

**KES Co., Ltd.**

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Report No.:

KES-EM-21T0173

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EMC TEST REPORT For RCM

Test Report No. : KES-EM-21T0173

Date of Issue : Mar. 16, 2021

Product name : NETWORK CAMERA

Model/Type No. : PND-A6081RF

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. 08, 2021

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Dae Jung, Choi
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 16, 2021	KES-EM-21T0173	Issued

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1.0 General Product Description

Main Specifications of EUT are:

	PND-A6081RF
Video	
Imaging Device	1/2" CMOS
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
Max. Framerate	H.265/H.264: Max. 60/50fps(60Hz/50Hz, AI analytics on), Max. 120/100fps(60Hz/50Hz, AI analytics off) MJPEG: Max. 15fps/12fps(60Hz/50Hz)
NETD	None
Pixel Size	None
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
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P) for installation USB: Micro USB Type B, 1280x720 for installation
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	4.38~9.33mm(2.13x) motorized varifocal
Max. Aperture Ratio	F1.3(Wide)~F2.15(Tele)
Angular Field of View	H:103.1°(Wide)~44.5°(Tele) / V:54.2°(Wide)~24.9°(Tele) / D:124°(Wide)~51.1°(Tele)
Min. Object Distance	0.5m(1.64ft)
Focus Control	Simple focus
Lens Type	P iris
Mount Type	None
Optional Lens	None
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	0°~360° / -45°~85° / 0°~355°
Pan Range	None
Pan Speed	None
Tilt Range	None
Tilt Speed	None
Rotate Range	None
Sequence	None
Preset Accuracy	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SDR
Wide Dynamic Range	120dB
Digital Noise Reduction	SSNR, WiseNR II(using AI engine)
Digital Image Stabilization	Stabilization Support(built-in gyro sensor)
Defog	None
Motion Detection	8ea, polygonal zones
Privacy Masking	6ea, rectangle zones - Color: Gray/Green/Red/Blue/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
Digital PTZ	None
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	- Classified object type : Person/Face/Vehicle/License plate with attributes, BestShot per object - Analytics events based on AI engine : Object detection, Face mask detection, Directional detection, Digital auto tracking, Enter/Exit, Loitering, Virtual line, Social distancing detection - Analytics events : Defocus detection, Motion detection, Appear/Disappear, Tampering, Audio detection, Sound classification, Shock detection
Business Intelligence	People counting, Queue management, Heatmap based on AI engine
Serial Interface	None
Alarm I/O	Input 1ea / Output 1ea / DC 12V Power(Max. 50mA) 1ea

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Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC or NAS recording at event triggers Alarm output Handover Audio playback
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	40m(131.23ft), Wise IR
IR Illuminator (Optional)	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature detect range	None
Temperature accuracy	None
Temperature detection	None
Additional	None
Network	
Ethernet	Metal shielded RJ-45(10/100/1000 BASE-T)
Video Compression	H.265/H.264: Main/High, MJPEG
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(Sea area), WiseStream II, WiseStream III(using AI engine)
Video Quality Adjustment	H.264/H.265: Target bitrate level control MJPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(6 users) / Multicast 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, UPnP, Bonjour, LLDP, SRTP (TCP, UDP Unicast)
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access log 802.1X Authentication(EAP-TLS, EAP-LEAP) Device Certificate(Hanwha Techwin Root CA) TPM with FIPS 140-2 level2 Secure boot, Verify firmware forgery
Application Programming Interface	ONVIF Profile S/G/T SUNAPI(HTTP API) Wisenet open platform
General	
Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slots 512GB
Memory	4096MB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-25°C ~ +50°C (-13°F ~ +122°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	IP52, IK10, Plenum rate

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Input Voltage	PoE+(IEEE802.3at), 12VDC
Power Consumption	PoE+: Max 19.50W, typical 16.00W 12VDC: Max 17.00W, typical 13.50W
Mechanical	
Color / Material	White / Aluminum, Hard-coated dome bubble
RAL Code	RAL9003
Product dimensions / weight	Ø205x163mm(8.07x4.92"), Weight : 1.95Kg (4.30lb)
Conduit hole	None
Hanging mount(Dome)	None
Skin cover(Dome)	None
Weather cap(Dome)	None
Power module	None
Backbox	None
DORI (EN62676-4 standard)	
Detect (25PPM/ 8PPF)	Wide: 62.9m(206.34ft) / Tele: 183m(600.33ft)
Observe (63PPM/ 19PPF)	Wide: 25.1m(82.34ft) / Tele: 73.3m(240.46ft)
Recognize (125PPM/ 38PPF)	Wide: 12.6m(41.33ft) / 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	PND-A6081RF	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd.	-
PoE Adapter	PT-PSE109GBRO-AH	PT1850221049	Dongguan PROCET Network Technology Co., Ltd	-
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	SHV-E210L	R33D713KA3F	Samsung Electronics Co., Ltd.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Micro SD Card	-	-	SanDisk	4 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 Adapter	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 Adapter	RJ-45 (LAN)	3.0	U
	3.5 mm	Smartphone	3.5 mm	0.5	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

■ DC/PoE Mode

Test Mode	operating
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.

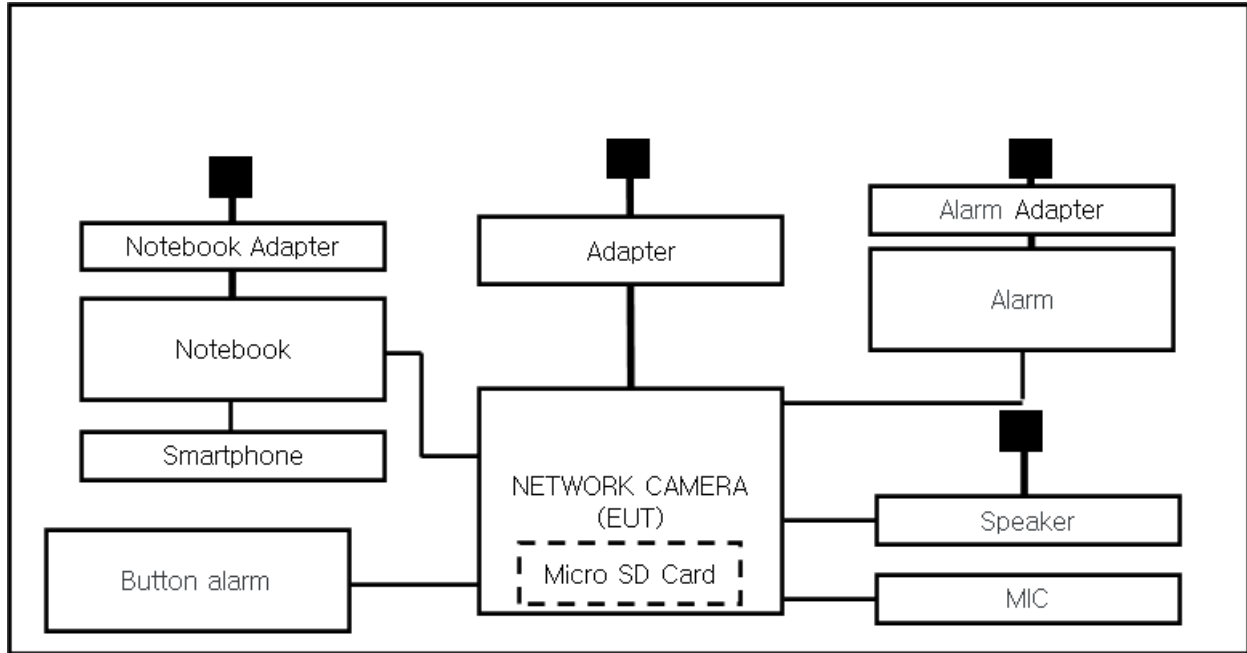
EUT Test operating S/W		
Name	Version	Manufacture Company
Web Viewer	-	Hanwha Techwin Co., Ltd.

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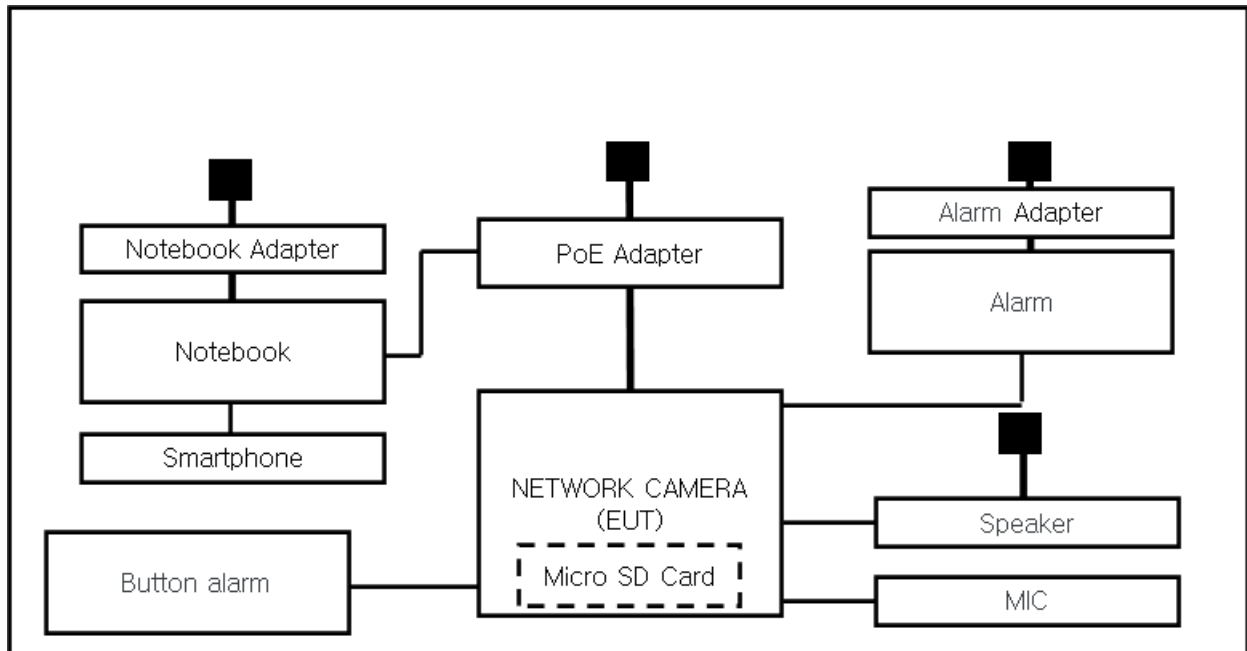
1.8 Configuration

■ AC Main
 □ DC Main

■ DC Mode



■ PoE Mode



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"/> VCCI -CISPR 32:2016 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> AS/NZS CISPR32:2015 | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
|
 | | |
| <input type="checkbox"/> 47 CFR Part 15, Subpart 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 | | |
|
 | | |
| <input type="checkbox"/> IC Regulation ICES-003 : 2016 | | |
| <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 | | |
|
 | | |
| <input type="checkbox"/> RE- Directive 2014/53/EU | | |
|
 | | |
| <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 | | |
|
 | | |
| <input type="checkbox"/> EN 301 489-3 V1.6.1 | | |
|
 | | |
| <input type="checkbox"/> EN 301 489-17 V2.2.1 | | |
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 | | |
| <input type="checkbox"/> EN 60945: 2002 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Feb. 08, 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: 22,9 °C

Relative Humidity: 46,2 % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.2 Conducted Emissions at Telecommunication Ports

Test Date
Feb. 08, 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, 2022

Test Conditions
Temperature: 22,9 °C
Relative Humidity: 46,2 % R.H.

Frequency Range of Measurement
150 kHz to 30 MHz

Instrument Settings
IF Band Width: 9 kHz

Test Results
The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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Report No.:

KES-EM-21T0173

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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb. 08, 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, 2022

Test Conditions

Temperature: 20,1 °C

Relative Humidity: 46,1 % 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.

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2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb. 08, 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, 2022
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: 20,2 °C

Relative Humidity: 45,7 % 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.:

PND-A6081RF

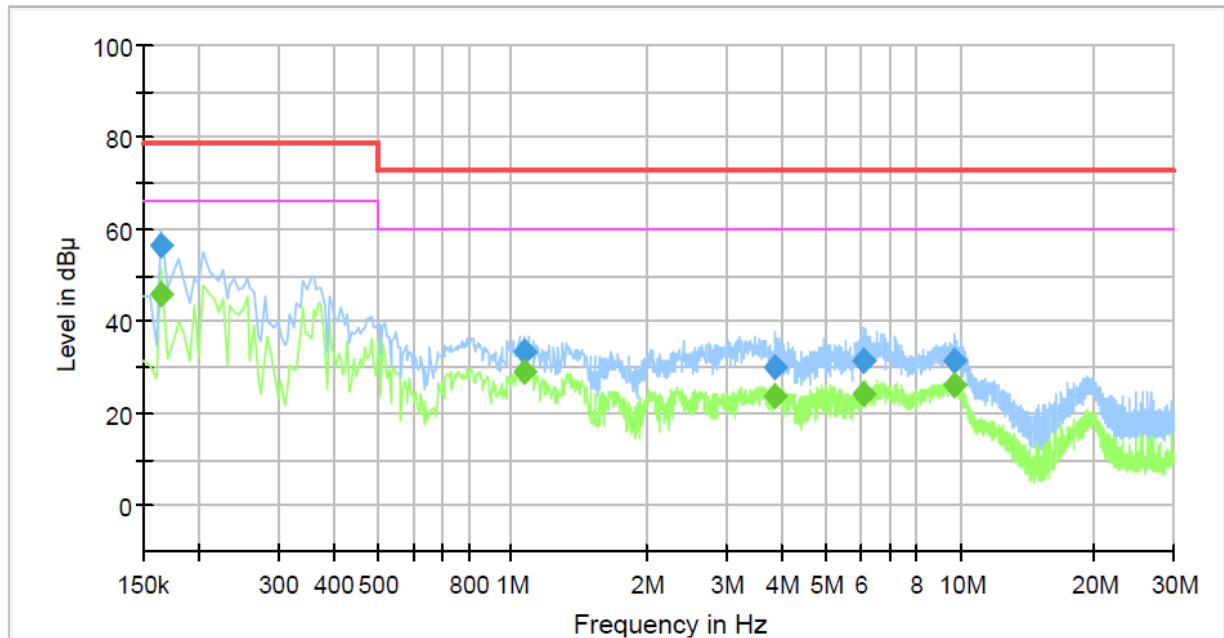
Phase:

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)
0.165000	---	45.96	66.00	20.04	1000.0	9.000	L1	19.4
0.165000	56.64	---	79.00	22.36	1000.0	9.000	L1	19.4
1.070000	---	29.12	60.00	30.88	1000.0	9.000	L1	20.0
1.070000	33.32	---	73.00	39.68	1000.0	9.000	L1	20.0
3.870000	---	23.58	60.00	36.42	1000.0	9.000	L1	19.8
3.870000	30.17	---	73.00	42.83	1000.0	9.000	L1	19.8
6.120000	---	24.11	60.00	35.89	1000.0	9.000	L1	19.5
6.120000	31.28	---	73.00	41.72	1000.0	9.000	L1	19.5
9.700000	---	26.04	60.00	33.96	1000.0	9.000	L1	19.8
9.700000	31.56	---	73.00	41.44	1000.0	9.000	L1	19.8

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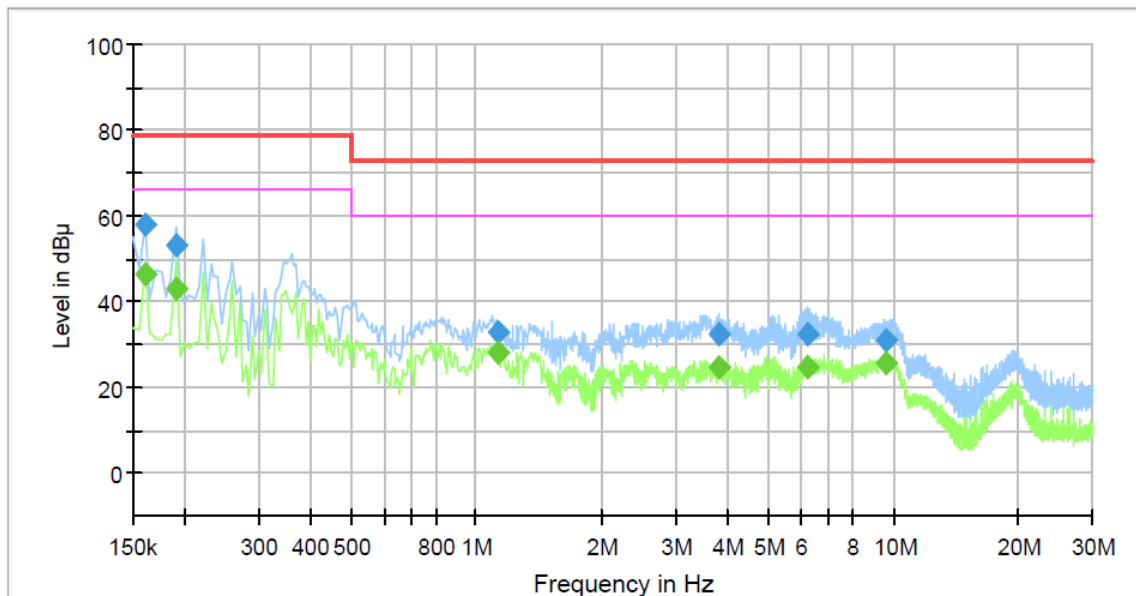
KES-EM-21T0173

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NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: PND-A6081RF
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)
0.160000	---	46.66	66.00	19.34	1000.0	9.000	N	19.4
0.160000	57.96	---	79.00	21.04	1000.0	9.000	N	19.4
0.190000	---	43.16	66.00	22.84	1000.0	9.000	N	19.4
0.190000	53.16	---	79.00	25.84	1000.0	9.000	N	19.4
1.125000	---	28.14	60.00	31.86	1000.0	9.000	N	20.0
1.125000	32.70	---	73.00	40.30	1000.0	9.000	N	20.0
3.825000	---	24.83	60.00	35.17	1000.0	9.000	N	19.8
3.825000	32.34	---	73.00	40.66	1000.0	9.000	N	19.8
6.225000	---	24.97	60.00	35.03	1000.0	9.000	N	19.5
6.225000	32.26	---	73.00	40.74	1000.0	9.000	N	19.5
9.635000	---	25.83	60.00	34.17	1000.0	9.000	N	19.8
9.635000	31.13	---	73.00	41.87	1000.0	9.000	N	19.8

◆ 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.:

PND-A6081RF

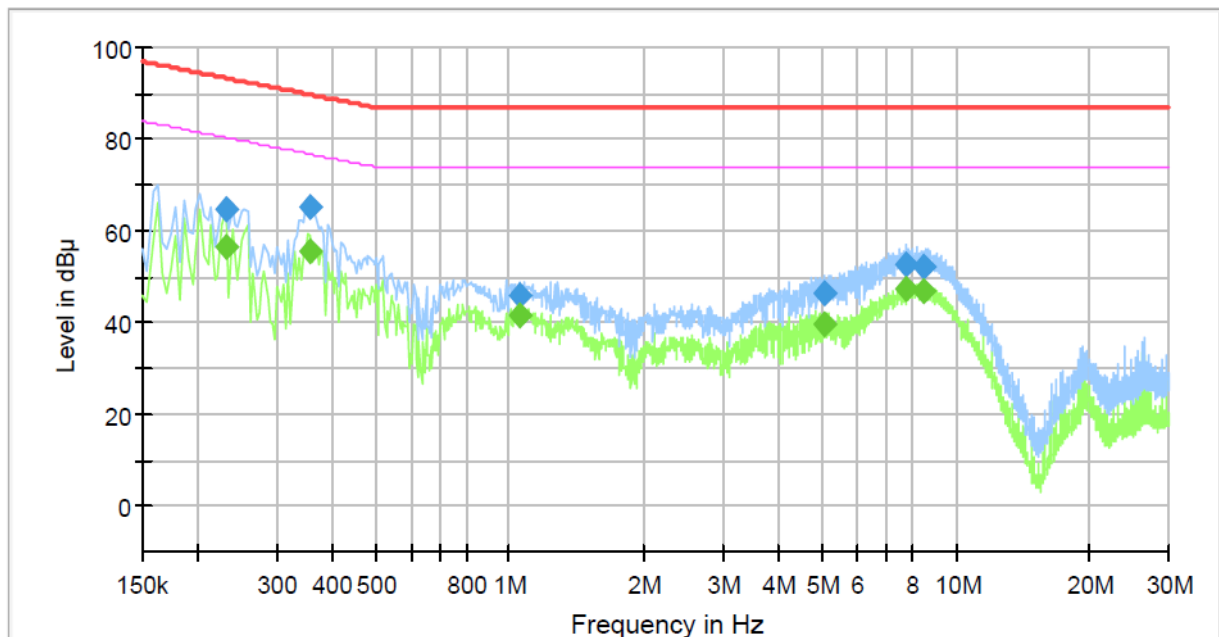
Mode :

DC_TEL 1 000 Mbps

Speed :

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.230000	---	56.36	80.45	24.09	1000.0	9.000	Single Line	19.5
0.230000	64.77	---	93.45	28.68	1000.0	9.000	Single Line	19.5
0.358000	---	55.85	76.77	20.92	1000.0	9.000	Single Line	19.6
0.358000	65.14	---	89.77	24.63	1000.0	9.000	Single Line	19.6
1.050000	---	41.45	74.00	32.55	1000.0	9.000	Single Line	20.0
1.050000	46.09	---	87.00	40.91	1000.0	9.000	Single Line	20.0
5.050000	---	39.47	74.00	34.53	1000.0	9.000	Single Line	19.5
5.050000	46.22	---	87.00	40.78	1000.0	9.000	Single Line	19.5
7.742000	---	47.19	74.00	26.81	1000.0	9.000	Single Line	19.5
7.742000	52.64	---	87.00	34.36	1000.0	9.000	Single Line	19.5
8.450000	---	47.10	74.00	26.90	1000.0	9.000	Single Line	19.6
8.450000	52.22	---	87.00	34.78	1000.0	9.000	Single Line	19.6

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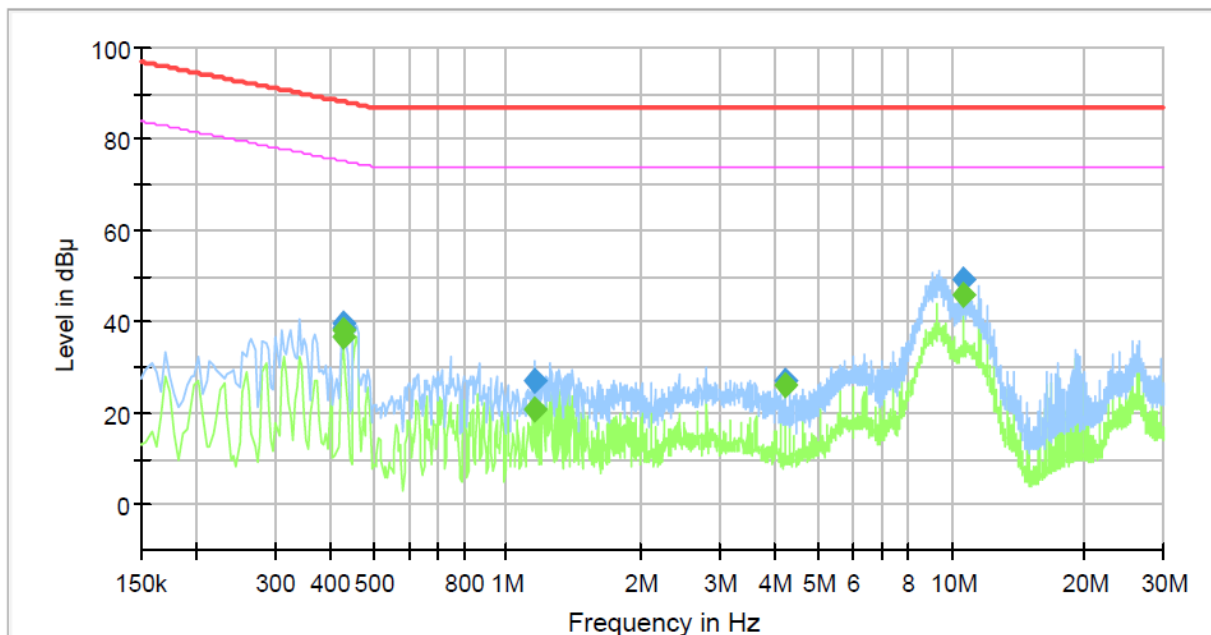
Report No.:
KES-EM-21T0173
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■ PoE Mode

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: PND-A6081RF
Mode : PoE_TEL 1 000 Mbps
Speed :
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.426000	---	36.82	75.33	38.51	1000.0	9.000	Single Line	19.6
0.426000	38.80	---	88.33	49.53	1000.0	9.000	Single Line	19.6
0.430000	---	38.27	75.25	36.98	1000.0	9.000	Single Line	19.6
0.430000	39.77	---	88.25	48.48	1000.0	9.000	Single Line	19.6
1.154000	---	20.94	74.00	53.06	1000.0	9.000	Single Line	20.0
1.154000	27.07	---	87.00	59.93	1000.0	9.000	Single Line	20.0
4.222000	---	25.99	74.00	48.01	1000.0	9.000	Single Line	19.7
4.222000	27.08	---	87.00	59.92	1000.0	9.000	Single Line	19.7
10.618000	---	45.92	74.00	28.08	1000.0	9.000	Single Line	19.9
10.618000	49.19	---	87.00	37.81	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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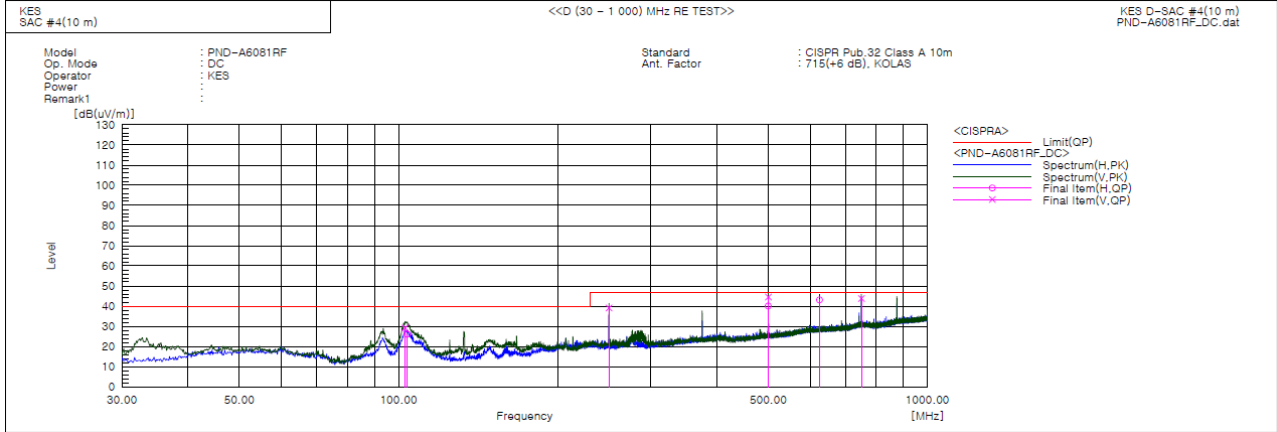
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



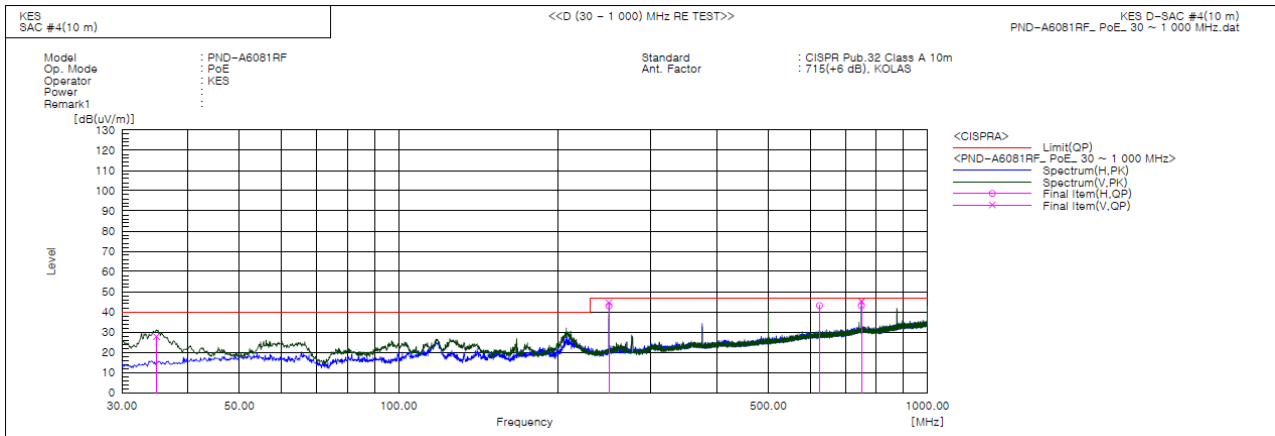
Final Result

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	102.871	V	51.7	-22.5	29.2	40.0	10.8	108.0	63.0	
2	103.841	H	48.6	-22.5	26.1	40.0	13.9	389.0	213.0	
3	249.948	V	58.3	-19.1	39.2	47.0	7.8	111.0	318.0	
4	499.965	V	56.2	-11.6	44.6	47.0	2.4	387.0	213.0	
5	499.965	H	51.7	-11.6	40.1	47.0	6.9	197.0	235.0	
6	624.974	H	51.3	-8.2	43.1	47.0	3.9	109.0	234.0	
7	749.983	V	49.6	-5.7	43.9	47.0	3.1	141.0	196.0	

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PoE Mode



Final Result

No.	Frequency (P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	QP [dB(uV)]	[dB(1/m)]	QP [dB(uV/m)]	QP [dB(uV/m)]	QP [dB]	[cm]	[deg]	
1	34.850	V 52.7	-24.9	27.8	40.0	12.2	142.0	78.0	
2	249.991	V 63.6	-19.1	44.5	47.0	2.5	110.0	130.0	
3	249.997	H 62.0	-19.1	42.9	47.0	4.1	354.0	196.0	
4	624.974	H 51.3	-8.2	43.1	47.0	3.9	298.0	74.0	
5	749.982	V 50.8	-5.7	45.1	47.0	1.9	150.0	130.0	
6	749.994	H 48.8	-5.7	43.1	47.0	3.9	386.0	328.0	

◆ 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



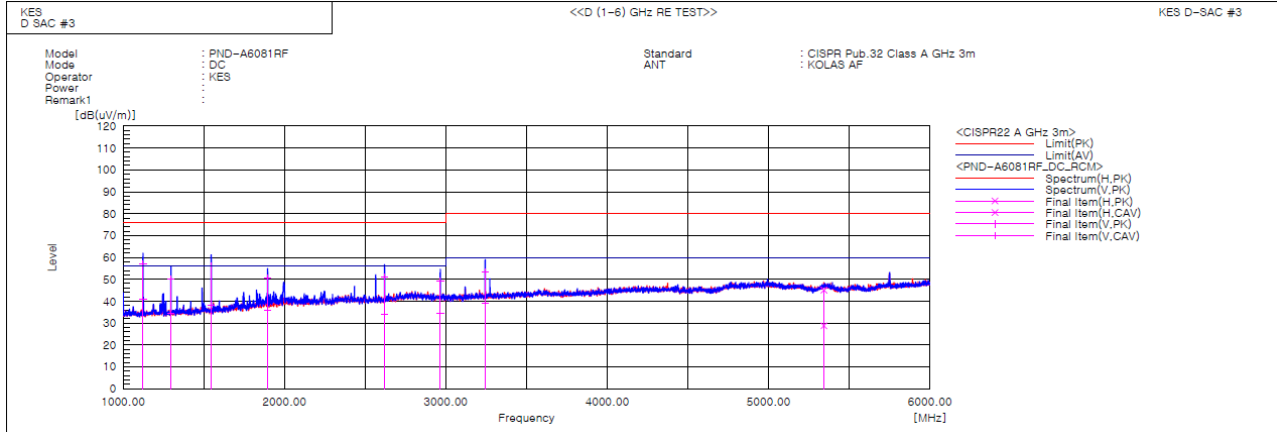
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Radiated Electric Field Emissions(Above 1 GHz)

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	1123.000	V	65.7	49.4	-8.6	57.1	40.8	76.0	56.0	18.9	15.2	100.0	101.2	
2	1296.000	V	57.7	41.9	-7.6	50.1	34.3	76.0	56.0	25.9	21.7	100.0	101.2	
3	1546.000	V	61.7	43.9	-5.8	55.9	38.1	76.0	56.0	20.1	17.9	100.0	56.2	
4	1895.000	V	53.0	38.1	-2.4	50.6	35.7	76.0	56.0	25.4	20.3	100.0	56.2	
5	2620.000	V	50.7	33.7	0.4	51.1	34.1	76.0	56.0	24.9	21.9	100.0	3.2	
6	2966.000	V	47.5	32.7	1.6	49.1	34.3	76.0	56.0	26.9	21.7	100.0	86.0	
7	3244.000	V	50.4	36.3	2.7	53.1	39.0	80.0	60.0	26.9	21.0	100.0	104.9	
8	5342.000	H	36.7	20.4	8.4	45.1	28.8	80.0	60.0	34.9	31.2	100.0	174.2	

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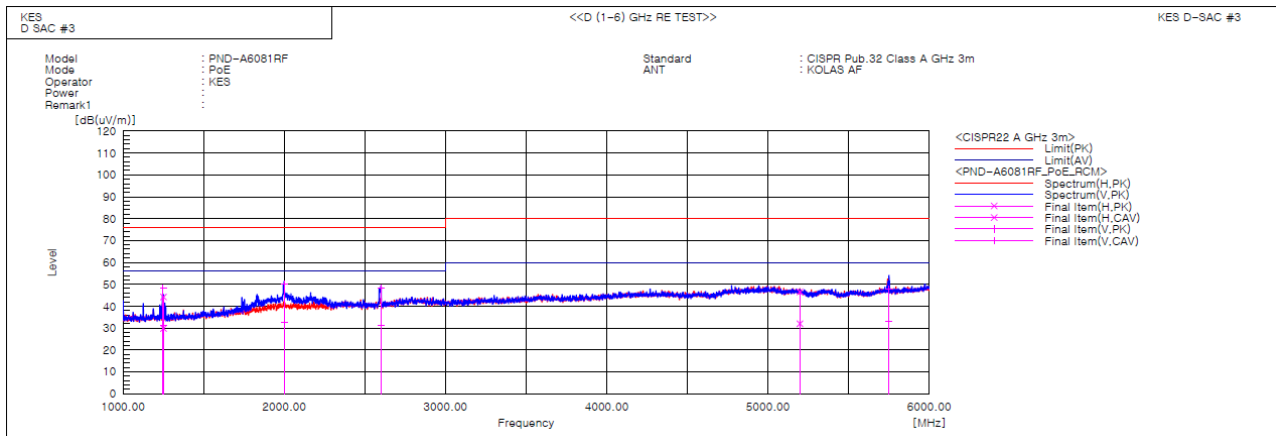


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PoE Mode



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	1248.000	V	56.3	39.0	-7.9	48.4	31.1	76.0	56.0	27.6	24.9	100.0	233.6	
2	1250.000	H	52.1	37.8	-7.9	44.2	29.9	76.0	56.0	31.8	26.1	100.0	262.6	
3	1999.000	V	51.6	34.1	-1.5	50.1	32.6	76.0	56.0	25.9	23.4	100.0	349.9	
4	2599.000	V	47.9	30.8	0.3	48.2	31.1	76.0	56.0	27.8	24.9	100.0	293.2	
5	5198.000	H	37.9	23.3	8.7	46.6	32.0	80.0	60.0	33.4	28.0	100.0	84.2	
6	5751.000	V	38.1	23.6	9.5	47.6	33.1	80.0	60.0	32.4	26.9	100.0	54.2	

◆ 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)]

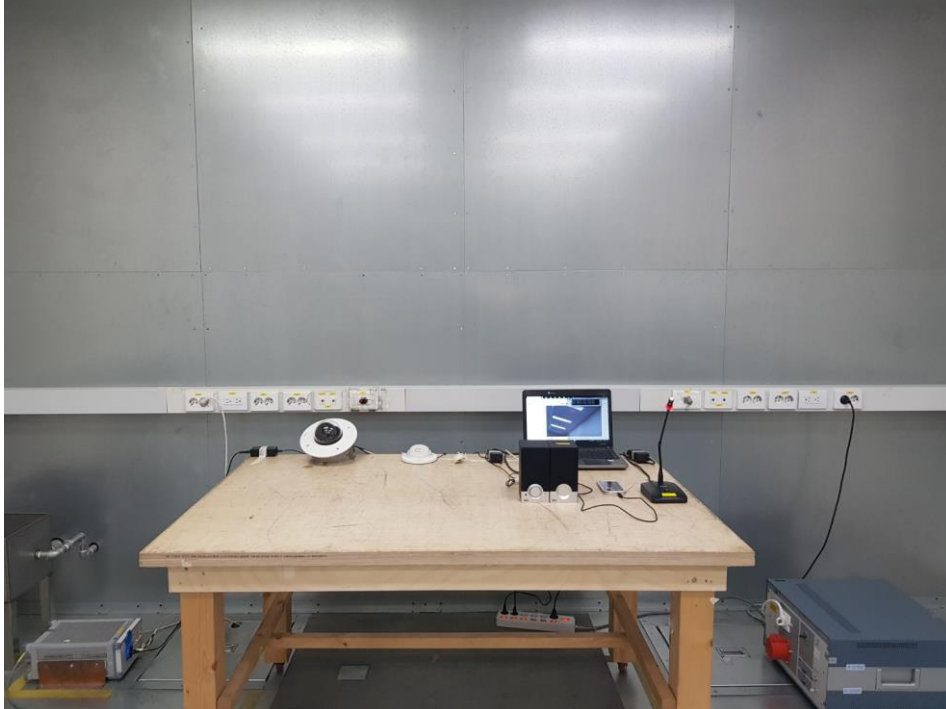
Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC Mode



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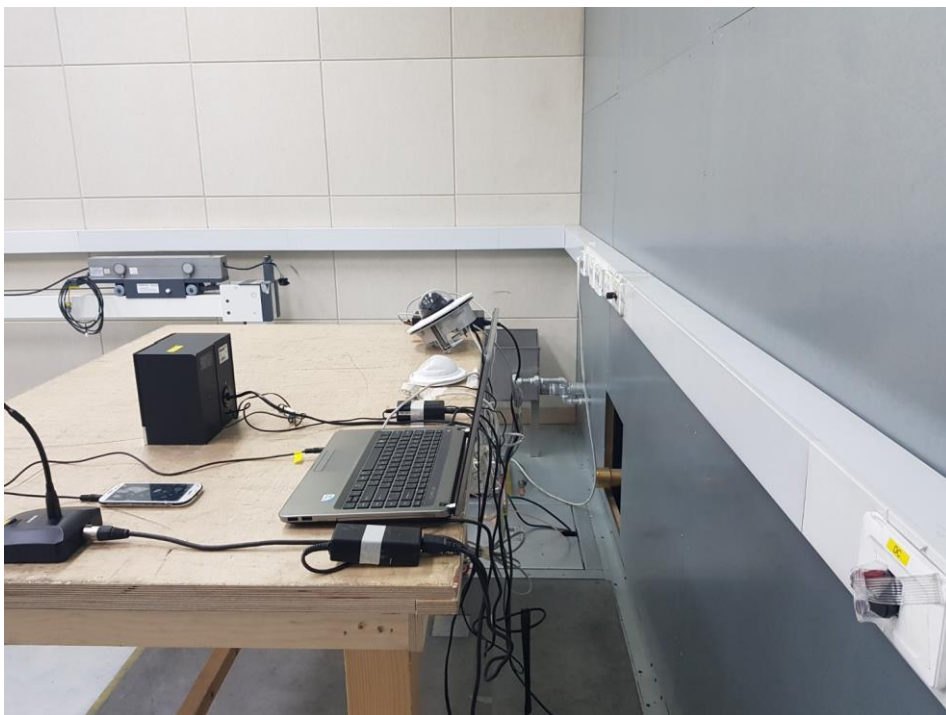
Conducted Emissions at Telecommunication Ports

■ DC Mode



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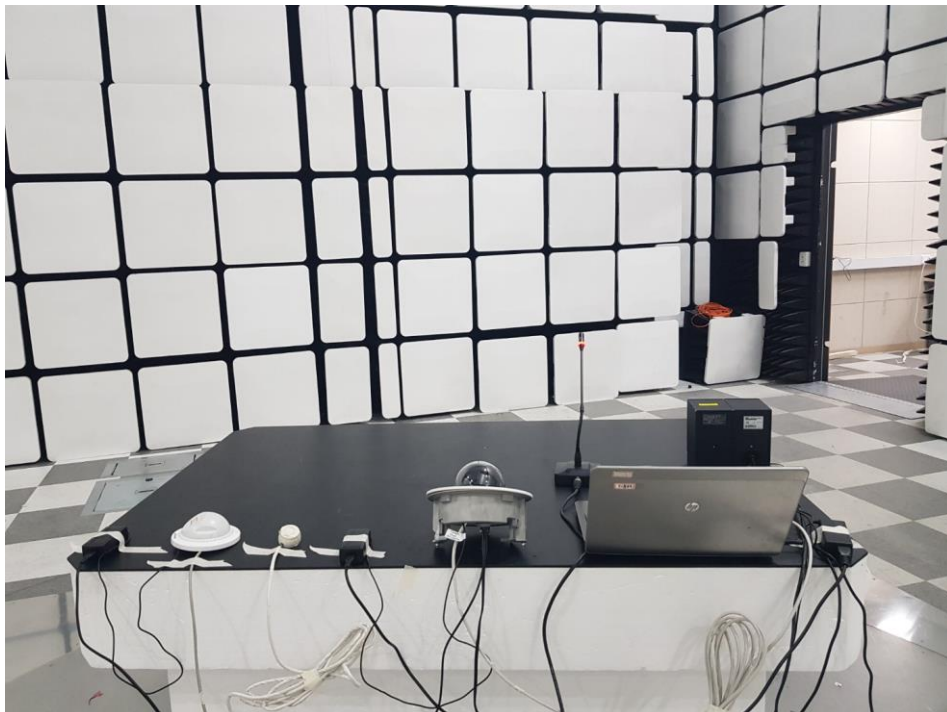
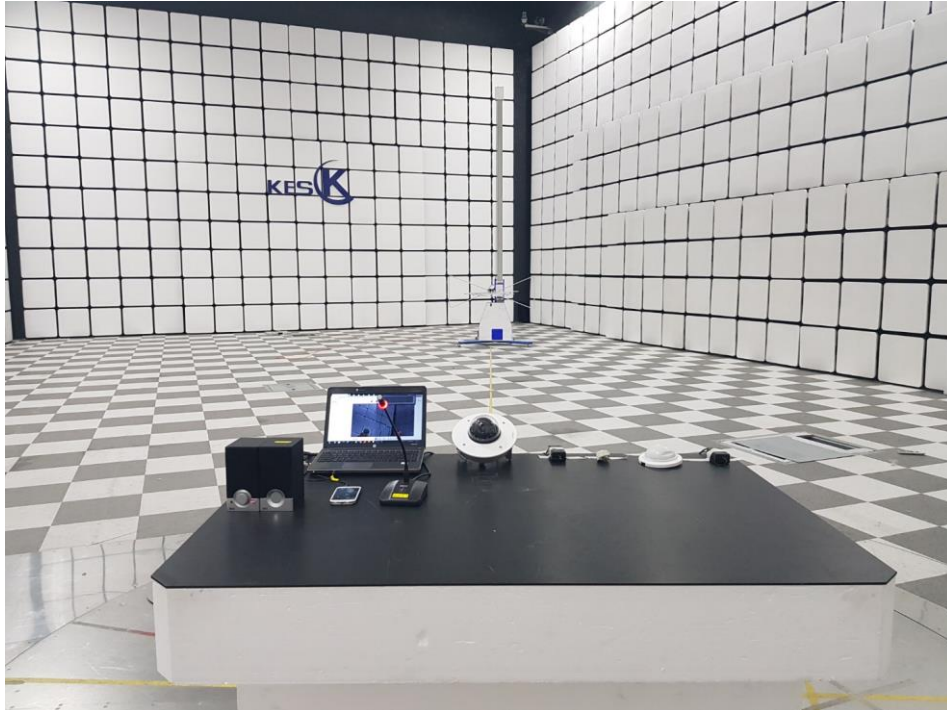
■ PoE Mode



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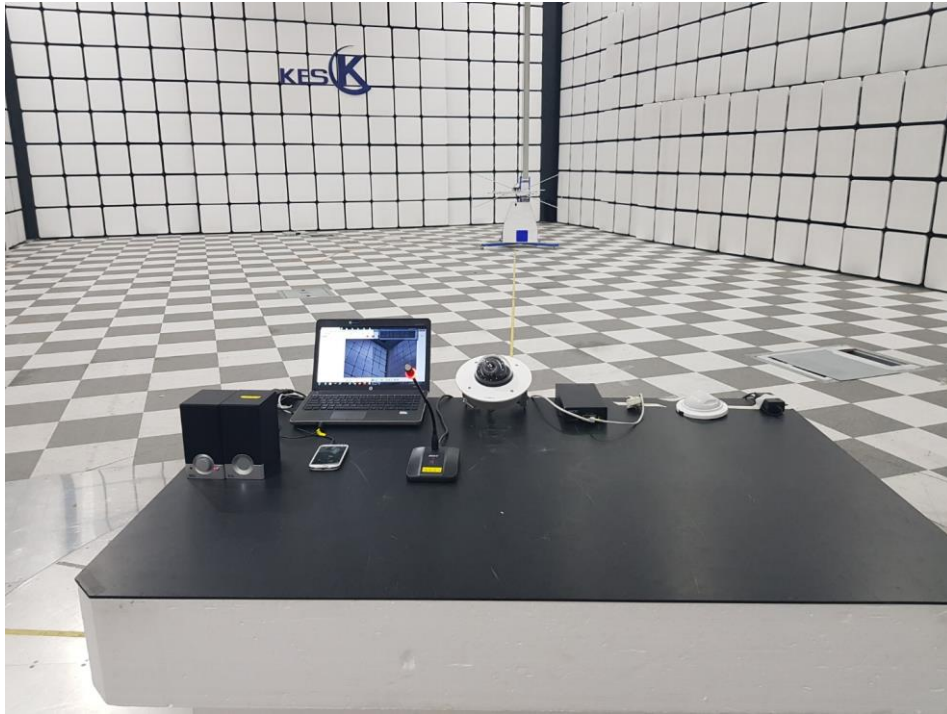
Radiated Electric Field Emissions(Below 1 GHz)

■ DC Mode



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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

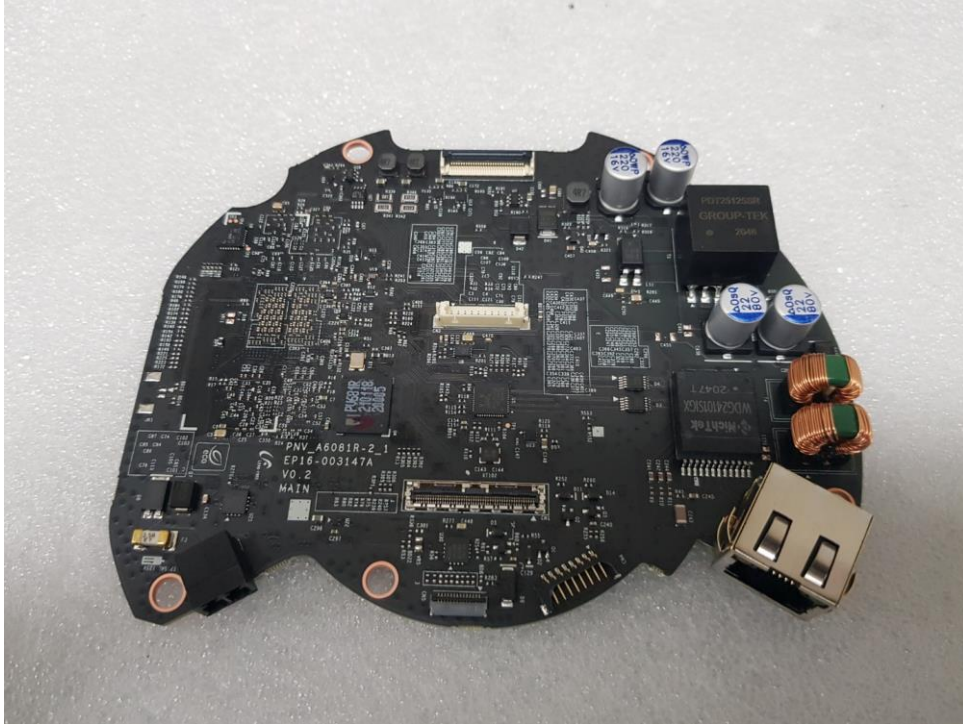
(Internal View)



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EUT Internal View – Main Board

(Top)



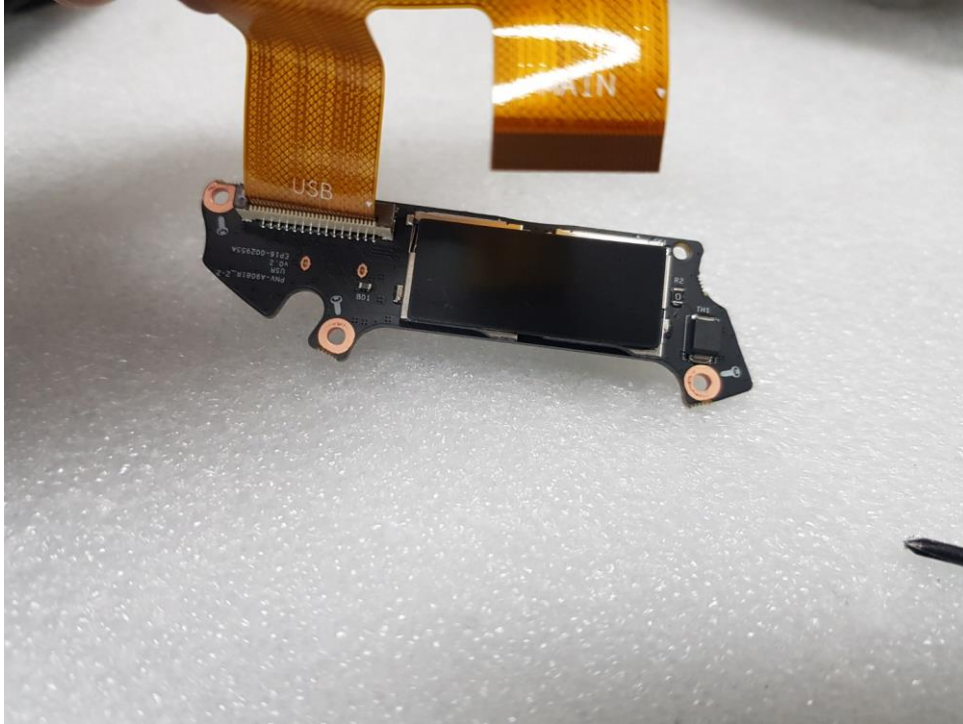
(Bottom)



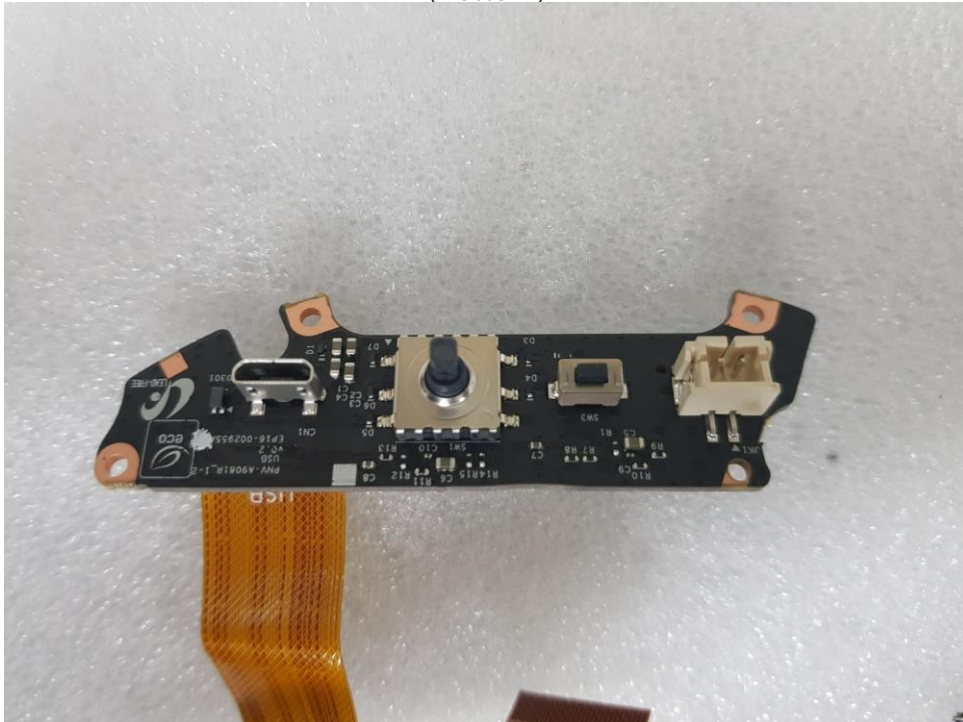
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EUT Internal View – Sub Board 1

(Top)



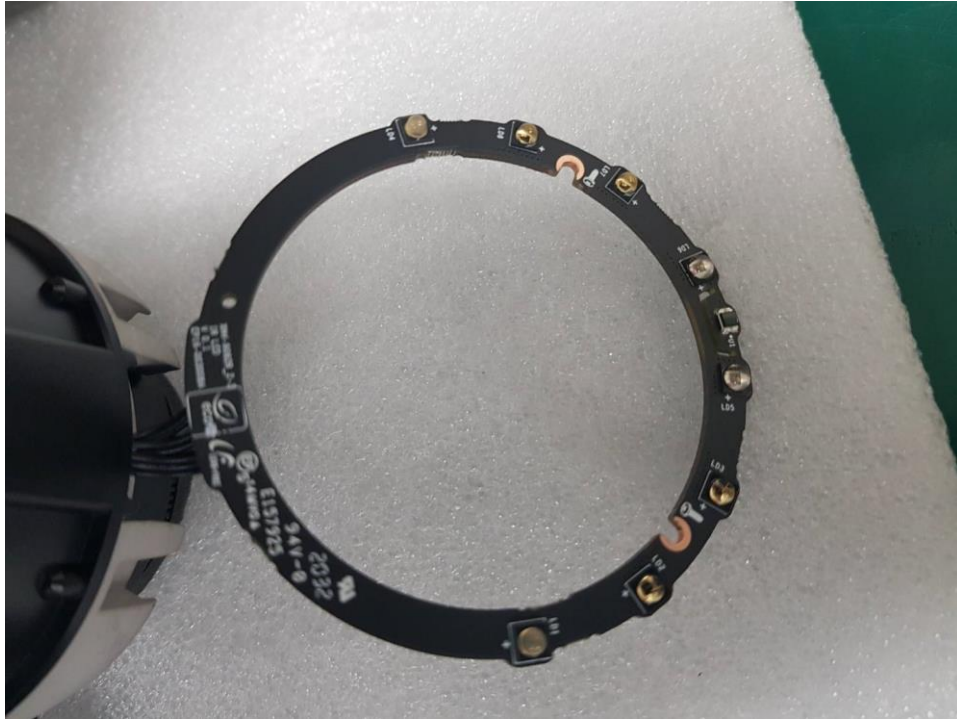
(Bottom)



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EUT Internal View – Sub Board 2

(Top)



(Bottom)



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EUT Internal View – Camera Lens

(Top)



(Bottom)



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