



TEST REPORT



Report No. : KES-EM243581

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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 : +82-31-341-3838

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. : TNO-A26081

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 : Oct. 16, 2024

4. Test date : Oct. 24, 2024 ~ Oct. 26, 2024

5. Date of Issue : Nov. 06, 2024

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
Nov. 06, 2024	KES-EM243581	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Highest Maximum Frequency	1.2 GHz
Video	
Imaging Device	Diagonal 28.3mm 1.8" CMOS
Resolution	6240x4160(WiseAI off 30fps, WiseAI on 20fps), 3840x2160, 2880x1920, 1920x1280, 1600x1200, 1440x960, 1280x800, 1024x768, 1280x720, 720x480, 640x480
Max. Framerate	H.265/H.264: Max. 30fps MJPEG: Max. 30fps(@26MP Max. 1fps)
NETD	None
Pixel Size	None
Min. Illumination	Color : 0.2Lux(F4.0, 1/30sec) B/W : 0.02Lux(F4.0, 1/30sec)
Video Out	USB: Micro USB Type C, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	55~250mm(4.54x) manual varifocal
Max. Aperture Ratio	F4(Wide)~F5.6(Tele)
Angular Field of View	H: 24°(Wide)~5.4°(Tele) V: 16°(Wide)~3.6°(Tele) D: 29°(Wide)~6.5°(Tele)
Min. Object Distance	0.85m (2.8ft)
Focus Control	Simple focus
Lens Type	Canon EF-S 55~250mm F4-5.6 IS STM
Mount Type	Canon EF-S
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	None
Pan Range	None
Pan Speed	None
Tilt Range	None
Tilt Speed	None
Rotate Range	None
Sequence	None
Preset Accuracy	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, SSDR
Wide Dynamic Range	None
Digital Noise Reduction	SSNR V, WiseNR II (Based on AI engine)(revision)
Digital Image Stabilization	None
Defog	None
Motion Detection	8ea, 8point Polygonal zones
Privacy Masking	6ea, Rectangular - Color: Gray/Black/White
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	None
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec) Prefer shutter control(Based on AI engine)



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Digital PTZ	Flip, Mirror, Hallway view(90°/270°)
Video Rotation	Support
Analytics	Classified object type : Person/Face/Vehicle/License plate Attributes : Person(Gender, Color and Bag), Face(Age, Gender, Mask and Glasses), Vehicle(Type:car/bus/truck/motorcycle/bicycle and Color) Support Bestshot per object Analytics events based on AI engine - Object detection, Virtual line*(Crossing/Direction), Virtual area*(Loitering/Intrusion/Enter/Exit), Motion detection Analytics events - Defocus detection, Tampering, Audio detection, Virtual area(Appear/Disappear) <i>*Some of the video analytics only works with people and vehicle detection</i>
Business Intelligence	Based on AI engine: People counting, Queue management, Heatmap, Vehicle counting
Serial Interface	None
Alarm I/O	2 configurable I/O ports
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule, MQTT subscription
Alarm Events	When alarm trigger occurred - File upload(image/video clip): e-mail/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 - MQTT: publication
Audio Streaming	None
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
Light Type	None
Light Viewable Length	None
IR Viewable Length	None
IR Illuminator (Optional)	None
IR Radiation angle	None
IR LED	None
IR Wavelength	None
IR Operation	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature Detect Range	None
Temperature Accuracy	None
Temperature Detection	None
Additional	None
Network	
Ethernet	Metal shielded RJ-45(10/100/1000 BASE-T), SFP slot(100/1000Mbps)
Video Compression	H.265/H.264: Main/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



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Video Quality Adjustment	None
Bitrate Control	H.264/H.265: CBR or VBR MPEG: 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, SFTP, SMTP, SMTPS, 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, S	None
Security	None
Application Programming Interfac	ONVIF Profile S/G/T/M SUNAPI(HTTP API)
Security	
OS / Firmware Protect	Encrypted Firmware, Secure boot, Signed Firmware
User authentication	Digest Authentication, Prevent brute-force attack
Network authentication	IEEE 802.1X (EAP-TLS, EAP-LEAP, EAP-PEAP, MSCHAPv2)
Secure Communication	HTTPS, WSS (WebSocket Secure), SRTP
Access Control	IP-based access control, MAC-based access control
Data Protect	Encryption Credentials, Encrypt compress for live recording file export
Audit	Access / System / Event Log management
Device ID	Device certificate (Hanwha Techwin Root CA)
Secure Storage	TPM(Trusted platform module), SDcard partition encrypt
Security Certificate	TPM with FIPS 140-3 level 3
General	
Webpage Language	None
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot 1TB
Memory	8GB RAM, 16GB EMMC
Environmental & Electrical	
Operating Temperature / Humidity	-40°C~+50°C (-40°F~+122°F) / 0~95% RH
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / 0~95% RH
Certification	IP66/IP67, IK10(Excluding window glass), NEMA4X
Input Voltage	HPoE(IEEE802.3bt type4, Class8, Injector not included), DC12V
Power Consumption	PoE++ : Max 44.3W, Typical : 24.9W 12VDC : Max 35.4W, Typical : 19.6W
Mechanical	
Color / Material	White / Aluminum, PC(Polycarbonate)
RAL Code	RAL9003
Product Dimensions / Weight	193.5x193.5x532mm(7.62"x7.62"x20.94"), 8100g(17.86 lb)
Compatible Conduit hole / Gang	None
Hanging Mount (Dome)	None
Skin Cover	None
Skin Cover (Dome)	None
Weather Cap (Dome)	None
Power Module	None
Backbox	None
Ceiling Mount (Assy)	None
Wall Mount	None
Pole Mount	None



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In-ceiling Mount	None
Parapet Mount	None
Corner Mount	None
Tilt Mount	None
Housing (Box)	None
Cabinet	None
Gang Plate	None
Conduit Adaptor	None
Other Compatible Models	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 RCM AS/NZS CISPR 32 Class A KS C 9832 Class A, KS C 9835
Safety	UL 62368-1, CAN/CSA C22.2 NO. 62368-1 IEC/EN 62471
Environment	IEC/EN 63000 IEC/EN 60529 IP66/IP67, IEC/EN 62262 IK10 NEMA 250 type 4X
Video	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 587.1m(1,926.3ft) / Tele: 2,646.4m(8,682.3ft)
Observe (63PPM/ 19PPF)	Wide: 234.9m(770.5ft) / Tele: 1,058.6m(3,472.9ft)
Recognize (125PPM/ 38PPF)	Wide: 117.4m(385.3ft) / Tele: 529.3m(1,736.5ft)
Identify (250PPM/ 76PPF)	Wide: 58.7m(192.6ft) / Tele: 264.6m(868.2ft)
LPR/ANPR/MMCR	
Speed Description	None
Speed limit	None
Min. Forward Distance	None
Max. Forward Distance	None
Max. Horizontal Angle	None
Max. Vertical Angle	None
Horizontal Offset	None
Camera Height	None
Lane Coverage	None
Vehicle Recognition	None
Available Countries	None



1.1 Test Voltage & Frequency

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

☒ AC 120 V, 60 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	TNO-A26081	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	KPL-048F-VI	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
PoE Injector	PT-PSE109GBRO-AH-S	-	Dongguan PROCET Network Technology Co.,Ltd	-
Optical Module#1	-	-	SOLTECH	-
Optical Module#2	-	-	SOLTECH	-
Laptop	P95G001	9JM8HT2	DELL INC.	-
Laptop Adapter	HA65NM130	-	Chicony Power Technology(Suzhou)Co.,Ltd.	-
Smartphone	SM-N920S	-	Samsung Electronics Co., Ltd.	-
Headset	K550	-	Britz®	-
Alarm	-	-	-	-
Button Alarm	-	-	-	-
Micro SD Card#1	-	-	SanDisk	16 GB
Micro SD Card#2	-	-	SanDisk	16 GB



1.6 External I/O Cabling

■ #1

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	DC IN (Terminal)	AC/DC Adapter	Line	1.2	U
	RJ-45	Laptop	RJ-45	3.1	S
	ALARM AUDIO (SPEAKER)	Headset	Line	1.8	U
	ALARM AUDIO (MIC)				
	ALARM AUDIO (ALARM OUT)	Alarm	Line	3.1	U
	ALARM AUDIO (ALARM IN)	Button Alarm	Line	3.1	U
	SFP	Optical Module#1	SFP	-	-
	Micro SD Slot	Micro SD Card#1	Micro SD Slot	-	-
	Micro SD Slot	Micro SD Card#2	Micro SD Slot	-	-
Optical Module#1	Optical	Optical Module#2	Optical	5.0	U
PoE Injector	SFP		SFP	-	-
Laptop	DC Jack	Laptop Adapter	Line	1.4	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 Injector	RJ-45	3.1	S
	ALARM AUDIO (SPEAKER)	Headset	Line	1.8	U
	ALARM AUDIO (MIC)				
	ALARM AUDIO (ALARM OUT)	Alarm	Line	3.1	U
	ALARM AUDIO (ALARM IN)	Button Alarm	Line	3.1	U
	SFP	Optical Module#1	SFP	-	-
	Micro SD Slot	Micro SD Card#1	Micro SD Slot	-	-
	Micro SD Slot	Micro SD Card#2	Micro SD Slot	-	-
Optical Module#1	Optical	Optical Module#2	Optical	5.0	U
PoE Injector	SFP		SFP	-	-
Laptop	DC Jack	Laptop Adapter	Line	1.4	U
	3.5 mm	Smartphone	3.5 mm	1.0	U
	RJ-45	PoE Injector	RJ-45	0.8	S

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

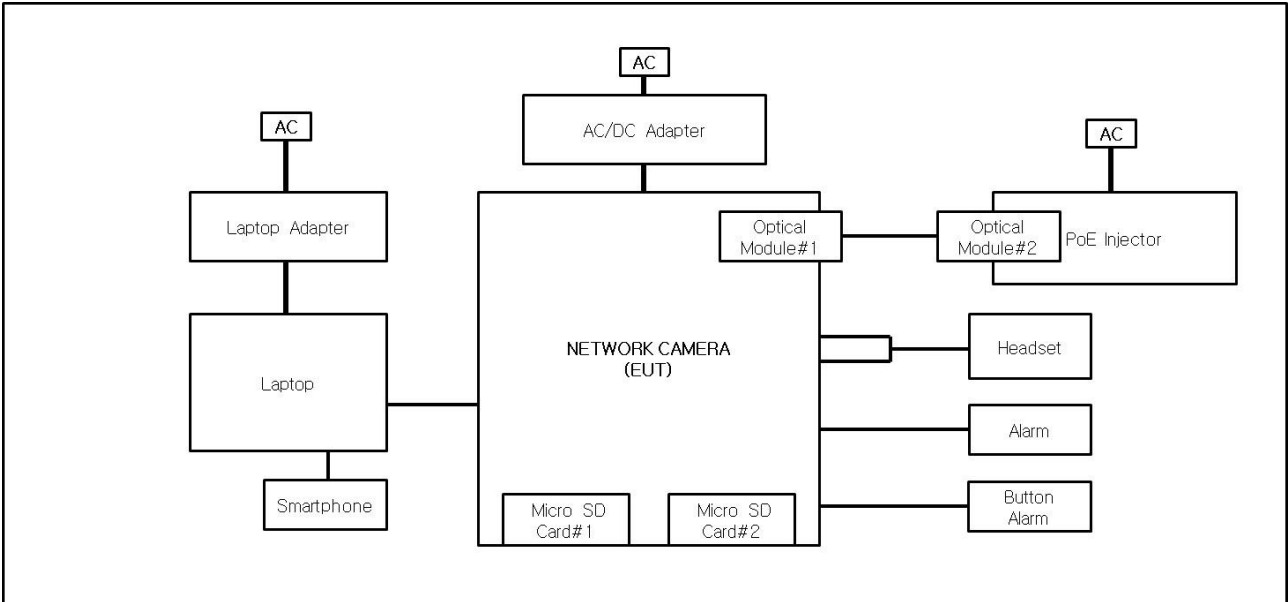
Division	Test mode	Normal operating	Test Voltages
#1	DC	- Monitoring EUT Using Web Viewer, Ping Test - Check Audio Port Behavior Through Headset - When the Button Alarm is pressed, make sure the Alarm is working - Check the operation of the SFP port through a link in PoE Injector - Check the files stored on the Micro SD Card after testing	AC 100 V, 50 Hz
#2	PoE		

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

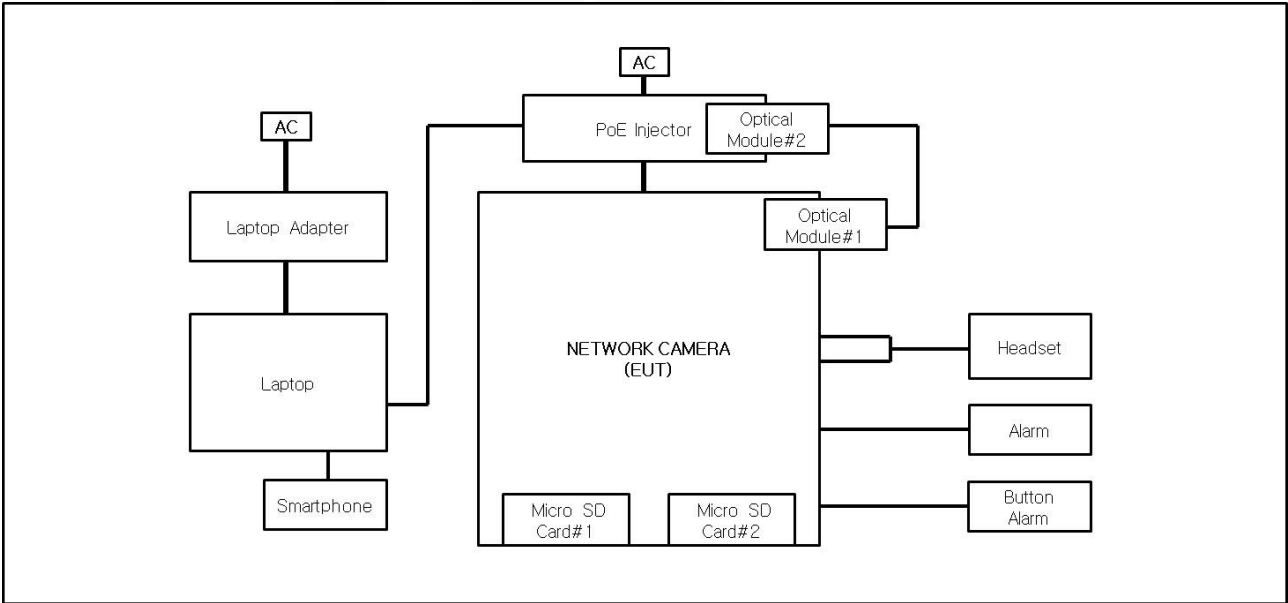


1.8 Configuration

■ #1



■ #2





1.9 Remarks when standards applied

- The USB C Type port was excluded from the test as a port for administrators.
- It receives PoE power, and the PoE port is considered a wired network port.
- Test items related to the power port are not applicable.



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 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





2.1 Conducted Emissions at Mains Power Ports

Test Date

Oct. 24, 2024

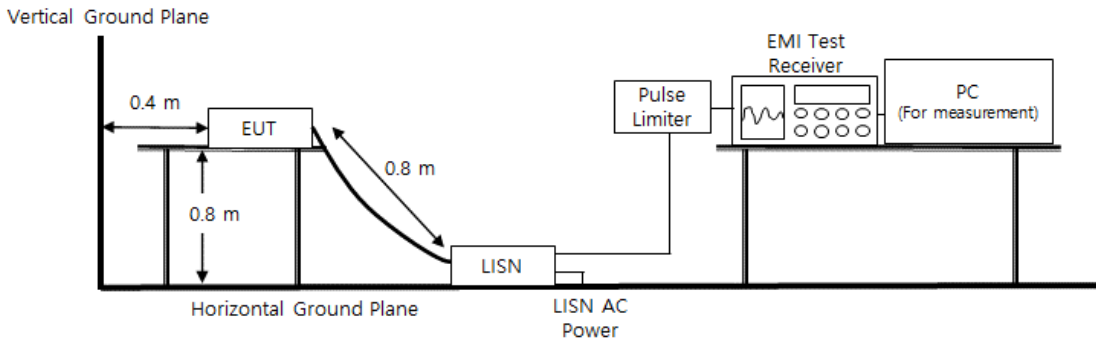
Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	11, 08, 2024
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	11, 08, 2024
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	11, 08, 2024
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 08, 2024

Diagram of test setup





Test Conditions

Temperature: (24,1 ± 0,1) °C
Relative Humidity: (47,0 ± 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)

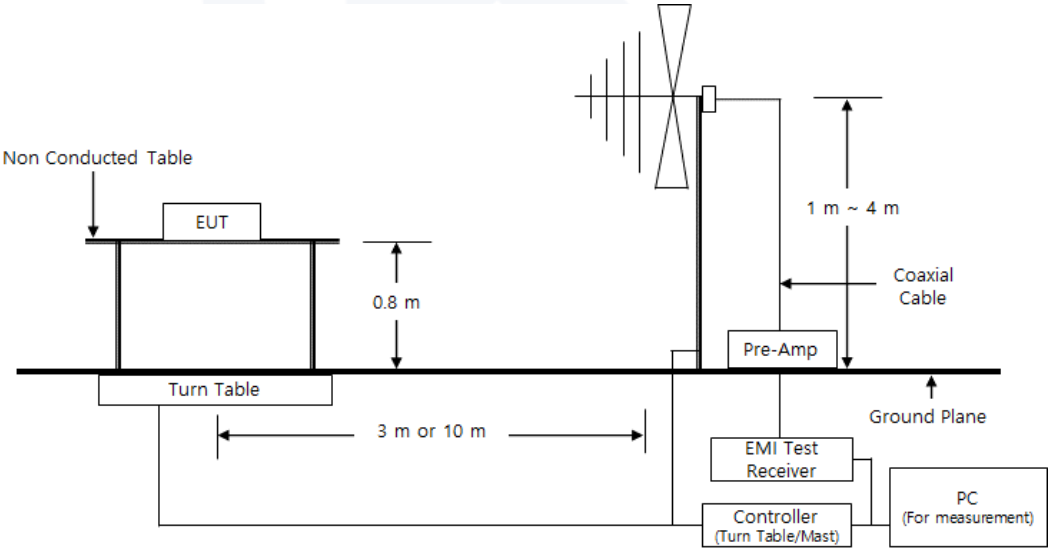
Test Date
Oct. 25, 2024

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	R & S	100551	02, 13, 2025
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 08, 2024
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	02, 13, 2025

Diagram of test setup





Test Conditions

Temperature: (23,3 ± 0,1) °C
Relative Humidity: (46,8 ± 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

Remarks

See Appendix A for test data.





2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Oct. 26, 2024

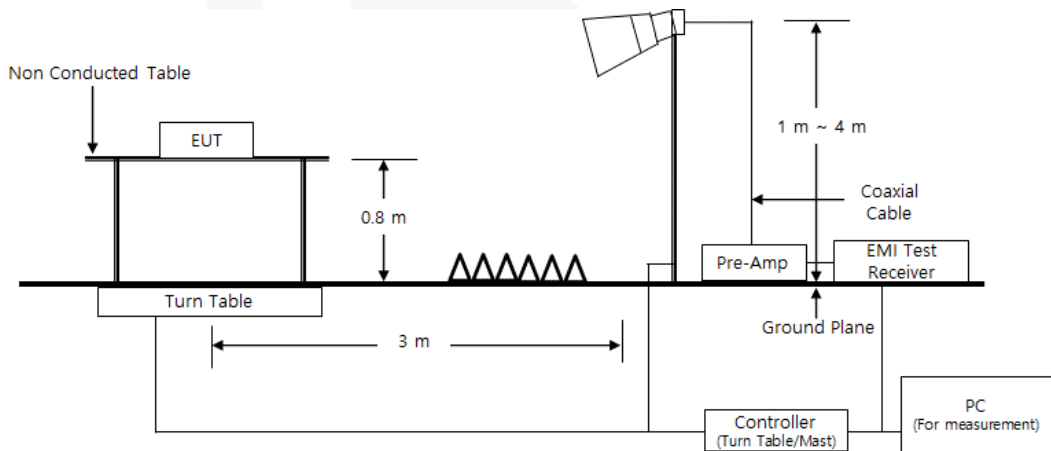
Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	02, 13, 2025
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 03, 2024
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	HP	3008A00538	04, 30, 2025
<input checked="" type="checkbox"/>	ATTENUATOR	8491B	HP	23094	02, 13, 2025

Diagram of test setup





Test Conditions

Temperature: $(22,9 \pm 0,1)^{\circ}\text{C}$
Relative Humidity: $(46,0 \pm 0,1) \% \text{ R.H.}$

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

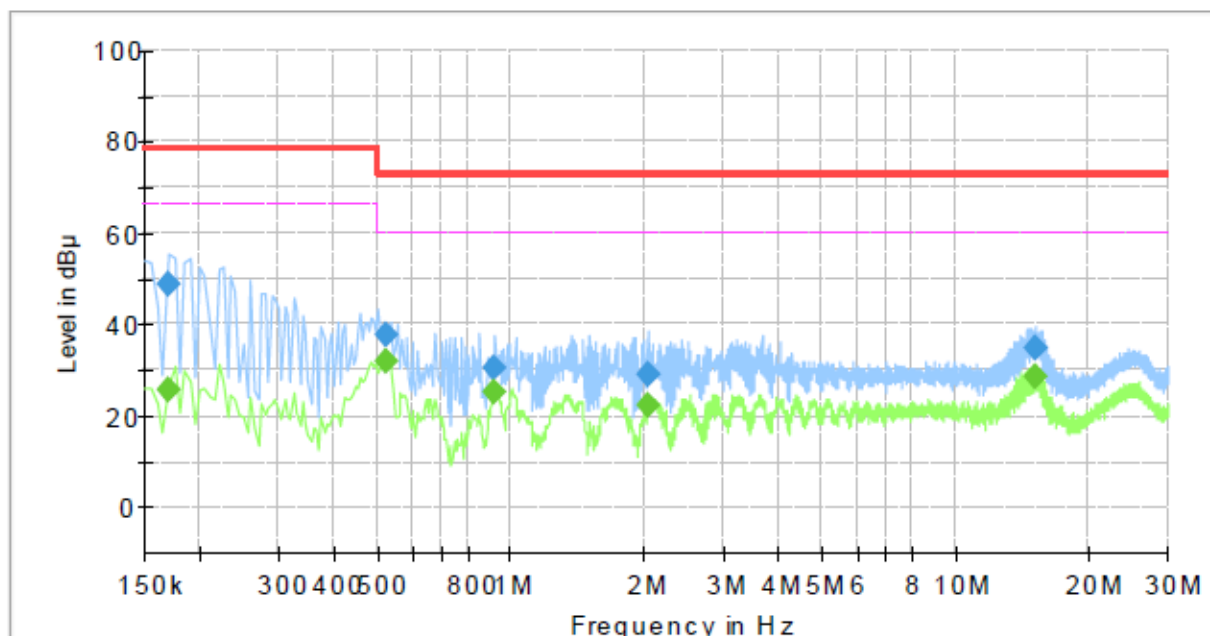
Conducted Emissions at Mains Power Ports

■ #1

HOT LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM243581
Phase: L
Mode: #1
Operator Name: KES



Final Result

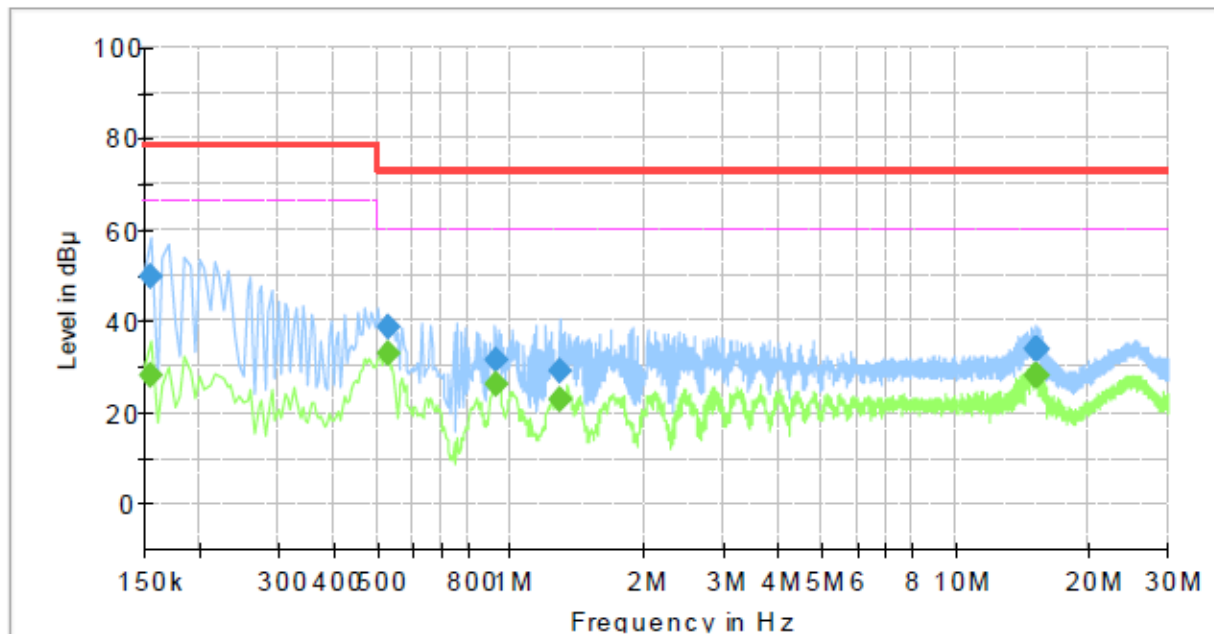
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.170000	---	25.56	66.00	40.44	1000.0	9.000	L1	19.6
0.170000	49.09	---	79.00	29.91	1000.0	9.000	L1	19.6
0.525000	---	32.15	60.00	27.85	1000.0	9.000	L1	19.6
0.525000	37.95	---	73.00	35.05	1000.0	9.000	L1	19.6
0.920000	---	25.34	60.00	34.66	1000.0	9.000	L1	19.7
0.920000	30.56	---	73.00	42.44	1000.0	9.000	L1	19.7
2.030000	---	22.35	60.00	37.65	1000.0	9.000	L1	19.7
2.030000	29.05	---	73.00	43.95	1000.0	9.000	L1	19.7
15.150000	---	28.53	60.00	31.47	1000.0	9.000	L1	20.3
15.150000	34.64	---	73.00	38.36	1000.0	9.000	L1	20.3



NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM243581
Phase: N
Mode: #1
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	---	28.11	66.00	37.89	1000.0	9.000	N	19.5
0.155000	49.94	---	79.00	29.06	1000.0	9.000	N	19.5
0.530000	---	32.93	60.00	27.07	1000.0	9.000	N	19.6
0.530000	38.60	---	73.00	34.40	1000.0	9.000	N	19.6
0.925000	---	26.31	60.00	33.69	1000.0	9.000	N	19.7
0.925000	31.60	---	73.00	41.40	1000.0	9.000	N	19.7
1.285000	---	22.59	60.00	37.41	1000.0	9.000	N	19.7
1.285000	29.32	---	73.00	43.68	1000.0	9.000	N	19.7
15.110000	---	28.08	60.00	31.92	1000.0	9.000	N	20.3
15.110000	34.12	---	73.00	38.88	1000.0	9.000	N	20.3
15.260000	---	27.90	60.00	32.10	1000.0	9.000	N	20.3
15.260000	33.96	---	73.00	39.04	1000.0	9.000	N	20.3

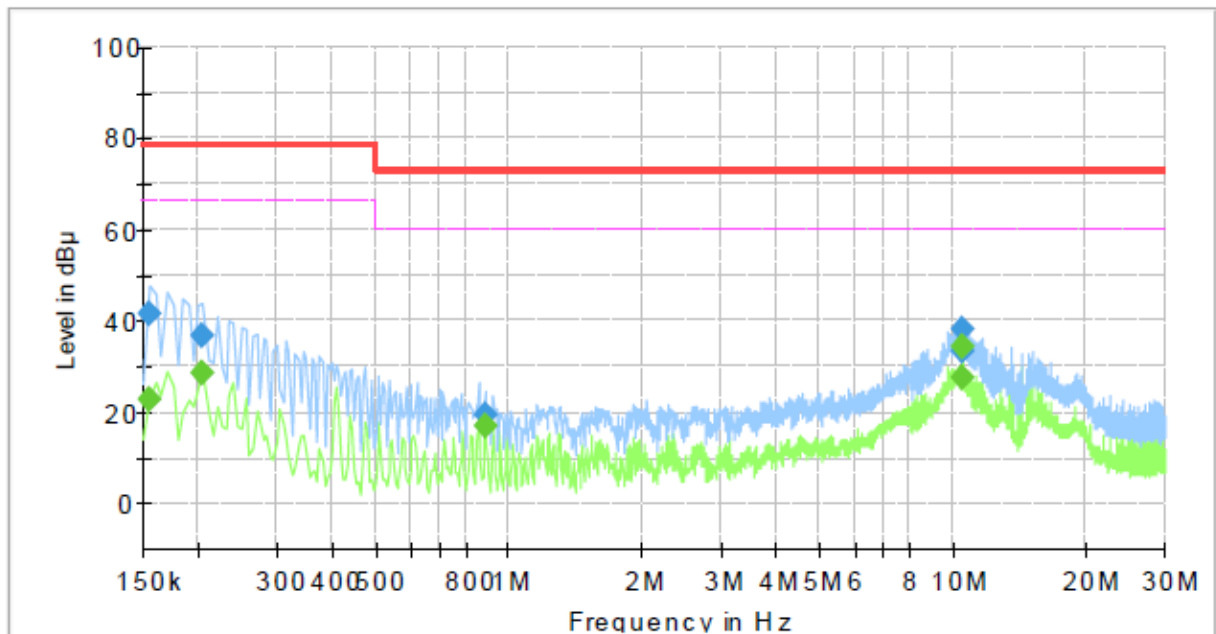


■ #2

HOT LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM243581
Phase: L
Mode: #2
Operator Name: KES



Final Result

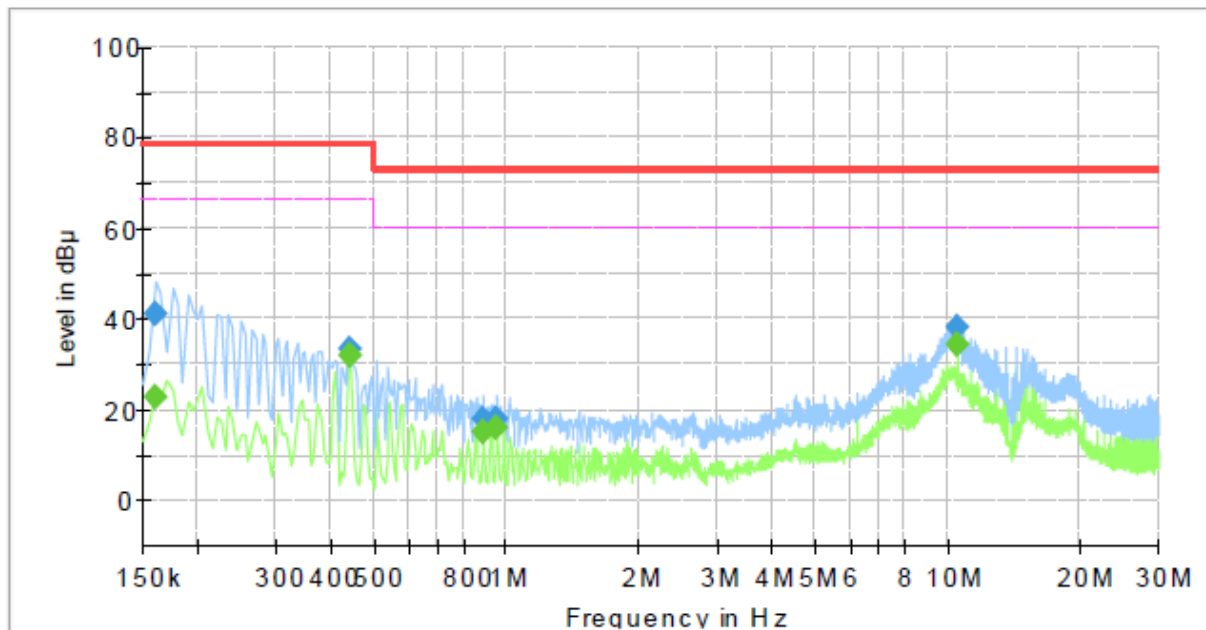
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	22.88	66.00	43.12	1000.0	9.000	L1	19.6
0.155000	41.68	---	79.00	37.32	1000.0	9.000	L1	19.6
0.205000	---	28.57	66.00	37.43	1000.0	9.000	L1	19.6
0.205000	36.98	---	79.00	42.02	1000.0	9.000	L1	19.6
0.885000	---	17.09	60.00	42.91	1000.0	9.000	L1	19.7
0.885000	19.58	---	73.00	53.42	1000.0	9.000	L1	19.7
10.490000	---	27.81	60.00	32.19	1000.0	9.000	L1	20.2
10.490000	33.51	---	73.00	39.49	1000.0	9.000	L1	20.2
10.500000	---	34.23	60.00	25.77	1000.0	9.000	L1	20.2
10.500000	38.01	---	73.00	34.99	1000.0	9.000	L1	20.2



NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Job No.: KES-EM243581
Phase: N
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)
0.160000	---	22.86	66.00	43.14	1000.0	9.000	N	19.5
0.160000	41.04	---	79.00	37.96	1000.0	9.000	N	19.5
0.445000	---	32.04	66.00	33.96	1000.0	9.000	N	19.6
0.445000	33.22	---	79.00	45.78	1000.0	9.000	N	19.6
0.885000	---	15.12	60.00	44.88	1000.0	9.000	N	19.6
0.885000	17.86	---	73.00	55.14	1000.0	9.000	N	19.6
0.955000	---	15.94	60.00	44.06	1000.0	9.000	N	19.7
0.955000	18.17	---	73.00	54.83	1000.0	9.000	N	19.7
10.500000	---	34.35	60.00	25.65	1000.0	9.000	N	20.2
10.500000	38.09	---	73.00	34.91	1000.0	9.000	N	20.2

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

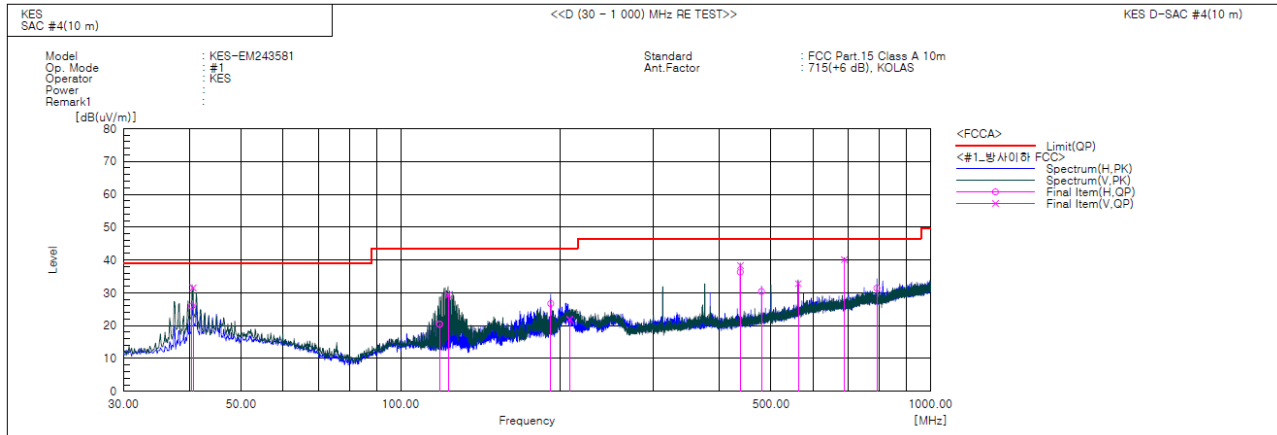
Reading Value : Not shown in the table.

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

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

■ #1

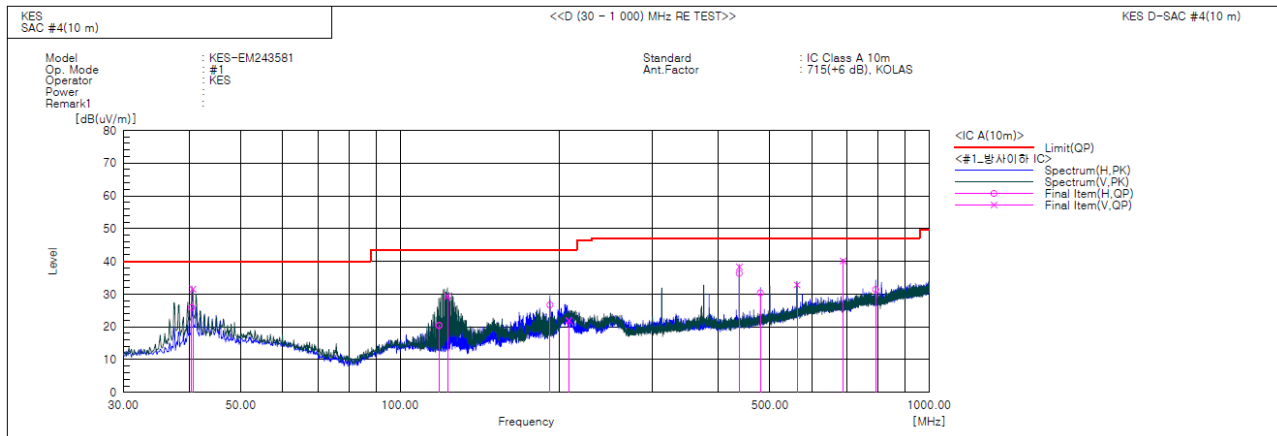
- 47 CFR Part 15, Subpart B

**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	40.374	H	48.6	-22.7	25.9	39.0	13.1	358.0	215.0	
2	40.581	V	54.2	-22.7	31.5	39.0	7.5	113.0	255.0	
3	118.513	H	44.2	-23.8	20.4	43.5	23.1	391.0	304.0	
4	122.999	V	53.6	-24.3	29.3	43.5	14.2	113.0	172.0	
5	191.990	H	48.4	-21.7	26.7	43.5	16.8	396.0	42.0	
6	208.480	V	42.0	-20.1	21.9	43.5	21.6	155.0	142.0	
7	437.521	H	49.4	-13.1	36.3	46.5	10.2	307.0	215.0	
8	437.741	V	51.4	-13.1	38.3	46.5	8.2	100.0	2.0	
9	479.959	H	42.1	-11.7	30.4	46.5	16.1	268.0	174.0	
10	562.651	V	42.1	-9.3	32.8	46.5	13.7	131.0	168.0	
11	687.539	V	46.8	-6.7	40.1	46.5	6.4	105.0	30.0	
12	792.056	H	36.9	-5.5	31.4	46.5	15.1	371.0	151.0	



- IC Regulation ICES-003 Issue 7



Final Result

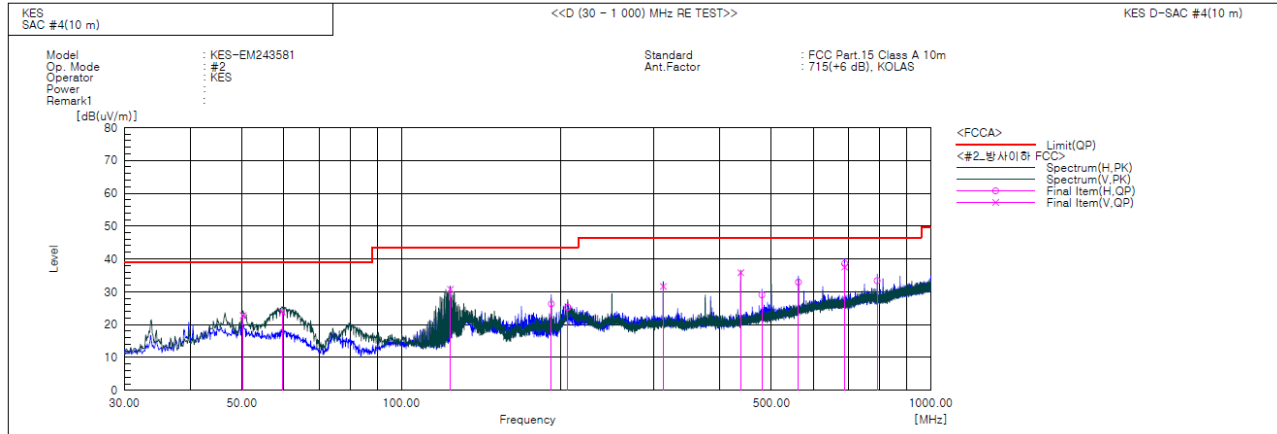
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	40.374	H	48.6	-22.7	25.9	40.0	14.1	358.0	215.0	
2	40.581	V	54.2	-22.7	31.5	40.0	8.5	113.0	255.0	
3	118.513	H	44.2	-23.8	20.4	43.5	23.1	391.0	304.0	
4	122.999	V	53.6	-24.3	29.3	43.5	14.2	113.0	172.0	
5	191.990	H	48.4	-21.7	26.7	43.5	16.8	396.0	42.0	
6	208.480	V	42.0	-20.1	21.9	43.5	21.6	155.0	142.0	
7	437.521	H	49.4	-13.1	36.3	47.0	10.7	307.0	215.0	
8	437.741	V	51.4	-13.1	38.3	47.0	8.7	100.0	2.0	
9	479.959	H	42.1	-11.7	30.4	47.0	16.6	268.0	174.0	
10	562.651	V	42.1	-9.3	32.8	47.0	14.2	131.0	168.0	
11	687.539	V	46.8	-6.7	40.1	47.0	6.9	105.0	30.0	
12	792.056	H	36.9	-5.5	31.4	47.0	15.6	371.0	151.0	



Report No. : KES-EM243581

■ #2

- 47 CFR Part 15, Subpart B



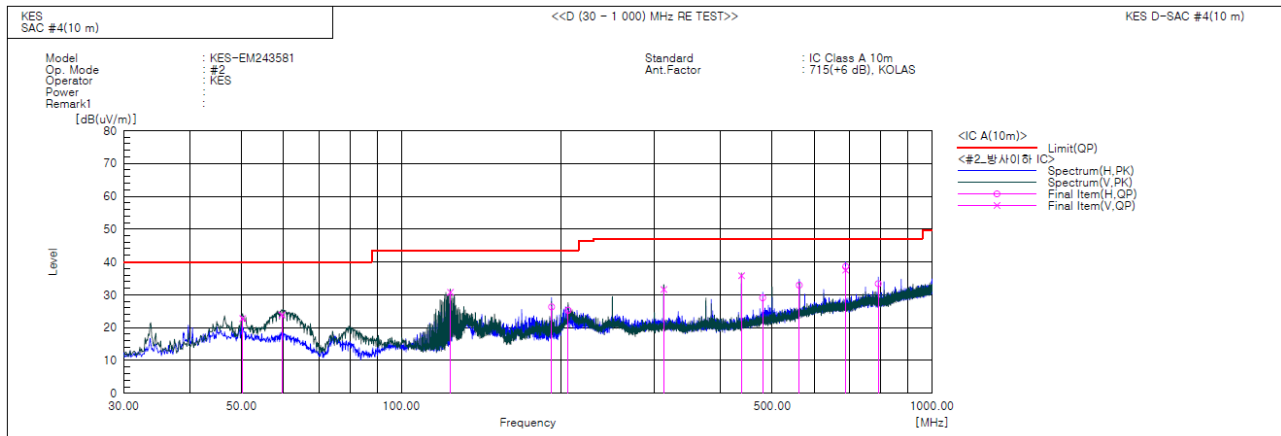
Final Result

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	50.249	V	43.9	-21.1	22.8	39.0	16.2	132.0	89.0	
2	59.585	V	45.9	-22.0	23.9	39.0	15.1	108.0	336.0	
3	123.726	V	55.2	-24.4	30.8	43.5	12.7	100.0	167.0	
4	191.990	H	48.0	-21.7	26.3	43.5	17.2	355.0	83.0	
5	206.298	H	45.6	-20.3	25.3	43.5	18.2	287.0	91.0	
6	312.513	V	48.5	-16.9	31.6	46.5	14.9	162.0	19.0	
7	437.521	V	48.9	-13.1	35.8	46.5	10.7	137.0	145.0	
8	479.959	H	40.8	-11.7	29.1	46.5	17.4	386.0	176.0	
9	562.530	H	42.2	-9.3	32.9	46.5	13.6	344.0	356.0	
10	687.539	V	44.2	-6.7	37.5	46.5	9.0	114.0	134.0	
11	687.724	H	45.3	-6.7	38.6	46.5	7.9	374.0	53.0	
12	792.056	H	38.9	-5.5	33.4	46.5	13.1	395.0	150.0	



Report No. : KES-EM243581

- 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	50.249	V	43.9	-21.1	22.8	40.0	17.2	132.0	89.0	
2	59.585	V	45.9	-22.0	23.9	40.0	16.1	108.0	336.0	
3	123.726	V	55.2	-24.4	30.8	43.5	12.7	100.0	167.0	
4	191.990	H	48.0	-21.7	26.3	43.5	17.2	355.0	83.0	
5	206.298	H	45.6	-20.3	25.3	43.5	18.2	287.0	91.0	
6	312.513	V	48.5	-16.9	31.6	47.0	15.4	162.0	19.0	
7	437.521	V	48.9	-13.1	35.8	47.0	11.2	137.0	145.0	
8	479.959	H	40.8	-11.7	29.1	47.0	17.9	386.0	176.0	
9	562.530	H	42.2	-9.3	32.9	47.0	14.1	344.0	356.0	
10	687.539	V	44.2	-6.7	37.5	47.0	9.5	114.0	134.0	
11	687.724	H	45.3	-6.7	38.6	47.0	8.4	374.0	53.0	
12	792.056	H	38.9	-5.5	33.4	47.0	13.6	395.0	150.0	

◆ Calculation

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

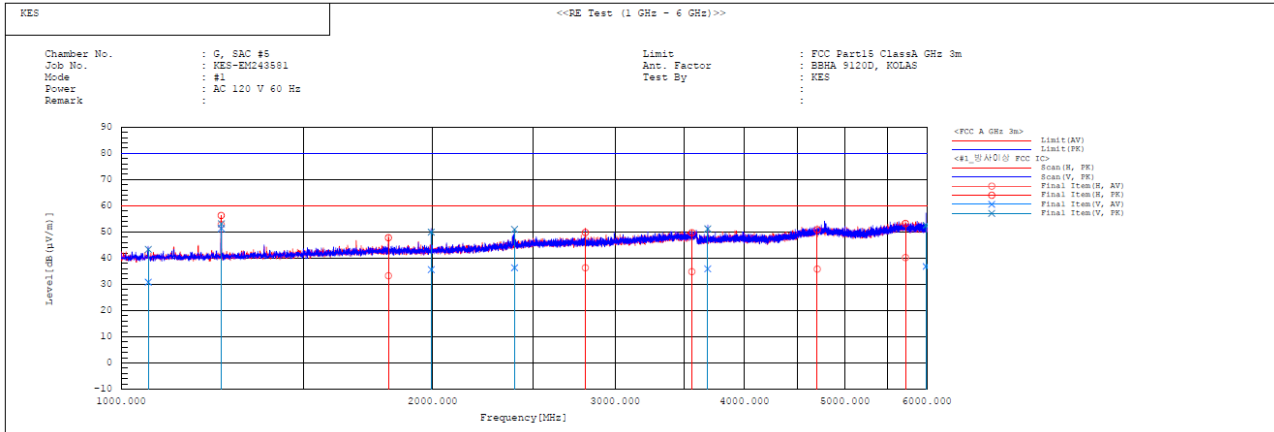
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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



Radiated Electric Field Emissions(Above 1 GHz)

#1

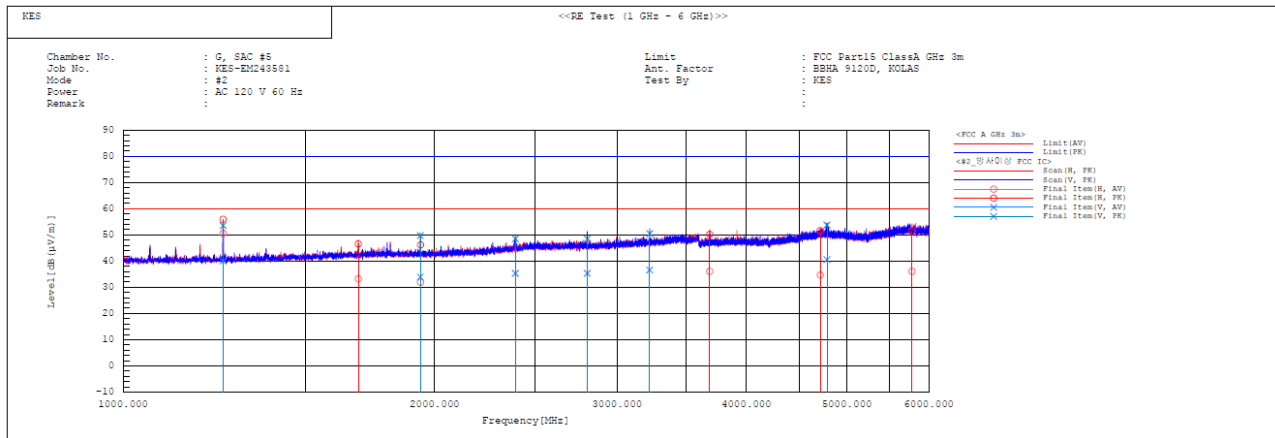


Final Result

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	1062.461	V	32.3	44.8	-1.5	30.8	43.3	60.0	80.0	29.2	36.7	114.0	166.3	
2	1249.414	H	53.3	56.8	-0.5	52.8	56.3	60.0	80.0	7.2	23.7	214.0	20.1	
3	1249.841	V	51.8	53.6	-0.5	51.3	53.1	60.0	80.0	8.7	26.9	134.0	157.1	
4	1812.466	H	31.3	45.8	2.0	33.3	47.8	60.0	80.0	26.7	32.2	203.0	19.1	
5	1993.384	V	32.8	47.1	2.8	35.6	49.9	60.0	80.0	24.4	30.1	100.0	101.0	
6	2398.714	V	31.9	46.6	4.4	36.3	51.0	60.0	80.0	23.7	29.0	108.0	269.8	
7	2807.433	H	30.7	44.2	5.6	36.3	49.8	60.0	80.0	23.7	30.2	177.0	27.4	
8	3558.681	H	27.6	42.5	7.2	34.8	49.7	60.0	80.0	25.2	30.3	241.0	116.5	
9	3686.249	V	28.4	43.7	7.5	35.9	51.2	60.0	80.0	24.1	28.8	115.0	226.0	
10	4702.338	H	24.6	39.6	11.2	35.8	50.8	60.0	80.0	24.2	29.2	191.0	341.6	
11	5720.504	H	26.6	39.6	13.6	40.2	53.2	60.0	80.0	19.8	26.8	233.0	155.6	
12	5988.524	V	22.6	38.3	14.2	36.8	52.5	60.0	80.0	23.2	27.5	155.0	244.0	



■ #2



Final Result

No.	Frequency	Pol	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin	Height	Angle	Remark
	[MHz]		AV	PK		AV	PK	AV	PK	AV	PK	[cm]	[deg]	
1	1249.394	V	40.6	54.1	-0.5	40.1	53.6	60.0	80.0	19.9	26.4	100.0	204.5	
2	1249.511	H	51.1	56.5	-0.5	50.6	56.0	60.0	80.0	9.4	24.0	100.0	6.3	
3	1687.459	H	31.7	45.1	1.5	33.2	46.6	60.0	80.0	26.8	33.4	100.0	7.8	
4	1937.217	V	31.3	47.2	2.6	33.9	49.8	60.0	80.0	26.1	30.2	100.0	60.2	
5	1937.921	H	29.3	43.6	2.6	31.9	46.2	60.0	80.0	28.1	33.8	100.0	106.0	
6	2393.072	V	31.0	44.2	4.3	35.3	48.5	60.0	80.0	24.7	31.5	100.0	271.5	
7	2808.149	V	29.7	42.8	5.6	35.3	48.4	60.0	80.0	24.7	31.6	100.0	27.7	
8	3225.373	V	30.1	44.0	6.5	36.6	50.5	60.0	80.0	23.4	29.5	100.0	182.2	
9	3686.246	H	28.6	42.7	7.5	36.1	50.2	60.0	80.0	23.9	29.8	100.0	205.0	
10	4714.507	H	23.4	40.3	11.3	34.7	51.6	60.0	80.0	25.3	28.4	100.0	135.5	
11	4784.123	V	29.0	42.1	11.6	40.6	53.7	60.0	80.0	19.4	26.3	100.0	1.0	
12	5781.349	H	22.3	37.7	13.8	36.1	51.5	60.0	80.0	23.9	28.5	100.0	285.7	

◆ Calculation

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

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



Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ #1





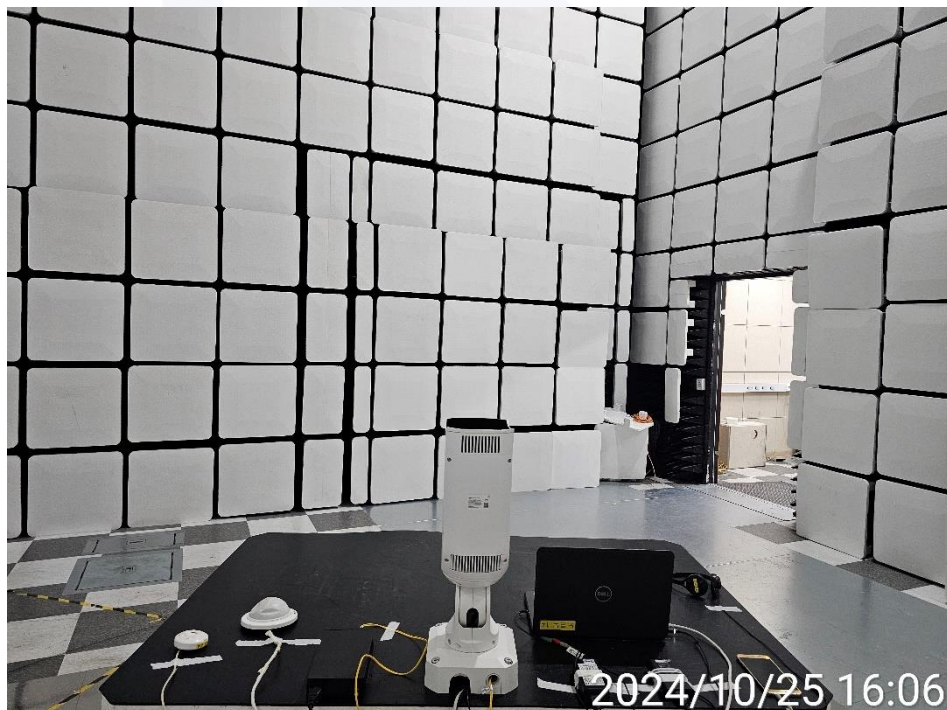
■ #2





Radiated Electric Field Emissions(Below 1 GHz)

■ #1





■ #2





Radiated Electric Field Emissions(Above 1 GHz)

■ #1





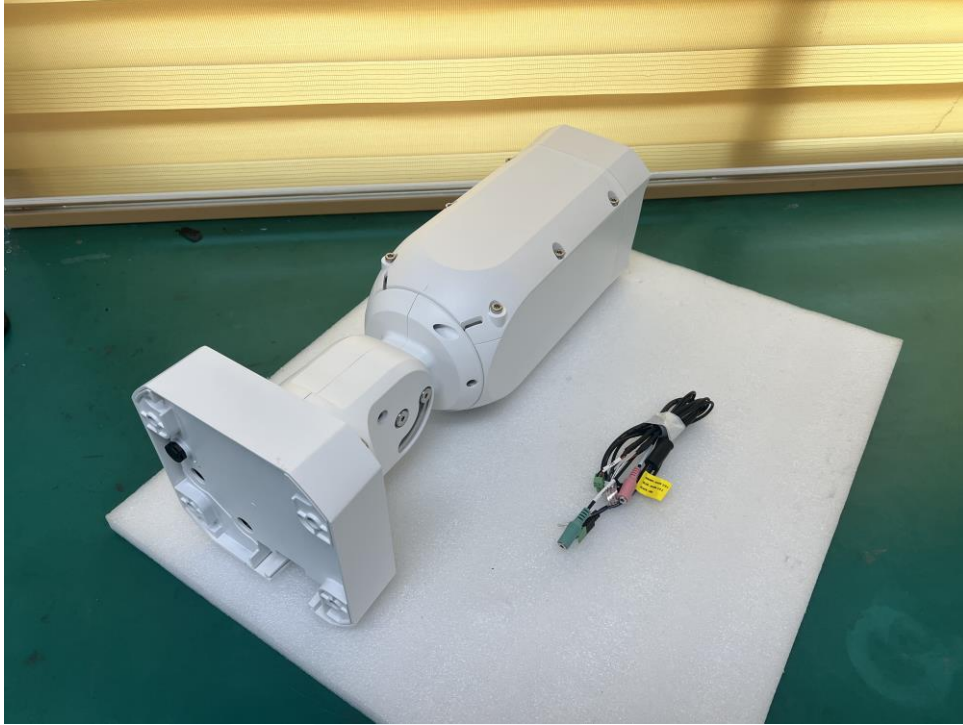
■ #2



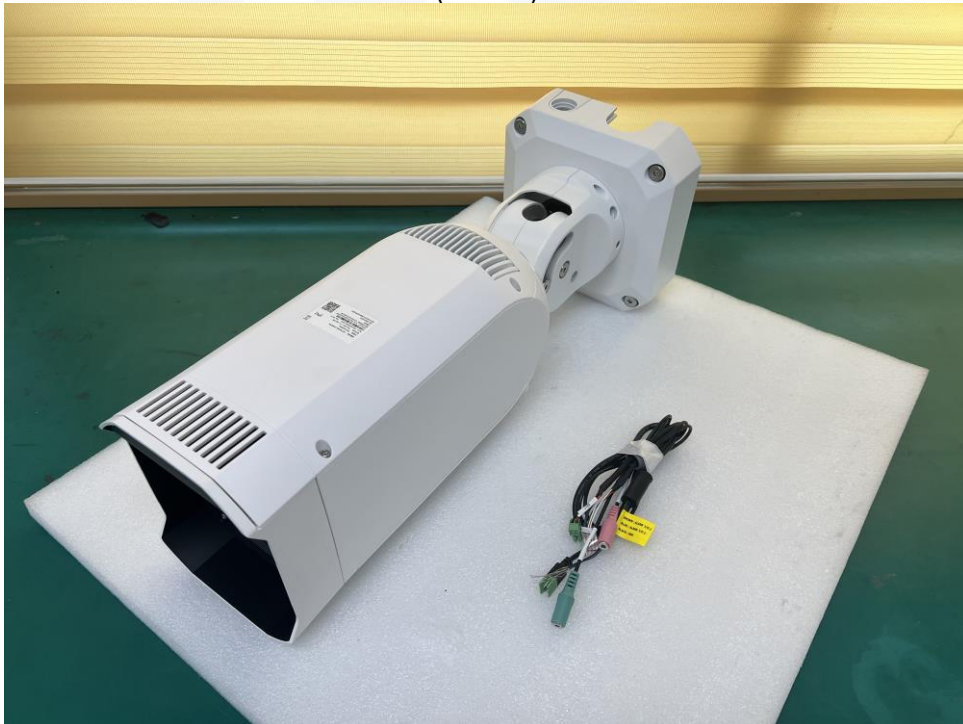


EUT External Photographs

(Top)



(Bottom)





EUT Internal Photographs

(Internal View)



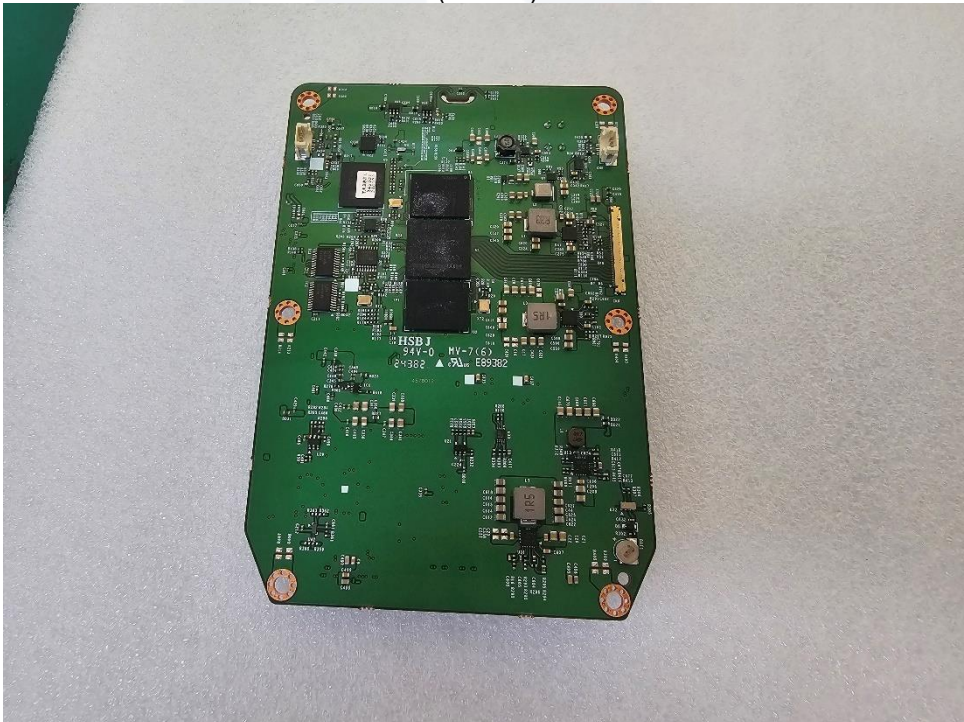


EUT Internal View – Board 1

(Top)



(Bottom)



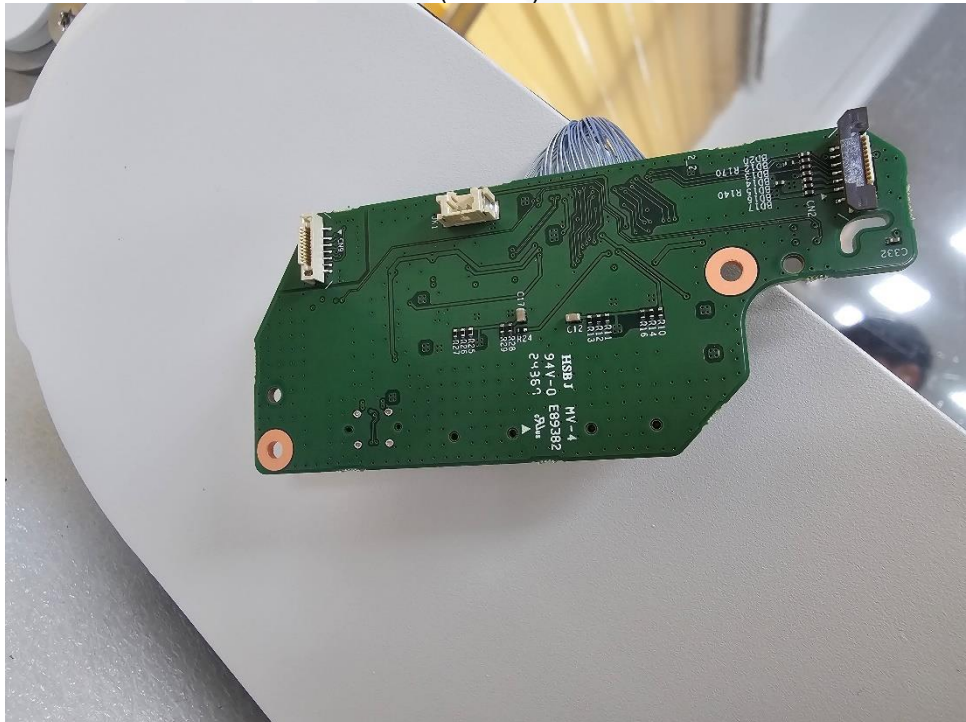


EUT Internal View – Board 2

(Top)



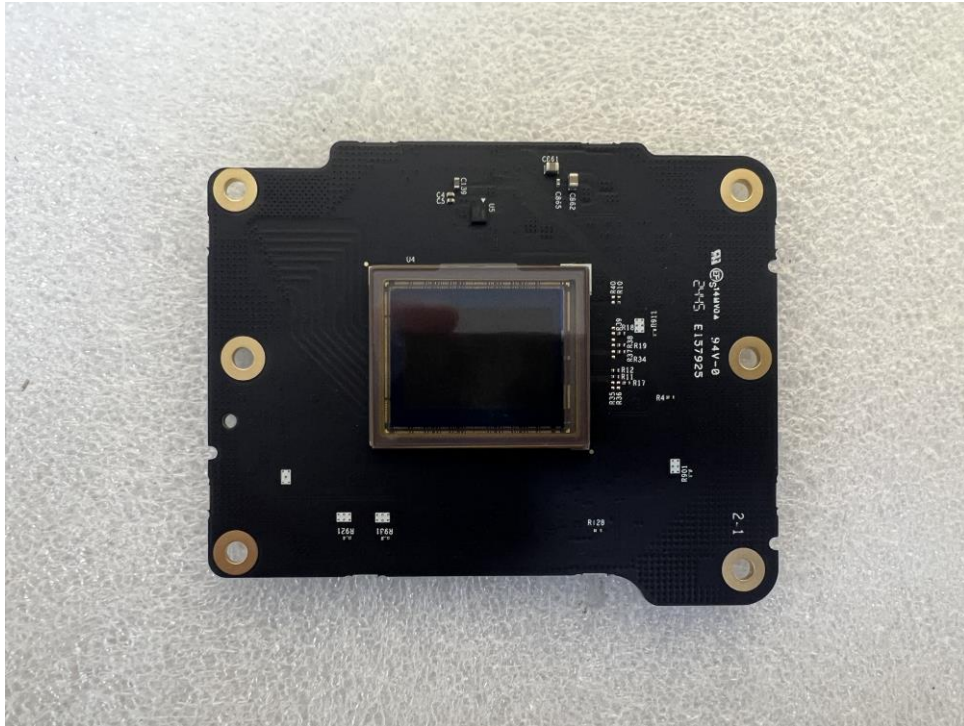
(Bottom)



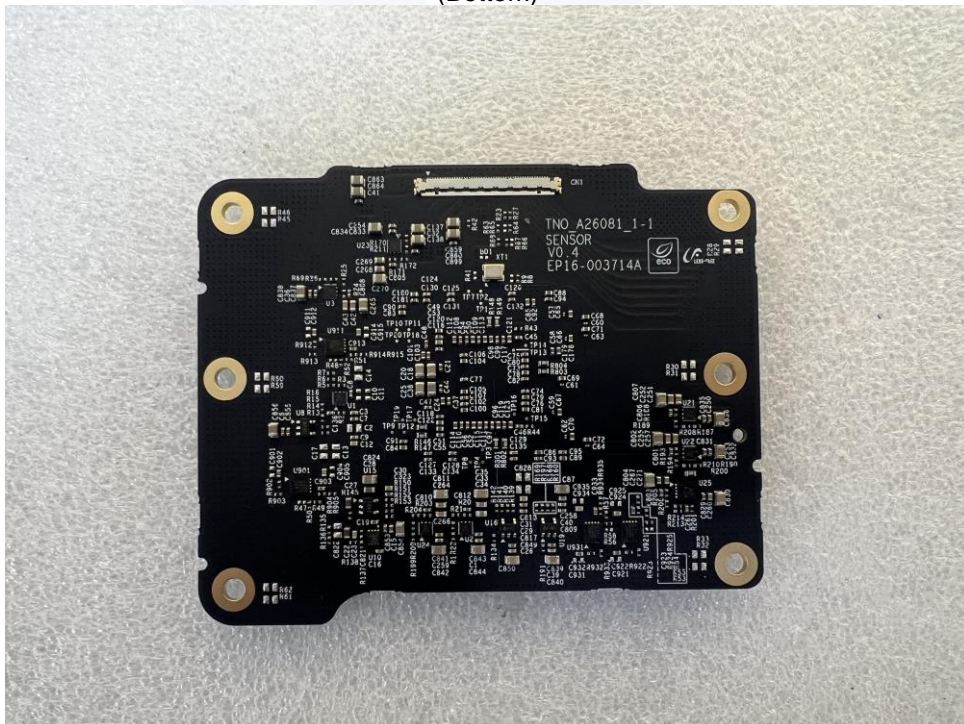


EUT Internal View – Board 3

(Top)



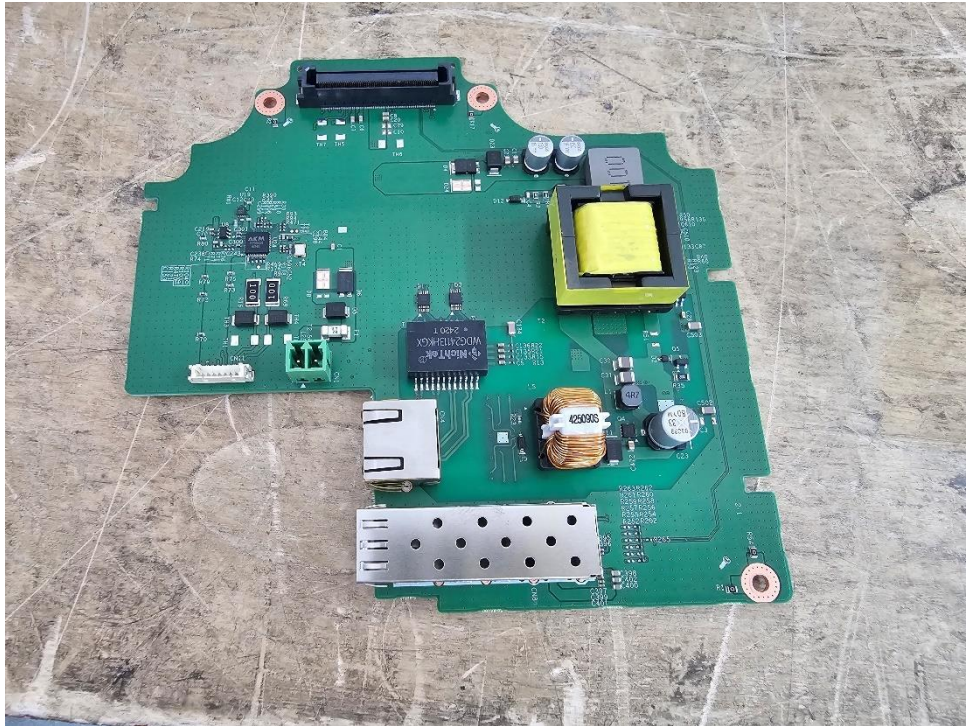
(Bottom)



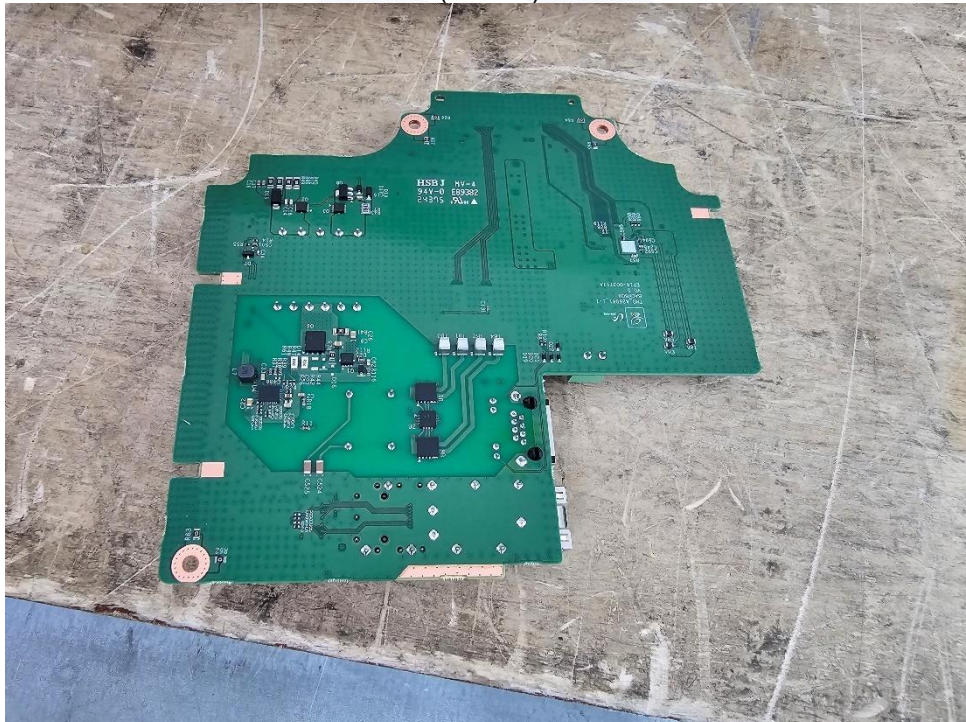


EUT Internal View – Board 4

(Top)



(Bottom)



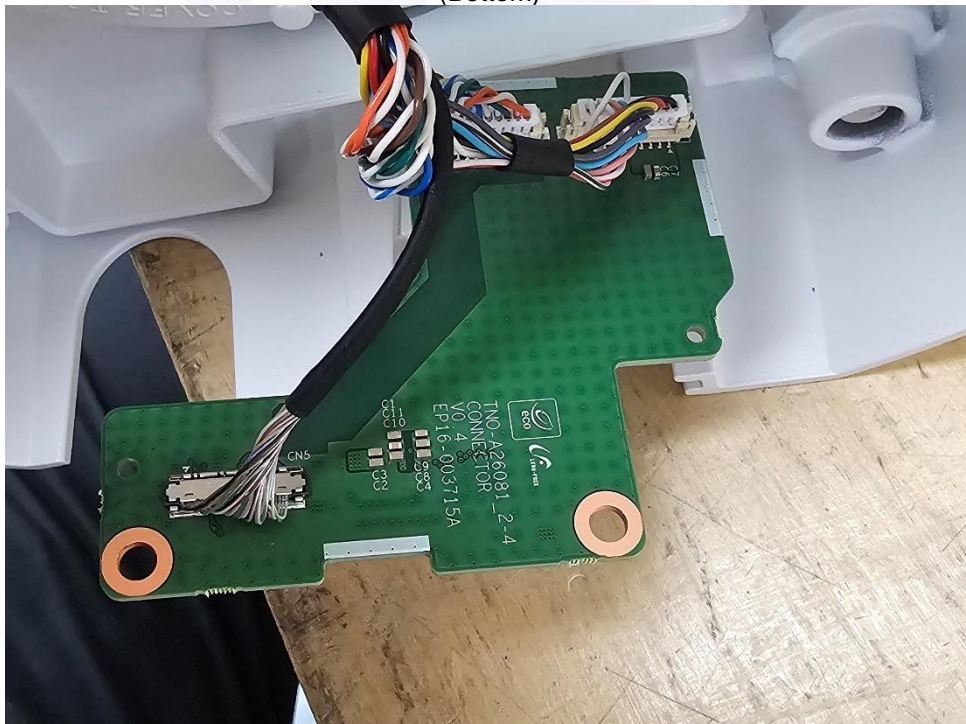


EUT Internal View – Board 5

(Top)



(Bottom)





EUT Internal View – Lens

(Top)



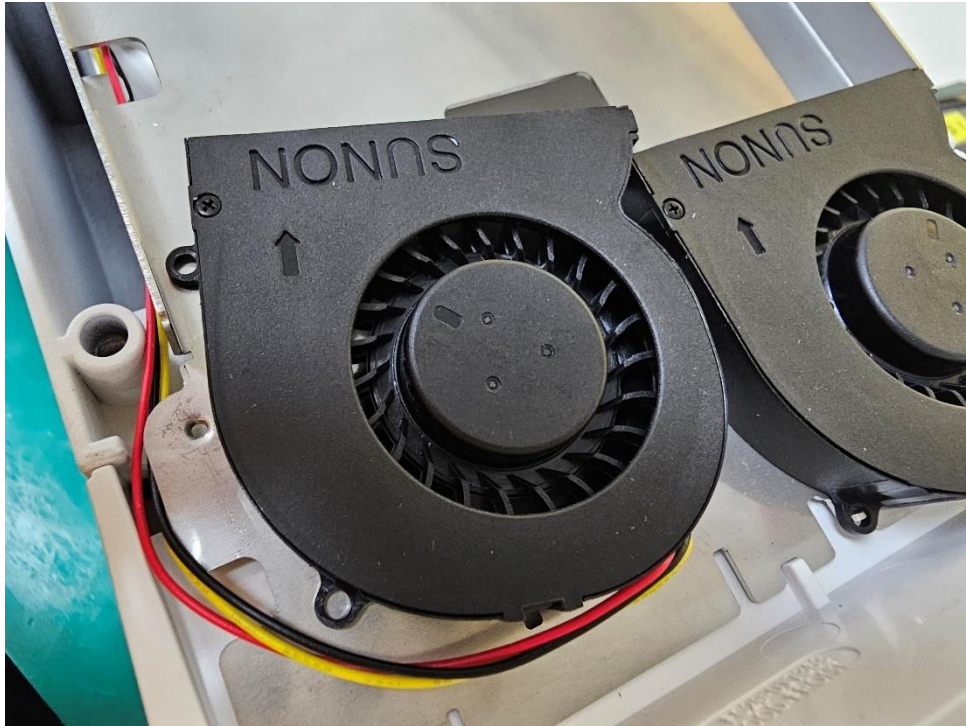
(Bottom)





EUT Internal View – FAN

(Top)



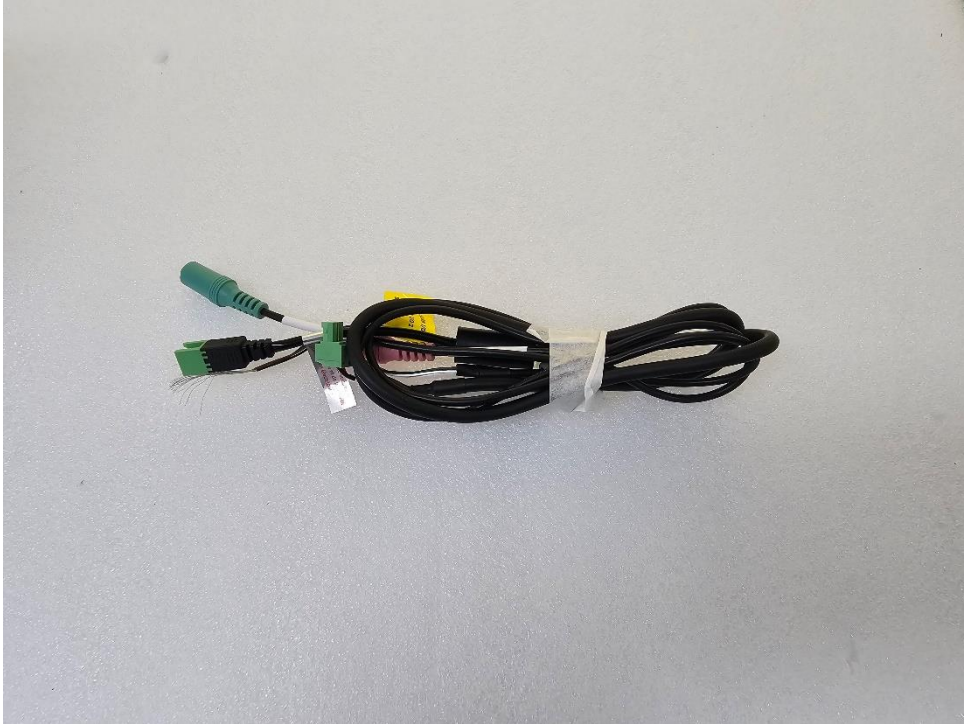
(Bottom)



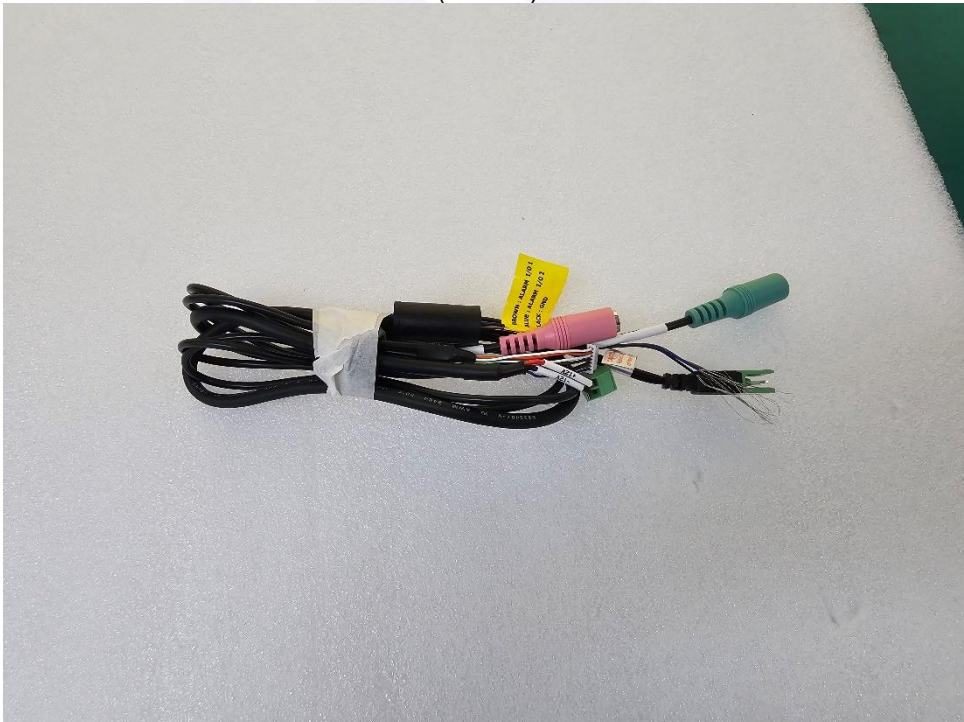


EUT Internal View – Cable

(Top)



(Bottom)





Label Photographs

FCC Label



NETWORK CAMERA

TNO-A26081

IC Label

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

This device complies with Industry Canada license-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

The End.