



TEST REPORT



Report No. : KES-EM251779

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KES Co., Ltd.

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1. Client

Applicant : Hanwha Vision Co., Ltd

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

2. Sample Description

Product name : NETWORK CAMERA

Model/Type No. : PNB-A9082

Variant Model : -

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 Ward, Bac Ninh Province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)

3. Date of Receipt : May. 15, 2025

4. Test date : Jun. 03, 2025 ~ Jun. 04, 2025

5. Date of Issue : Jul. 25, 2025

6. Test Results : In Compliance

Tested by

Reviewed by

Eun Gu, Jeon
EMC Test Engineer

Dong Hun, Jang
EMC Technical Manager

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

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr)



REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jul. 25, 2025	KES-EM251779	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Division		Specificity
Internal highest operating frequency		1.6 GHz
Power	Rated Power	DC 12 V, PoE
	Test Power	AC 120 V, 60 Hz
Ports	I/O Port	DC(2 Pin) 1 EA, RJ-45 1 EA, Audio IN 1 EA, Audio OUT 1 EA, 7 Pin 1 EA (Alarm IN 2 EA, Alarm OUT 1 EA, RS 485 1 EA), Micro SD Card Slot 2 EA
	Unused Port	USB Type-C 1 EA
Components		Main Body 1 EA
Ethernet Speed		1 000 Mbps

Video	
Imaging Device	1/1.2" CMOS
Resolution	3840x2160, 3328x1872, 3072x1728, 2592x1944, 2592x1520, 2560x1440, 1920x1080, 1600x1200, 1280x960, 1280x720, 1024x768, 800x600, 640x480, 640x360, 320x240, 320x180
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps(@8MP Max. 5fps)
NETD	None
Pixel Size	None
Video Out	USB: Micro USB Type C for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	5.9~13.3mm(2.25x) motorized varifocal
Optical Zoom	None
Max. Aperture Ratio	F1.5(Wide)~F2.9(Tele)
Angular Field of View	H: 109°(Wide)~49°(Tele) V: 59°(Wide)~27°(Tele) D: 128°(Wide)~56°(Tele)
Focus Control	Simple focus
Lens Type	P-iris(IR corrected)
Mount Type	None
Optional Lens	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNRV, WiseNR II (Based on AI engine)
Digital Image Stabilization	Support
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, 8point polygonal zones - Color: gray/green/red/blue/black/white/purple/yellow - Mosaic Dynamic Privacy Mask(Based on AI engine) - Color: gray/green/red/blue/black/white/purple/yellow - Mosaic
Gain Control	Off / Max Gain / Manual
White Balance	ATW / NarrowATW / AWC / Manual / Indoor / Outdoor
LDC	Support(Fill/Stretch mode)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker(2~1/30,000sec) Prefer shutter control(Based on AI engine)
Digital PTZ	None
Video Rotation	Flip, mirror, hallway view(90°/270°)



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Analytics	Classified object type: Person/Face/Vehicle(Type: car/bus/truck/motorcycle/bicycle)/License plate Attributes: Person(Gender, Clothing top/bottom color, Bag), Face(Age, Gender, Mask, Glasses), Vehicle(Type: car/bus/truck/motorcycle/bicycle, Color) Support BestShot Support Re-ID(Person) Analytics events based on AI engine - Motion detection, Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit/Appear/Disappear), Slip & fall detection, Face mask detection, Social distancing detection, Sound classification(To be released) Analytics events - Defocus detection, Tampering, Shock detection, Audio detection
Business Intelligence	Based on AI engine: People/Vehicle/Crowd counting, Queue management, Heatmap
Serial Interface	RS-485(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm Triggers	Analytics, Network disconnection, Alarm input, Time schedule, MQTT subscription, Day/Night, Storage disruption
Alarm Events	When alarm trigger occurred - File upload(image): e-mail/FTP/SFTP - File upload(video clip): FTP/SFTP - 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(WAV, MP3) - MQTT: publication
Audio Streaming	None
Audio In	Selectable(mic in/line in/built-in mic)
Audio Out	Line out
Network	
Ethernet	Metal shielded RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High MJPEG
Audio Compression	G.711(PCM): 8kHz(64Kbps) G.726(ADPCM): 8kHz(16/24/32/40Kbps) AAC-LC: 16kHz(48Kbps) OPUS: 48kHz(64Kbps)
Smart Codec	WiseStream(Based on AI engine)
Video Quality Adjustment	None
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 5 profiles, 3 virtual channel support)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP/SFTP, SMTP(StartTLS), ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP(TCP, UDP Unicast), CDP, MQTT, Syslog
SIP support (VoIP, Peer-to-peer)	None
Security	None
Application Programming Inter	ONVIF Profile S/G/T/M SUNAPI(HTTP API) Hanwha Vision Open Platform



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Security	
OS / Firmware Protect	Encrypted Firmware, Secure boot, Signed Firmware
User authentication	Digest Authentication, Prevent brute-force attack
Network authentication	802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2)
Secure Communication	HTTPS, SRTP, WSS(Websocket secure)
Access Control	IP-based access control, MAC-based access control, Auto logout
Data Protect	Encryption Credentials, Encrypt compress for live recording file export
Audit	Access / System / Event Log management
Device ID	Device Certificate(Hanwha vision Root CA)
Secure Storage	Secure element, SDcard partition encrypt
Security Certificate	ETSI EN 303 645, Secure element(FIPS 140-3 level3, CC EAL6+)
General	
Webpage Language	English, Korean, Simplified Chinese, Traditional Chinese, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slots 2TB(1TBx2)
Memory	4GB RAM, 8GB eMMC
Environmental & Electrical	
Operating Temperature / Humidity	-10°C~-+55°C(14°F~-+131°F) / 0~95% RH
Storage Temperature / Humidity	-50°C~-+60°C(-58°F~-+140°F) / 0~90% RH
Wind Load	None
EPA(Effective Projected Area)	0.0153m ²
Certification	None
Input Voltage	PoE+(IEEE802.3at type2, Class4), 12VDC
Power Consumption	PoE: Max. 13.6W, typical 12.7W
	12VDC: Max. 11.5W, typical 10.9W
	Support Wisepower
	- Power monitoring(Max./Current/Avg.) - Power Redundance Failover
Mechanical	
Color / Material	Black / Aluminum
RAL Code	RAL9005
Product Dimensions / Weight	82(W)x76(H)x190(D)mm(3.23x2.99x7.48"), 900g(1.98lb)
Compatible Conduit hole / Gasket	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
Safety	RCM AS/NZS CISPR 32 Class A
	KS C 9832 Class A, KS C 9835
Environment	UL 62368-1, CAN/CSA C22.2 NO. 62368-1
	IEC/EN 62471
Video	IEC/EN 63000
	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-78
Compatible Models	
Housing	SHB-4301HP, SHB-4301H2, SHB-4301H1, SHB-4300H, SHB-4200H, SHB-4200
Interface Box	SPM-4210



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 ☒ AC 120 V, 60 Hz (PoE Adapter Input Power)

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	PNB-A9082	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter	PT-PSE106GBR-AH-S	-	Dongguan PROCET Network Technology Co.,Ltd	-
LAPTOP	LG15N54	506NZGK000615	LG Electronics	-
LAPTOP Adapter	PA-1650-43(65W)	OF58U63849302Y609	LG Electronics	-
Micro SD Card 1	-	-	SanDisk	-
Micro SD Card 2	-	-	SanDisk	-
LED Alarm	PRO-SL	-	SENSOR PRO	-
Button Alarm 1	-	-	-	-
Button Alarm 2	-	-	-	-
HEADSET	K550	-	Britz®	-
AC/DC Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
Controller	SPC-1010	C50E67WG10100F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	AP-12005A	-	APOWER	-



1.6 External I/O Cabling

■mode 1

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	2 Pin	AC/DC Adapter	DC JACK	1.6	U
	Micro SD Card Slot	Micro SD Card 1	Micro SD Card Slot	-	-
	Micro SD Card Slot	Micro SD Card 2	Micro SD Card Slot	-	-
	RJ-45 (LAN)	LAPTOP	RJ-45 (LAN)	3.1	U
	Alarm IN	LED Alarm	Alarm OUT	3.1	U
	Alarm OUT	Button Alarm 1	Alarm IN	3.1	U
	Alarm OUT	Button Alarm 2	Alarm IN	3.1	U
	Audio IN	HEADSET	3.5 mm (MIC)	1.4	U
	Audio OUT		3.5 mm (HEADSET)		
	RS 485	Controller	RS 485	3.2	U
	GROUND	GROUND	GROUND	1.5	-
LAPTOP	DC JACK	LAPTOP Adapter	DC JACK	1.6	U
Controller	DC JACK	Controller Adapter	DC JACK	1.5	U

* Unshielded=U, Shielded=S

■mode 2

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)	3.2	U
	Micro SD Card Slot	Micro SD Card 1	Micro SD Card Slot	-	-
	Micro SD Card Slot	Micro SD Card 2	Micro SD Card Slot	-	-
	Alarm IN	LED Alarm	Alarm OUT	3.1	U
	Alarm OUT	Button Alarm	Alarm IN	3.1	U
	Alarm OUT	Button Alarm 2	Alarm IN	3.1	U
	Audio IN	HEADSET	3.5 mm (MIC)	1.4	U
	Audio OUT		3.5 mm (HEADSET)		
	RS 485	Controller	RS 485	3.2	U
	GROUND	GROUND	GROUND	1.5	-
PoE Adapter	RJ-45 (LAN)	LAPTOP	RJ-45 (LAN)	1.8	U
Controller	DC JACK	Controller Adapter	DC JACK	1.5	U



* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

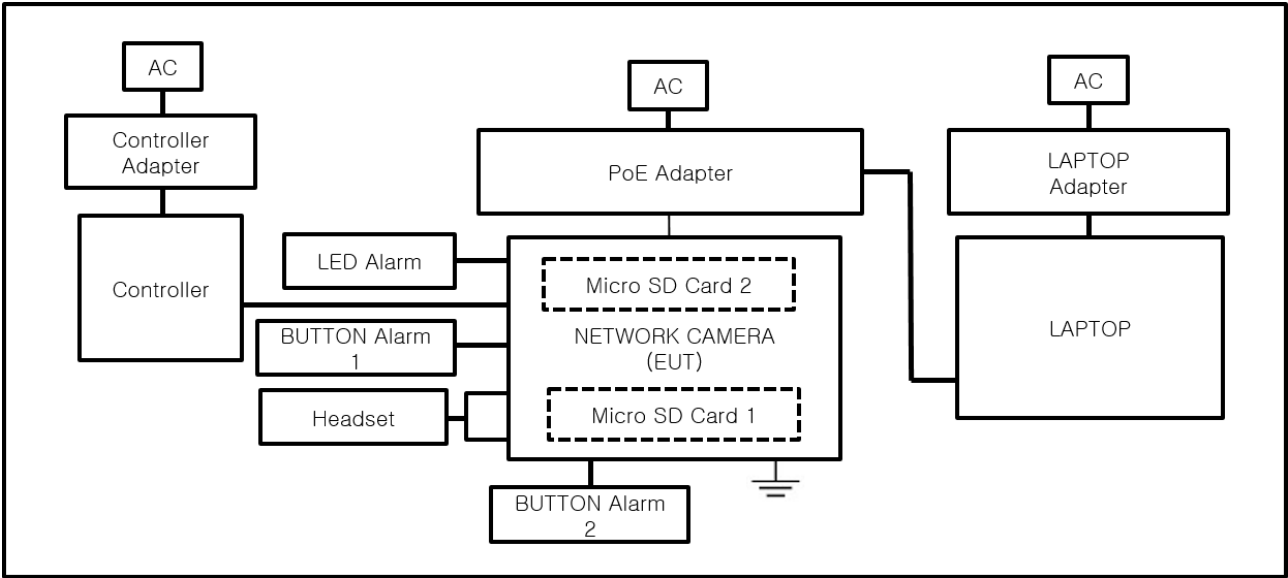
Test mode		Normal operating
mode 1	AC/DC Adapter	- IP from the test equipment to the laptop was tested by Ping Test on the laptop. - The test was conducted by checking whether the camera image was output normally in the Web Viewer. - After the test, I checked whether the video was recorded normally on the Micro SD Card 1, 2.
mode 2	PoE	

EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	HANWHA VISION VIETNAM COMPANY LIMITED

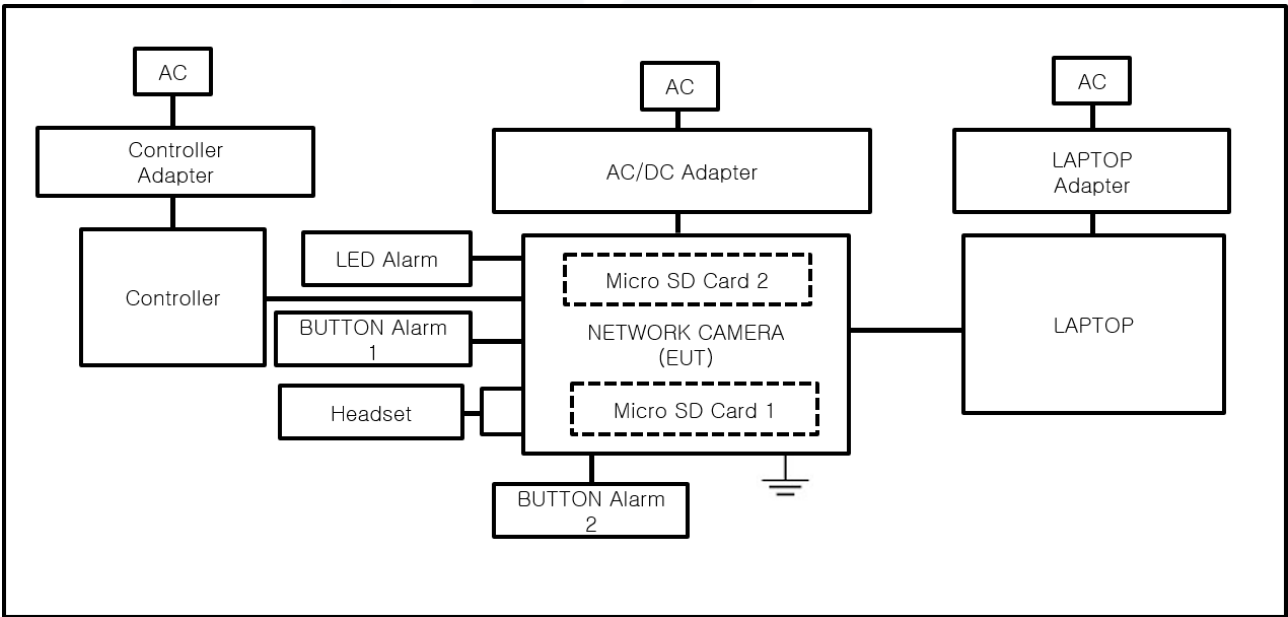


1.8 Configuration

■mode 1



■mode 2





1.9 Remarks when standards applied

USB Type-C ports are not used and have not been tested.

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.12 Measurement Procedure

- Conducted Emissions

The conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emission exceed the average limit with the instrument set to the quasi-peak mode, the measurements are made in the average mode. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded. Quasi-peak readings are distinguished with a "QP".

- Radiated Electric Field Emissions

The test was done at a SEMI ANECHOIC CHAMBER with quasi-peak detector. The final test data was measured using a Quasi-Peak detector below 1 GHz at 10 m or 3 m distance and a Peak and Average detector above 1 GHz at 3 m distance. Test was proceeded worst case test mode and cable configuration.

Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

Measurement procedures was In accordance with ANSI C63.4-2014 7.3.3, 7.3.4, 8.3.1.1, 8.3.1.2, 8.3.2.1, 8.3.2.2



1.13 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 0008



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B





Test Conditions

Temperature: (23,3 ± 0,1) °C
Relative Humidity: (46,1 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

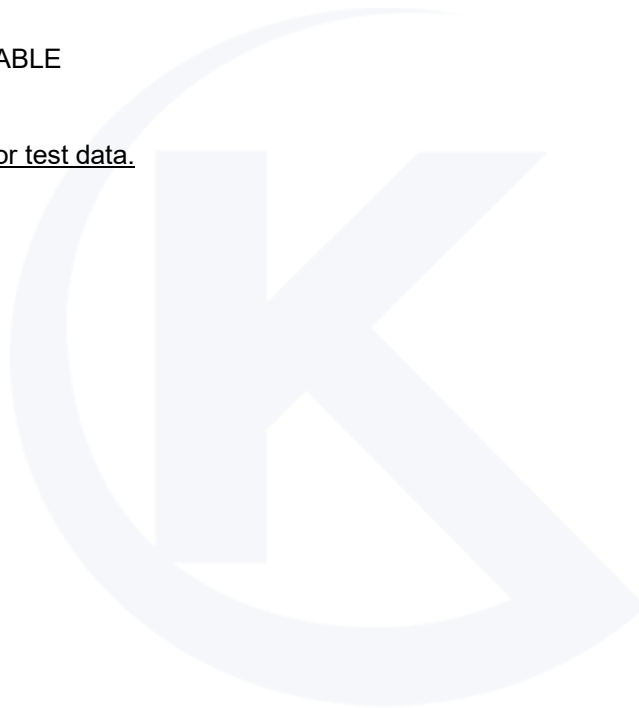
Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.





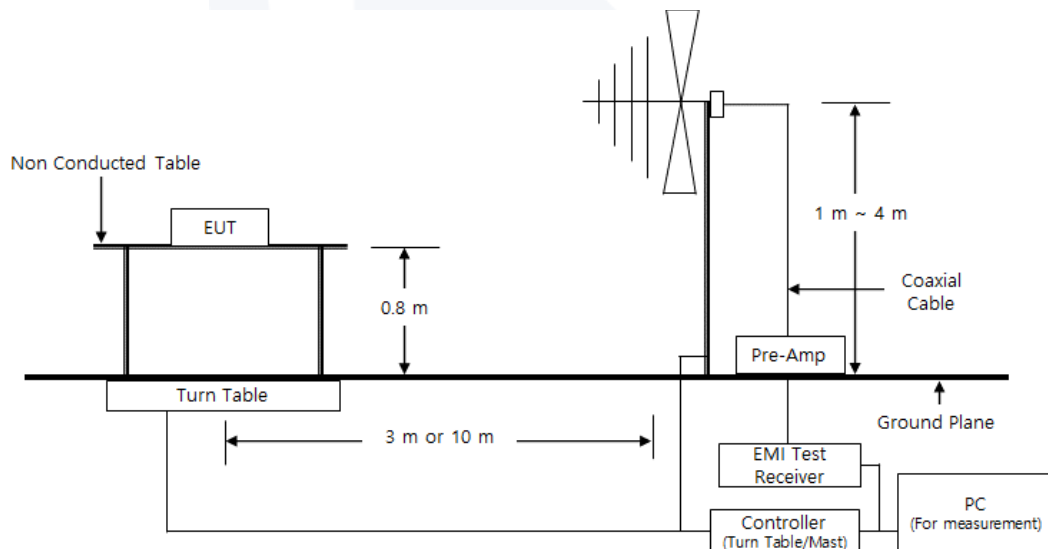
2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 03, 2025

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

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due	calibration interval
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	02, 13, 2026	1 Year
☒	AMPLIFIER	SCU 01	R & S	100603	11, 06, 2025	1 Year
☒	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	05, 09, 2026	2 Year
☒	ATTENUATOR	6806.17.A	HUBER+SUHNER	-	02, 13, 2026	1 Year

Diagram of test setup



Test Conditions

Temperature: (24,4 ± 0,1) °C
Relative Humidity: (46,1 ± 0,1) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

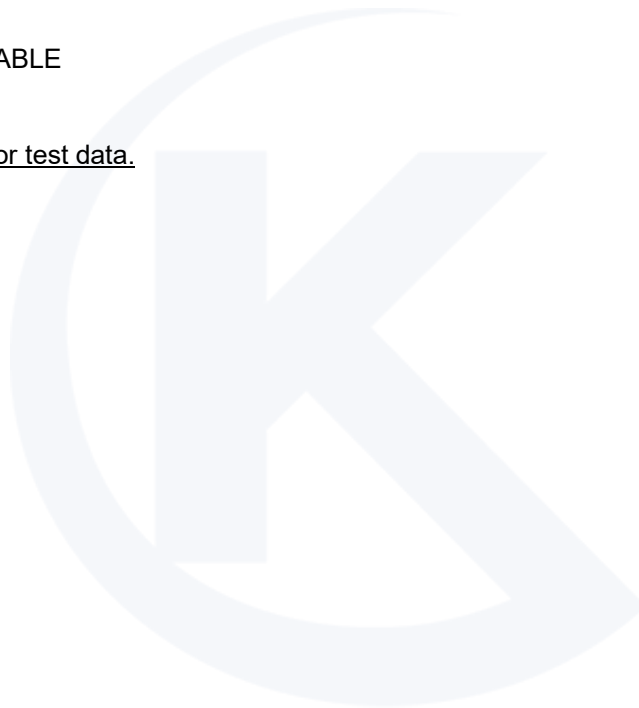
Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.





2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 04, 2025

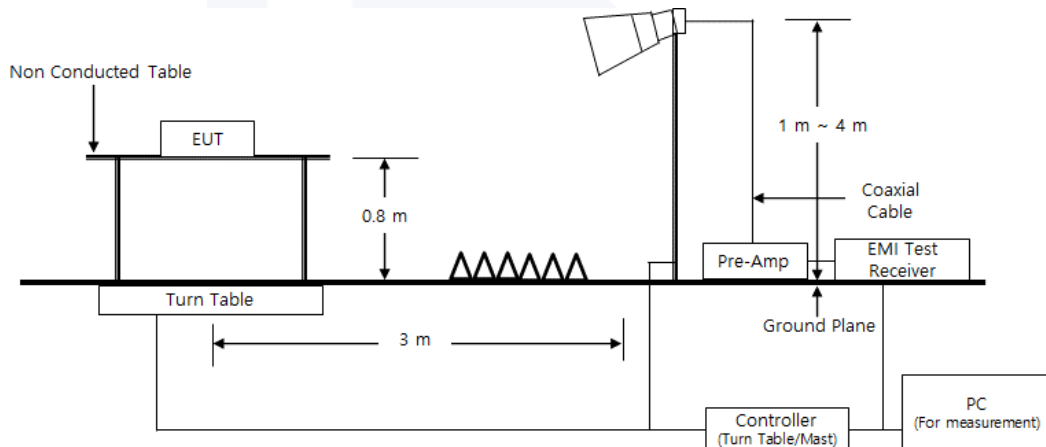
Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due	calibration interval
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	02, 13, 2026	1 Year
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 04, 2025	1 Year
☒	PREAMPLIFIER	8449B	HP	3008A00538	04, 30, 2025	1 Year
☒	ATTENUATOR	8491B	HP	23094	02, 13, 2026	1 Year

Diagram of test setup





Test Conditions

Temperature: (23,1 ± 0,1)°C
Relative Humidity: (46,6 ± 0,1) % R.H.

Frequency Range of Measurement

1 GHz to 8 GHz

Instrument Settings

IF Band Width: 1 MHz

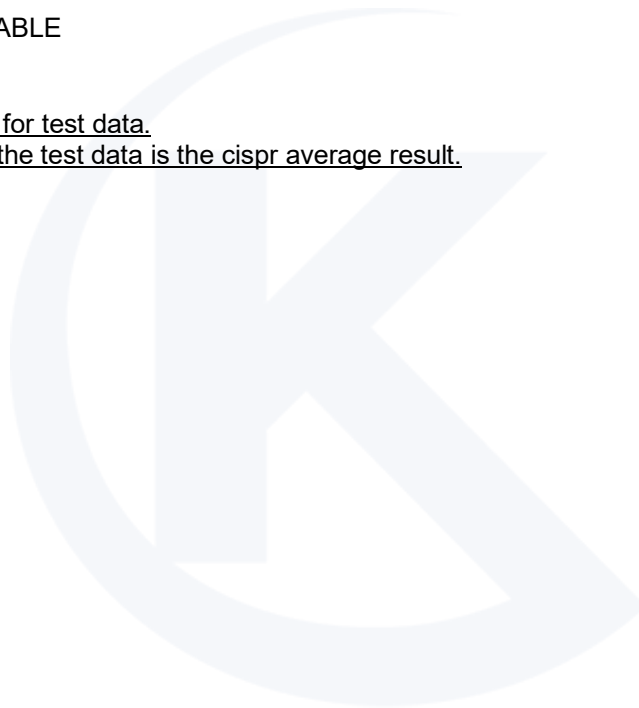
Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

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





APPENDIX A – TEST DATA

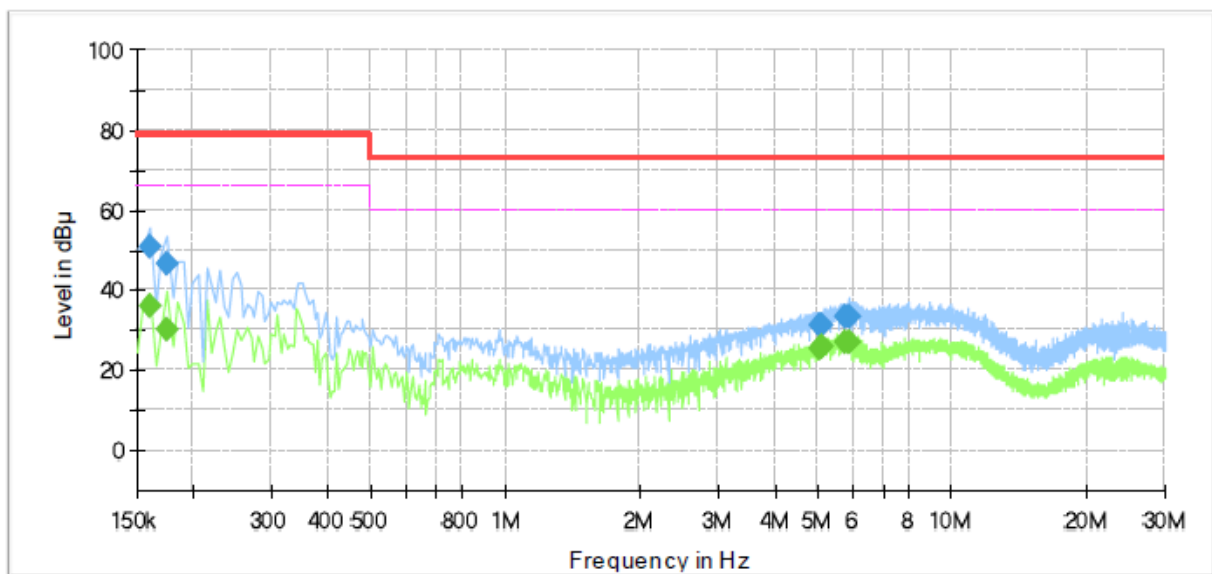
Conducted Emissions at Mains Power Ports

mode 1

HOT LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM251779
Phase: L
Mode: mode 1
Operator Name: KES



Final_Result

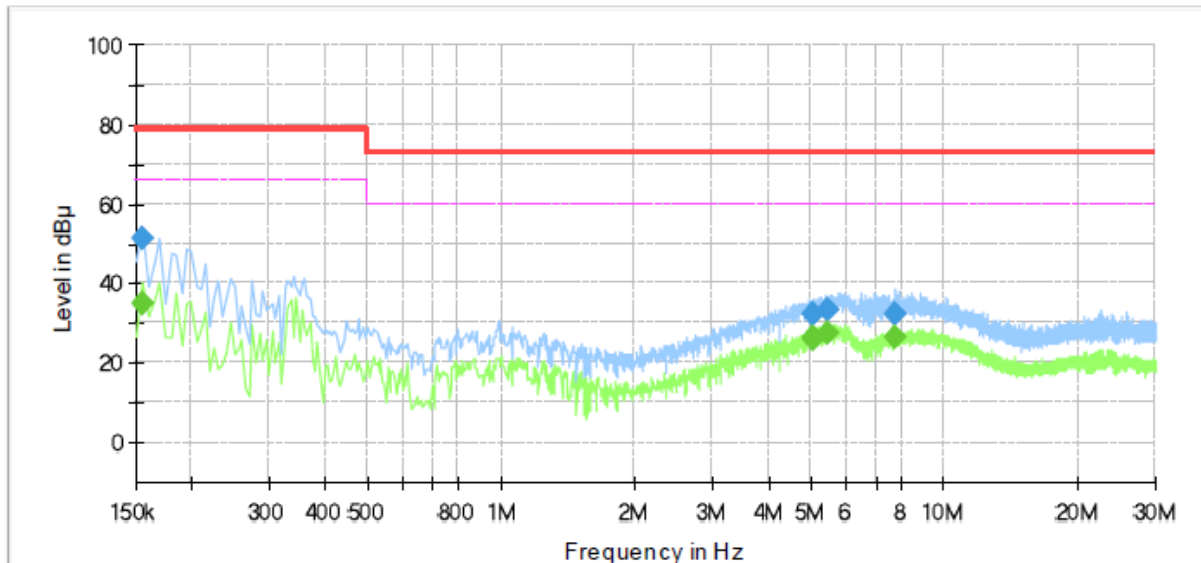
Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	36.15	66.00	29.85	1000.0	9.000	L1	19.5
0.160000	50.92	---	79.00	28.08	1000.0	9.000	L1	19.5
0.175000	---	30.40	66.00	35.60	1000.0	9.000	L1	19.5
0.175000	46.76	---	79.00	32.24	1000.0	9.000	L1	19.5
5.070000	---	25.61	60.00	34.39	1000.0	9.000	L1	19.9
5.070000	31.23	---	73.00	41.77	1000.0	9.000	L1	19.9
5.105000	---	25.83	60.00	34.17	1000.0	9.000	L1	19.9
5.105000	31.34	---	73.00	41.66	1000.0	9.000	L1	19.9
5.745000	---	27.16	60.00	32.84	1000.0	9.000	L1	19.9
5.745000	33.13	---	73.00	39.87	1000.0	9.000	L1	19.9
5.860000	---	26.95	60.00	33.05	1000.0	9.000	L1	20.0
5.860000	33.24	---	73.00	39.76	1000.0	9.000	L1	20.0



NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM251779
Phase: N
Mode: mode 1
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	34.71	66.00	31.29	1000.0	9.000	N	19.5
0.155000	51.50	---	79.00	27.50	1000.0	9.000	N	19.5
5.035000	---	26.12	60.00	33.88	1000.0	9.000	N	19.9
5.035000	32.08	---	73.00	40.92	1000.0	9.000	N	19.9
5.070000	---	26.27	60.00	33.73	1000.0	9.000	N	19.9
5.070000	32.25	---	73.00	40.75	1000.0	9.000	N	19.9
5.475000	---	27.65	60.00	32.35	1000.0	9.000	N	19.9
5.475000	33.34	---	73.00	39.66	1000.0	9.000	N	19.9
7.780000	---	26.31	60.00	33.69	1000.0	9.000	N	20.0
7.780000	32.22	---	73.00	40.78	1000.0	9.000	N	20.0

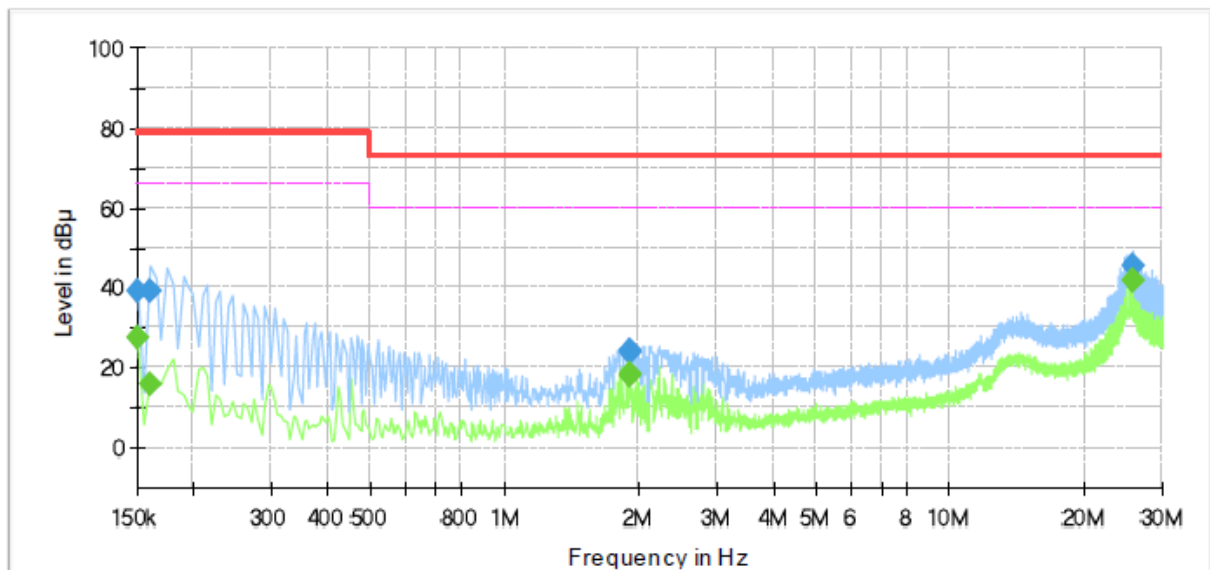


mode 2

HOT LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM251779
Phase: L
Mode: mode 2
Operator Name: KES



Final_Result

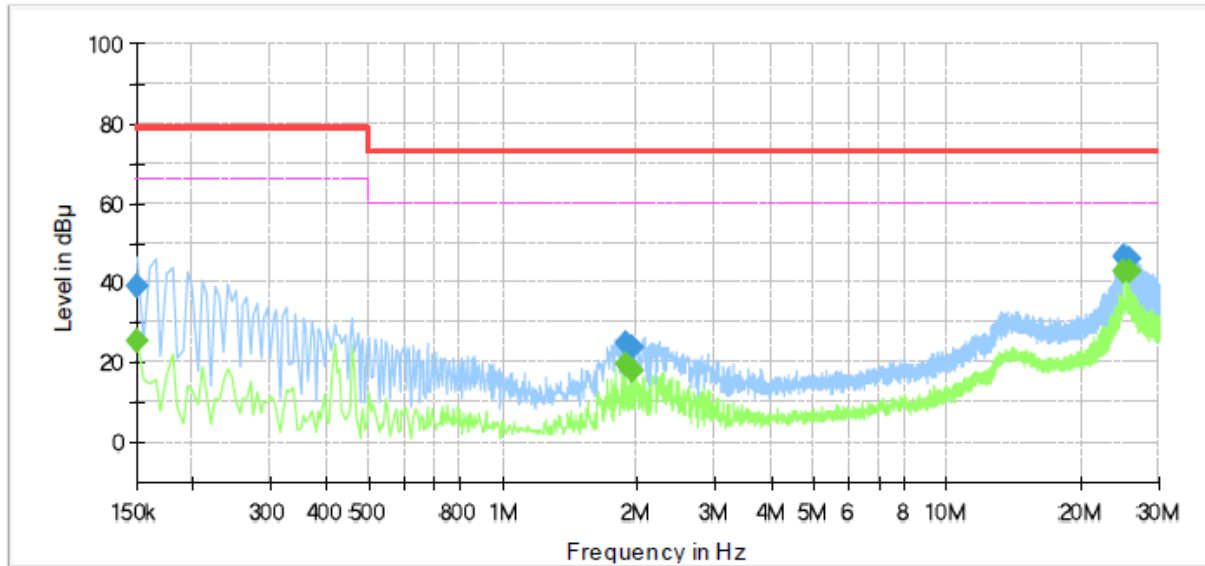
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	27.43	66.00	38.57	1000.0	9.000	L1	19.5
0.150000	39.16	---	79.00	39.84	1000.0	9.000	L1	19.5
0.160000	---	15.84	66.00	50.16	1000.0	9.000	L1	19.5
0.160000	38.94	---	79.00	40.06	1000.0	9.000	L1	19.5
1.910000	---	18.10	60.00	41.90	1000.0	9.000	L1	19.7
1.910000	23.90	---	73.00	49.10	1000.0	9.000	L1	19.7
1.915000	---	18.40	60.00	41.60	1000.0	9.000	L1	19.7
1.915000	24.30	---	73.00	48.70	1000.0	9.000	L1	19.7
25.615000	---	41.71	60.00	18.29	1000.0	9.000	L1	20.5
25.615000	45.59	---	73.00	27.41	1000.0	9.000	L1	20.5
25.720000	---	41.59	60.00	18.41	1000.0	9.000	L1	20.5
25.720000	45.46	---	73.00	27.54	1000.0	9.000	L1	20.5



NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM251779
Phase: N
Mode: mode 2
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	25.64	66.00	40.36	1000.0	9.000	N	19.5
0.150000	39.15	---	79.00	39.85	1000.0	9.000	N	19.5
1.885000	---	19.40	60.00	40.60	1000.0	9.000	N	19.6
1.885000	24.76	---	73.00	48.24	1000.0	9.000	N	19.6
1.945000	---	18.19	60.00	41.81	1000.0	9.000	N	19.6
1.945000	23.70	---	73.00	49.30	1000.0	9.000	N	19.6
24.990000	---	42.82	60.00	17.18	1000.0	9.000	N	20.5
24.990000	46.49	---	73.00	26.51	1000.0	9.000	N	20.5
25.720000	---	42.63	60.00	17.37	1000.0	9.000	N	20.5
25.720000	46.07	---	73.00	26.93	1000.0	9.000	N	20.5

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

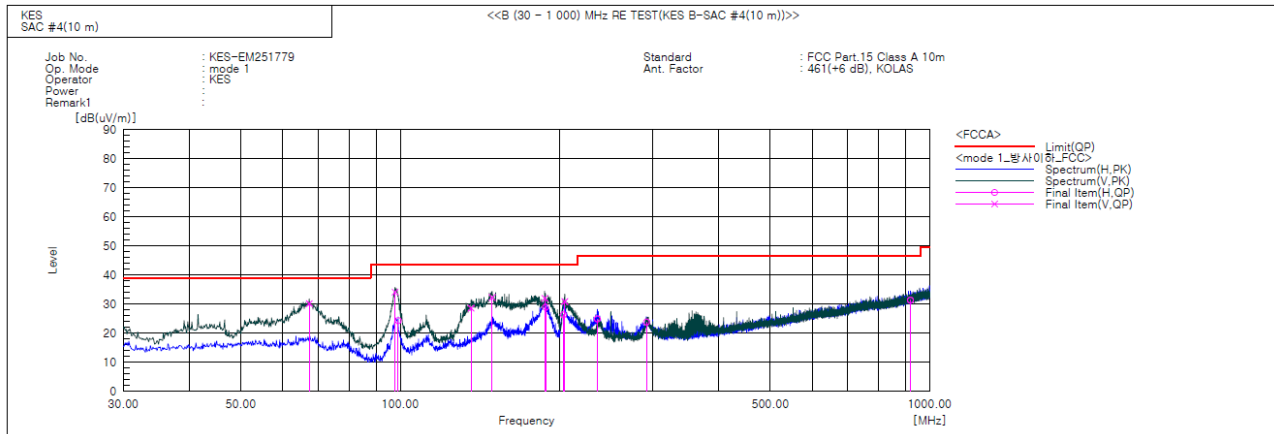
Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

**Radiated Electric Field Emissions(Below 1 GHz)**

■ mode 1

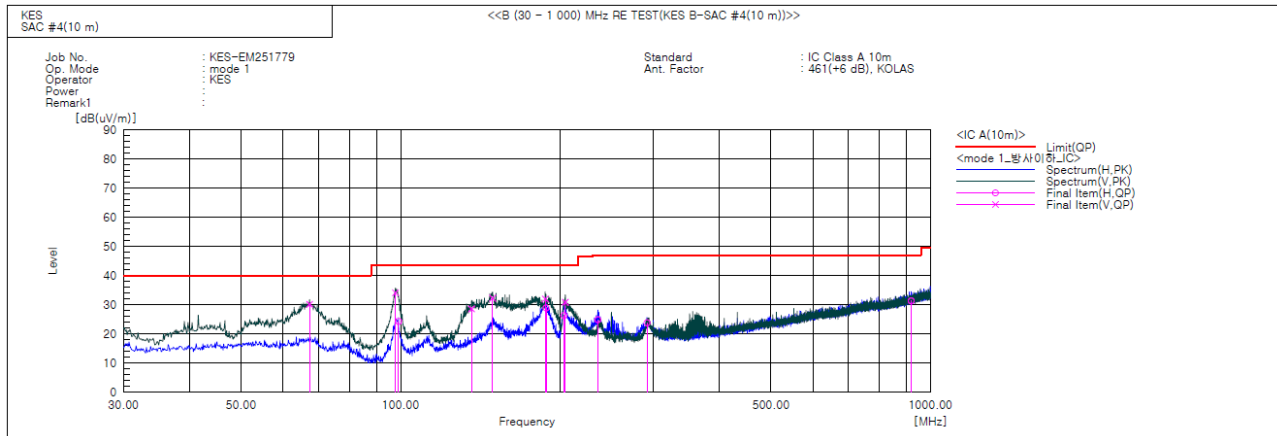
- 47 CFR Part 15, Subpart B

**Final Result**

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	67.345	V	52.4	-22.2	30.2	39.0	8.8	156.0	277.0	
2	97.779	V	59.3	-25.2	34.1	43.5	9.4	145.0	115.0	
3	99.113	H	49.3	-25.0	24.3	43.5	19.2	354.0	38.0	
4	136.094	V	49.1	-20.5	28.6	43.5	14.9	172.0	187.0	
5	149.068	V	51.6	-19.3	32.3	43.5	11.2	105.0	65.0	
6	187.504	V	53.4	-21.4	32.0	43.5	11.5	182.0	194.0	
7	188.231	H	50.4	-21.5	28.9	43.5	14.6	297.0	19.0	
8	203.266	H	48.1	-21.8	26.3	43.5	17.2	331.0	350.0	
9	204.479	V	52.7	-21.8	30.9	43.5	12.6	378.0	194.0	
10	235.640	H	45.2	-20.3	24.9	46.5	21.6	299.0	178.0	
11	291.904	H	41.1	-17.3	23.8	46.5	22.7	361.0	53.0	
12	919.854	H	32.5	-1.2	31.3	46.5	15.2	397.0	46.0	



- IC Regulation ICES-003 Issue 7



Final Result

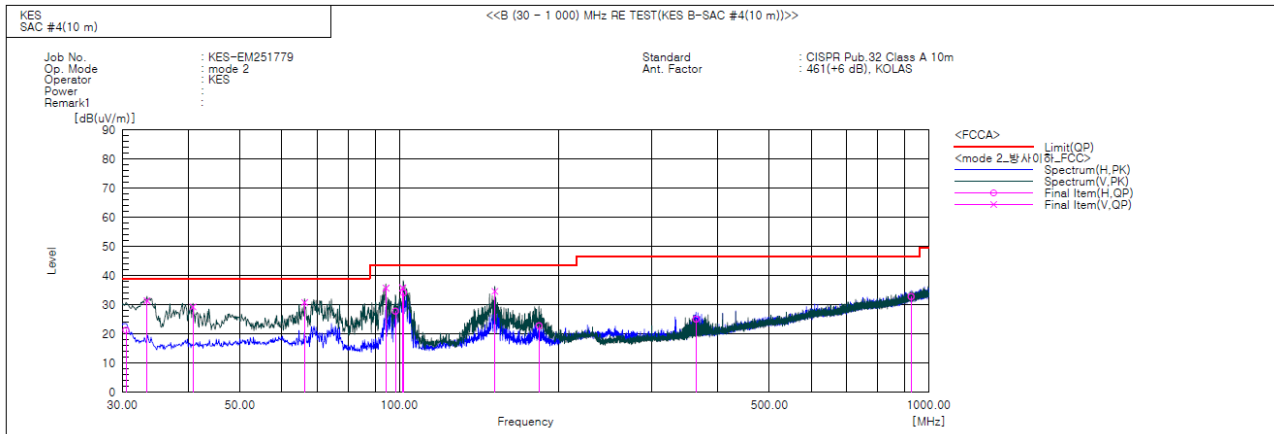
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	67.345	V	52.4	-22.2	30.2	40.0	9.8	156.0	277.0	
2	97.779	V	59.3	-25.2	34.1	43.5	9.4	145.0	115.0	
3	99.113	H	49.3	-25.0	24.3	43.5	19.2	354.0	38.0	
4	136.094	V	49.1	-20.5	28.6	43.5	14.9	172.0	187.0	
5	149.068	V	51.6	-19.3	32.3	43.5	11.2	105.0	65.0	
6	187.504	V	53.4	-21.4	32.0	43.5	11.5	182.0	194.0	
7	188.231	H	50.4	-21.5	28.9	43.5	14.6	297.0	19.0	
8	203.266	H	48.1	-21.8	26.3	43.5	17.2	331.0	350.0	
9	204.479	V	52.7	-21.8	30.9	43.5	12.6	378.0	194.0	
10	235.640	H	45.2	-20.3	24.9	47.0	22.1	299.0	178.0	
11	291.904	H	41.1	-17.3	23.8	47.0	23.2	361.0	53.0	
12	919.854	H	32.5	-1.2	31.3	47.0	15.7	397.0	46.0	



Report No. : KES-EM251779

■ mode 2

- 47 CFR Part 15, Subpart B

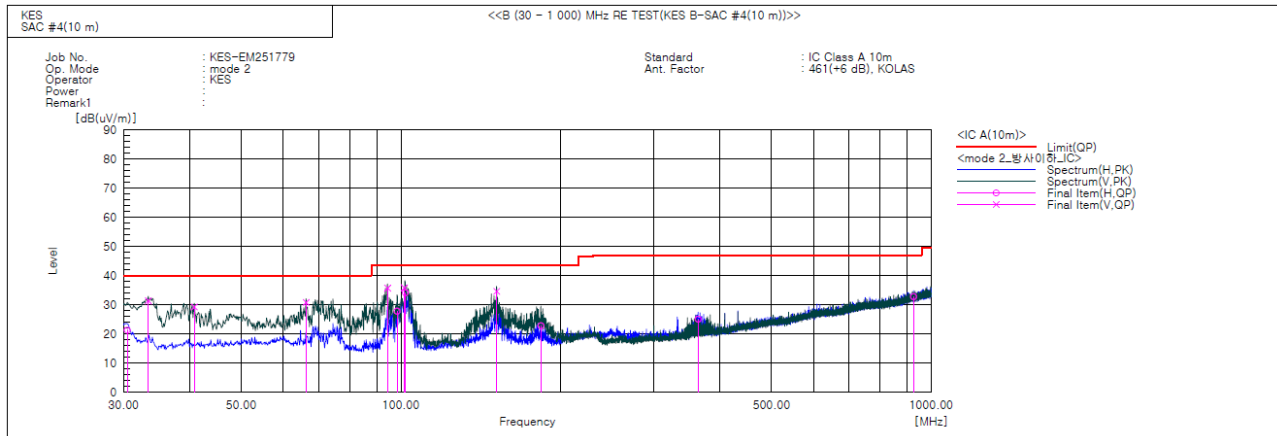


Final Result

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	30.485	H	44.0	-22.7	21.3	39.0	17.7	351.0	225.0	
2	33.395	V	53.8	-22.4	31.4	40.0	8.6	125.0	312.0	
3	40.791	V	51.0	-21.7	29.3	39.0	9.7	131.0	345.0	
4	66.254	V	52.8	-22.0	30.8	39.0	8.2	168.0	78.0	
5	94.384	V	61.5	-25.8	35.7	40.0	4.3	146.0	226.0	
6	98.385	H	52.9	-25.1	27.8	40.0	12.2	311.0	338.0	
7	101.478	V	60.4	-24.6	35.8	40.0	4.2	118.0	134.0	
8	101.901	H	58.6	-24.5	34.1	40.0	5.9	303.0	180.0	
9	151.493	V	53.9	-19.3	34.6	40.0	5.4	164.0	293.0	
10	183.745	H	43.9	-21.1	22.8	43.5	20.7	341.0	296.0	
11	363.559	H	40.1	-15.0	25.1	46.5	21.4	289.0	98.0	
12	926.280	H	33.9	-1.1	32.8	46.5	13.7	375.0	218.0	



- IC Regulation ICES-003 Issue 7



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	30.485	H	44.0	-22.7	21.3	40.0	18.7	351.0	225.0	
2	33.395	V	53.8	-22.4	31.4	40.0	8.6	125.0	312.0	
3	40.791	V	51.0	-21.7	29.3	40.0	10.7	131.0	345.0	
4	66.254	V	52.8	-22.0	30.8	40.0	9.2	168.0	78.0	
5	94.384	V	61.5	-25.8	35.7	43.5	7.8	146.0	226.0	
6	98.385	H	52.9	-25.1	27.8	43.5	15.7	311.0	338.0	
7	101.478	V	60.4	-24.6	35.8	43.5	7.7	118.0	134.0	
8	101.901	H	58.6	-24.5	34.1	43.5	9.4	303.0	180.0	
9	151.493	V	53.9	-19.3	34.6	43.5	8.9	164.0	293.0	
10	183.745	H	43.9	-21.1	22.8	43.5	20.7	341.0	296.0	
11	363.559	H	40.1	-15.0	25.1	47.0	21.9	289.0	98.0	
12	926.280	H	33.9	-1.1	32.8	47.0	14.2	375.0	218.0	

◆ Calculation

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

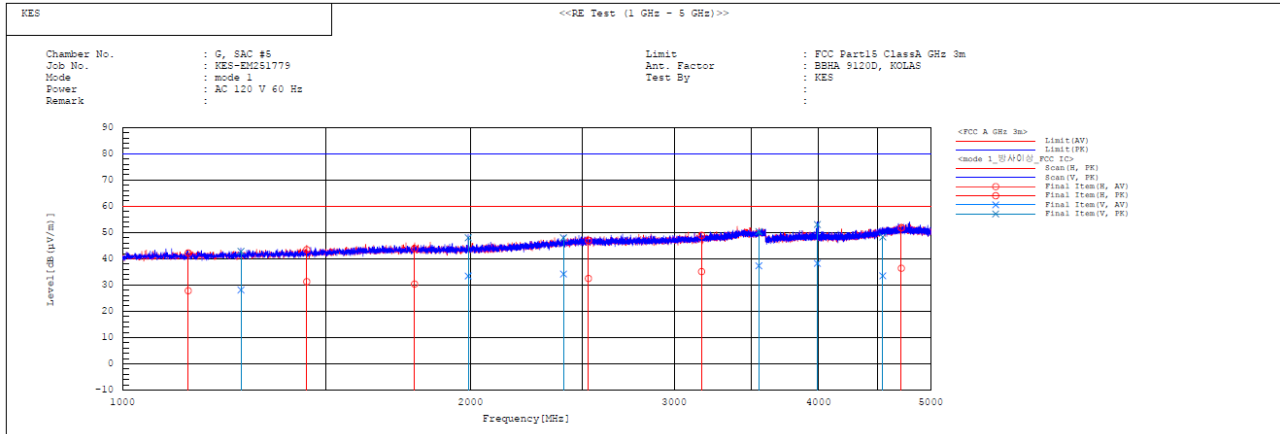
Margin(QP)[dB] = Limit[dB(μV/m)] – Result(QP) [dB(μV/m)]

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 GHz)**

■ mode 1
- (1 ~ 5) GHz

**Final Result**

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/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	1140.084	H	28.7	43.1	-0.9	42.2	60.0	80.0	32.2	37.8	224.0	324.7	
2	1266.284	V	28.3	43.0	-0.2	42.8	60.0	80.0	31.9	37.2	133.0	57.0	
3	1443.643	H	30.5	42.7	0.8	43.5	60.0	80.0	28.7	36.5	231.0	330.1	
4	1789.521	H	28.2	41.7	2.2	43.9	60.0	80.0	29.6	36.1	197.0	81.7	
5	1991.414	V	30.5	45.1	2.9	48.0	60.0	80.0	26.6	32.0	133.0	107.5	
6	2407.185	V	29.5	43.3	4.7	48.0	60.0	80.0	25.8	32.0	142.0	71.9	
7	2529.436	H	27.4	41.9	5.1	47.0	60.0	80.0	27.5	33.0	301.0	143.5	
8	3168.804	H	28.5	42.3	6.6	48.9	60.0	80.0	24.9	31.1	204.0	96.5	
9	3551.458	V	29.9	42.9	7.4	50.3	60.0	80.0	22.7	29.7	152.0	76.7	
10	3990.400	V	29.3	44.1	8.9	53.0	60.0	80.0	21.8	27.0	142.0	161.7	
11	4545.317	V	22.4	37.2	11.1	48.3	60.0	80.0	26.5	31.7	117.0	180.2	
12	4717.371	H	24.8	40.2	11.6	51.8	60.0	80.0	23.6	28.2	274.0	170.5	



- (5 ~ 8) GHz

- PK

Frequency (MHz)	Reading PK (dBuV)	Polarization	Height (m)	ANT Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
6 889.700	41.500	H	1.000	35.950	9.970	34.680	52.740	80.000	27.260
6 911.500	40.100	V	1.000	36.060	9.970	34.670	51.460	80.000	28.540

- CISPR AV

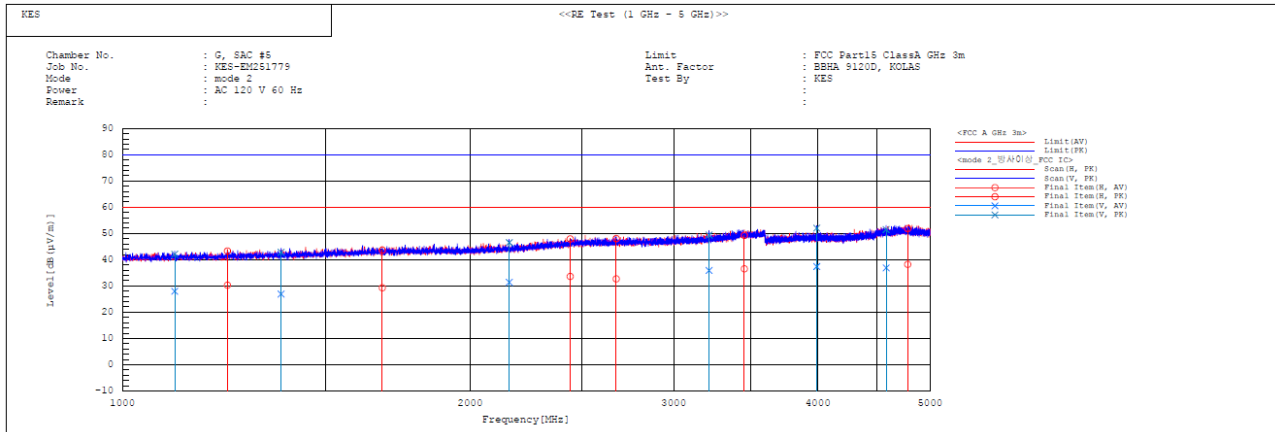
Frequency (MHz)	Reading CISPR AV (dBuV)	Polarization	Height (m)	ANT Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
6 889.700	27.500	H	1.000	35.950	9.970	34.680	38.740	60.000	21.260
6 911.500	27.400	V	1.000	36.060	9.970	34.670	38.760	60.000	21.240



Report No. : KES-EM251779

■ mode 2

- (1 ~ 5) GHz



Final Result

No.	Frequency	Pol	Reading AV	Reading PK	c.f	Result PK	Limit AV	Limit PK	Margin AV	Margin PK	Height	Angle	Remark
	[MHz]		[dB (μV)]	[dB (μV)]	[dB (1/m)]	[dB (μV/m)]	[dB (μV/m)]	[dB (μV/m)]	[dB]	[dB]	[cm]	[deg]	
1	1110.249	V	29.1	43.2	-1.1	42.1	60.0	80.0	32.0	37.9	113.0	69.4	
2	1233.241	H	30.7	43.7	-0.4	43.3	60.0	80.0	29.7	36.7	204.0	169.7	
3	1372.433	V	26.5	42.4	0.4	42.8	60.0	80.0	33.1	37.2	142.0	224.5	
4	1678.807	H	27.5	41.9	1.8	43.7	60.0	80.0	30.7	36.3	179.0	161.3	
5	2162.051	V	27.7	42.8	3.7	46.5	60.0	80.0	28.6	33.5	106.0	212.4	
6	2441.156	H	28.8	43.1	4.8	47.9	60.0	80.0	26.4	32.1	228.0	257.2	
7	2676.433	H	27.2	42.6	5.5	48.1	60.0	80.0	27.3	31.9	331.0	354.2	
8	3220.447	V	29.2	42.7	6.7	49.4	60.0	80.0	24.1	30.6	162.0	274.4	
9	3454.404	H	29.3	42.1	7.2	49.3	60.0	80.0	23.5	30.7	286.0	307.0	
10	3890.658	V	28.5	43.1	8.9	52.0	60.0	80.0	22.6	28.0	202.0	170.8	
11	4582.172	V	25.7	40.3	11.2	51.5	60.0	80.0	23.1	28.5	141.0	42.3	
12	4783.641	H	26.5	40.2	11.7	51.9	60.0	80.0	21.8	28.1	266.0	113.3	



Report No. : KES-EM251779

- (5 ~ 8) GHz

- PK

Frequency (MHz)	Reading PK (dBuV)	Polarization	Height (m)	ANT Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5 872.100	40.600	V	1.000	33.490	9.310	33.540	49.860	80.000	30.140
6 682.300	42.100	H	1.000	34.910	10.120	34.750	52.380	80.000	27.620

- CISPR AV

Frequency (MHz)	Reading CISPR AV (dBuV)	Polarization	Height (m)	ANT Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5 872.100	26.900	V	1.000	33.490	9.310	33.540	36.160	60.000	23.840
6 682.300	28.300	H	1.000	34.910	10.120	34.750	38.580	60.000	21.420

◆ Calculation

$$\text{Result(PK/CAV)} [\text{dB}(\mu\text{V/m})] = (\text{Reading(PK/CAV)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$
$$\text{Margin(PK/CAV)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V/m})] - \text{Result(PK/CAV)} [\text{dB}(\mu\text{V/m})]$$

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

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



Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ mode 1





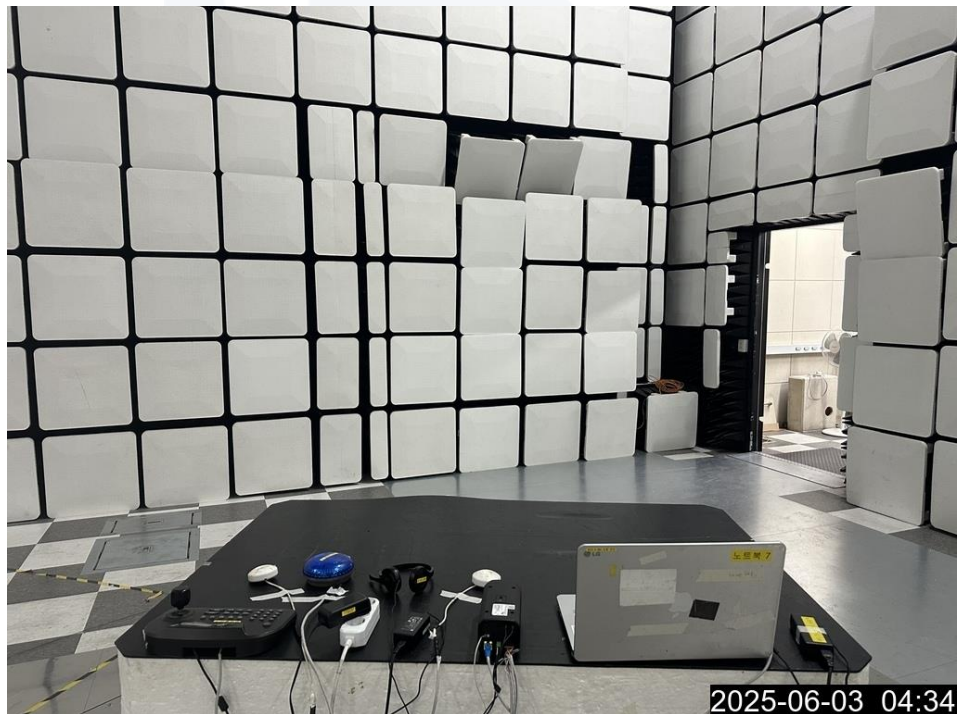
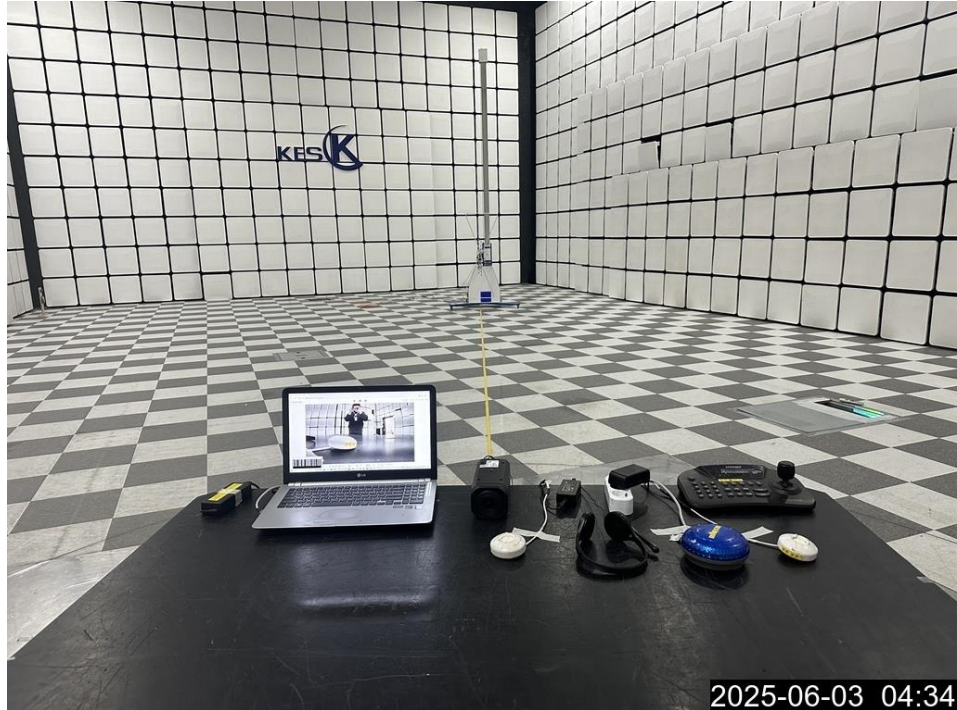
■ mode 2





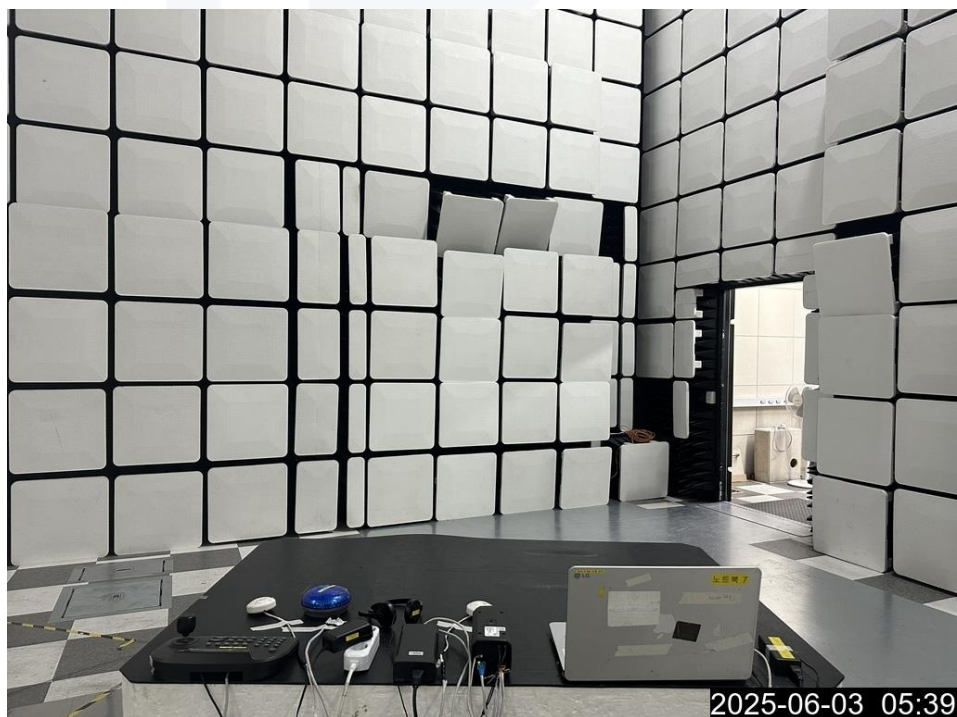
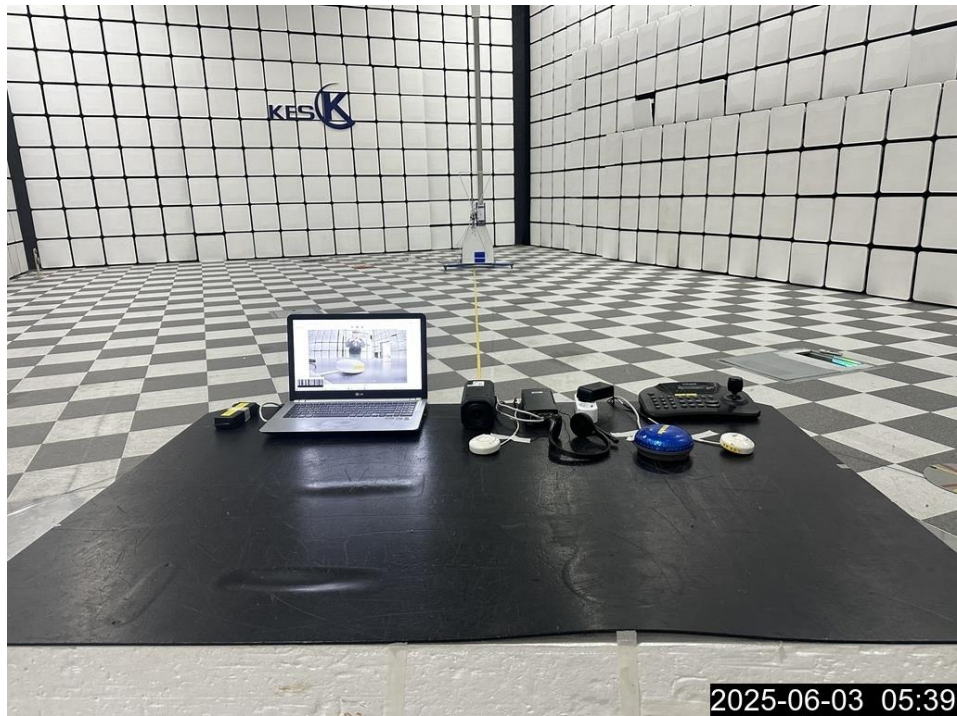
Radiated Electric Field Emissions(Below 1 GHz)

■ mode 1





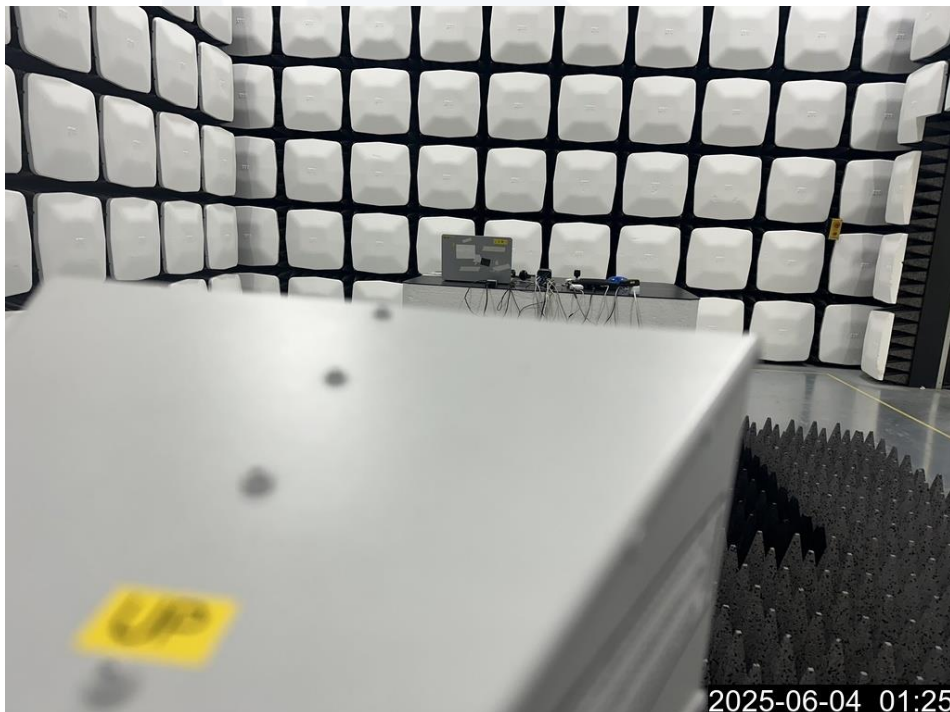
■ mode 2





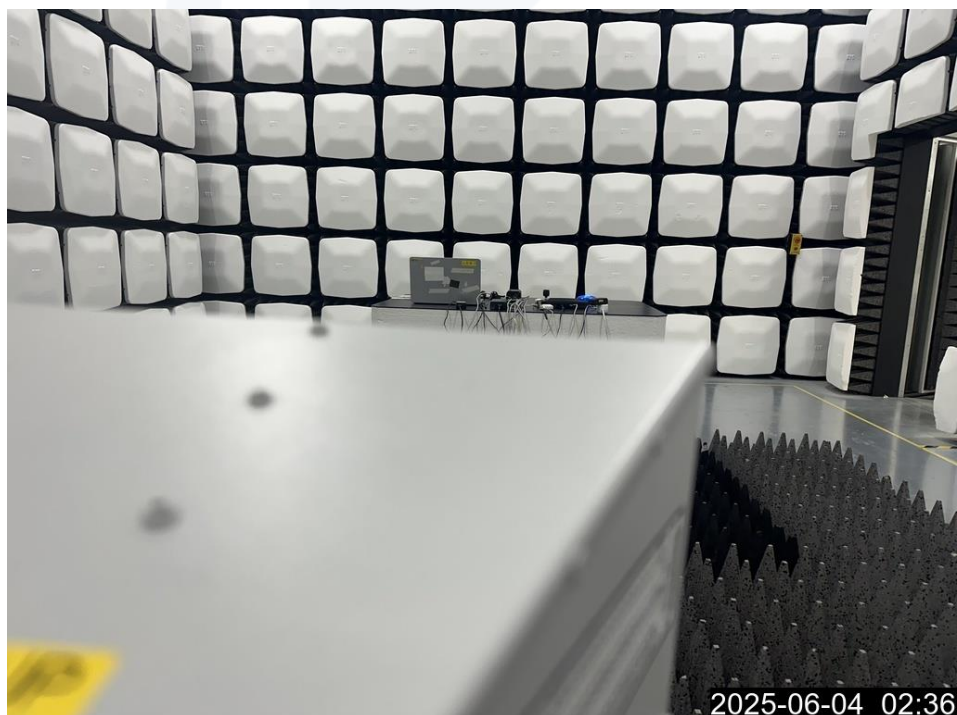
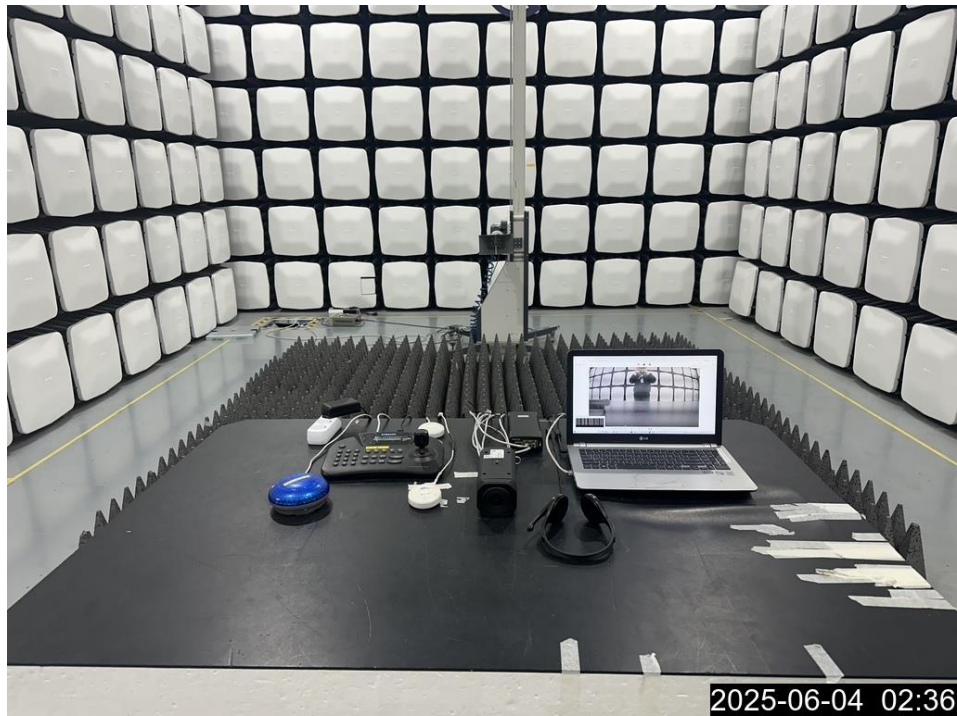
Radiated Electric Field Emissions(Above 1 GHz)

■ mode 1





■ mode 2





EUT External Photographs

(Top)



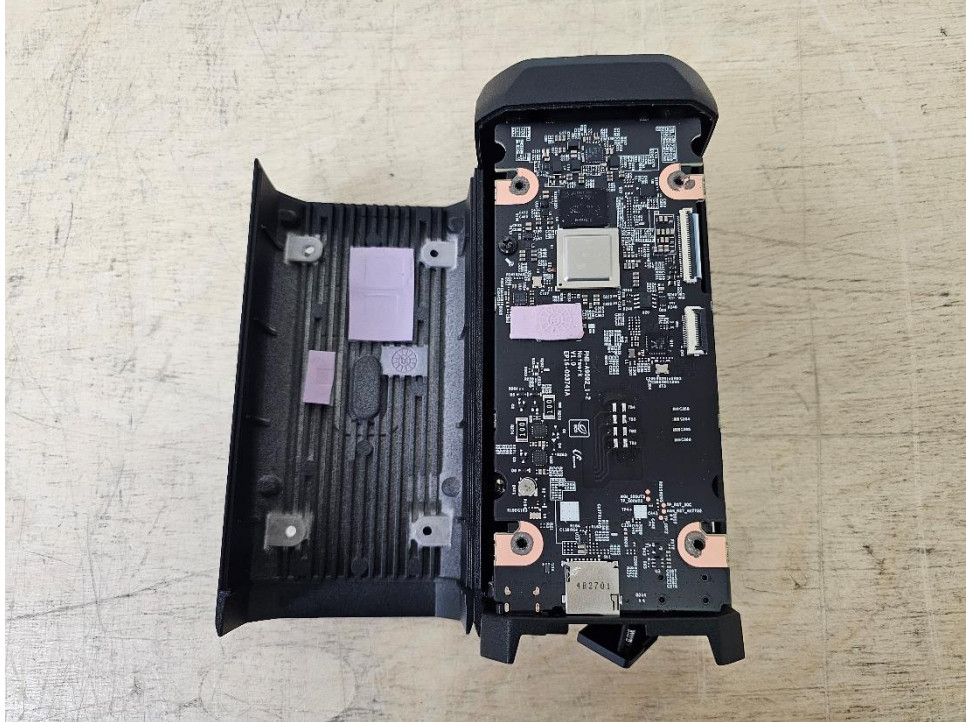
(Bottom)





EUT Internal Photographs

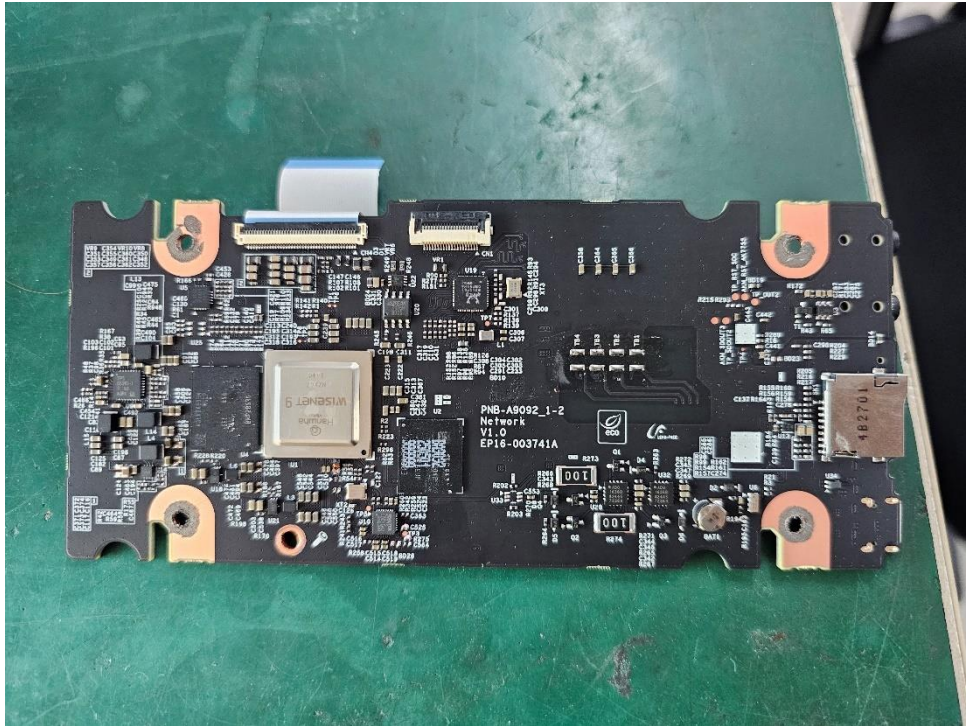
(Internal View)



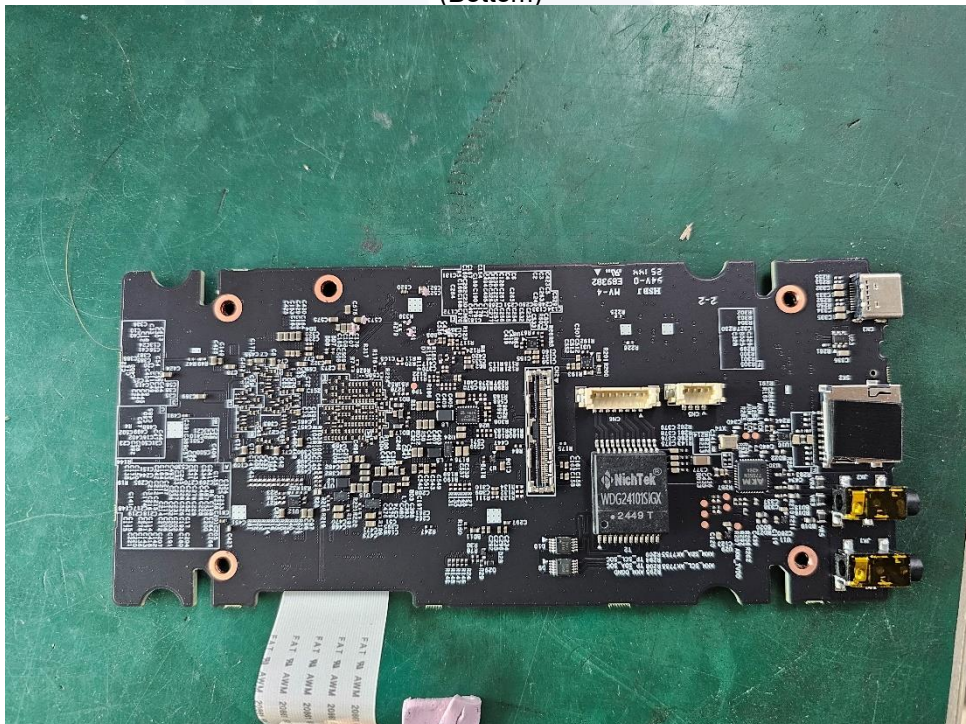


EUT Internal View – Main Board

(Top)



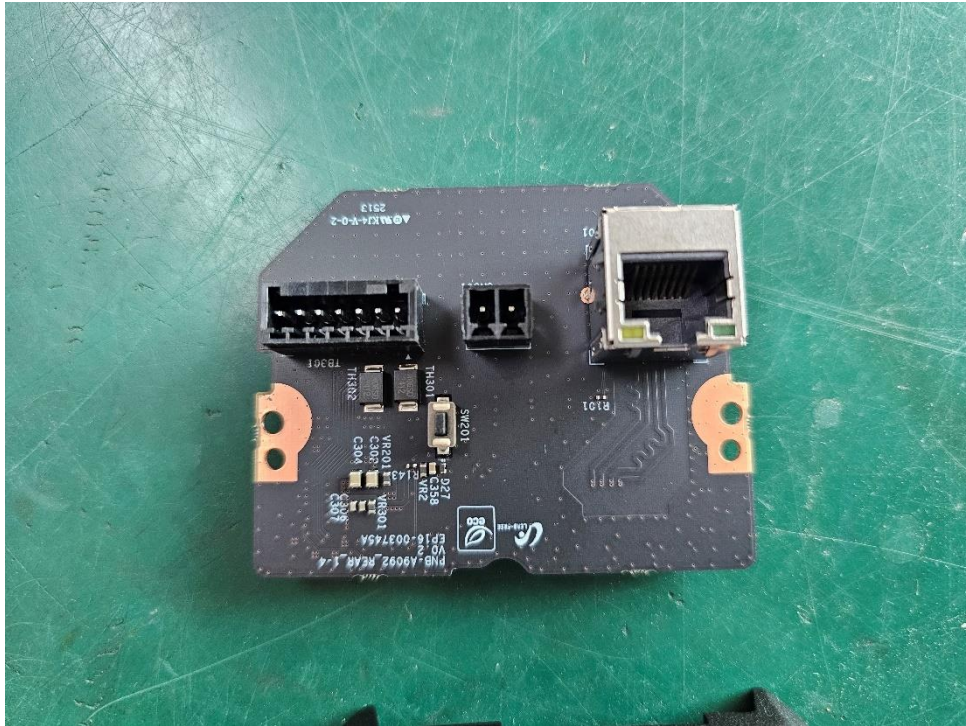
(Bottom)





EUT Internal View – SUB Board 1

(Top)



(Bottom)



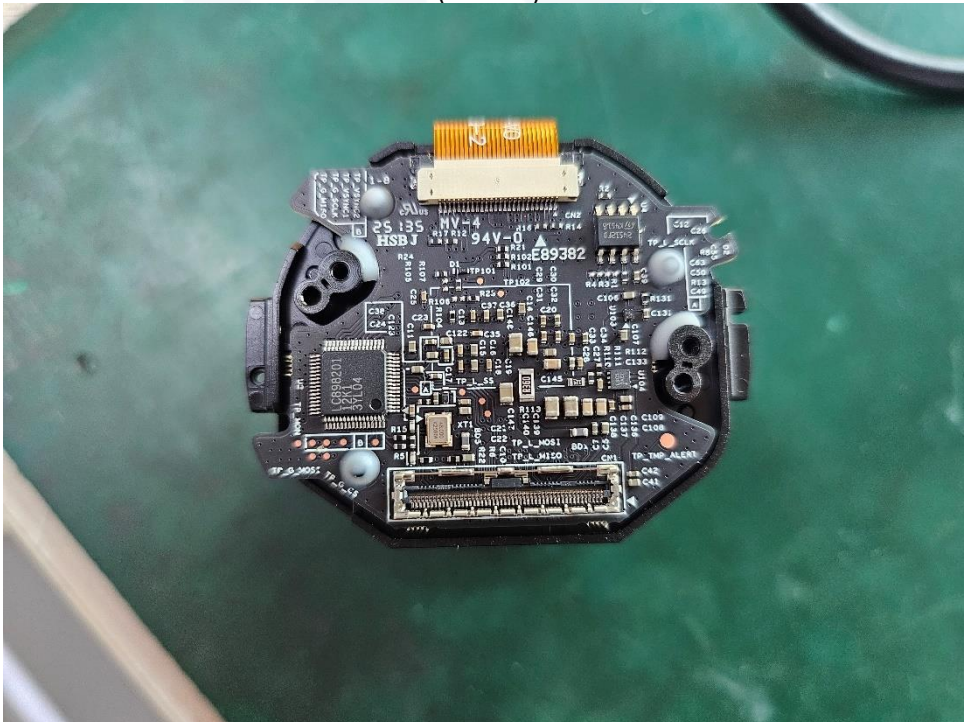


EUT Internal View – Lens Board

(Top)



(Bottom)





Label Photographs

FCC Label



NETWORK CAMERA

PNB-A9082

IC Label

CAN ICES-003(A) / NMB-003(A)

This device complies with ICES-003 Canada Rules Operation is subject to the following two conditions:
(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The End.