

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-21T0100

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# EMC TEST REPORT For RCM

Test Report No. : KES-EM-21T0100

Date of Issue : Feb. 19, 2021

Product name : NETWORK CAMERA

Model/Type No. : PNV-A6081R

Variant Model : -

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)

Date of Receipt : Jan. 28, 2021

Test date : Feb. 05, 2021

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

*Tested by*

Dae Soo, Kim  
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. 19, 2021	KES-EM-21T0100	Issued

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## 1.0 General Product Description

### Main Specifications of EUT are:

<b>Video</b>		Wide Dynamic Range	120dB
Imaging Device	1/2" CMOS	Digital Noise Reduction	SSNRV
Resolution	1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x380	Digital Image Stabilization	Stabilization Support(built-in gyro sensor)
Max. Framerate	H.265/H.264: Max. 120fps/100fps(60Hz/50Hz) MJPEG: Max. 15fps/12fps(60Hz/50Hz)	Defog	None
NETD	None	Motion Detection	Bea, polygonal zones
Pixel Size	None	Privacy Masking	6ea, rectangle zones - Color: Gray/Green/Red/Blue/Black/White
Min. Illumination	Color: 0.008Lux(F1.3, 1/30sec, 30IRE) B/W : 0.0008Lux(F1.3, 1/30sec, 30IRE), 0Lux(IR LED on), 30/25fps Color: 0.016Lux(F1.3, 1/60sec, 30IRE) B/W : 0.0016Lux(F1.3, 1/60sec, 30IRE), 0Lux(IR LED on), 60/50fps Color: 0.032Lux(F1.3, 1/120sec, 30IRE) B/W : 0.0032Lux(F1.3, 1/120sec, 30IRE), 0Lux(IR LED on), 120/100fps	Gain Control	Low / Middle / High
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation	White Balance	ATW / AWC / Manual / Indoor / Outdoor
Video Transmission Distance	None	LDC	Support
<b>Lens</b>		Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec)
Focal Length (Zoom Ratio)	4.38~9.33mm(2.13x) motorized varifocal	Digital PTZ	None
Max. Aperture Ratio	F1.3(Wide)~F2.15(Tele)	Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Angular Field of View	H:103.1°(Wide)~44.5°(Tele) / V:54.2°(Wide)~24.9°(Tele) / D:124°(Wide)~51.1°(Tele)	Analytics	- Classified object type : Person/Face/Vehicle/License plate with attributes, BestShot per object - Analytics events based on AI engine : Object detection, <b>Face mask detection</b> , Directional detection, Digital auto tracking, Enter/Exit, Loitering, Virtual line, <b>Social distancing detection</b> - Analytics events : Defocus detection, Motion detection, Appear/Disappear, Tampering, Audio detection, Sound classification, Shock detection
Min. Object Distance	0.5m(1.64ft)	Business Intelligence	People counting, Queue management, Heatmap based on AI engine
Focus Control	Simple focus	Serial Interface	None
Lens Type	P iris	Alarm I/O	Input 1ea / Output 1ea / DC 12V Power(Max. 50mA) 1ea
Mount Type	None	Alarm Triggers	Analytics, Network disconnect, Alarm input
Optional Lens	None		File upload via FTP and e-mail
<b>Pan / Tilt / Rotate</b>		Alarm Events	Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output Handover <b>Audio playback</b>
Pan / Tilt / Rotate Range	0°~360° / 45°~85° / 0°~355°	Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Pan Range	None	Audio Out	Line out, Max.output level: 1Vrms
Pan Speed	None	IR Viewable Length	30m(98.42ft), Wise IR
Tilt Range	None	IR Illuminator (Optional)	None
Tilt Speed	None	Water Removal	None
Rotate Range	None	Auto Tracking	None
Sequence	None		
Preset Accuracy	None	<b>General</b>	
<b>Operational</b>		Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Camera Title	Displayed up to 85 characters	Web Viewer	None
Direction Indicator	None	Edge Storage	Micro SD/SDHC/SDXC 2slots 512GB
Day & Night	Auto(ICR)	Memory	4096MB RAM, 512MB Flash
Backlight Compensation	BLC, WDR, SSOR	<b>Environmental &amp; Electrical</b>	
Coaxial Protocol	None	Operating Temperature / Humidity	-40°C ~ +55°C(-40°F ~ +131°F) / Less than 90% RH * Start up should be done at above -30°C
Color Palettes	None	Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
<b>Radiometry</b>		Certification	IP66/IP67/IP68/IK10+, NEMA4X
Temperature detect range	None	Input Voltage	PoE+1EEE802.3at, 12VDC
Temperature accuracy	None	Power Consumption	PoE+: Max 20.00W, typical 17.00W 12VDC: Max 18.70W, typical 15.00W
Temperature detection	None	<b>Mechanical</b>	
Additional	None	Color / Material	White / Aluminum, Hard-coated dome bulks
<b>Network</b>		RAL Code	RAL9003
Ethernet	Metal shielded RJ-45(10/100/1000 BASE-T)	Product dimensions / weight	Ø180x125mm(7.09x4.92") Weight : 1.50kg (4.19lb)
Video Compression	H.265/H.264 Main/High, MJPEG	Conduit hole	None
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	Hanging mount(Dome)	SBP-187H/MW
Smart Codec	Manual(Sea area), WiseStreamII	Skin cover(Dome)	SBC-180B
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control	Weather cap(Dome)	None
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR	Power module	None
Streaming	Unicast(6 users) / Multicast Multiple streaming(Up to 3 profiles)	Backbox	None
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP/RTCP, RTSP/RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMP-v1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)	<b>DORI (EN62676-4 standard)</b>	
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) (Device Certificate/Hanwha Techwin Root CA) <b>TPM with FIPS 140-2 level2</b> <b>Secure boot, Verify firmware forgery</b>	Detect (25PPM/ 80PPF)	Wide: 62.9m(206.34ft) / Tele: 18.3m(60.03ft)
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisetnet open platform	Observe (63PPM/ 150PPF)	Wide: 25.1m(82.34ft) / Tele: 73.3m(240.46ft)
		Recognize (125PPM/ 38PPF)	Wide: 12.6m(41.31ft) / Tele: 36.6m(120.07ft)
		Identify (250PPM/ 76PPF)	Wide: 6.3m(20.67ft) / Tele: 18.3m(60.03ft)

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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	PNV-A6081R	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT

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## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	FSP060-DIBAN2	H00000669	Zhonghan Electronics (Shenzhen) Co., Ltd.	-
PoE INJECTOR	PSE156G	3115156G000013	UBIQUET	-
Notebook	CQ61-127TU	CNF91801TM	HP	-
Notebook Adapter	PPP09D	601W94D1CKU	HP	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Alarm Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
Button alarm	-	-	-	-
Smartphone	A1303	-	APPLE .Inc	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Micro SD Card	-	-	SanDisk	16 GB

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## 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	S
	Alarm OUT	Alarm	Alarm IN	3.0	U
	Alarm IN	Button alarm	Alarm OUT	3.0	U
	Audio OUT	Speaker	Audio OUT	1.4	U
	Audio IN	MIC	Audio IN	1.4	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 INJECTOR	RJ-45 (PoE)	3.5	S
	Alarm OUT	Alarm	Alarm IN	3.0	U
	Alarm IN	Button alarm	Alarm OUT	3.0	U
	Audio OUT	Speaker	Audio OUT	1.4	U
	Audio IN	MIC	Audio IN	1.4	U
	SLOT	Micro SD Card	SLOT	-	-
Notebook	RJ-45 (LAN)	PoE INJECTOR	RJ-45 (LAN)	1.5	S
	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
OP	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 Techwin Co., Ltd.

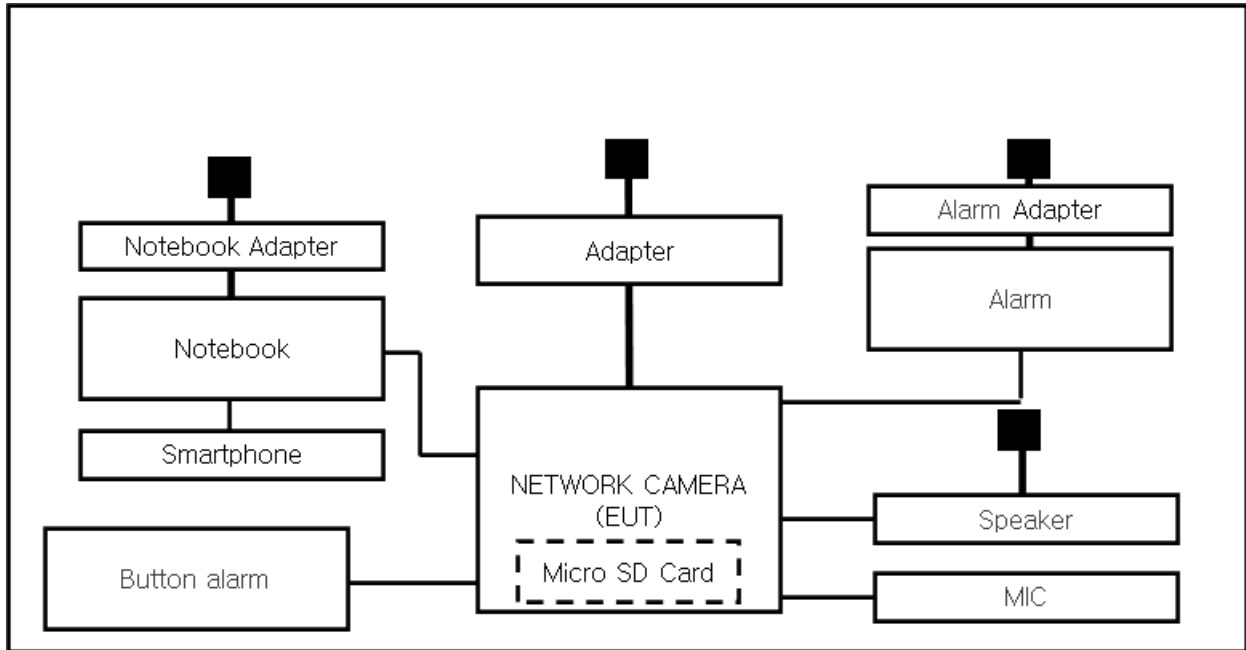
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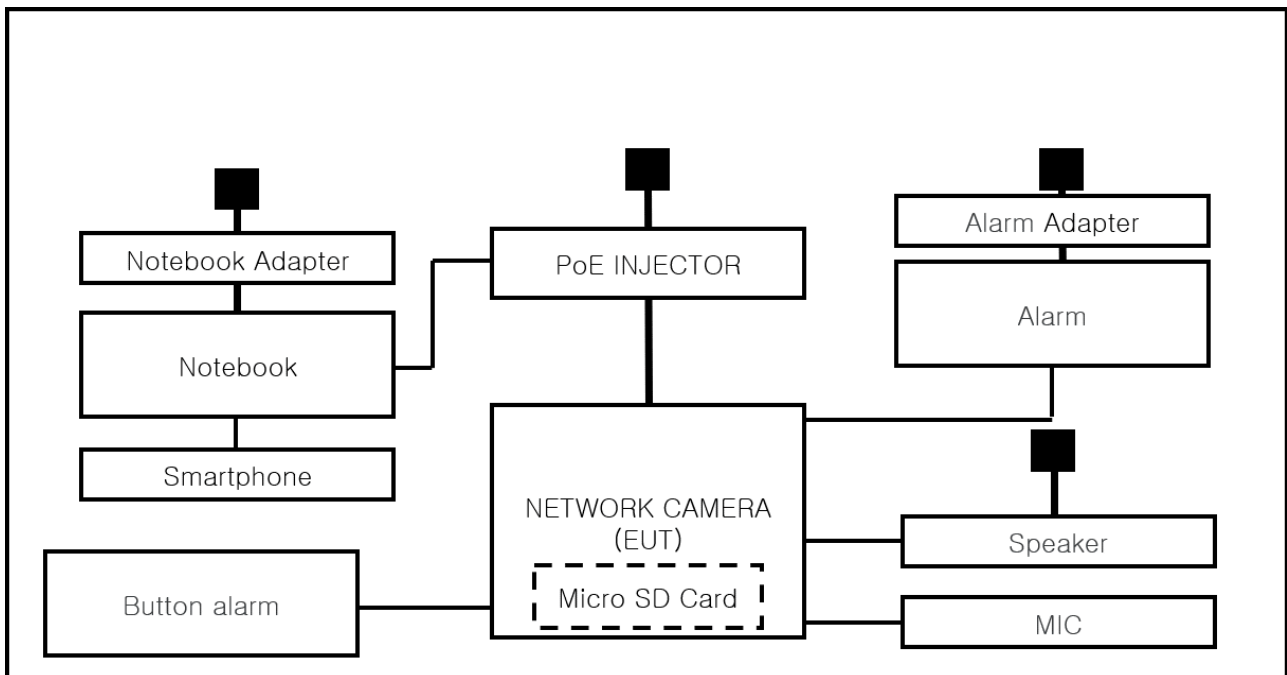
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ DC Mode



### ■ PoE Mode



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## 1.9 Remarks when standards applied

USB port and VIDEO port are for administrator use and are excluded from testing.







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

## 1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-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

## 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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- |   |   |                                  |
|---|---|----------------------------------|
| <input type="checkbox"/> <b>VCCI-CISPR 32:2016</b>                | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> <b>AS/NZS CISPR32:2015</b>    | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <br><input type="checkbox"/> <b>47 CFR Part 15, Subpart B</b>     |   |                                  |
| <input type="checkbox"/> CISPR 22:2009 +A1:2010                   | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2009                          |   |                                  |
| <br><input type="checkbox"/> <b>IC Regulation ICES-003 : 2016</b> |   |                                  |
| <input type="checkbox"/> CAN/CSA CISPR 22-10                      | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2014                          |   |                                  |
| <br><input type="checkbox"/> <b>RE- Directive 2014/53/EU</b>      |   |                                  |
| <br><input type="checkbox"/> EN 301 489-1 V1.9.2                  |   |                                  |
| <input type="checkbox"/> Equipment for fixed use                  |   |                                  |
| <input type="checkbox"/> Equipment for vehicular use              |   |                                  |
| <input type="checkbox"/> Equipment for portable use               |   |                                  |
| <br><input type="checkbox"/> EN 301 489-3 V1.6.1                  |   |                                  |
| <input type="checkbox"/> EN 301 489-17 V2.2.1                     |   |                                  |
| <input type="checkbox"/> EN 60945:2002                            |   |                                  |

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## 2.1 Conducted Emissions at Mains Power Ports

**Test Date**

Feb. 05, 2021

**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	01, 15, 2022
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	11, 29, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	11, 29, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 29, 2021

**Test Conditions**

Temperature: 23,3 °C  
Relative Humidity: 45,7 % 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.

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## 2.2 Conducted Emissions at Telecommunication Ports

### Test Date

Feb. 05, 2021

### 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	01, 20, 2021
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	11, 29, 2021
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	11, 29, 2021
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 29, 2021
<input type="checkbox"/>	8-WIRE ISN CAT3,5	ENY81	R & S	100174	11, 30, 2021
<input type="checkbox"/>	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	11, 30, 2021
<input checked="" type="checkbox"/>	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	03, 10, 2021

### Test Conditions

Temperature: 23,3 °C  
Relative Humidity: 45,7 % 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.

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## 2.3 Radiated Electric Field Emissions(Below 1 GHz)

**Test Date**

Feb. 05, 2021

**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	04, 01, 2021
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
<input checked="" type="checkbox"/>	ATTENUATOR	8491A	HP	32173	03, 10, 2021

**Test Conditions**

Temperature: 22,0 °C

Relative Humidity: 46,7 % 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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Report No.:

KES-EM-21T0100

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## 2.4 Radiated Electric Field Emissions(Above 1 GHz)

**Test Date**

Feb. 05, 2021

**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, 05, 2021
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 20, 2021
<input type="checkbox"/>	ATTENUATOR	8491A	HP	35496	03, 10, 2021
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2021

**Test Conditions**

Temperature: 22,7 °C  
Relative Humidity: 46,1 % 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

**Remarks**See Appendix A for test data.

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## APPENDIX A – TEST DATA

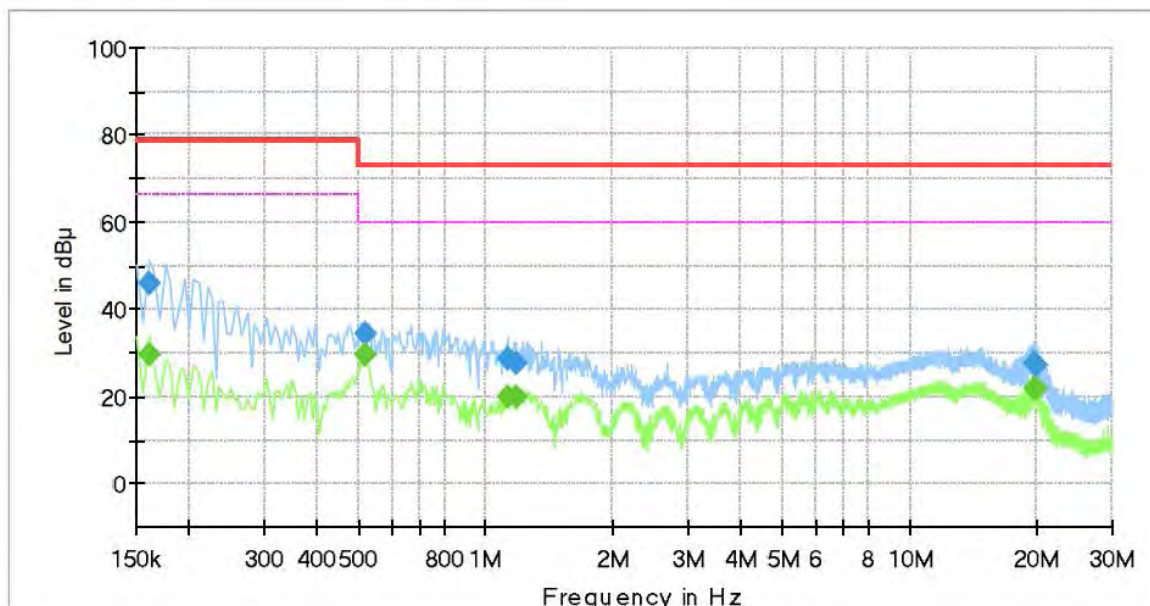
### Conducted Emissions at Mains Power Ports

■ DC Mode

HOT LINE

#### Common Information

Test Description:	Conducted Emission
Model No.:	PNV-A6081R
Phase:	H
Mode:	
Operator Name:	KES



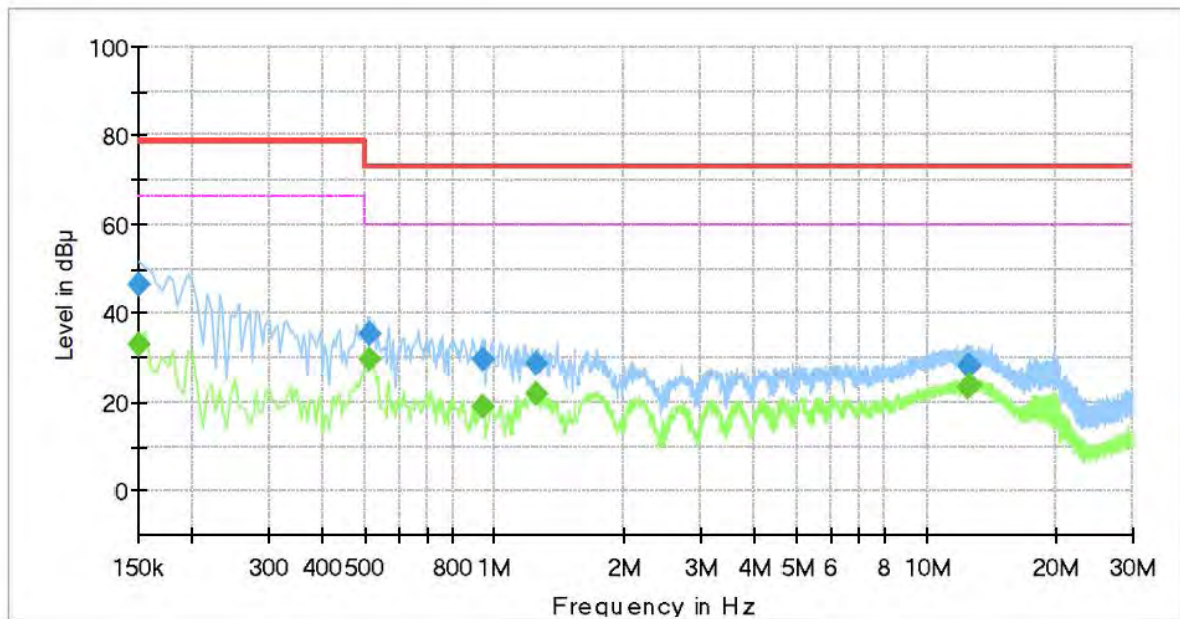
#### Final\_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	29.79	66.00	36.21	1000.0	9.000	L1	19.4
0.160000	46.06	---	79.00	32.94	1000.0	9.000	L1	19.4
0.520000	---	29.41	60.00	30.59	1000.0	9.000	L1	19.7
0.520000	34.40	---	73.00	38.60	1000.0	9.000	L1	19.7
1.125000	---	19.70	60.00	40.30	1000.0	9.000	L1	20.0
1.125000	28.77	---	73.00	44.23	1000.0	9.000	L1	20.0
1.175000	---	19.75	60.00	40.25	1000.0	9.000	L1	20.0
1.175000	27.71	---	73.00	45.29	1000.0	9.000	L1	20.0
19.785000	---	21.66	60.00	38.34	1000.0	9.000	L1	20.1
19.785000	27.46	---	73.00	45.54	1000.0	9.000	L1	20.1
19.875000	---	21.68	60.00	38.32	1000.0	9.000	L1	20.1
19.875000	27.13	---	73.00	45.87	1000.0	9.000	L1	20.1

## NEUTRAL LINE

### Common Information

Test Description: Conducted Emission  
 Model No.: PNV-A6081R  
 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)
0.150000	---	32.87	66.00	33.13	1000.0	9.000	N	19.4
0.150000	46.55	---	79.00	32.45	1000.0	9.000	N	19.4
0.515000	---	29.78	60.00	30.22	1000.0	9.000	N	19.7
0.515000	35.15	---	73.00	37.85	1000.0	9.000	N	19.7
0.935000	---	19.11	60.00	40.89	1000.0	9.000	N	20.0
0.935000	29.69	---	73.00	43.31	1000.0	9.000	N	20.0
1.255000	---	21.90	60.00	38.10	1000.0	9.000	N	20.0
1.255000	28.79	---	73.00	44.21	1000.0	9.000	N	20.0
12.425000	---	23.53	60.00	36.47	1000.0	9.000	N	19.9
12.425000	27.95	---	73.00	45.05	1000.0	9.000	N	19.9
12.660000	---	23.82	60.00	36.18	1000.0	9.000	N	19.9
12.660000	28.18	---	73.00	44.82	1000.0	9.000	N	19.9

#### ◆ 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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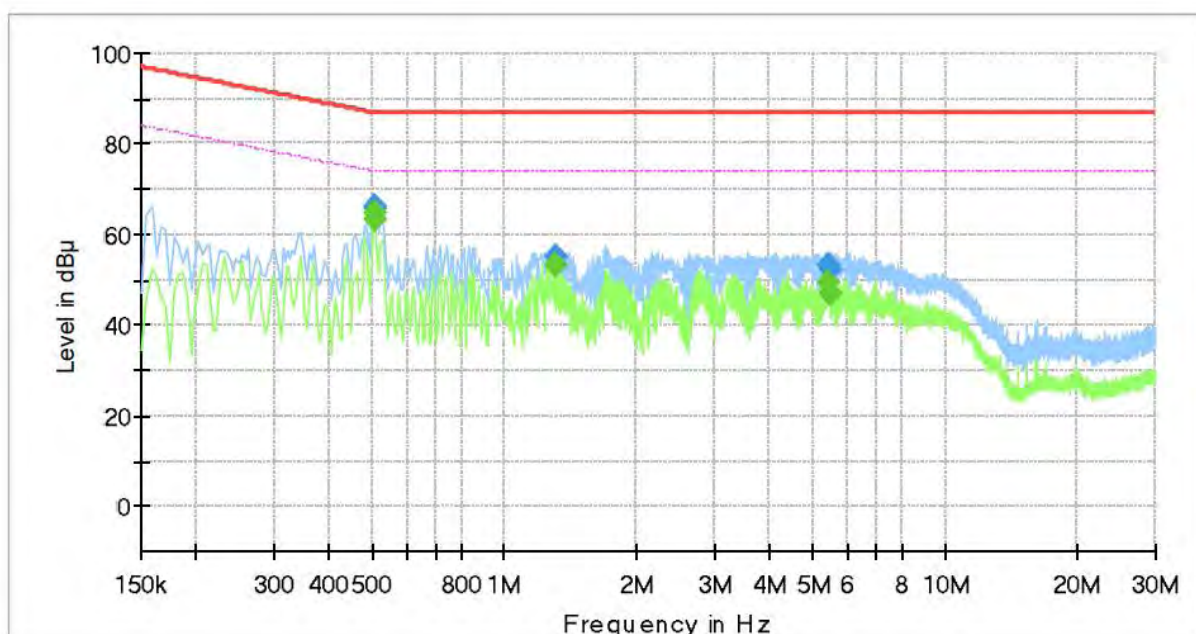
## Conducted Emissions at Telecommunication Ports

■ DC Mode

[1 000 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	PNV-A6081R
Mode :	DC
Speed :	1 000 Mbps
Operator Name:	KES



### Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.506000	---	64.70	74.00	9.30	1000.0	9.000	Single Line	19.7
0.506000	66.26	---	87.00	20.74	1000.0	9.000	Single Line	19.7
0.510000	---	63.42	74.00	10.58	1000.0	9.000	Single Line	19.7
0.510000	65.89	---	87.00	21.11	1000.0	9.000	Single Line	19.7
1.314000	---	53.17	74.00	20.83	1000.0	9.000	Single Line	20.0
1.314000	55.27	---	87.00	31.73	1000.0	9.000	Single Line	20.0
5.422000	---	49.31	74.00	24.69	1000.0	9.000	Single Line	19.5
5.422000	53.33	---	87.00	33.67	1000.0	9.000	Single Line	19.5
5.494000	---	46.83	74.00	27.17	1000.0	9.000	Single Line	19.5
5.494000	52.06	---	87.00	34.94	1000.0	9.000	Single Line	19.5

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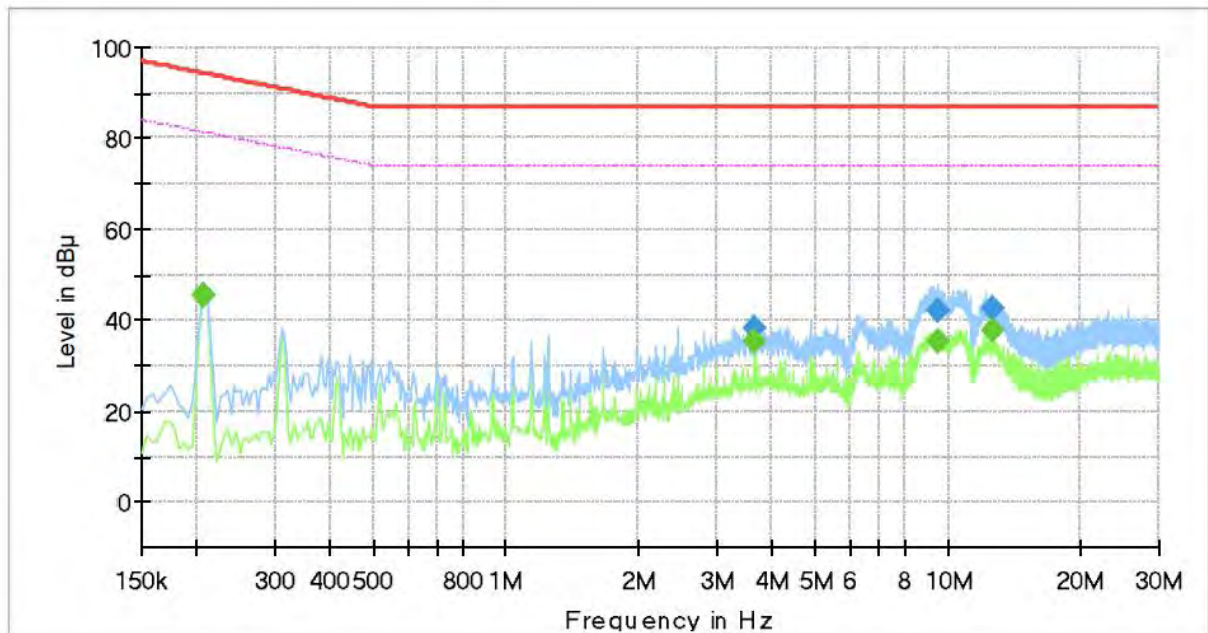
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■ PoE Mode

[1 000 Mbps]

## Common Information

Test Description:	Telecommunication Emission
Model No.:	PNV-A6081R
Mode :	PoE
Speed :	1 000 Mbps
Operator Name:	KES



## Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.206000	---	45.37	81.37	36.00	1000.0	9.000	Single Line	19.5
0.206000	45.41	---	94.37	48.96	1000.0	9.000	Single Line	19.5
3.662000	---	35.53	74.00	38.47	1000.0	9.000	Single Line	19.8
3.662000	38.27	---	87.00	48.73	1000.0	9.000	Single Line	19.8
9.510000	---	35.39	74.00	38.61	1000.0	9.000	Single Line	19.8
9.510000	42.29	---	87.00	44.71	1000.0	9.000	Single Line	19.8
12.602000	---	37.65	74.00	36.35	1000.0	9.000	Single Line	19.9
12.602000	42.35	---	87.00	44.65	1000.0	9.000	Single Line	19.9

◆ 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 (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))



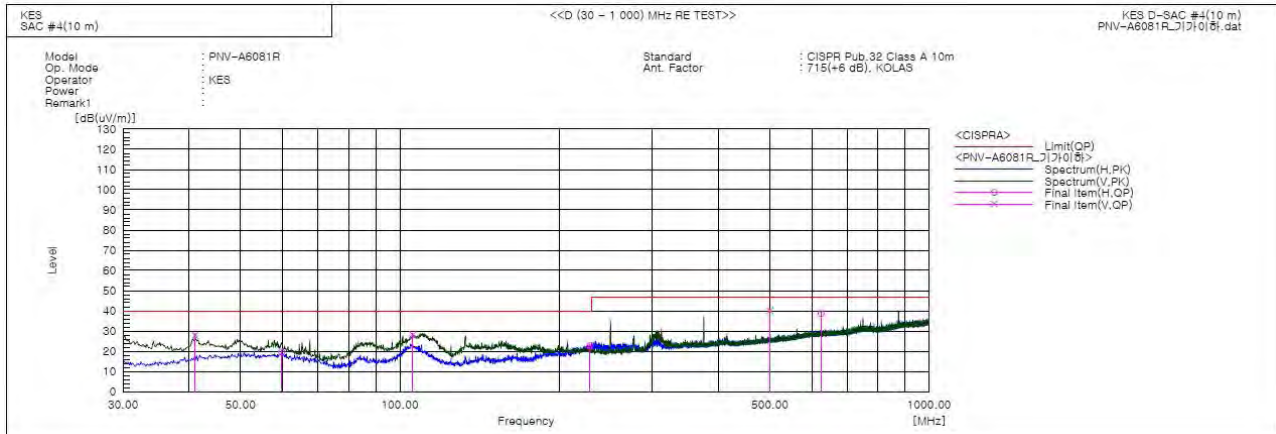
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## Radiated Electric Field Emissions(Below 1 GHz)

### ■ 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	41.034	V	50.1	-22.2	27.9	40.0	12.1	108.0	58.0	
2	59.828	H	41.5	-21.9	19.6	40.0	20.4	367.0	1.0	
3	105.660	V	50.5	-22.4	28.1	40.0	11.9	125.0	93.0	
4	228.486	H	42.5	-19.8	22.7	40.0	17.3	297.0	200.0	
5	499.965	V	51.8	-11.6	40.2	47.0	6.8	114.0	182.0	
6	624.974	H	46.8	-8.2	38.6	47.0	8.4	216.0	356.0	

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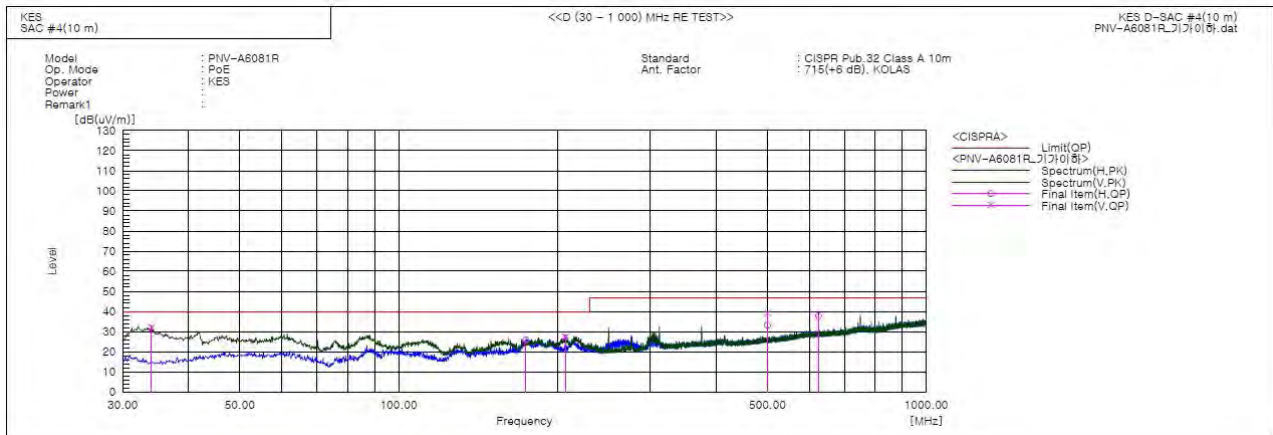


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### PoE Mode



### 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	34.001	V	57.0	-24.9	32.1	40.0	7.9	138.0	70.0	
2	174.288	H	49.7	-23.8	25.9	40.0	14.1	312.0	230.0	
3	207.146	V	48.0	-20.6	27.4	40.0	12.6	125.0	312.0	
4	499.965	H	44.8	-11.6	33.2	47.0	13.8	224.0	281.0	
5	499.965	V	50.7	-11.6	39.1	47.0	7.9	109.0	146.0	
6	624.974	H	46.1	-8.2	37.9	47.0	9.1	207.0	58.0	

### ◆ 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

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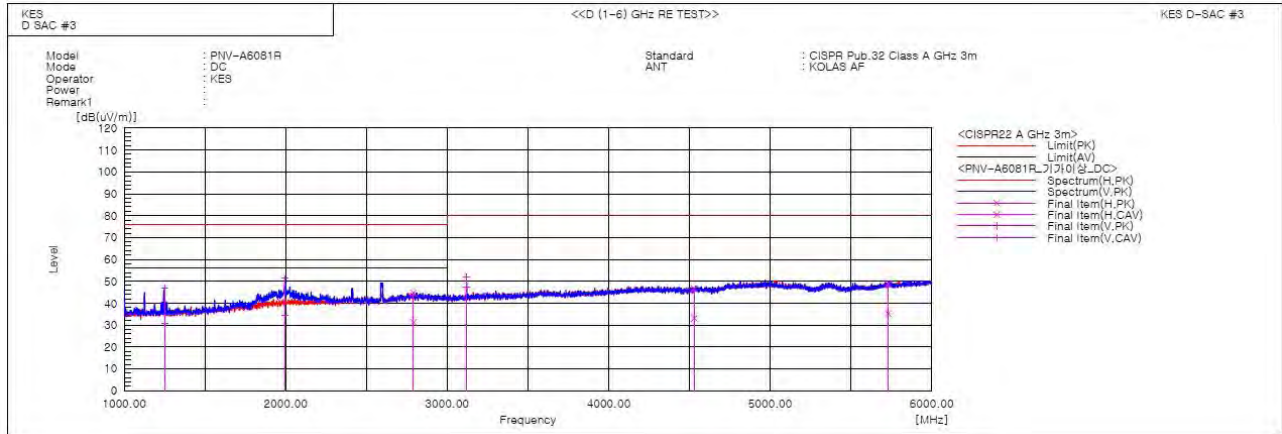
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### Radiated Electric Field Emissions(Above 1 GHz)

#### ■ 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	1250.060	V	55.0	38.6	-7.9	47.1	30.7	76.0	56.0	28.9	25.3	100.0	199.2	
2	1994.320	V	52.9	35.9	-1.6	51.3	34.3	76.0	56.0	24.7	21.7	100.0	352.7	
3	2790.714	H	42.3	29.1	2.3	44.6	31.4	76.0	56.0	31.4	24.6	100.0	259.6	
4	3119.790	V	49.8	45.4	2.1	51.9	47.5	80.0	60.0	28.1	12.5	100.0	337.3	
5	4528.324	H	40.0	26.5	6.6	46.6	33.1	80.0	60.0	33.4	26.9	100.0	29.2	
6	5730.084	H	39.2	25.9	9.3	48.5	35.2	80.0	60.0	31.5	24.8	100.0	327.8	

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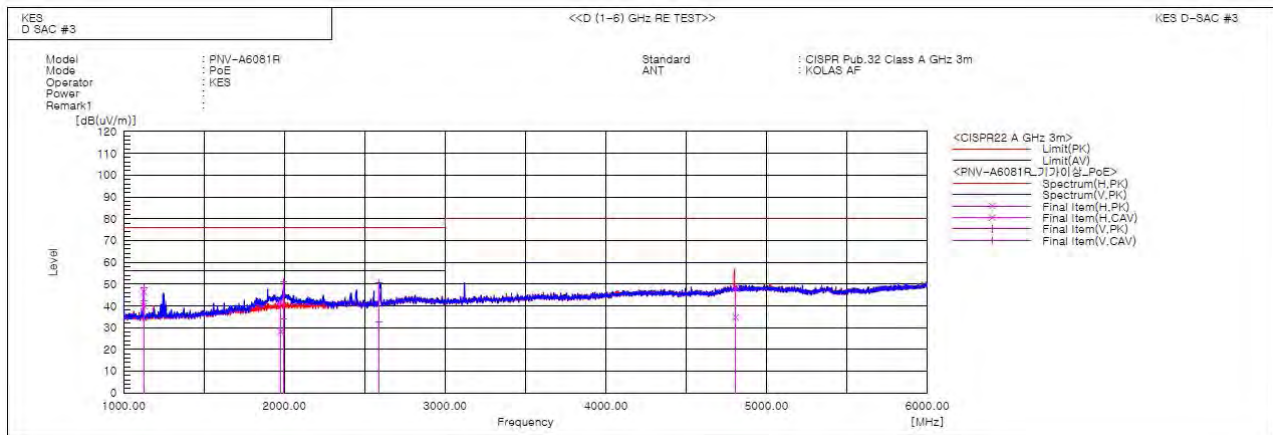


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### PoE Mode



#### 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	1124.860	V	56.8	51.0	-8.6	48.2	42.4	76.0	56.0	27.8	13.6	100.0	149.0	
2	1124.930	H	55.0	48.6	-8.6	46.4	40.0	76.0	56.0	29.6	16.0	100.0	11.6	
3	1992.891	V	52.6	35.6	-1.6	51.0	34.0	76.0	56.0	25.0	22.0	100.0	357.5	
4	1976.895	H	43.6	29.9	-1.7	41.9	28.2	76.0	56.0	34.1	27.8	100.0	107.5	
5	2588.572	V	50.5	32.2	0.3	50.8	32.5	76.0	56.0	25.2	23.5	100.0	293.2	
6	4807.988	H	39.6	26.2	8.6	48.2	34.8	80.0	60.0	31.8	25.2	100.0	173.2	

### ◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB( $\mu$ V/m)] - Result(PK/CAV) [dB( $\mu$ 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

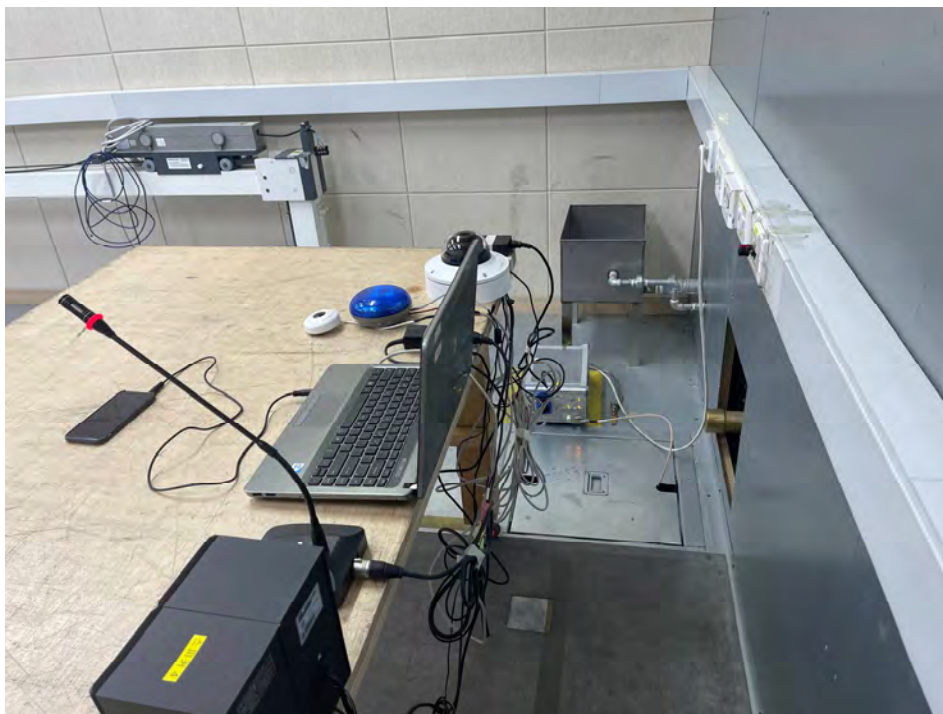
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## Test Setup Photos and Configuration

### Conducted Emissions at Mains Power Ports

#### ■ DC Mode



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## Conducted Emissions at Telecommunication Ports

### ■ DC Mode



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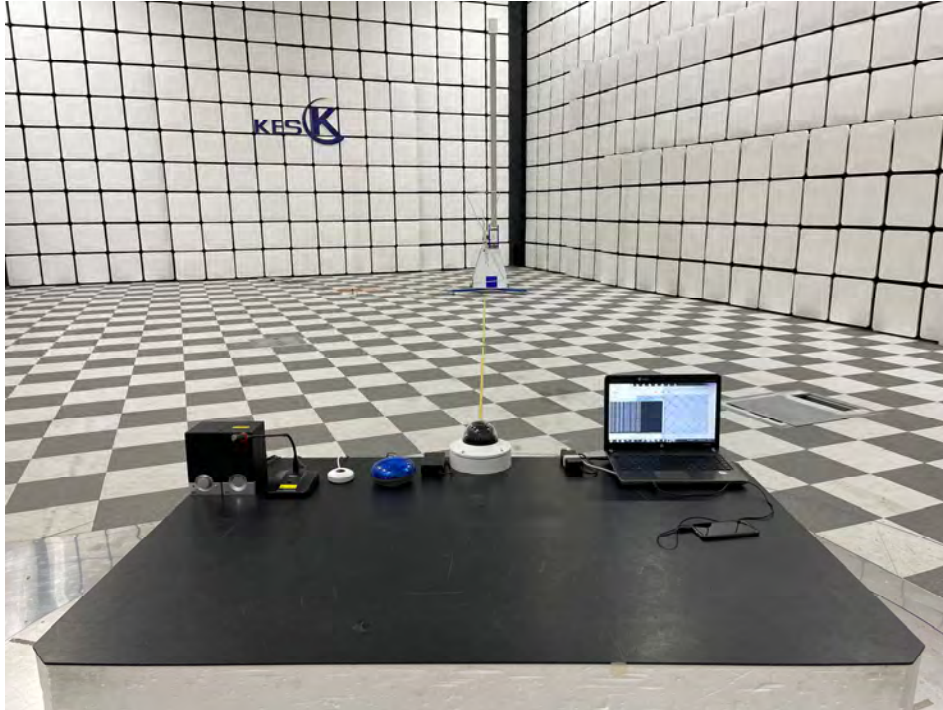
## ■ PoE Mode



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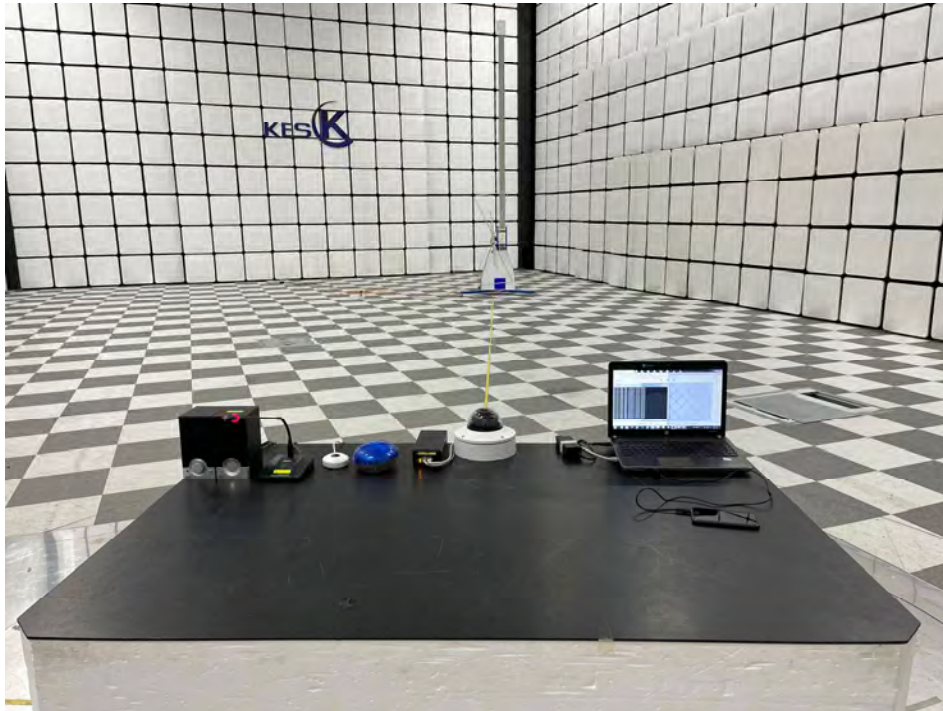
## Radiated Electric Field Emissions(Below 1 GHz)

### ■ DC Mode



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**■ PoE Mode**

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## Radiated Electric Field Emissions(Above 1 GHz)

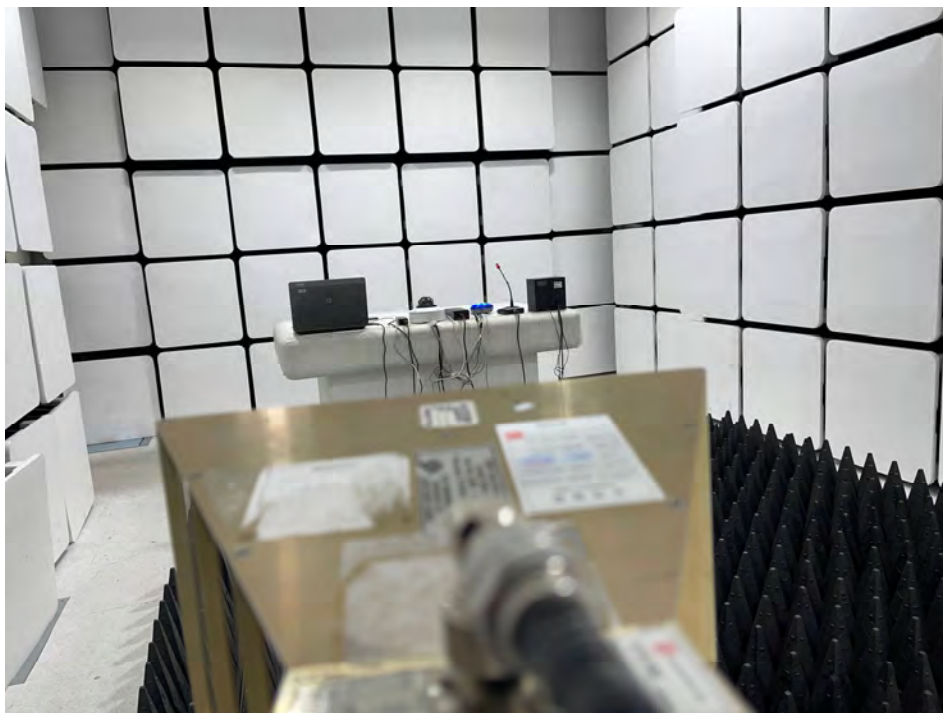
### ■ DC Mode



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## EUT External Photographs

(Top)



(Bottom)

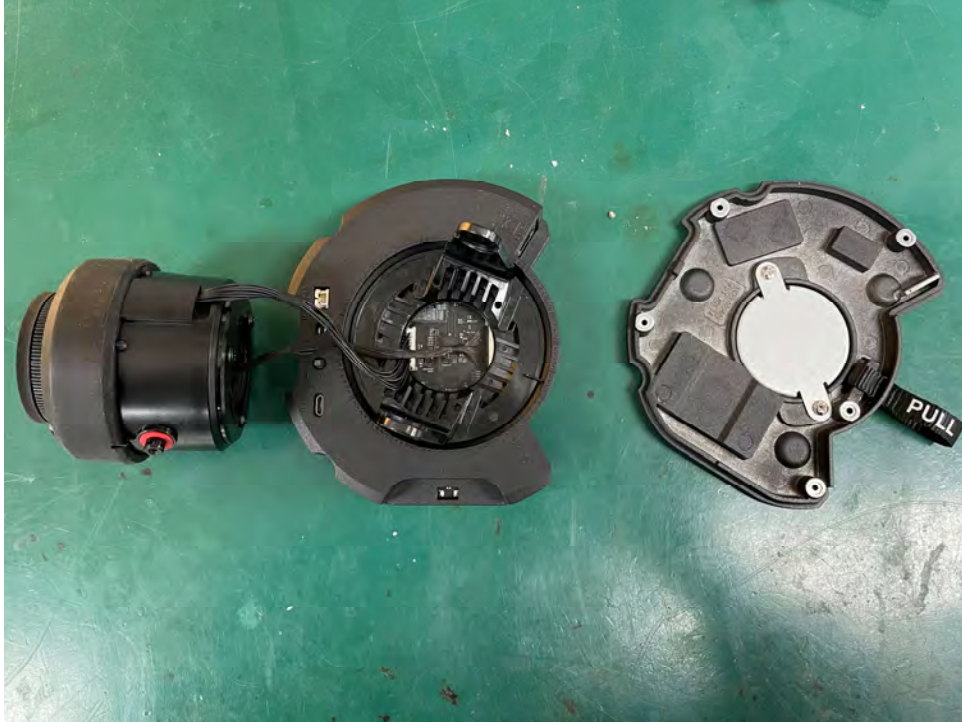


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## EUT Internal Photographs

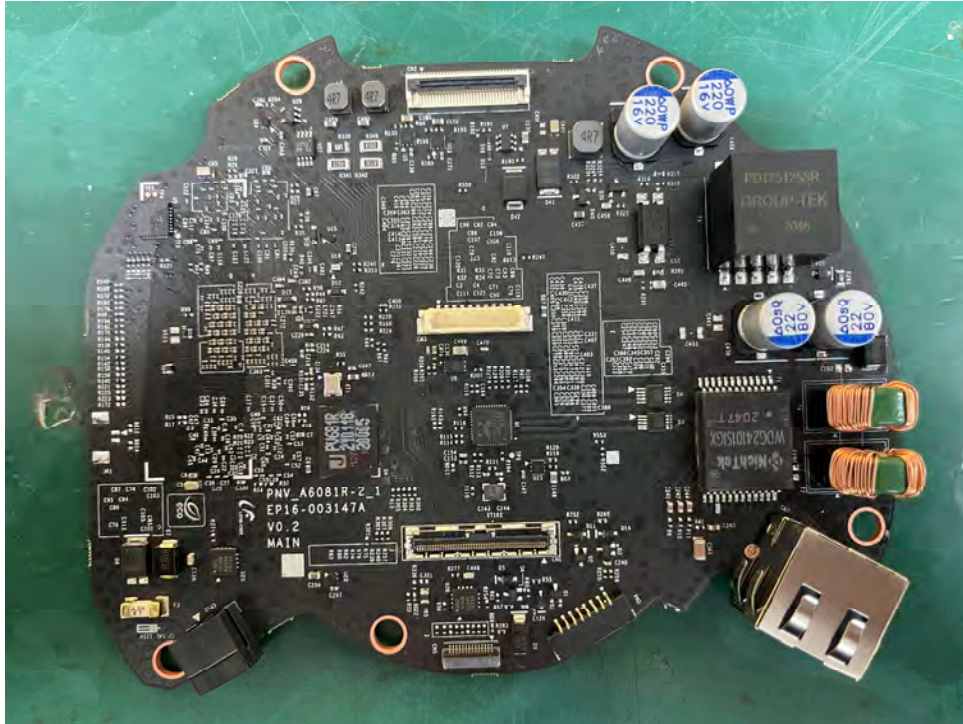
(Internal View)



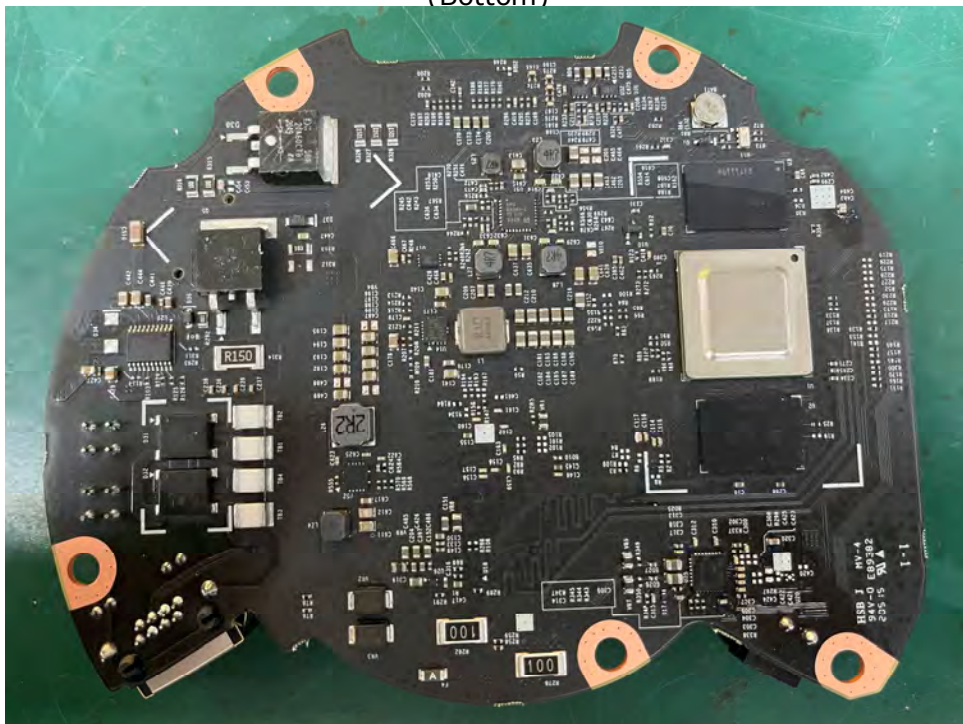
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## EUT Internal View – Board 1

(Top)



(Bottom)

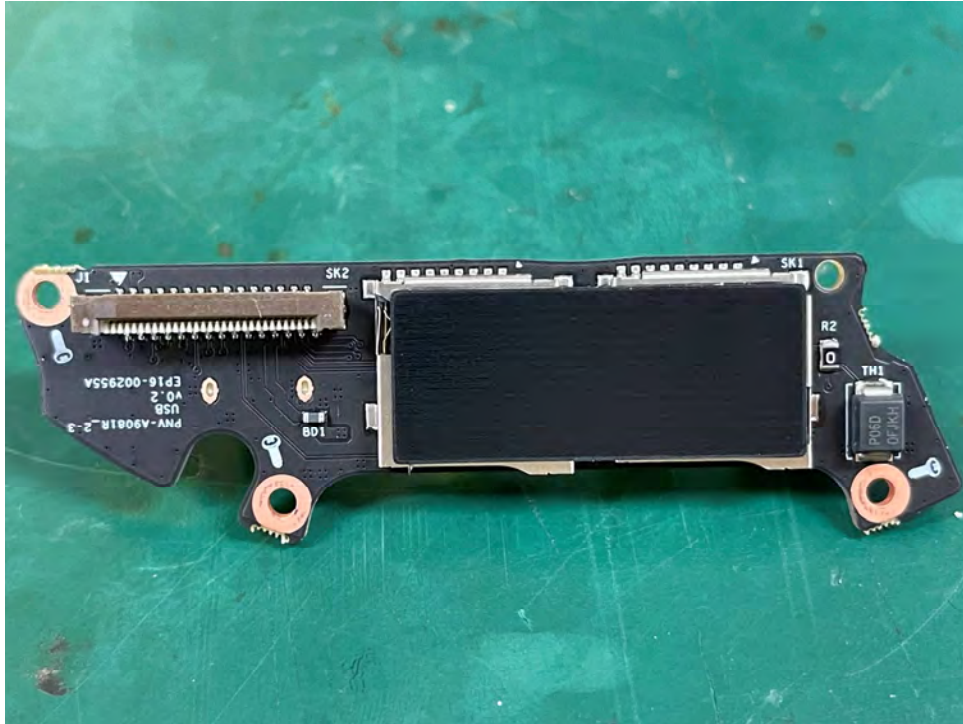


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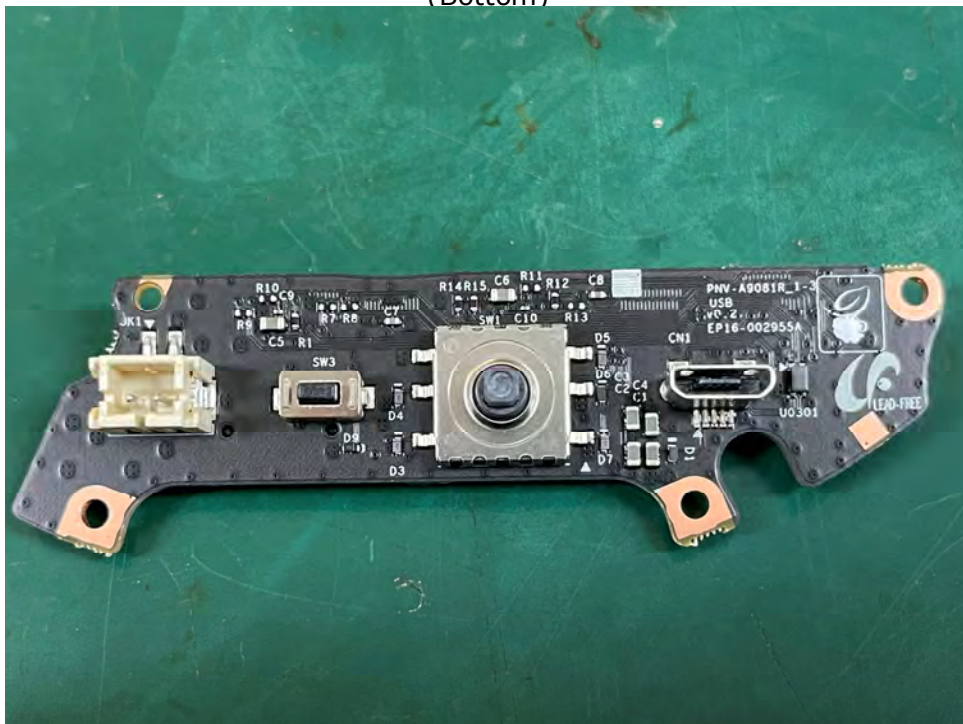


## EUT Internal View – Board 2

(Top)



(Bottom)



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## EUT Internal View – Board 3

(Top)



(Bottom)

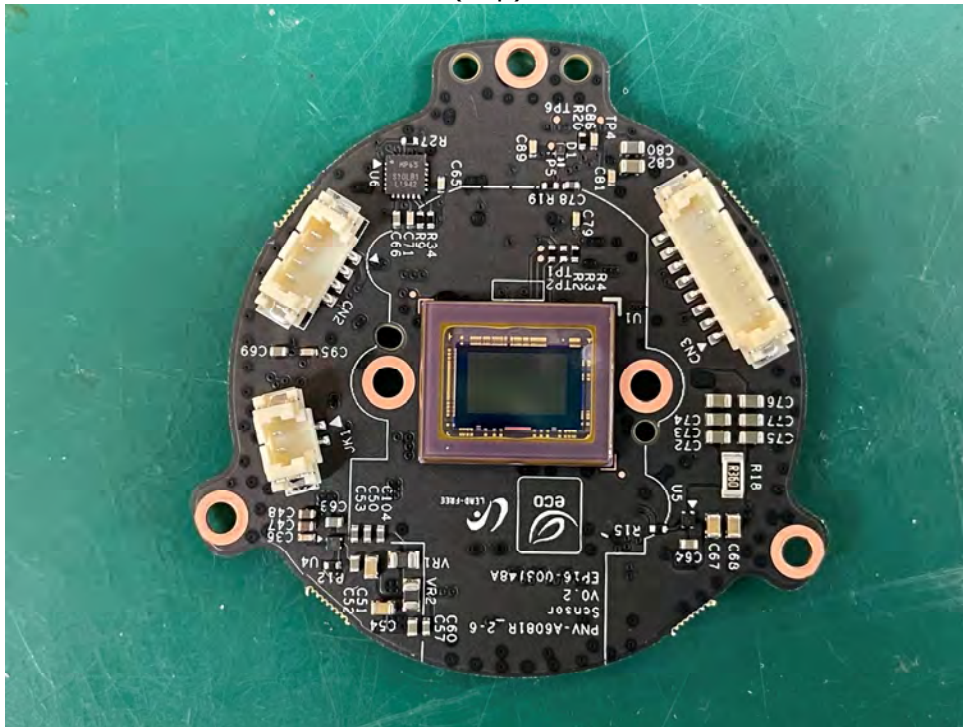


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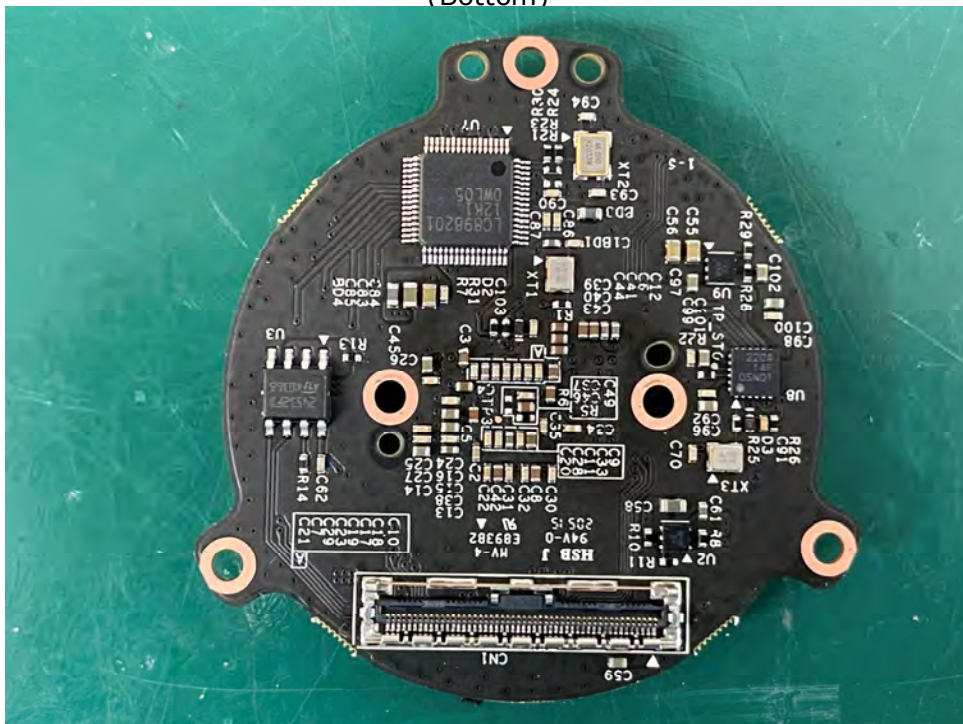


## EUT Internal View – Board 4

(Top)



(Bottom)



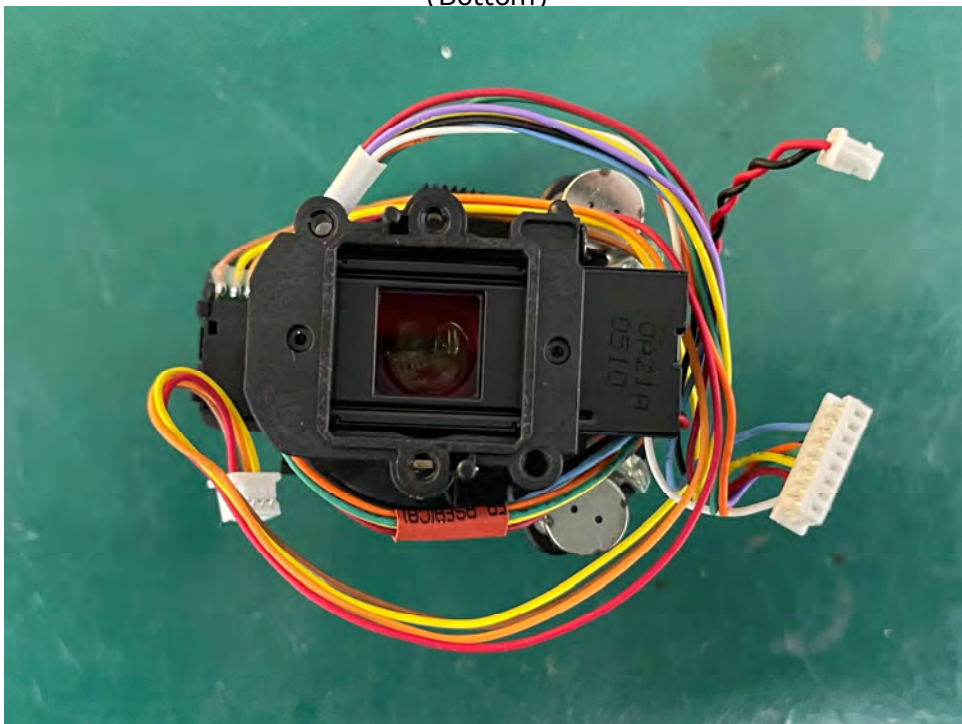
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## EUT Internal View – Camera Lens

(Top)



(Bottom)



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