



TEST REPORT



Report No. : KES-EM244078-R1

Page 1 / 35

KES Co., Ltd.

#3002, #3503, #3701, 40, Simin-daero365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Republic of Korea
Tel : +82-31-425-6200, Fax : +82-31-381-3838

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. : PNM-C16000QB

Variant Model : PNM-C20000QB

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

3. Date of Receipt : Feb. 13, 2025

4. Test date : Nov. 26, 2024 ~ Nov. 28, 2024

5. Date of Issue : Feb. 17, 2025

6. Test Results : In Compliance

Tested by

Reviewed by

Dong Yun, Lee
EMC Test Engineer

Dae Jung, Choi
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
Dec. 05, 2024	KES-EM244078	Issued
Feb. 17, 2025	KES-EM244078-R1	Reissuance due to the addition of a derivative

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	6
1.2	Variant Model Differences	6
1.3	Device Modifications	6
1.4	Equipment Under Test	6
1.5	Support Equipments	6
1.6	External I/O Cabling.....	7
1.7	EUT Operating Mode(s).....	8
1.8	Configuration.....	9
1.9	Remarks when standards applied	10
1.10	Calibration Details of Equipment Used for Measurement.....	10
1.11	Test Facility	10
1.12	Laboratory Accreditations and Listings	11
2.0	Test Regulations	12
2.1	Conducted Emissions at Mains Power Ports.....	13
2.2	Conducted Emissions at Telecommunication Ports.....	14
2.3	Radiated Electric Field Emissions(Below 1 GHz).....	15
2.4	Radiated Electric Field Emissions(Above 1 GHz)	16
APPENDIX A – TEST DATA		17
Conducted Emissions at Mains Power Ports		17
Conducted Emissions at Telecommunication Ports		19
Radiated Electric Field Emissions(Below 1 GHz)		21
Radiated Electric Field Emissions(Above 1 GHz).....		23
Test Setup Photos and Configuration.....		25
Conducted Emissions at Mains Power Ports		25
Conducted Emissions at Telecommunication Ports		26
Radiated Electric Field Emissions(Below 1 GHz)		28
Radiated Electric Field Emissions(Above 1 GHz).....		30
EUT External Photographs.....		32
EUT Internal Photographs.....		33



1.0 General Product Description

Main Specifications of EUT are:

Internal highest operating frequency : 2.133 GHz

Video	
Imaging Device	None
Resolution	2592x1520, 2560x1440, 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) (2MP) H.265/H.264: Max. 15fps/15fps(60Hz/50Hz) (4MP) MJPEG: Max. 30fps@4MP Max. 5fps
Video Out	HDMI(1920x1080, Single/Quad view), USB-C for installation
Lens	
Optional Lens	SLA-T1080FA, SLA-T2480A, SLA-T2480VA, SLA-T4680A, SLA-T4680VA, SLA-T2880BA (4MP Lenses - will be added as a separate project but the main unit has to be compatible with 4MP resolution lenses)
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(Electrical)
Backlight Compensation	BLC, WDR, SSDR
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	16ea, 4point quadrangle zones - Color: All color - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Digital PTZ	None
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	Classified object type: Person/Face/Vehicle/License plate Attributes: Vehicle(Type: car/bus/truck/motorcycle/bicycle), Person (upper and bottom clothing color) 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, Virtual area(Appear/Disappear), Shock detection Some of the video analytics only works with people and vehicle detection
Business Intelligence	Based on AI engine: People counting, Vehicle counting Queue management, Heatmap (Performance will be confirmed during development)
Serial Interface	None
Alarm I/O	4ea selectable
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule, MQTT subscription
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/MQTT) - Audio clip playback
Audio Streaming	None



Report No. : KES-EM244078-R1

Audio In	4 x Selectable (mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 25K ohm
Audio Out	Line out, Max. output level: 0.5Vrms
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(Sea area), WiseStreamII, WiseStreamIII(Based on AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Quality Level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 12 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS/StartTLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, LLDP, CDP, SRTP (TCP, UDP Unicast), MQTT
SIP support (VoIP, Peer-to-peer, SIP/PBX integration)	None
Security	OS / Firmware Protect : Secure boot, Verify firmware forgery, Firmware encryption User authentication : Digest Authentication 12 Network authentication : 802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2) Secure Communication : HTTPS, WSS(Websocket secure) Access Control : IP address filtering Data Protect : Authentication information encryption, ZIP compression encryption Audit : User Access/System/Event log Device ID : Device Certificate(Hanwha Vision Root CA, preinstalled) Secure Storage :
Application Programming Interface	ONVIF Profile S/G/T/M SUNAPI(HTTP API)
Security	
OS / Firmware Protect	Secure boot, Signed firmware, Firmware encryption
User authentication	Digest Authentication,
Network authentication	802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2)
Secure Communication	HTTPS, SRTP, WSS(Websocket secure)
Access Control	IP address filtering
Data Protect	Authentication information encryption, ZIP compression encryption
Audit	User Access/System/Event log
Device ID	Device Certificate(HanwhaVision Root CA, pre-installed)
Secure Storage	TPM 2.0 with FIPS 140-3 level3
General	
Webpage Language	English, Korean, Chinese Simplified, Chinese Traditional, French, Italian, Spanish, German, Japanese, Russian, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek.
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot 2TB(1TB X 2)
Memory	8GB RAM, 16GB eMMC (TBD)
Environmental & Electrical	
Operating Temperature / Humidity	-10°C ~ +45°C(14°F ~ +113°F) / Less than 95% RH(Non condensing)
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	None
Input Voltage	PoE+(IEEE802.3at, Class4), 12VDC
Power Consumption	PoE : Max 25.5W 0.48A DC 12V : Max 23.1W 1.93A
Mechanical	
Color / Material	Black / Plastic, Dicasting
RAL Code	RAL9003
Product Dimensions / Weight	200(W)x37(H)x146(D)mm (7.87x1.46x5.75"), weight : TBD
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
Safety	UL 62368-1, CAN/CSA C22.2 NO. 62368-1 IEC/EN 62471
Environment	IEC/EN 63000 IEC/EN 60529, IEC/EN 62262

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)



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

Adding a Simple Variant Model on Customer Request

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	PNM-C16000QB	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Laptop	P95G001	8KM8HT2	DELL INC.	-
Laptop Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Micro SD Card	-	-	SanDisk	16 GB
Alarm	PRO-SL	-	SENSOR PRO	-
Button Alarm	-	-	-	-
Headset	K550	-	Britz®	-
Smartphone	-	-	SAMSUNG	-
Monitor	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-
Camera1	-	-	-	-
Camera2	-	-	-	-
Camera3	-	-	-	-
Camera4	-	-	-	-



1.6 External I/O Cabling

#1

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45(LAN)	Laptop	RJ-45(LAN)	3.1	U
	Alarm OUT	Alarm	Alarm IN	3.5	U
	Alarm IN	Button Alarm	Alarm OUT	3.5	U
	Audio OUT	Headset	Audio IN	1.5	U
	Audio IN		Audio OUT	1.5	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	HDMI	Monitor	HDMI	1.7	S
	6 Pin(1)	Camera1	6 Pin(1)	5.0	U
	6 Pin(2)	Camera2	6 Pin(2)	5.0	U
	6 Pin(3)	Camera3	6 Pin(3)	5.0	U
	6 Pin(4)	Camera4	6 Pin(4)	5.0	U
	2 Pin (DC Power)	AC/DC Adapter	2 Pin (DC Power)	1.6	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
	3.5 mm	Smartphone	3.5 mm	1.0	U

* Unshielded=U, Shielded=S

#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)	3.5	U
	Alarm OUT	Alarm	Alarm IN	3.5	U
	Alarm IN	Button Alarm	Alarm OUT	3.5	U
	Audio OUT	Headset	Audio IN	1.5	U
	Audio IN		Audio OUT	1.5	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	HDMI	Monitor	HDMI	1.7	S
	6 Pin(1)	Camera1	6 Pin(1)	5.0	U
	6 Pin(2)	Camera2	6 Pin(2)	5.0	U
	6 Pin(3)	Camera3	6 Pin(3)	5.0	U
	6 Pin(4)	Camera4	6 Pin(4)	5.0	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.3	U
	3.5 mm	Smartphone	3.5 mm	1.0	U
	RJ-45(LAN)	PoE Adapter	RJ-45(LAN)	1.8	U

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

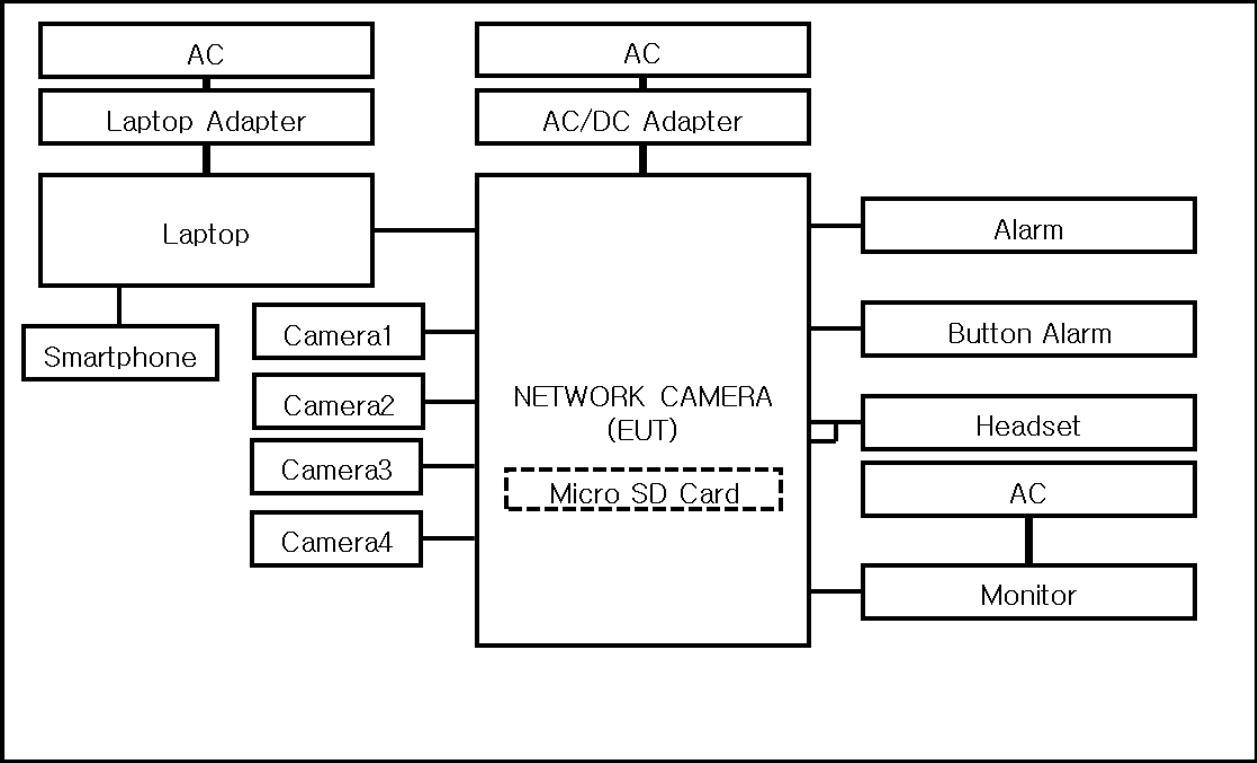
Dision	Mode name	Operating status
#1	AC/DC Adapter	-After connecting the test equipment and DC power supply, 1. Run the web viewer on your laptop and check the camera video output. 2. Check the network status by performing PingTest on your laptop. 3. Press the button alarm to check alarm output 4. Play 1kHz tone on your smartphone and check the output on the headset. 5. Record from laptop and check input with headset microphone 6. After the test, the Micro SD Card saved file was checked.
#2	PoE	- After connecting the test equipment and PoE adapter 1. Run the web viewer on your laptop and check the camera video output. 2. Check the network status by performing PingTest on your laptop. 3. Press the button alarm to check alarm output 4. Play 1kHz tone on your smartphone and check the output on the headset. 5. Record from laptop and check input with headset microphone 6. After the test, the Micro SD Card saved file was checked.

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

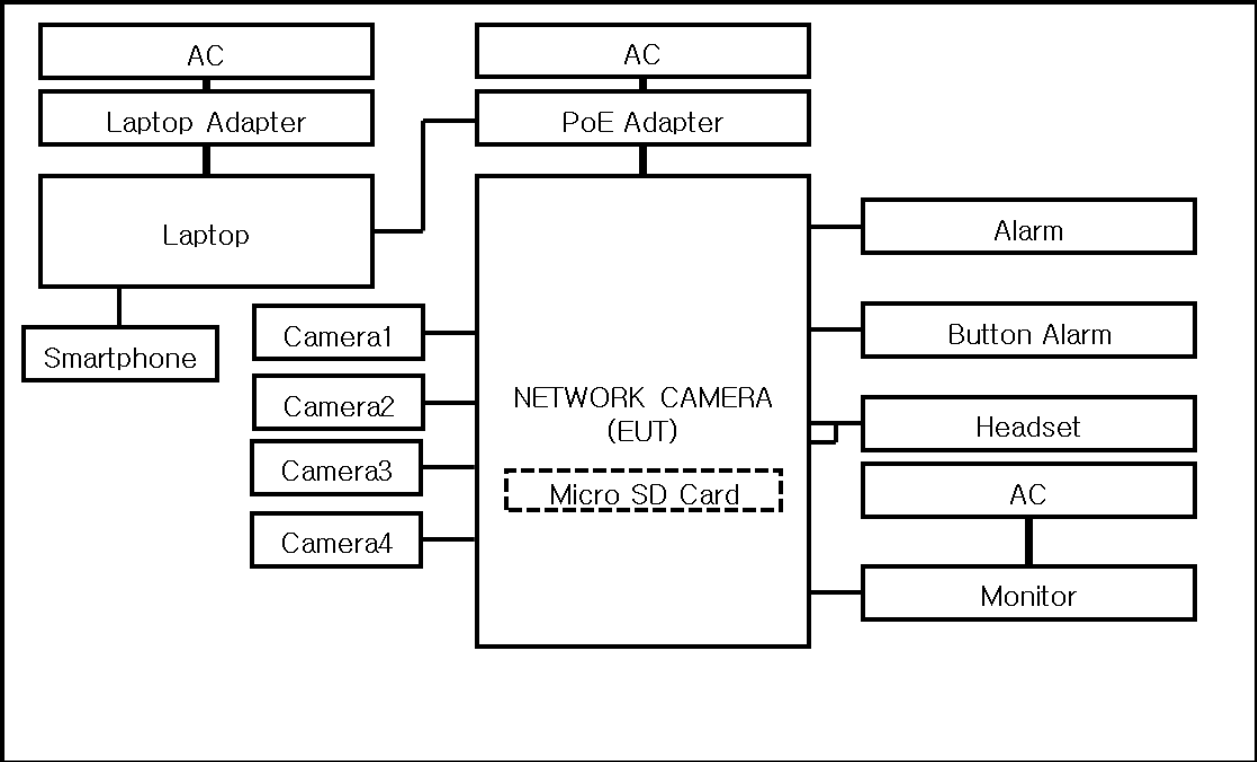


1.8 Configuration

■ #1



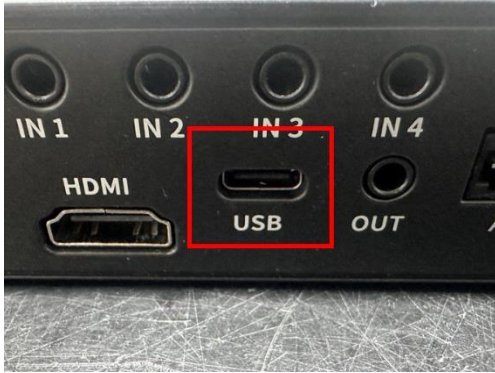
■ #2





1.9 Remarks when standards applied

- In PoE mode, the LAN port is regarded as a wired communication network port and power-related ports are not tested.
- USB Type-C port is not tested because it is for administrators.
- port picture for admin



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 0008



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

Nov. 28, 2024

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 10, 2025
☒	LISN	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025

Test Conditions

Temperature: (22,6 ± 0,1) °C

Relative Humidity: (45,9 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Nov. 28, 2024

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	11, 06, 2025
☒	LISN	ENV216	R & S	101786	01, 10, 2025
☒	LISN	ESH2-Z5	R & S	100450	11, 06, 2025
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	11, 12, 2025
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101666	03, 06, 2025

Test Conditions

Temperature: (22,6 ± 0,1) °C

Relative Humidity: (45,9 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 26, 2024

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	02, 13, 2025
☒	AMPLIFIER	SCU 01	R & S	100603	11, 06, 2025
☒	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	05, 09, 2026
☒	ATTENUATOR	6806.17.A	HUBER+SUHNER	-	02, 13, 2025

Test Conditions

Temperature: (22,9 ± 0,2) °C

Relative Humidity: (46,5 ± 0,2) % 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

RemarksSee Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Nov. 27, 2024

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

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

Test Conditions

Temperature: (22,7 ± 0,2) °C

Relative Humidity: (46,3 ± 0,2) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

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



APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

■ #1

HOT LINE

Common Information

Test Description:

Conducted Emission

Job No.:

KES-EM244078

Phase:

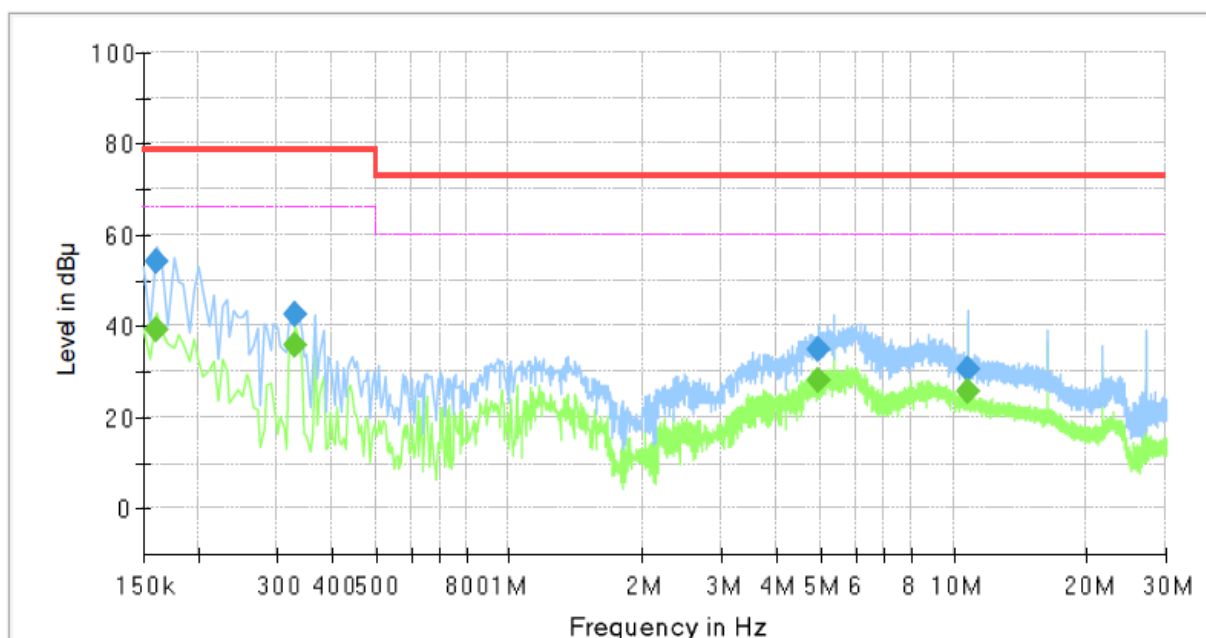
L

Mode:

#1

Operator Name:

KES



Final Result

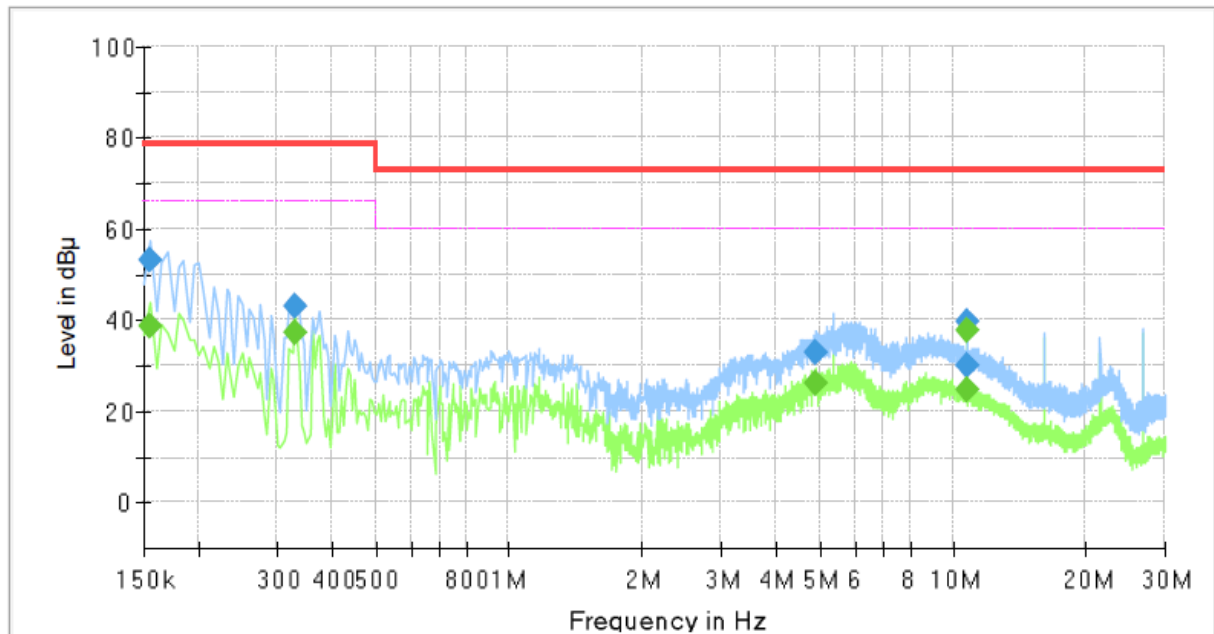
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margi n (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	54.38	---	79.00	24.62	1000.0	9.000	L1	19.6
0.160000	---	39.03	66.00	26.97	1000.0	9.000	L1	19.6
0.330000	42.47	---	79.00	36.53	1000.0	9.000	L1	19.6
0.330000	---	35.82	66.00	30.18	1000.0	9.000	L1	19.6
4.975000	34.64	---	73.00	38.36	1000.0	9.000	L1	19.9
4.975000	---	27.88	60.00	32.12	1000.0	9.000	L1	19.9
10.775000	---	25.60	60.00	34.40	1000.0	9.000	L1	20.1
10.775000	30.47	---	73.00	42.53	1000.0	9.000	L1	20.1



NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM244078
Phase: N
Mode: #1
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margi n (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	53.30	---	79.00	25.70	1000.0	9.000	N	19.5
0.155000	---	38.82	66.00	27.18	1000.0	9.000	N	19.5
0.330000	---	37.45	66.00	28.55	1000.0	9.000	N	19.6
0.330000	43.06	---	79.00	35.94	1000.0	9.000	N	19.6
4.905000	---	26.30	60.00	33.70	1000.0	9.000	N	19.9
4.905000	33.00	---	73.00	40.00	1000.0	9.000	N	19.9
10.715000	39.55	---	73.00	33.45	1000.0	9.000	N	20.1
10.715000	---	37.80	60.00	22.20	1000.0	9.000	N	20.1
10.720000	---	24.75	60.00	35.25	1000.0	9.000	N	20.1
10.720000	30.07	---	73.00	42.93	1000.0	9.000	N	20.1

◆ 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))

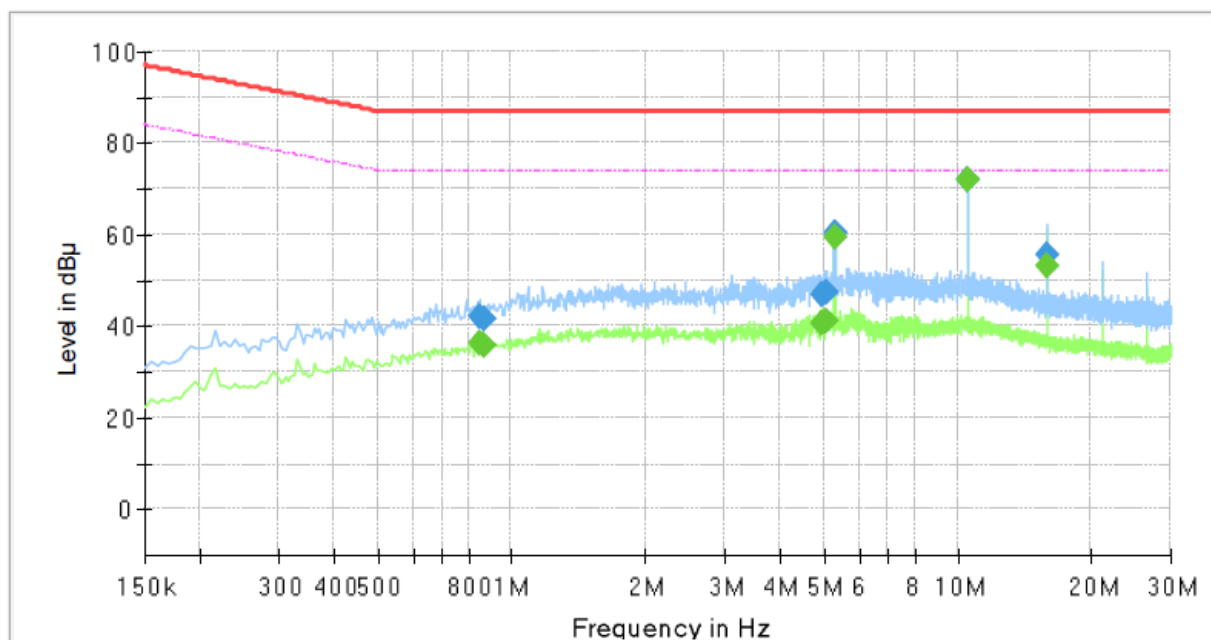
**Conducted Emissions at Telecommunication Ports**

■ #1

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Job No.: KES-EM244078
Mode : #1
Speed : 1000 Mbps
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.845000	41.90	---	87.00	45.10	1000.0	9.000	Single Line	19.5
0.845000	---	36.11	74.00	37.89	1000.0	9.000	Single Line	19.5
0.865000	41.77	---	87.00	45.23	1000.0	9.000	Single Line	19.5
0.865000	---	36.03	74.00	37.97	1000.0	9.000	Single Line	19.5
4.985000	47.06	---	87.00	39.94	1000.0	9.000	Single Line	19.6
4.985000	---	40.78	74.00	33.22	1000.0	9.000	Single Line	19.6
5.080000	47.38	---	87.00	39.62	1000.0	9.000	Single Line	19.6
5.080000	---	41.00	74.00	33.00	1000.0	9.000	Single Line	19.6
5.280000	60.51	---	87.00	26.49	1000.0	9.000	Single Line	19.6
5.280000	---	59.64	74.00	14.36	1000.0	9.000	Single Line	19.6
10.555000	---	71.83	74.00	2.17	1000.0	9.000	Single Line	19.7
10.555000	72.03	---	87.00	14.97	1000.0	9.000	Single Line	19.7
15.835000	---	53.07	74.00	20.93	1000.0	9.000	Single Line	19.8
15.835000	55.57	---	87.00	31.43	1000.0	9.000	Single Line	19.8

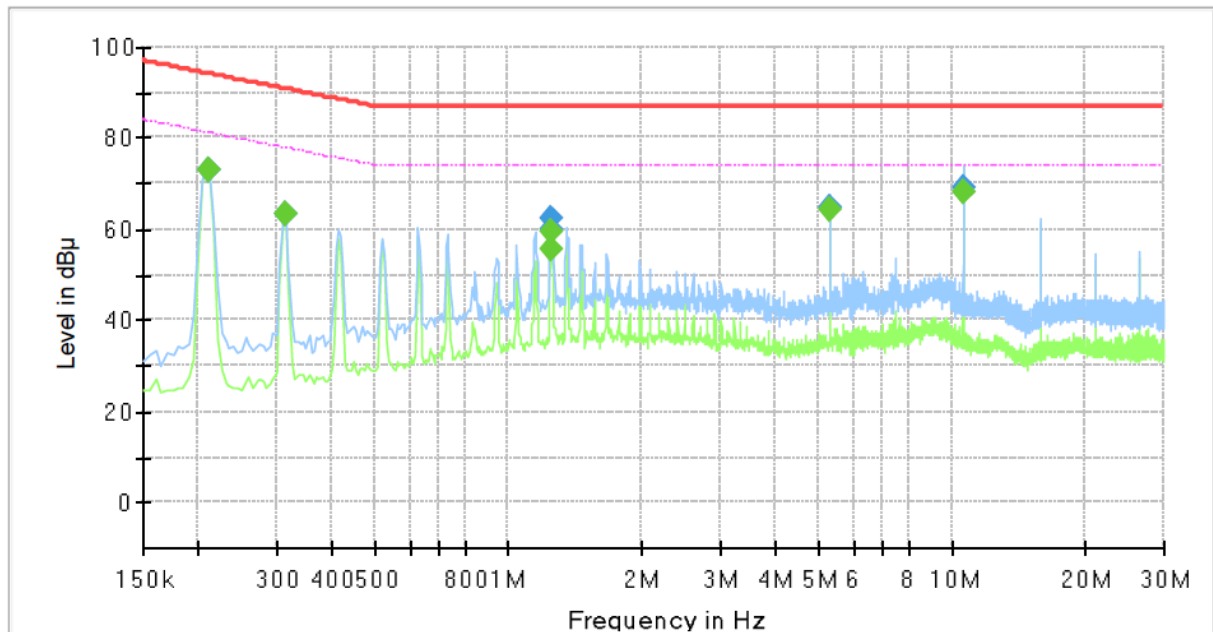


■ #2

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Job No.: KES-EM244078
Mode : #2
Speed : 1000 Mbps
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.210000	73.05	---	94.21	21.16	1000.0	9.000	Single Line	19.7
0.210000	---	72.84	81.21	8.37	1000.0	9.000	Single Line	19.7
0.315000	---	63.10	77.84	14.74	1000.0	9.000	Single Line	19.6
0.315000	63.41	---	90.84	27.43	1000.0	9.000	Single Line	19.6
1.250000	---	59.52	74.00	14.48	1000.0	9.000	Single Line	19.5
1.250000	62.52	---	87.00	24.48	1000.0	9.000	Single Line	19.5
1.255000	59.94	---	87.00	27.06	1000.0	9.000	Single Line	19.5
1.255000	---	55.74	74.00	18.26	1000.0	9.000	Single Line	19.5
5.295000	64.64	---	87.00	22.36	1000.0	9.000	Single Line	19.6
5.295000	---	64.34	74.00	9.66	1000.0	9.000	Single Line	19.6
10.590000	68.94	---	87.00	18.06	1000.0	9.000	Single Line	19.7
10.590000	---	67.93	74.00	6.07	1000.0	9.000	Single Line	19.7

◆ Calculation

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

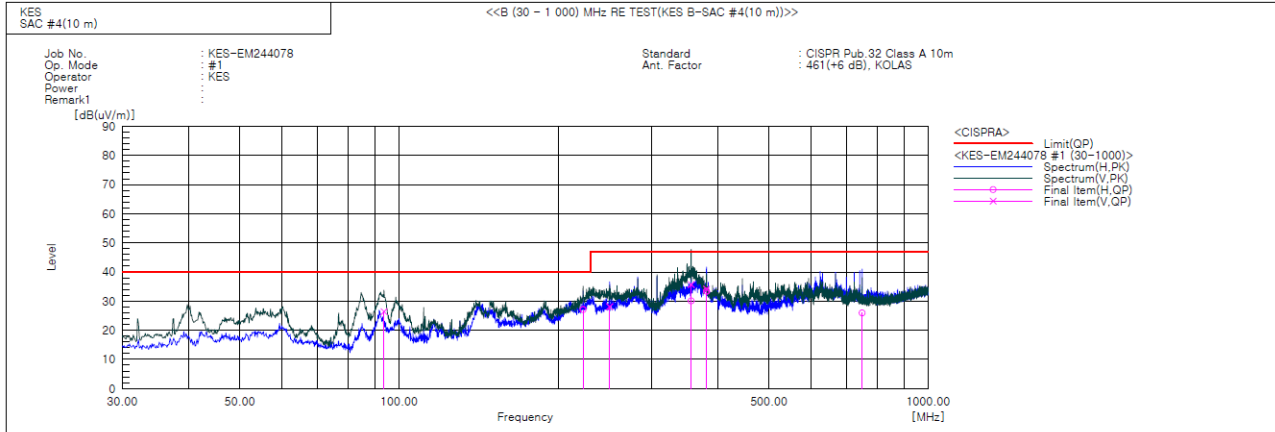
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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

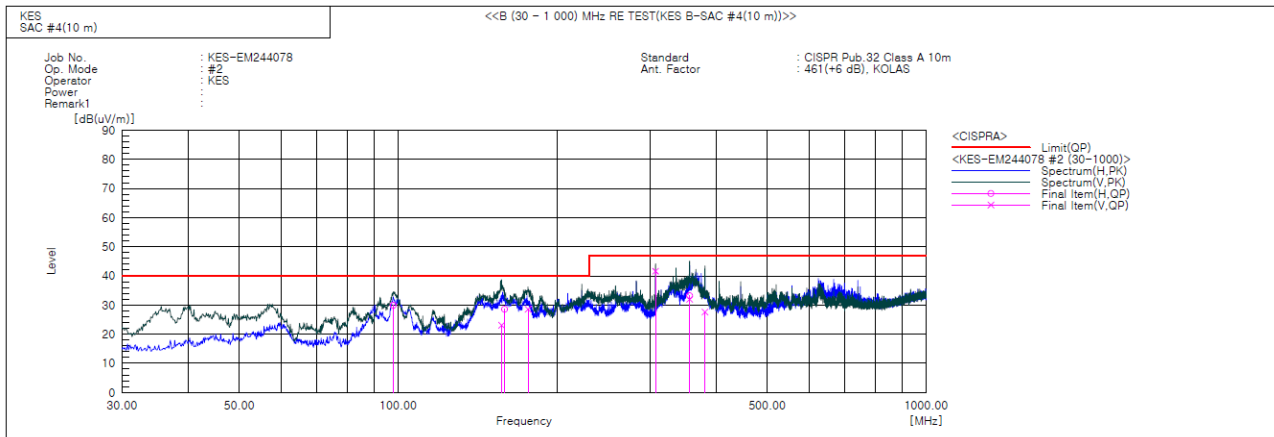
■ #1

**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	93.656	V	52.4	-26.0	26.4	40.0	13.6	104.0	131.0	
2	222.788	H	48.4	-21.3	27.1	40.0	12.9	391.0	53.0	
3	249.948	V	47.7	-19.6	28.1	47.0	18.9	107.0	188.0	
4	356.284	H	45.5	-15.4	30.1	47.0	16.9	397.0	258.0	
5	356.285	V	51.1	-15.4	35.7	47.0	11.3	112.0	229.0	
6	380.896	V	48.7	-14.5	34.2	47.0	12.8	113.0	248.0	
7	380.898	H	47.9	-14.5	33.4	47.0	13.6	390.0	135.0	
8	750.104	H	29.9	-3.9	26.0	47.0	21.0	383.0	1.0	



■ #2



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	97.900	H	55.2	-25.3	29.9	40.0	10.1	381.0	175.0	
2	156.949	V	42.6	-19.5	23.1	40.0	16.9	118.0	144.0	
3	159.010	H	48.2	-19.6	28.6	40.0	11.4	399.0	130.0	
4	176.106	V	49.2	-20.6	28.6	40.0	11.4	109.0	46.0	
5	307.178	V	58.5	-16.9	41.6	47.0	5.4	112.0	215.0	
6	356.284	V	47.4	-15.4	32.0	47.0	15.0	105.0	226.0	
7	356.405	H	48.6	-15.4	33.2	47.0	13.8	392.0	288.0	
8	380.898	V	42.1	-14.5	27.6	47.0	19.4	110.0	301.0	

◆ 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)]

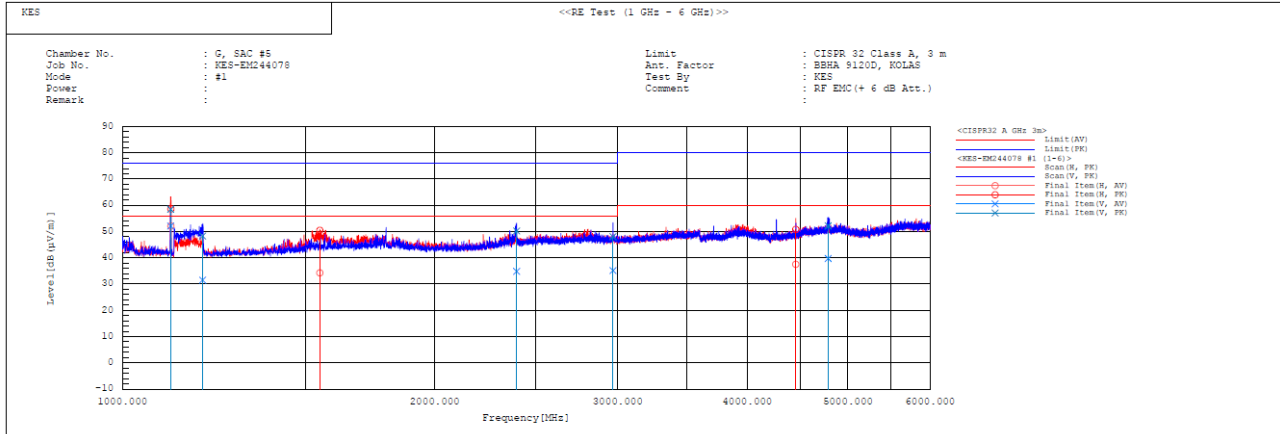
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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



Radiated Electric Field Emissions(Above 1 GHz)

#1

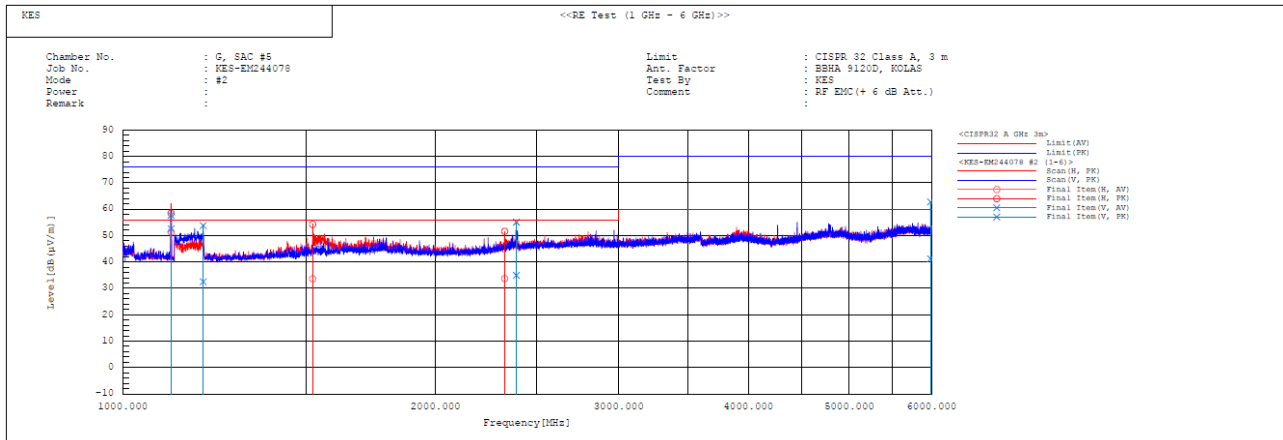


Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1113.457	V	53.2	59.6	-1.1	52.1	58.5	56.0	76.0	3.9	17.5	100.0	31.2	
2	1113.631	H	53.2	59.7	-1.1	52.1	58.6	56.0	76.0	3.9	17.4	100.0	37.3	
3	1195.187	V	32.1	48.9	-0.6	31.5	48.3	56.0	76.0	24.5	27.7	100.0	0.0	
4	1549.500	H	33.1	49.3	1.2	34.3	50.5	56.0	76.0	21.7	25.5	100.0	285.4	
5	2398.448	V	30.4	45.8	4.4	34.8	50.2	56.0	76.0	21.2	25.8	100.0	272.4	
6	2969.689	V	28.9	41.9	6.2	35.1	48.1	56.0	76.0	20.9	27.9	100.0	317.9	
7	4454.560	H	27.4	40.7	10.1	37.5	50.8	60.0	80.0	22.5	29.2	100.0	344.2	
8	4787.285	V	28.4	40.9	11.3	39.7	52.2	60.0	80.0	20.3	27.8	100.0	170.2	



#2



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB (μV)]	Reading PK [dB (μV)]	c.f [dB (1/m)]	Result AV [dB (μV/m)]	Result PK [dB (μV/m)]	Limit AV [dB (μV/m)]	Limit PK [dB (μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1113.242	H	52.5	59.6	-1.1	51.4	58.5	56.0	76.0	4.6	17.5	100.0	329.9	
2	1113.179	V	53.6	58.8	-1.1	52.5	57.7	56.0	76.0	3.5	18.3	100.0	310.6	
3	1195.538	V	33.1	54.4	-0.6	32.5	53.8	56.0	76.0	23.5	22.2	100.0	0.5	
4	1523.279	H	32.5	53.1	1.1	33.6	54.2	56.0	76.0	22.4	21.8	100.0	44.0	
5	2331.308	H	29.5	47.4	4.2	33.7	51.6	56.0	76.0	22.3	24.4	100.0	44.0	
6	2391.667	V	30.5	50.7	4.4	34.9	55.1	56.0	76.0	21.1	20.9	100.0	31.2	
7	5987.339	V	27.0	48.6	14.2	41.2	62.8	60.0	80.0	18.8	17.2	100.0	357.0	

◆ 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

■ #1





Conducted Emissions at Telecommunication Ports

■ #1





■ #2





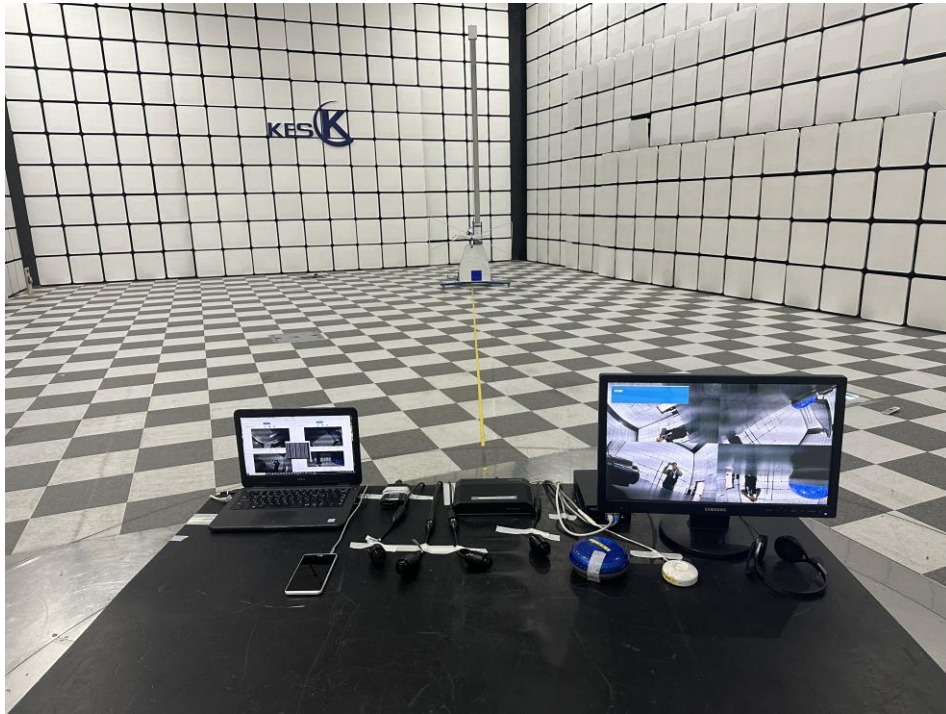
Radiated Electric Field Emissions(Below 1 GHz)

■ #1





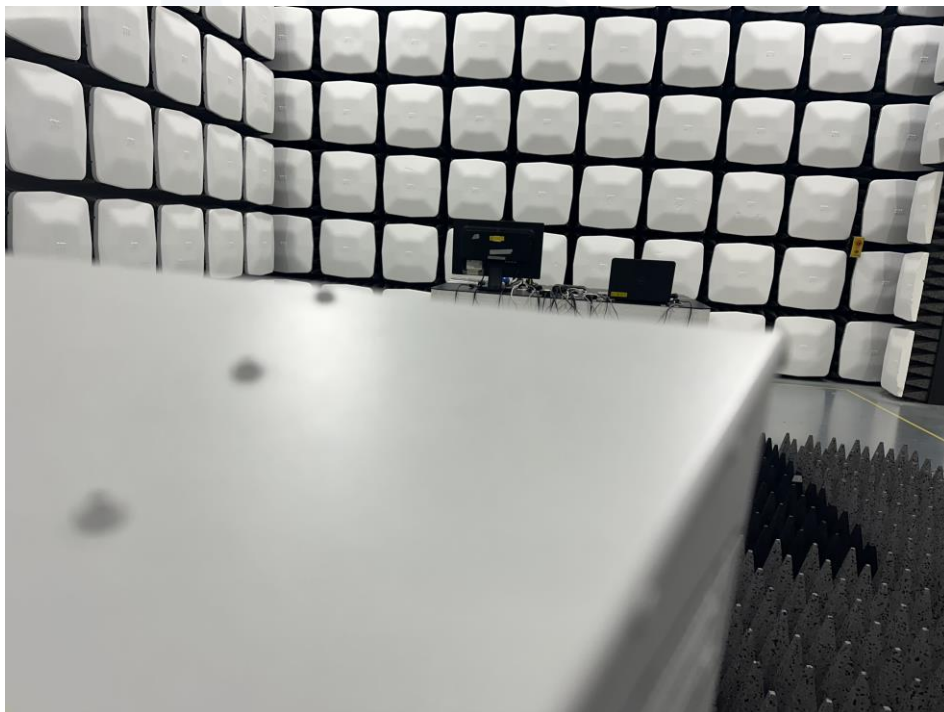
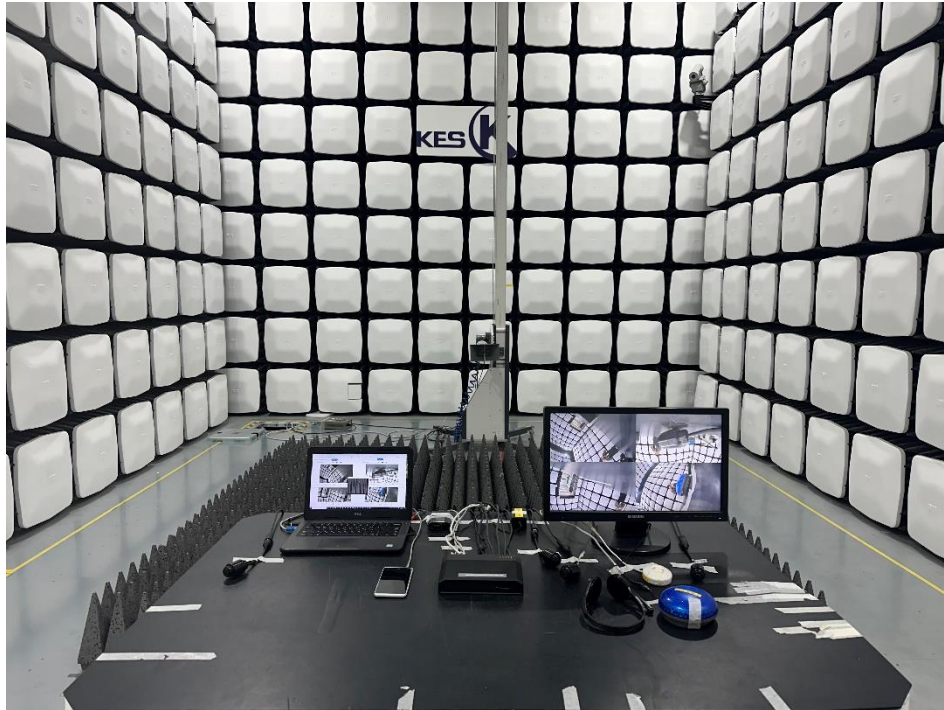
■ #2





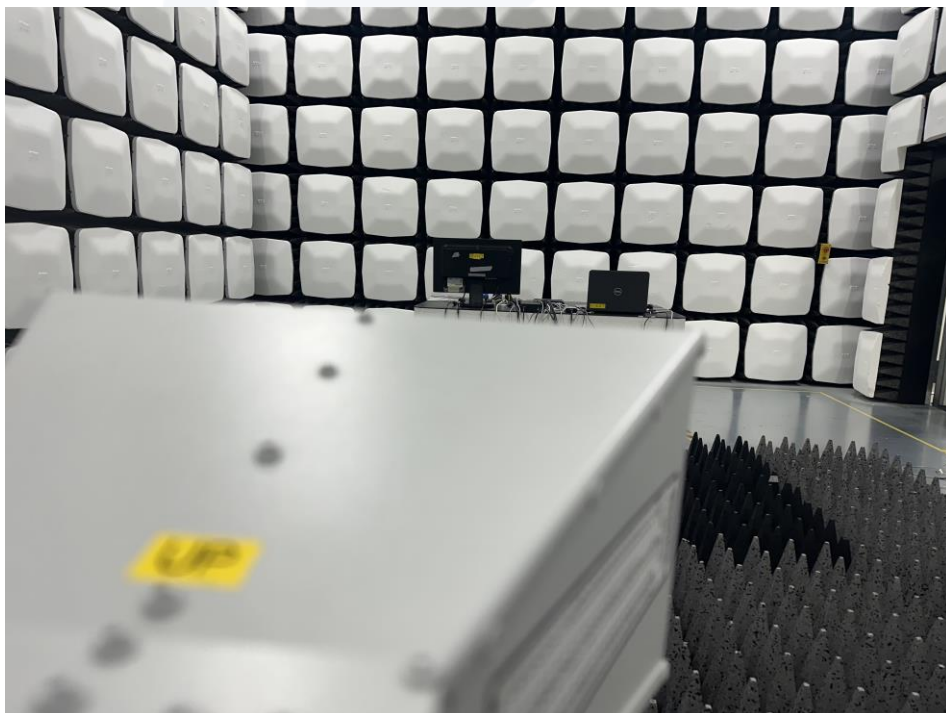
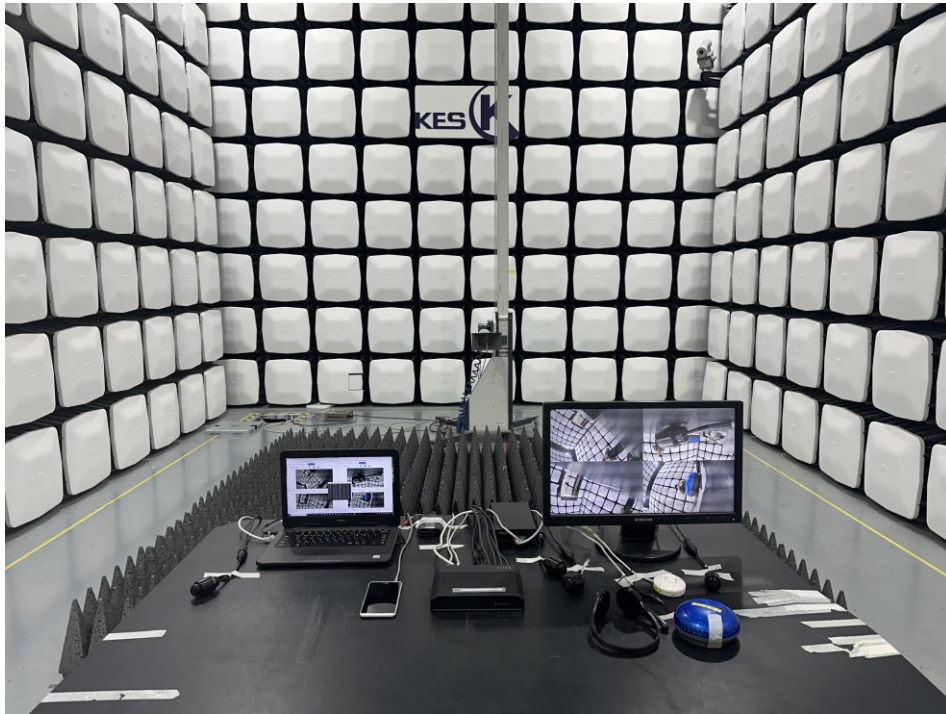
Radiated Electric Field Emissions(Above 1 GHz)

■ #1





■ #2





EUT External Photographs

(Top)



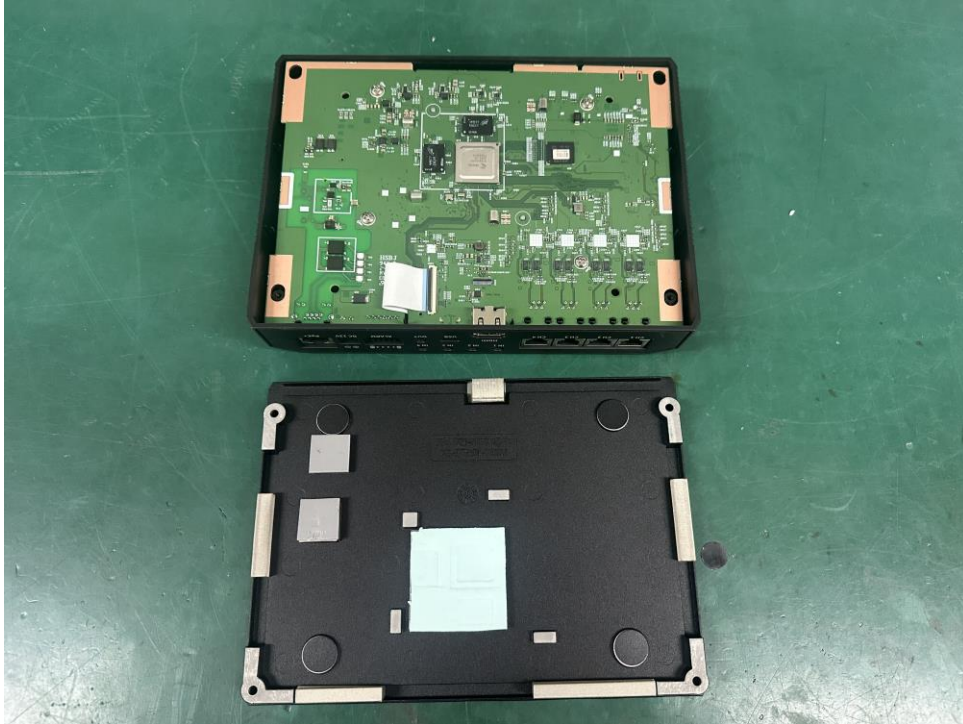
(Bottom)





EUT Internal Photographs

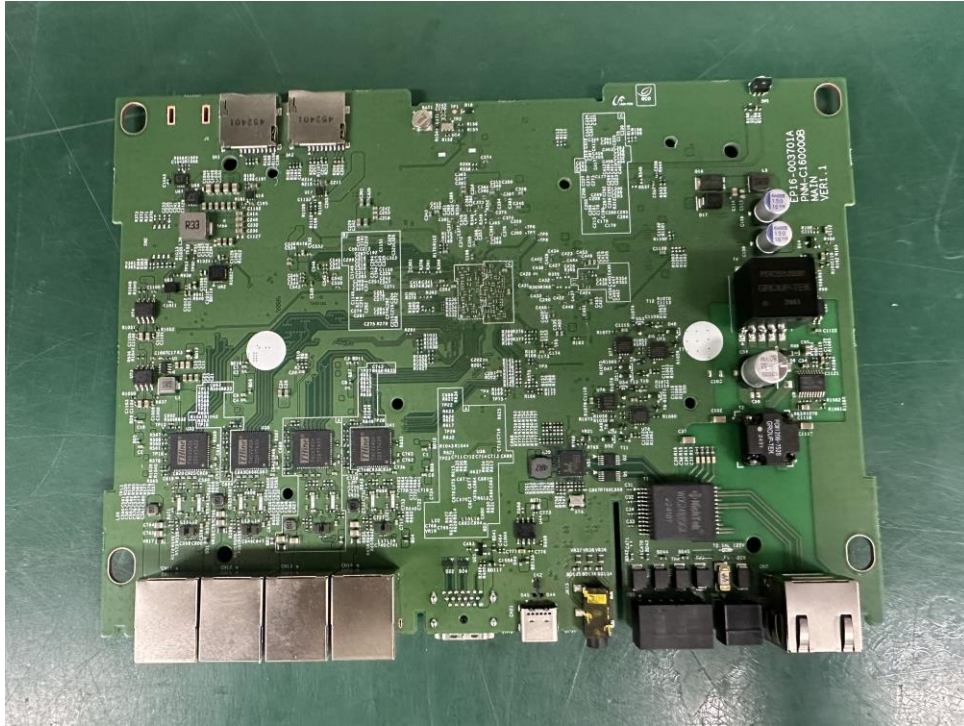
(Internal View)



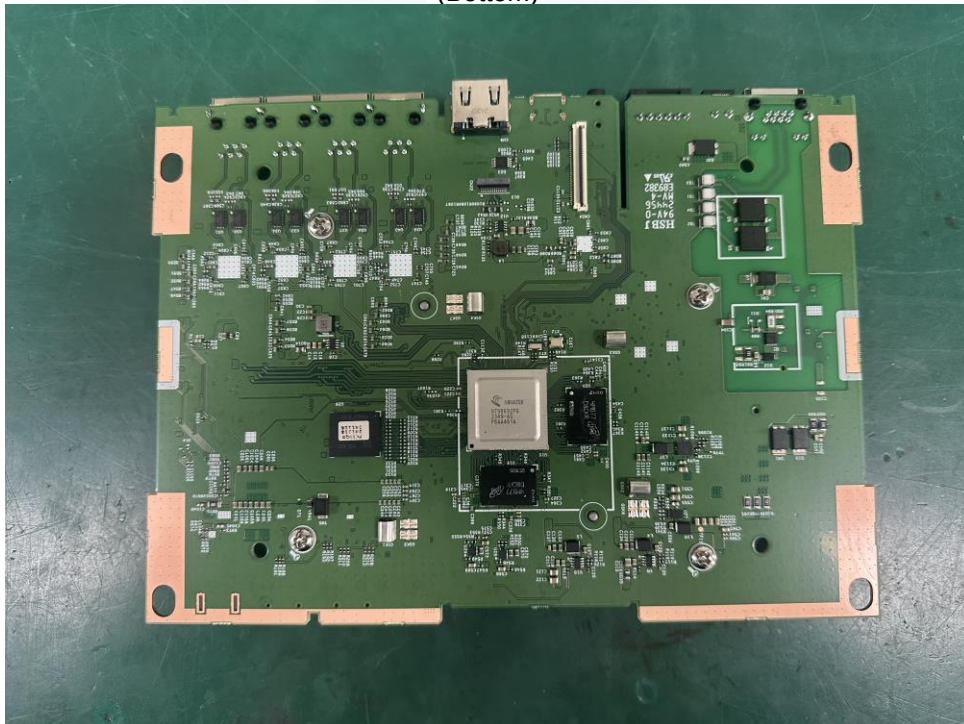


EUT Internal View – Board 1

(Top)



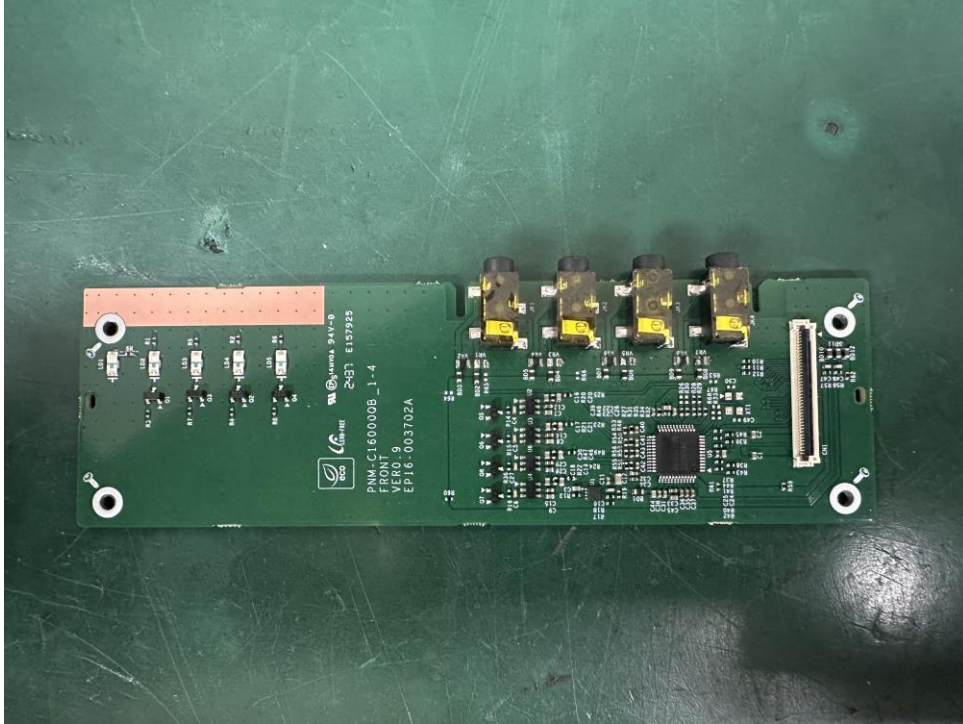
(Bottom)



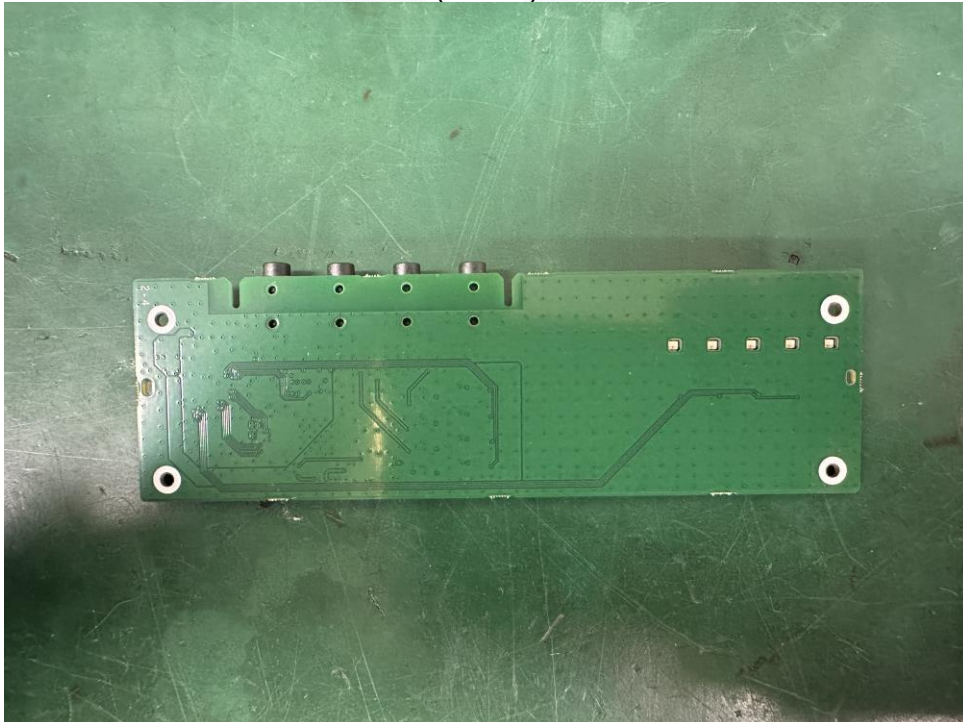


EUT Internal View – Board 2

(Top)



(Bottom)



The End.