	49.8	33.8	-1.1	48.7	32.7	80.0	60.0	31.3	27.3	116.0	179.0	
6	2075.121	H	42.1	27.5	0.1	42.2	27.6	80.0	60.0	37.8	32.4	380.0	114.0	
7	2425.141	V	40.6	26.7	2.0	42.6	28.7	80.0	60.0	37.4	31.3	155.0	201.0	
8	2850.115	H	45.1	31.6	3.8	48.9	35.4	80.0	60.0	31.1	24.6	368.0	153.0	
9	3000.515	V	52.1	36.6	4.5	56.6	41.1	80.0	60.0	23.4	18.9	136.0	171.0	
10	3512.531	H	44.2	30.8	5.9	50.1	36.7	80.0	60.0	29.9	23.3	398.0	84.0	
11	4050.215	V	46.8	30.9	8.7	55.5	39.6	80.0	60.0	24.5	20.4	156.0	243.0	
12	4572.141	H	43.7	30.5	10.7	54.4	41.2	80.0	60.0	25.6	18.8	367.0	200.0	

■ 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	1199.515	V	42.5	28.9	-4.2	38.3	24.7	80.0	60.0	41.7	35.3	112.0	224.0	
2	1340.541	H	45.8	31.1	-3.4	42.4	27.7	80.0	60.0	37.6	32.3	351.0	122.0	
3	1398.125	V	48.1	33.2	-3.0	45.1	30.2	80.0	60.0	34.9	29.8	117.0	166.0	
4	1681.108	H	45.6	32.3	-1.6	44.0	30.7	80.0	60.0	36.0	29.3	367.0	185.0	
5	1796.525	V	52.2	34.2	-1.1	51.1	33.1	80.0	60.0	28.9	26.9	157.0	204.0	
6	1995.311	H	44.1	28.5	-0.2	43.9	28.3	80.0	60.0	36.1	31.7	366.0	173.0	
7	2068.541	V	41.4	27.4	0.1	41.5	27.5	80.0	60.0	38.5	32.5	103.0	189.0	
8	2633.525	H	44.8	30.5	2.9	47.7	33.4	80.0	60.0	32.3	26.6	361.0	286.0	
9	2850.051	V	45.7	33.5	3.8	49.5	37.3	80.0	60.0	30.5	22.7	135.0	236.0	
10	3493.315	H	46.4	32.4	5.8	52.2	38.2	80.0	60.0	27.8	21.8	351.0	283.0	
11	4050.331	V	46.1	30.9	8.7	54.8	39.6	80.0	60.0	25.2	20.4	151.0	243.0	
12	4496.521	H	43.9	32.1	10.2	54.1	42.3	80.0	60.0	25.9	17.7	371.0	122.0	

♦ 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)]

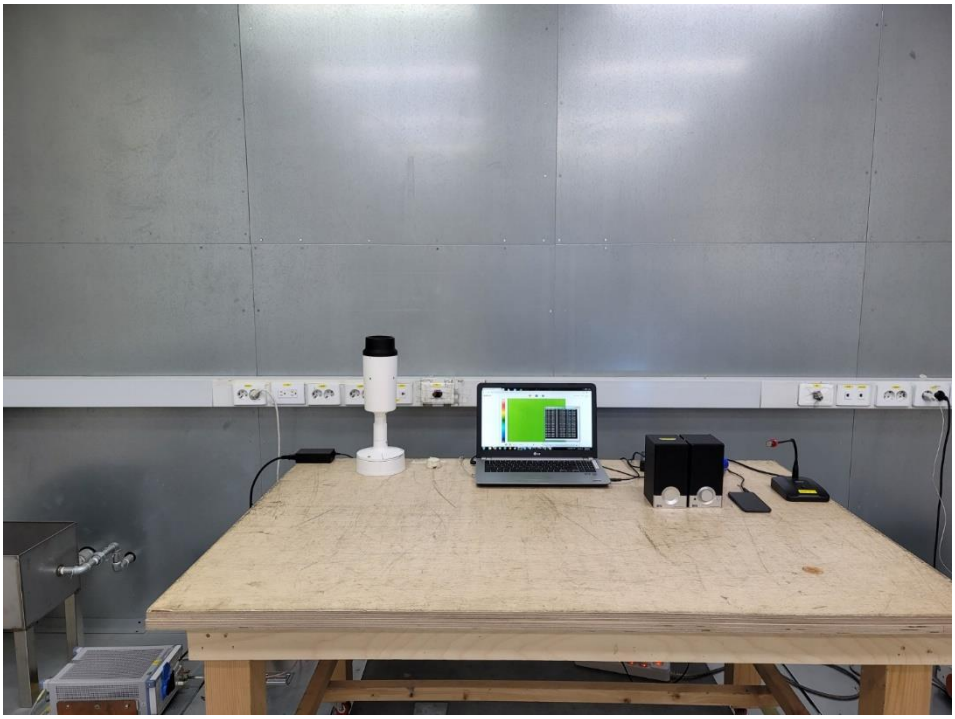
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

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

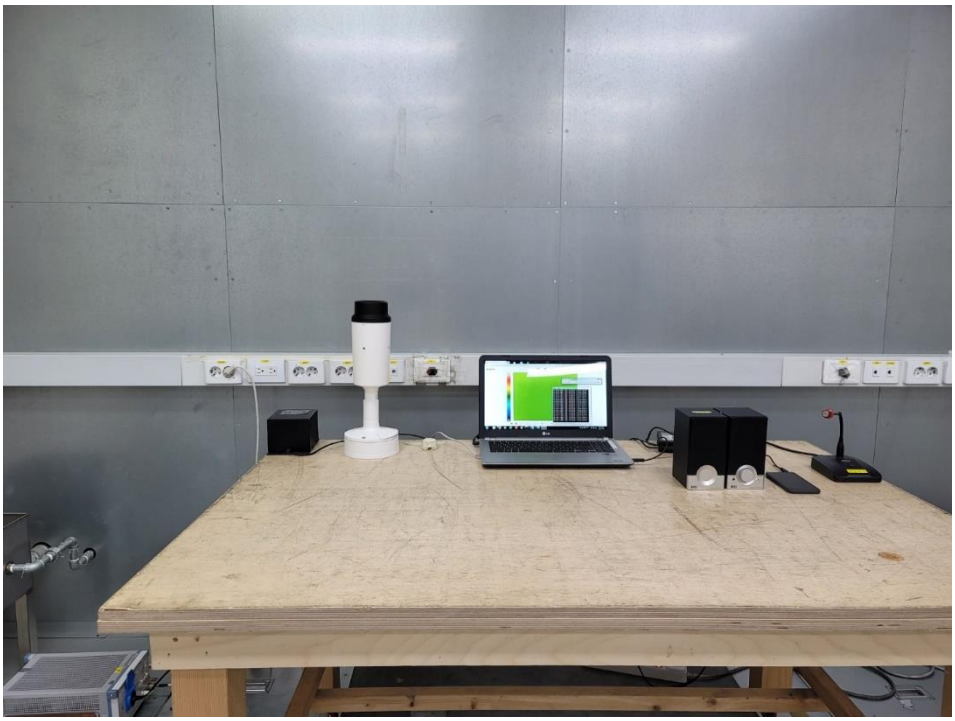
Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode

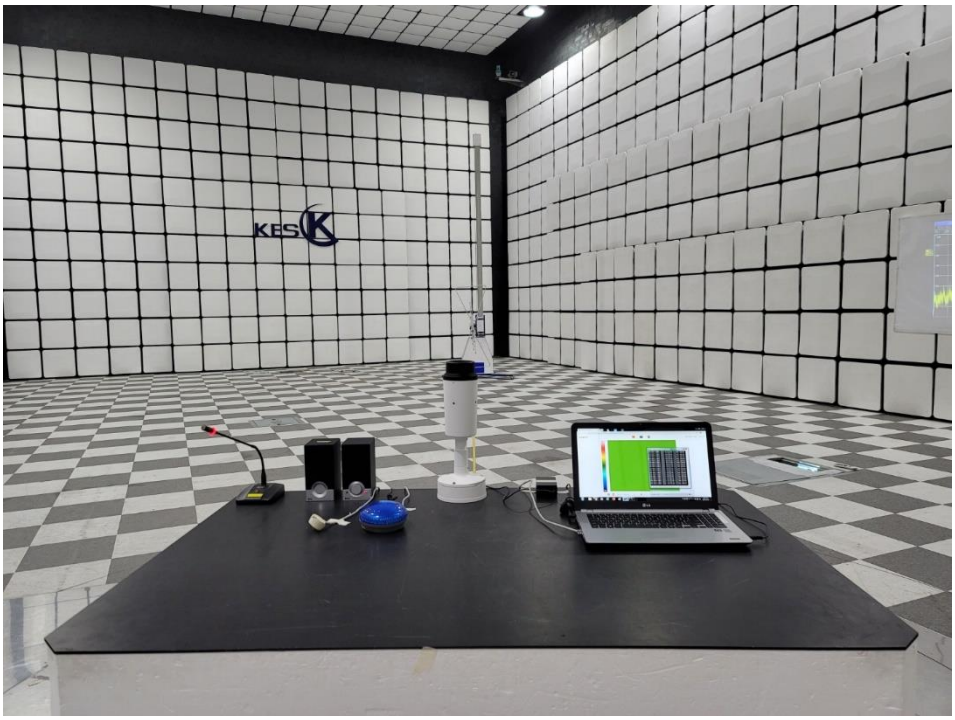


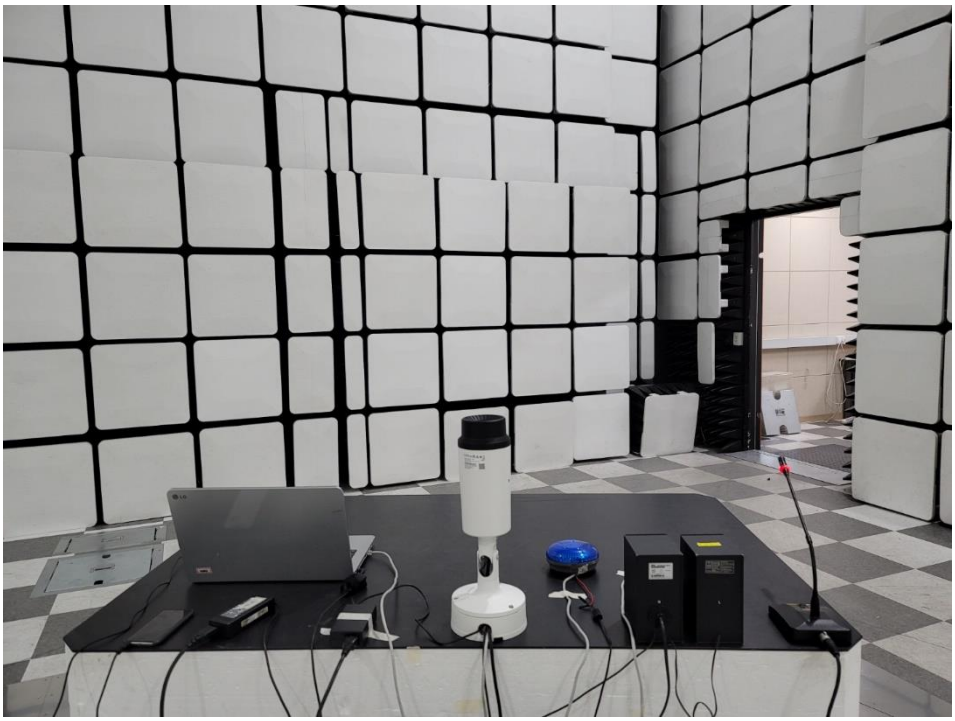
■ AC Mode



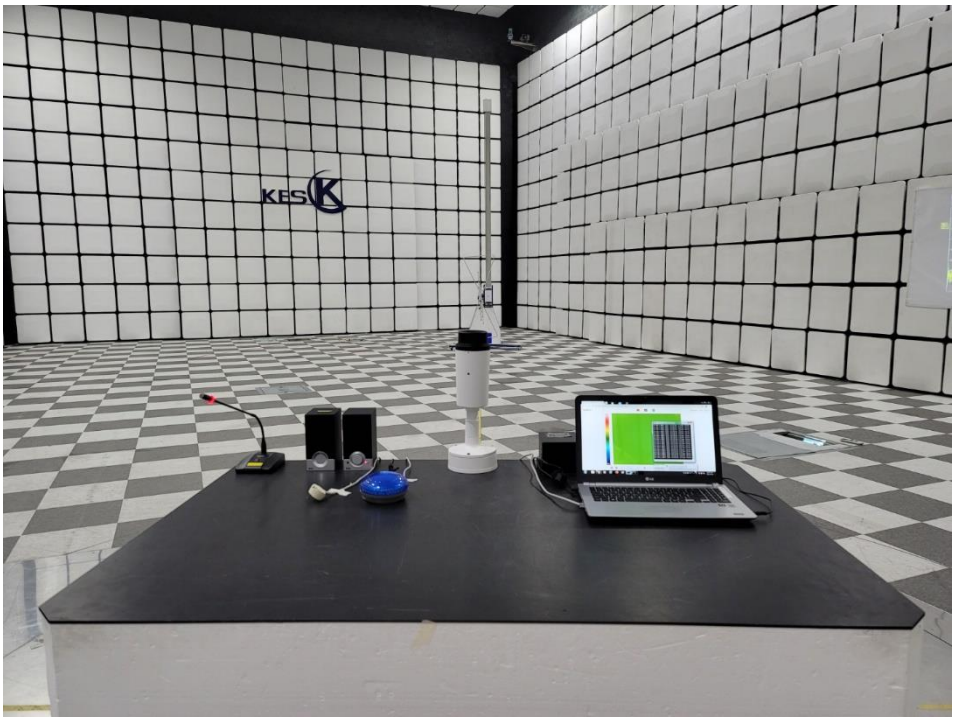
Radiated Electric Field Emissions(Below 1 ㎓)

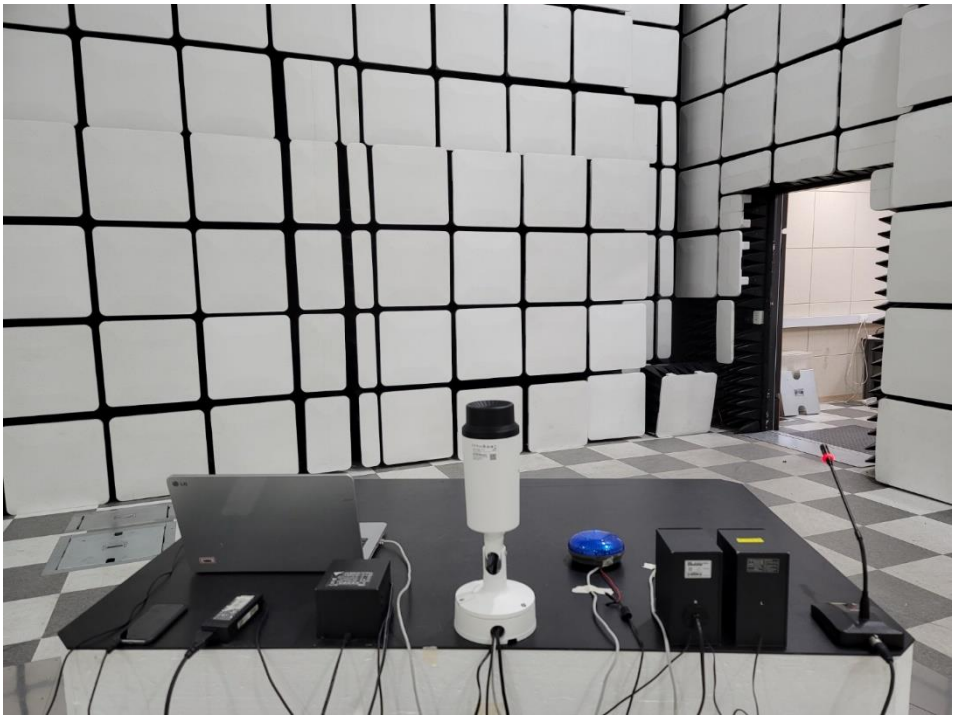
■ DC Mode



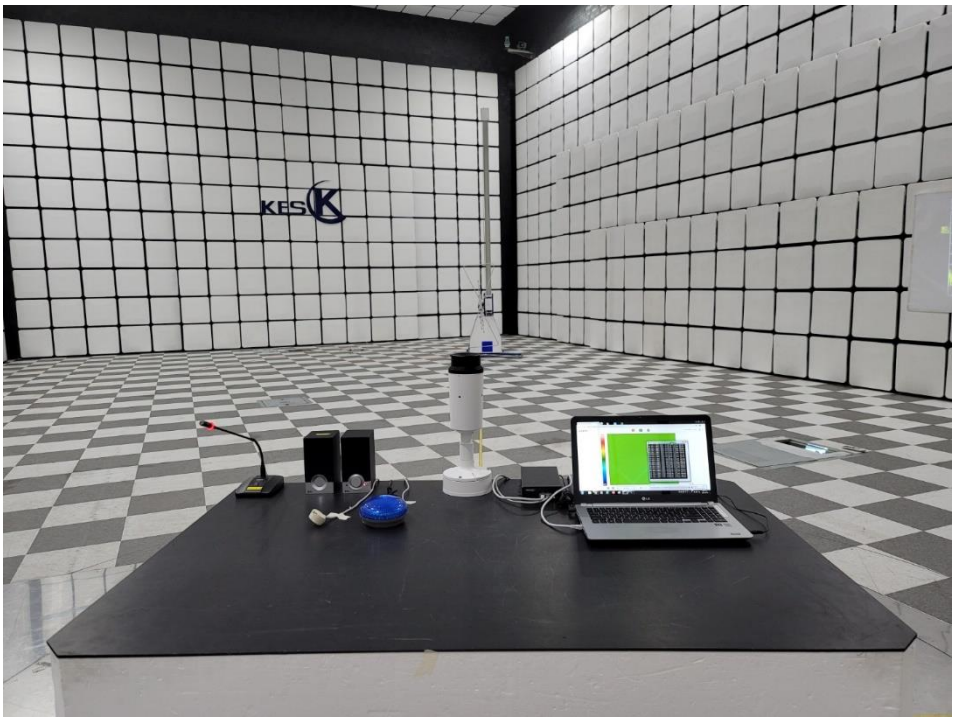


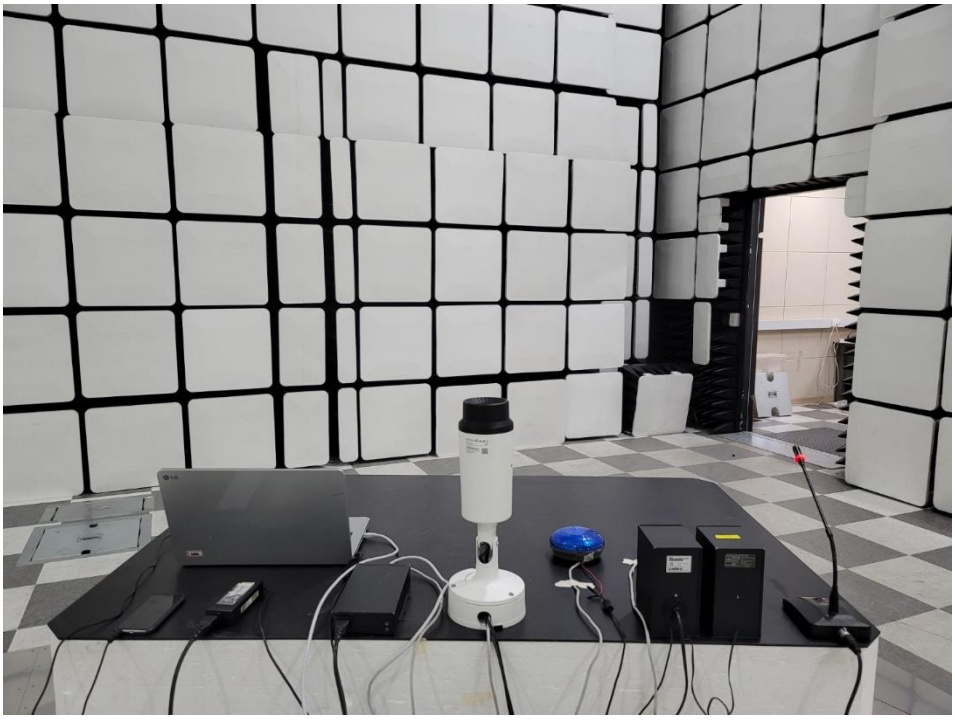
■ AC Mode





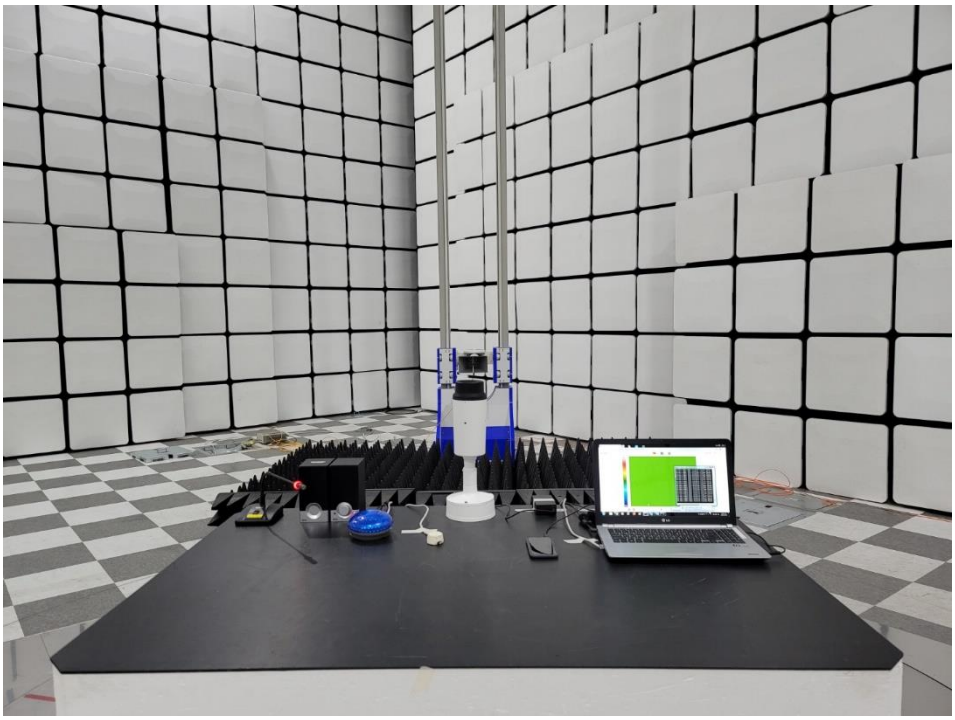
■ PoE Mode

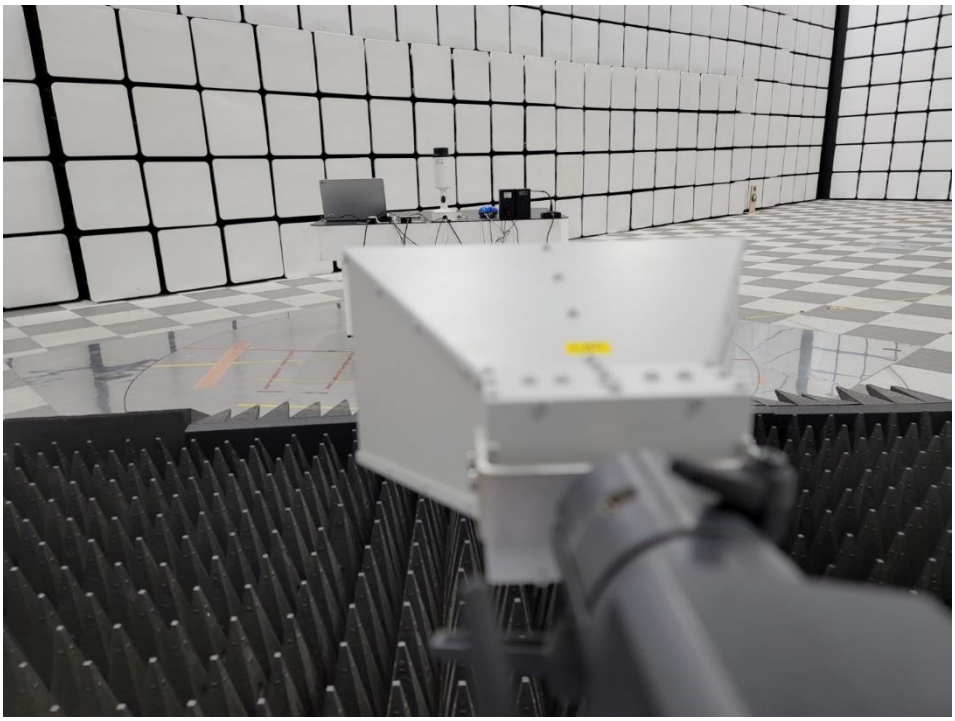




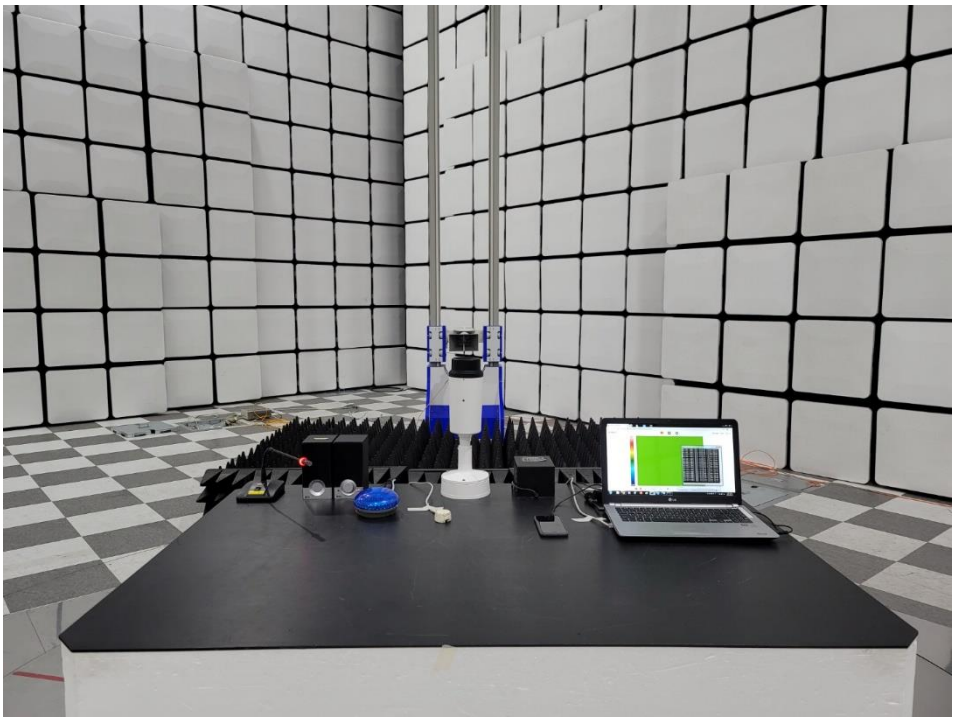
Radiated Electric Field Emissions(Above 1 ㎓)

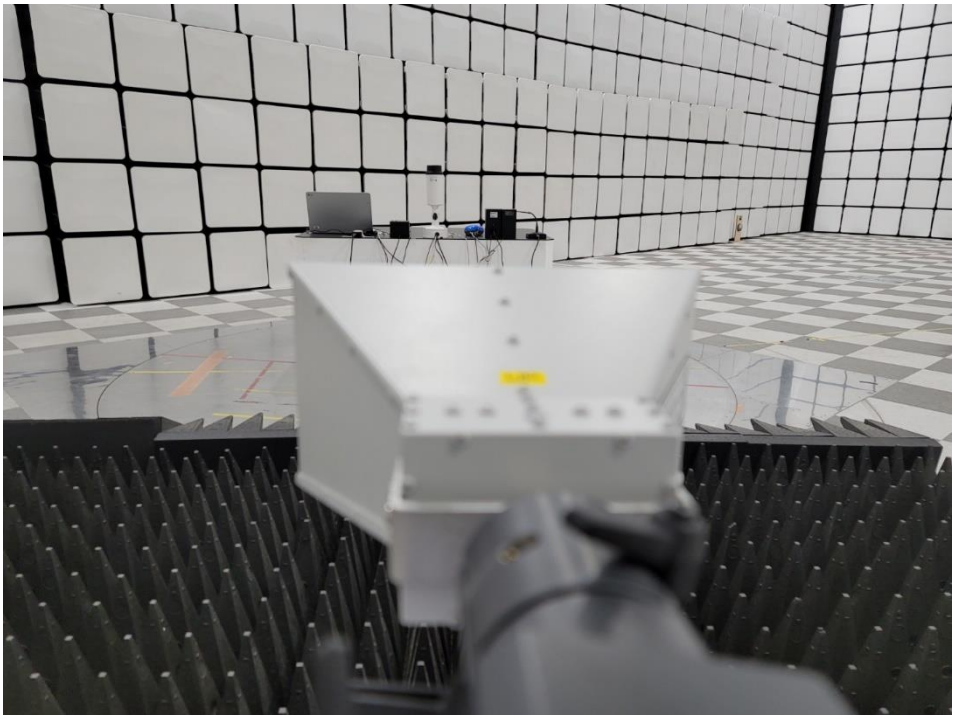
■ DC Mode



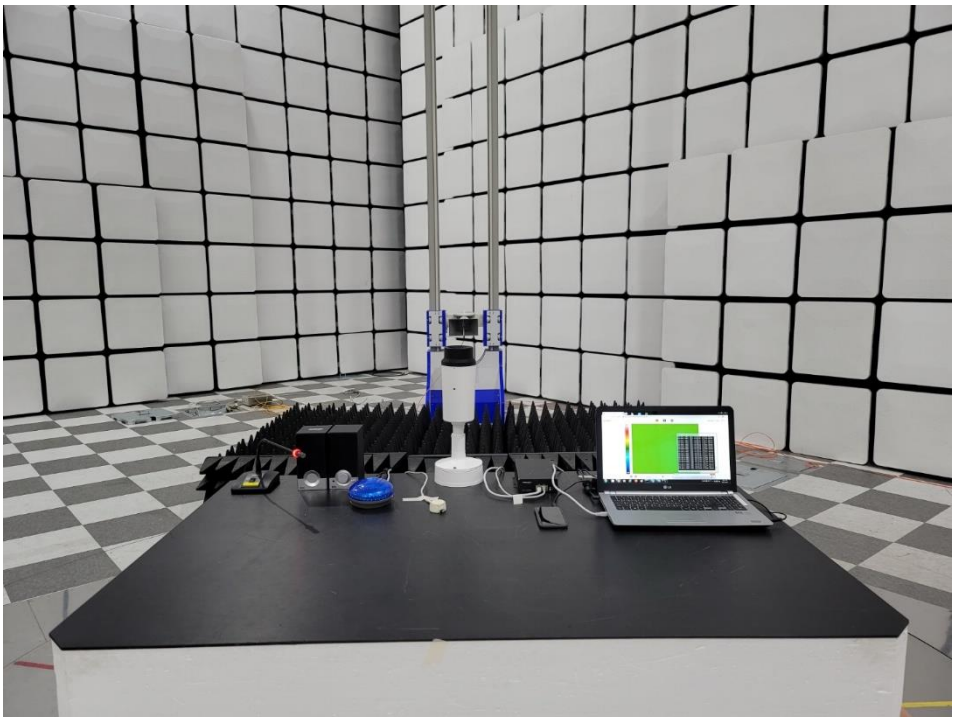


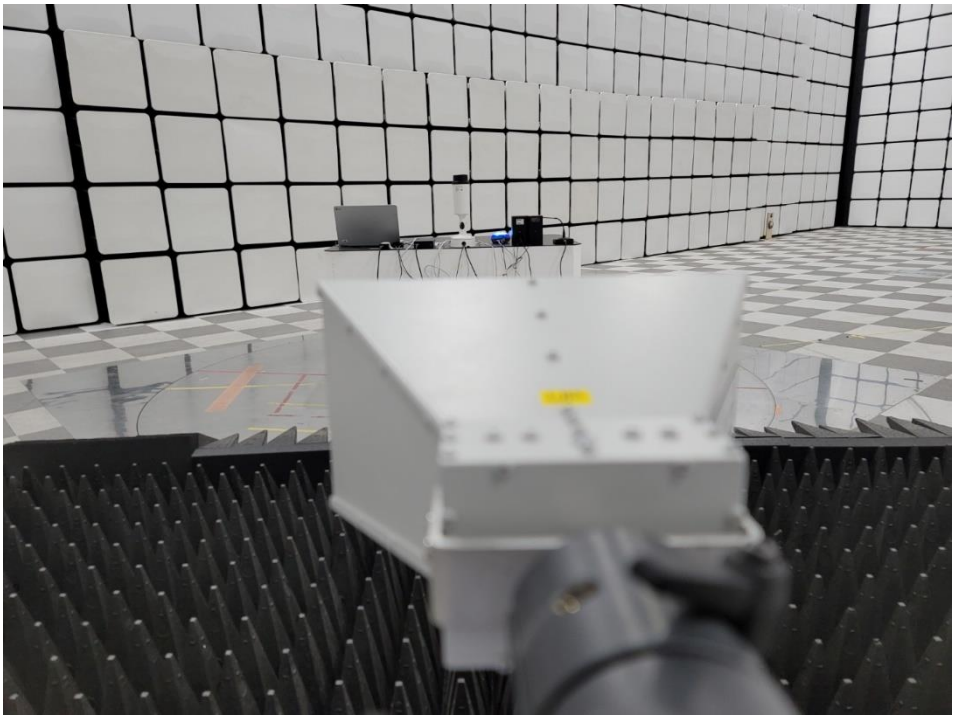
■ AC Mode





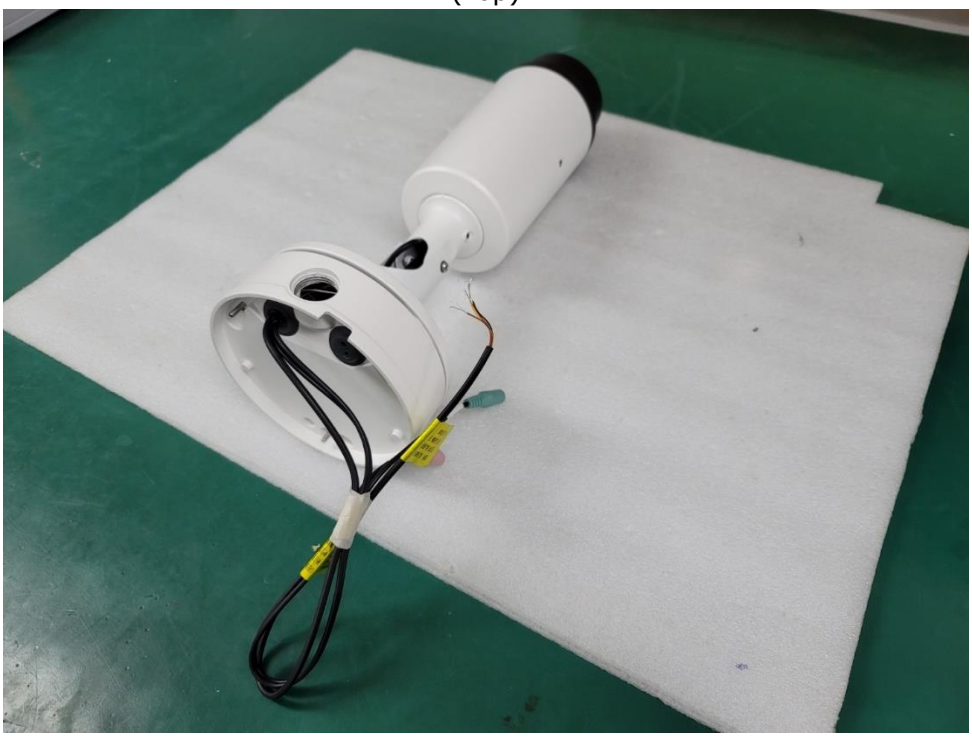
■ PoE Mode



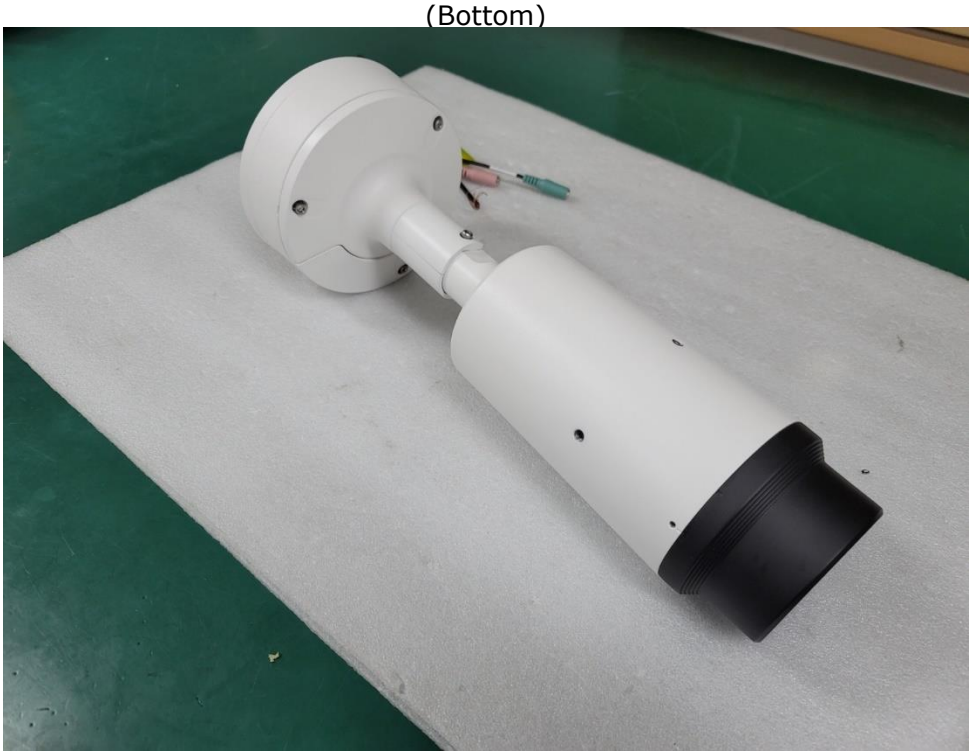


EUT External Photographs

(Top)

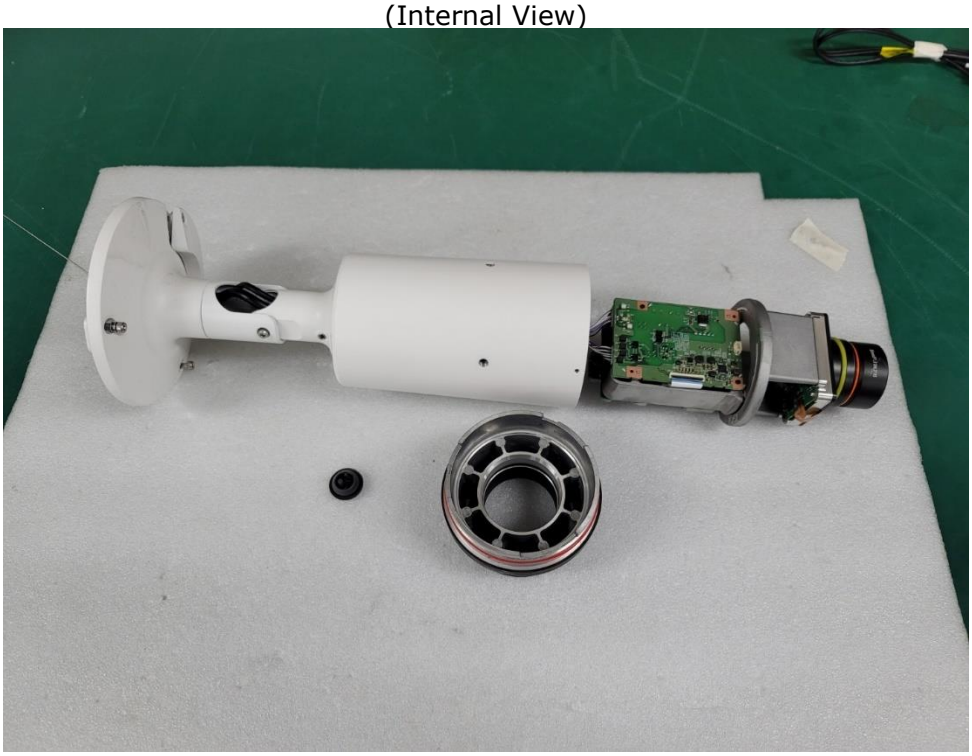


(Bottom)



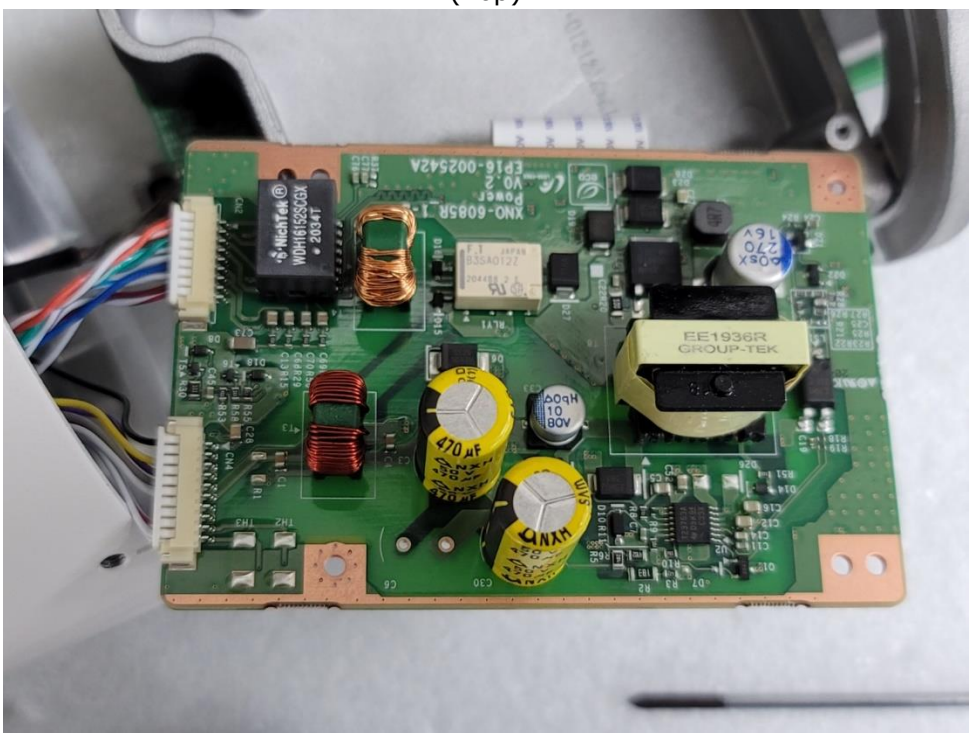
EUT Internal Photographs

(Internal View)

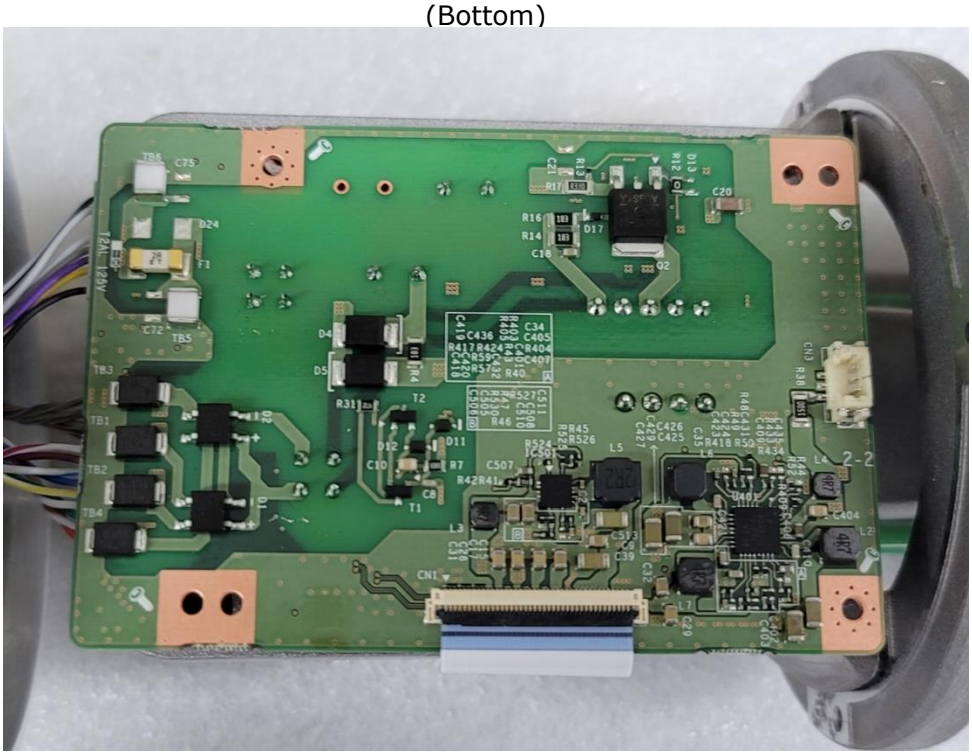


EUT Internal View – Board 1

(Top)

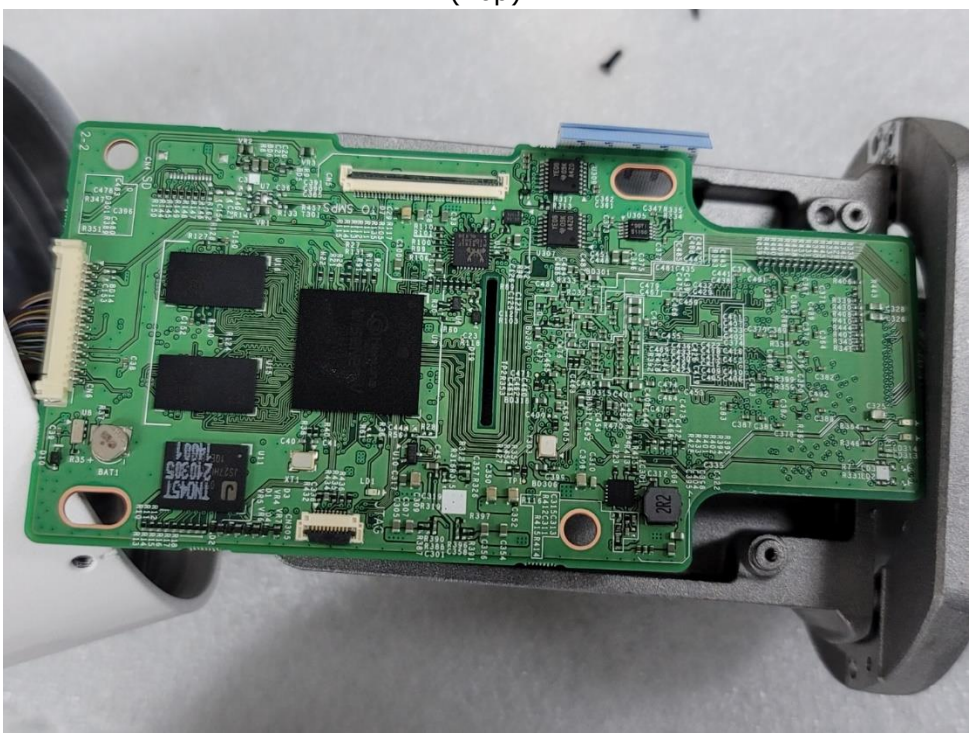


(Bottom)

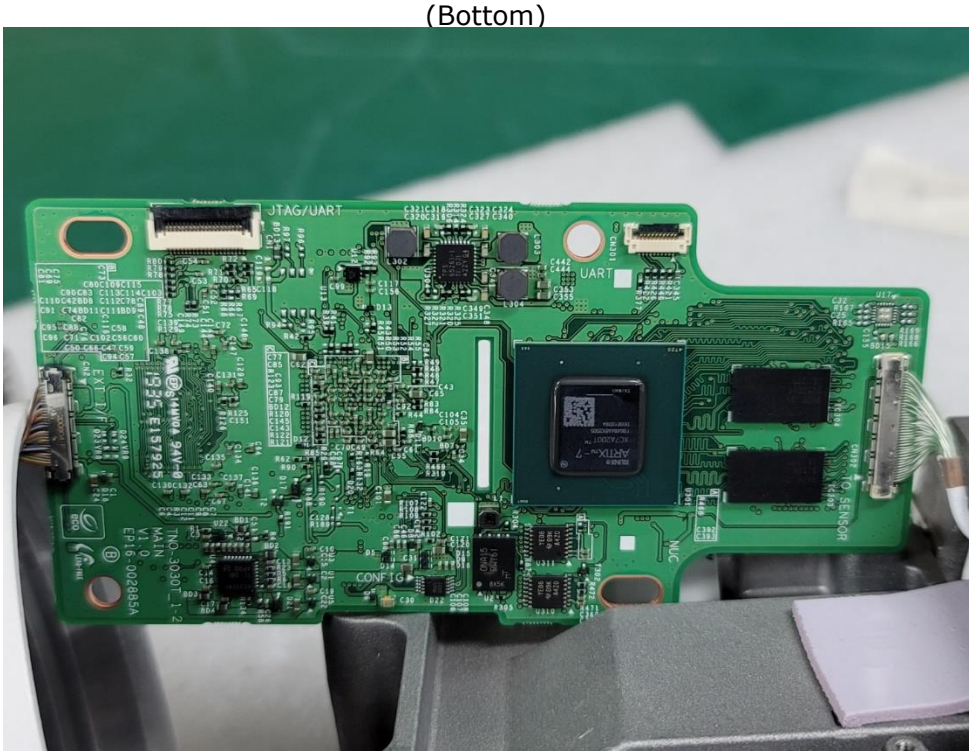


EUT Internal View – Board 2

(Top)

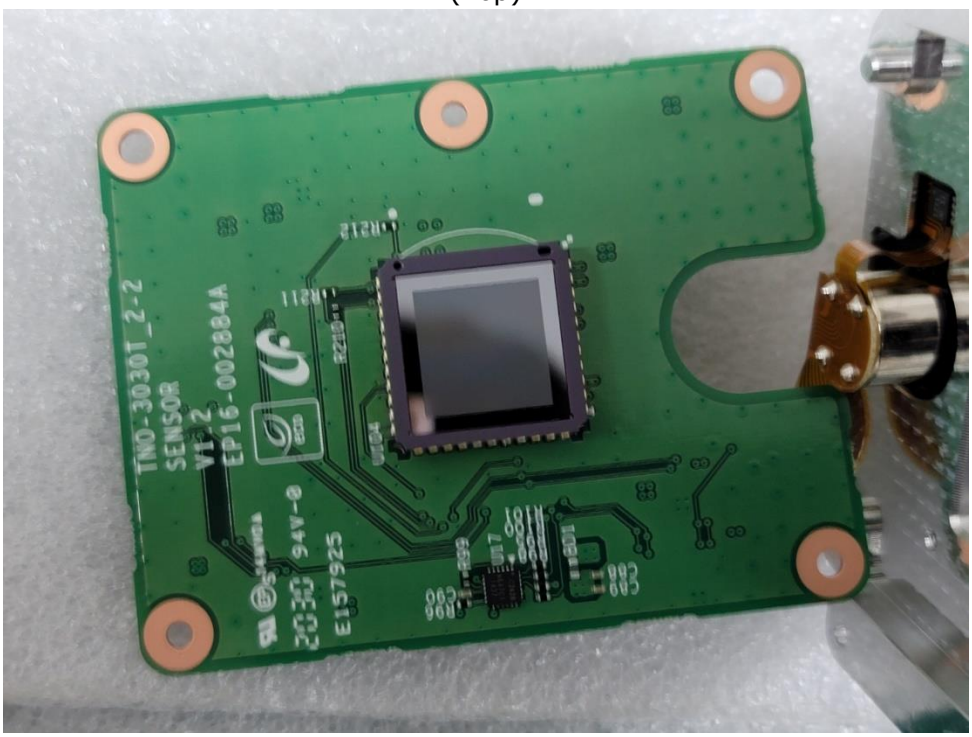


(Bottom)

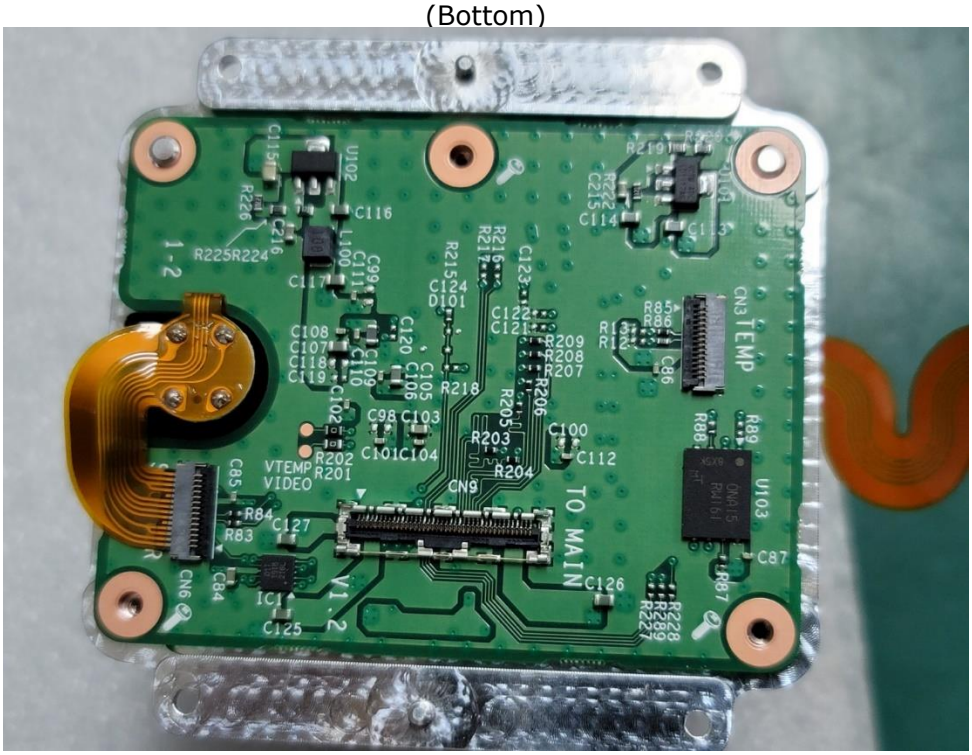


EUT Internal View – Board 3

(Top)

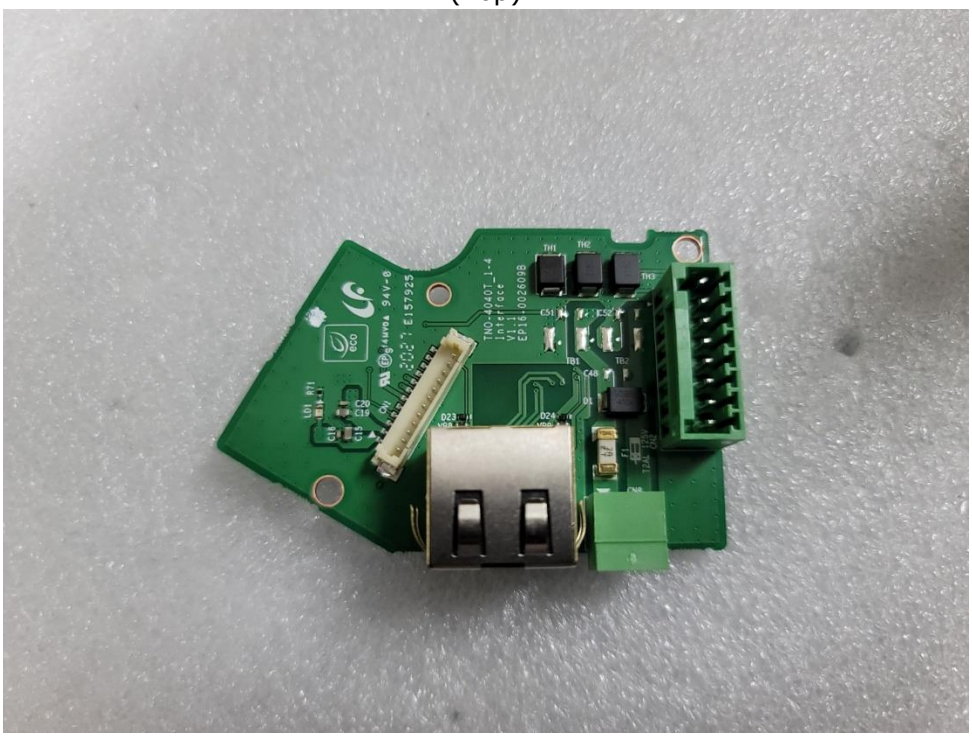


(Bottom)

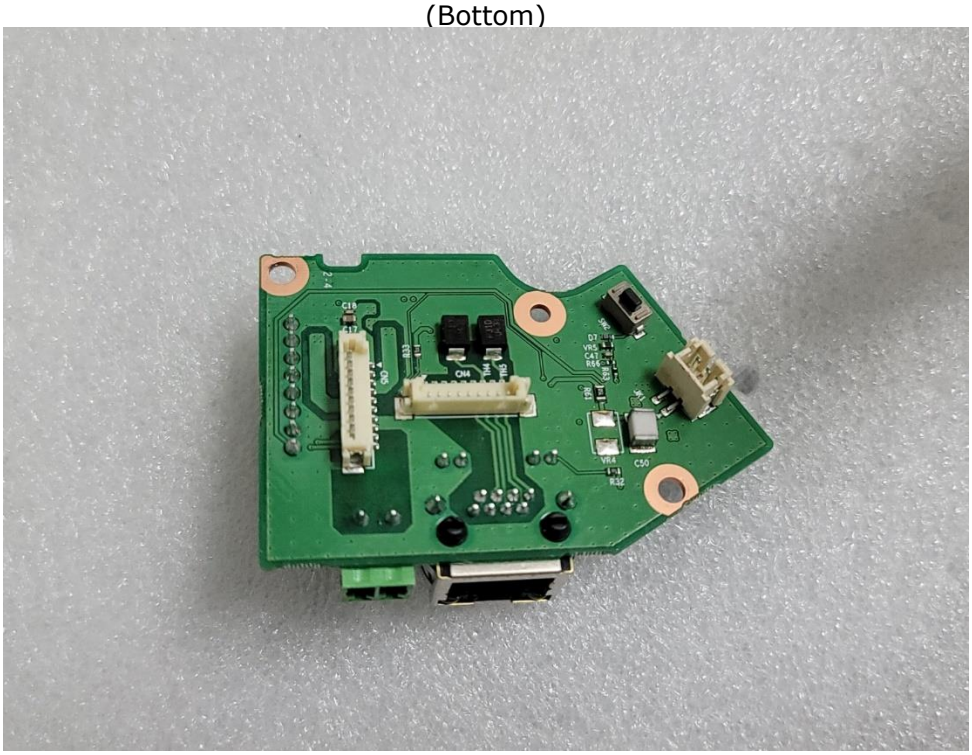


EUT Internal View – Board 4

(Top)



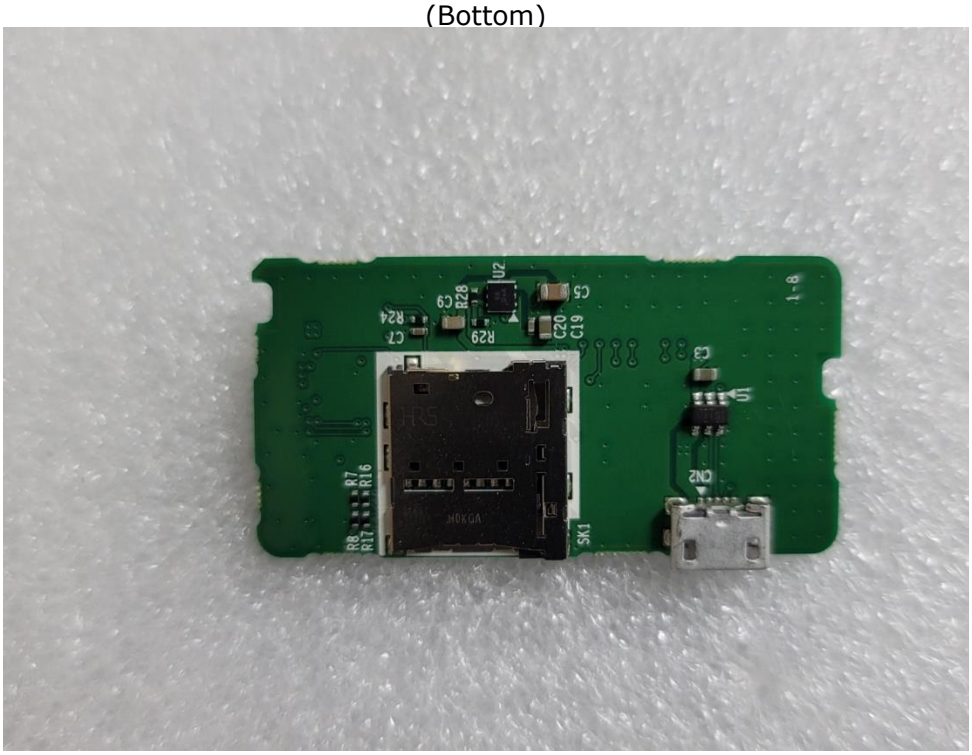
(Bottom)



EUT Internal View – Board 5

(Top)

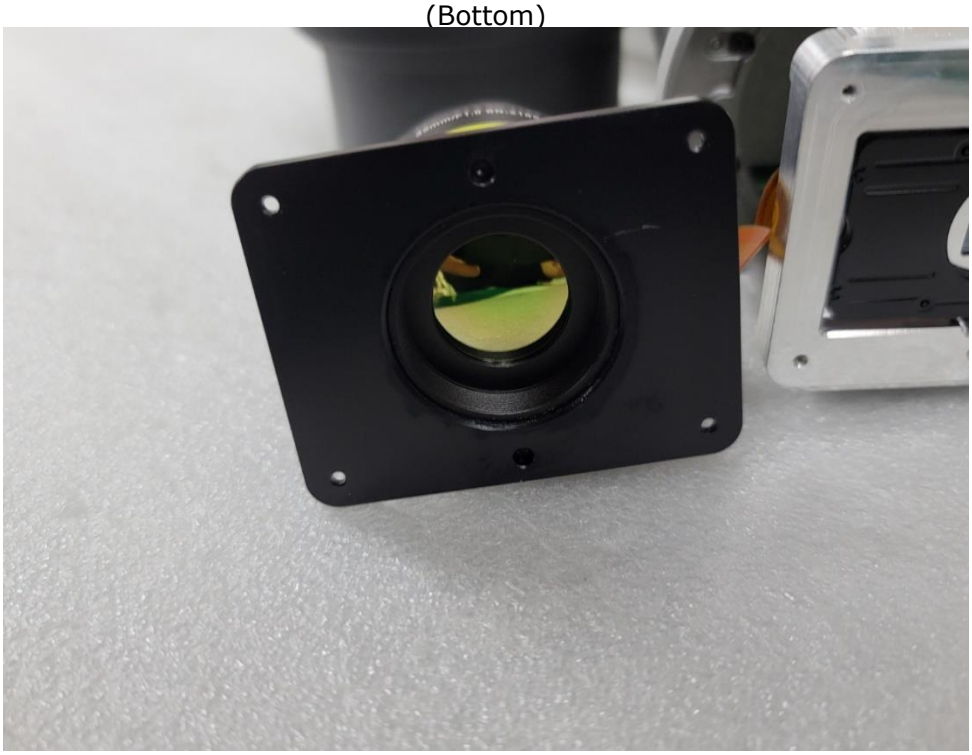
(Bottom)



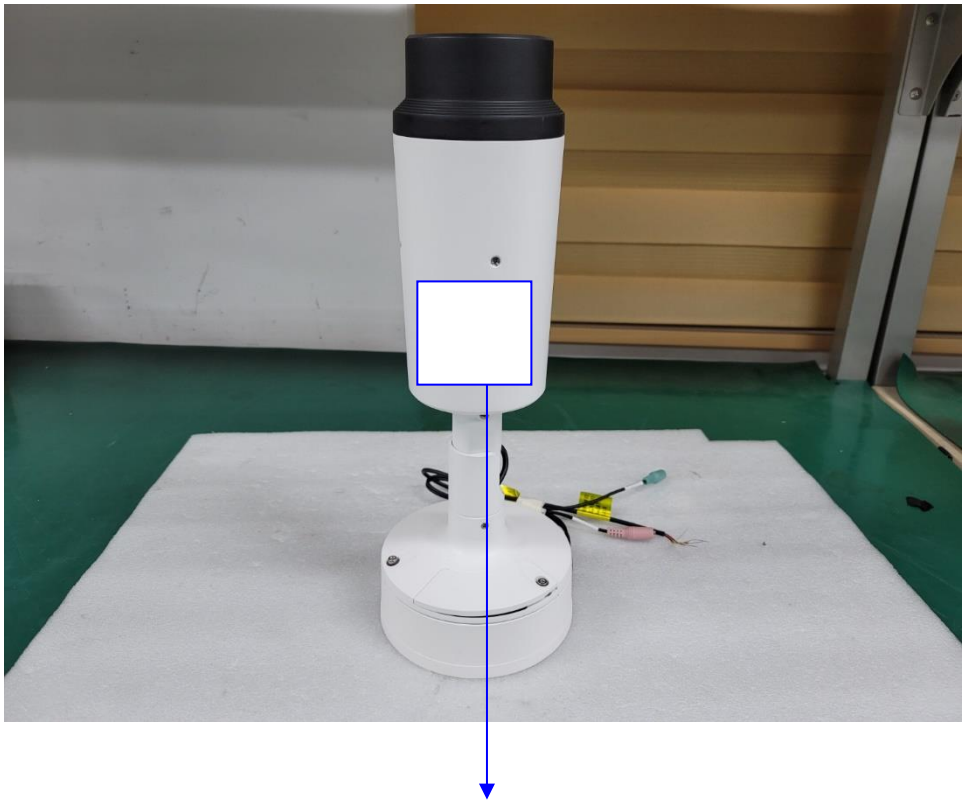
EUT Internal View – Lens

(Top)

(Bottom)



Label Photographs



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.