

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-22T0648-R1

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EMC TEST REPORT For VCCI

Test Report No. : KES-EM-22T0648-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : XND-9083RV
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Jul. 08, 2022
Test date : Jul. 11, 2022 ~ Jul. 12, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Sung-Keun, Park
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jul. 27, 2022	KES-EM-22T0648	Issued
Feb. 24, 2023	KES-EM-22T0648-R1	Change the Applicant and manufacturer at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	1/1.8" progressive CMOS
Resolution	3840x2160, 3328x1872, 3072x1728, 2592x1944, 2688x1520, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 15fps/12fps(60Hz/50Hz)
NETD	None
Pixel Size	None
Min. Illumination	(TBD) Color: 0.04Lux(F1.3, 1/30sec) BW: 0.004Lux(F1.3, 1/30sec), 0Lux(IR LED on)
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	4.4~9.3mm(2.1x) motorized varifocal
Max. Aperture Ratio	F1.3
Angular Field of View	H : 112.1°(Wide)~47.5°(Tele) V : 58.0°(Wide)~26.6°(Tele) D : 137.5°(Wide)~54.6°(Tele)
Min. Object Distance	0.5m(1.64ft)
Focus Control	Simple focus, Manual
Lens Type	P-iris(IR corrected)
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	0°~360° / -45°~85° / 0°~355°(TBD)
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, HLC, WDR, SSDR
Wide Dynamic Range	extremeWDR (120dB)
Digital Noise Reduction	WiseNR II (Based on AI engine), SSNR V
Digital Image Stabilization	Support(built-in gyro sensor)
Defog	Support
Motion Detection	8ea, 8point Polygonal zones
Privacy Masking	32ea, Quadrangle zones - Color : Gray, Green, Red, Blue, Black, White - Mosaic

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Gain Control	Support
White Balance	ATW / Narrow ATW / AWC / Manual / Indoor / Outdoor
LDC	Support (Fill/stretch mode)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec) Auto prefer shutter control(Based on AI engine)
Digital PTZ	Support
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	- Analytics events based on AI engine(NPU) : Object detection (Person/Face/Vehicle(car/truck/bus/bicycle/motorcycle)/Licence plate), IVA (Virtual line/Area, Enter/Exit, Loitering, direction, intrusion) - Analytics events : Defocus detection, Motion detection, Tampering, Fog detection, Audio detection, Sound classification, Shock detection, Appear/Disappear
Business Intelligence	Based on AI engine(NPU) : People counting, Queue management, Heatmap
Serial Interface	None
Alarm I/O	2 configurable I/O ports, DC 12V output(Max. 50mA)
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule
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) - Audio clip playback - PTZ preset
Audio In	Selectable(mic in/line in/built-in MIC) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	WiseIR 50m(164.04ft)(TBD)
IR Illuminator (Optional)	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(10/100/1000BASE-T)
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
Smart Codec	Manual(Sea area), WiseStreamII, WiseStreamIII(Based on AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 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, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)

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Security	TPM 2.0 (FIPS 140-2 level 2) HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2) Device Certificate(Hanwha Techwin Root CA, pre-installed) Secure by default certificate(TBD) Secure OS/Boot/Storage, Verify firmware forgery
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish,, Portuguese, Czech, Polish, Turkish, Dutch, Greek, Hungarian
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot Max. 1TB (512GB * 2)
Memory	4GB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-25 °C ~ 50 °C(-13°F ~ +122°F) * Maximum temperature : +55°C (intermittent) less than 95% RH(non-condensing) Humidity control /w GORE vent
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP52/IK10
Input Voltage	PoE+(IEEE802.3at, Class4), 12VDC
Power Consumption	TBD Power redundancy failover
Mechanical	
Color / Material	White / Aluminum Hard-coated dome bubble
RAL Code	RAL9003
Product Dimensions / Weight	Ø160x125mm(6.30x4.92"), 1.6kg(3.53 lb) (TBD)
Compatible Conduit hole / Gangbox	1/2" (M20) single, double, 4" octagon, 4" square
Hanging Mount (Dome)	SBP-167HMMW
Skin Cover (Dome)	None
Weather Cap (Dome)	None
Power Module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 51.7m(169.64ft) / Tele: 174.5m(572.64ft)
Observe (63PPM/ 19PPF)	Wide: 20.7m(67.85ft) / Tele: 69.8m(229.06ft)
Recognize (125PPM/ 38PPF)	Wide: 10.3m(33.93ft) / Tele: 34.9m(114.53ft)
Identify (250PPM/ 76PPF)	Wide: 5.2m(16.96ft) / Tele: 17.5m(57.26ft)

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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 100 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	XND-9083RV	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	2ACB022F	-	ChAnnel Well Technology (Guangzhou) Co.,Ltd.	-
PoE Adapter	PT-PSE109GBRO-AH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Notebook	Latitude 5300	8C47BE45C060	DELL INC.	-
Notebook Adapter	HA65NM130	-	Chicony Power Technology(Suzhou)Co., Ltd.	-
Smart Phone	A1905	-	Apple Inc.	-
Alarm	PRO-SL	-	SENSOR PRO	-
Button alarm	-	-	-	-
Headset	K550	-	Britz®	-
Micro SD Card	-	-	-	-

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1.6 External I/O Cabling

■ DC MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	DC In	Adapter	DC Out	1.2	U
	RJ-45	Notebook	RJ-45	3.0	S
	Audio Out	Headset	3.5 mm	1.6	U
	Audio In	Smart Phone	3.5 mm	1.6	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	DC Jack	Notebook Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

■ PoE MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	PoE Adapter	RJ-45	3.0	S
	Audio Out	Headset	3.5 mm	1.6	U
	Audio In	Smart Phone	3.5 mm	1.6	U
	Alarm Out	Alarm	Alarm In	3.0	U
	Alarm In	Button Alarm	Alarm Out	3.0	U
	SLOT	Micro SD Card	SLOT	-	-
PoE Adapter	RJ-45	Notebook	RJ-45	2.0	S
Notebook	DC Jack	Notebook Adapter	DC Jack	1.5	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

■ DC, PoE MODE

Test Mode	operating
Operation	EUT Monitoring, Ping Test

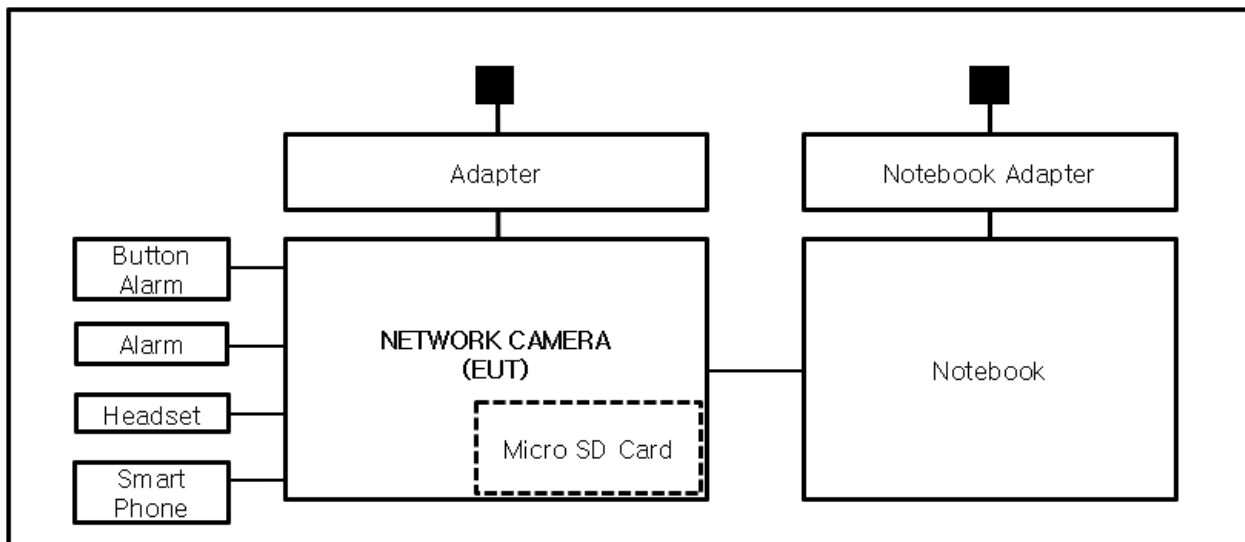
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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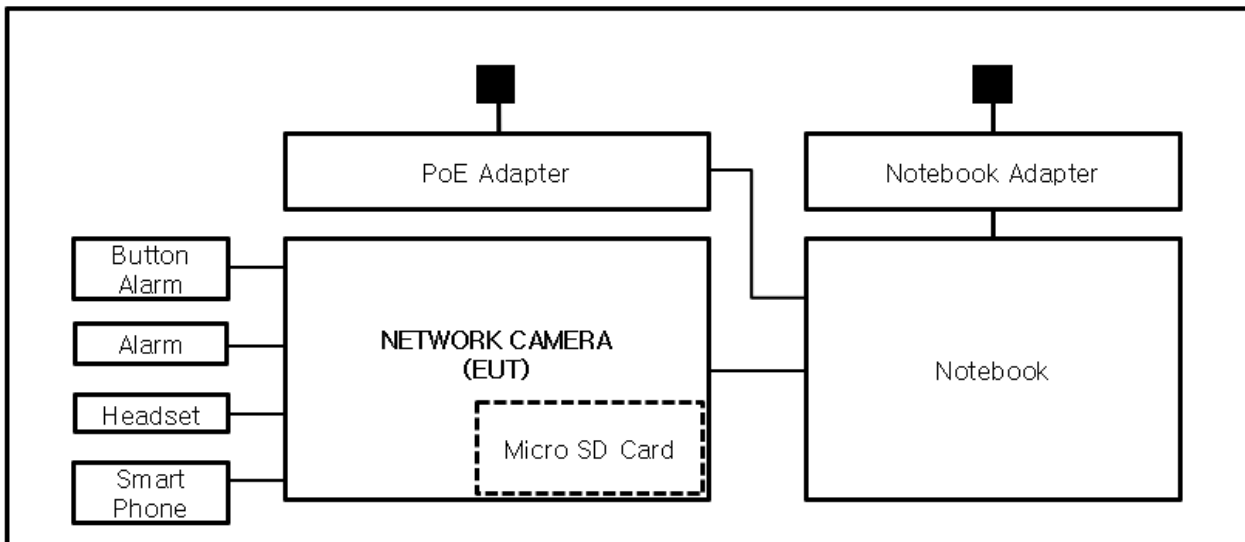
1.8 Configuration

■ AC Main
 □ DC Main

■ DC MODE



■ PoE MODE



1.9 Remarks when standards applied

The usb and video ports were excluded from the test as administrator ports.



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 0004



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2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **VCCI-CISPR 32:2016**

☒ Class A

☐ Class B

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2.1 Conducted Emissions Mains Power Ports

Test Date

Jul. 12, 2022

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	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

Test Conditions

Temperature: (24,4 ± 0,1) °C

Relative Humidity: (44,7 ± 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.

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2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jul. 12, 2022

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	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022
☐	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 28, 2022
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 28, 2022
☒	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	03, 07, 2023

Test Conditions

Temperature: (24,4 ± 0,1) °C

Relative Humidity: (44,7 ± 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.

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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jul. 11, 2022

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	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Test Conditions

Temperature: (24,5 ± 0,1) °C

Relative Humidity: (44,3 ± 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.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jul. 11, 2022

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	03, 31, 2023
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 16, 2022
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 02, 2023

Test Conditions

Temperature: (24,1 ± 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.



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APPENDIX A – TEST DATA

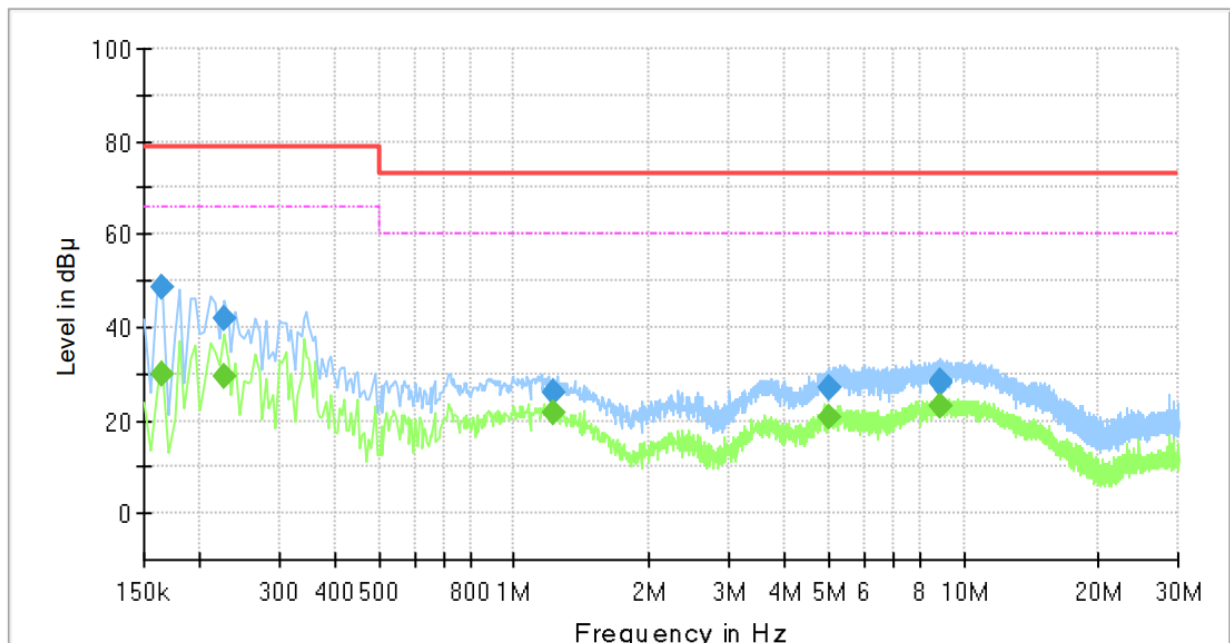
Conducted Emissions at Mains Power Ports

■ DC MODE

HOT LINE

Common Information

Test Description: Conducted Emission
Model No.: XND-9083RV
Phase: L1
Mode: DC Mode
Operator Name: KES



Final Result

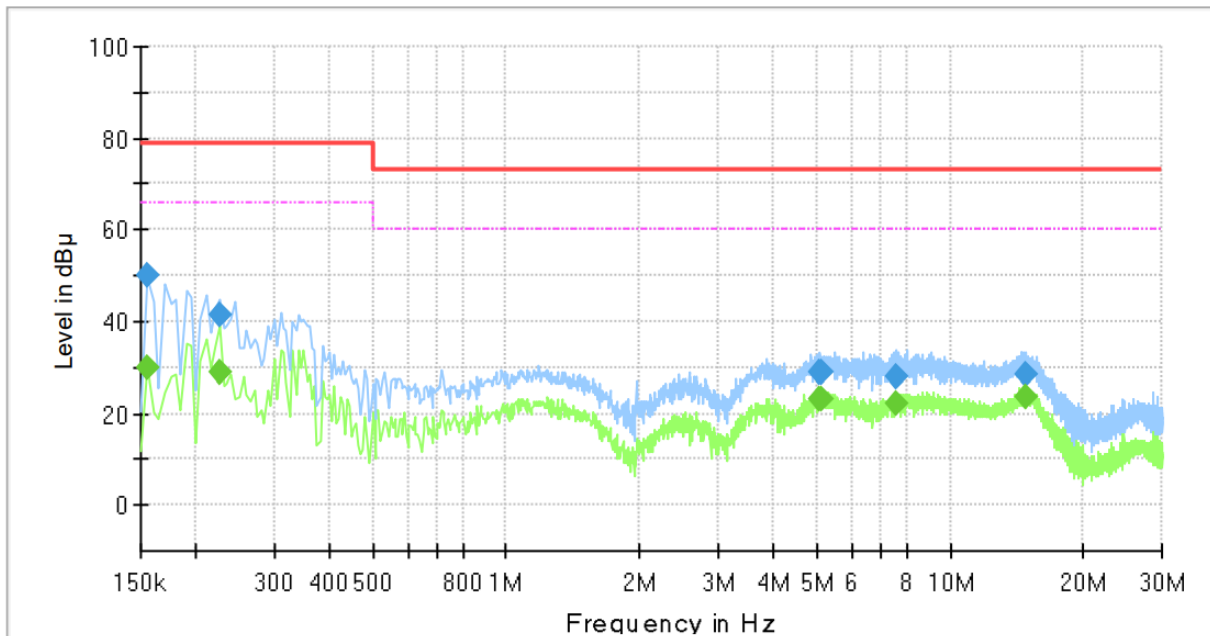
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	29.73	66.00	36.27	1000.0	9.000	L1	19.4
0.165000	48.50	---	79.00	30.50	1000.0	9.000	L1	19.4
0.225000	---	29.55	66.00	36.45	1000.0	9.000	L1	19.4
0.225000	41.80	---	79.00	37.20	1000.0	9.000	L1	19.4
1.220000	---	21.70	60.00	38.30	1000.0	9.000	L1	20.1
1.220000	25.95	---	73.00	47.05	1000.0	9.000	L1	20.1
5.020000	---	20.82	60.00	39.18	1000.0	9.000	L1	19.6
5.020000	26.83	---	73.00	46.17	1000.0	9.000	L1	19.6
8.850000	---	22.95	60.00	37.05	1000.0	9.000	L1	19.7
8.850000	28.07	---	73.00	44.93	1000.0	9.000	L1	19.7
8.860000	---	22.95	60.00	37.05	1000.0	9.000	L1	19.7
8.860000	28.19	---	73.00	44.81	1000.0	9.000	L1	19.7

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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XND-9083RV
Phase:	N
Mode:	DC Mode
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	---	29.90	66.00	36.10	1000.0	9.000	N	19.4
0.155000	49.89	---	79.00	29.11	1000.0	9.000	N	19.4
0.225000	---	29.12	66.00	36.88	1000.0	9.000	N	19.4
0.225000	41.28	---	79.00	37.72	1000.0	9.000	N	19.4
5.100000	---	23.11	60.00	36.89	1000.0	9.000	N	19.6
5.100000	28.72	---	73.00	44.28	1000.0	9.000	N	19.6
5.125000	---	22.99	60.00	37.01	1000.0	9.000	N	19.6
5.125000	28.72	---	73.00	44.28	1000.0	9.000	N	19.6
7.535000	---	22.27	60.00	37.73	1000.0	9.000	N	19.5
7.535000	27.82	---	73.00	45.18	1000.0	9.000	N	19.5
14.775000	---	23.70	60.00	36.30	1000.0	9.000	N	19.9
14.775000	28.57	---	73.00	44.43	1000.0	9.000	N	19.9

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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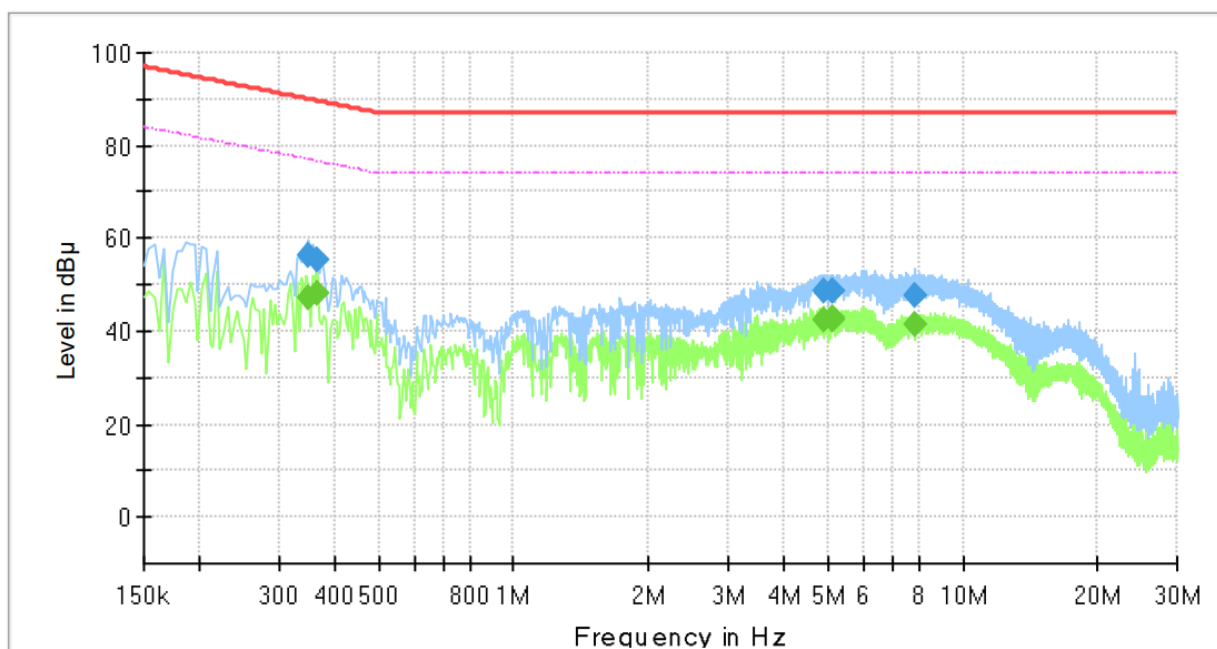
Conducted Emissions at Telecommunication Ports

■ DC MODE

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XND-9083RV
Mode :	DC Mode
Speed :	1 000 Mbps
Operator Name:	KES



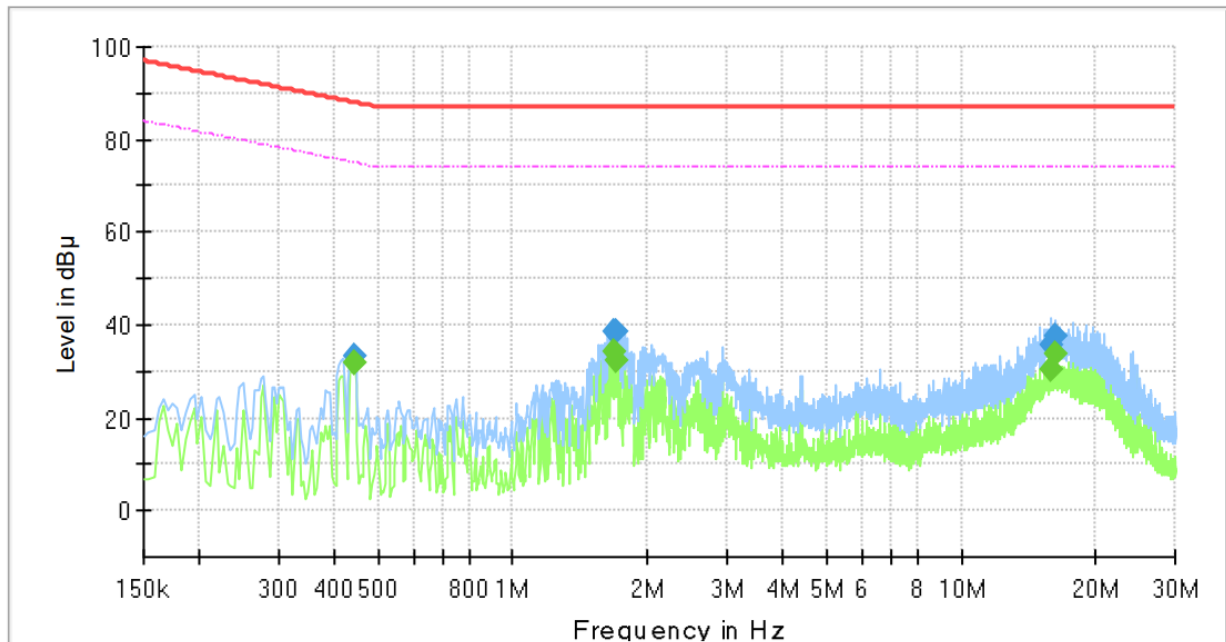
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.350000	---	47.00	76.96	29.96	1000.0	9.000	Single Line	19.4
0.350000	56.45	---	89.96	33.51	1000.0	9.000	Single Line	19.4
0.366000	---	48.26	76.59	28.33	1000.0	9.000	Single Line	19.4
0.366000	55.50	---	89.59	34.09	1000.0	9.000	Single Line	19.4
4.914000	---	42.58	74.00	31.42	1000.0	9.000	Single Line	19.5
4.914000	48.59	---	87.00	38.41	1000.0	9.000	Single Line	19.5
5.118000	---	42.47	74.00	31.53	1000.0	9.000	Single Line	19.5
5.118000	48.54	---	87.00	38.46	1000.0	9.000	Single Line	19.5
5.142000	---	42.62	74.00	31.38	1000.0	9.000	Single Line	19.5
5.142000	48.50	---	87.00	38.50	1000.0	9.000	Single Line	19.5
7.830000	---	41.49	74.00	32.51	1000.0	9.000	Single Line	19.4
7.830000	47.61	---	87.00	39.39	1000.0	9.000	Single Line	19.4

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PoE MODE
[1 000 Mbps]
Common Information

Test Description:	Telecommunication Emission
Model No.:	XND-9083RV
Mode :	PoE Mode
Speed :	1 000 Mbps
Operator Name:	KES


Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.442000	---	31.76	75.02	43.26	1000.0	9.000	Single Line	19.5
0.442000	33.01	---	88.02	55.01	1000.0	9.000	Single Line	19.5
1.686000	---	34.17	74.00	39.83	1000.0	9.000	Single Line	20.2
1.686000	38.72	---	87.00	48.28	1000.0	9.000	Single Line	20.2
1.690000	---	32.07	74.00	41.93	1000.0	9.000	Single Line	20.2
1.690000	38.36	---	87.00	48.64	1000.0	9.000	Single Line	20.2
15.922000	---	30.50	74.00	43.50	1000.0	9.000	Single Line	19.8
15.922000	35.57	---	87.00	51.43	1000.0	9.000	Single Line	19.8
16.226000	---	33.80	74.00	40.20	1000.0	9.000	Single Line	19.8
16.226000	37.37	---	87.00	49.63	1000.0	9.000	Single Line	19.8

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



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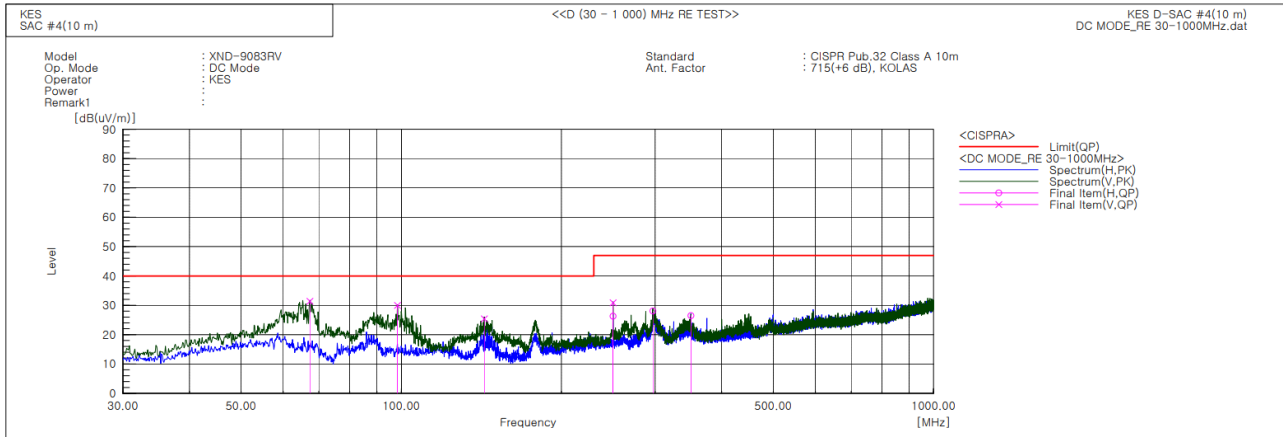
Report No.:

KES-EM-22T0648-R1

Page (22) of (42)

Radiated Electric Field Emissions(Below 1 GHz)

DC MODE



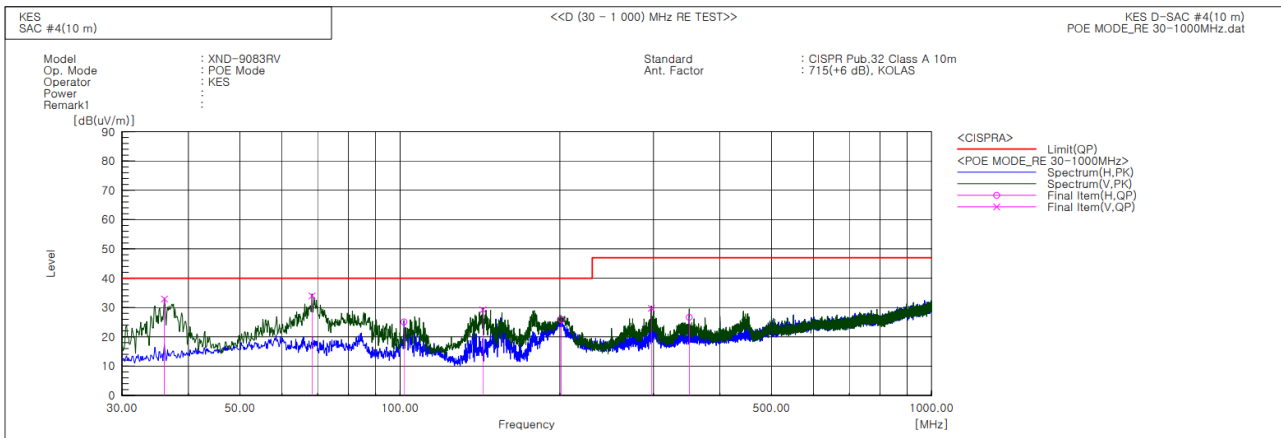
Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	67.345	V	55.4	-24.0	31.4	40.0	8.6	135.0	224.6	
2	98.385	V	52.7	-22.7	30.0	40.0	10.0	110.0	224.6	
3	143.248	V	50.9	-25.5	25.4	40.0	14.6	203.0	253.2	
4	249.948	H	45.6	-19.3	26.3	47.0	20.7	241.0	161.0	
5	249.948	V	50.2	-19.3	30.9	47.0	16.1	194.0	224.6	
6	296.993	H	46.2	-18.1	28.1	47.0	18.9	287.0	269.5	
7	349.979	H	41.8	-15.3	26.5	47.0	20.5	318.0	323.7	

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■ PoE MODE



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	36.063	V	57.4	-24.5	32.9	40.0	7.1	106.0	141.4	
2	68.315	V	58.3	-24.3	34.0	40.0	6.0	155.0	231.4	
3	101.780	H	47.6	-22.5	25.1	40.0	14.9	392.0	194.2	
4	143.248	V	54.7	-25.5	29.2	40.0	10.8	204.0	71.1	
5	201.205	H	46.8	-20.9	25.9	40.0	14.1	287.0	212.1	
6	296.993	V	47.8	-18.1	29.7	47.0	17.3	200.0	205.3	
7	349.979	H	42.0	-15.3	26.7	47.0	20.3	183.0	141.4	

◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

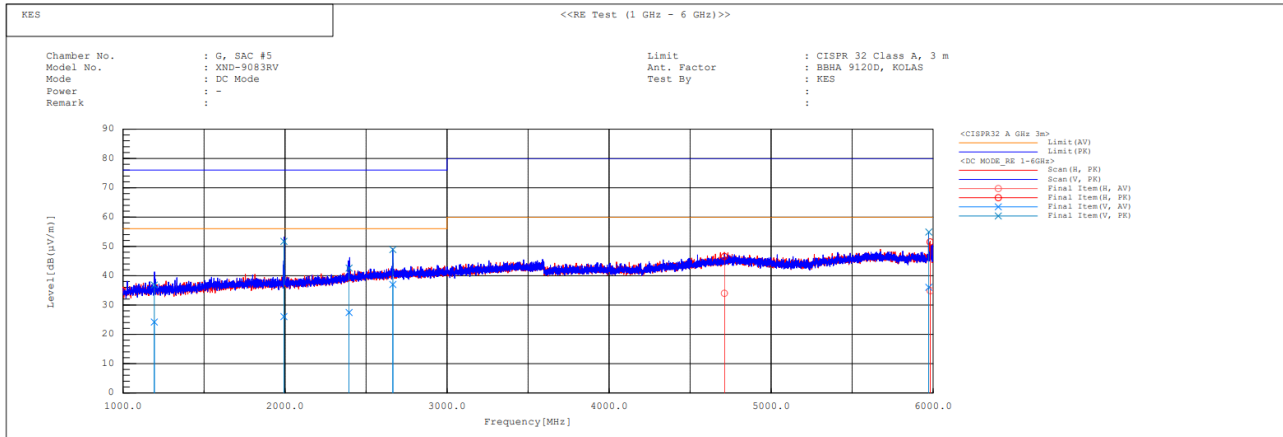
Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss



Radiated Electric Field Emissions(Above 1 GHz)

DC MODE



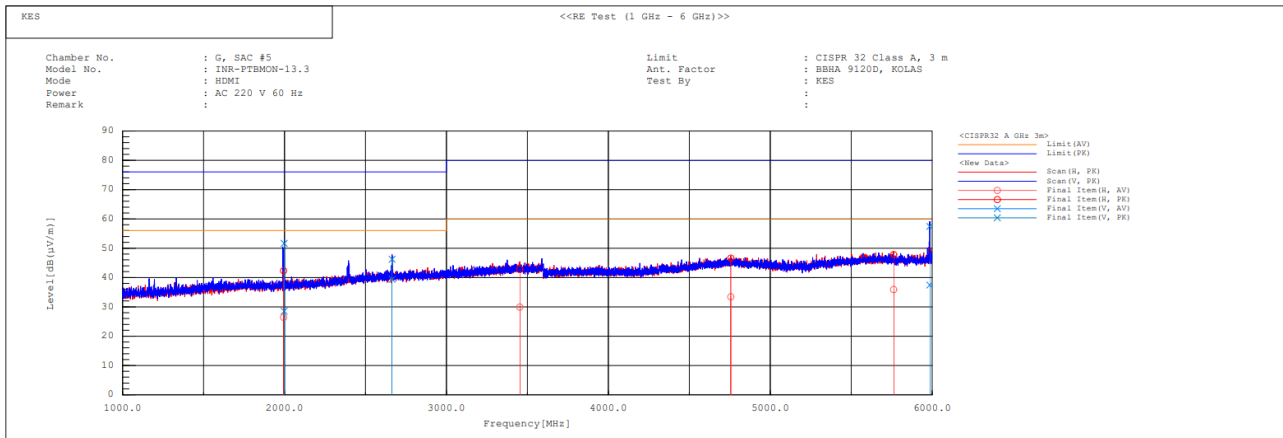
Final Result

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]
1	1193.921	V	30.9	43.5	-6.7	24.2	36.8	56.0	76.0	31.8	39.2	100.0	236.3
2	1993.682	V	28.8	54.5	-2.8	26.0	51.7	56.0	76.0	30.0	24.3	100.0	3.3
3	2396.489	V	28.9	44.1	-1.5	27.4	42.6	56.0	76.0	28.6	33.4	100.0	201.3
4	2666.201	V	37.3	49.2	-0.3	37.0	48.9	56.0	76.0	19.0	27.1	100.0	260.0
5	4712.328	H	27.9	40.4	6.1	34.0	46.5	60.0	80.0	26.0	33.5	100.0	9.3
6	5973.751	V	27.3	46.2	8.7	36.0	54.9	60.0	80.0	24.0	25.1	100.0	270.2
7	5982.021	H	26.1	42.7	8.8	34.9	51.5	60.0	80.0	25.1	28.5	100.0	253.6

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■ PoE MODE



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]
1	1995.124	H	29.2	45.1	-2.8	26.4	42.3	56.0	76.0	29.6	33.7	100.0	337.4
2	1998.748	V	31.2	54.3	-2.7	28.5	51.6	56.0	76.0	27.5	24.4	100.0	201.6
3	2665.417	V	39.7	46.5	-0.3	39.4	46.2	56.0	76.0	16.6	29.8	100.0	323.5
4	3453.912	H	28.1	41.0	1.8	29.9	42.8	60.0	80.0	30.1	37.2	100.0	144.6
5	4756.832	H	27.1	40.3	6.3	33.4	46.6	60.0	80.0	26.6	33.4	100.0	47.2
6	5762.471	H	27.7	39.6	8.2	35.9	47.8	60.0	80.0	24.1	32.2	100.0	235.9
7	5985.113	V	28.6	48.6	8.8	37.4	57.4	60.0	80.0	22.6	22.6	100.0	264.6

◆ Calculation

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

Margin(PK/CAV) [dB] = Limit [dB (μV/m)] - Result(PK/CAV) [dB (μV/m)]

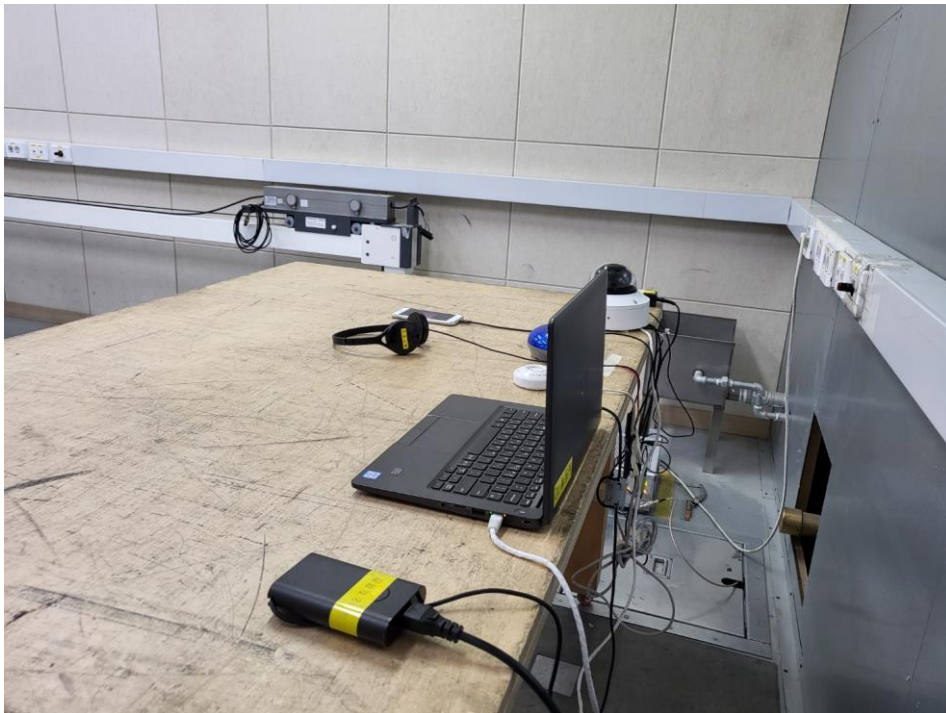
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

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

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

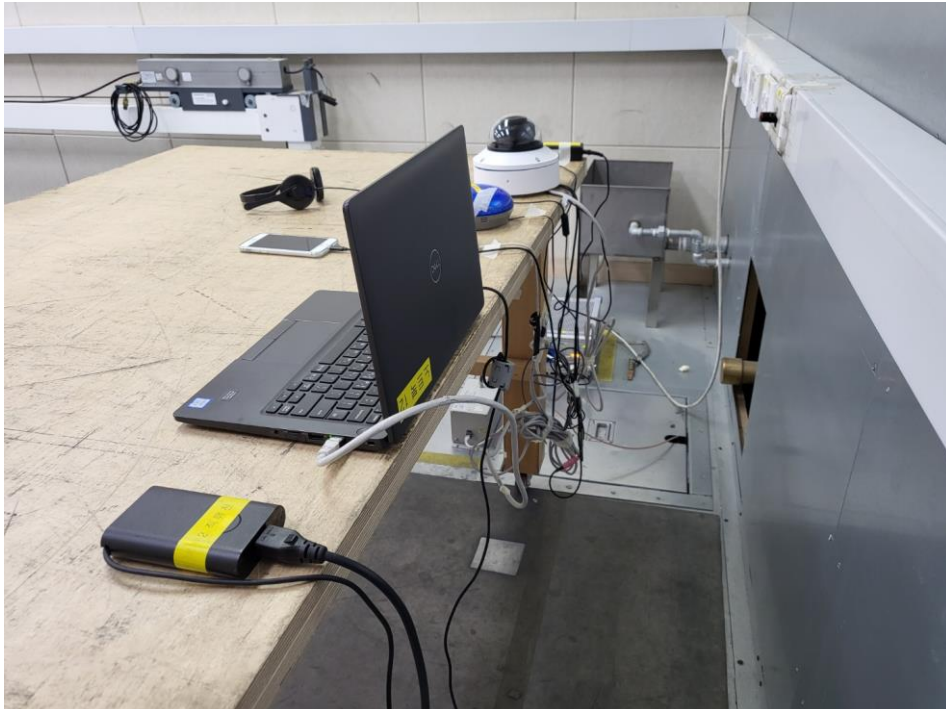
■ DC MODE



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Conducted Emissions at Telecommunication Ports

■ DC MODE



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■ PoE MODE



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Radiated Electric Field Emissions(Below 1 GHz)

■ DC MODE



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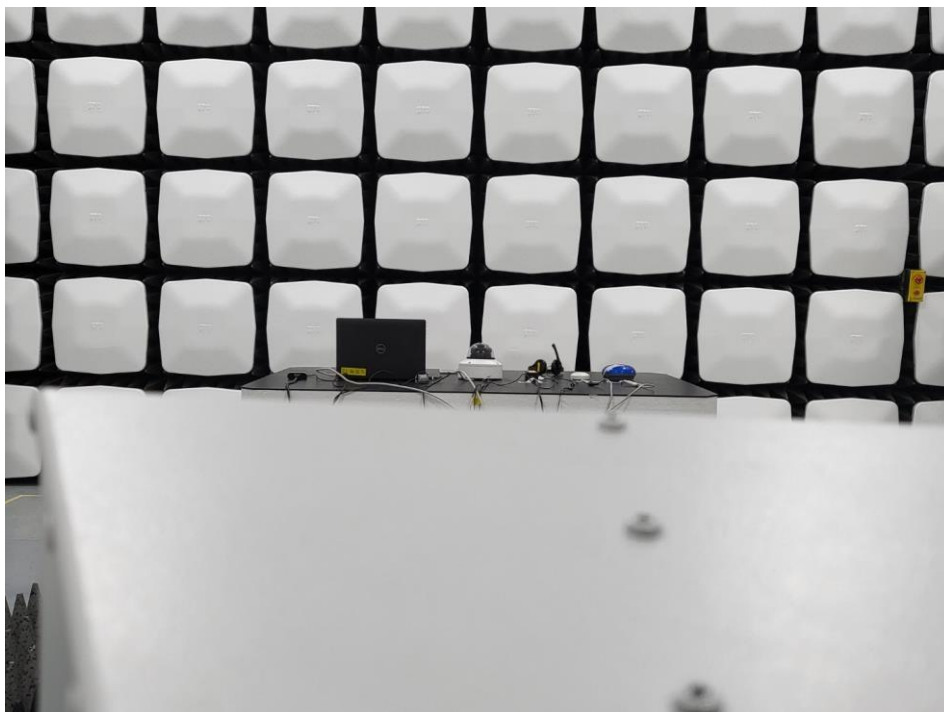
■ PoE MODE



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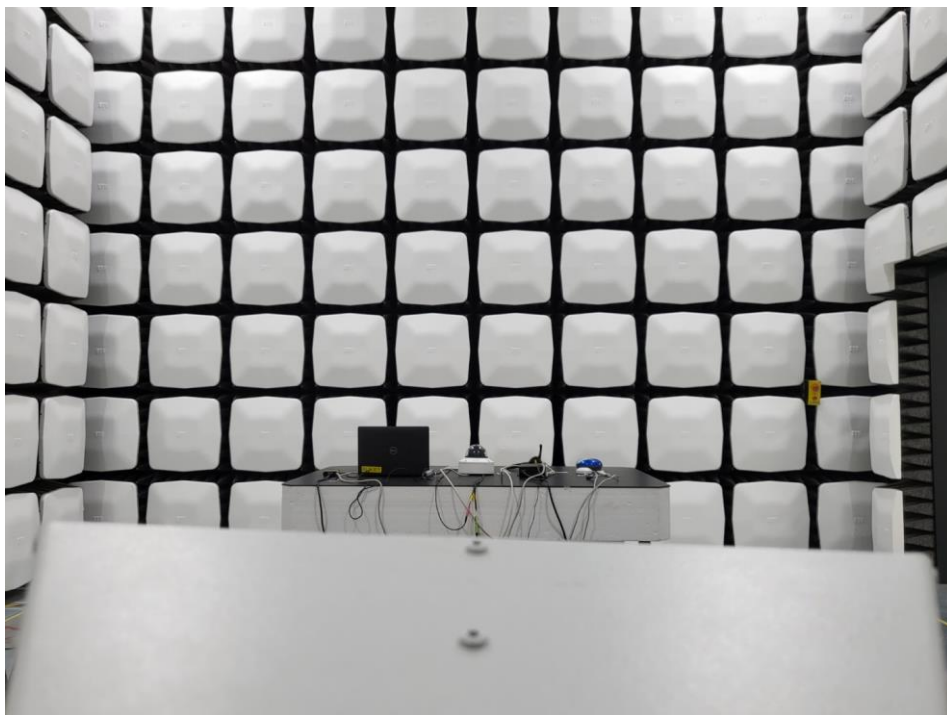
Radiated Electric Field Emissions(Above 1 GHz)

■ DC MODE



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■ PoE MODE



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

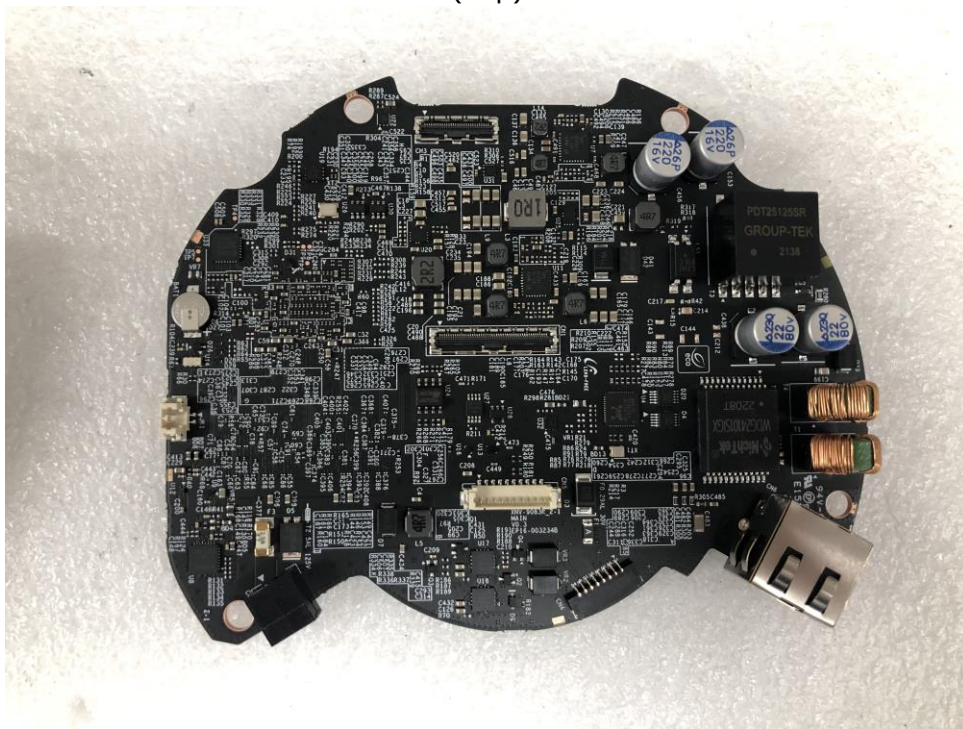
(Internal View)



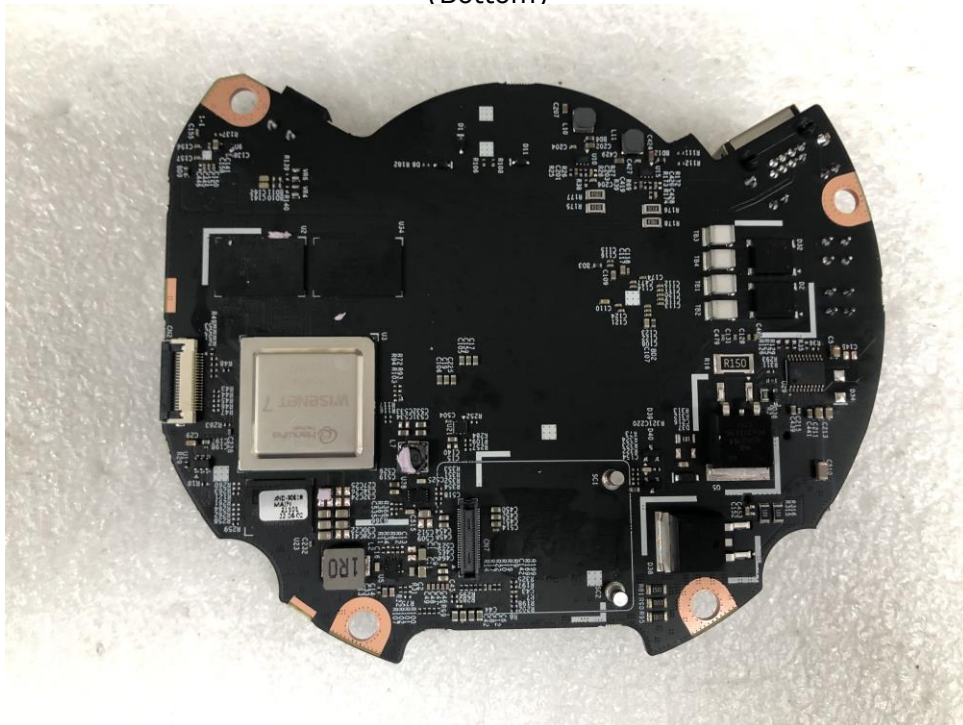
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EUT Internal View –Main Board

(Top)



(Bottom)



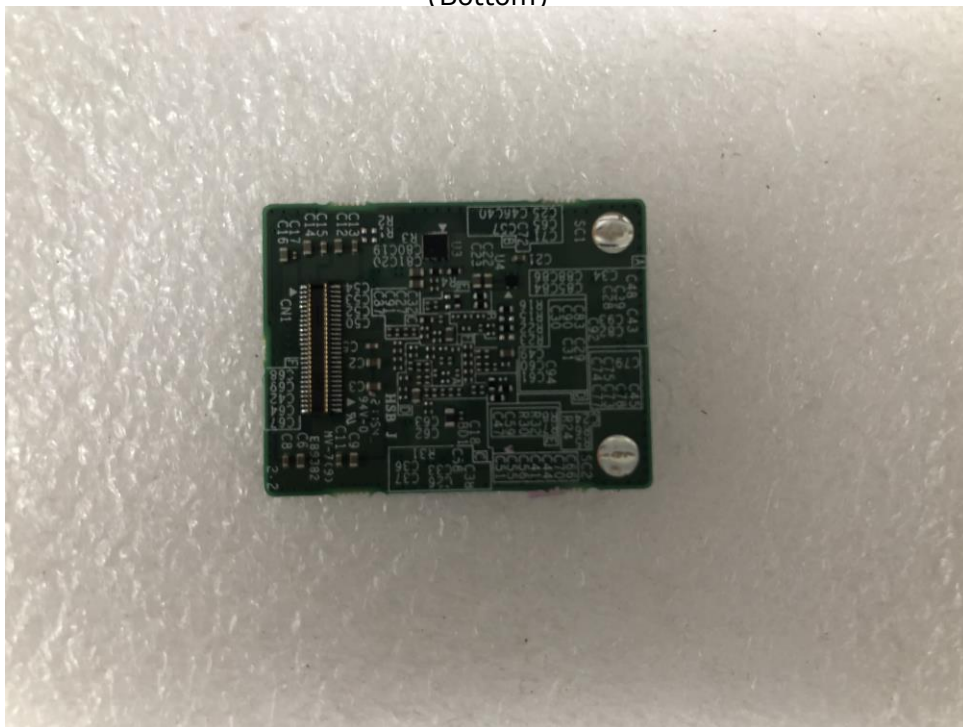
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EUT Internal View – Sub Board 1

(Top)



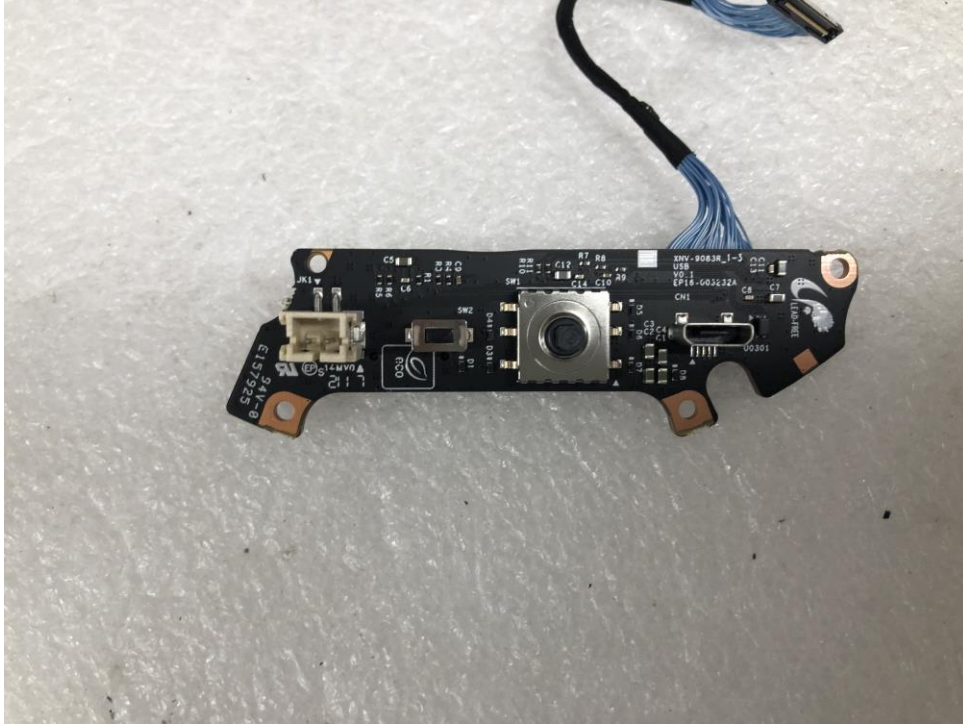
(Bottom)



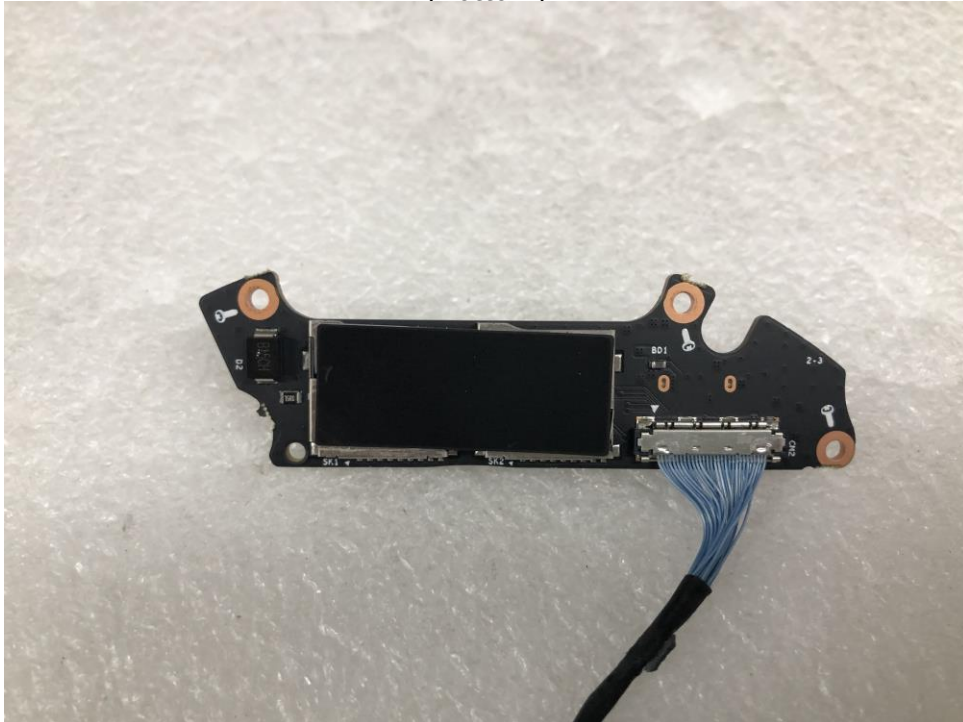
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EUT Internal View – Sub Board 2

(Top)



(Bottom)



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EUT Internal View – Sub Board 3

(Top)



(Bottom)



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EUT EUT Internal View – Lens

(Top)



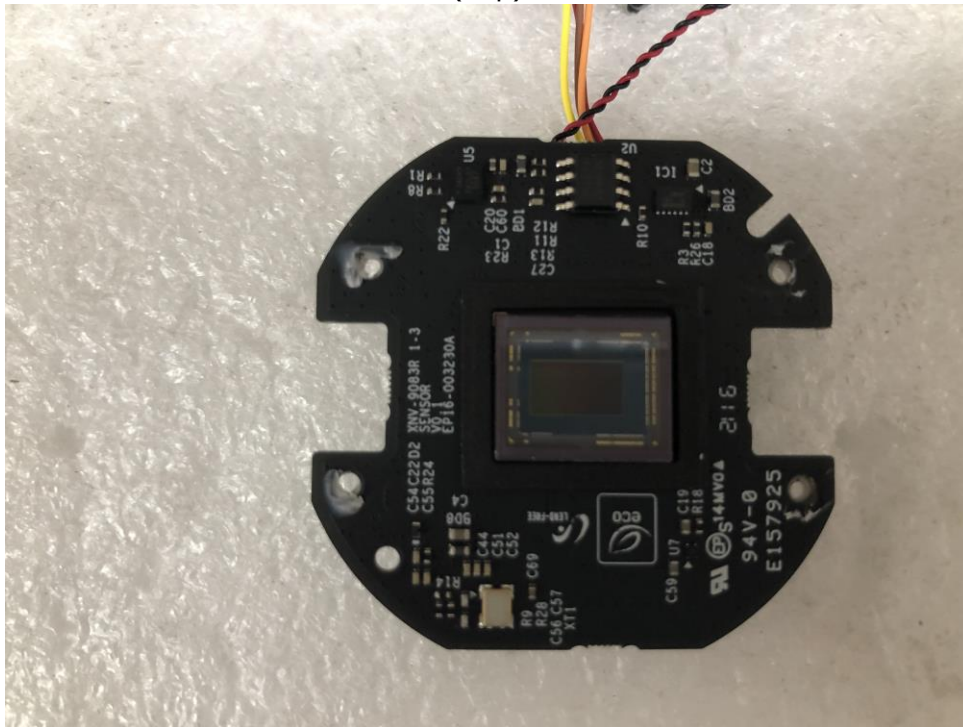
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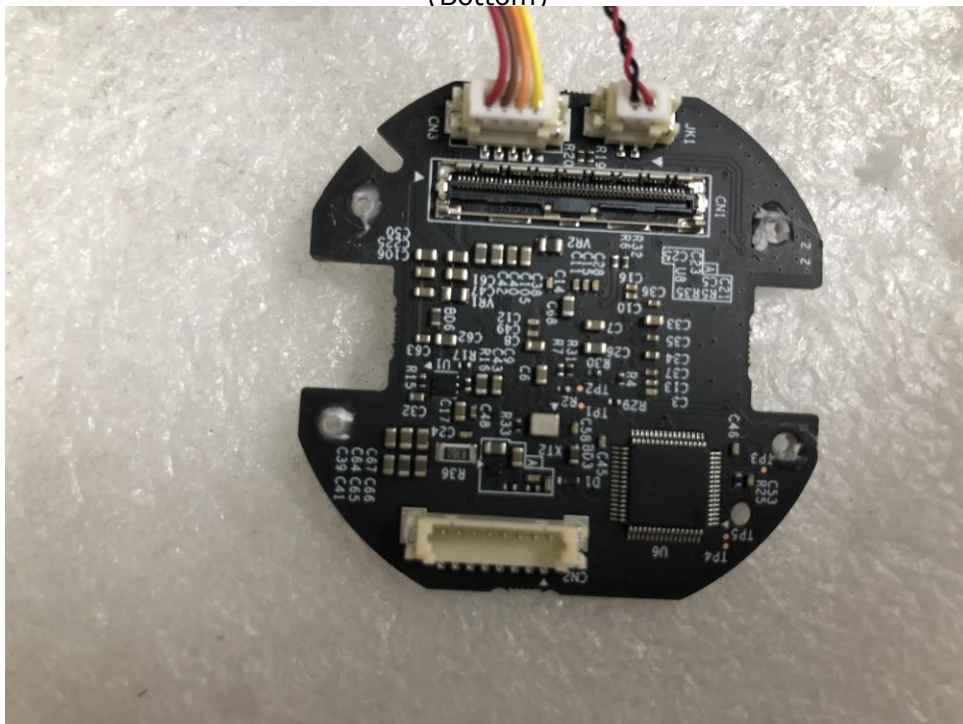
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EUT EUT Internal View – Lens Board

(Top)



(Bottom)



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EUT Internal View – Mike

(Top)



(Bottom)



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Label Photographs



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