



EMC TEST REPORT For VCCI

Test Report No. : KES-EM-20T0123-R1
Date of Issue : Feb. 24, 2023
Product name : Network Camera
Model/Type No. : XNV-6012
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 : Jan. 31, 2020
Test date : Feb. 06, 2020
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
Feb. 14, 2020	KES-EM-20T0123	Issued
Feb. 24, 2023	KES-EM-20T0123-R1	- Change the Applicant and Manufacturer at the request of the customer - Factory deletion at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Video		Network	
Imaging Device	1/2.8" 2M CMOS	Ethernet	RJ45(10/100BASE-T)
Total Pixels	1945(H) x 1109(V) 2.16M	Video Compression Form	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Effective Pixels	1945(H) x 1097(V) 2.13M	Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Scanning System	Progressive Scan	Max. Framerate	H.265/H.264 : Max. 60fps at all resolutions Motion JPEG : Max. 30fps
Min. Illumination	Color : 0.066 lux(F2.0, 1/30sec) (TBD) B/W : 0.0055Lux	Smart Codec	Manual Mode (area-based : 5EA)
S / N Ratio	50dB	WiseStream II	Support
Video Out	USB : Micro USB type B, 1280x720, for installation	Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
Lens		Bitrate Control Method	
Focal Length (Zoom Ratio)	2.4mm Fixed	H.264/H.265 : CBR or VBR	MJPEG : VBR
Max. Aperture Ratio	F2.0	Streaming Capability	
Angular Field of View	H 139° V 73° D167° (TBD)	Multiple Streaming (Up to 10 Profiles)	
Min. Object Distance	0.4m(1.31ft)	Audio Compression Form	G.711 u-law / G.726 Selectable
Focus Control	Manual		G.726 (ADPCM) 8KHz, G.711 8KHz
Lens Type	Fixed		G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps
Mount Type	Board-in type	Audio Communication	AAC-LC : 48Kbps at 16KHz
Pan / Tilt / Rotate		Bi-directional (2-Way)	
Pan / Tilt / Rotate range	±5°/0-87°±90°	IP	IPv4, IPv6
Operational		Protocol	
IR Viewable Length	-	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour	
Camera Title	Off / On (Displayed up to 85 characters) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution	Security	HTTPS(SSL) Login Authentication
			Digest Login Authentication
			IP Address Filtering
Day & Night	Auto (ICR) / Color / B/W / External / Schedule	Streaming Method	User access Log
Backlight Compensation	Off / BLG / HLG(Masking/Dimming), WDR		802.1X Authentication (EAP-TLS, EAP-LEAP)
Wide Dynamic Range	150dB		Unicast / Multicast
Contrast Enhancement	SSDR (Off / On)	Max. User Access	20 users at Unicast Mode
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)	Edge Storage	SD/SDHC/SDXC 1slot (up to 256 GB)
Digital Image Stabilization	Off / On		- Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded.
Defog	Auto(input from fog detection) / Manual / Off		NAS(Network Attached Storage) Local PC for Instant Recording
Motion Detection	Off/ On(8ea, 8point Polygonal zones), Handover Off / On (32ea, polygonal zones)	Application Programming	ONVIF Profile S/G
Privacy Masking	- Color : Grey/Green/Red/Blue/Black/White - Mosaic		SUNAPI(HTTP API)
Gain Control	Off / Low / Middle / High		Open Platform
White Balance	ATW / AWG / Manual / Indoor / Outdoor(Included Mercury & Sodium)	Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Contrast	level adjustment		Supported OS : Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12
LDC	On/Off (5 levels with Min/Max)		Non-plugin Webviewer Supported Browser : Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)	Web Viewer	Plug-in Webviewer Supported Browser : MS Explore 11, Apple Safari 9 (Mac OS X only)
Digital PTZ	24X, *Digital PTZ(Preset, Group)		SmartViewer, SSM
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°	Central Management Soft	
Video & Audio Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Digital Auto Tracking, Sound Classification, People counting	Environmental	
		Operating Temperature / Humidity	
		-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH *Start up should be done at above -20°C	
Alarm I/O	-	Storage Temperature / Humidity	
Alarm Triggers	Motion Detection, Video & Audio Analytics, Network Disconnect	-50°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH	
		Ingress Protection	
		IP66	
Alarm events	File upload via FTP, E-Mail Notification via E-Mail local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers External output DPTZ preset	Vibration Resistance	
		EN55011:2009+A1:2010, EN50581:2012, EN50121-3-2:2015, EN61000-4-2:2009 EN61000-4-3:2006+A2:2010, EN61000-4-4:2012, EN61000-4-5:2014 EN61000-4-6:2009, EN50155:2007, NEMA 4X	
		Vandal Resistance	
Audio In	Selectable (Mic IN/Line IN), Built-in microphone	Electrical	
Audio out	Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm Line out, Max output level: 1 Vrms	Input Voltage / Current	
Audio Noise Reduction	Off / On	PoE(IEEE802.3af/Class3)	
Pixel Counter	Support	Power Consumption	
		TBD	
		Mechanical	
		Color / Material	
		Ivory / Metal	
		Dimension (WxHxD)	
		99 x 52 x 100	
		Weight	
		296g(TBD)	

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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 ☐ 240 Vac ☐ 100 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-6012	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adaptor	PSE156G 4-Pair,Hi-Power	-	Level one	-
Notebook	LG15N54	410NZGK015231	LG	-
Notebook Adaptor	ADP-90WH B	84ZW19F1663	DELTA ELECTRONICS (JIANGSU) LTD.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Smartphone	LG-SU760	108KPQJ0186212	LG	-
Micro SD Card	-	-	Sandisk	8 GB



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	RJ-45	PoE Adaptor	RJ-45	3.0	U
	3.5 mm	MIC	XLR	1.5	U
	3.5 mm	Speaker	3.5 mm	1.5	U
	Slot	Micro SD Card	-	-	-
Notebook	RJ-45	PoE Adaptor	RJ-45	3.0	U
	3.5 mm	Smartphone	3.5 mm	1.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

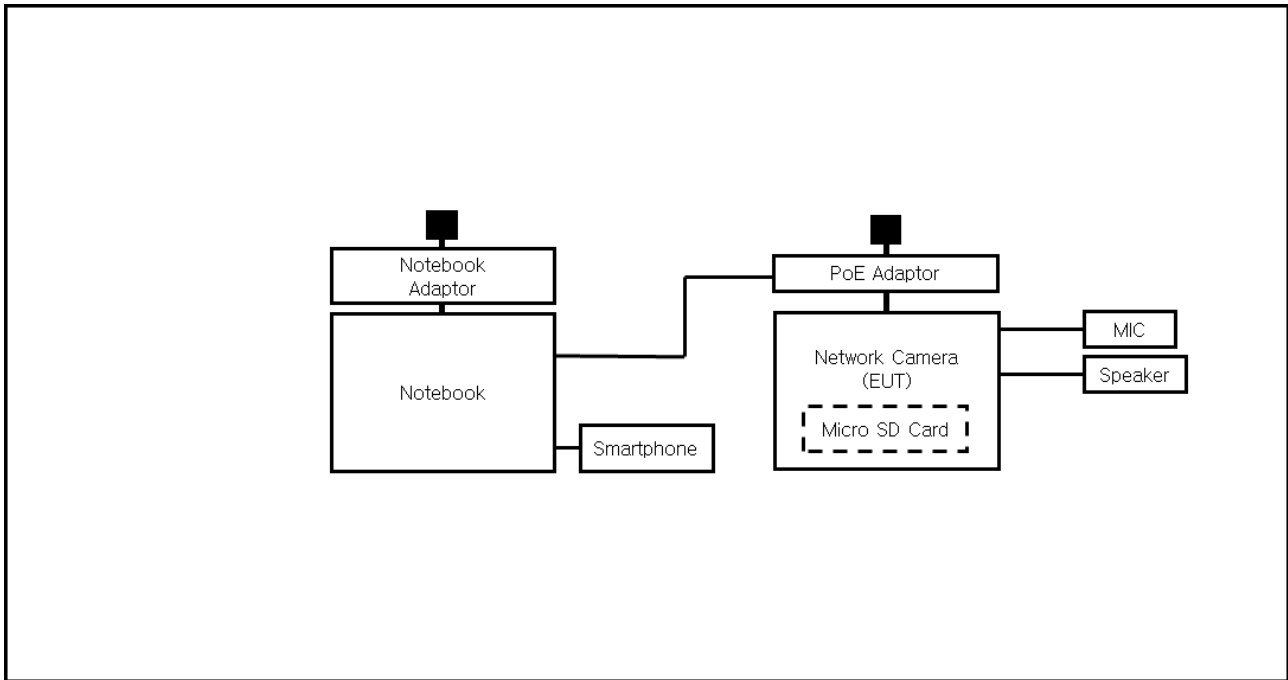
Test mode	operating
OP	Monitoring EUT Using Web Viewer, Ping Test

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

1.8 Configuration

■ AC Main

□ DC Main



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 61547 :2009

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ 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 C63.4-2009 | | |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
|
☐ 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 Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test S/W	EMC32	R & S	9.12.00	-
☐	EMI TEST RECEIVER	ESU26	R & S	100552	04, 19, 2020
☐	LISN	ENV216	R & S	101787	01, 02, 2021
☐	LISN	ESH2-Z5	R & S	100450	01, 02, 2021
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021

Test Conditions

Temperature: °C
Relative Humidity: % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks

It is not tested apply because it is powered by PoE

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Feb. 06, 2020

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	ESU26	R & S	100552	04, 19, 2020
☒	LISN	ENV216	R & S	101787	01, 02, 2021
☒	LISN	ESH2-Z5	R & S	100450	01, 02, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2021
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2021
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	05, 09, 2020

Test ConditionsTemperature: 21,3 °C
Relative Humidity: 40,9 % R.H.**Frequency Range of Measurement**

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb. 06, 2020

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, 09, 2020
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2020
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020
☒	ATTENUATOR	8491A	HP	32173	03, 11, 2020

Test Conditions

Temperature: 21,9 °C
Relative Humidity: 41,3 % 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

Feb. 06, 2020

Test Location

SEMI ANECHOIC CHAMBER #3

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	ESR7	R & S	101190	08, 06, 2020
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 27, 2020
☐	ATTENUATOR	8491A	HP	35496	03, 11, 2020
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 12, 2020

Test Conditions

Temperature: 21,5 °C
Relative Humidity: 40,5 % 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

HOT LINE

N/A

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NEUTRAL LINE

N/A

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

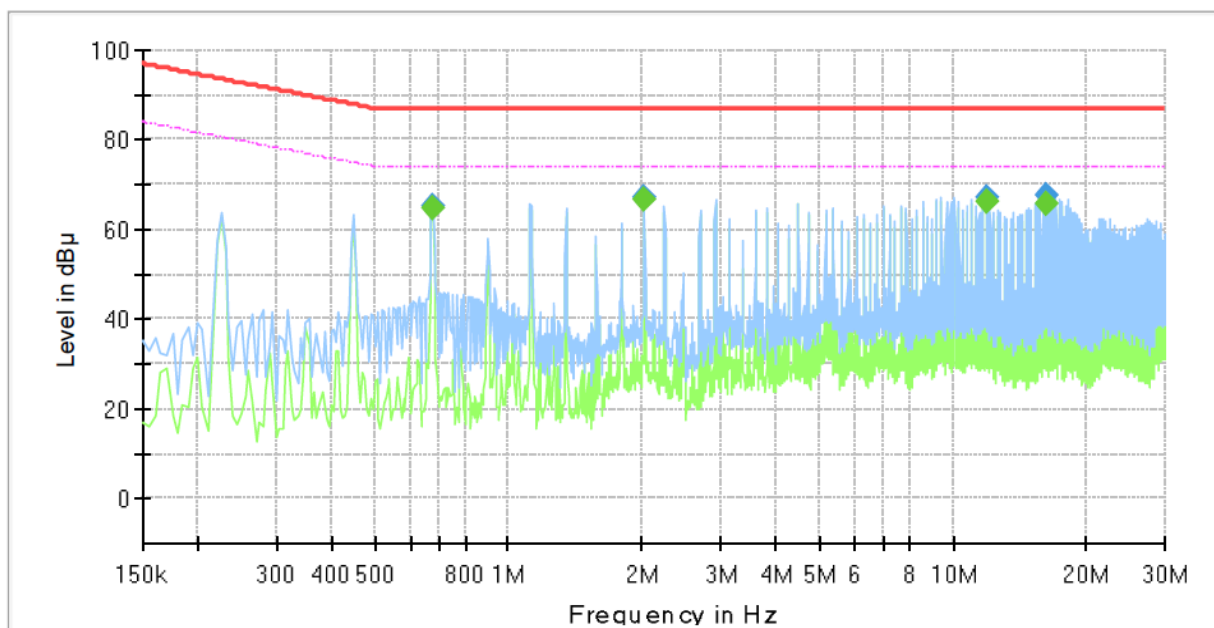
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Conducted Emissions at Telecommunication Ports

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
 Model No.: XNV-6012
 Mode :
 Speed : 100 Mbps
 Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.675000	---	64.69	74.00	9.31	1000.0	9.000	Single Line	19.6
0.675000	65.49	---	87.00	21.51	1000.0	9.000	Single Line	19.6
2.020000	---	66.77	74.00	7.23	1000.0	9.000	Single Line	19.5
2.020000	67.14	---	87.00	19.86	1000.0	9.000	Single Line	19.5
11.900000	---	66.14	74.00	7.86	1000.0	9.000	Single Line	19.9
11.900000	67.04	---	87.00	19.96	1000.0	9.000	Single Line	19.9
16.165000	---	65.54	74.00	8.46	1000.0	9.000	Single Line	20.0
16.165000	67.85	---	87.00	19.15	1000.0	9.000	Single Line	20.0

◆ Calculation

QuasiPeak [dBμV] / CAverage [dBμV] = Reading Value [dBμV] + 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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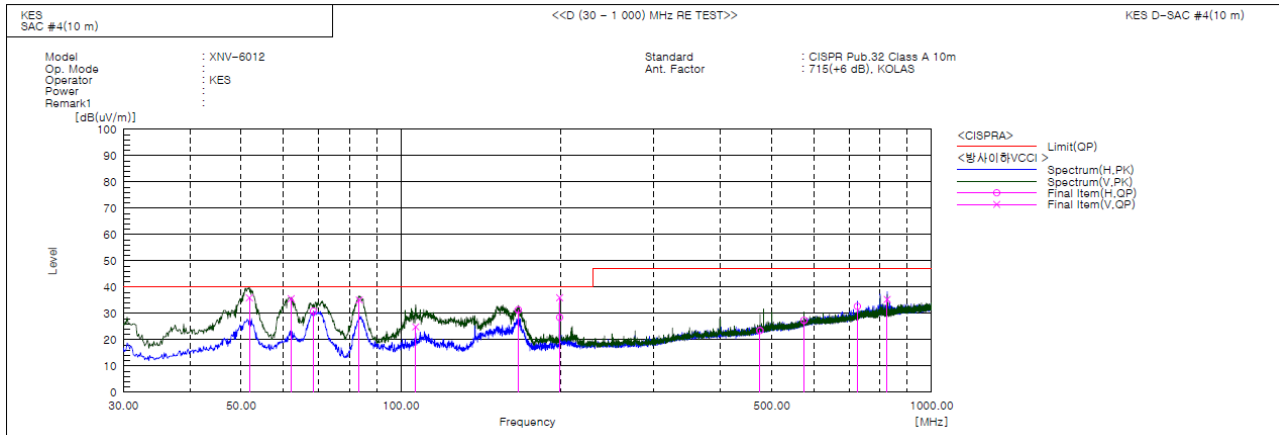
3701, 40, Simin-daero 365beon-gil,
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Radiated Electric Field Emissions(Below 1 GHz)



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	51.825	V	57.3	-21.4	35.9	40.0	4.1	100.0	104.0	
2	62.131	V	58.5	-22.9	35.6	40.0	4.4	122.0	95.0	
3	68.436	H	55.5	-24.6	30.9	40.0	9.1	233.0	182.0	
4	83.471	V	61.9	-26.8	35.1	40.0	4.9	169.0	190.0	
5	106.630	V	47.4	-22.5	24.9	40.0	15.1	152.0	95.0	
6	166.406	H	55.9	-24.5	31.4	40.0	8.6	400.0	205.0	
7	199.144	V	57.8	-21.8	36.0	40.0	4.0	100.0	275.0	
8	199.144	H	50.3	-21.8	28.5	40.0	11.5	378.0	229.0	
9	474.988	H	36.9	-13.4	23.5	47.0	23.5	177.0	288.0	
10	575.019	H	37.9	-10.5	27.4	47.0	19.6	202.0	324.0	
11	725.005	H	40.3	-7.6	32.7	47.0	14.3	198.0	122.0	
12	825.036	V	42.3	-7.0	35.3	47.0	11.7	156.0	334.0	

◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

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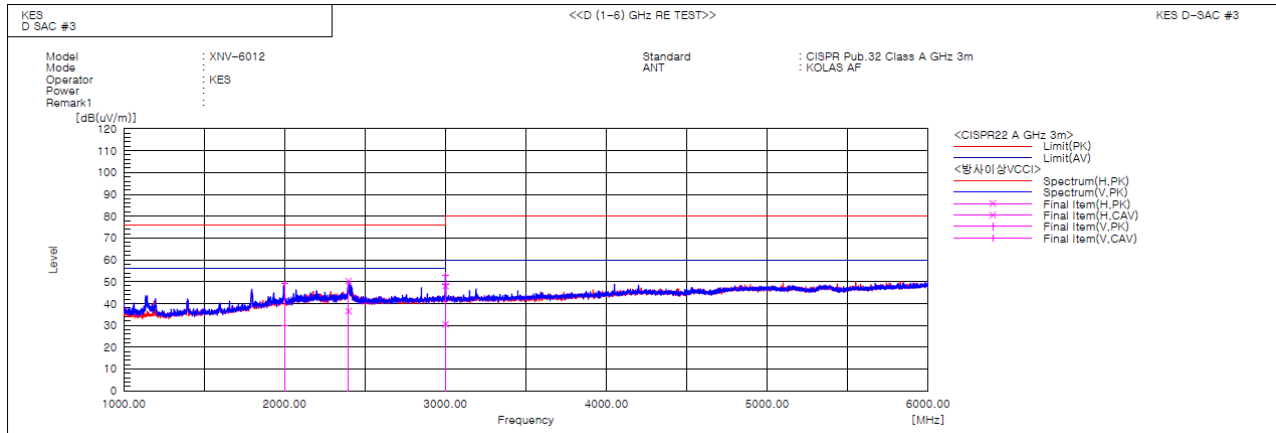
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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Radiated Electric Field Emissions(Above 1 GHz)



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	1999.499	V	50.7	31.6	-1.7	49.0	29.9	76.0	56.0	27.0	26.1	100.0	173.2	
2	2397.500	H	50.9	37.0	-0.5	50.4	36.5	76.0	56.0	25.6	19.5	100.0	197.0	
3	3000.420	V	51.4	47.1	1.5	52.9	48.6	80.0	60.0	27.1	11.4	100.0	157.8	
4	3000.510	H	46.5	29.0	1.5	48.0	30.5	80.0	60.0	32.0	29.5	100.0	233.4	

◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(μ V/m)] - Result(PK/CAV) [dB(μ V/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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KES-EM-20T0123-R1
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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

N/A

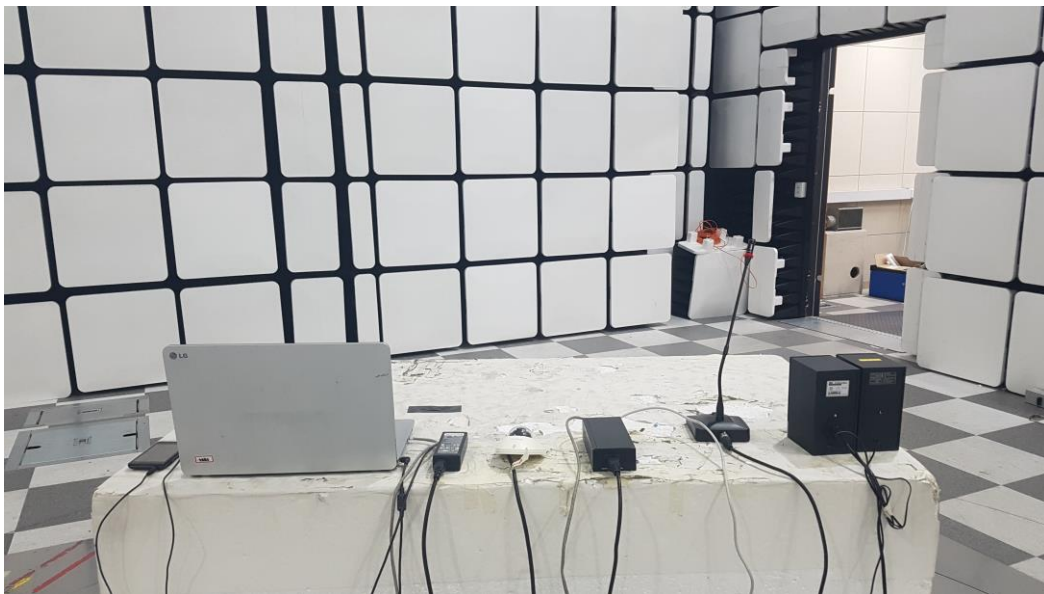
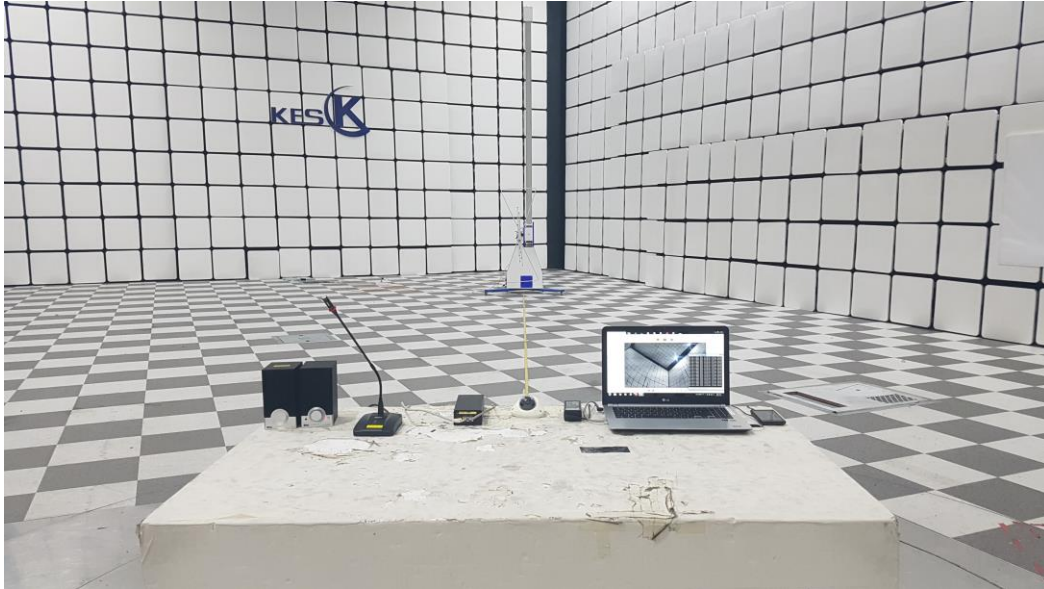
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Conducted Emissions at Telecommunication Ports



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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



EUT External Photographs

(Top)

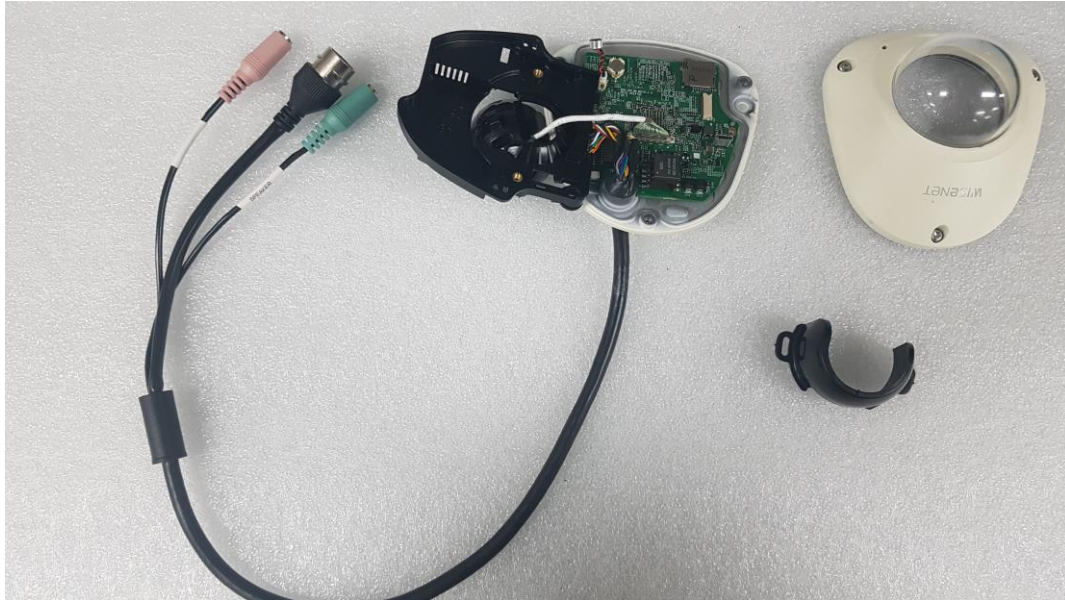


(Bottom)



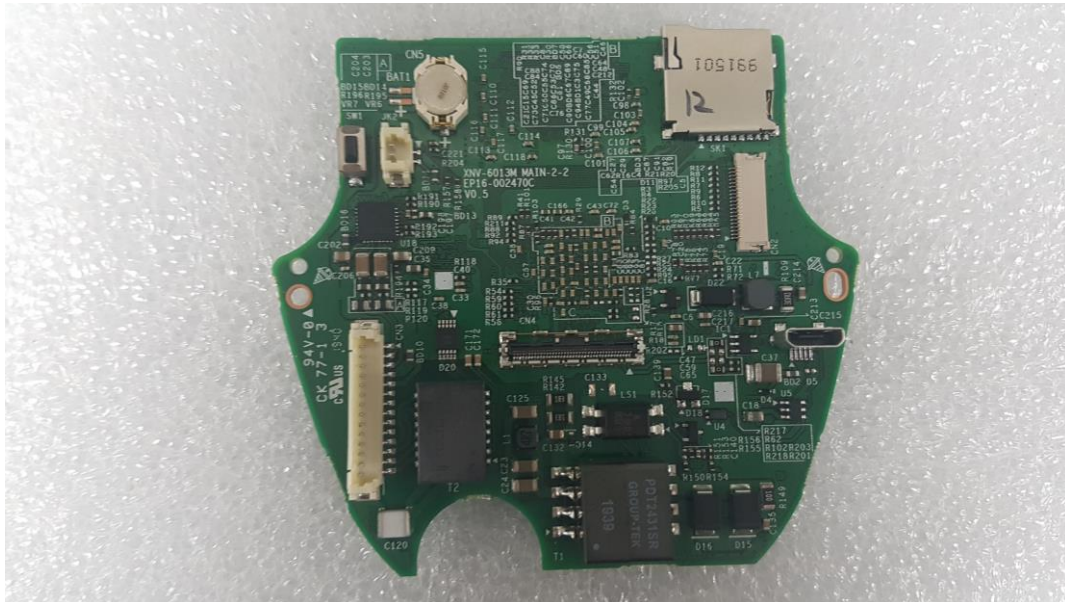
EUT Internal Photographs

(Internal View)

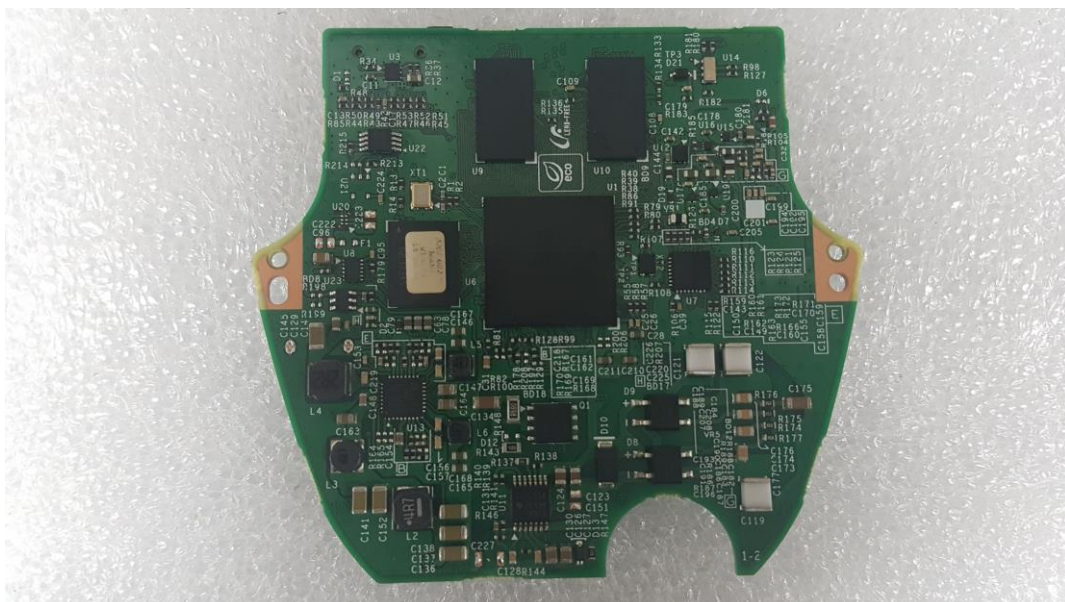


EUT Internal View – Board

(Top)

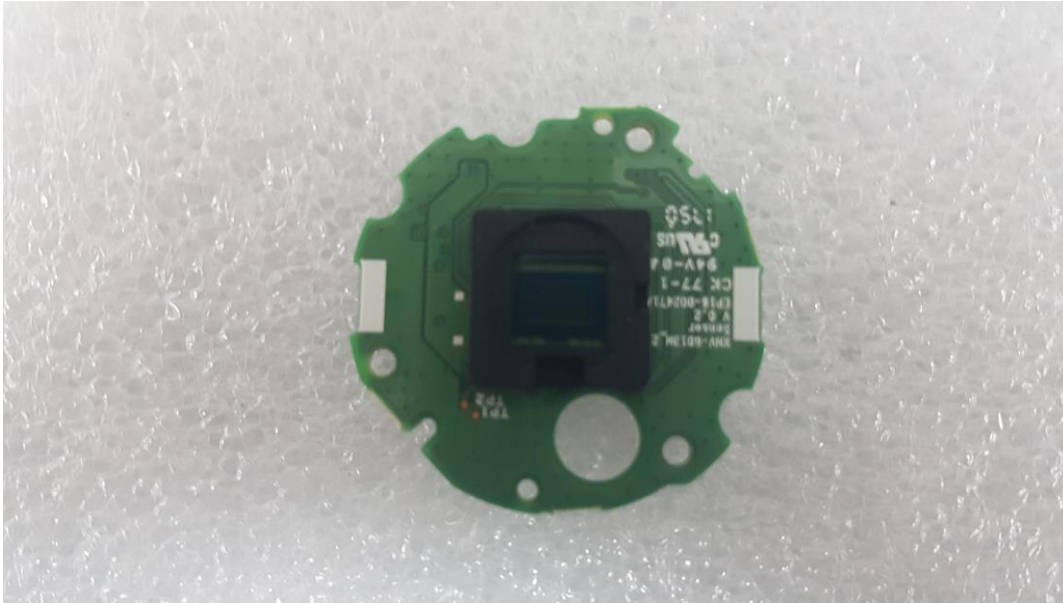


(Bottom)

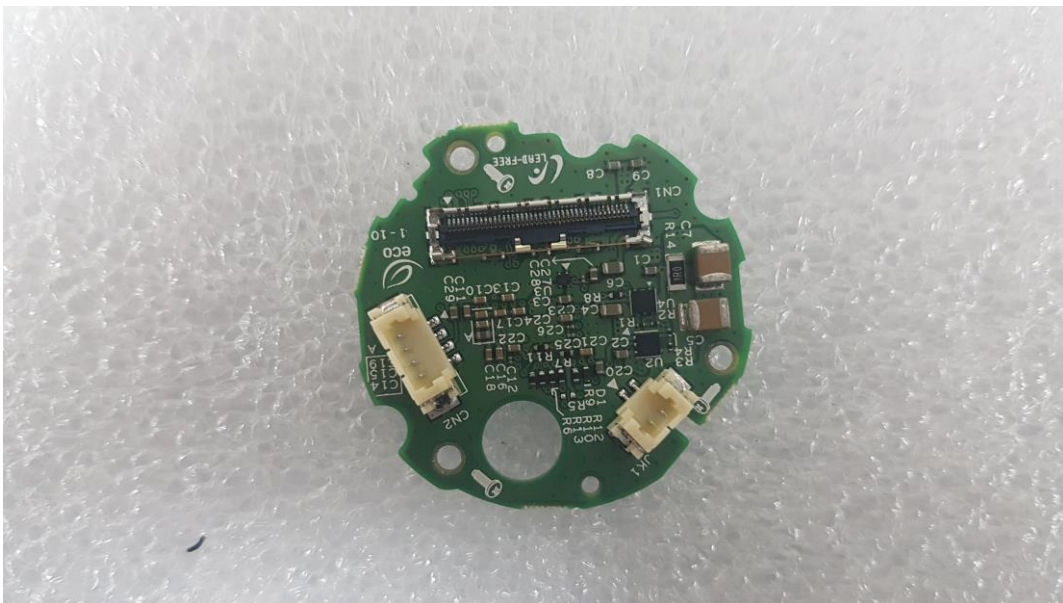


EUT Internal View – Camera Board

(Top)



(Bottom)



Label Photographs



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