EMC TEST REPORT

Test Report No.	:	KES-EM-21T1213-R1
Date of Issue	:	Mar. 10, 2022
Product name	:	NETWORK CAMERA
Model/Type No.	:	PNM-A9083RVD
Variant Model	:	PNM-C12083RVD
Applicant	:	Hanwha Techwin Co., Ltd.
Applicant Address	:	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	1. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD. 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	:	Dec. 15, 2021
Test date	:	Dec. 17, 2021 ~ Dec. 18, 2021
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Eun Gu, Jeon
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 shchoi@kes.co.kr

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 23, 2021	KES-EM-21T1213	Issued
Mar. 10, 2022	KES-EM-21T1213-R1	Reissuance due to the addition of a derivative

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.

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 Radiated Electric Field Emissions(Below 1 ㎓) 12
2.3 Radiated Electric Field Emissions(Above 1 ㎓) 13
APPENDIX A – TEST DATA 14
Conducted Emissions at Mains Power Ports 14
Radiated Electric Field Emissions(Below 1 ㎓) 16
Radiated Electric Field Emissions(Above 1 ㎓) 18
Test Setup Photos and Configuration 19
Conducted Emissions at Mains Power Ports 19
Radiated Electric Field Emissions(Below 1 ㎓) 20
Radiated Electric Field Emissions(Above 1 ㎓) 21
EUT External Photographs 22
EUT Internal Photographs 23

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 shchoi@kes.co.kr

1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	CMOS x 2CH (Must have independent configuration)
Resolution	3328x1872,3072x1728, 2592x1944, 2688x1520, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Min. Illumination	Color: 0.16lux (F1.67, 1/30sec) (TBD) BW: 0 lux(IR LED on)
Max. Framerate	H.265/H.264: 6MP Max. 20fps(60Hz/50Hz) MJPEG: Max. 20fps(60Hz/50Hz)
Video Out	USB: micro USB Type B, 1280x720 for installation
Lens	
Focal Length (Zoom Ratio)	3.54~6.69mm motorized varifocal
Max. Aperture Ratio	F1.67(Wide)~F2.64(Tele)
Angular Field of View	H: 95.08°(Wide)~47.64°(Tele) / V: 50.78°(Wide)~26.7°(Tele) / D: 112.6°(Wide)~54.74°(Tele) -- TBD
Min. Object Distance	1.5m(4.92ft)
Focus Control	Simple focus
Pan / Tilt / Rotate Range	0~355°/0~78°/0~180°
Lens Type	Fixed IRIS
Operational	
Camera Title	Displayed up to 85 characters
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SSDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR, WiseNR Ⅱ(using AI engine)
Digital Image Stabilization	Not Support
Defog	Not Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	6ea retanglar zones (Nice to have polygonal zones) - Color: Grey/Black/White
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5 ~1/12,000sec) Auto prefer shutter control(Based on AI engine)
Video Rotation	Flip, Mirror, Hallway view(90°/270°) - Each channel separately
Analytics	- Analytics events based on AI engine: Object detection (Person/Face/Vehicle (car/truck/bus/bicycle/bike) /licence plate), Bestshot support, Attributes Not Support, IVA (Virtual line/Area, Enter/Exit, Loitering, direction, intrusion), Appear/Disappear - Analytics events : Defocus detection, Motion detection, Tampering, * Audio detection, Sound classification (with NW I/O Box)
Alarm Triggers	Analytics, Network disconnect * Alarm input(with NW I/O Box)
Alarm Events	Notification via e-mail SD/SDHC/SDXC recording at event triggers * Alarm output(with NW I/O Box)
Audio In	* Audio In (with NW I/O Box)
Audio Out	* Audio Out (with NW I/O Box)

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 shchoi@kes.co.kr

IR Viewable Length	15m, Wise IR (Nice to have 30m)
Network	
Ethernet	RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Smart Codec	Manual(5ea area), WiseStreamⅡ, WiseStreamⅢ(Based on AI engine)
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	(5 profiles/channel) Unicast(10 users) / Multicast (TBD) Multiple streaming(Up to 5 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, LLDP
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 Secure OS/Boot/Storage, Verify firmware forgery, TPM with FIPS 140-2 level2
Application Programming Interface	ONVIF Profile S/T SUNAPI(HTTP API)
General	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Edge Storage	Micro SD/SDHC/SDXC 1slot 256GB (1slots 512GB TBD)
Open platform	Open platform Application that has access to both channels
Environmental & Electrical	
Operating Temperature / Humidity	-40°C~+55°C(-40°F~+131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C~+60°C(-58°F~+140°F) / Less than 90% RH
Certification	IP66, IK10, NEMA4X (IP67 would be nice to have)
Input Voltage	PoE+
Power Consumption	<25.5watt (Typical : TBD, Max : TBD)
Mechanical	
Color / Material	White / Aluminum Hard-coated dome bubble
RAL Code	RAL9003
Product dimensions / weight	215(H) X 135(V) X 93.2(H) (mm) / 1.33 kg
Gangbox compatibility	Single, Double, 4" Square, 4" Octagon by using a back plate The camera mounting holes should fit at least one of the above electrical boxes

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 shchoi@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 120 V, 60 Hz (PoE Adapter Input Power)

1.2 Variant Model Differences

Add derivative model for vendor management

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	PNM-A9083RVD	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE INJECTOR	GS728TPP	-	NETGEAR	-
Notebook	P95G001	9JM8HT2	Wistron Infocom (Chengdu) Company Limited	-
Notebook Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO.,LTD.	-
Micro SD Card	-	-	Sandisk	8 GB

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 shchoi@kes.co.kr

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 INJECTOR	RJ-45	3.0	U
	Micro SD Slot	Micro SD Card	Micro SD Slot	-	-
Notebook	RJ-45	PoE INJECTOR	RJ-45	2.0	U
	DC Jack	Notebook Adapter	DC Jack	1.6	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

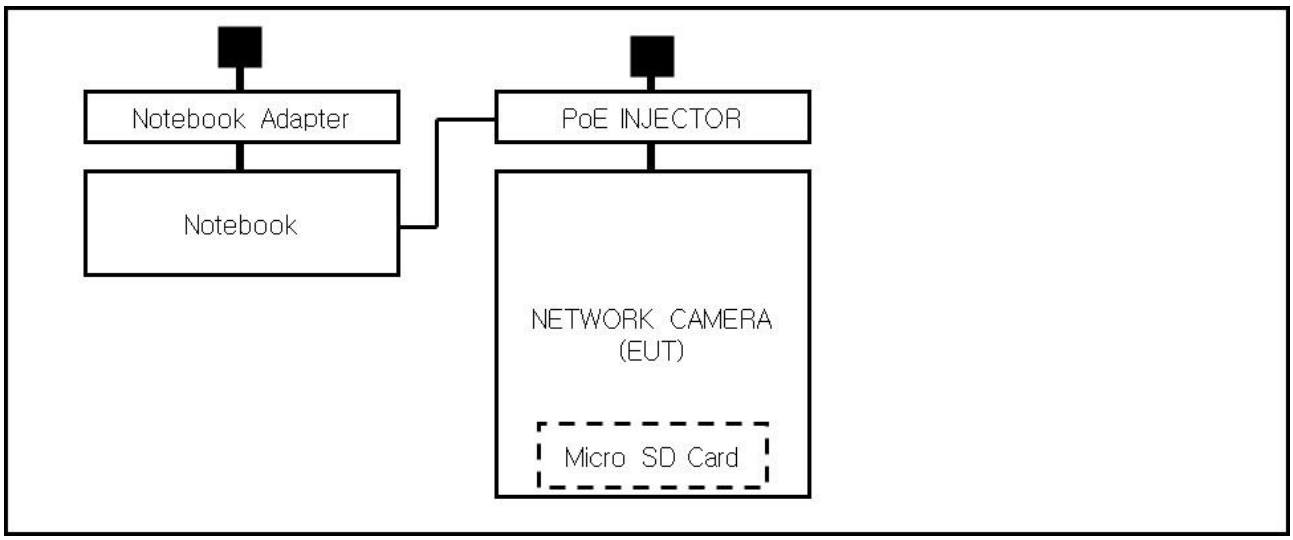
operating
EUT Monitoring, Ping Test

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

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 shchoi@kes.co.kr

1.8 Configuration

■ AC Main
□ DC Main



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 shchoi@kes.co.kr

1.9 Remarks when standards applied

USB ports are not used and have not been tested. (For firmware update)

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 C63.4a-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 , 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-20056, C-20036, T-20040, G-20057
Europe	**TÜV SÜD**	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 001633 0004

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 shchoi@kes.co.kr

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B
☒ ANSI C63.4a-2017	☒ Class A	☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17	☐ Class A	☐ Class B
☒ ANSI C63.4a-2017	☒ 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 shchoi@kes.co.kr

2.1 Conducted Emissions at Mains Power Ports

Test Date
Dec. 18, 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: (22,1 ± 0,1) ℃
Relative Humidity: (43,4 ± 0,1) % 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.

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 shchoi@kes.co.kr

2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Dec. 18, 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, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions
Temperature: (22,1 ± 0,1) ℃
Relative Humidity: (43,8 ± 0,2) % 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.

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 shchoi@kes.co.kr

2.3 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
Dec. 17, 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
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 21, 2022

Test Conditions
Temperature: (22,1 ± 0,2) ℃
Relative Humidity: (43,6 ± 0,1) % 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.

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 shchoi@kes.co.kr

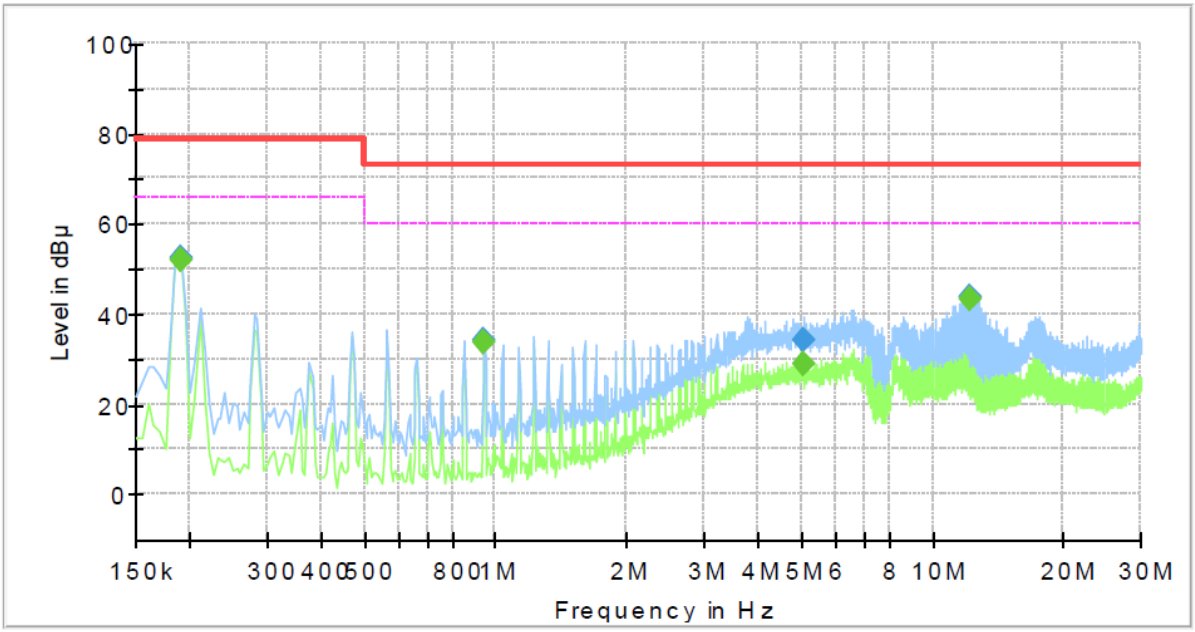
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-A9083RVD
Phase:	L1
Mode:	
Operator Name:	KES



Final_Result

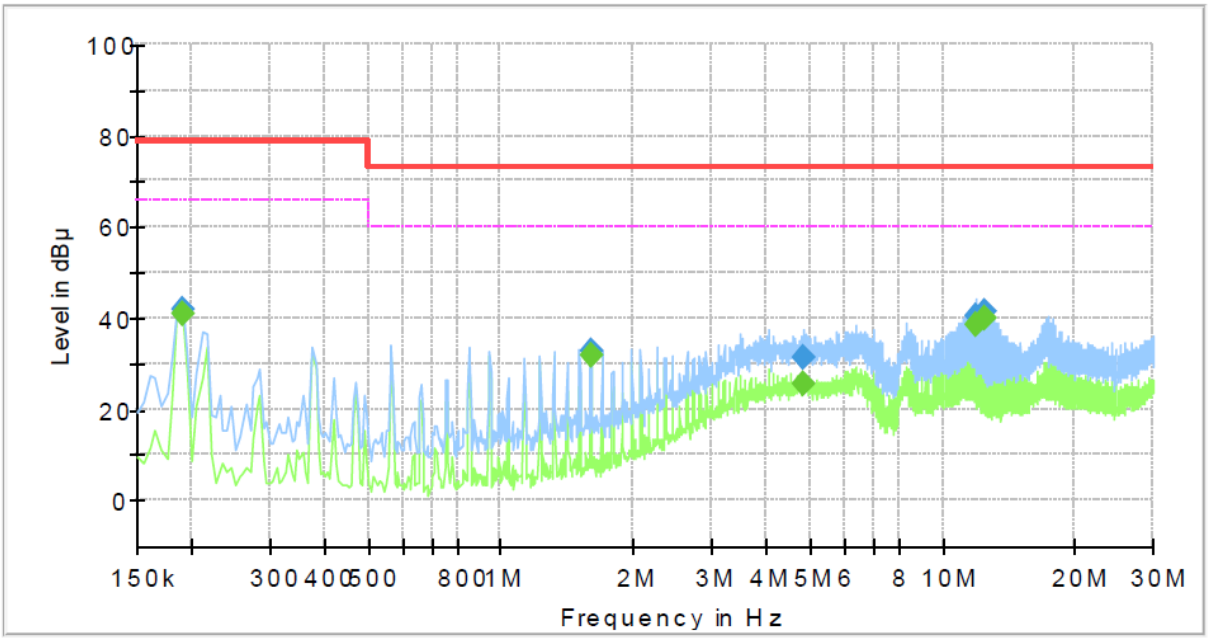
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	---	52.16	66.00	13.84	1000.0	9.000	L1	19.5
0.190000	52.54	---	79.00	26.46	1000.0	9.000	L1	19.5
0.940000	---	33.71	60.00	26.29	1000.0	9.000	L1	20.1
0.940000	33.99	---	73.00	39.01	1000.0	9.000	L1	20.1
5.080000	---	28.85	60.00	31.15	1000.0	9.000	L1	19.7
5.080000	34.24	---	73.00	38.76	1000.0	9.000	L1	19.7
12.135000	---	43.16	60.00	16.84	1000.0	9.000	L1	20.0
12.135000	44.02	---	73.00	28.98	1000.0	9.000	L1	20.0

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 shchoi@kes.co.kr

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-A9083RVD
Phase:	N
Mode:	
Operator Name:	KES



Final_Result

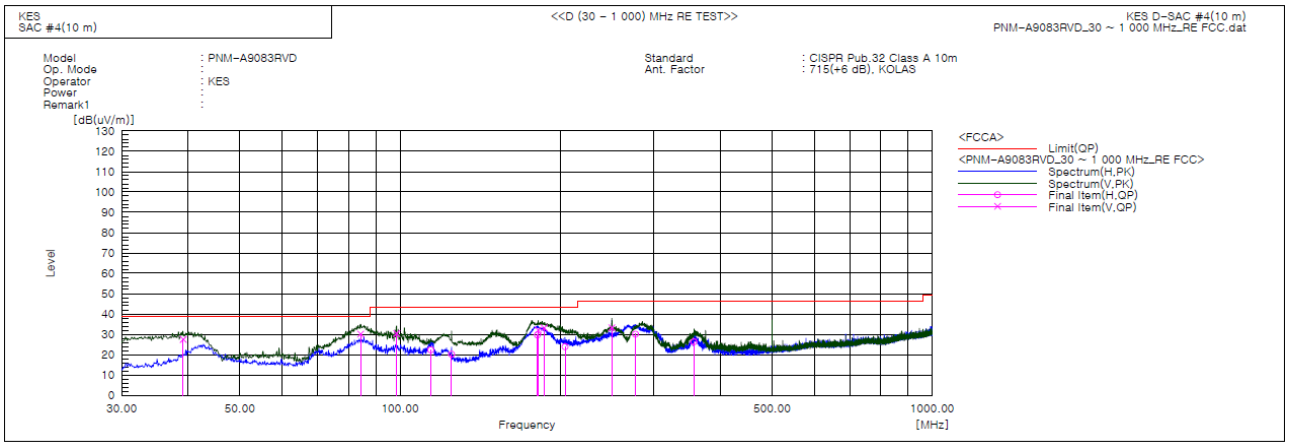
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	---	40.69	66.00	25.31	1000.0	9.000	N	19.4
0.190000	41.92	---	79.00	37.08	1000.0	9.000	N	19.4
1.600000	---	31.87	60.00	28.13	1000.0	9.000	N	20.3
1.600000	32.95	---	73.00	40.05	1000.0	9.000	N	20.3
4.850000	---	25.71	60.00	34.29	1000.0	9.000	N	19.7
4.850000	31.29	---	73.00	41.71	1000.0	9.000	N	19.7
11.950000	---	38.75	60.00	21.25	1000.0	9.000	N	20.0
11.950000	40.49	---	73.00	32.51	1000.0	9.000	N	20.0
12.420000	---	40.07	60.00	19.93	1000.0	9.000	N	20.0
12.420000	41.25	---	73.00	31.75	1000.0	9.000	N	20.0

◆ Calculation
QuasiPeak[㏈uV] / CAverage [㏈uV] = Reading Value[㏈uV] + Corr. [㏈]
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 shchoi@kes.co.kr

Radiated Electric Field Emissions(Below 1 ㎓)

- 47 CFR Part 15, Subpart B

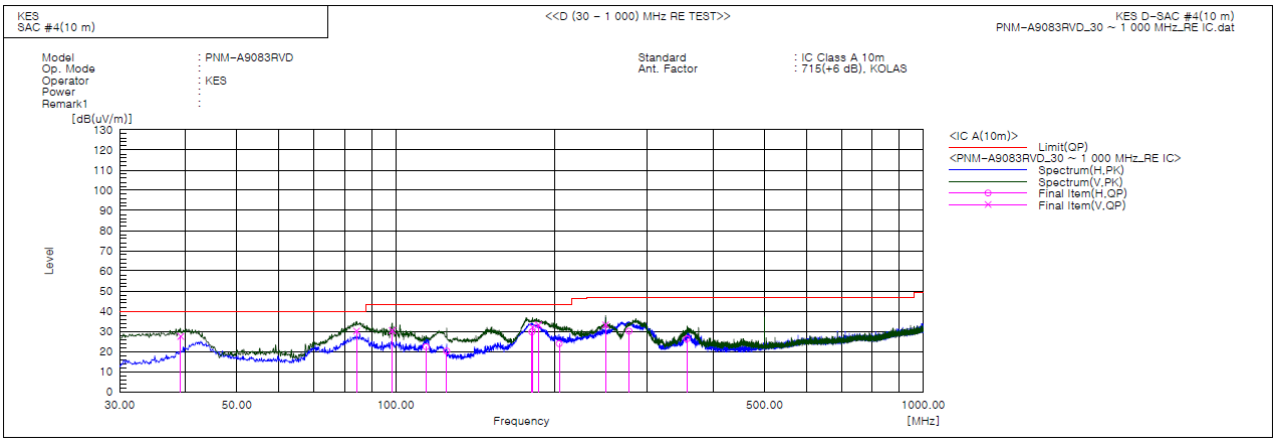


Final Result

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	39.142	V	50.3	-22.8	27.5	39.0	11.5	131.0	284.0	
2	84.352	V	56.5	-26.3	30.2	40.0	9.8	132.0	217.0	
3	98.542	V	52.9	-22.5	30.4	43.5	13.1	127.0	246.0	
4	114.167	H	45.0	-22.7	22.3	40.0	17.7	361.0	302.0	
5	124.962	H	45.0	-24.8	20.2	43.5	23.3	378.0	261.0	
6	181.149	H	53.0	-23.3	29.7	40.0	10.3	392.0	253.0	
7	181.837	V	55.3	-23.2	32.1	40.0	7.9	121.0	168.0	
8	186.532	V	55.8	-22.6	33.2	43.5	10.3	155.0	164.0	
9	204.144	H	44.6	-20.7	23.9	43.5	19.6	398.0	57.0	
10	249.989	V	52.4	-19.1	33.3	47.0	13.7	109.0	100.0	
11	276.884	H	48.7	-18.6	30.1	47.0	16.9	374.0	272.0	
12	356.432	H	41.3	-15.0	26.3	46.5	20.2	372.0	208.0	

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 shchoi@kes.co.kr

- IC Regulation ICES-003 Issue 7



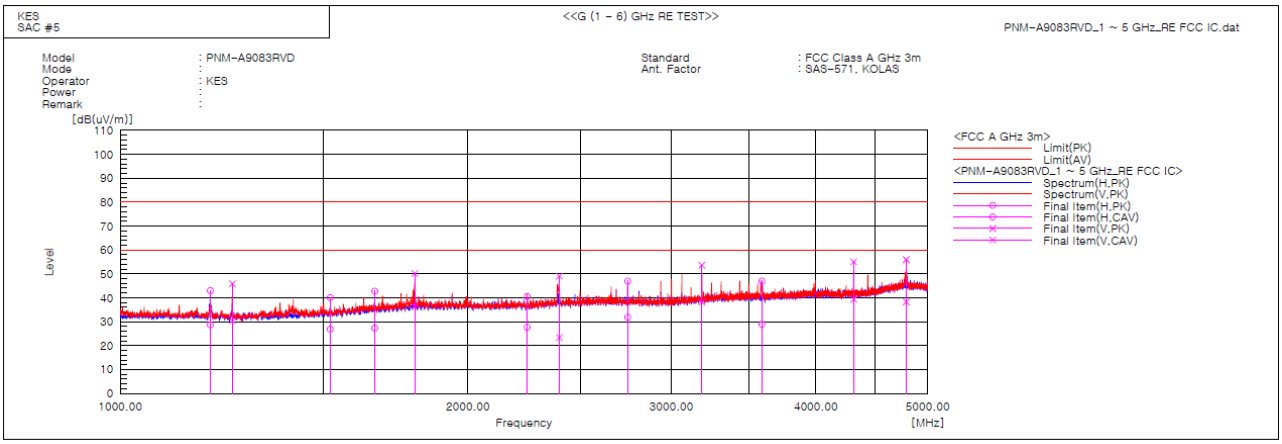
Final Result

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	39.142	V	50.3	-22.8	27.5	40.0	12.5	131.0	284.0	
2	84.352	V	56.5	-26.3	30.2	40.0	9.8	132.0	217.0	
3	98.542	V	52.9	-22.5	30.4	43.5	13.1	127.0	246.0	
4	114.167	H	45.0	-22.7	22.3	43.5	21.2	361.0	302.0	
5	124.962	H	45.0	-24.8	20.2	43.5	23.3	378.0	261.0	
6	181.149	H	53.0	-23.3	29.7	43.5	13.8	392.0	253.0	
7	181.837	V	55.3	-23.2	32.1	43.5	11.4	121.0	168.0	
8	186.532	V	55.8	-22.6	33.2	43.5	10.3	155.0	164.0	
9	204.144	H	44.6	-20.7	23.9	43.5	19.6	398.0	57.0	
10	249.989	V	52.4	-19.1	33.3	47.0	13.7	109.0	100.0	
11	276.884	H	48.7	-18.6	30.1	47.0	16.9	374.0	272.0	
12	356.432	H	41.3	-15.0	26.3	47.0	20.7	372.0	208.0	

♦ Calculation – SAC #4(10 m)
Result(QP) [dB(㎶/m)] = (Reading(QP)[dB(㎶)] + c.f[dB(1/m)]
Margin(QP)[dB] = Limit[dB(㎶/m)] - Result(QP) [dB(㎶/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

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 shchoi@kes.co.kr

Radiated Electric Field Emissions(Above 1 ㎓)



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	1196.421	H	51.5	37.2	-8.5	43.0	28.7	80.0	60.0	37.0	31.3	351.0	256.2	
2	1250.459	V	54.1	38.7	-8.2	45.9	30.5	80.0	60.0	34.1	29.5	112.0	185.8	
3	1519.542	H	46.2	33.0	-6.1	40.1	26.9	80.0	60.0	39.9	33.1	355.0	244.9	
4	1660.623	H	47.3	31.9	-4.5	42.8	27.4	80.0	60.0	37.2	32.6	382.0	315.1	
5	1798.283	V	53.2	39.4	-3.0	50.2	36.4	80.0	60.0	29.8	23.6	147.0	216.7	
6	2250.542	H	40.8	28.0	-0.3	40.5	27.7	80.0	60.0	39.5	32.3	384.0	108.4	
7	2399.294	V	49.1	23.4	0.0	49.1	23.4	80.0	60.0	30.9	36.6	111.0	264.4	
8	2750.229	H	45.8	30.6	1.2	47.0	31.8	80.0	60.0	33.0	28.2	378.0	150.1	
9	3187.542	V	51.5	36.1	2.2	53.7	38.3	80.0	60.0	26.3	21.7	129.0	158.7	
10	3593.349	H	44.1	26.0	2.9	47.0	28.9	80.0	60.0	33.0	31.1	377.0	119.5	
11	4313.149	V	49.5	33.8	5.6	55.1	39.4	80.0	60.0	24.9	20.6	144.0	173.7	
12	4790.552	V	48.1	30.4	7.9	56.0	38.3	80.0	60.0	24.0	21.7	156.0	15.7	

♦ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(㎶/m)] - Result(PK/CAV) [dB(㎶/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 shchoi@kes.co.kr

Test Setup Photos and Configuration

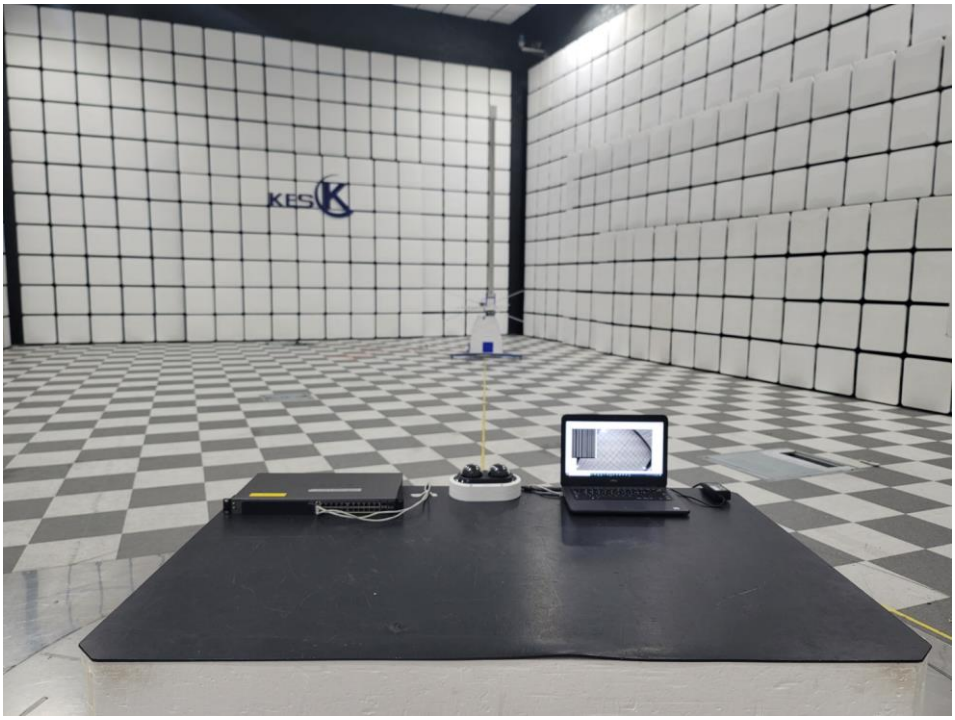
Conducted Emissions at Mains Power Ports





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 shchoi@kes.co.kr

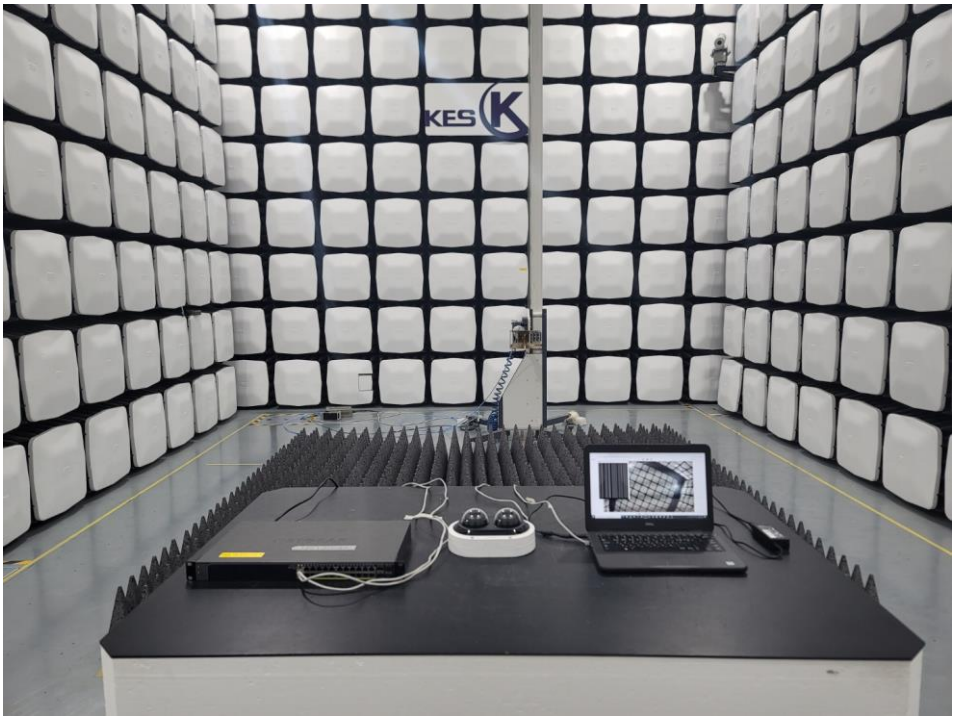
Radiated Electric Field Emissions(Below 1 ㎓)

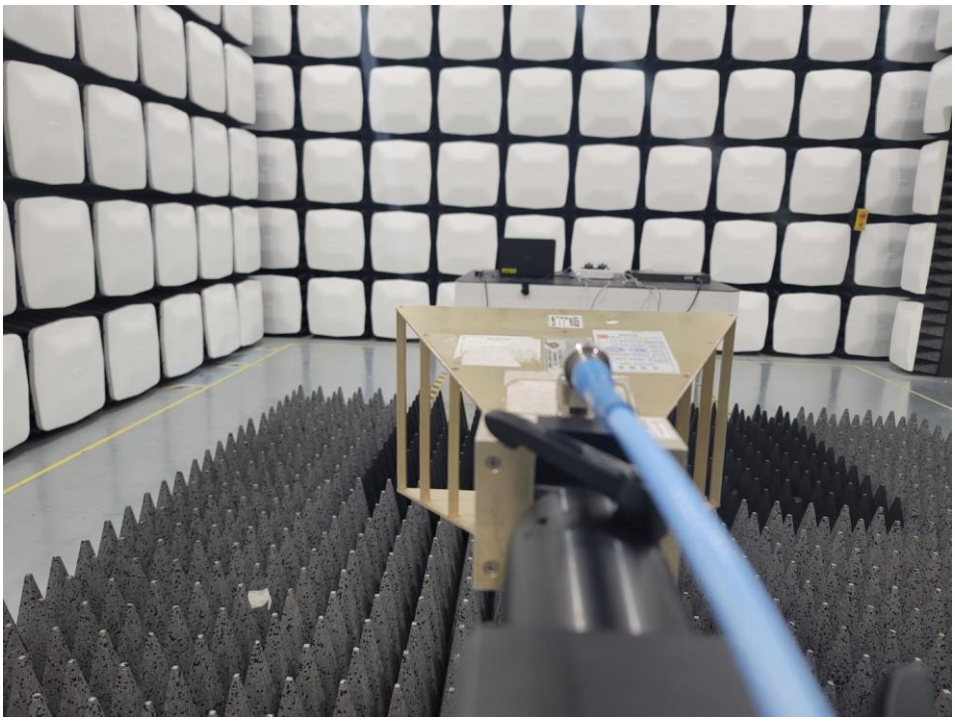




This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

Radiated Electric Field Emissions(Above 1 ㎓)





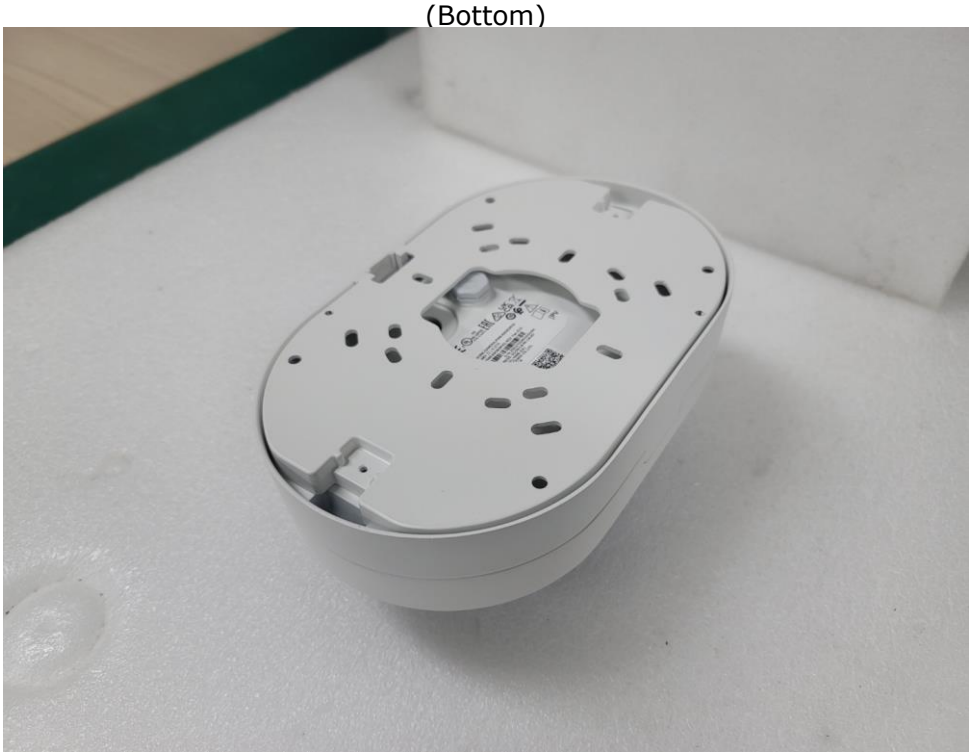
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

EUT External Photographs

(Top)



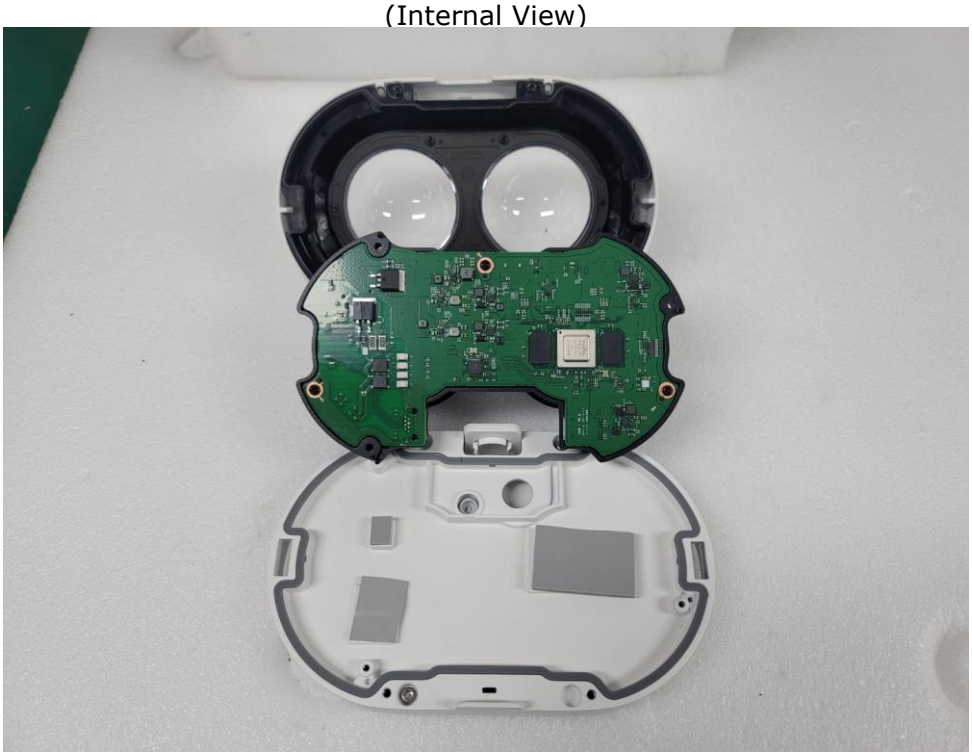
(Bottom)



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 shchoi@kes.co.kr

EUT Internal Photographs

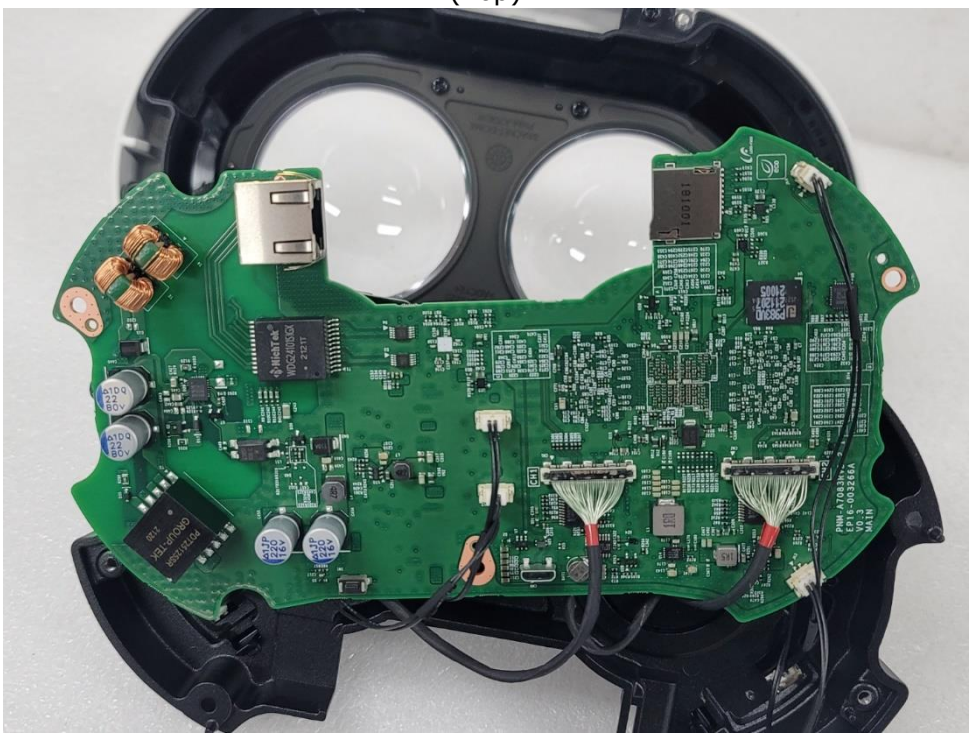
(Internal View)



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 shchoi@kes.co.kr

EUT Internal View – Board 1

(Top)



(Bottom)



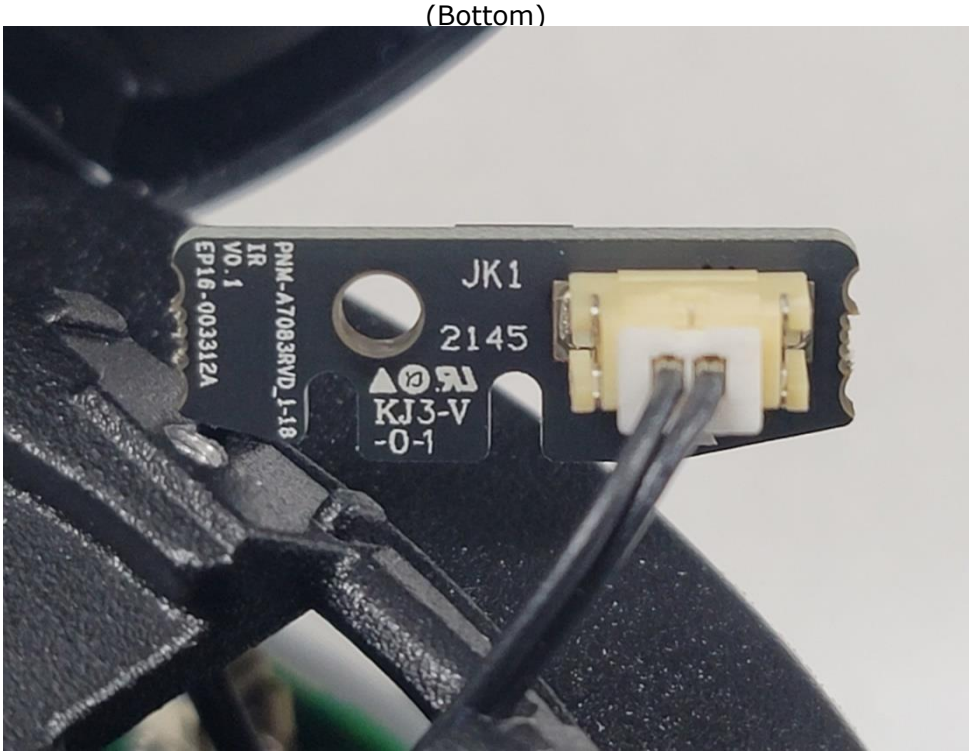
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

EUT Internal View – Board 2

(Top)



(Bottom)



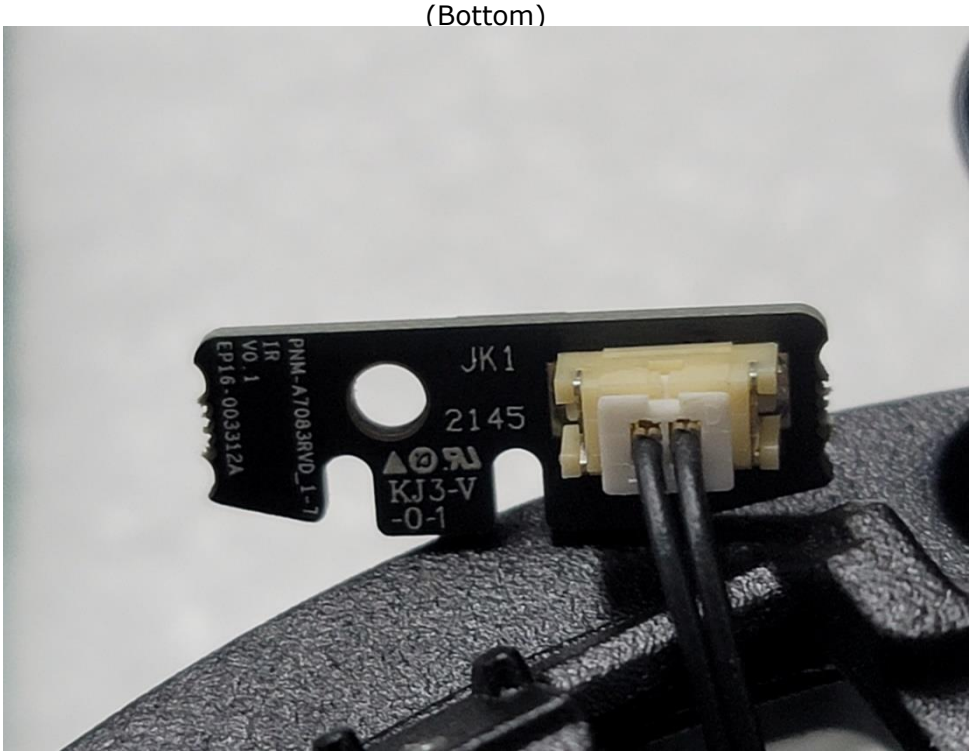
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

EUT Internal View – Board 3

(Top)



(Bottom)



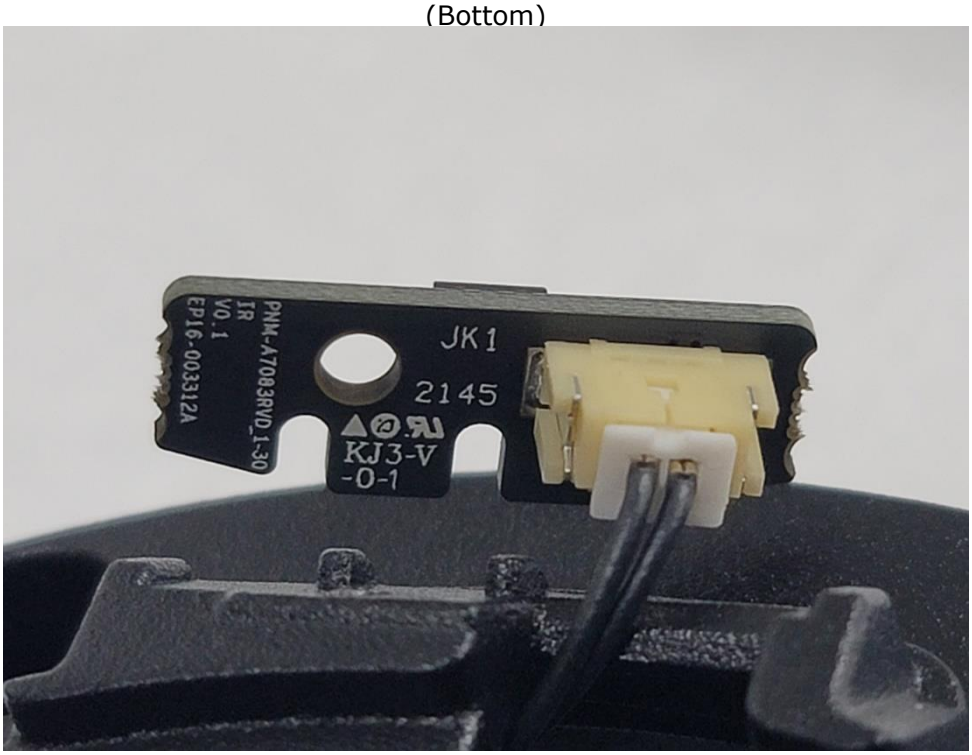
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

EUT Internal View – Board 4

(Top)



(Bottom)



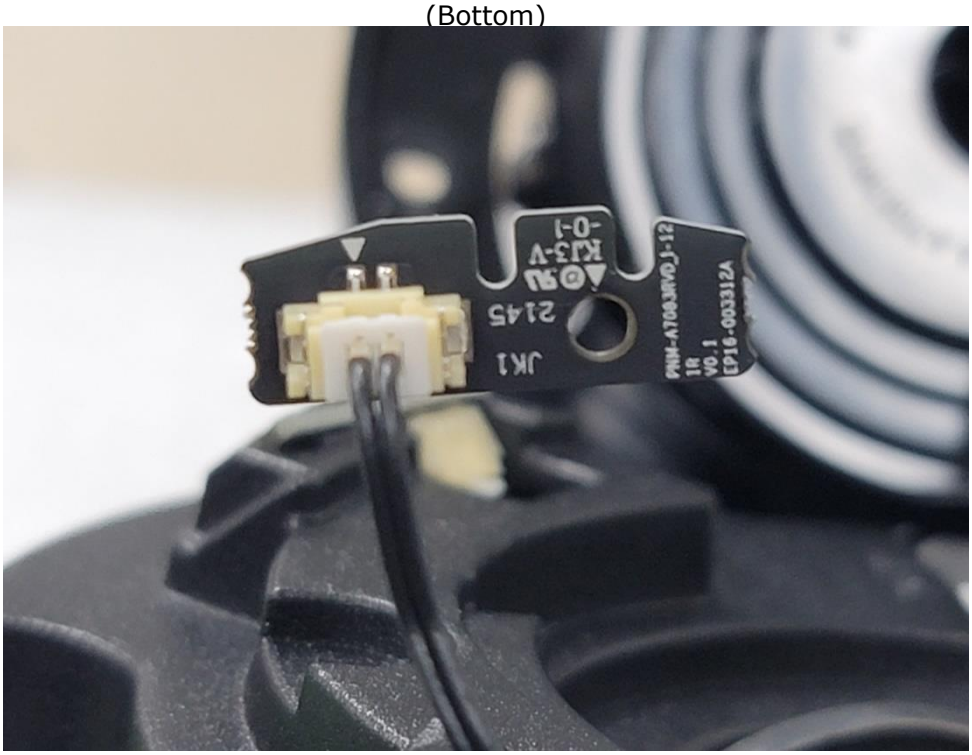
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact shchoi@kes.co.kr

EUT Internal View – Board 5

(Top)



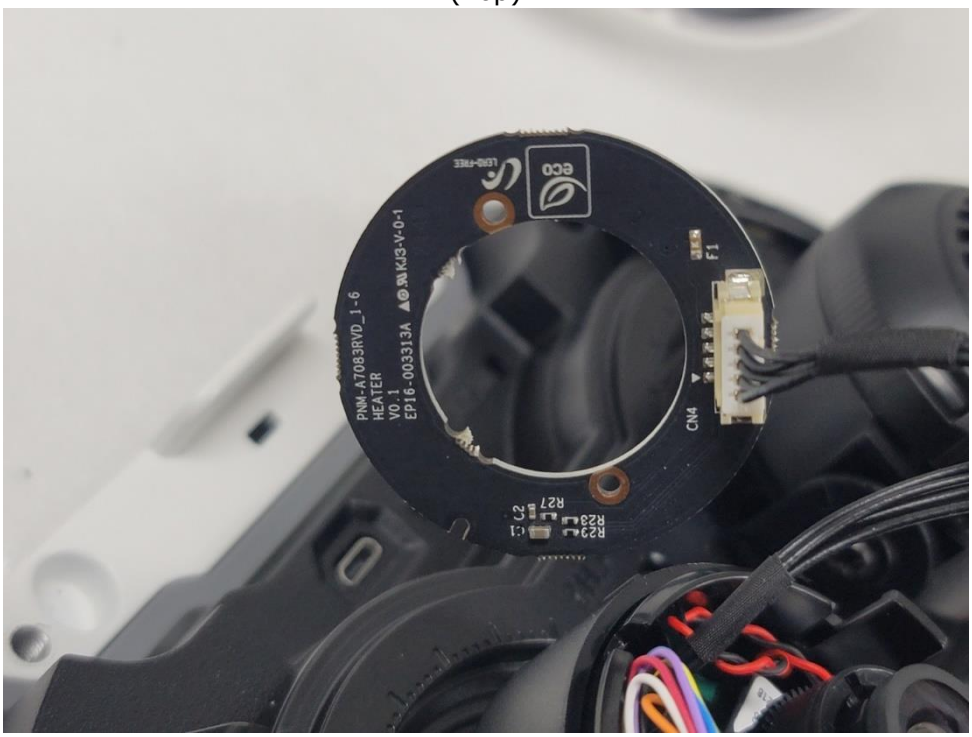
(Bottom)



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 shchoi@kes.co.kr

EUT Internal View – Board 6

(Top)



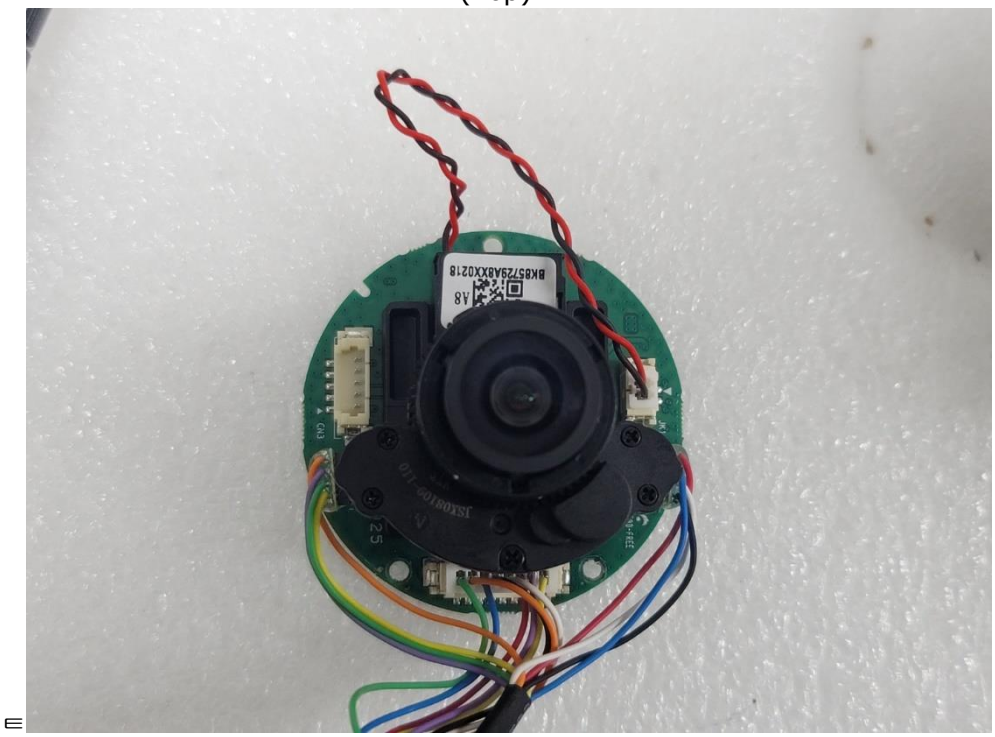
(Bottom)



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 shchoi@kes.co.kr

EUT Internal View – Board 7

(Top)

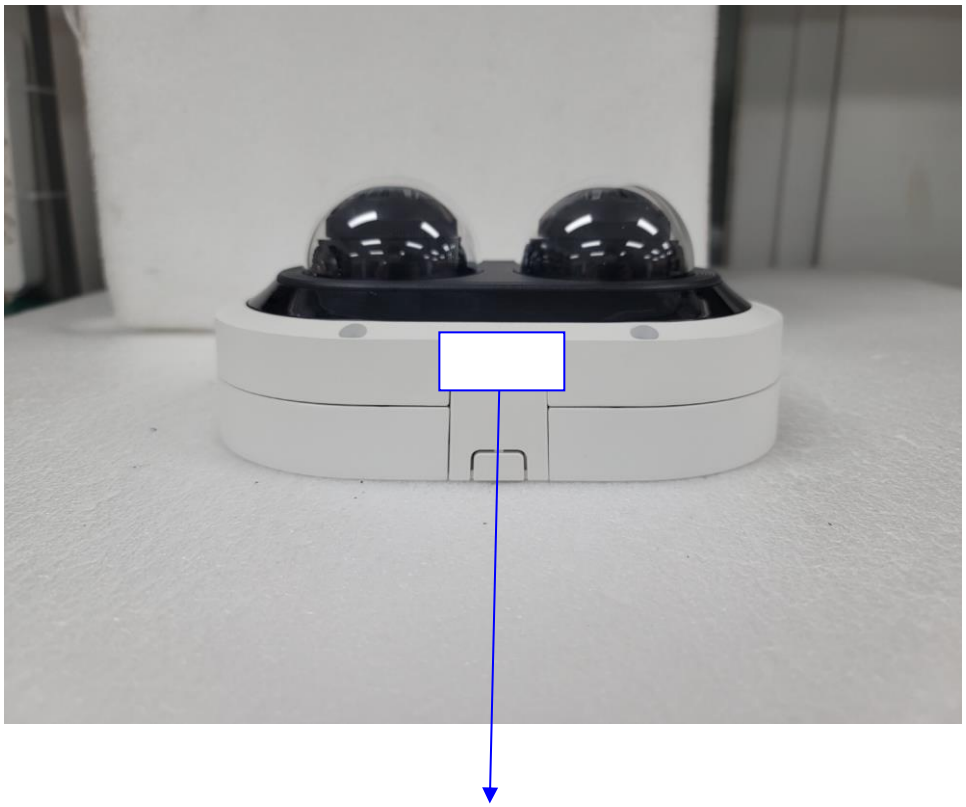


(Bottom)



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 shchoi@kes.co.kr

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.

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 shchoi@kes.co.kr