

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (1) of (34)

EMC TEST REPORT For RCM

Test Report No. : KES-EM-22T0920-R1
Date of Issue : Feb. 24, 2023
Product name : Network Camera
Model/Type No. : XNP-6371RH
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 : Oct. 27, 2022
Test date : Nov. 07, 2022 ~ Nov. 08, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jun Soo, Jung
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.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (2) of (34)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Nov. 16, 2022	KES-EM-22T0920	Issued
Feb. 24, 2023	KES-EM-22T0920-R1	Change the Applicant and Manufacturer at the request of the customer

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	6
1.2	Variant Model Differences	6
1.3	Device Modifications	6
1.4	Equipment Under Test.....	6
1.5	Support Equipments	6
1.6	External I/O Cabling	7
1.7	EUT Operating Mode(s)	7
1.8	Configuration.....	8
1.9	Remarks when standards applied	9
1.10	Calibration Details of Equipment Used for Measurement	9
1.11	Test Facility	9
1.12	Laboratory Accreditations and Listings	9
2.0	Test Regulations.....	10
2.1	Conducted Emissions at Mains Power Ports	11
2.2	Conducted Emissions at Telecommunication Ports.....	12
2.3	Radiated Electric Field Emissions(Below 1 GHz)	13
2.4	Radiated Electric Field Emissions(Above 1 GHz)	14
APPENDIX A – TEST DATA.....		15
Conducted Emissions at Mains Power Ports.....		15
Conducted Emissions at Telecommunication Ports		17
Radiated Electric Field Emissions(Below 1 GHz)		18
Radiated Electric Field Emissions(Above 1 GHz).....		19
Test Setup Photos and Configuration		20
Conducted Emissions at Mains Power Ports.....		20
Conducted Emissions at Telecommunication Ports		21
Radiated Electric Field Emissions(Below 1 GHz)		22
Radiated Electric Field Emissions(Above 1 GHz).....		23
EUT External Photographs		24
EUT Internal Photographs		25



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (4) of (34)

1.0 General Product Description

Main Specifications of EUT are:

Video

Imaging Device	1/2" 2MP CMOS
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: Max. 60fps/50fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
Min. Illumination	Color: 0.01Lux(F1.5, 1/30sec) BW: 0Lux(IR LED)
Video Out	CVBS: 1.0Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation

Lens

Focal Length (Zoom Ratio)	6~222mm(37x) zoom
Max. Aperture Ratio	F1.5(Wide)~F4.6(Tele)
Angular Field of View	H: 59.3°(Wide)~1.9°(Tele) / V: 35.8°(Wide)~1.1°(Tele)
Min. Object Distance	1.5m(3.28ft)
Focus Control	Oneshot AF
Lens Type	DC auto iris

Pan / Tilt / Rotate

Pan Range	360° Endless
Pan Speed	Preset: 400°/sec, Manual: 0.024°/sec ~ 250°/sec
Tilt Range	190°(-5°~185°)
Tilt Speed	Preset: 300°/sec, Manual: 0.024°/sec ~ 250°/sec
Sequence	Preset(300ea), Swing, Group(6ea), Trace, Tour, Auto Run, Schedule
Preset Accuracy	±0.2°

Operational

Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, HLC, WDR, SDDR
Wide Dynamic Range	150dB
Digital Noise Reduction	SSNR V
Digital Image Stabilization	Support(built-in gyro sensor)
Defog	Support
Motion Detection	Bea, rectangular zones
Privacy Masking	24ea, rectangular zones - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Video Rotation	Flip, Mirror
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
Serial Interface	RS-485(Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm I/O	Input 4ea / Output 2ea
Alarm Triggers	Analytics, Network disconnect, Alarm input

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (5) of (34)

Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output 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	350m(1,148.29ft)
Auto Tracking	Support

Network

Ethernet	RJ-45(10/100BASE-T), SFP(Optional)
Video Compression	H.265/H.264: Main/Baseline/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), WiseStream II
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming (Up to 10 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, SRTP, LLDP
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP)
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, Hungarian, Greek
Web Viewer	Support OS: Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12 Recommended browser : Google Chrome Supported browser: MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari (Mac OS X only)
Edge Storage	SD/SDHC/SDXC 1slot 256GB
Memory	1024MB RAM, 256MB Flash

Environmental & Electrical

Operating Temperature / Humidity	-50°C~+55°C (-122°F~+131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C~+60°C (-122°F~+140°F) / Less than 90% RH
Certification	IP66, IK10
Input Voltage	24VAC
Power Consumption	24VAC: Max 90W

Mechanical

Color / Material	Body: Ivory / Plastic, Head: Black / Plastic
Product Dimensions / Weight	Ø236.9x407.7mm(9.33x16.05"), 7.1Kg(15.65 lb)
Hanging Mount (Dome)	SBP-303HF(SFP)

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



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 240 V, 50 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	XNP-6371RH	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC Adapter	-	-	-	-
Notebook	P95G001	8KM8HT2	DELL INC.	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
LED Alarm	PRO-SL	-	SENSOR PRO	-
Button Alarm	-	-	-	-
Headset	K550	-	Britz®	-
Smartphone	G8441	-	SONY	-
Controller	SPC-1010	C50E67WG10100 F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	FSP060-DIBAN2	-	Zhonghan Electronics (Shenzhen) Co., Ltd.	-
SD CARD	-	-	SanDisk	-



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (EUT)	AC IN	AC adapter	Line	1.9	U
	RJ-45	Notebook	RJ-45	3.0	U
	RS-485	Controller	RS-485	3.0	U
	Alarm OUT	LED Alarm	Alarm IN	3.0	U
	Alarm IN	Button Alarm	Alarm OUT	3.0	U
	AUDIO IN	Headset	Line	1.8	U
	AUDIO OUT				
	SD CARD Slot	SD CARD	SD CARD Slot	-	-

* Unshielded=U, Shielded=S

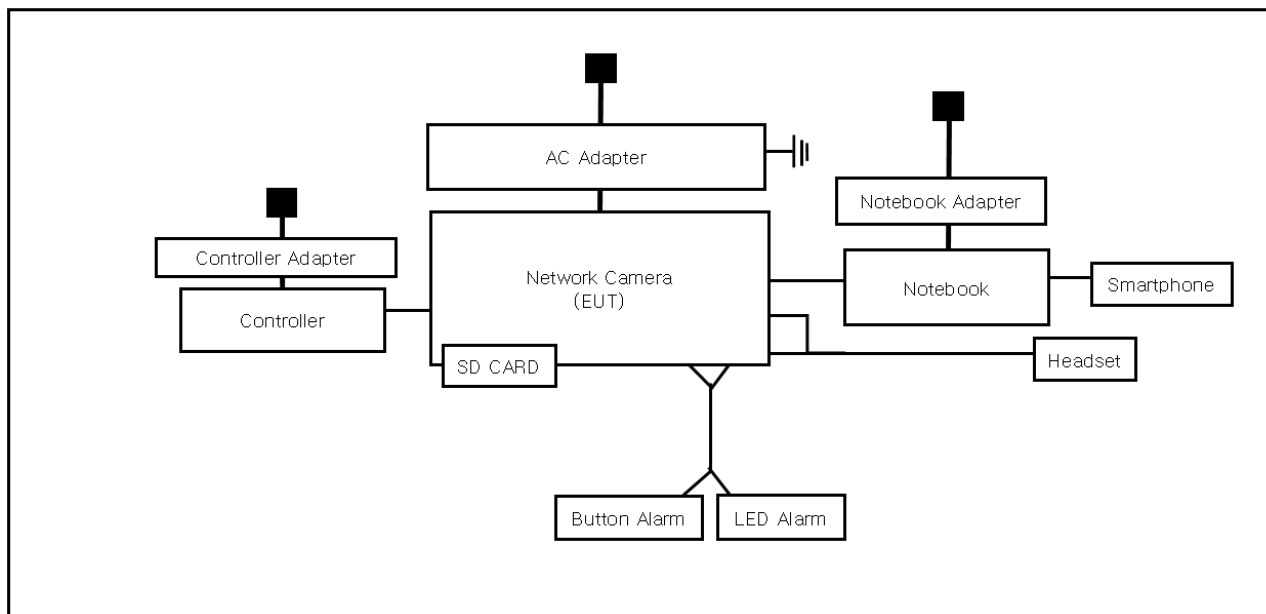
1.7 EUT Operating Mode(s)

Test Mode	operating
Operation	1. Check whether the image of the camera is normally output on the web page of the laptop and check whether the network is connected properly through a ping test. 2. Check whether the 1 kHz tone sound played on the smartphone is normally output to the headset. 3. After the test, check that the SD card is recorded normally.

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

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



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (10) of (34)

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **AS/NZS CISPR 32:2015 AMD 1:2020**

☒ Class A

☐ Class B

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr



2.1 Conducted Emissions at Mains Power Ports

Test Date

Nov. 07, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	11, 10, 2023
<input type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023

Test Conditions

Temperature: (22,5 ± 0,1) °C

Relative Humidity: (47,5 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Nov. 07, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	11, 11, 2023
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	11, 10, 2023
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023
<input checked="" type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 28, 2022
<input type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 28, 2022

Test Conditions

Temperature: (22,5 ± 0,1) °C

Relative Humidity: (47,5 ± 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.
- For Ethernet interfaces, measurements are required at the highest data rate supported by the interface.



2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 07, 2022

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	R & S	100551	03, 31, 2023
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
<input checked="" type="checkbox"/>	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	04, 27, 2024
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Test Conditions

Temperature: (22,4 ± 0,1) °C
Relative Humidity: (47,3 ± 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.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (14) of (34)

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Nov. 08, 2022

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR7	R & S	101190	08, 01, 2023
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 01, 2023
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 08, 2023
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 03, 2023

Test Conditions

Temperature: (22,7 ± 0,1) °C

Relative Humidity: (47,4 ± 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

RemarksSee Appendix A for test data.

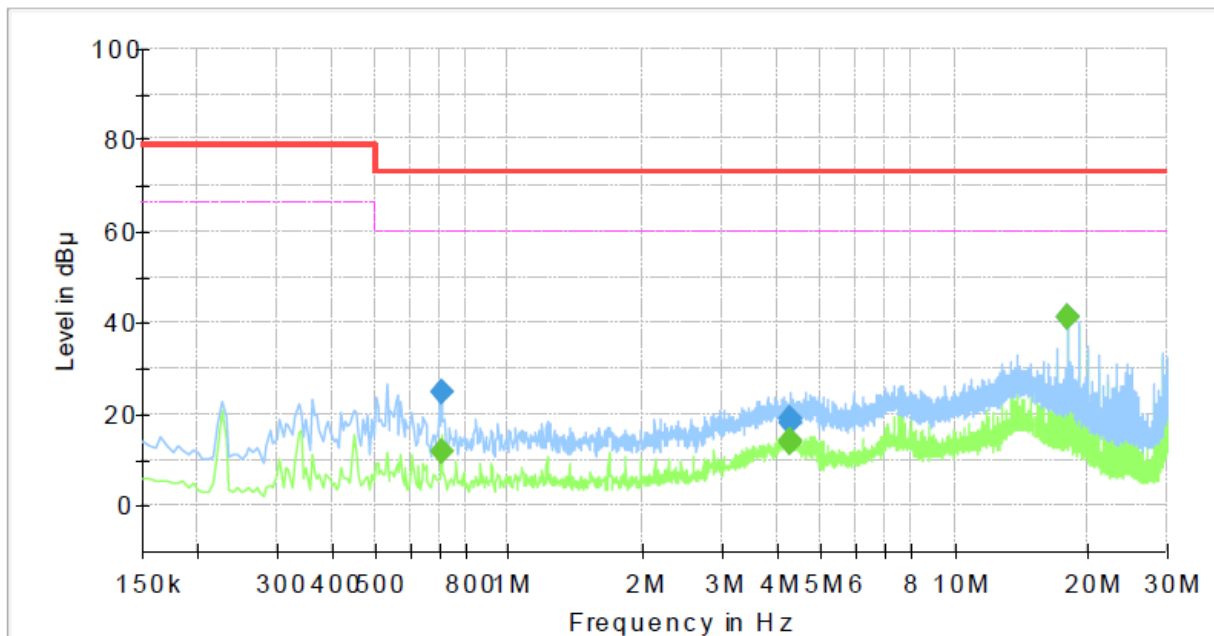
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNP-6371RH
Phase:	L1
Mode:	
Operator Name:	KES



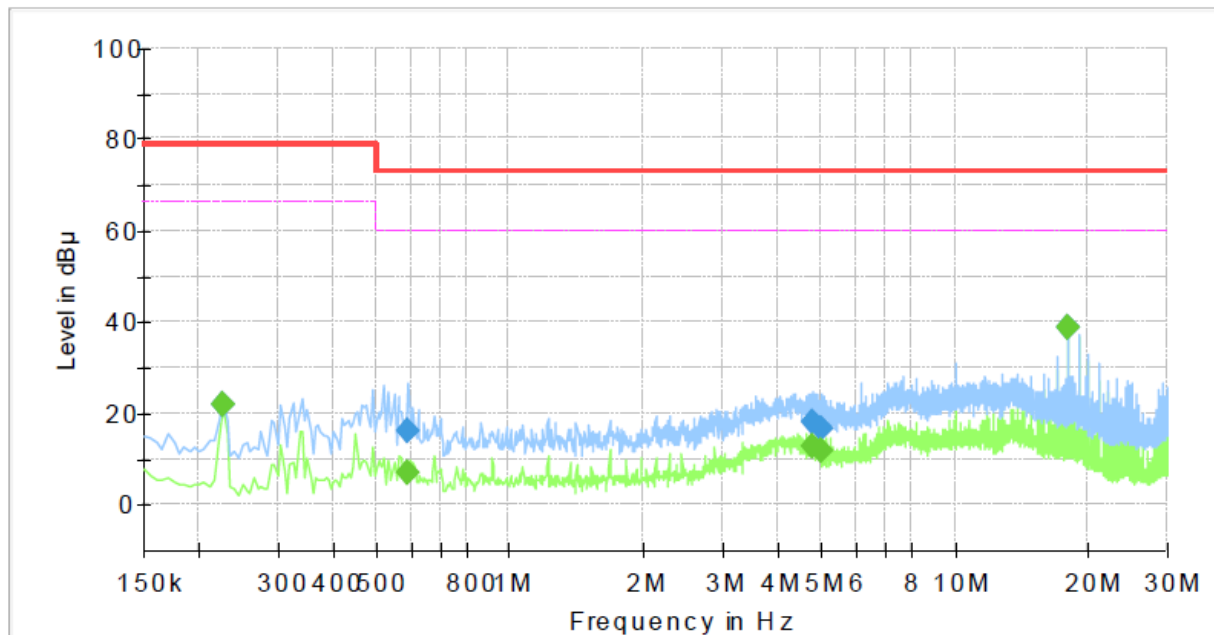
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.705000	---	11.84	60.00	48.16	1000.0	9.000	L1	19.9
0.705000	24.94	---	73.00	48.06	1000.0	9.000	L1	19.9
4.265000	---	13.54	60.00	46.46	1000.0	9.000	L1	19.8
4.265000	17.84	---	73.00	55.16	1000.0	9.000	L1	19.8
4.280000	---	14.13	60.00	45.87	1000.0	9.000	L1	19.8
4.280000	18.91	---	73.00	54.09	1000.0	9.000	L1	19.8
17.920000	---	41.15	60.00	18.85	1000.0	9.000	L1	20.0
17.920000	41.29	---	73.00	31.71	1000.0	9.000	L1	20.0

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNP-6371RH
Phase:	N
Mode:	
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.225000	---	21.73	66.00	44.27	1000.0	9.000	N	19.5
0.225000	21.92	---	79.00	57.08	1000.0	9.000	N	19.5
0.590000	---	6.93	60.00	53.07	1000.0	9.000	N	19.8
0.590000	16.11	---	73.00	56.89	1000.0	9.000	N	19.8
4.805000	---	12.85	60.00	47.15	1000.0	9.000	N	19.7
4.805000	18.16	---	73.00	54.84	1000.0	9.000	N	19.7
5.020000	---	11.47	60.00	48.53	1000.0	9.000	N	19.6
5.020000	16.52	---	73.00	56.48	1000.0	9.000	N	19.6
17.920000	---	38.74	60.00	21.26	1000.0	9.000	N	20.0
17.920000	38.87	---	73.00	34.13	1000.0	9.000	N	20.0

◆ 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))

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

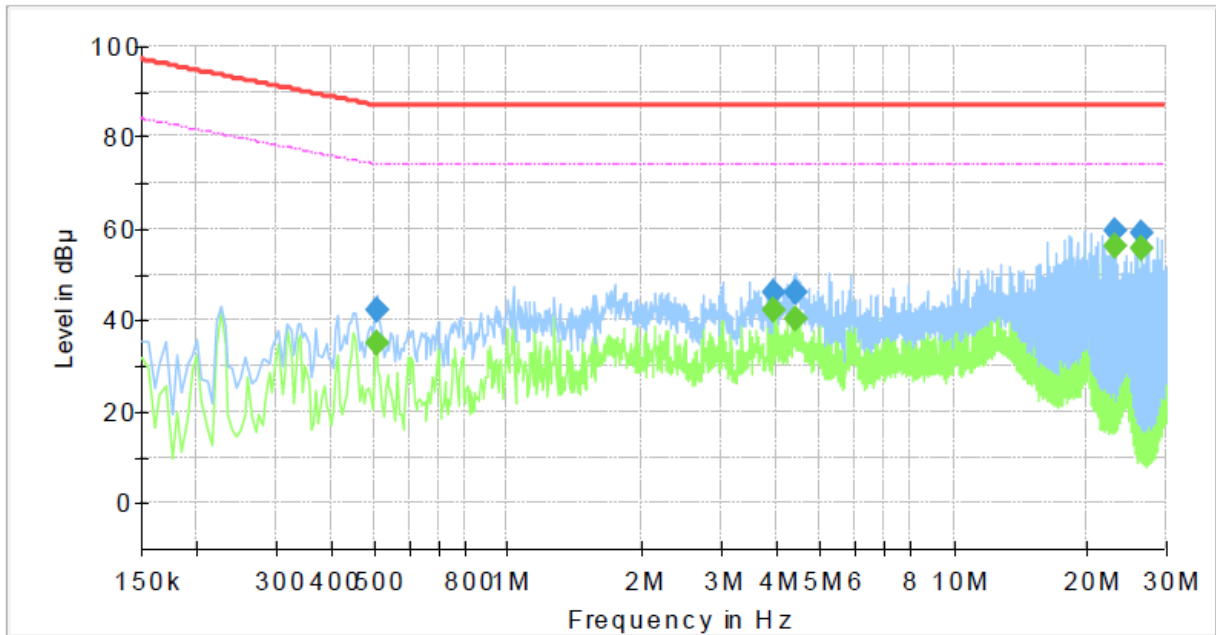
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr

Conducted Emissions at Telecommunication Ports [100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNP-6371RH
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)
0.505000	---	34.87	74.00	39.13	1000.0	9.000	Single Line	19.8
0.505000	41.95	---	87.00	45.05	1000.0	9.000	Single Line	19.8
3.955000	---	41.90	74.00	32.10	1000.0	9.000	Single Line	19.7
3.955000	46.20	---	87.00	40.80	1000.0	9.000	Single Line	19.7
4.415000	---	40.24	74.00	33.76	1000.0	9.000	Single Line	19.6
4.415000	45.93	---	87.00	41.07	1000.0	9.000	Single Line	19.6
23.130000	---	56.23	74.00	17.77	1000.0	9.000	Single Line	20.1
23.130000	59.65	---	87.00	27.35	1000.0	9.000	Single Line	20.1
26.610000	---	55.70	74.00	18.30	1000.0	9.000	Single Line	20.2
26.610000	59.19	---	87.00	27.81	1000.0	9.000	Single Line	20.2

◆ 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))

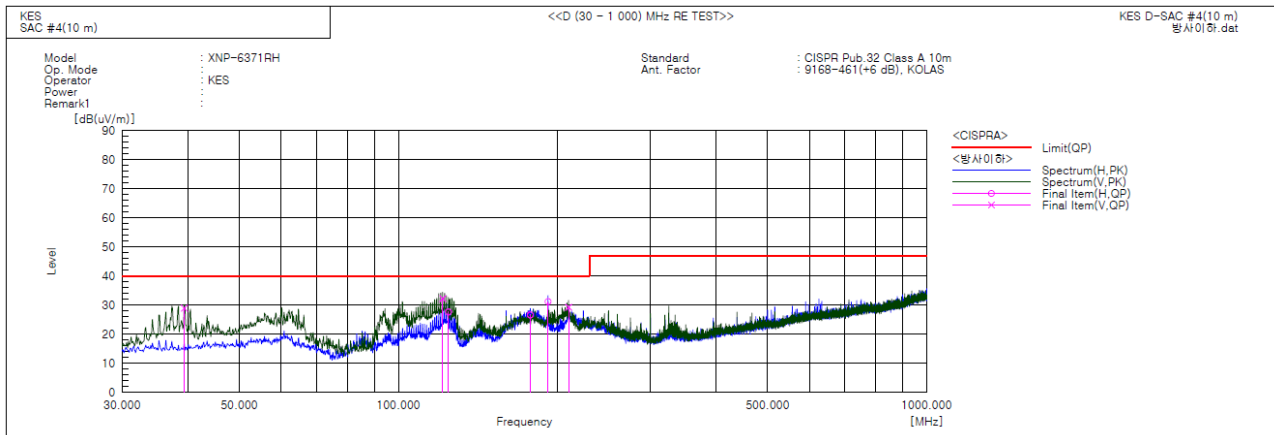
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr



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	39.336	V	51.0	-22.1	28.9	40.0	11.1	109.0	299.0	
2	121.301	V	54.7	-22.5	32.2	40.0	7.8	105.0	96.0	
3	124.333	H	49.7	-22.1	27.6	40.0	12.4	398.0	53.0	
4	177.683	H	47.6	-21.0	26.6	40.0	13.4	390.0	224.0	
5	191.990	H	53.5	-22.3	31.2	40.0	8.8	362.0	153.0	
6	209.935	V	51.6	-22.3	29.3	40.0	10.7	100.0	348.0	

◆ Calculation

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



KES Co., Ltd.

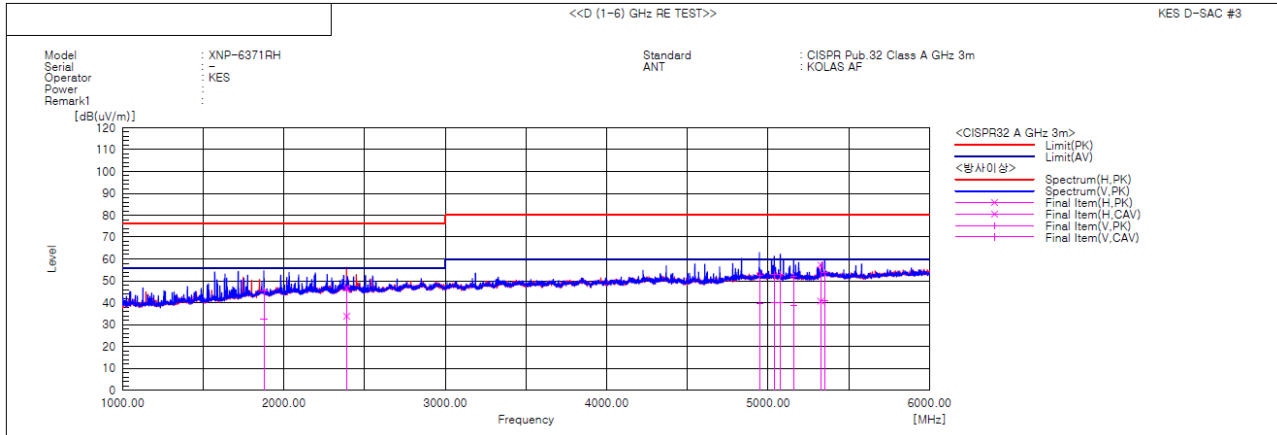
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-22T0920-R1

Page (19) of (34)

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	1876.188	V	41.6	28.7	3.9	45.5	32.6	76.0	56.0	30.5	23.4	100.0	78.8	
2	2388.837	H	40.4	27.6	6.3	46.7	33.9	76.0	56.0	29.3	22.1	100.0	293.8	
3	4946.556	V	38.4	25.5	14.3	52.7	39.8	80.0	60.0	27.3	20.2	100.0	221.6	
4	5038.388	V	38.5	25.5	14.4	52.9	39.9	80.0	60.0	27.1	20.1	100.0	221.6	
5	5076.199	V	38.5	25.6	14.4	52.9	40.0	80.0	60.0	27.1	20.0	100.0	99.9	
6	5158.809	V	37.8	24.6	14.3	52.1	38.9	80.0	60.0	27.9	21.1	100.0	226.7	
7	5325.343	H	42.5	25.9	14.8	57.3	40.7	80.0	60.0	22.7	19.3	100.0	239.3	
8	5351.295	V	38.9	25.8	15.0	53.9	40.8	80.0	60.0	26.1	19.2	100.0	131.0	

◆ 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

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

The authenticity of the test report, contact kes@kes.co.kr

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



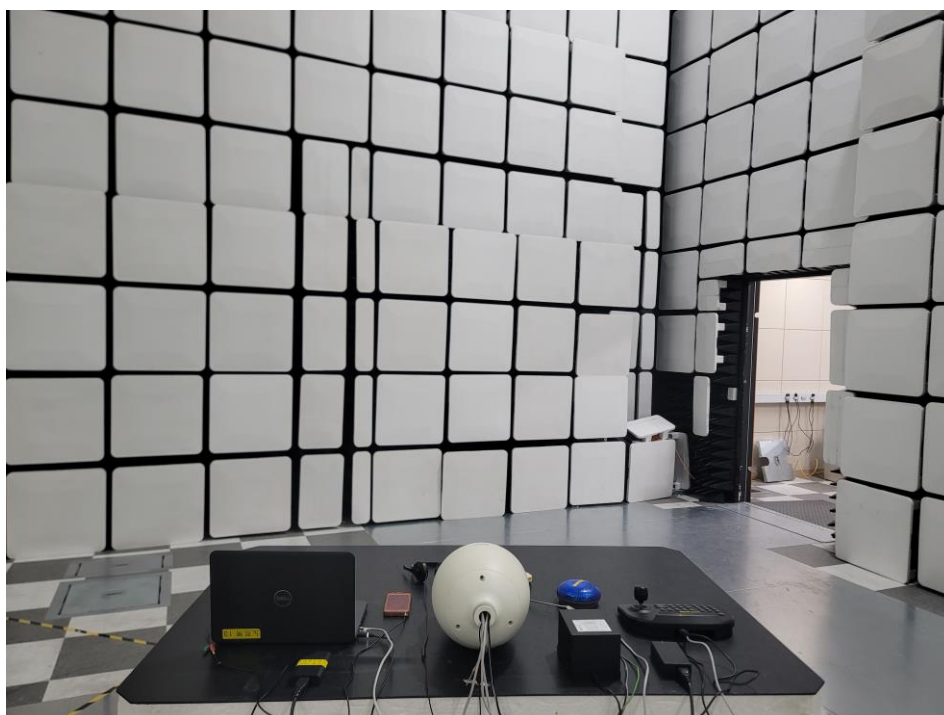
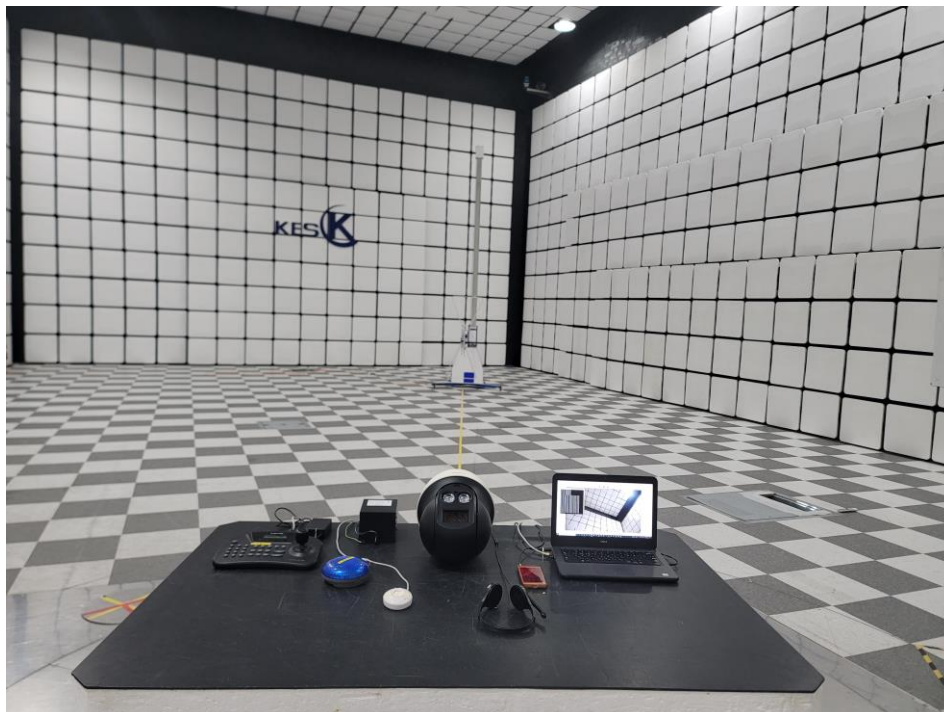
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Conducted Emissions at Telecommunication Ports



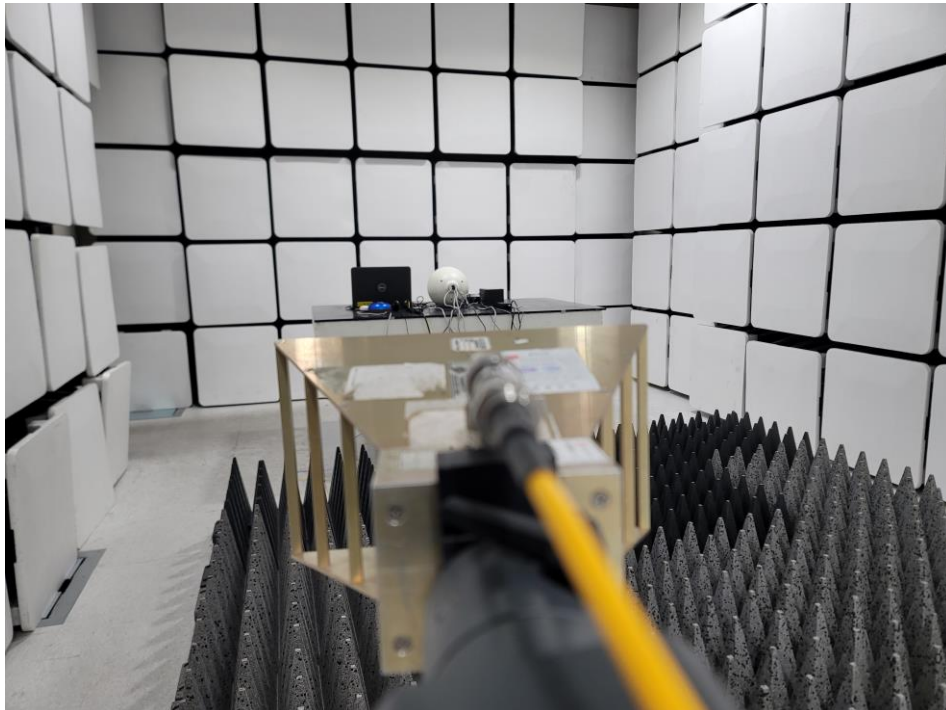
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Radiated Electric Field Emissions(Below 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Radiated Electric Field Emissions(Above 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT External Photographs

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal Photographs

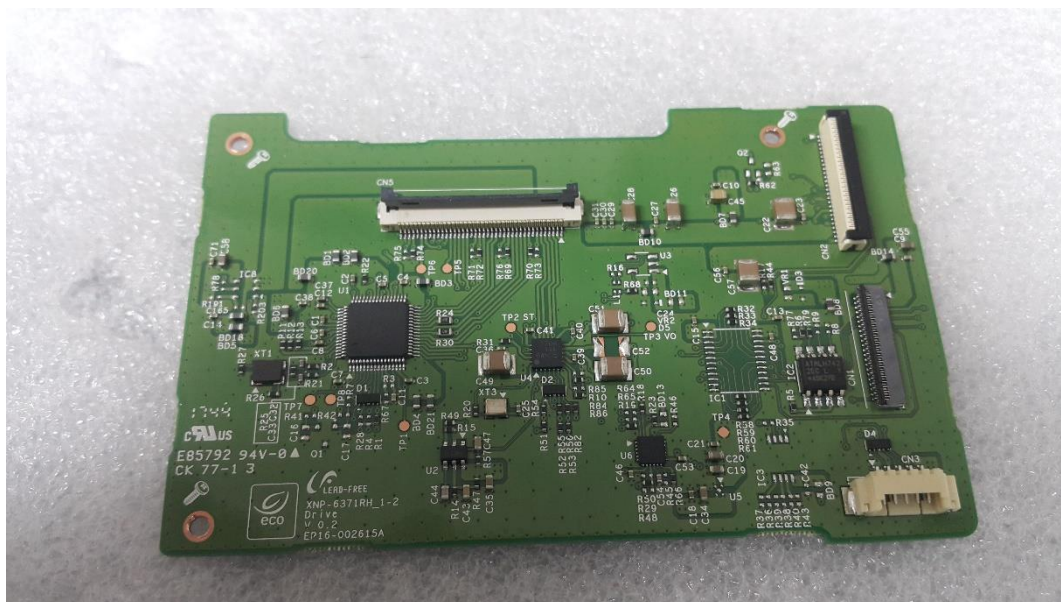
(Internal View)



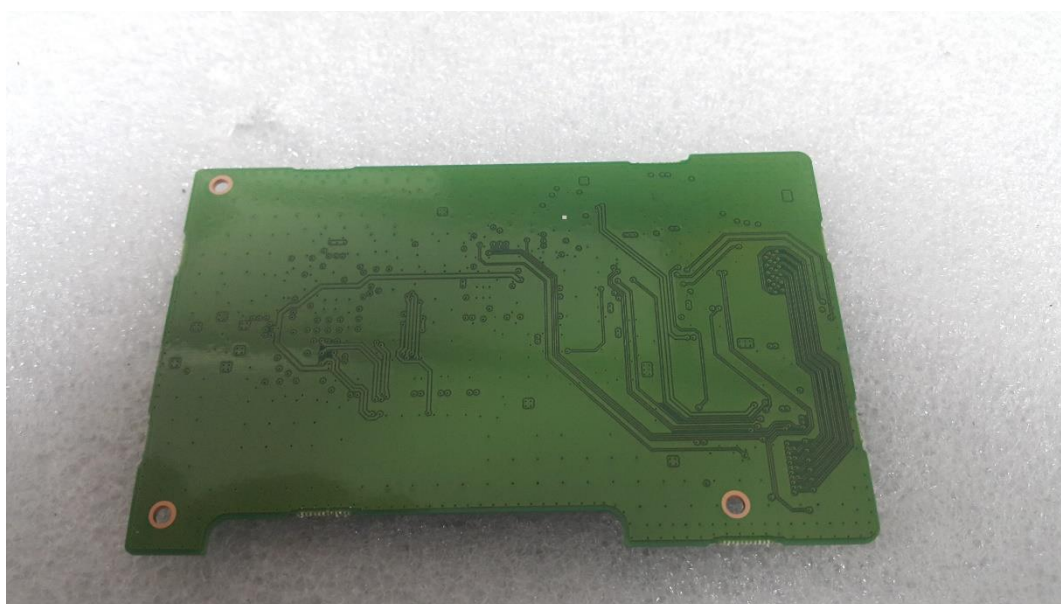
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Main Board

(Top)

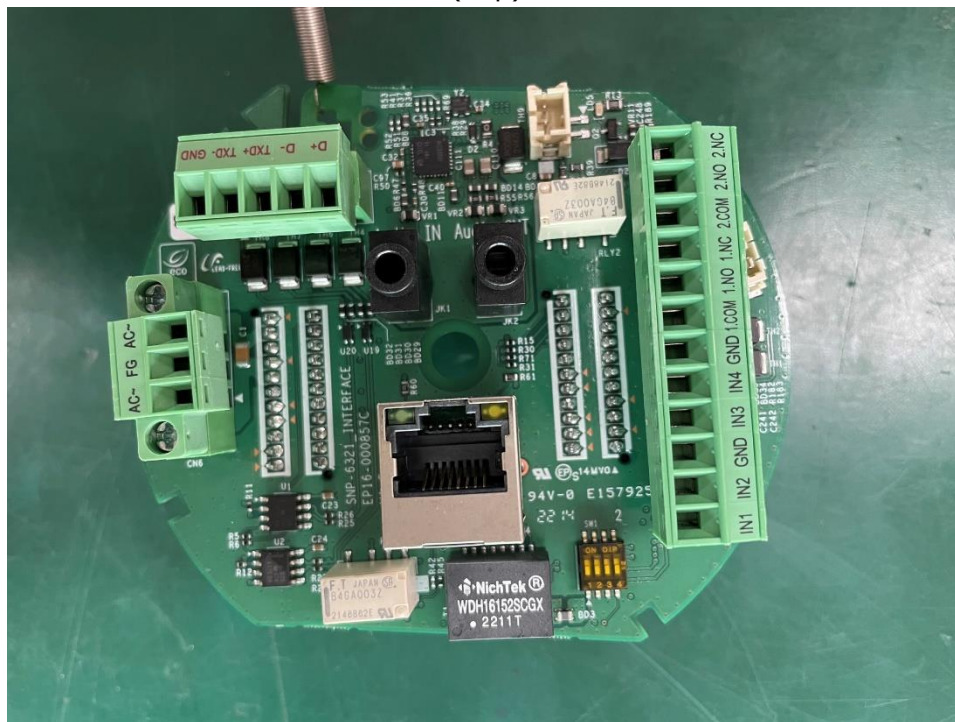


(Bottom)



EUT Internal View – IO Board

(Top)



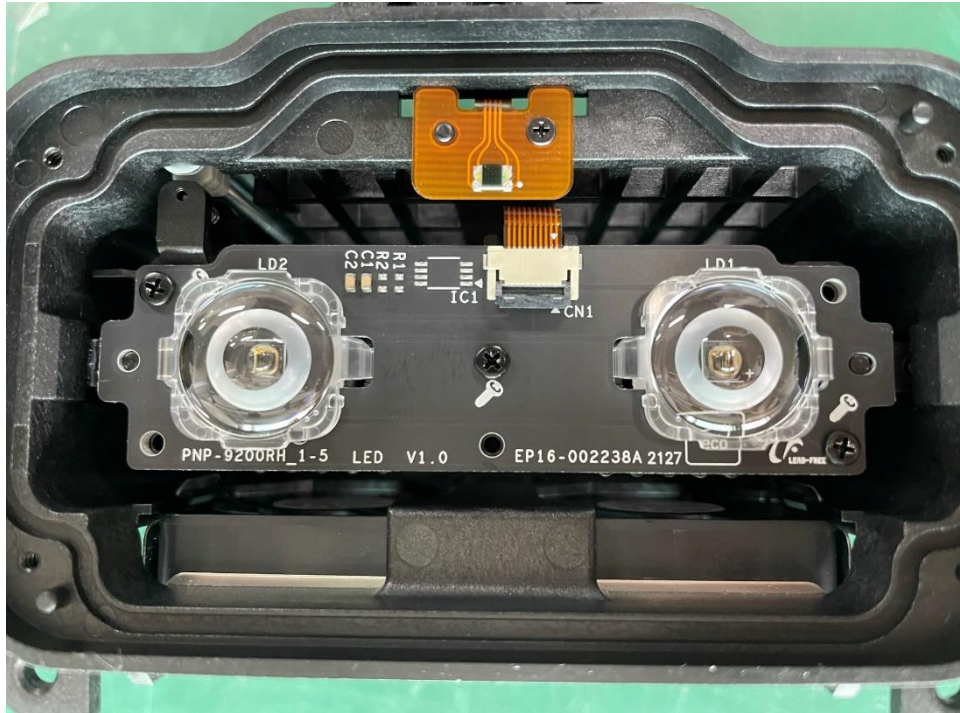
(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – IR Board

(Top)



EUT Internal View – Motor

(Top)



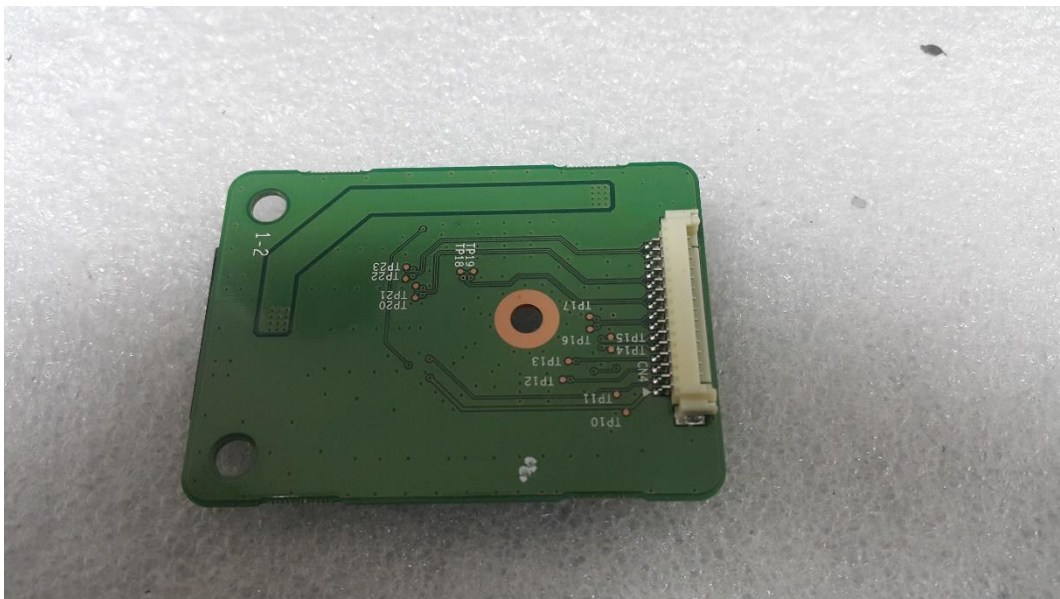
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – SUB Board 2

(Top)

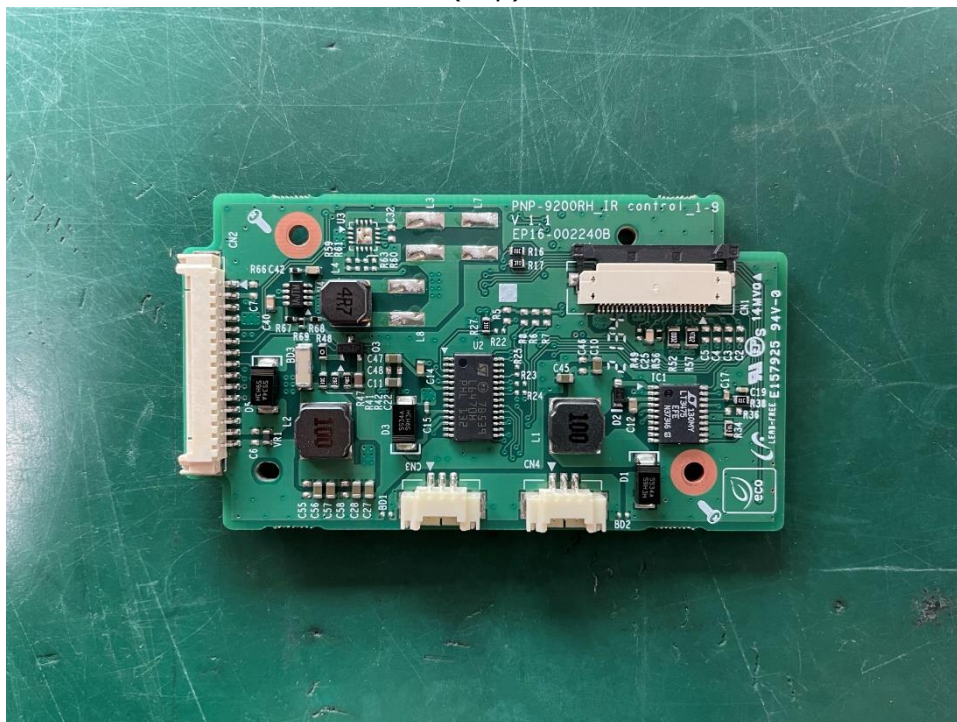


(Bottom)

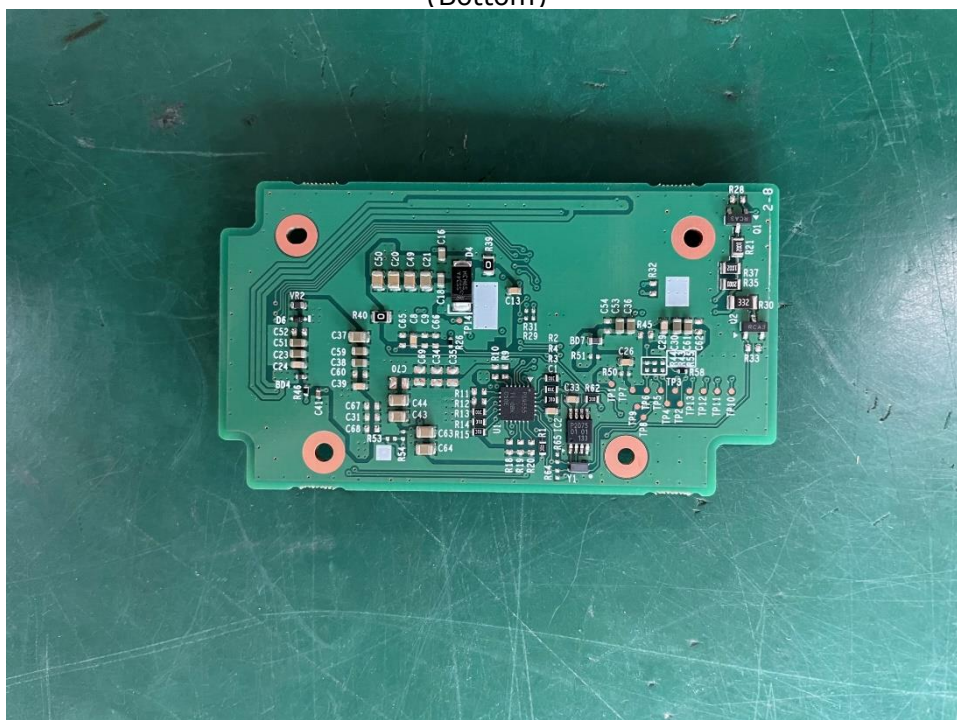


EUT Internal View – SUB Board 3

(Top)



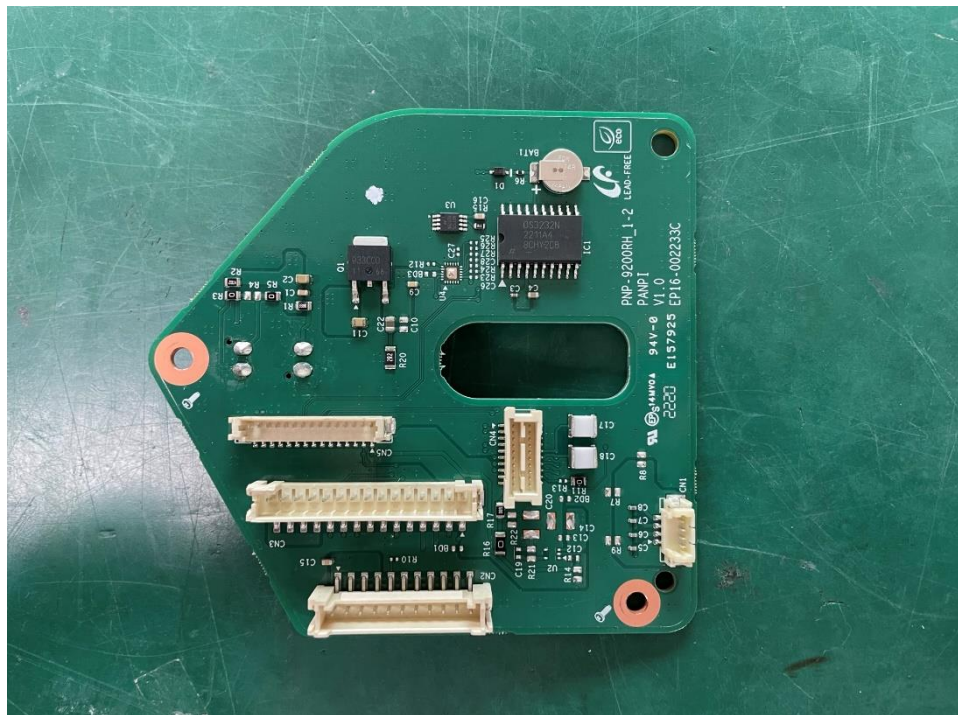
(Bottom)



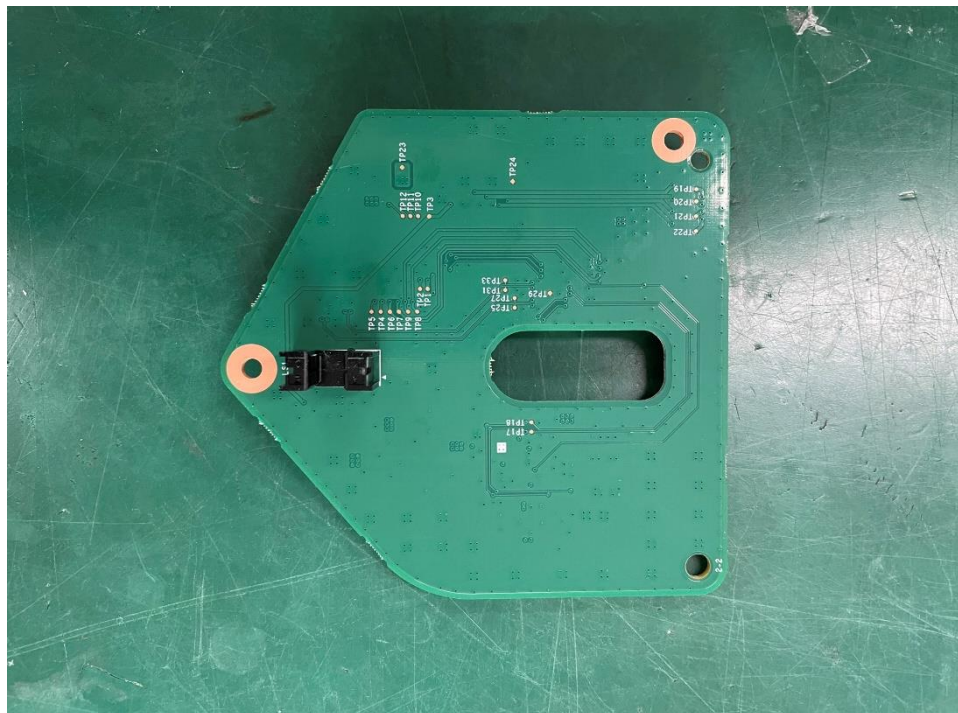
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
 The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
 The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – SUB Board 4

(Top)



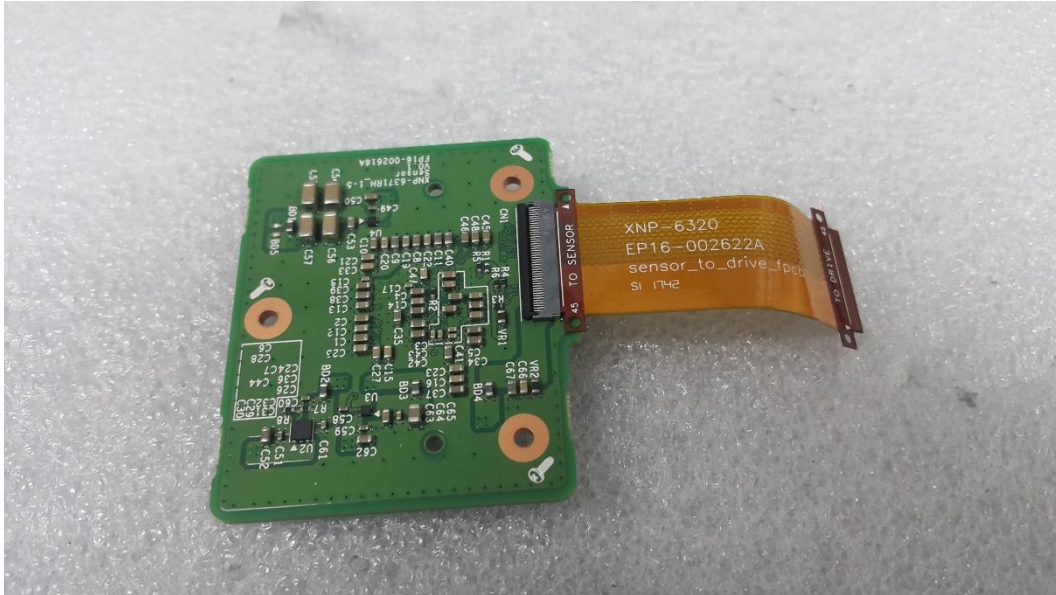
(Bottom)



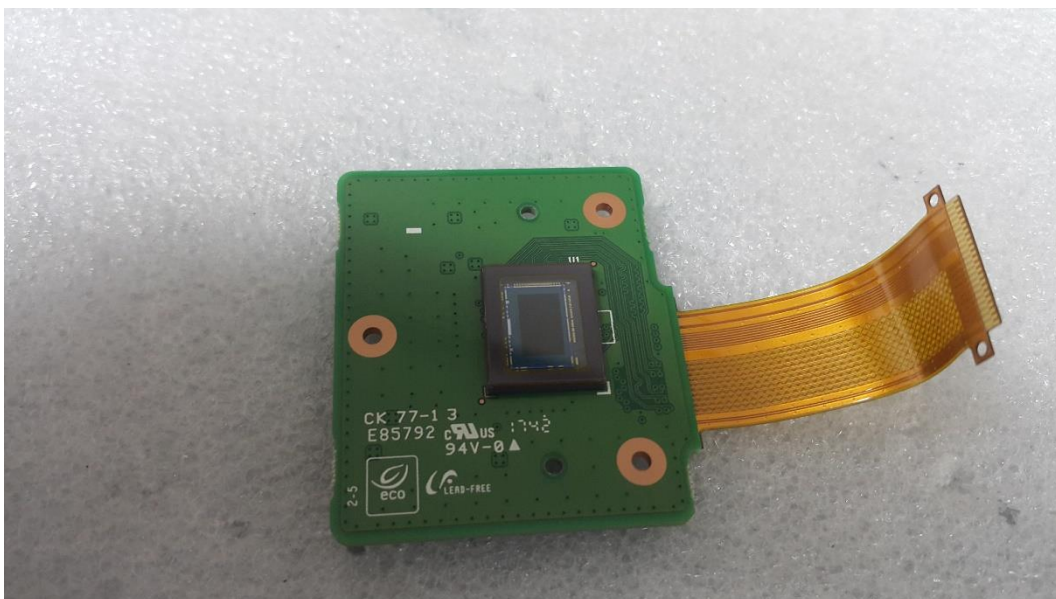
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Sensor Board

(Top)

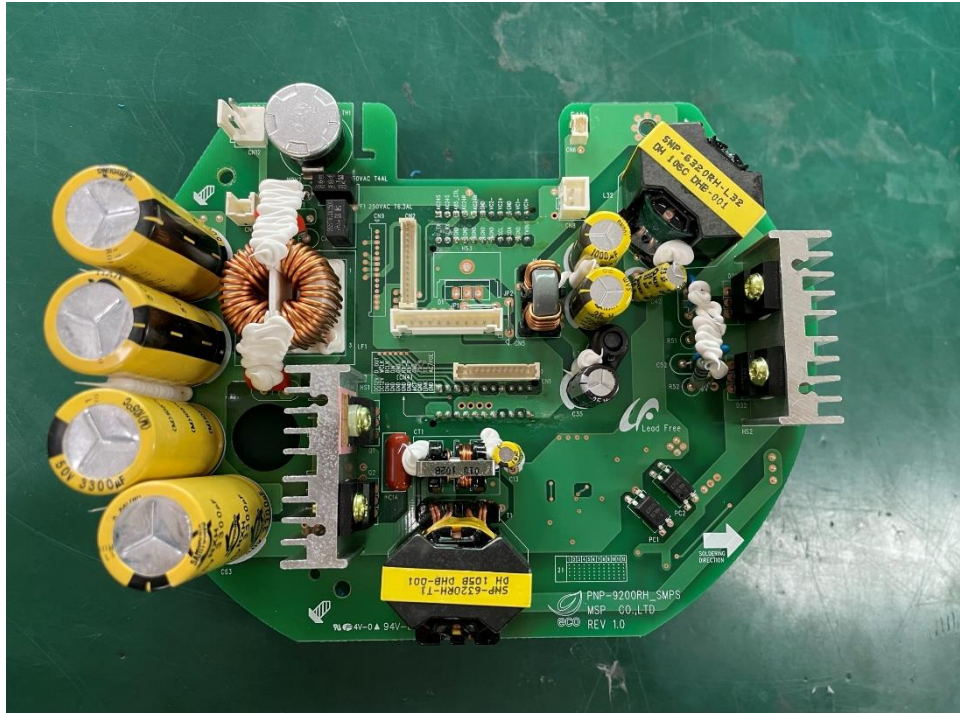


(Bottom)

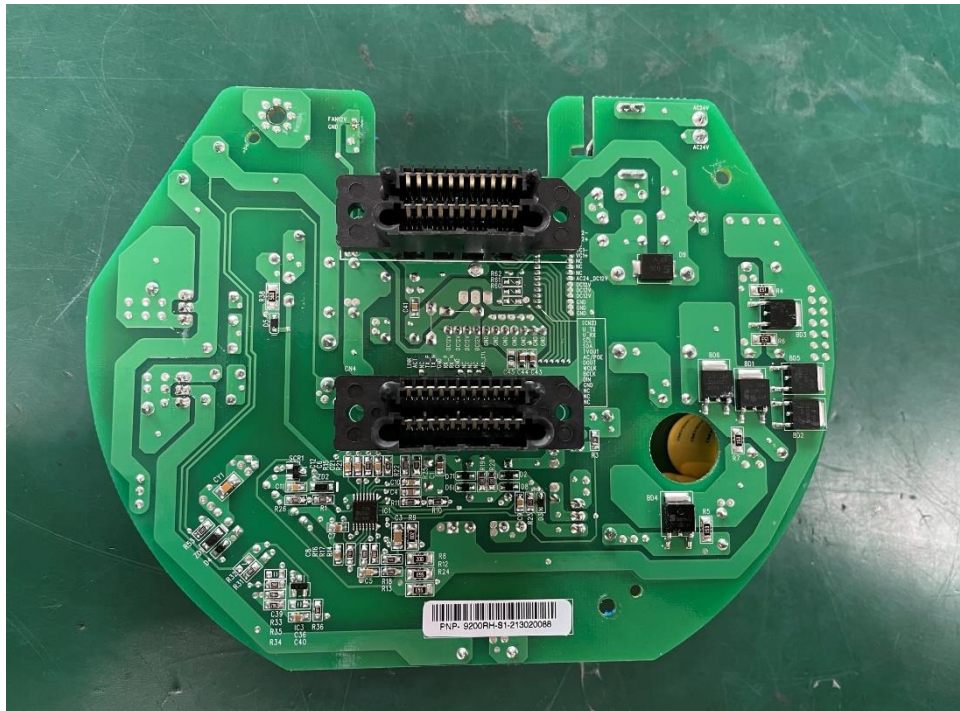


EUT Internal View – Power Board

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr