



TEST REPORT



Report No. : KES-EM250495

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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. : QNF-C9010V

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 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. 10, 2025

4. Test date : Feb. 10, 2025 ~ Feb. 11, 2025

5. Date of Issue : Feb. 18, 2025

6. Test Results : In Compliance

Tested by

[전은구]2025/02/18

Eun Gu, Jeon
EMC Test Engineer

Reviewed by

[장동훈]2025/02/18

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
Feb. 18, 2025	KES-EM250495	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Division		Specificity
Internal highest clock frequency		1 866 MHz
Power	Rated Power	PoE
	Test Power	AC 230 V, 50 Hz
Ports	I/O Port	RJ-45(PoE) 1 EA, Micro SD Slot 1 EA
	Unused Port	Administrator port : USB Micro B Type
Components		EUT 1 EA
Ethernet Speed		100 Mbps



Video	
Imaging Device	1/1.6" 12MP CMOS
Resolution	Overview : 3008x3008, 2560x2560, 1920x1920, 1504x1504, 1280x1280, 800x800, 640x640, 480x480 Double panorama: 3584x1792, 1920x960, 1280x640, 1024x512, 640x320 Single panorama: 3584x896, 1920x480, 1280x320, 1024x256, 640x160 Quad view: 3584x2688, 2048x1536, 1792x1344, 1024x768, 768x576, 512x384 Q1/Q2/Q3/Q4(4:3): 1792x1344, 1024x768, 768x576, 512x384
Max. Framerate	Original view: Max.20ps@3008x3008, Double panorama: Max.20fps@3584x1792 Single panorama: Max.20fps@3584x896 Quad view: Max.20fps@3584x2688 Q1/Q2/Q3/Q4(4:3): Max.20fps@1792x1344 MJPEG: Max.5fps
NETD	None
Pixel Size	None
Min. Illumination	Color: (TBD)Lux (F1.8, 1/30sec)
Video Out	USB: Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	1.76mm fixed focal
Max. Aperture Ratio	F1.8
Angular Field of View	H: 185° / V: 185° / D: 185°
Min. Object Distance	0.5m(1.64ft)
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	Digital Rotation
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR V, WiseNR II (Based on AI engine)
Digital Image Stabilization	None
Defog	None
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, 4point quadrangle zones
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec)
Digital PTZ	Support
Video Rotation	Flip, Mirror



Analytics	Classified object type: Person/Vehicle Attributes: Person(Upper/lower clothes color), Vehicle(color) Support BestShot Analytics events based on AI engine - Motion detection*, Object detection, Virtual line*(Crossing/Direction), Virtual area*(Loitering/Intrusion/Enter/Exit/Appear/Disappear) Analytics events - Defocus detection, Tampering * Some of the video analytics only works with people and vehicle detection
Business Intelligence	Based on AI engine: People counting, Queue management, Heatmap
Serial Interface	None
Alarm I/O	None
Alarm Triggers	Analytics, Network disconnect
Alarm Events	When alarm trigger occurred - File upload(image) : e-mail/FTP/SFTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP)
Network	
Ethernet	RJ-45(10/100BASE-T)
Video Compression	H.265/H.264: Main/High, MJPEG
Audio Compression	None
Smart Codec	Manual(Sea area), 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 5 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP/SFTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, CDP, SRTP (TCP, UDP Unicast), MQTT
SIP support (VoIP, Peer-to-peer)	None
Security	None
Application Programming Interface	ONVIF Profile S/G/T/M SUNAPI(HTTP API) Hanwha Vision Open Platform
Security	
OS / Firmware Protect	Secure boot, Signed firmware, Firmware encryption
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	Access control based on IP address
Data Protect	Authentication information encryption, ZIP compression encryption
Audit	User Access/System/Event log management
Device ID	Device Certificate(Hanwha Private Root CA)
Secure Storage	SDcard partition encrypt
Security Certificate	Secure by default
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 1slot 256GB
Memory	2GB RAM, 1GB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-40°C~+55°C(-40°F~+131°F) / 0~100% RH(condensing)
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / Less than 95% RH
Certification	IP66, IK10, NEMA4X
Input Voltage	PoE(IEEE802.3af, Class3)
Power Consumption	PoE: Max 6.7W, typical 4.8W
Mechanical	
Color / Material	White / Aluminum
RAL Code	RAL9003
Product Dimensions / Weight	ø120x75.7mm(ø4.7x2.05"), 573g(1.26lb)
Compatible Conduit hole / Gang	None
Hanging Mount (Dome)	SBP-140HMMW
Skin Cover	None
Skin Cover (Dome)	None
Weather Cap (Dome)	None
Power Module	None
Backbox	SBO-140BW
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	36.9m(121.03ft)
Observe (63PPM/ 19PPF)	14.8m(48.42ft)
Recognize (125PPM/ 38PPF)	7.4m(24.21ft)
Identify (250PPM/ 76PPF)	3.7m(12.10ft)



dycjd

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

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	QNF-C9010V	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Fiber PoE Injector	PT-PSE109GBRO-AH-S	-	Dongguan PROCET Network Technology Co.,Ltd	-
Laptop	P95G001	9JM8HT2	DELL INC.	-
Laptop Adapter	HA65NM130	-	Chicony Power Technology(Suzhou)Co.,Ltd.	-
Micro SD Card	-	-	-	-



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45 (PoE)	Fiber PoE Injector	RJ-45 (PoE)	3.1	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
Fiber PoE Injector	RJ-45 (LAN)	Laptop	RJ-45 (LAN)	1.8	U
Laptop	DC Jack	Laptop Adapter	Line	1.2	U

* Unshielded=U, Shielded=S

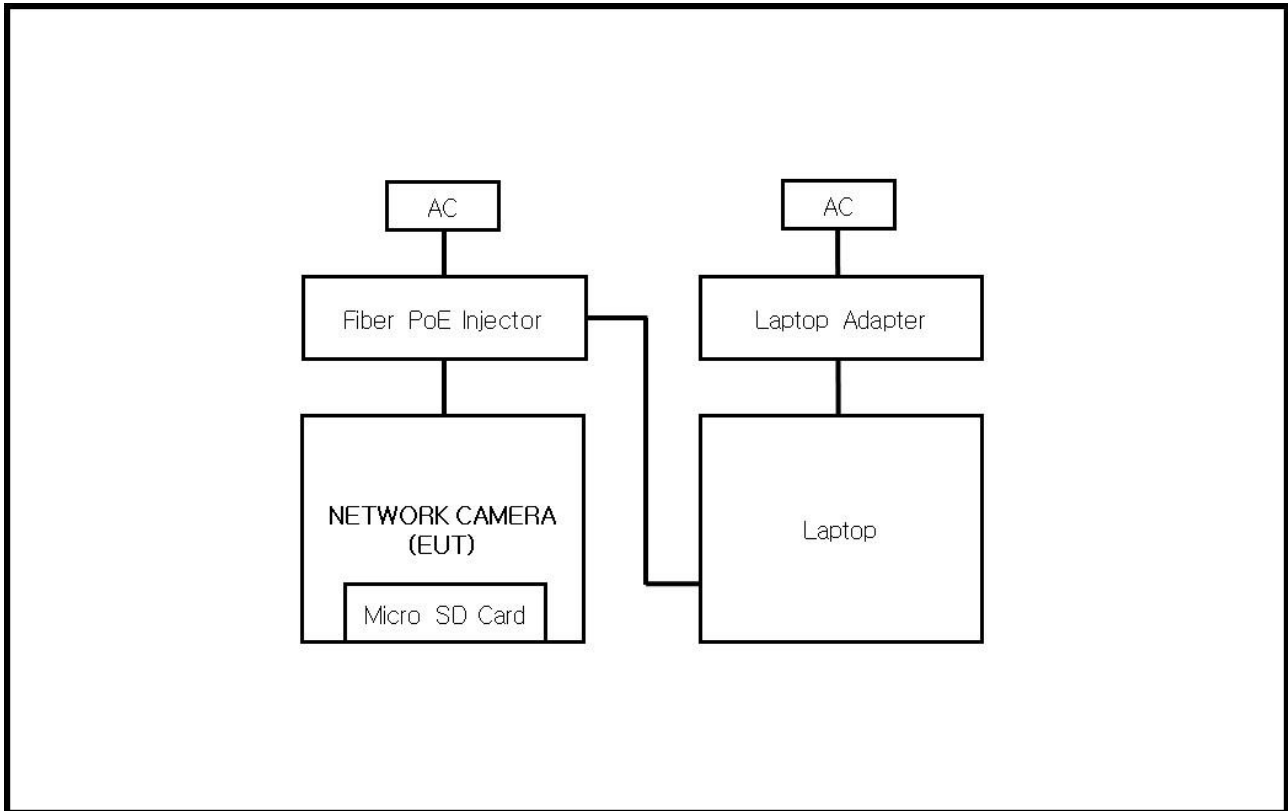
1.7 EUT Operating Mode(s)

Test mode	Normal operating
Operating	- Check the network behavior of the EUT with the laptop's ping test - View images of the camera through the Web Viewer - After testing, check the recording with Micro SD Card

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



1.8 Configuration





1.9 Remarks when standards applied

USB Micro B Type Port is not tested because it is for administrator port.



1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

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

**1.12 Laboratory Accreditations and Listings**

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 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

N/A

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, 09, 2026
☐	LISN	ESH2-Z5	R & S	100450	11, 06, 2025
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 06, 2025

Test Conditions

Temperature:

°C

Relative Humidity:

% 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

The LAN port is regarded as a wired communication network port and power-related ports are not tested.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Feb. 10, 2025

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, 09, 2026
☒	ARTIFICIAL MAINS NETWORK	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

Test Conditions

Temperature: (23,4 ± 0,1) °C
Relative Humidity: (45,3 ± 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

Feb. 11, 2025

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: (22,7 ± 0,1) °C

Relative Humidity: (45,8 ± 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

RemarksSee Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb. 10, 2025

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: (23,3 ± 0,1) °C

Relative Humidity: (45,9 ± 0,1) % 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

HOT LINE

N/A



NEUTRAL LINE

N/A

◆ Calculation

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

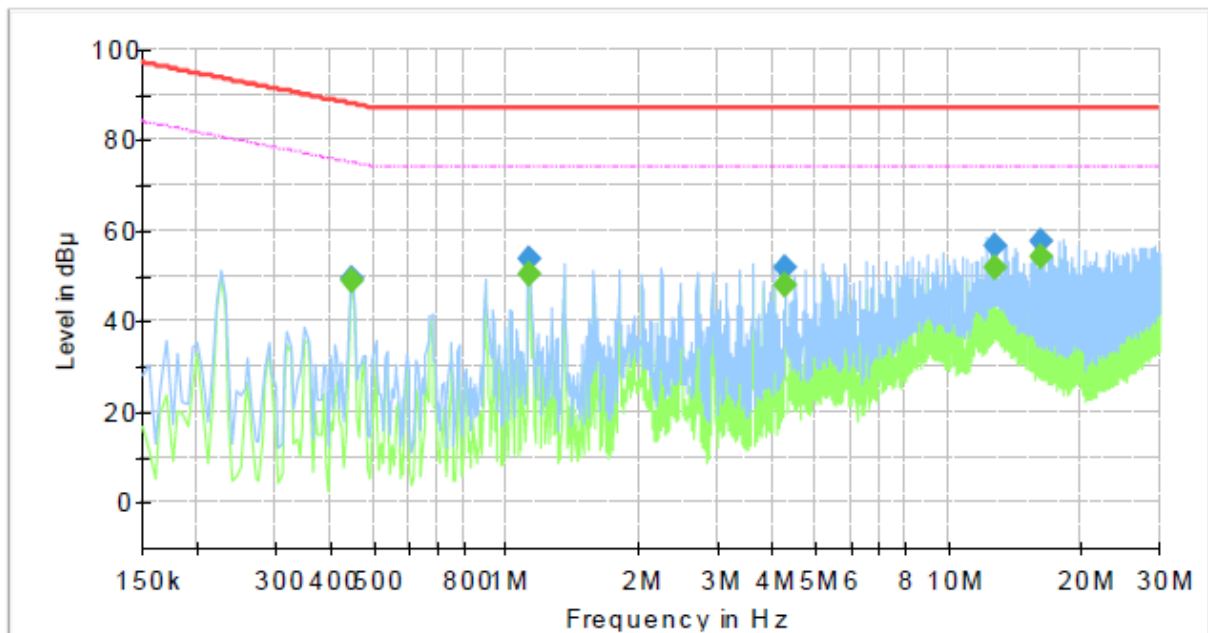
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

**Conducted Emissions at Telecommunication Ports****[100 Mbps]****Common Information**

Test Description: Telecommunication Emission
Job No.: KES-EM250495
Mode :
Speed : 100 Mbps
Operator Name: KES

**Final_Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000	—	48.66	74.88	26.22	1000.0	9.000	Single Line	19.6
0.450000	49.46	—	87.88	38.42	1000.0	9.000	Single Line	19.6
1.125000	—	50.10	74.00	23.90	1000.0	9.000	Single Line	19.5
1.125000	53.74	—	87.00	33.26	1000.0	9.000	Single Line	19.5
4.270000	—	48.05	74.00	25.95	1000.0	9.000	Single Line	19.5
4.270000	51.96	—	87.00	35.04	1000.0	9.000	Single Line	19.5
12.810000	—	51.60	74.00	22.40	1000.0	9.000	Single Line	19.7
12.810000	56.70	—	87.00	30.30	1000.0	9.000	Single Line	19.7
16.230000	—	54.32	74.00	19.68	1000.0	9.000	Single Line	19.8
16.230000	57.50	—	87.00	29.50	1000.0	9.000	Single Line	19.8

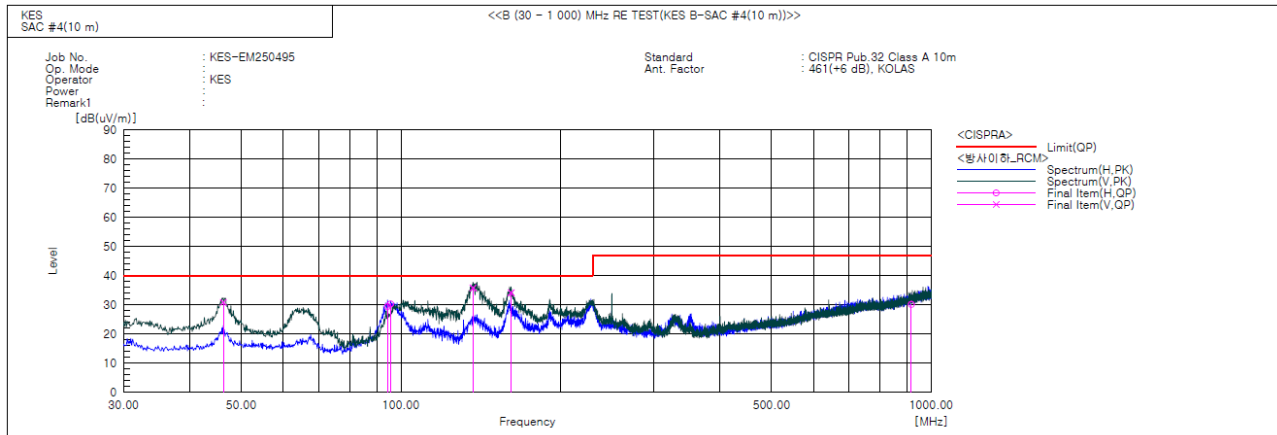
◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

**Radiated Electric Field Emissions(Below 1 GHz)****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	46.248	V	52.1	-21.3	30.8	40.0	9.2	133.0	272.0	
2	94.384	H	55.3	-25.9	29.4	40.0	10.6	366.0	110.0	
3	95.596	H	56.0	-25.7	30.3	40.0	9.7	381.0	136.0	
4	136.821	V	56.4	-20.6	35.8	40.0	4.2	100.0	134.0	
5	161.314	V	53.7	-19.6	34.1	40.0	5.9	117.0	137.0	
6	917.550	H	31.5	-1.4	30.1	47.0	16.9	397.0	173.0	

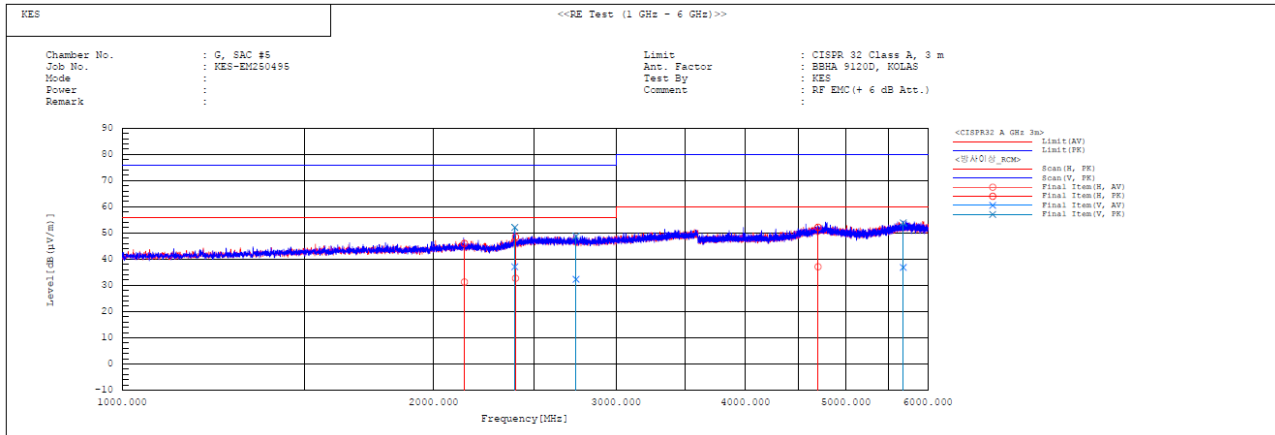
◆ Calculation

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)****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	2141.361	H	27.9	42.6	3.4	31.3	46.0	56.0	76.0	24.7	30.0	100.0	67.9	
2	2395.041	V	32.7	47.7	4.4	37.1	52.1	56.0	76.0	18.9	23.9	100.0	268.7	
3	2398.621	H	28.3	44.1	4.4	32.7	48.5	56.0	76.0	23.3	27.5	100.0	239.1	
4	2745.461	V	26.8	43.3	5.5	32.3	49.8	56.0	76.0	23.7	27.2	100.0	14.7	
5	4659.783	H	26.1	41.2	11.0	37.1	52.2	60.0	80.0	22.9	27.8	100.0	169.6	
6	5682.347	V	23.4	40.5	13.4	36.8	53.9	60.0	80.0	23.2	26.1	100.0	308.1	

◆ 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(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

N/A

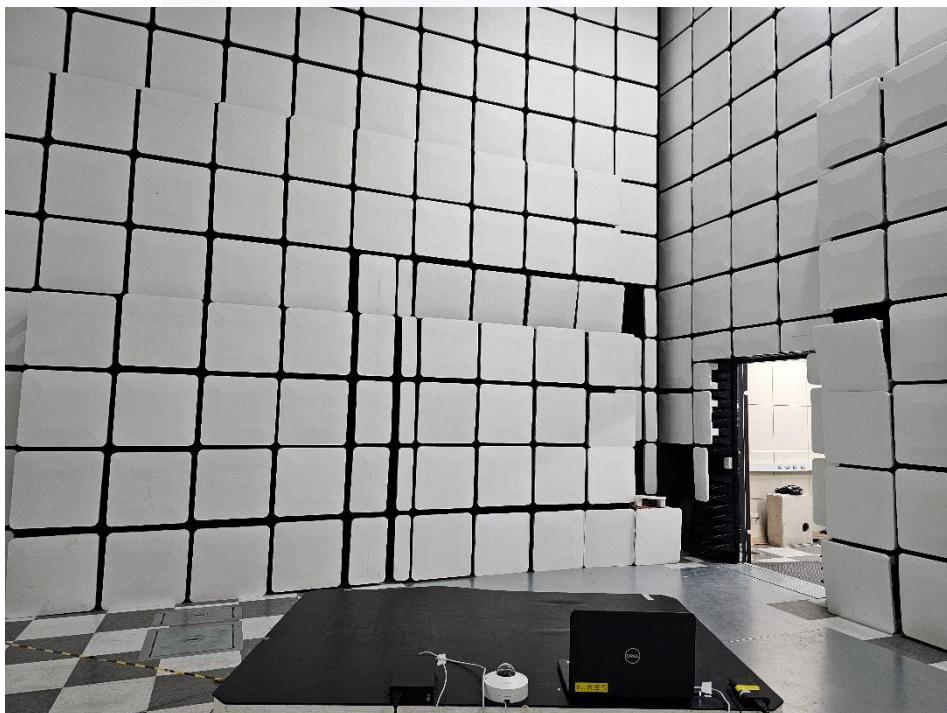
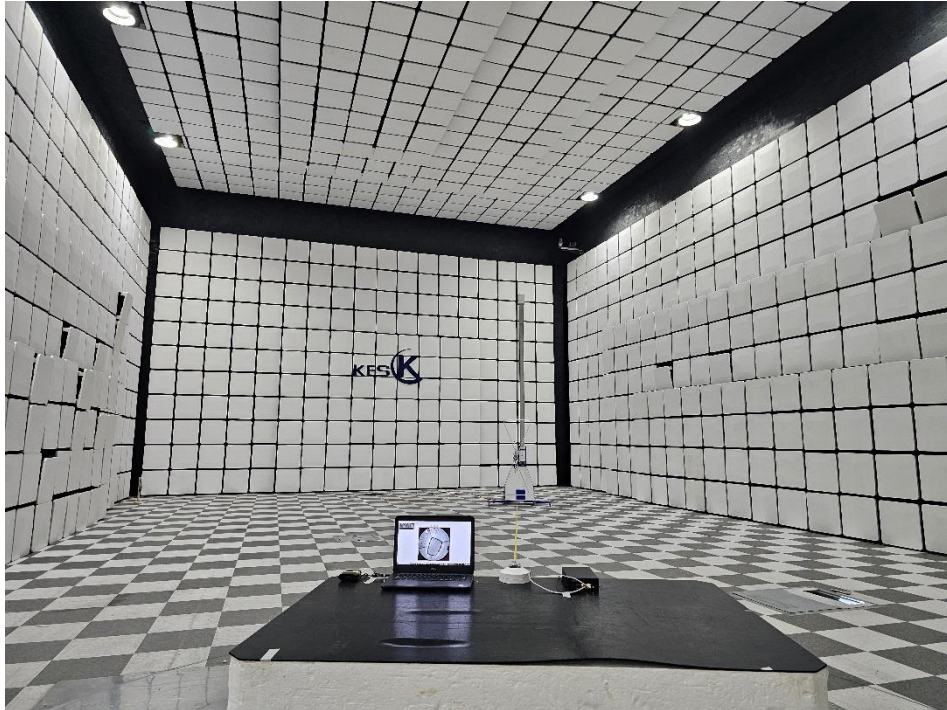


Conducted Emissions at Telecommunication Ports



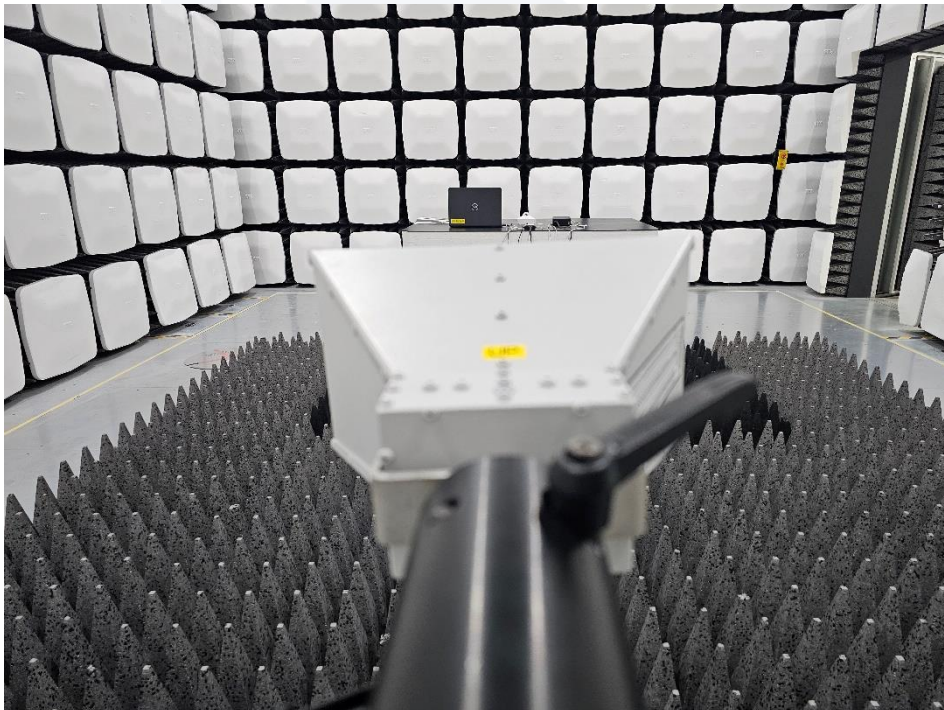
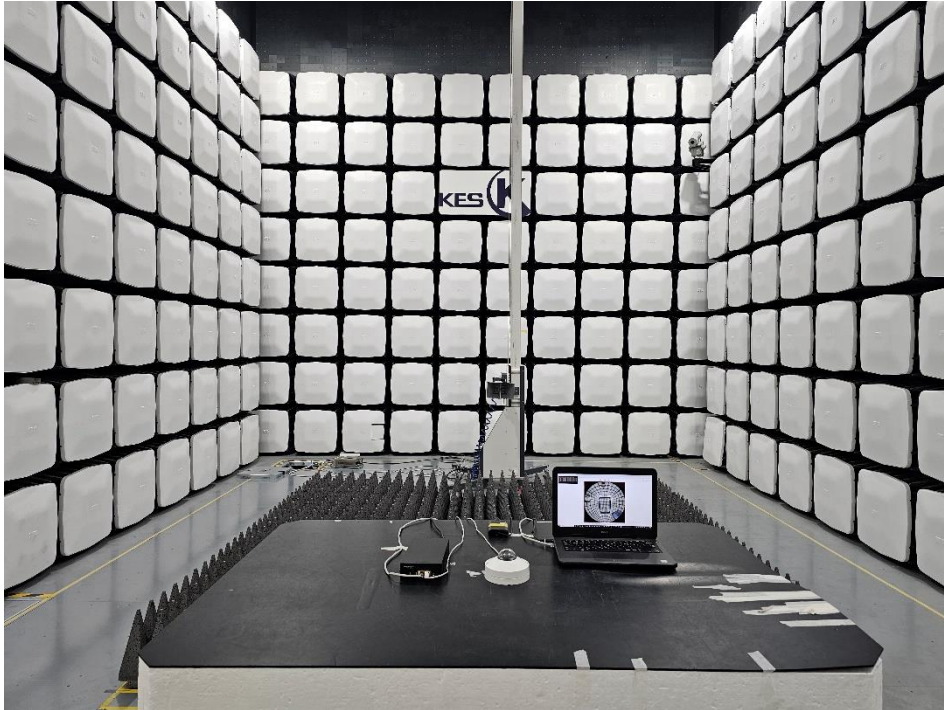


Radiated Electric Field Emissions(Below 1 GHz)





Radiated Electric Field Emissions(Above 1 GHz)



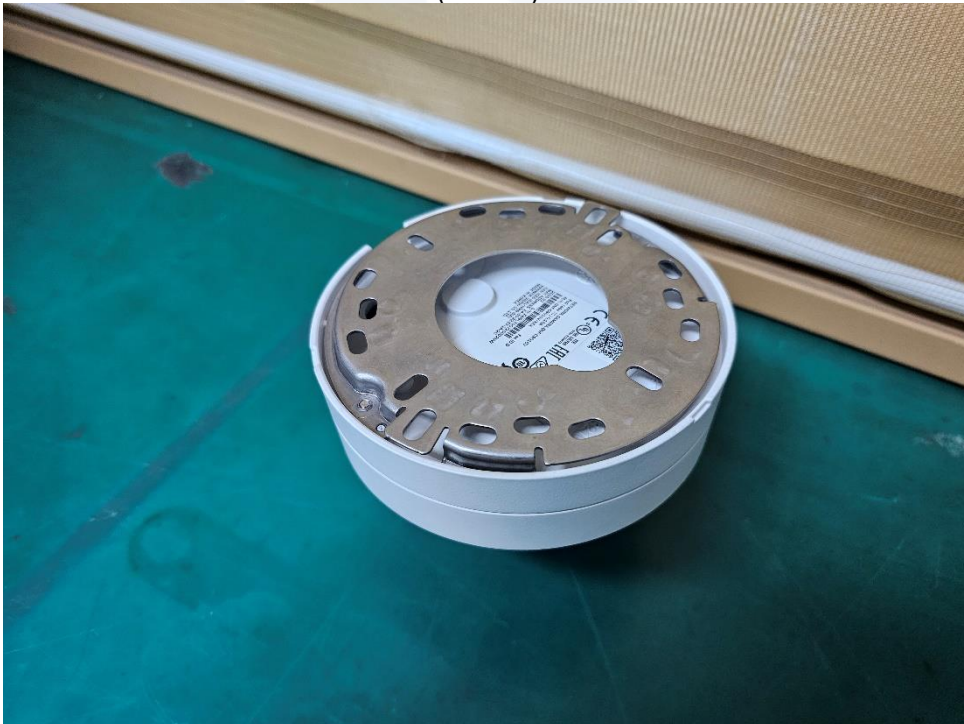


EUT External Photographs

(Top)



(Bottom)





EUT Internal Photographs

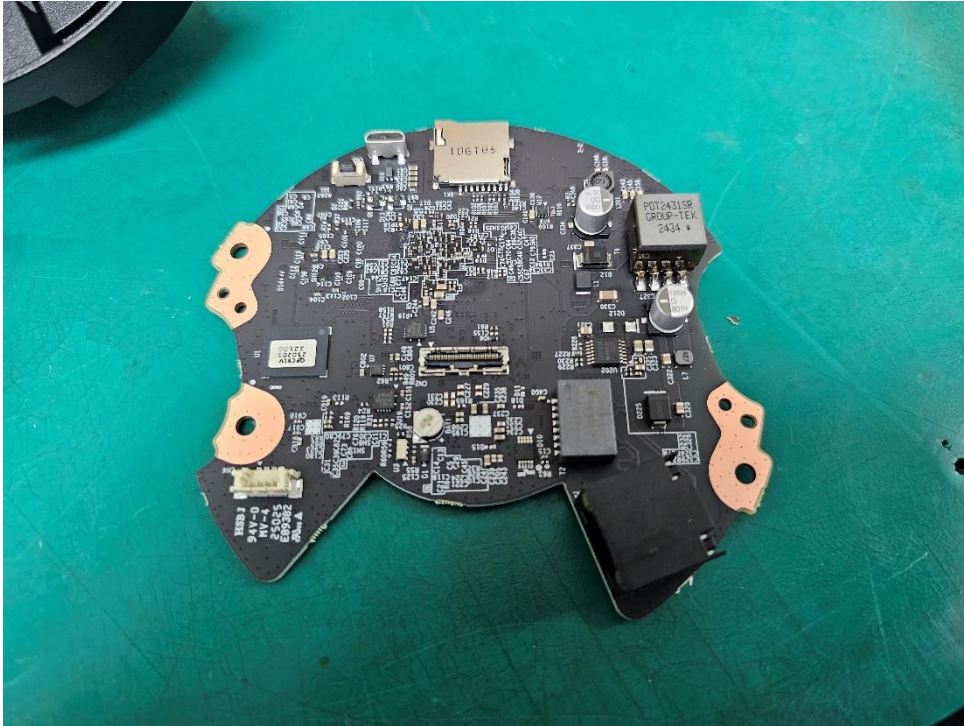
(Internal View)



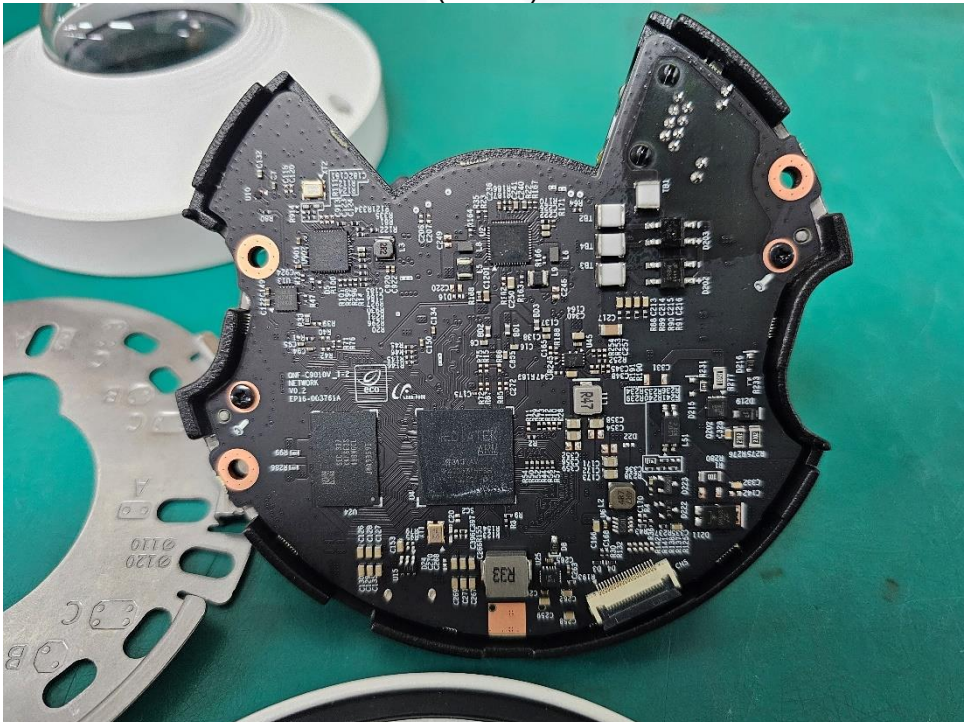


EUT Internal View – Board 1

(Top)



(Bottom)



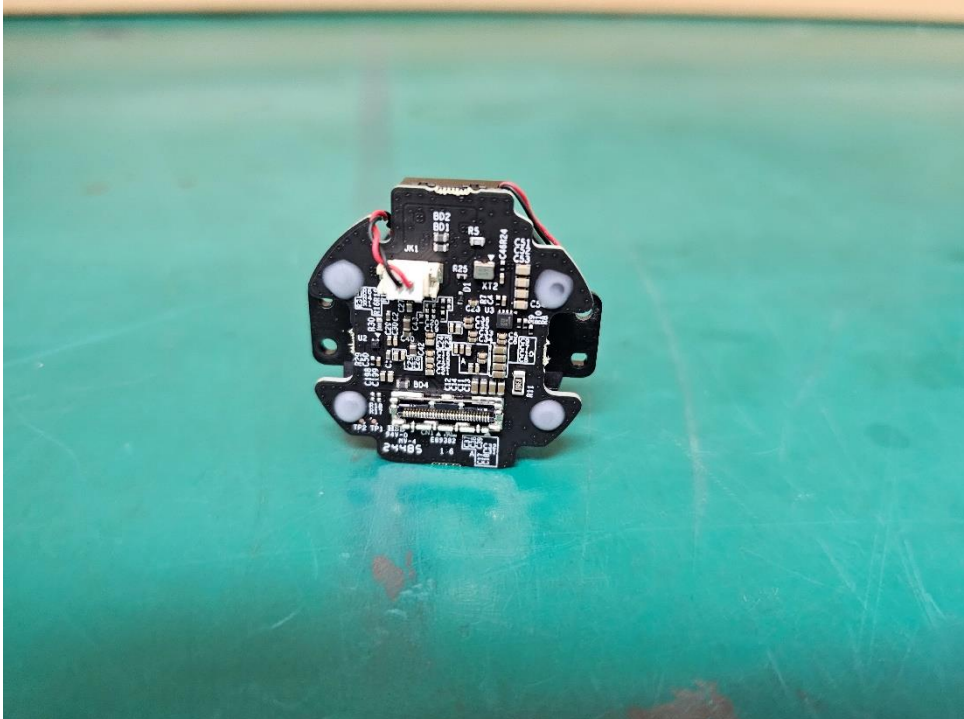


EUT Internal View – Board 2

(Top)



(Bottom)





EUT Internal View – Board 3

(Top)



(Bottom)



The End.