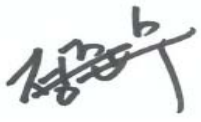
EMC TEST REPORT

Test Report No.	:	KES-E1-19T0097
Date of Issue	:	Feb. 18, 2019
Product name	:	Network Camera
Model/Type No.	:	XNV-8081R
Variant Mode	:	-
Applicant	:	Hanwha Techwin Co., Ltd.
Applicant Address	:	6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
Manufacturer	:	1. Hanwha Techwin (Tianjin) Co.,Ltd. 2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. 3. D-TECH CO.,LTD.
Manufacturer Address	:	1. No.11 Weiliu Rd,Micro-Electronic Industrial Park, TEDA,Tianjin, 300385,People's Republic of China 2. Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam 3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea (Suwon Industrial Complex)
Equipment authorization	:	Supply's Declaration of Conformity
Date of Receipt	:	Jan. 21, 2019
Test date	:	Feb. 12, 2019 ~ Feb. 14, 2019
Test Results	:	☒ In Compliance ☐ Not in Compliance

Tested by



Jun Soo, Jung
EMC Test Engineer

Reviewed by



Dong-Hun, Jang
EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 18, 2019	KES-E1-19T0097	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Items		Description		
		XNV-8081R	XND-8081RV	XND-8081RF
Video	Imaging Device	1/1.8" 6MP CMOS		
	Effective Pixels	2616(H) x 1976(V)		
	NETD	None		
	Pixel Size	None		
	Min. Illumination	Color : 0.07 Lux(F1.2, 1/30sec) B/W : 0 Lux(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		
Lens	Focal Length (Zoom Ratio)	3.6~9.4mm(2.6x) motorized varifocal		
	Max. Aperture Ratio	F1.2(Wide) ~ F2.4(Tele)		
	Angular Field of View	H : 102.5°(Wide) ~ 38.7°(Tele) V : 74.2°(Wide) ~ 29.0°(Tele) D : 135.5°(Wide) ~ 48.6°(Tele)		
	Min. Object Distance	0.5m (1.64ft)		
	Focus Control	Simple focus		
	Lens Type	DC Auto Iris, P-Iris		
	Mount Type	None		
	Optional Lens	None		
Pan / Tilt / Rotate	Pan / Tilt / Rotate range	0°~360° / -45°~85° / 0°~355°		
	Pan Range	Remote adjustment (Max. 200 cycles)		
	Pan Speed	None		
	Tilt Range	None		
	Tilt Speed	None		
	Rotate Range	None		
	Sequence	None		
	Preset Accuracy	None		
	Azimuth	None		
	Auto Tracking	None		

Items		Description		
		XNV-8081R	XND-8081RV	XND-8081RF
Operational	IR Viewable Length	50m(164.04ft)		
	Camera Title	Displayed up to 85 characters		
	Day & Night	Auto (ICR)		
	Backlight Compensation	BLC, HLC, WDR, SSDR		
	Wide Dynamic Range	150dB		
	Digital Noise Reduction	SSNR V		
	Digital Image Stabilization	Support (built-in Gyro Sensor)		
	Defog	Support		
	Motion Detection	8ea, 8point Polygonal zones		
	Privacy Masking	32ea, polygonal zones - Color : Gray, Green, Red, Blue, Black, White - 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)		
	Video Rotation	Flip, Mirror, Hallway view(90°/270°)		
	Analytics	Defocus detection, Directional detection, Fog detection, Face detection, Motion detection, Digital auto tracking, Appear/Disappear, Enter/Exit, Loitering, Tampering, Virtual line, Audio detection, Sound classification, Shock detection		
	Business Intelligence	People counting, Queue management, Heatmap		
	Serial Interface	None		
	Alarm I/O	Input 1ea / Output 1ea		
	Alarm Triggers	Analytics, Network disconnect, Alarm input		

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Items		Description		
		XNV-8081R	XND-8081RV	XND-8081RF
Operational	Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail • SD/SDHC/SDXC or NAS recording at event triggers • Alarm output • Handover • Audio playback		
	Audio in	Selectable (Mic IN/Line IN) Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm	Selectable (Mic IN/Line IN/Built-in mic) Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm	Selectable (Mic IN/Line IN) Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
	Audio out	Line out, Max output level: 1 Vrms		
	Wiper	None		
	Coaxial Protocol	None		
	Video Transmission Distance	None		
Radiometry	Temperature detect range	None		
	Temperature accuracy	None		
	Temperature detection	None		
	Additional	None		
Network	Ethernet	RJ-45 (10/100BASE-T)		
	Video Compression	H.265/H.264: Main/Baseline/High, MJPEG		
	Resolution	2560x1920, 2560x1440, 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. 30fps/25fps(60Hz/50Hz)		

Items		Description		
		XNV-8081R	XND-8081RV	XND-8081RF
Network	Smart Codec	Manual(Sea area), WiseStream II		
	Bitrate Control	H.264/H.265 : CBR or VBR MJPEG : VBR		
	Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)		
	Audio Compression	G.711 μ-law /G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC : 48Kbps at 16KHz		
	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, PIM-SM, UPnP, Bonjour, LLDP		
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication (EAP-TLS, EAP-LEAP)		
	Edge Storage	Micro SD/SDHC/SDXC 2slot 512GB		
	Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet Open Platform		
	Web Viewer	Supported OS : Windows 7 / 8.1 / 10, MAC OS X 10.10, 10.11, 10.12 Recommended Browser : Google Chrome Supported web browsers : MS Explorer11, MS Edge, Mozilla Firefox (Window 64bit only), Apple Safari (Mac OS X only)		
	Memory	1024MB RAM, 256MB Flash		

Items		Description		
		XNV-8081R	XND-8081RV	XND-8081RF
Environmental	Operating Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH * Start up should be done at above -35°C	-25°C ~ +60°C (-13°F ~ +140°F) / Less than 90% RH	
	Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH		
	Certification	IP66/IP67, IK10+, NEMA4X	IP52, IK10	IP52, Plenum rate(UL2820)
Electrical	Input Voltage	PoE(IEEE802.3af, Class3), 24VAC, 12VDC	PoE(IEEE802.3af, Class3), 12VDC	
	Power Consumption	PoE: Max 12.95W, typical 10.90W 12VDC: Max 11.7W, typical 8.90W 24VAC: Max 14.9W, typical 11.30W	PoE: Max 12.95W, typical 10.10W 12VDC: Max 11.7W, typical 7.90W	
Mechanical	Color / Material	White / Aluminum		
	RAL Code	RAL 9003		
	Product dimensions / weight	Ø160x125mm(7.09x4.92"), 1.75kg(3.86 lb)	Ø160x125mm (6.30x4.92"), 1.45kg(3.20 lb)	Ø206x155mm(8.07x6.10"), 1.80kg(3.97 lb)

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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.

Voltage ☐ 230 Vac ☐ 120 Vac ☒ 24 Vac ☒ 12 Vdc ☒ PoE

Frequency ☐ 50 Hz ☐ 60 Hz ☐ 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	XNV-8081R	-	Hanwha Techwin (Tianjin) Co.,Ltd.	EUT
AC module	SPC-100AC	-	-	AC 24 V

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
POE Adapter	PD-9501GR/AC	-	CHANGZHOU WUJIN HONGGUANG RADIO CO., LTD.	-
Notebook	X56K	HN11N5151FJ0045W	HANSUNG	-
Notebook Adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
Mike	MP1000	-	-	-
Gpad	LG-V480	-	LG	-
Alarm button	-	-	-	-
Alarm	SIP-1201DDD0	-	SAMSUNG TECHWIN CO., LTD.	-

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1.6 External I/O Cabling

■ AC 24 V, DC 12 V

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	Notebook	RJ-45	4.0	U
	3.5 ㎜	Speaker	3.5 ㎜	1.4	U
	3.5 ㎜	Mike	3.5 ㎜	1.7	U
	2Pin	Alarm IN	2Pin	3.0	U
	2Pin	Alarm Out	2Pin	3.0	U
Notebook	3.5 ㎜	Gpad	3.5 ㎜	1.6	U

* Unshielded=U, Shielded=S

■ PoE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	POE Adapter	RJ-45	4.0	U
	3.5 ㎜	Speaker	3.5 ㎜	1.4	U
	3.5 ㎜	Mike	3.5 ㎜	1.7	U
	2Pin	Alarm IN	2Pin	3.0	U
	2Pin	Alarm Out	2Pin	3.0	U
Notebook	3.5 ㎜	Gpad	3.5 ㎜	1.6	U
	RJ-45	POE Adapter	RJ-45	4.0	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

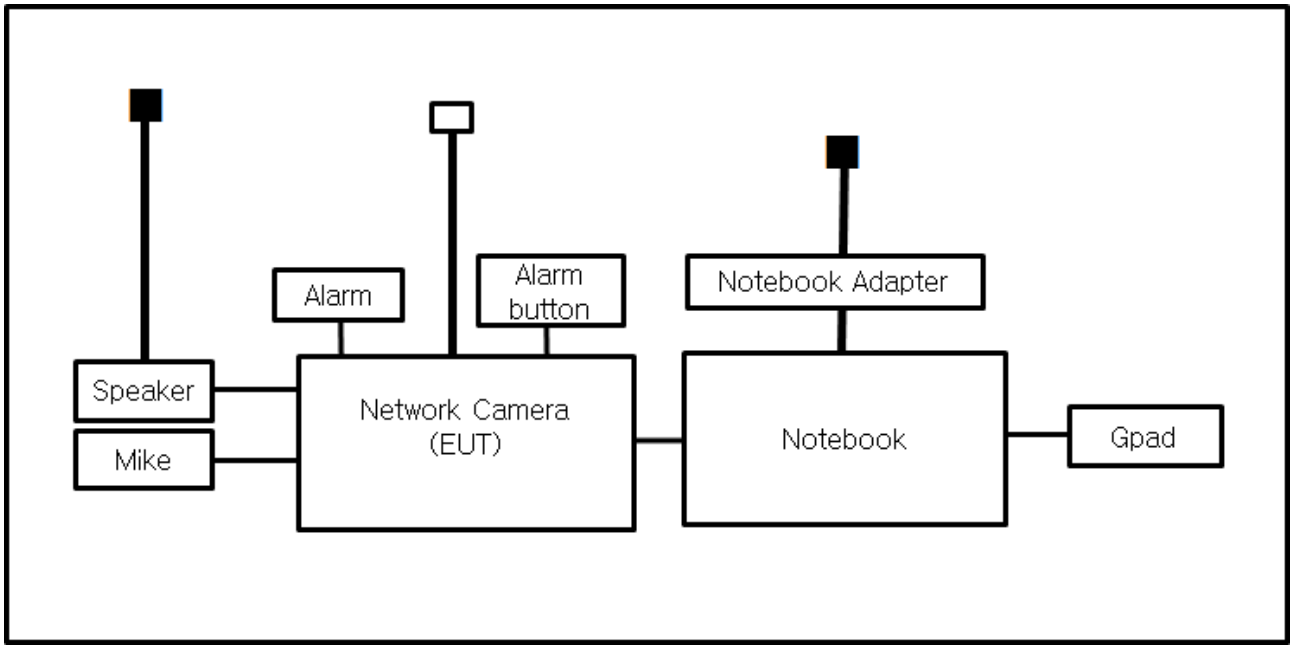
Test mode	operating
AC 24 V, DC 12 V, POE	EUT Monitoring, Ping Test

EUT Test operating S/W		
Name	Version	Manufacture Company
-	-	-

1.8 Configuration

■ AC Main
□ DC Main

■ AC 24 V



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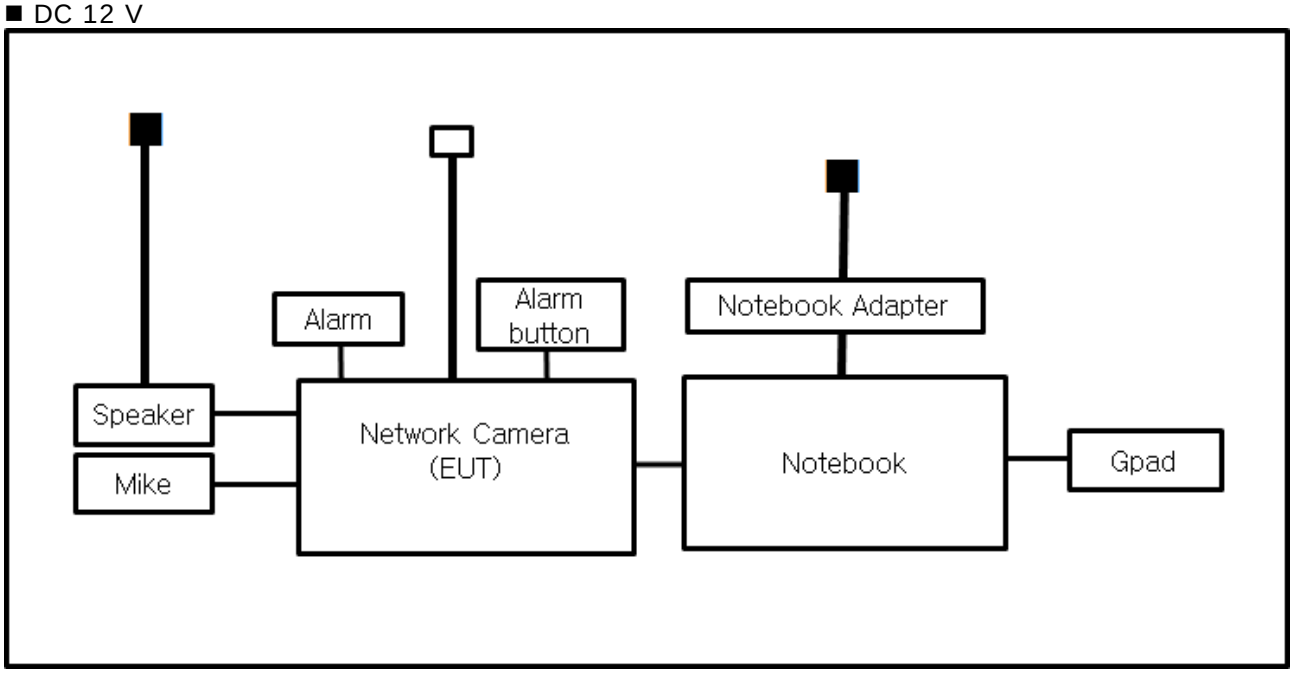
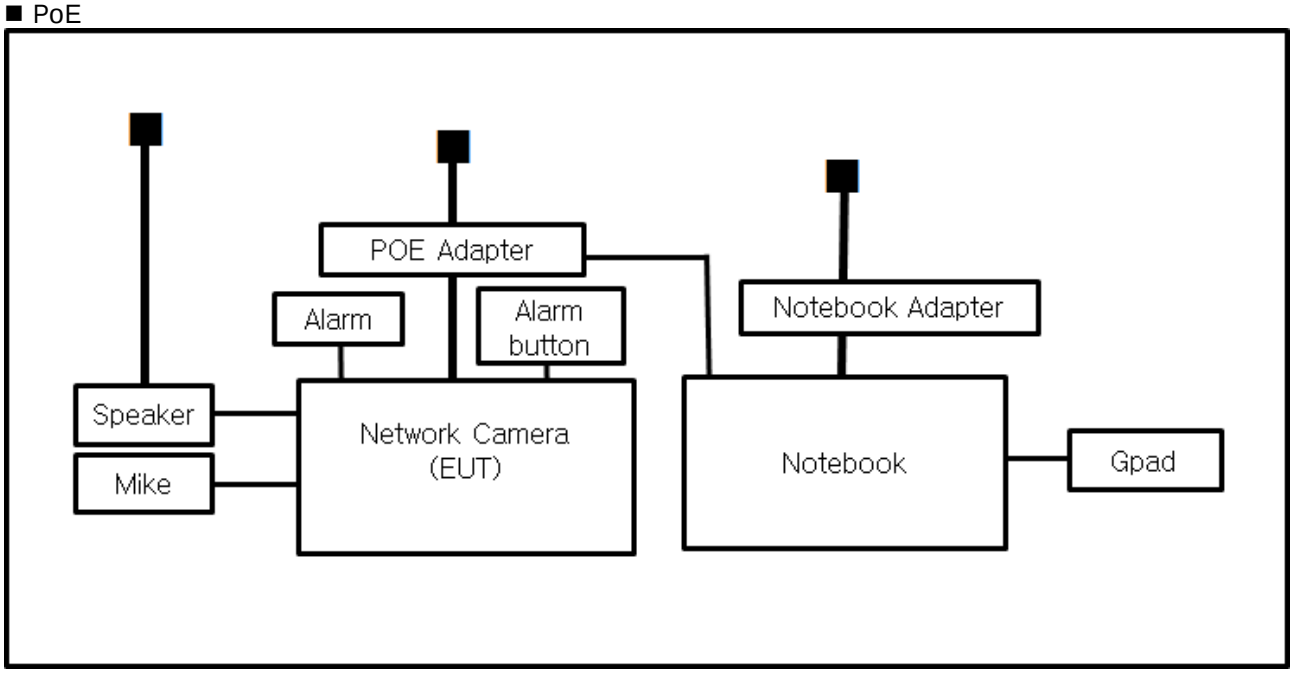
■ DC 12 V



■ PoE



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1.9 Remarks when standards applied

N/A

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. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area 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, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	R-4308, C-4798, T-2311, G-914
Europe	TÜ V SÜ D	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	CARAT 17 07 01633 001

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2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ EMC – Directive 2014/30/EU

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010 ☐ Group 1 ☐ Group 2
☐ Class A ☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015 ☐ Class A ☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013

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☐ VCCI-CISPR 32:2016	☐ Class A	☐ Class B
☐ AS/NZS CISPR32:2015	☐ Class A	☐ Class B
☒ 47 CFR Part 15, Subpart B		
☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B
☒ ANSI C63.4-2014	☒ Class A	☐ Class B
☒ IC Regulation ICES-003 : 2016		
☐ CAN/CSA CISPR 22-10	☐ Class A	☐ Class B
☒ ANSI C63.4-2014	☒ Class A	☐ Class B

☐ RE– Directive 2014/53/EU

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

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2.1 Conducted Emissions at Mains Power Ports

Test Date
Feb. 12, 2019

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	101781	04, 25, 2019
☒	LISN	ENV216	R & S	101787	01, 04, 2020
☒	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019

Test Conditions
Temperature: 22,1 ℃
Relative Humidity: 43,9 % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Feb. 12, 2019

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

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	04, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 26, 2019
☒	ATTENUATOR	8491A	HP	32173	03, 21, 2019
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020

Test Conditions
Temperature: 21,4 ℃
Relative Humidity: 42,0 % R.H.

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Feb. 14, 2019

Test Location
SEMI ANECHOIC CHAMBER #4(10 m)

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	04, 11, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 08, 2020
☐	ATTENUATOR	8491A	HP	35496	03, 21, 2019
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	09, 04, 2019

Test Conditions
Temperature: 22,4 ℃
Relative Humidity: 41,8 % R.H.

Frequency Range of Measurement
1 ㎓ to 5 ㎓

Instrument Settings
IF Band Width: 1 ㎒

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

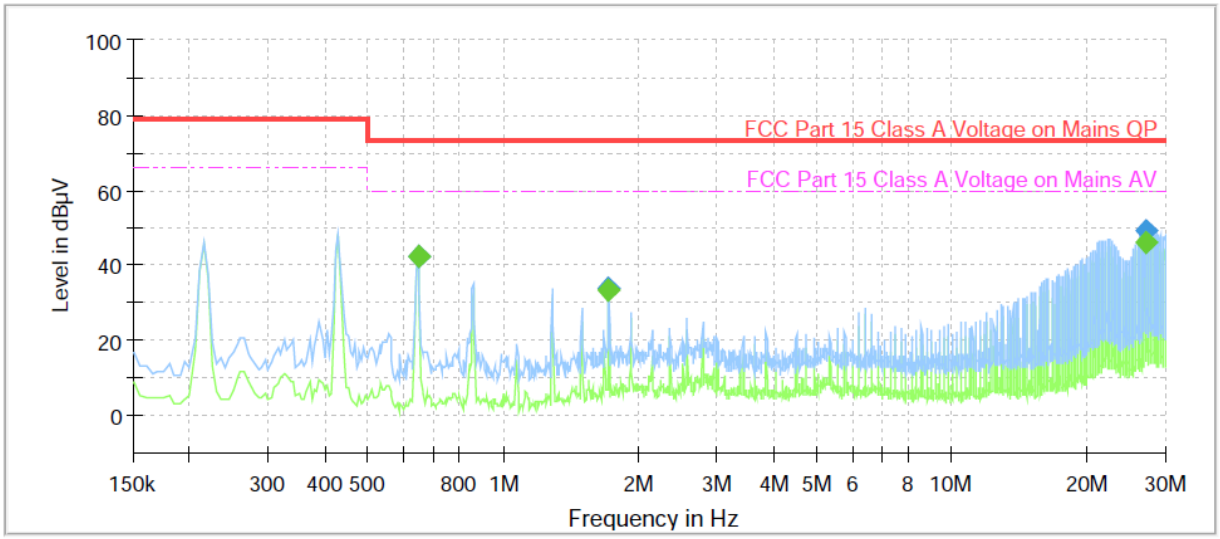
Conducted Emissions at Mains Power Ports

■ AC 24 V

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-8081R
Mode	AC 24 V_H
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.645000	---	42.26	60.00	17.74	1000.0	9.000	L1	19.6
0.645000	42.46	---	73.00	30.54	1000.0	9.000	L1	19.6
1.715000	---	33.17	60.00	26.83	1000.0	9.000	L1	19.7
1.715000	33.93	---	73.00	39.07	1000.0	9.000	L1	19.7
27.050000	---	46.15	60.00	13.85	1000.0	9.000	L1	20.3
27.050000	48.98	---	73.00	24.02	1000.0	9.000	L1	20.3

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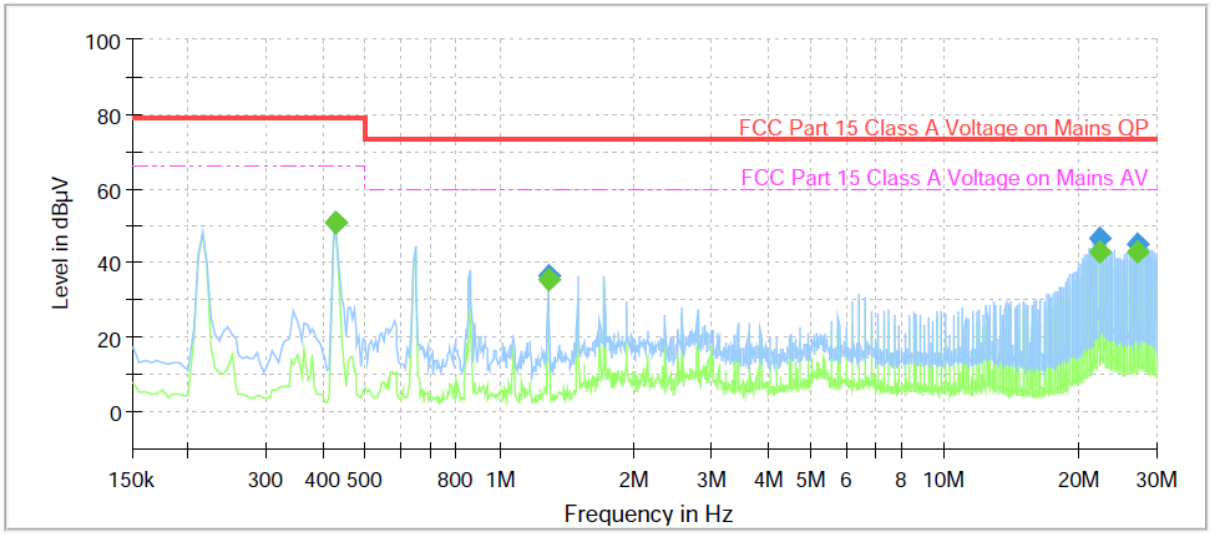
NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-8081R
Mode	AC 24 V_N
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.430000	---	50.98	66.00	15.02	1000.0	9.000	N	19.6
0.430000	51.03	---	79.00	27.97	1000.0	9.000	N	19.6
1.290000	---	35.24	60.00	24.76	1000.0	9.000	N	19.7
1.290000	36.59	---	73.00	36.41	1000.0	9.000	N	19.7
22.325000	---	42.88	60.00	17.12	1000.0	9.000	N	20.3
22.325000	46.33	---	73.00	26.67	1000.0	9.000	N	20.3
27.050000	---	42.79	60.00	17.21	1000.0	9.000	N	20.4
27.050000	45.25	---	73.00	27.75	1000.0	9.000	N	20.4

◆ 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))

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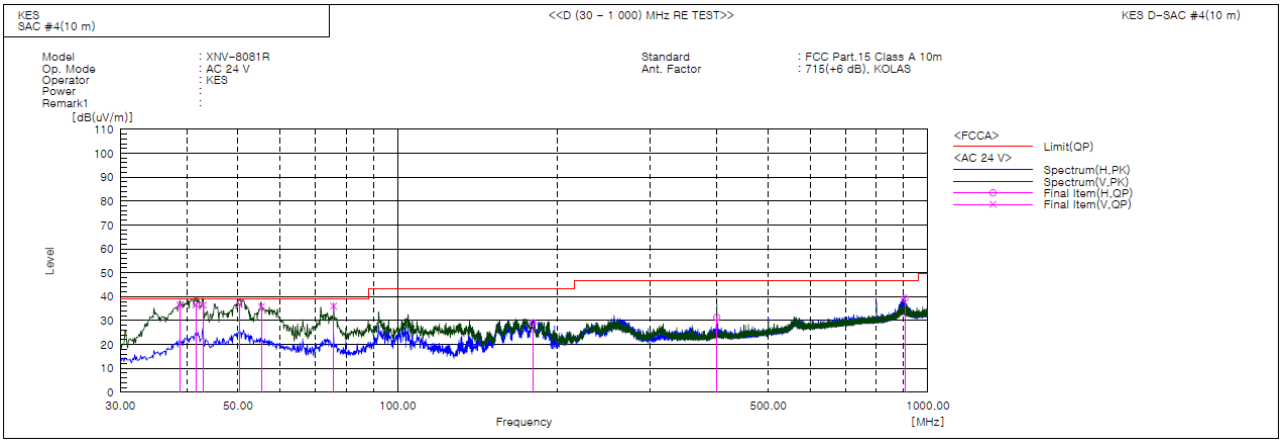
Radiated Electric Field Emissions(Below 1 GHz)

■ AC 24 V



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	38.851	V	60.1	-23.6	36.5	39.0	2.5	100.0	179.0	
2	41.645	V	59.1	-22.5	36.6	39.0	2.4	100.0	110.0	
3	42.974	V	58.8	-22.3	36.5	39.0	2.5	153.0	43.0	
4	50.377	V	58.3	-21.5	36.8	39.0	2.2	108.0	345.0	
5	55.355	V	57.8	-21.9	35.9	39.0	3.1	166.0	285.0	
6	75.711	V	63.2	-27.1	36.1	39.0	2.9	164.0	154.0	
7	179.865	H	52.9	-23.9	29.0	43.5	14.5	400.0	50.0	
8	400.045	H	46.7	-15.3	31.4	46.5	15.1	395.0	129.0	
9	905.309	H	45.0	-5.7	39.3	46.5	7.2	185.0	48.0	

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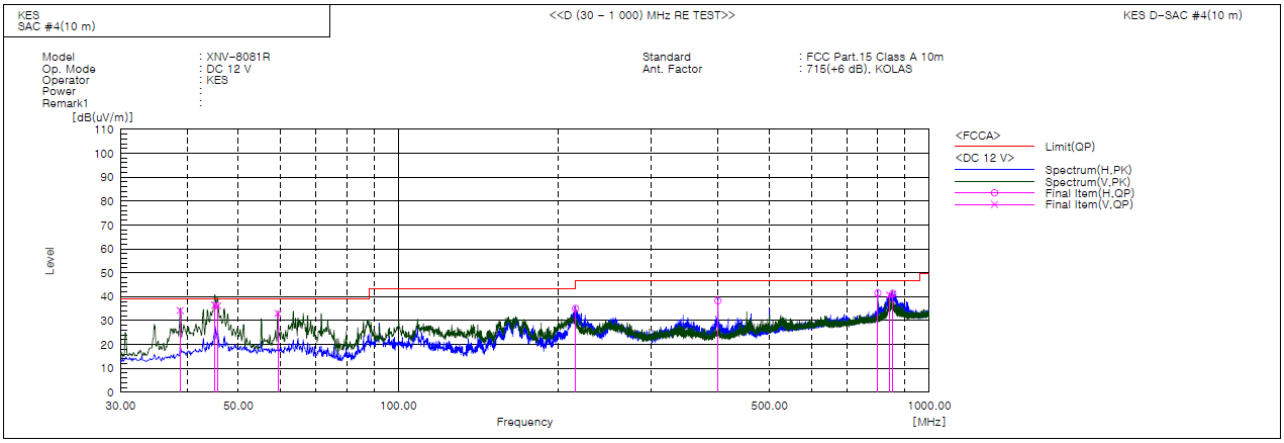
■ DC 12 V



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	38.851	V	57.8	-23.6	34.2	39.0	4.8	105.0	254.0	
2	45.156	V	58.5	-22.0	36.5	39.0	2.5	100.0	297.0	
3	45.763	V	58.1	-21.9	36.2	39.0	2.8	153.0	254.0	
4	59.343	V	55.5	-22.5	33.0	39.0	6.0	108.0	294.0	
5	215.755	H	56.0	-20.9	35.1	43.5	8.4	400.0	93.0	
6	400.055	H	53.6	-15.3	38.3	46.5	8.2	195.0	318.0	
7	800.059	H	49.2	-7.7	41.5	46.5	5.0	204.0	21.0	
8	841.041	V	47.5	-6.8	40.7	46.5	5.8	101.0	23.0	
9	853.773	H	47.8	-6.4	41.4	46.5	5.1	206.0	1.0	

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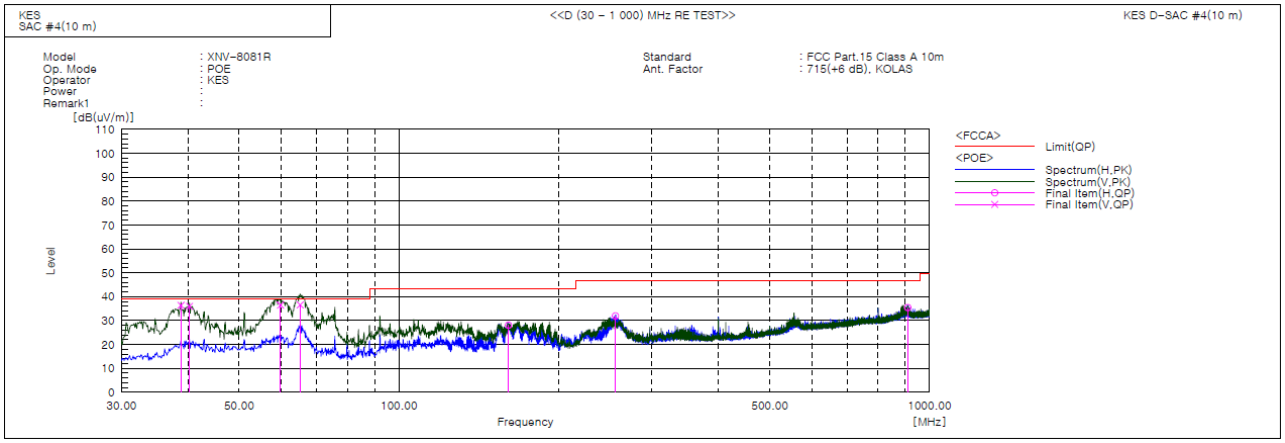
■ PoE



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	38.851	V	60.0	-23.6	36.4	39.0	2.6	107.0	259.0	
2	40.306	V	58.9	-22.9	36.0	39.0	3.0	100.0	64.0	
3	59.828	V	59.1	-22.6	36.5	39.0	2.5	100.0	251.0	
4	65.163	V	60.3	-23.7	36.6	39.0	2.4	137.0	154.0	
5	160.829	H	53.1	-25.0	28.1	43.5	15.4	400.0	62.0	
6	255.889	H	52.0	-20.0	32.0	46.5	14.5	388.0	221.0	
7	910.033	H	41.2	-5.7	35.5	46.5	11.0	105.0	277.0	

♦ Calculation – SAC #4(10 m)
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

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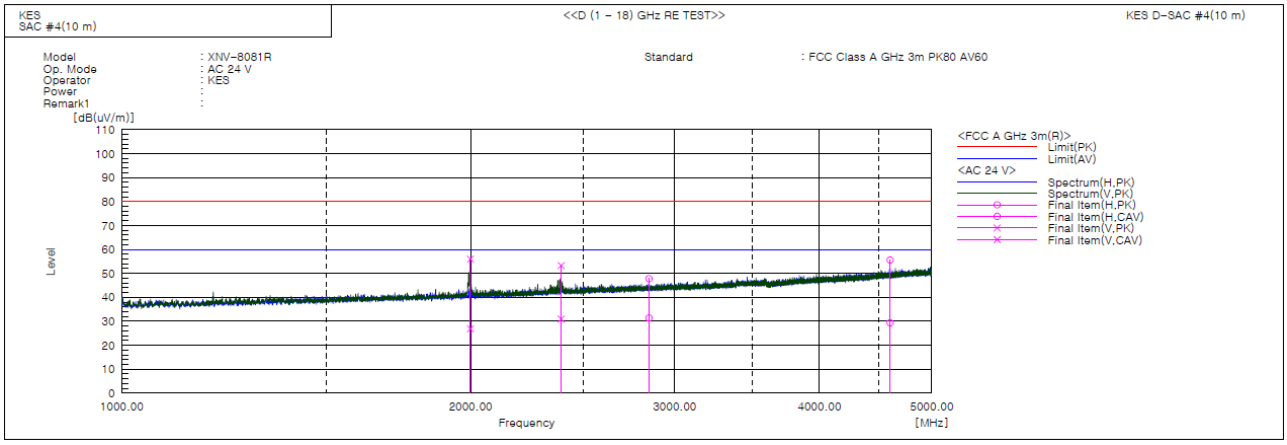
Radiated Electric Field Emissions(Above 1 GHz)

■ AC 24 V



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1999.365	V	56.4	27.3	-0.4	56.0	26.9	80.0	60.0	24.0	33.1	102.0	350.0	
2	2394.181	V	51.9	29.6	1.4	53.3	31.0	80.0	60.0	26.7	29.0	105.0	10.0	
3	2850.695	H	44.6	28.2	3.2	47.8	31.4	80.0	60.0	32.2	28.6	399.0	42.0	
4	4602.705	H	45.7	19.5	9.9	55.6	29.4	80.0	60.0	24.4	30.6	384.0	246.0	

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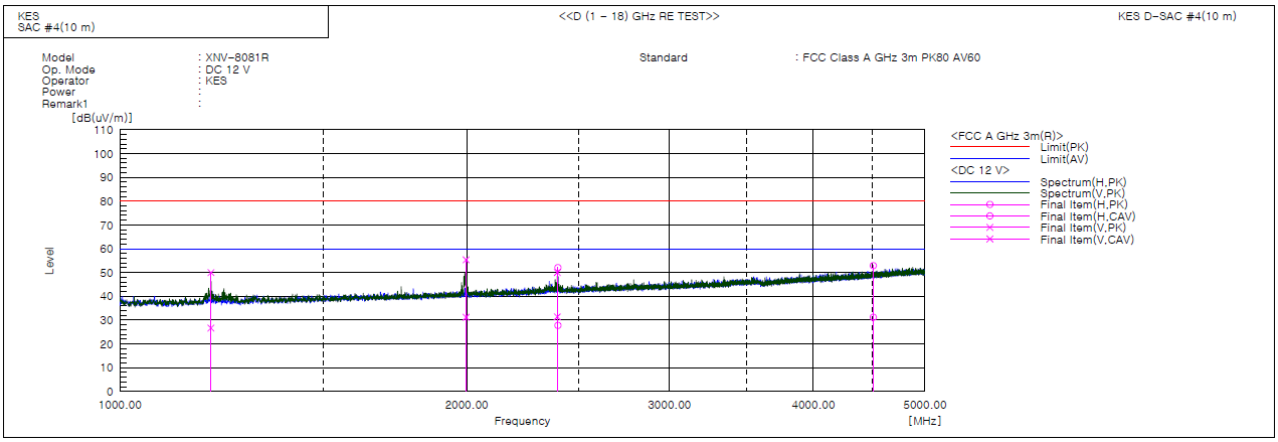
■ DC 12 V



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1199.477	V	54.8	31.5	-4.8	50.0	26.7	80.0	60.0	30.0	33.3	101.0	19.0	
2	1997.495	V	55.8	31.6	-0.4	55.4	31.2	80.0	60.0	24.6	28.8	103.0	347.0	
3	2397.533	V	48.5	29.9	1.5	50.0	31.4	80.0	60.0	30.0	28.6	109.0	31.0	
4	2400.693	H	50.6	26.3	1.5	52.1	27.8	80.0	60.0	27.9	32.2	361.0	337.0	
5	4509.154	H	43.4	21.7	9.5	52.9	31.2	80.0	60.0	27.1	28.8	288.0	242.0	

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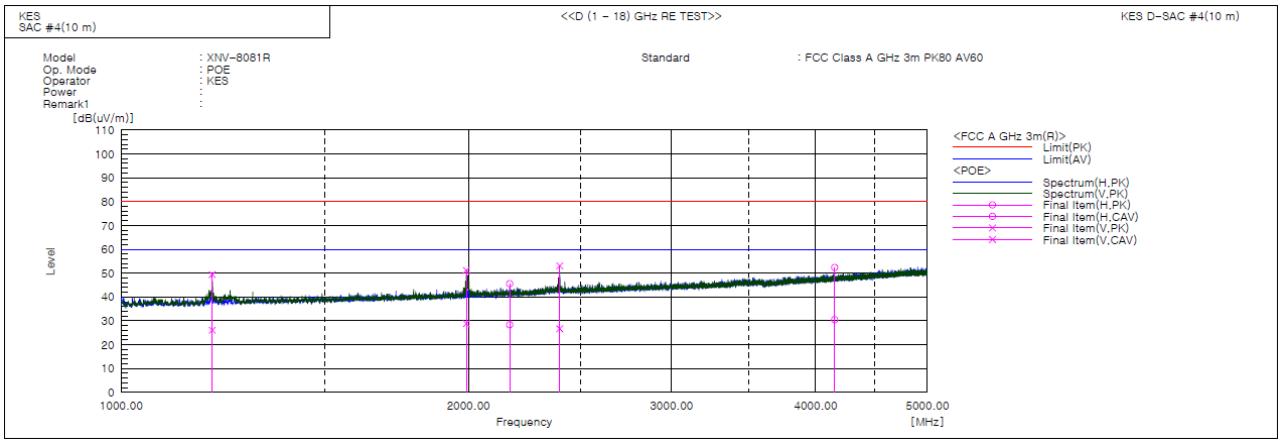
■ PoE



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1199.532	V	54.2	30.9	-4.8	49.4	26.1	80.0	60.0	30.6	33.9	105.0	29.0	
2	1992.106	V	51.6	29.3	-0.4	51.2	28.9	80.0	60.0	28.8	31.1	100.0	229.0	
3	2172.000	H	45.2	28.0	0.4	45.6	28.4	80.0	60.0	34.4	31.6	395.0	122.0	
4	2400.115	V	51.6	25.2	1.5	53.1	26.7	80.0	60.0	26.9	33.3	103.0	305.0	
5	4154.514	H	44.3	22.4	8.1	52.4	30.5	80.0	60.0	27.6	29.5	344.0	126.0	

♦ 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

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Test Setup Photos and Configuration

Conducted Voltage Emissions





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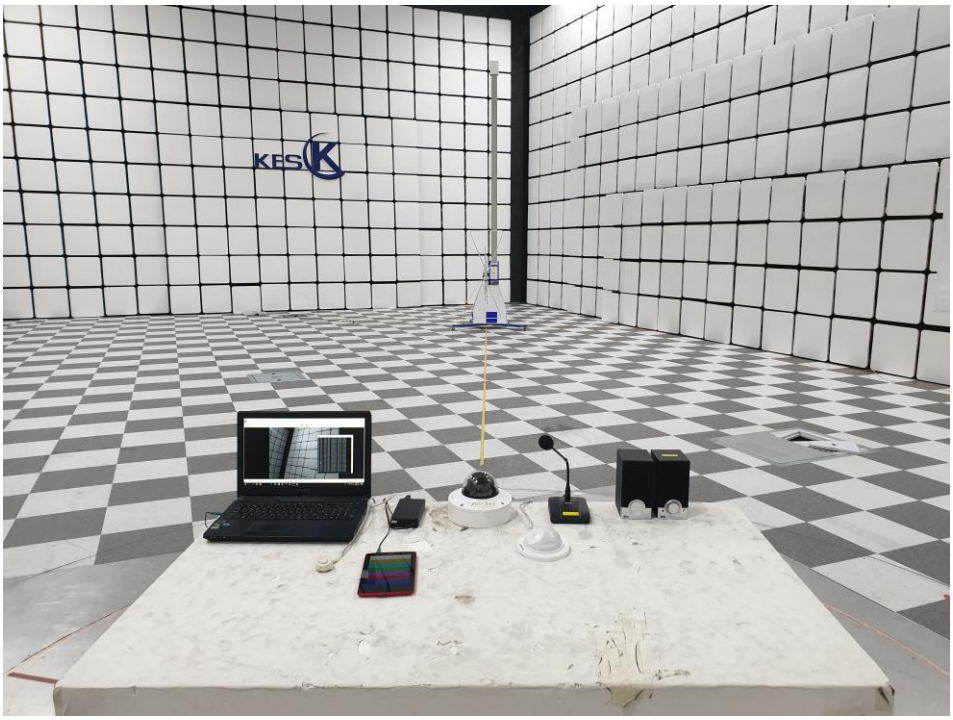
Radiated Electric Field Emissions(Below 1 GHz)





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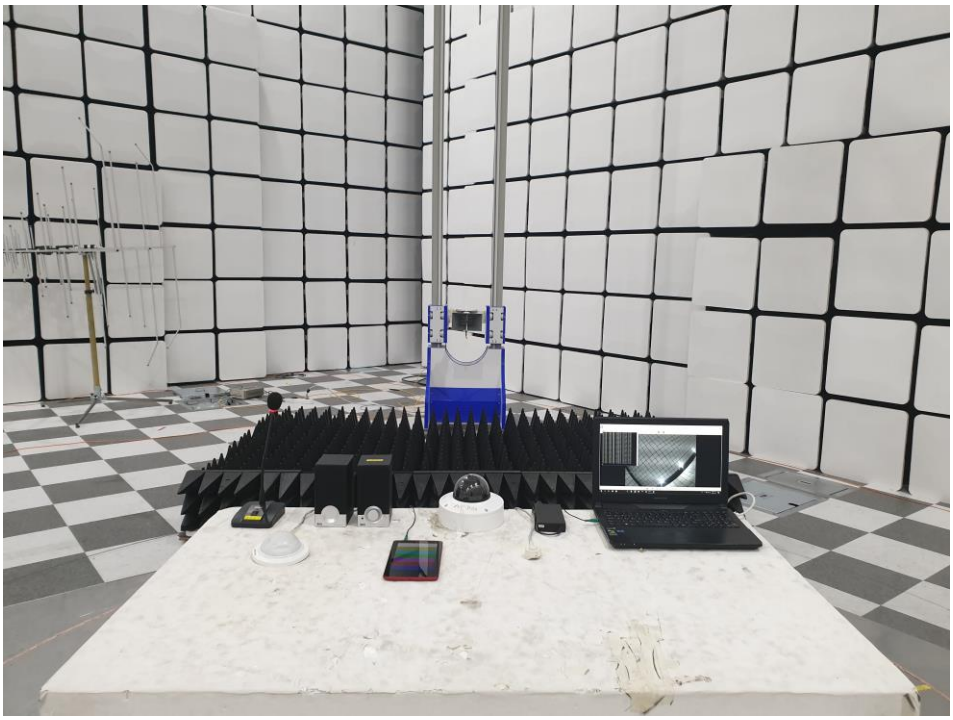
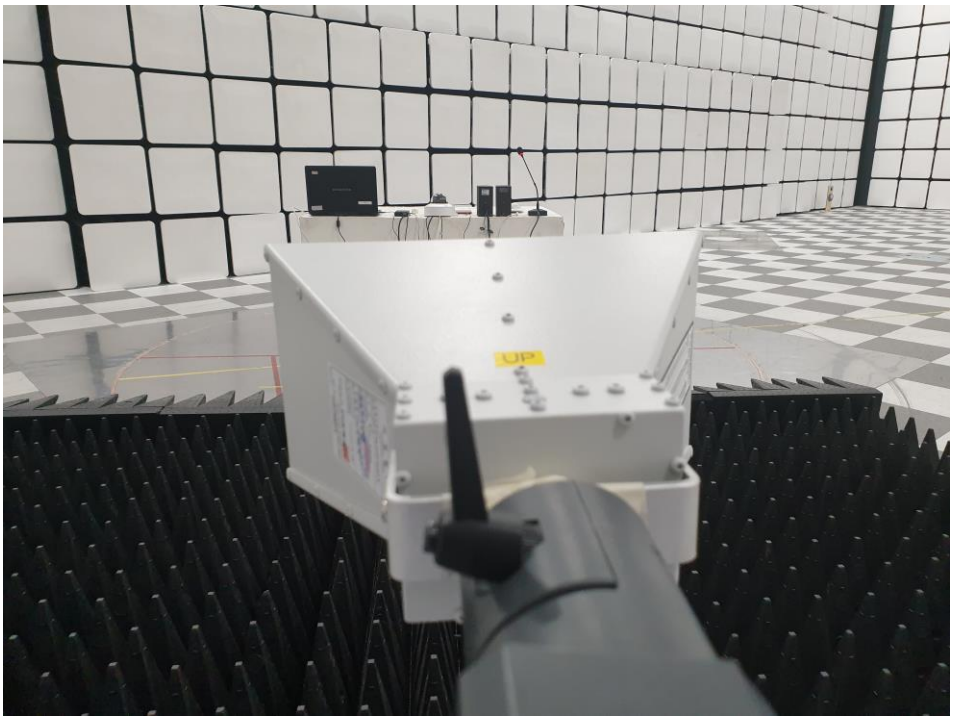
Radiated Electric Field Emissions(Above 1 GHz)





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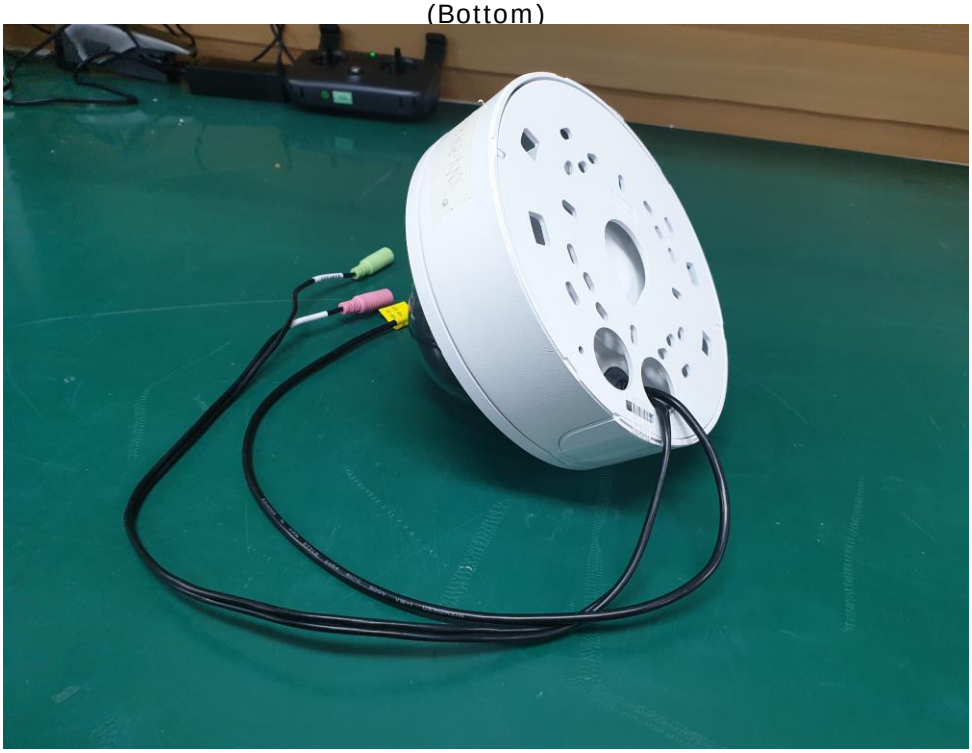
EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

(Internal View)



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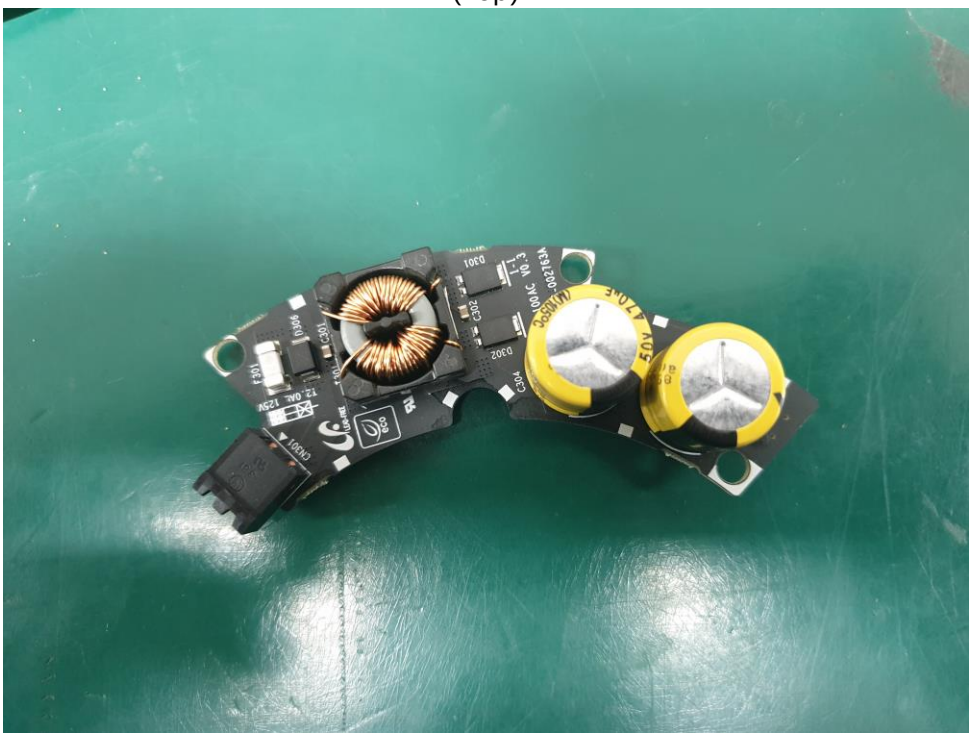
EUT Internal View – AC Module Board

(Top)



(Bottom)



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EUT Internal View – AC Module

(Top)



(Bottom)



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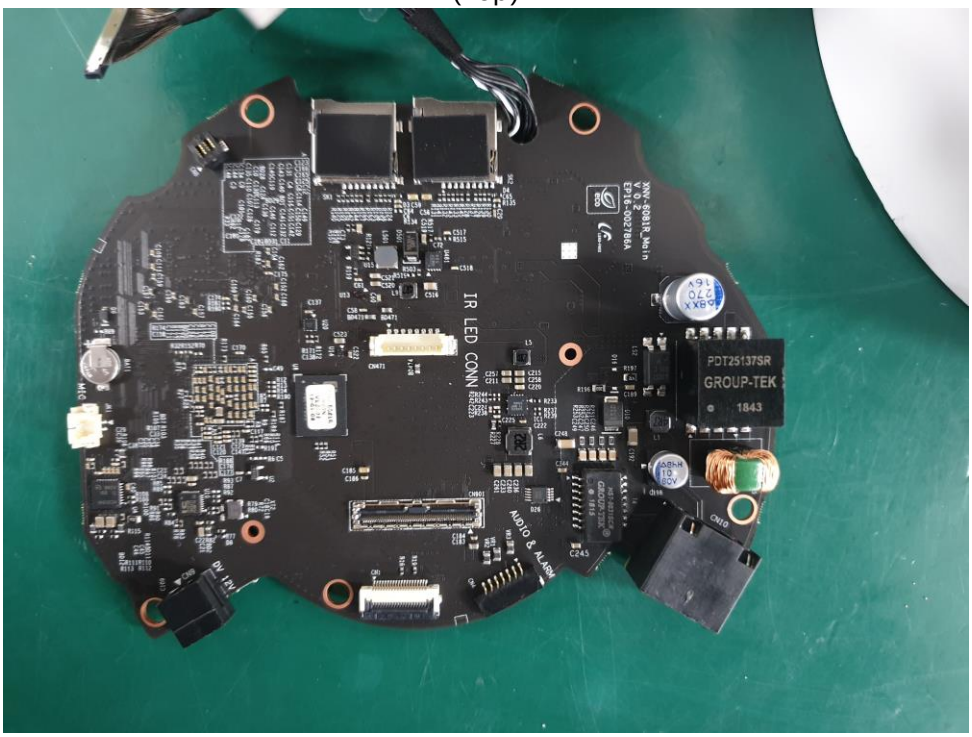
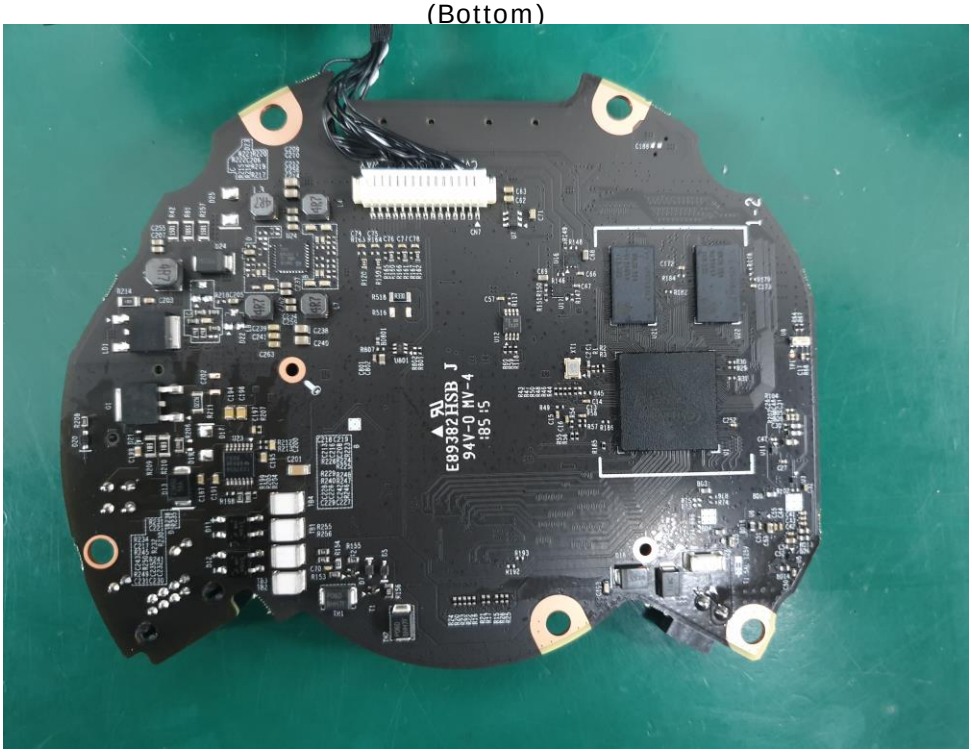
EUT Internal View – Board 1

(Top)



(Bottom)



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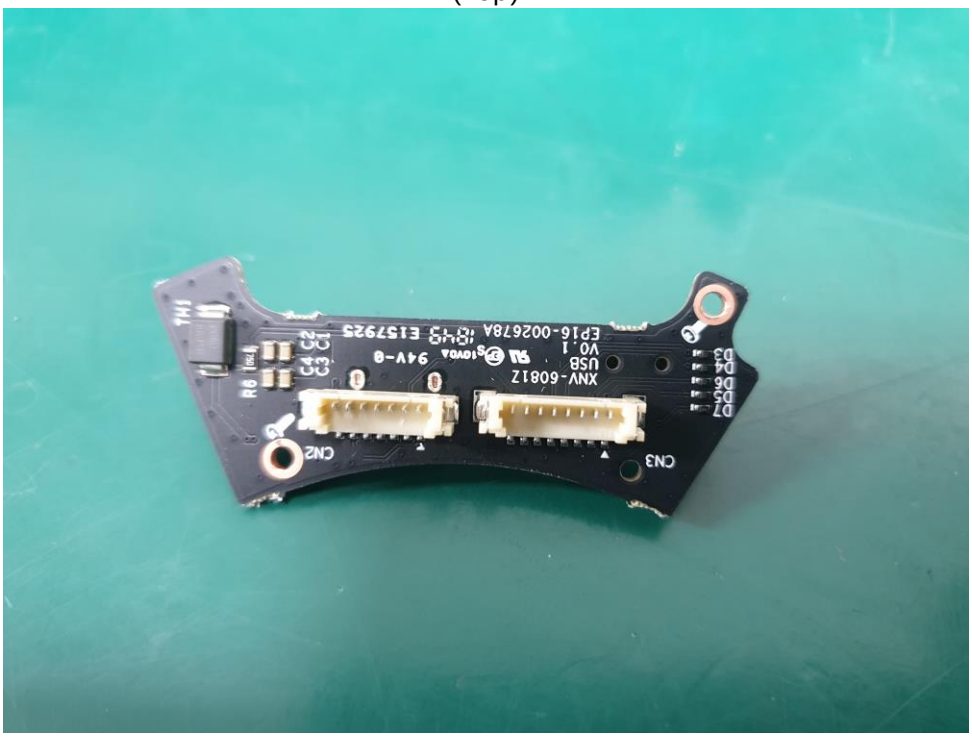
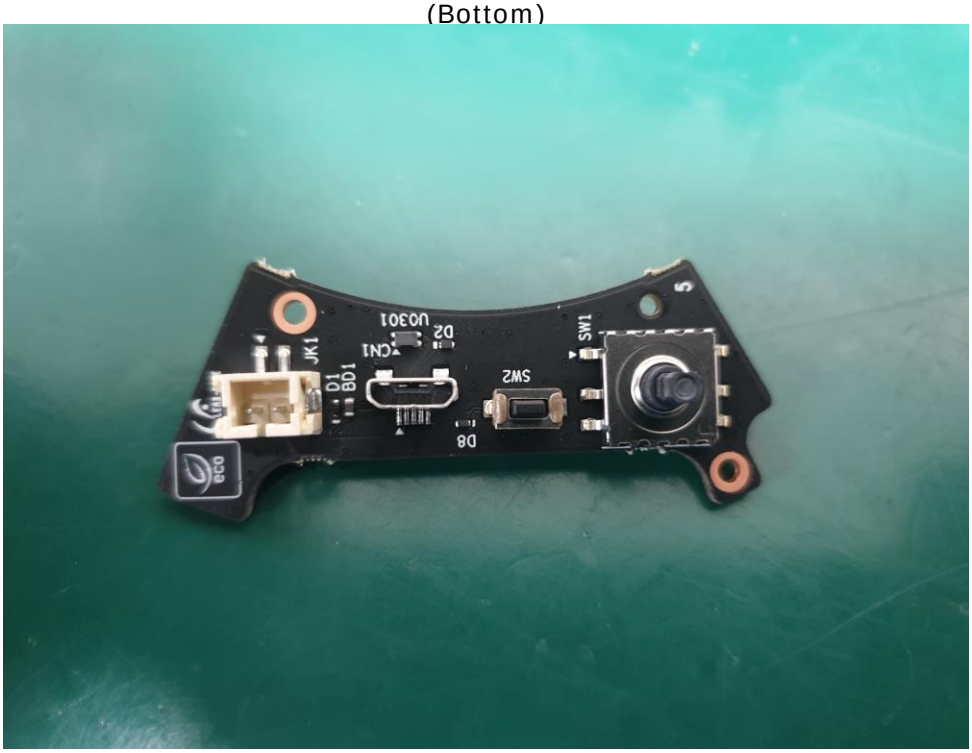
EUT Internal View – Board 2

(Top)



(Bottom)



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EUT Internal View – Board 3

(Top)



(Bottom)



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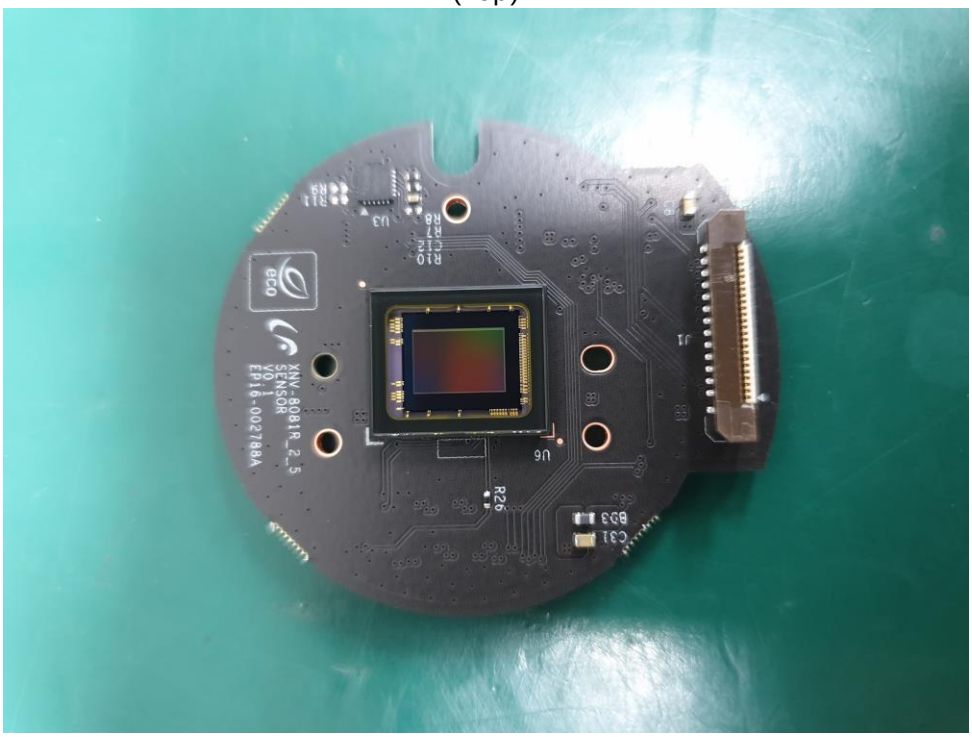
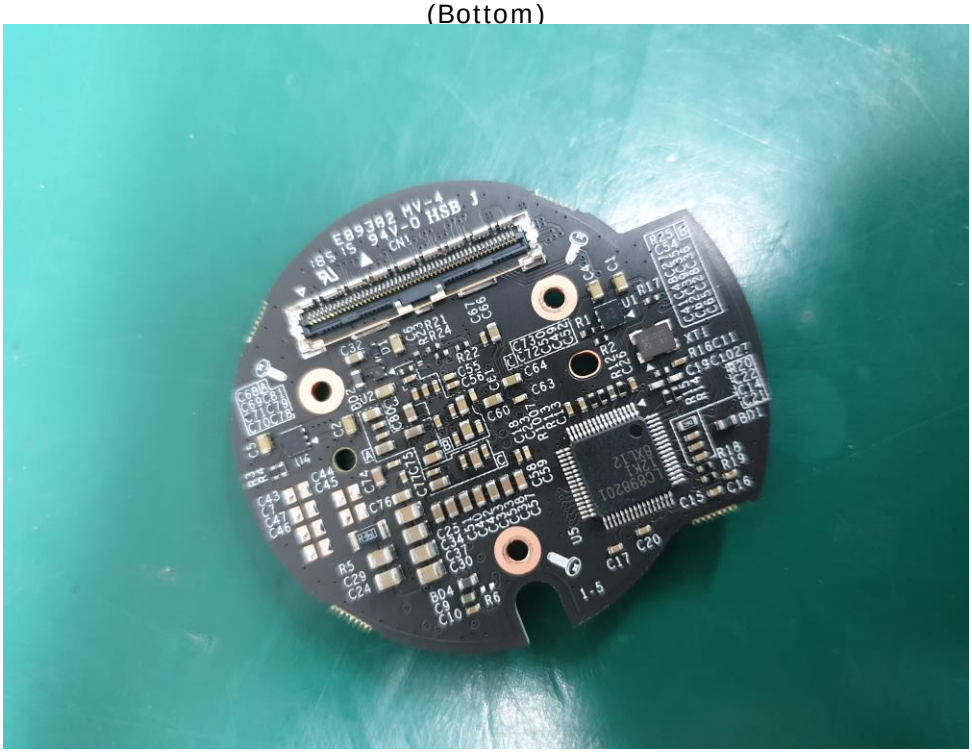
EUT Internal View – Board 4

(Top)



(Bottom)



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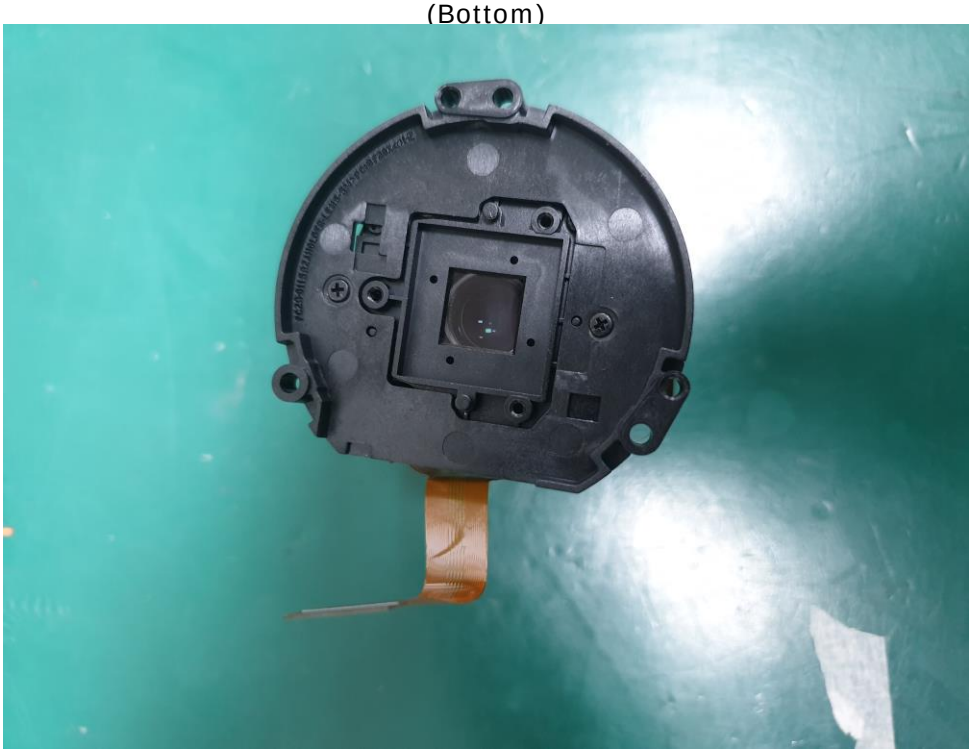
EUT Internal View – Camera Lens

(Top)



(Bottom)



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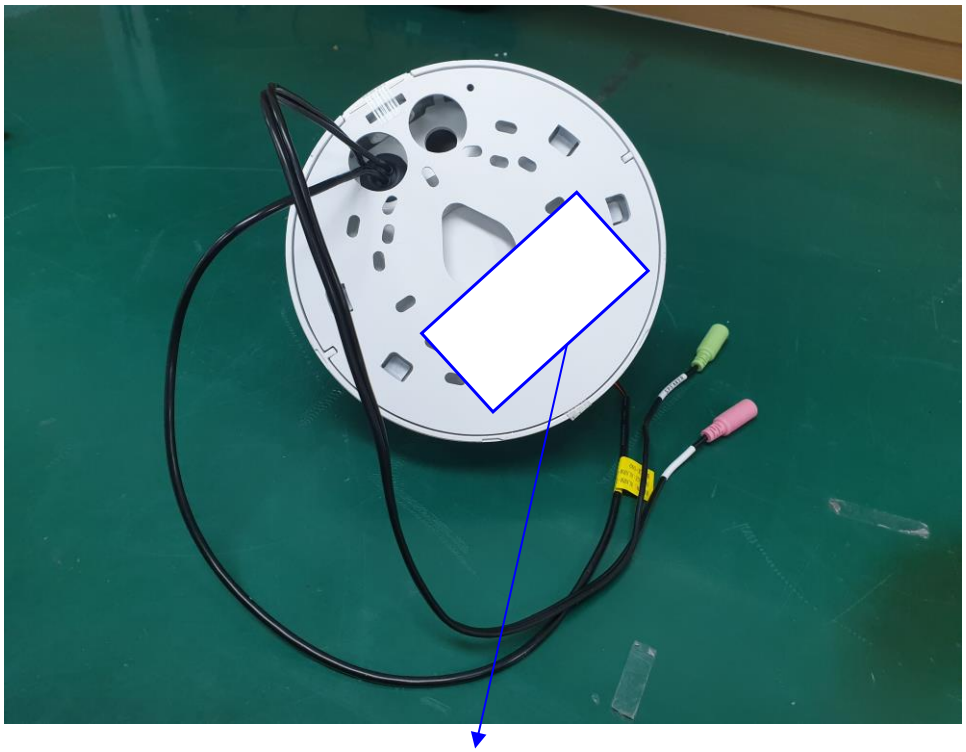
Label Photographs



CAN ICES-3(A) / NMB-3(A)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

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.

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