

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-21T0302-R1

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EMC TEST REPORT

Test Report No. : KES-EM-21T0302-R1

Date of Issue : Feb. 24, 2023

Product name : NETWORK CAMERA

Model/Type No. : XNV-C8083R

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)

Equipment authorization : **Supplier's Declaration of Conformity**

Date of Receipt : Mar. 31, 2021

Test date : Apr. 07, 2021 ~ Apr. 08, 2021

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Jung, Choi
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
Apr. 29, 2021	KES-EM-21T0302	Issued
Feb. 24, 2023	KES-EM-21T0302-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:

Imaging Device	1/1.8" progressive CMOS
Resolution	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	Color: 0.04Lux(F1.3, 1/30sec, 30IRE) B/W : 0.004Lux(F1.3, 1/30sec, 30IRE), 0Lux(IR LED on)
Video Out	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	TBD (Pan ± 177 isang, Tilt ± 75 isang, Rotate ± 178 isang) * gijon WN5 X sayang ($0^{\circ} \sim 354^{\circ}$ / $0^{\circ} \sim 67^{\circ}$ / $0^{\circ} \sim 355^{\circ}$)

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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	WiseNRⅡ(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, 4point Quadrangle zones - Color : Gray, Green, Red, Blue, Black, White - Mosaic
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/bike)/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

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Business Intelligence	Based on AI engine(NPU) : People counting, Queue management, Heatmap
Serial Interface	None
Alarm I/O	2 configurable I/O ports
Alarm Triggers	Analytics, Network disconnect, Alarm input, App event, Time schedule
Alarm Events	When alarm trigger occurred - File upload(image) : e-mail/FTP - File upload(video clip) : 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) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max.output level: 1Vrms
IR Viewable Length	WiseIR40m(131.23ft)(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(10/100BASE-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

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	G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(5ea 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)
Security	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 HTPM (Hanwha Trusted platform module) 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 1slot 512GB
Memory	4GB RAM, 512MB Flash

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Environmental & Electrical	
Operating Temperature / Humidity	-40°C~+55°C(-40°F ~ +131°F) * Maximum temperature : +60°C (intermittent) NEMA TS-2 : 74°C * Start up should be done at above -20°C less than 95%RH(non-condensing), 100%RH(condensing)(TBD) Humidity control /w GORE vent
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP66/IP67/NEMA4X, IK10
Input Voltage	PoE(IEEE802.3af, Class3), 12VDC
Power Consumption	TBD
Mechanical	
Color / Material	White / Aluminum Hard-coated dome bubble
RAL Code	RAL9003
Product Dimensions / Weight	Ø160x118mm(Ø6.30x4.65"), 1450g(3.20 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)	SBV-160WCW
Power Module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 44.8m(147.02ft) / Tele: 151.3m(496.29ft)
Observe (63PPM/ 19PPF)	Wide: 17.9m(58.81ft) / Tele: 60.5m(198.52ft)
Recognize (125PPM/ 38PPF)	Wide: 9.0m(29.4ft) / Tele: 30.3m(99.26ft)
Identify (250PPM/ 76PPF)	Wide: 4.5m(14.7ft) / Tele: 15.1m(49.63ft)

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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 120 V, 60 Hz ☒ PoE

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-C8083R	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC/DC Adapter	2ACB022F	-	Channel Well Technology(Guangzhou) Co., Ltd.	-
PoE Adapter	PSE156G 4-Pair,Hi- Power	-	KME-Tech	-
Notebook	HSN-Q07C	5CD8367KND	HP	-
Notebook Adapter	HSTNN-CA40	WFTKU0ERLB4Q CH	HP	-
Alarm1	-	-	-	-
Alarm2	-	-	-	-
Smartphone	LG-SU760	108KPQJ0186212	LG	-
Earphone	EG920	-	SAMSUNG	-
MIC	MP1000	-	-	-
Micro SD Card	-	-	SanDisk	16 GB



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)	RJ-45	Notebook	RJ-45	3.5	U
	Alarm OUT	Alarm1	Alarm IN	3.0	U
	Alarm IN	Alarm2	Alarm OUT	3.0	U
	Audio OUT	Earphone	Audio IN	1.4	U
	Audio IN	MIC	Alarm OUT	1.6	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	3.5 mm	Smartphone	3.5 mm	0.5	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)	PoE Adapter	RJ-45 (PoE)	3.5	U
	Alarm OUT	Alarm1	Alarm IN	3.0	U
	Alarm IN	Alarm2	Alarm OUT	3.0	U
	Audio OUT	Earphone	Audio IN	1.4	U
	Audio IN	MIC	Alarm OUT	1.6	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	RJ-45 (LAN)	PoE Adapter	RJ-45 (LAN)	3.0	U
	3.5 mm	Smartphone	3.5 mm	0.5	U

* Unshielded=U, Shielded=S



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1.7 EUT Operating Mode(s)

■ DC / PoE Mode

Test Mode	operating
Operation	the test was conducted while checking the camera video output from the laptop and making sure that they operate normally while performing a ping test.

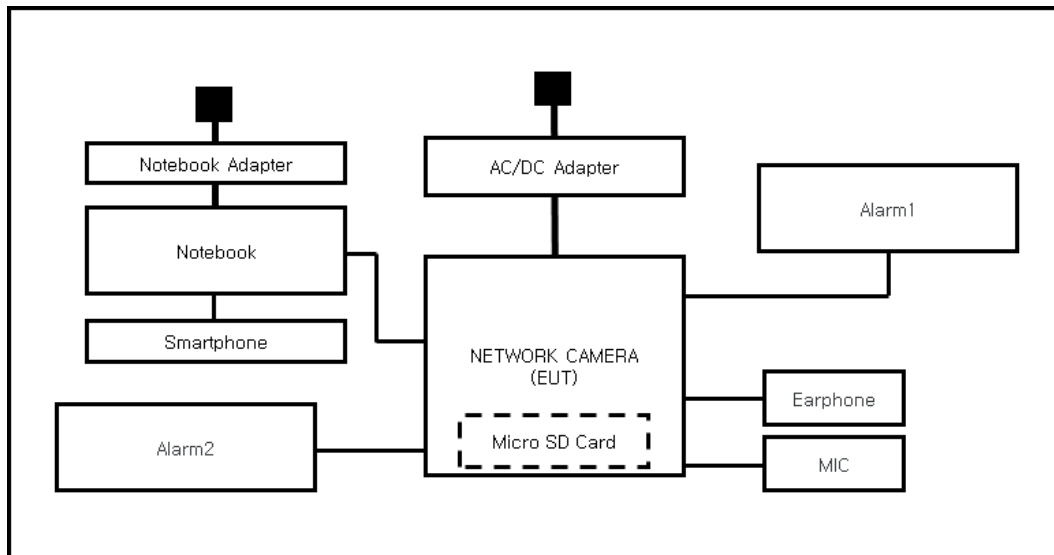
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Vision Co., Ltd

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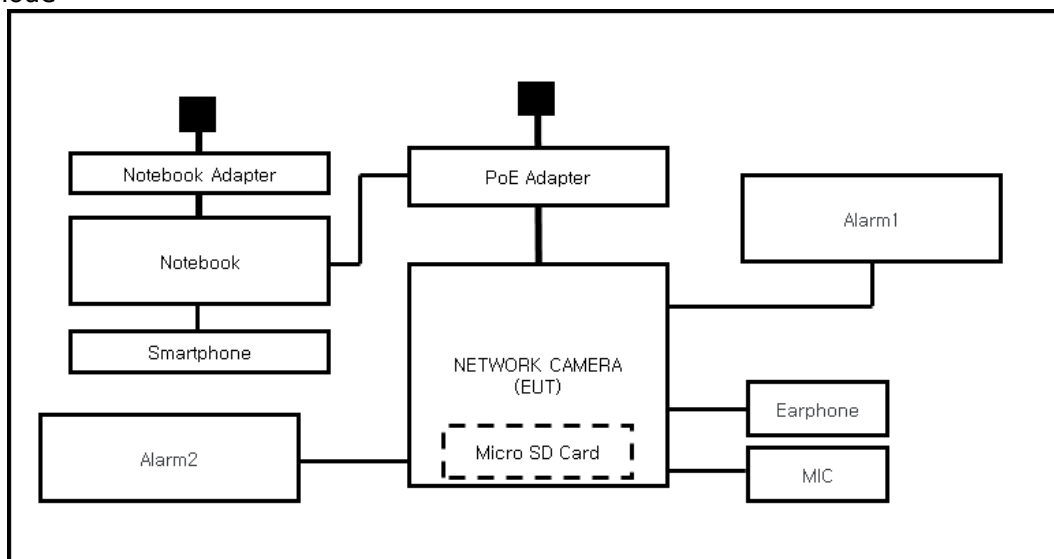
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



1.9 Remarks when standards applied

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, 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

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
☐ Class A

☐ Group 2
☐ 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 C63.4-2017 | ☒ Class A | ☐ Class B |
| ☐ IC Regulation ICES-003 Issue 7 | | |
| ☐ CAN/CSA CISPR 32:17 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2017 | ☐ Class A | ☐ Class B |
| ☐ RE- Directive 2014/53/EU | | |
| ☐ EN 301 489-1 V2.2.3 | | |
| ☐ 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

Apr. 07, 2021

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	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions

Temperature: (24,0 ± 0,1) °C

Relative Humidity: (45,8 ± 0,2) % 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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2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Apr. 07, 2021

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	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Temperature: (23,6 ± 0,1) °C

Relative Humidity: (44,8 ± 0,2) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Apr. 08, 2021

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.120	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	04, 01, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021
☒	PREAMPLIFIER	8449B	AGILENT	8008A01640	04, 05, 2022

Test Conditions

Temperature: (24,3 ± 0,2) °C

Relative Humidity: (43,5 ± 0,3) % R.H.

Frequency Range of Measurement

1 GHz to 5 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

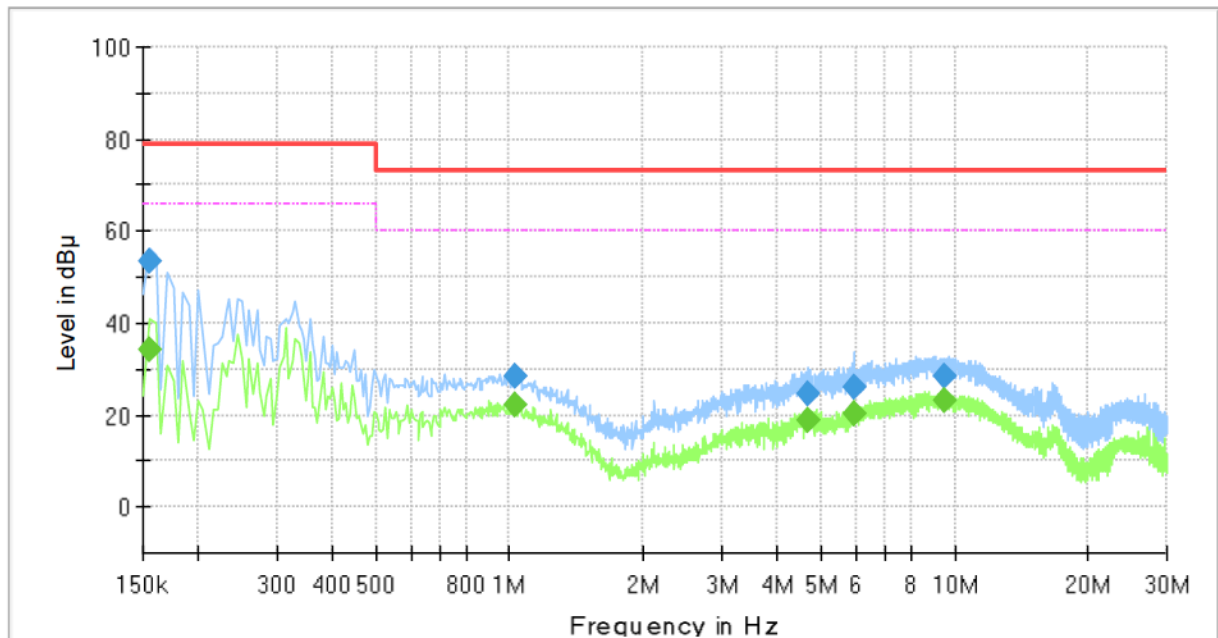
Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-C8083R
Phase:	L1
Mode:	DC
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	---	34.19	66.00	31.81	1000.0	9.000	L1	19.4
0.155000	53.49	---	79.00	25.51	1000.0	9.000	L1	19.4
1.030000	---	22.25	60.00	37.75	1000.0	9.000	L1	20.0
1.030000	28.35	---	73.00	44.65	1000.0	9.000	L1	20.0
4.685000	---	18.78	60.00	41.22	1000.0	9.000	L1	19.7
4.685000	24.68	---	73.00	48.32	1000.0	9.000	L1	19.7
5.935000	---	20.11	60.00	39.89	1000.0	9.000	L1	19.5
5.935000	25.79	---	73.00	47.21	1000.0	9.000	L1	19.5
9.500000	---	23.33	60.00	36.67	1000.0	9.000	L1	19.8
9.500000	28.44	---	73.00	44.56	1000.0	9.000	L1	19.8

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Report No.:

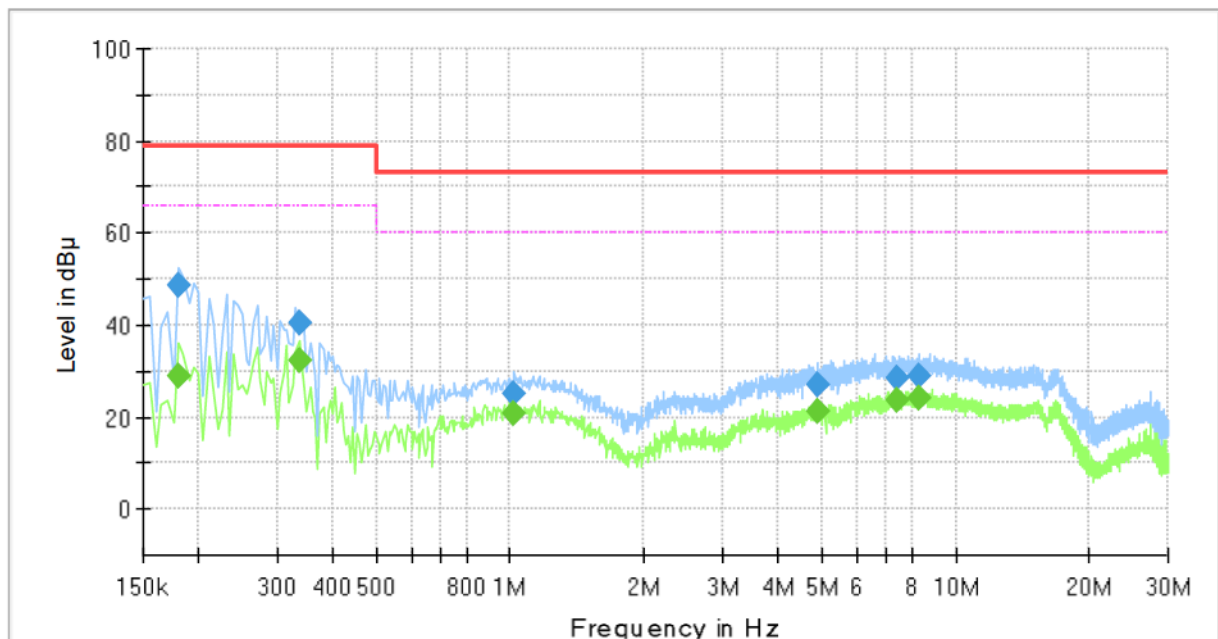
KES-EM-21T0302-R1

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NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: XNV-C8083R
Phase: N
Mode: DC
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.180000	---	29.00	66.00	37.00	1000.0	9.000	N	19.4
0.180000	48.51	---	79.00	30.49	1000.0	9.000	N	19.4
0.335000	---	32.40	66.00	33.60	1000.0	9.000	N	19.5
0.335000	40.39	---	79.00	38.61	1000.0	9.000	N	19.5
1.020000	---	20.76	60.00	39.24	1000.0	9.000	N	20.0
1.020000	25.06	---	73.00	47.94	1000.0	9.000	N	20.0
4.885000	---	21.15	60.00	38.85	1000.0	9.000	N	19.6
4.885000	26.81	---	73.00	46.19	1000.0	9.000	N	19.6
7.415000	---	23.39	60.00	36.61	1000.0	9.000	N	19.6
7.415000	28.50	---	73.00	44.50	1000.0	9.000	N	19.6
8.255000	---	23.89	60.00	36.11	1000.0	9.000	N	19.6
8.255000	28.91	---	73.00	44.09	1000.0	9.000	N	19.6

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Report No.:

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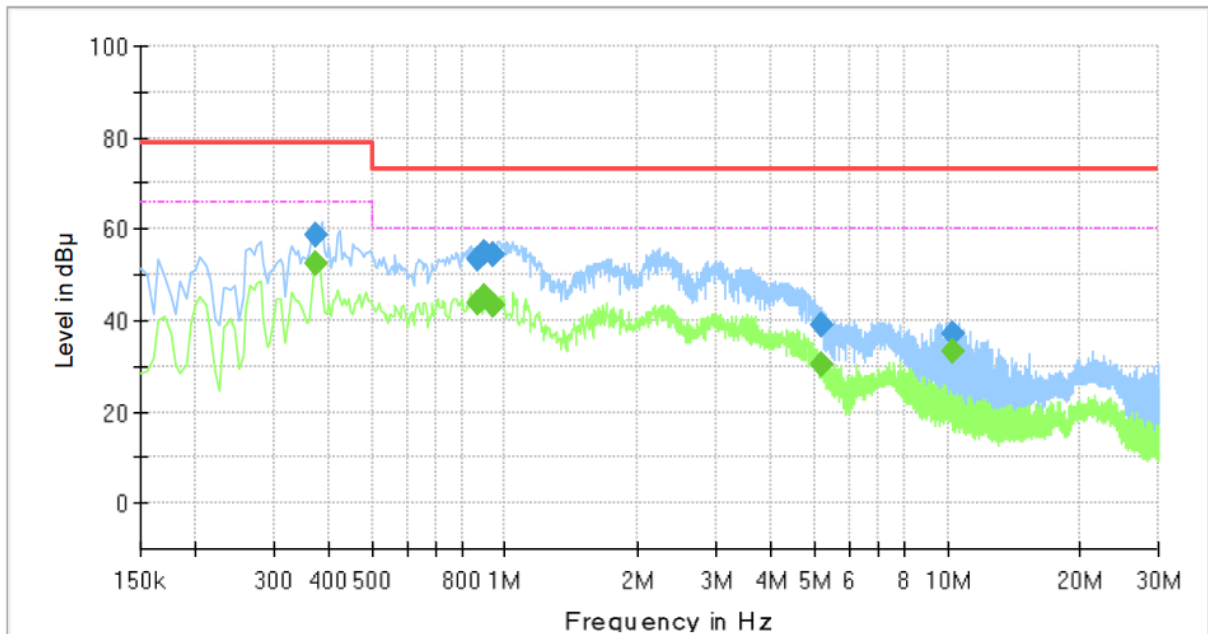
Page (21) of (41)

■ PoE Mode

HOT LINE

Common Information

Test Description: Conducted Emission
Model No.: XNV-C8083R
Phase: L1
Mode: PoE
Operator Name: KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.375000	---	52.39	66.00	13.61	1000.0	9.000	L1	19.6
0.375000	58.55	---	79.00	20.45	1000.0	9.000	L1	19.6
0.870000	---	43.88	60.00	16.12	1000.0	9.000	L1	20.0
0.870000	53.55	---	73.00	19.45	1000.0	9.000	L1	20.0
0.900000	---	45.26	60.00	14.74	1000.0	9.000	L1	20.0
0.900000	54.83	---	73.00	18.17	1000.0	9.000	L1	20.0
0.935000	---	43.42	60.00	16.58	1000.0	9.000	L1	20.0
0.935000	54.52	---	73.00	18.48	1000.0	9.000	L1	20.0
5.165000	---	30.20	60.00	29.80	1000.0	9.000	L1	19.6
5.165000	38.89	---	73.00	34.11	1000.0	9.000	L1	19.6
10.230000	---	33.05	60.00	26.95	1000.0	9.000	L1	19.9
10.230000	37.26	---	73.00	35.74	1000.0	9.000	L1	19.9

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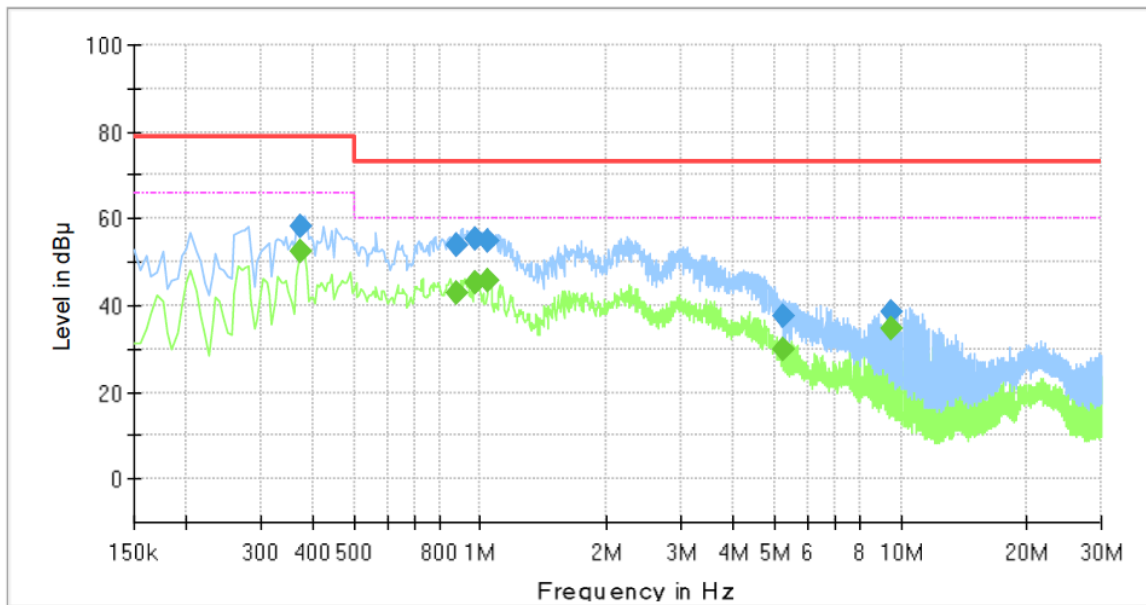
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-C8083R
Phase:	N
Mode:	PoE
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.375000	---	52.30	66.00	13.70	1000.0	9.000	N	19.6
0.375000	58.07	---	79.00	20.93	1000.0	9.000	N	19.6
0.875000	---	43.04	60.00	16.96	1000.0	9.000	N	20.0
0.875000	54.00	---	73.00	19.00	1000.0	9.000	N	20.0
0.970000	---	45.15	60.00	14.85	1000.0	9.000	N	20.0
0.970000	55.27	---	73.00	17.73	1000.0	9.000	N	20.0
1.045000	---	45.89	60.00	14.11	1000.0	9.000	N	20.0
1.045000	54.72	---	73.00	18.28	1000.0	9.000	N	20.0
5.275000	---	30.09	60.00	29.91	1000.0	9.000	N	19.6
5.275000	37.39	---	73.00	35.61	1000.0	9.000	N	19.6
9.450000	---	34.82	60.00	25.18	1000.0	9.000	N	19.8
9.450000	38.45	---	73.00	34.55	1000.0	9.000	N	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 (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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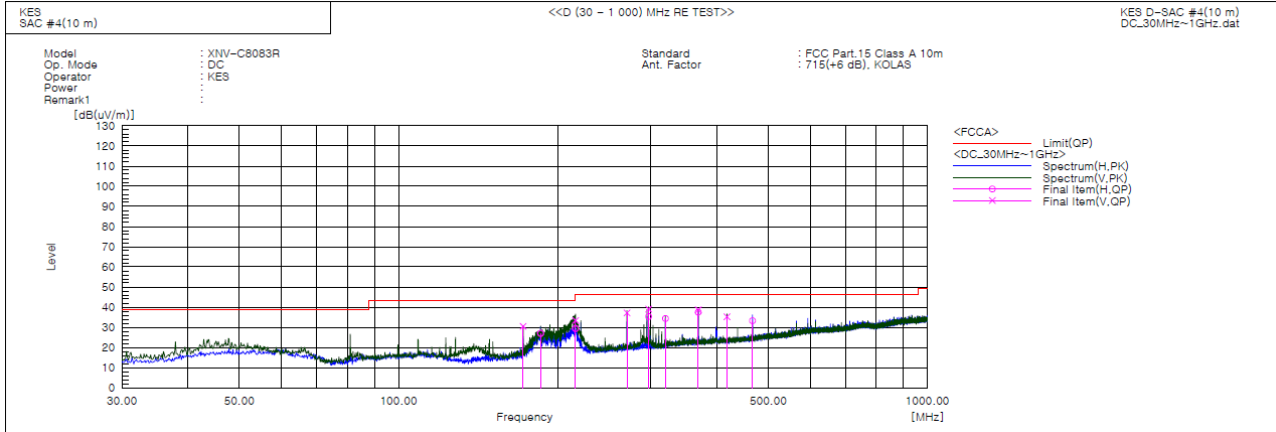
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode

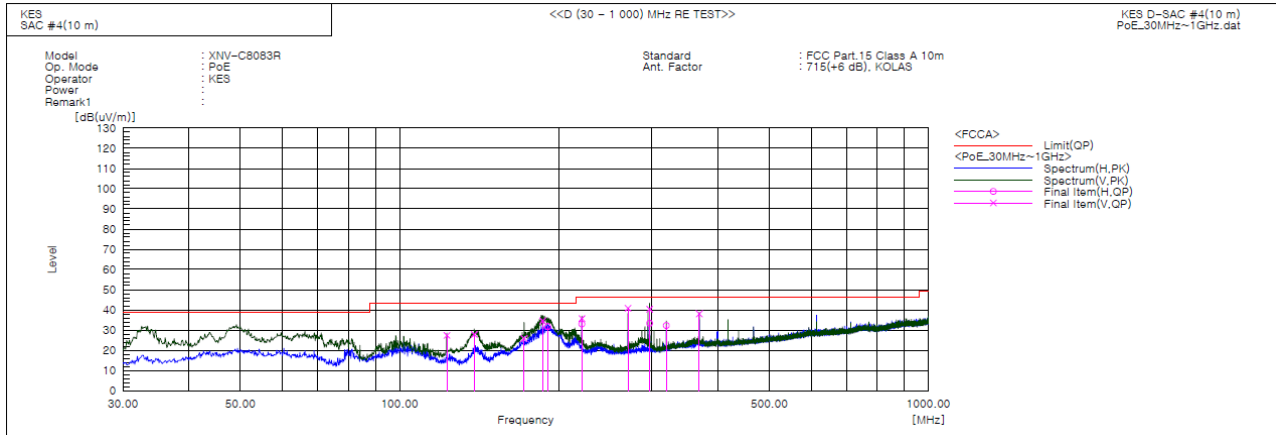


Final Result

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	171.984	V	54.5	-24.0	30.5	43.5	13.0	172.0	211.0	
2	185.564	H	49.7	-22.7	27.0	43.5	16.5	336.0	136.0	
3	215.998	H	49.7	-20.3	29.4	43.5	14.1	377.0	151.0	
4	215.998	V	53.7	-20.3	33.4	43.5	10.1	126.0	22.0	
5	270.318	V	55.9	-18.7	37.2	46.5	9.3	172.0	196.0	
6	296.993	H	53.4	-18.0	35.4	46.5	11.1	400.0	21.0	
7	296.993	V	57.1	-18.0	39.1	46.5	7.4	261.0	58.0	
8	319.545	H	51.2	-16.8	34.4	46.5	12.1	361.0	166.0	
9	368.651	H	52.5	-15.0	37.5	46.5	9.0	251.0	28.0	
10	368.651	V	53.8	-15.0	38.8	46.5	7.7	100.0	309.0	
11	417.758	V	49.2	-13.9	35.3	46.5	11.2	100.0	43.0	
12	466.985	H	45.9	-12.6	33.3	46.5	13.2	213.0	257.0	



■ PoE Mode



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	QP		QP	QP	QP			
		[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	122.878	V	52.0	-24.6	27.4	43.5	16.1	100.0	94.0
2	138.398	V	53.3	-25.4	27.9	43.5	15.6	100.0	214.0
3	171.984	V	49.8	-24.0	25.8	43.5	17.7	100.0	342.0
4	186.413	V	57.2	-22.6	34.6	43.5	8.9	142.0	342.0
5	190.656	H	53.6	-21.9	31.7	43.5	11.8	400.0	182.0
6	221.211	H	53.1	-20.1	33.0	46.5	13.5	367.0	221.0
7	221.211	V	55.9	-20.1	35.8	46.5	10.7	100.0	27.0
8	270.318	V	59.5	-18.7	40.8	46.5	5.7	100.0	169.0
9	296.993	V	58.4	-18.0	40.4	46.5	6.1	112.0	49.0
10	296.993	H	51.4	-18.0	33.4	46.5	13.1	261.0	36.0
11	319.424	H	49.1	-16.8	32.3	46.5	14.2	400.0	197.0
12	368.651	V	53.1	-15.0	38.1	46.5	8.4	100.0	162.0

◆ 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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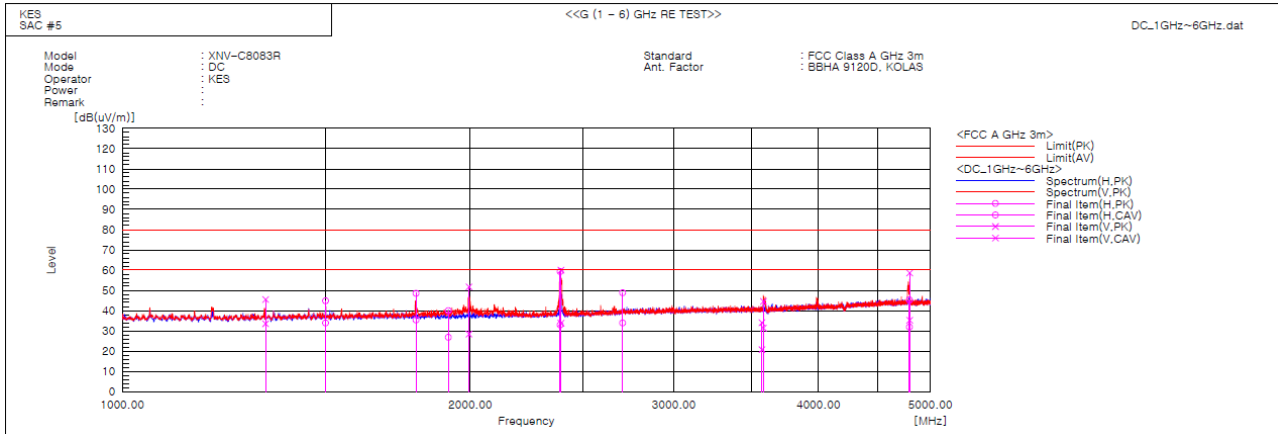
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KES-EM-21T0302-R1

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Radiated Electric Field Emissions(Above 1 GHz)

■ DC Mode



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	1330.000	V	53.8	41.9	-8.3	45.5	33.6	80.0	60.0	34.5	26.4	102.0	212.8	
2	1498.750	H	52.6	41.6	-7.7	44.9	33.9	80.0	60.0	35.1	26.1	100.2	343.6	
3	1795.000	H	55.1	42.0	-6.6	48.5	35.4	80.0	60.0	31.5	24.6	200.3	115.2	
4	1914.375	H	46.2	33.0	-6.2	40.0	26.8	80.0	60.0	40.0	33.2	110.1	218.8	
5	1994.375	V	57.6	34.3	-5.9	51.7	28.4	80.0	60.0	28.3	31.6	152.7	142.0	
6	2391.875	H	64.1	37.7	-4.8	59.3	32.9	80.0	60.0	20.7	27.1	107.3	345.0	
7	2395.000	V	64.8	38.6	-4.8	60.0	33.8	80.0	60.0	20.0	26.2	102.0	67.1	
8	2708.750	H	52.3	37.4	-3.5	48.8	33.9	80.0	60.0	31.2	26.1	100.0	4.4	
9	3574.625	V	35.7	22.4	-1.6	34.1	20.8	80.0	60.0	45.9	39.2	111.0	357.5	
10	3585.625	V	46.2	33.0	-1.6	44.6	31.4	80.0	60.0	35.4	28.6	142.0	49.4	
11	4795.500	H	42.8	29.4	2.5	45.3	31.9	80.0	60.0	34.7	28.1	195.7	116.3	
12	4797.500	V	56.1	32.8	2.5	58.6	35.3	80.0	60.0	21.4	24.7	100.3	157.3	

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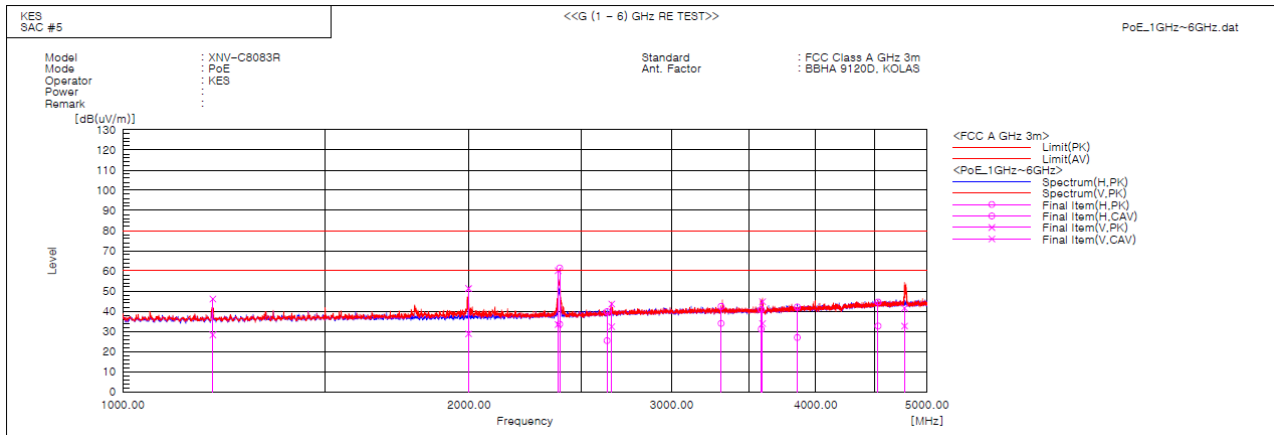
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■ PoE Mode



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	1197.500	V	54.9	37.1	-8.9	46.0	28.2	80.0	60.0	34.0	31.8	214.1	201.0	
2	1997.500	V	57.2	34.7	-5.9	51.3	28.8	80.0	60.0	28.7	31.2	104.7	169.2	
3	2389.375	V	64.9	38.2	-4.8	60.1	33.4	80.0	60.0	19.9	26.6	125.8	136.3	
4	2396.875	H	66.2	38.4	-4.8	61.4	33.6	80.0	60.0	18.6	26.4	111.4	356.8	
5	2635.625	H	43.7	29.3	-3.9	39.8	25.4	80.0	60.0	40.2	34.6	200.1	166.1	
6	2660.000	V	47.4	36.2	-3.8	43.6	32.4	80.0	60.0	36.4	27.6	102.6	5.1	
7	3311.250	H	44.4	35.9	-2.0	42.4	33.9	80.0	60.0	37.6	26.1	400.3	173.3	
8	3588.125	H	42.4	32.7	-1.6	40.8	31.1	80.0	60.0	39.2	28.9	100.0	51.2	
9	3597.500	V	46.4	35.5	-1.6	44.8	33.9	80.0	60.0	35.2	26.1	106.2	63.4	
10	3856.250	H	42.4	27.2	-0.3	42.1	26.9	80.0	60.0	37.9	33.1	100.9	357.1	
11	4533.125	H	42.6	30.6	2.0	44.6	32.6	80.0	60.0	35.4	27.4	379.5	42.7	
12	4780.000	V	39.1	30.1	2.5	41.6	32.6	80.0	60.0	38.4	27.4	101.6	152.4	

◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(uV/m)] - Result(PK/CAV) [dB(uV/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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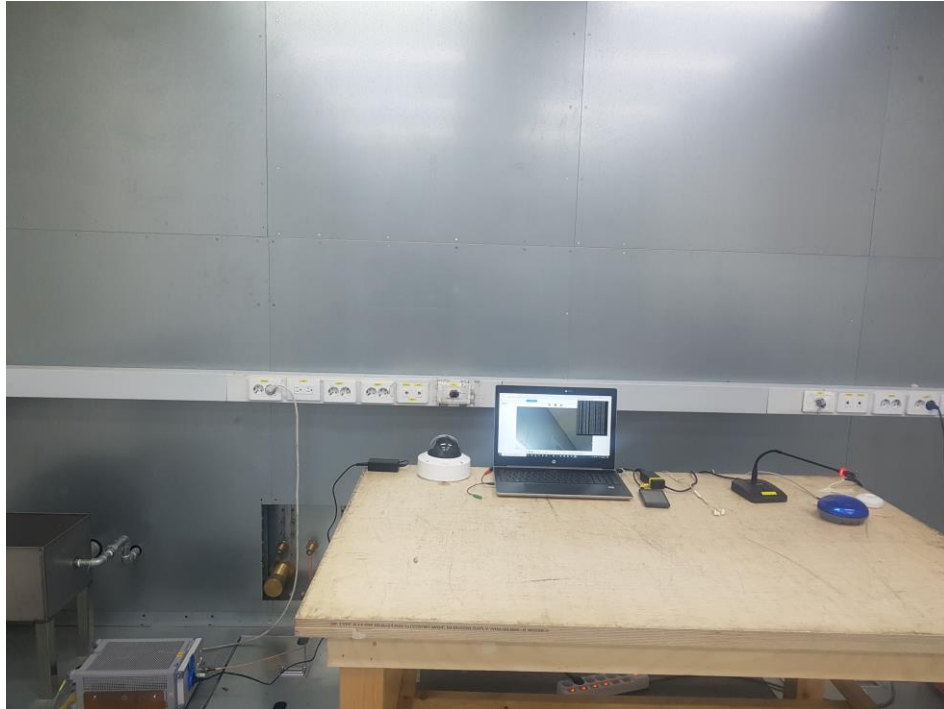
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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode



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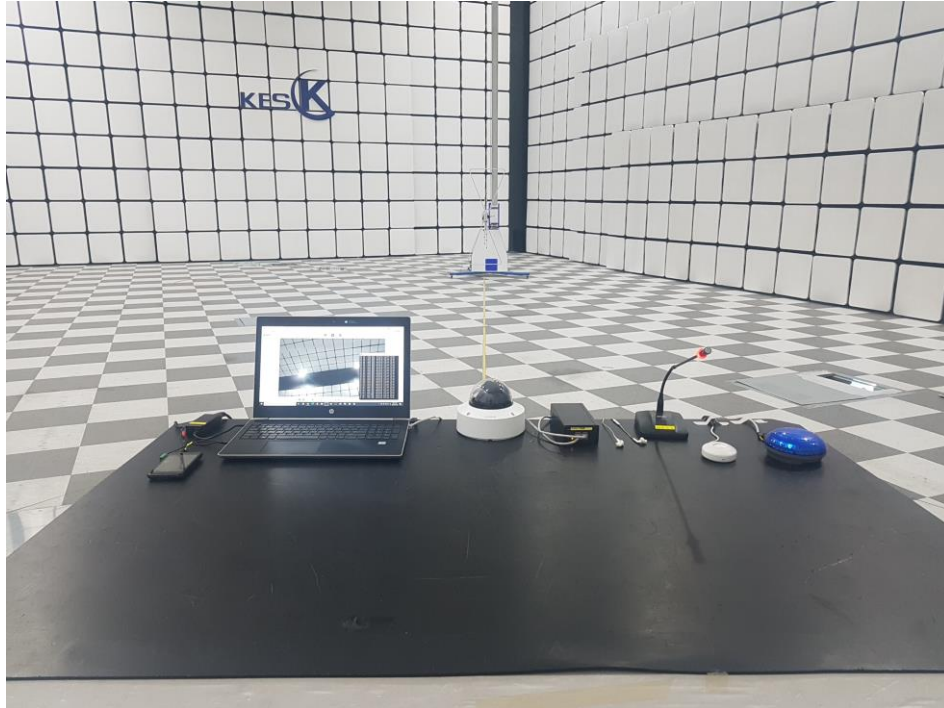
Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



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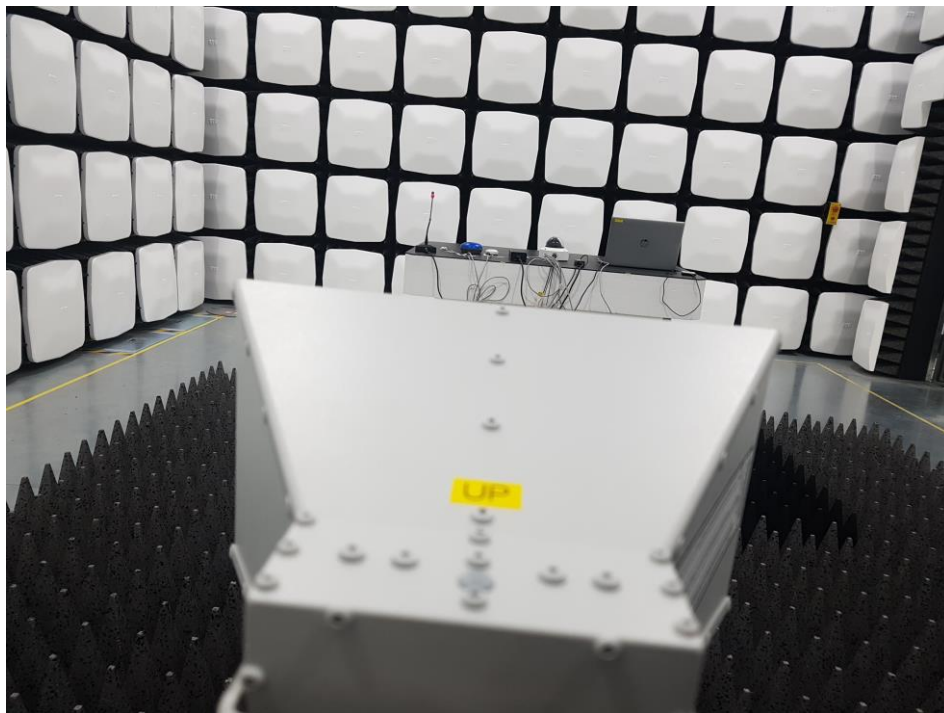
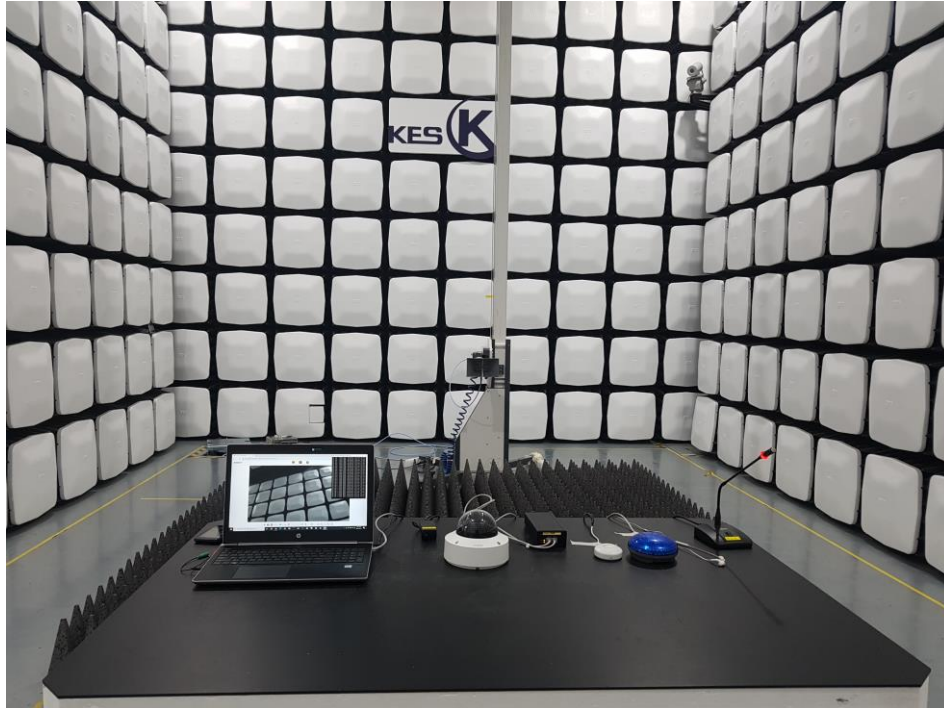
Radiated Electric Field Emissions(Above 1 GHz)

■ 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)

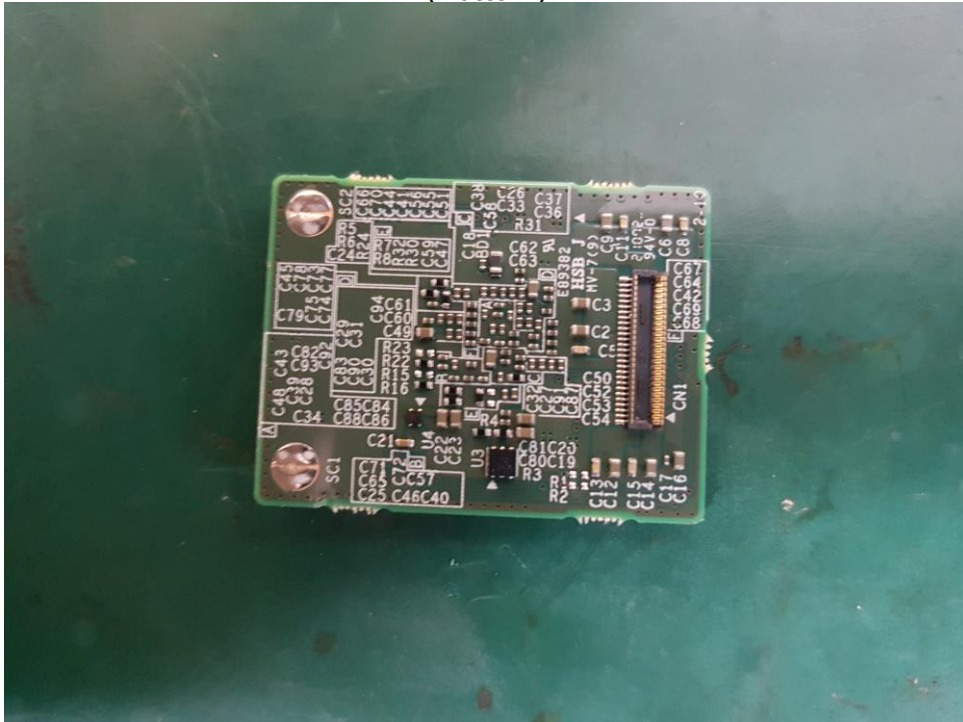


EUT Internal View – Board 1

(Top)



(Bottom)



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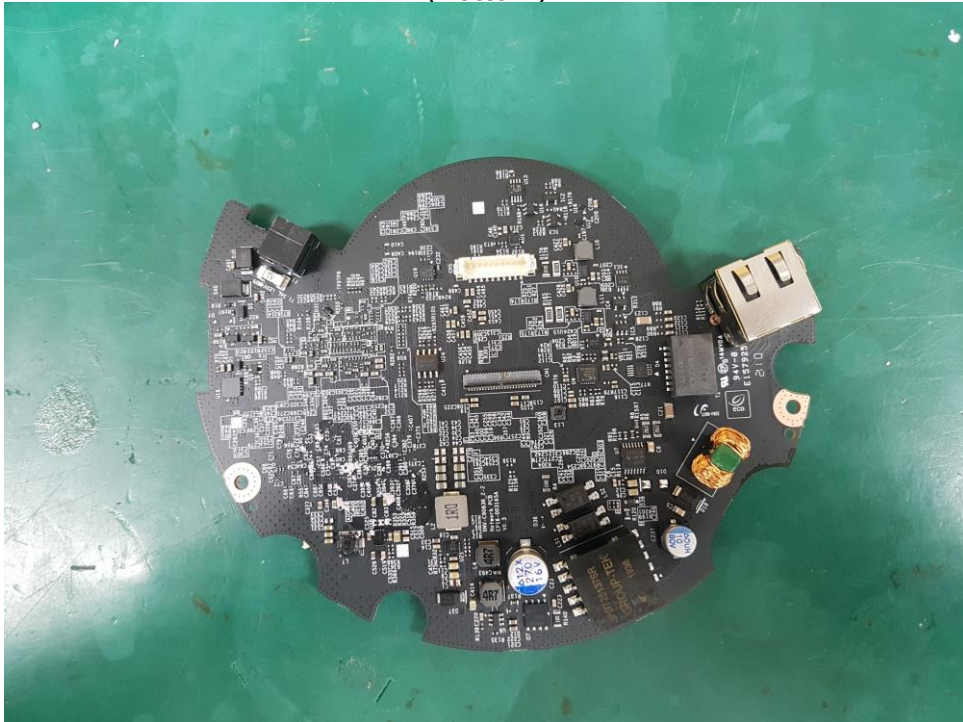
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EUT Internal View – Board 2

(Top)



(Bottom)



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EUT Internal View – Board 3

(Top)



(Bottom)



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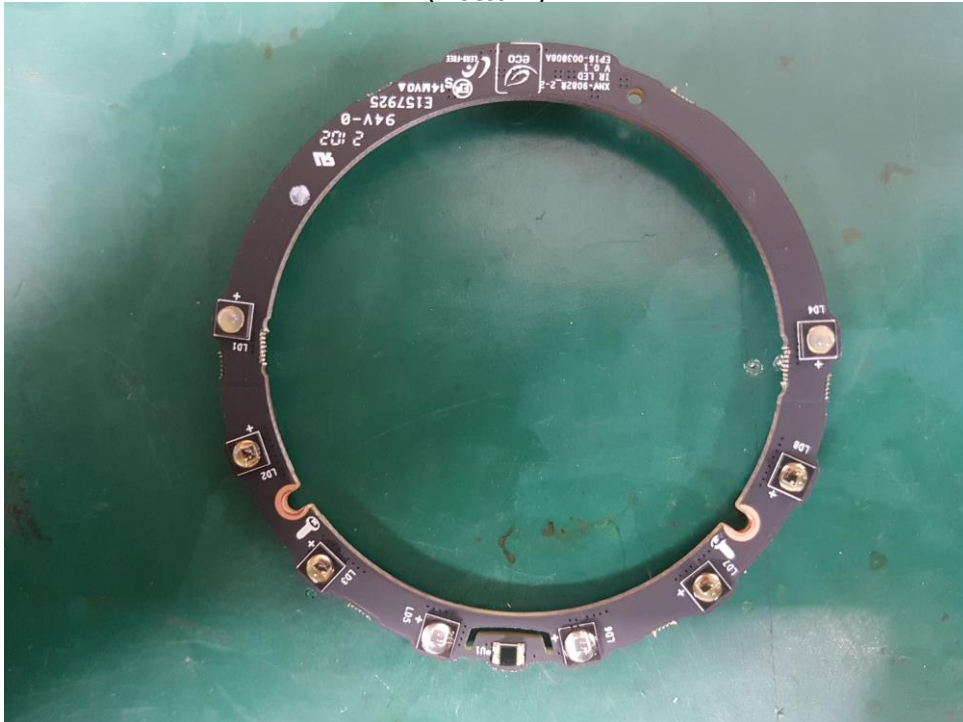
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EUT Internal View – Board 4

(Top)



(Bottom)



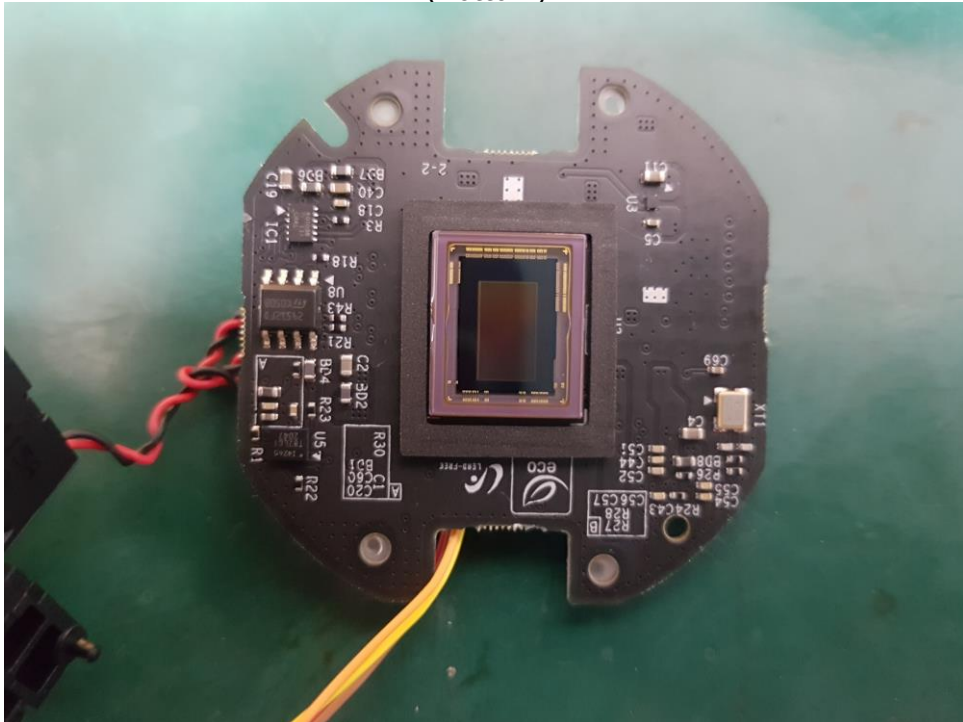
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EUT Internal View – Board 5

(Top)



(Bottom)



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EUT Internal View – Lens

(Top)

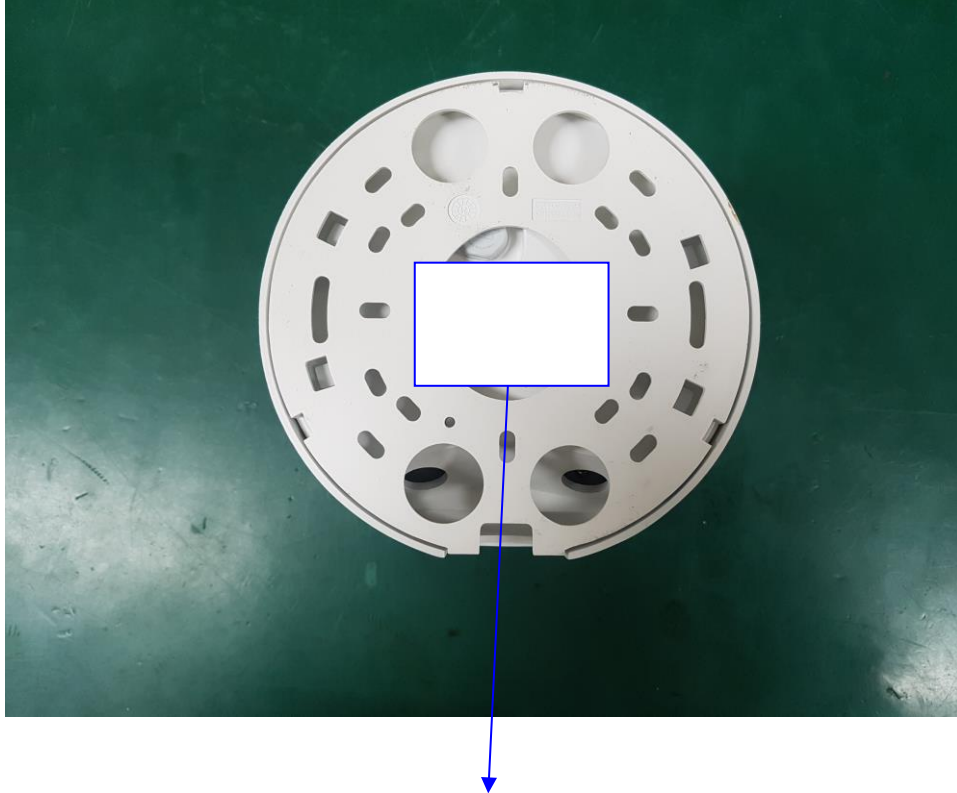


(Bottom)



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Label Photographs



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.