



KES Co., Ltd.

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Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-20T0620

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EMC TEST REPORT

Test Report No. : KES-EM-20T0620
Date of Issue : Sep. 18, 2020
Product name : NETWORK CAMERA
Model/Type No. : PNM-9000QB
Variant Mode : -
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 : Aug. 04, 2020
Test date : Aug. 10, 2020 ~ Aug. 11, 2020
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Il, Lee
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
Sep. 18, 2020	KES-EM-20T0620	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	
Imaging Device	None
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.265/H.264: 2MP Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 30fps/25fps(60Hz/50Hz)
NETD	None
Pixel Size	None
Min. Illumination	None
Video Out	HDMI(1920x1080, Single/Quad view)
Video Transmission Distance	None
Lens	
Focal Length (Zoom Ratio)	None
Max. Aperture Ratio	None
Angular Field of View	None
Min. Object Distance	None
Focus Control	None
Lens Type	None
Mount Type	None
Optional Lens	SLA-T1080FA, SLA-T2480A, SLA-T2480VA, SLA-T4680A, SLA-T4680VA
Pan / Tilt / Rotate	
Pan / Tilt / Rotate Range	None
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

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Direction Indicator	None
Day & Night	Auto(Electrical)
Backlight Compensation	BLC, HLC, WDR, SDDR
Wide Dynamic Range	extreme WDR(150dB)
Digital Noise Reduction	SSNR V
Digital Image Stabilization	Support
Defog	Support
Motion Detection	8ea, 8point polygonal zones
Privacy Masking	32ea, polygonal zones - Color: Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2~1/12,000sec)
Digital PTZ	None
Video Rotation	Flip, Mirror, Hallway view(90°/270°)
Analytics	Defocus detection, Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line
Business Intelligence	None
Serial Interface	None
Alarm I/O	Input 2ea / Output 2ea
Alarm Triggers	Analytics, Network disconnect, Alarm input
Alarm Events	File upload via FTP and e-mail Notification via e-mail SD/SDHC/SDXC at event triggers Alarm output
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	None
IR Illuminator (Optional)	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None

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Color Palettes	None
Radiometry	
Temperature detect range	None
Temperature accuracy	None
Temperature detection	None
Additional	None
Network	
Ethernet	RJ-45(10/100/1000BASE-T)
Video Compression	H.265/H.264: Main/Baseline/High, MJPEG
Audio Compression	G.711 u-law /G.726 Selectable G.726(ADPCM) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(Sea area), WiseStreamII
Video Quality Adjustment	None
Bitrate Control	H.264/H.265: CBR or VBR MJPEG: VBR
Streaming	Unicast(20 users) / Multicast Multiple streaming(Up to 10 profiles)
Protocol	IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour, LLDP
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)
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

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Web Viewer	None
Edge Storage	Micro SD/SDHC/SDXC 2slot [256 X 2 GB]
Memory	4GB(LPDDR4), 512MB(NAND)
Environmental & Electrical	
Operating Temperature / Humidity	-10°C ~ +45°C(-40°F ~ +113°F) / Less than 95% RH(Non condensing)
Storage Temperature / Humidity	-50°C ~ +60°C(-58°F ~ +140°F) / Less than 90% RH
Certification	None
Input Voltage	PoE+(IEEE802.3at, Class4), 12VDC
Power Consumption	PoE : (Typical) 16.70W (Max) 22.00W DC : (Typical) 14.00W (Max) 19.00W
Mechanical	
Color / Material	White / Plastic
RAL Code	RAL9003
Product dimensions / weight	200(W)x37(H)x146(D)mm
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)	None
Observe (63PPM/ 19PPF)	None
Recognize (125PPM/ 38PPF)	None
Identify (250PPM/ 76PPF)	None

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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 ☐ 230 Vac ☒ 120 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	PNM-9000QB	-	HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	P95G001	8KM8HT2	DELL	-
Notebook Adaptor	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANG ZHOU)CO.,LTD.	-
CAMERA 1	SLA-T4680V		HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
CAMERA 2	SLA-T2480V		HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
CAMERA 3	SLA-T4680		HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
CAMERA 4	SLA-T2480		HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
CAMERA 5	SLA-T1080F		HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.	-
Micro SD Card 1	-	-	SanDisk	8 GB
Micro SD Card 2	-	-	SanDisk	16 GB
PoE Adaptor	PT-PSE109GBRO-AH	PT1850221049	Dongguan PROCET Network Technology Co.,Ltd	-
DC Adaptor	2ACB022F	-	Channel Well Technology (Guangzhou) Co.,Ltd.	-
Alarm	-	-	-	-
Alarm	-	-	-	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
MIC	MP1000	-	-	-
Smart Phone	LG-SU760	108KPQJ0186212	LG	-
Monitor	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-

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1.6 External I/O Cabling

■ DC_CAMERA(1,2,3,4)

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	Notebook	PoE	3.0	S
	SLOT	Micro SD Card 1	SLOT	-	-
	SLOT	Micro SD Card 2	SLOT	-	-
	LAN(6Pin)	CAMERA 1	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 2	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 3	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 4	LAN(6Pin)	10.0	S
	HDMI	Monitor	HDMI	1.5	S
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	3.5 mm	1.6	U
	Alarm in	Alarm	Alarm out	3.0	U
	Alarm out	Alarm	Alarm in	3.0	U
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U

* Unshielded=U, Shielded=S

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■ DC_CAMERA(2,3,4,5)

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	Notebook	PoE	3.0	S
	SLOT	Micro SD Card 1	SLOT	-	-
	SLOT	Micro SD Card 2	SLOT	-	-
	LAN(6Pin)	CAMERA 2	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 3	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 4	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 5	LAN(6Pin)	10.0	S
	HDMI	Monitor	HDMI	1.5	S
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	3.5 mm	1.6	U
	Alarm in	Alarm	Alarm out	3.0	U
	Alarm out	Alarm	Alarm in	3.0	U
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U

* Unshielded=U, Shielded=S

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■ PoE_CAMERA(1,2,3,4)

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45(PoE)	PoE Adaptor	PoE	5.0	S
	SLOT	Micro SD Card 1	SLOT	-	-
	SLOT	Micro SD Card 2	SLOT	-	-
	LAN(6Pin)	CAMERA 1	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 2	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 3	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 4	LAN(6Pin)	10.0	S
	HDMI	Monitor	HDMI	1.5	S
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	3.5 mm	1.6	U
	Alarm in	Alarm	Alarm out	3.0	U
	Alarm out	Alarm	Alarm in	3.0	U
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U
	RJ-45	PoE Adaptor	RJ-45	5.0	S

* Unshielded=U, Shielded=S

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■ PoE_CAMERA(2,3,4,5)

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45(PoE)	PoE Adaptor	PoE	5.0	S
	SLOT	Micro SD Card 1	SLOT	-	-
	SLOT	Micro SD Card 2	SLOT	-	-
	LAN(6Pin)	CAMERA 2	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 3	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 4	LAN(6Pin)	10.0	S
	LAN(6Pin)	CAMERA 5	LAN(6Pin)	10.0	S
	HDMI	Monitor	HDMI	1.5	S
	3.5 mm	Speaker	3.5 mm	1.4	U
	3.5 mm	MIC	3.5 mm	1.6	U
	Alarm in	Alarm	Alarm out	3.0	U
	Alarm out	Alarm	Alarm in	3.0	U
Notebook	3.5 mm	Smart Phone	3.5 mm	1.0	U
	RJ-45	PoE Adaptor	RJ-45	5.0	S

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

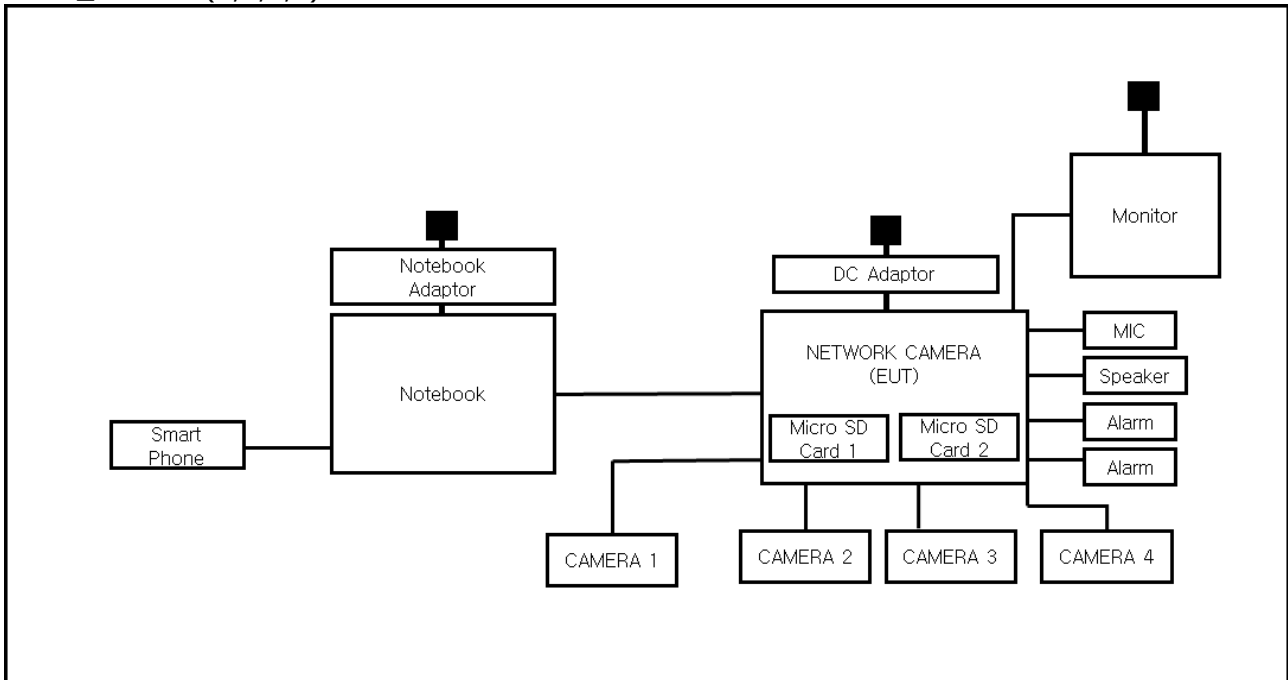
Test mode	operating
Operation mode	Monitoring EUT Using Web Viewer, Ping Test

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

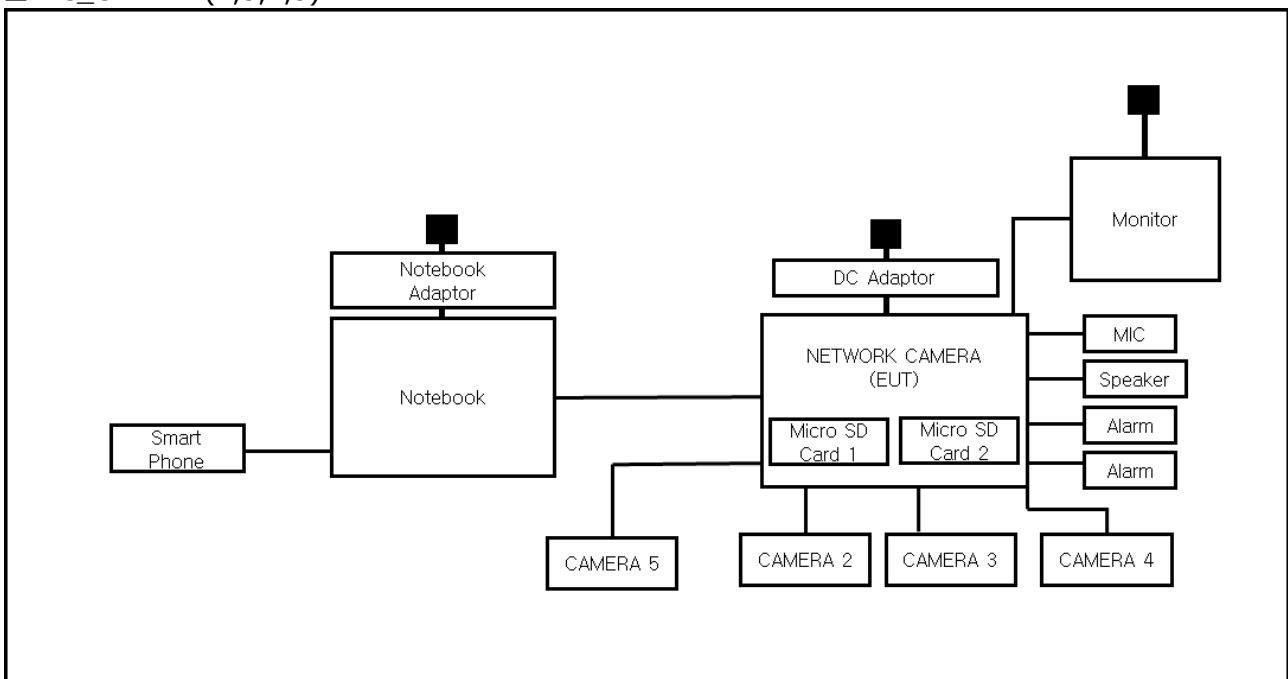
1.8 Configuration

■ AC Main
 □ DC Main

■ DC_CAMERA(1,2,3,4)

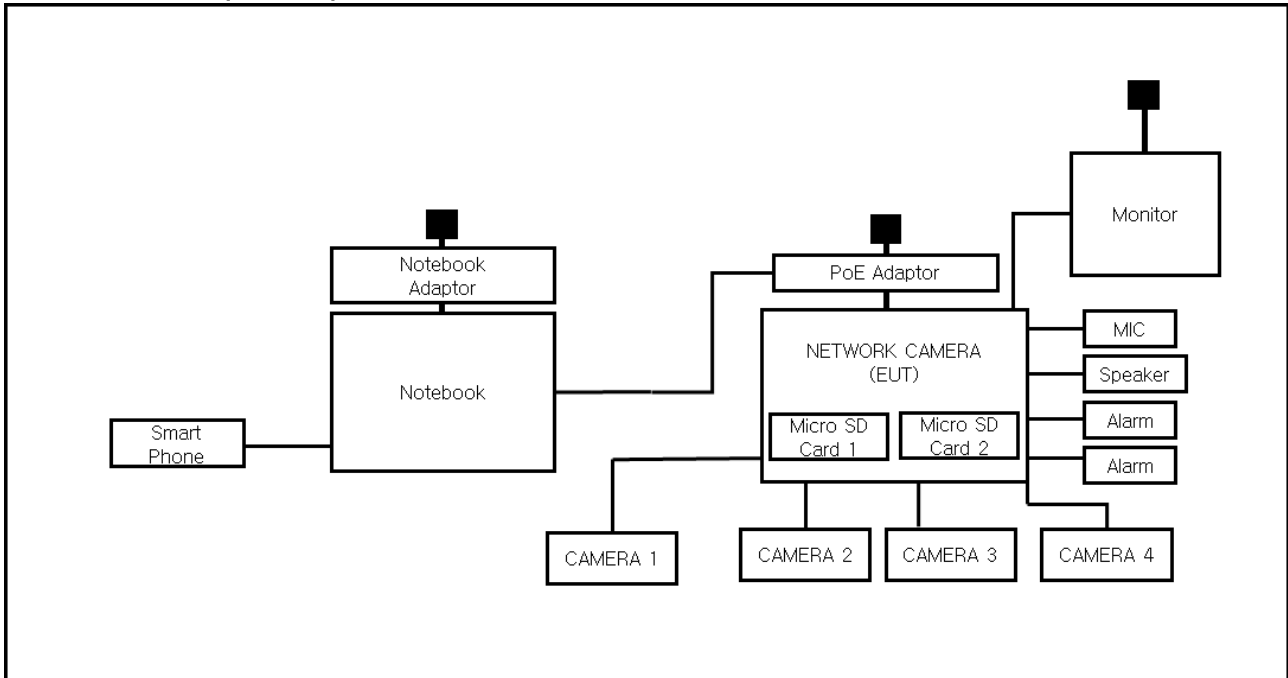


■ DC_CAMERA(2,3,4,5)

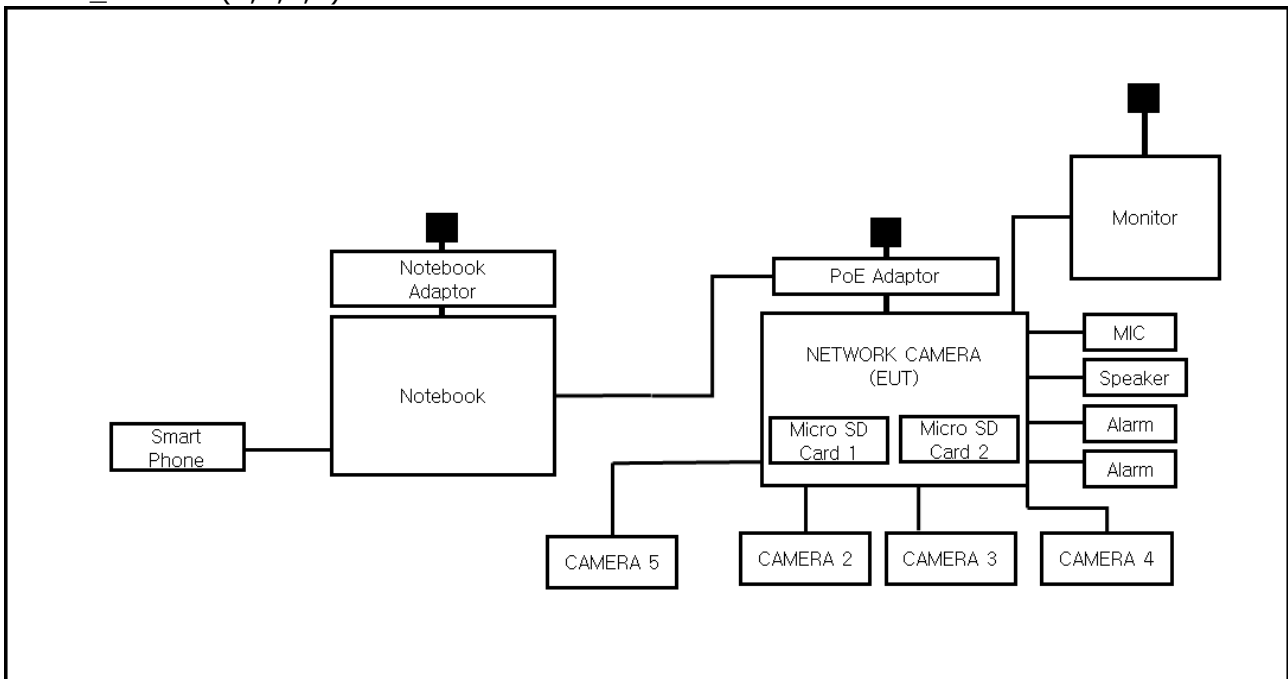


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■ PoE_CAMERA(1,2,3,4)



■ PoE_CAMERA(2,3,4,5)



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.11 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. 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 0003

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

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Aug. 10, 2020

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 20, 2021
☒	LISN	ENV216	R & S	101787	01, 02, 2021
☒	LISN	ESH2-Z5	R & S	100450	01, 02, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021

Test Conditions

Temperature: 25,0 °C
Relative Humidity: 56,5 % 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 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Aug. 10, 2020

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

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2021
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2020
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2021

Test Conditions

Temperature: 23,3 °C
Relative Humidity: 50,9 % 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

RemarksSee Appendix A for test data.

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Aug. 11, 2020

Test Location

SEMI ANECHOIC CHAMBER #4(10 m)

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, 2021
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 02, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2021
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 13, 2020

Test Conditions

Temperature: 23,6 °C
Relative Humidity: 51,2 % R.H.

Frequency Range of Measurement

1 GHz to 5 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.

APPENDIX A – TEST DATA

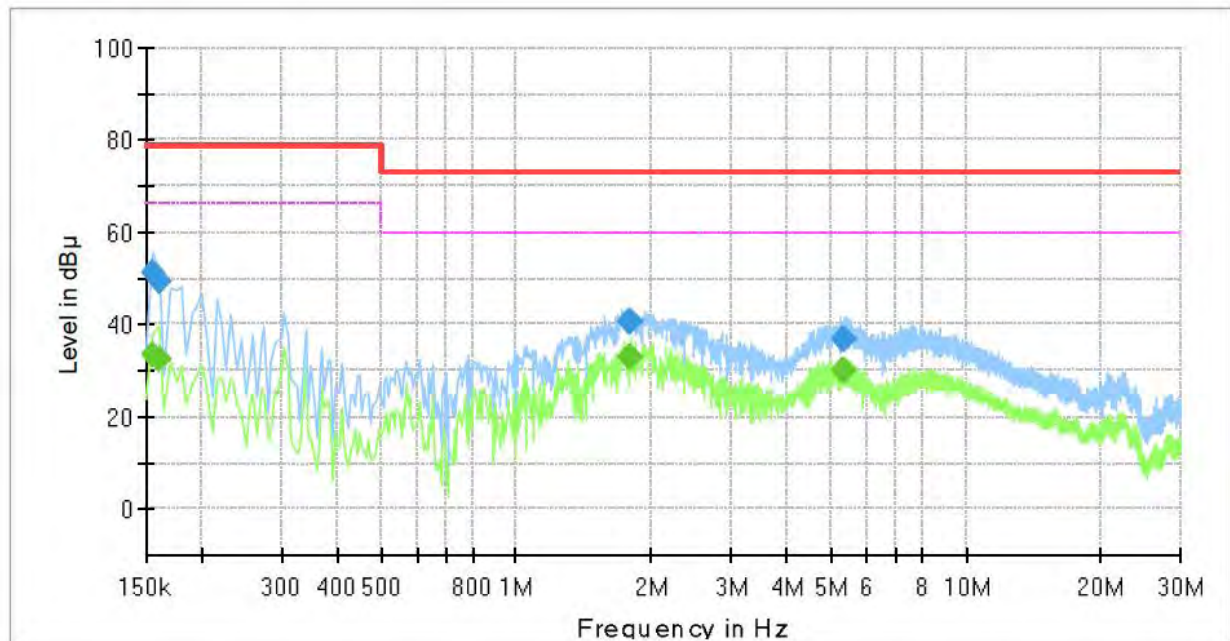
Conducted Emissions at Mains Power Ports

■ DC_CAMERA(1,2,3,4)

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-9000QB
Phase:	L1
Mode:	DC_CAMERA(1,2,3,4)
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	33.50	66.00	32.50	1000.0	9.000	L1	19.5
0.155000	51.29	---	79.00	27.71	1000.0	9.000	L1	19.5
0.160000	---	32.39	66.00	33.61	1000.0	9.000	L1	19.5
0.160000	49.30	---	79.00	29.70	1000.0	9.000	L1	19.5
1.775000	---	32.81	60.00	27.19	1000.0	9.000	L1	20.2
1.775000	40.72	---	73.00	32.28	1000.0	9.000	L1	20.2
1.795000	---	33.17	60.00	26.83	1000.0	9.000	L1	20.2
1.795000	40.72	---	73.00	32.28	1000.0	9.000	L1	20.2
5.290000	---	30.18	60.00	29.82	1000.0	9.000	L1	19.5
5.290000	36.65	---	73.00	36.35	1000.0	9.000	L1	19.5
5.365000	---	29.92	60.00	30.08	1000.0	9.000	L1	19.5
5.365000	37.02	---	73.00	35.98	1000.0	9.000	L1	19.5

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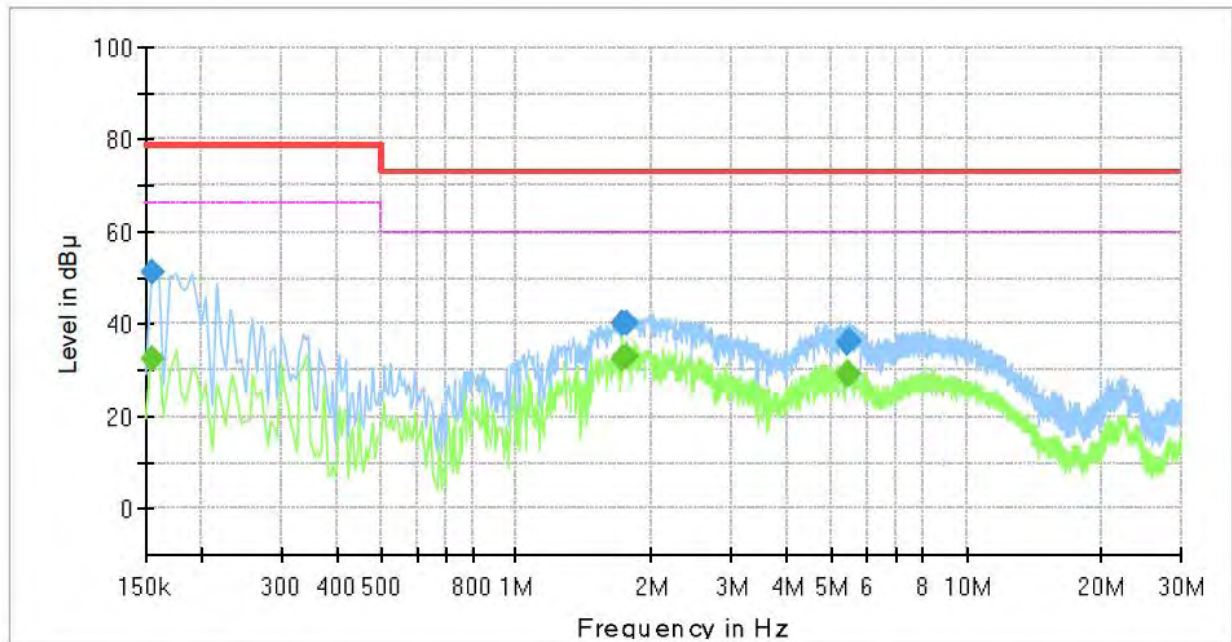
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NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: PNM-9000QB
Phase: N
Mode: DC_CAMERA(1,2,3,4)
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	32.53	66.00	33.47	1000.0	9.000	N	19.4
0.155000	51.16	---	79.00	27.84	1000.0	9.000	N	19.4
1.725000	---	32.35	60.00	27.65	1000.0	9.000	N	20.2
1.725000	40.13	---	73.00	32.87	1000.0	9.000	N	20.2
1.765000	---	32.89	60.00	27.11	1000.0	9.000	N	20.2
1.765000	40.34	---	73.00	32.66	1000.0	9.000	N	20.2
5.440000	---	29.02	60.00	30.98	1000.0	9.000	N	19.6
5.440000	35.94	---	73.00	37.06	1000.0	9.000	N	19.6
5.470000	---	28.90	60.00	31.10	1000.0	9.000	N	19.6
5.470000	36.08	---	73.00	36.92	1000.0	9.000	N	19.6

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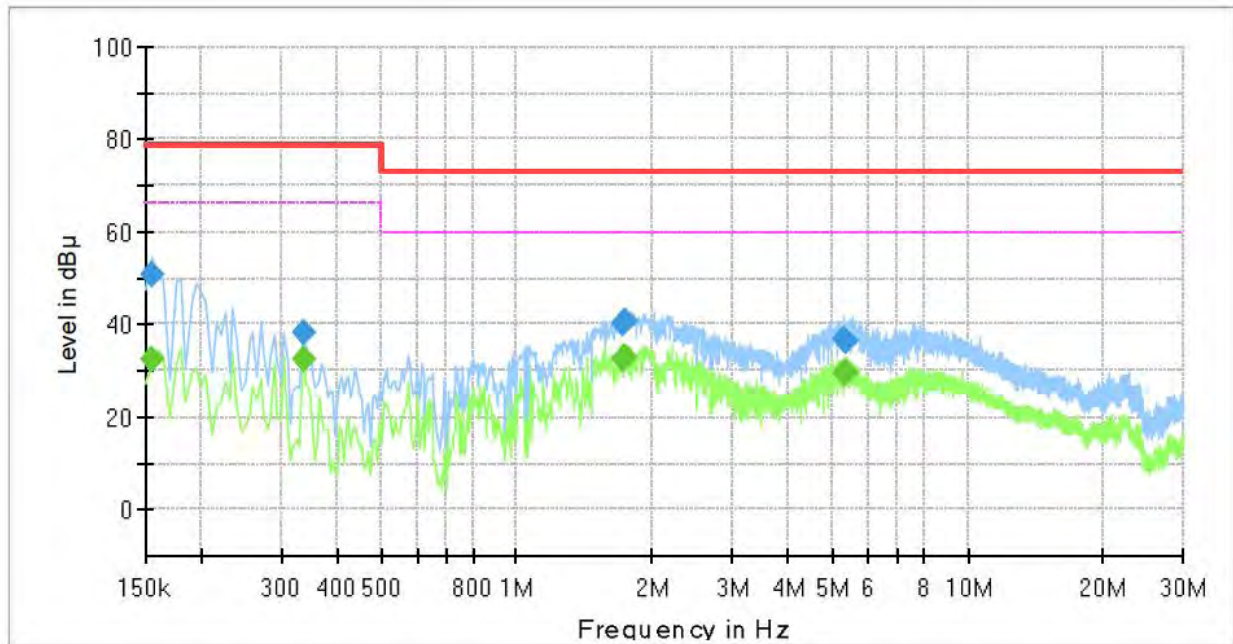
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■ DC_CAMERA(2,3,4,5)

HOT LINE

Common Information

Test Description: Conducted Emission
Model No.: PNM-9000QB
Phase: L1
Mode: DC_CAMERA(2,3,4,5)
Operator Name: KES



Final Result

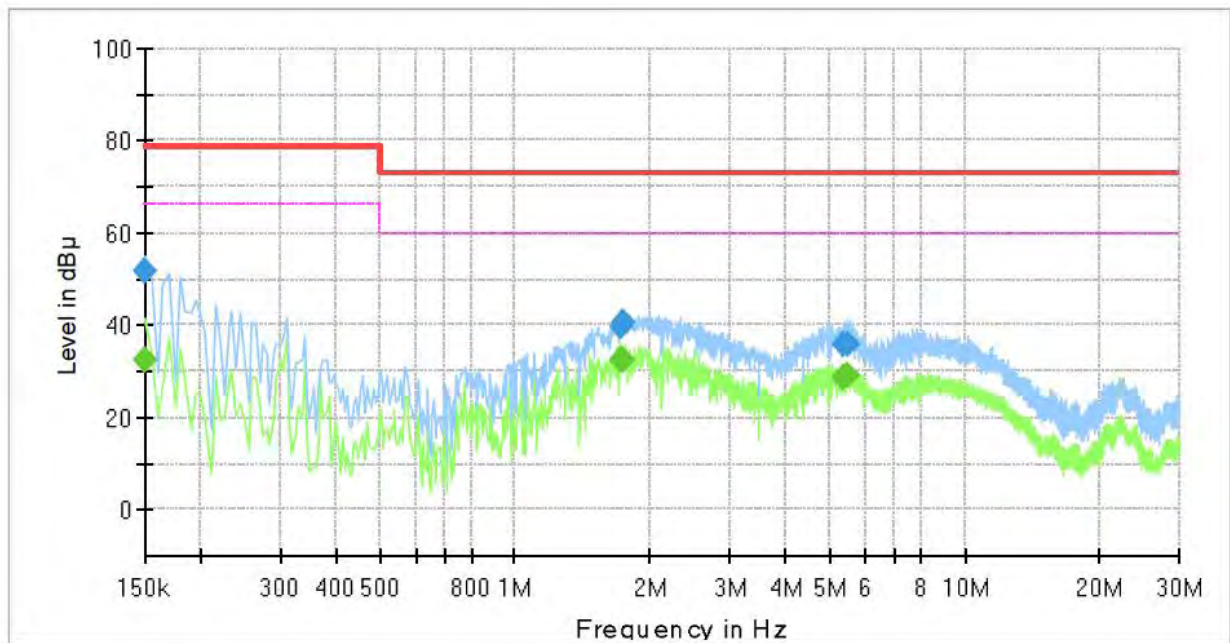
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	32.69	66.00	33.31	1000.0	9.000	L1	19.5
0.155000	51.02	---	79.00	27.98	1000.0	9.000	L1	19.5
0.335000	---	32.52	66.00	33.48	1000.0	9.000	L1	19.6
0.335000	38.04	---	79.00	40.96	1000.0	9.000	L1	19.6
1.715000	---	32.58	60.00	27.42	1000.0	9.000	L1	20.2
1.715000	40.41	---	73.00	32.59	1000.0	9.000	L1	20.2
1.735000	---	32.74	60.00	27.26	1000.0	9.000	L1	20.2
1.735000	40.79	---	73.00	32.21	1000.0	9.000	L1	20.2
5.315000	---	29.44	60.00	30.56	1000.0	9.000	L1	19.5
5.315000	36.59	---	73.00	36.41	1000.0	9.000	L1	19.5
5.355000	---	29.63	60.00	30.37	1000.0	9.000	L1	19.5
5.355000	36.54	---	73.00	36.46	1000.0	9.000	L1	19.5

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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	PNM-9000QB
Phase:	N
Mode:	DC_CAMERA(2,3,4,5)
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	---	32.40	66.00	33.60	1000.0	9.000	N	19.4
0.150000	51.85	---	79.00	27.15	1000.0	9.000	N	19.4
1.710000	---	32.29	60.00	27.71	1000.0	9.000	N	20.2
1.710000	39.84	---	73.00	33.16	1000.0	9.000	N	20.2
1.745000	---	32.61	60.00	27.39	1000.0	9.000	N	20.2
1.745000	40.46	---	73.00	32.54	1000.0	9.000	N	20.2
5.345000	---	28.79	60.00	31.21	1000.0	9.000	N	19.6
5.345000	35.90	---	73.00	37.10	1000.0	9.000	N	19.6
5.515000	---	28.97	60.00	31.03	1000.0	9.000	N	19.6
5.515000	36.04	---	73.00	36.96	1000.0	9.000	N	19.6

◆ 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))



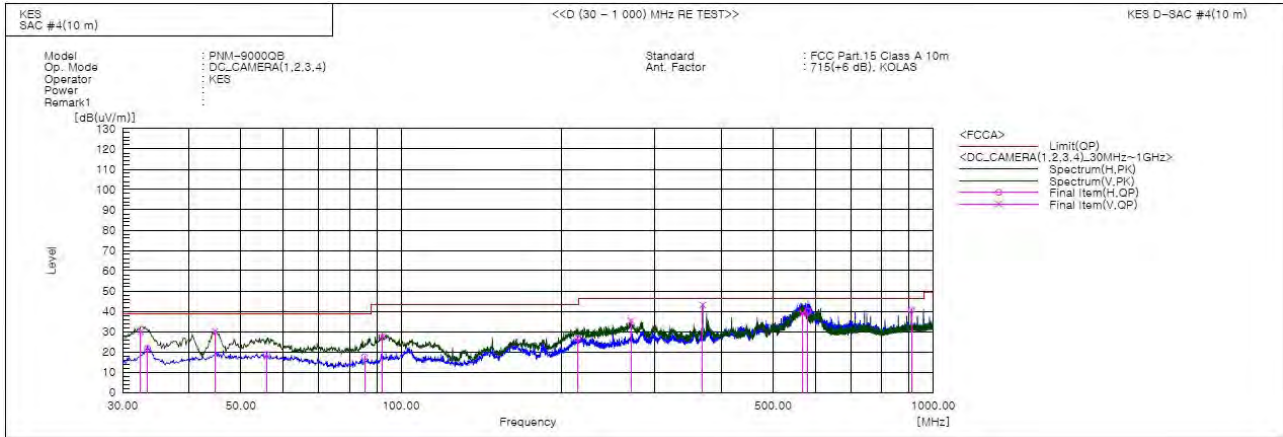
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC_CAMERA(1,2,3,4)



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	32.425	V	54.9	-25.0	29.9	39.0	9.1	178.0	255.0	
2	33.395	H	46.5	-24.9	21.6	39.0	17.4	367.0	167.0	
3	44.671	V	52.1	-21.9	30.2	39.0	8.8	325.0	275.0	
4	55.948	H	40.6	-21.9	18.7	39.0	20.3	189.0	310.0	
5	85.411	H	43.8	-26.2	17.6	39.0	21.4	100.0	340.0	
6	92.323	V	52.1	-24.2	27.9	43.5	15.6	100.0	76.0	
7	214.785	H	47.5	-20.9	26.6	43.5	16.9	400.0	349.0	
8	270.318	V	55.0	-19.6	35.4	46.5	11.1	144.0	171.0	
9	368.651	V	59.0	-15.9	43.1	46.5	3.4	162.0	31.0	
10	568.350	V	50.0	-11.0	39.0	46.5	7.5	142.0	16.0	
11	581.203	H	50.4	-10.4	40.0	46.5	6.5	209.0	39.0	
12	909.305	H	46.2	-5.6	40.6	46.5	5.9	352.0	333.0	

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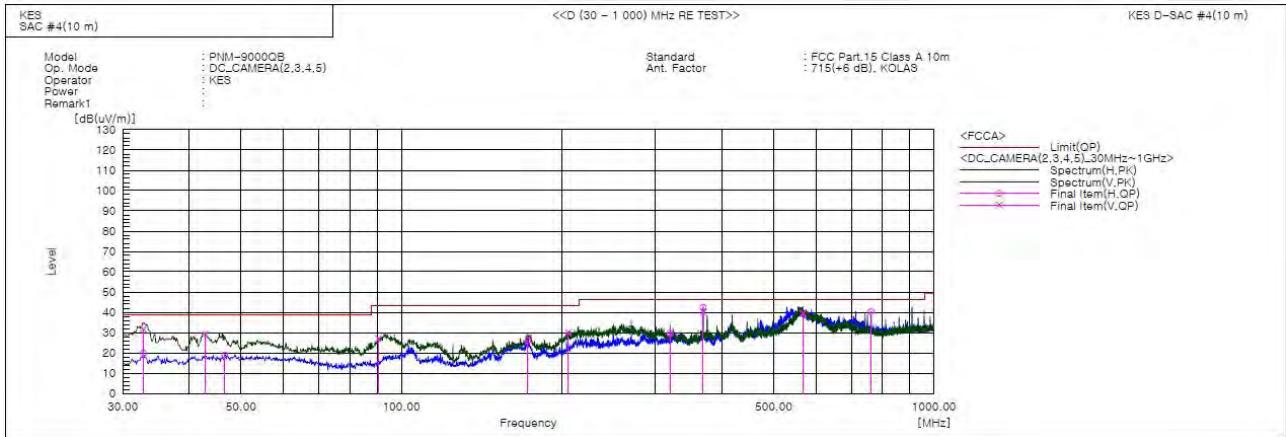


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DC_CAMERA(2,3,4,5)



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	32.789	V	56.6	-24.9	31.7	39.0	7.3	145.0	191.0	
2	32.789	H	44.8	-24.9	19.9	39.0	19.1	378.0	202.0	
3	42.853	V	51.3	-22.1	29.2	39.0	9.8	100.0	249.0	
4	46.611	H	40.6	-21.7	18.9	39.0	20.1	400.0	186.0	
5	90.504	V	51.8	-24.7	27.1	43.5	16.4	149.0	56.0	
6	172.833	H	50.4	-24.3	26.1	43.5	17.4	377.0	325.0	
7	205.691	V	51.5	-21.4	30.1	43.5	13.4	108.0	188.0	
8	319.424	H	47.1	-17.5	29.6	46.5	16.9	213.0	330.0	
9	368.651	V	55.9	-15.9	40.0	46.5	6.5	100.0	23.0	
10	368.651	H	58.4	-15.9	42.5	46.5	4.0	207.0	129.0	
11	566.895	V	50.5	-11.1	39.4	46.5	7.1	116.0	188.0	
12	761.865	H	47.8	-7.5	40.3	46.5	6.2	100.0	208.0	

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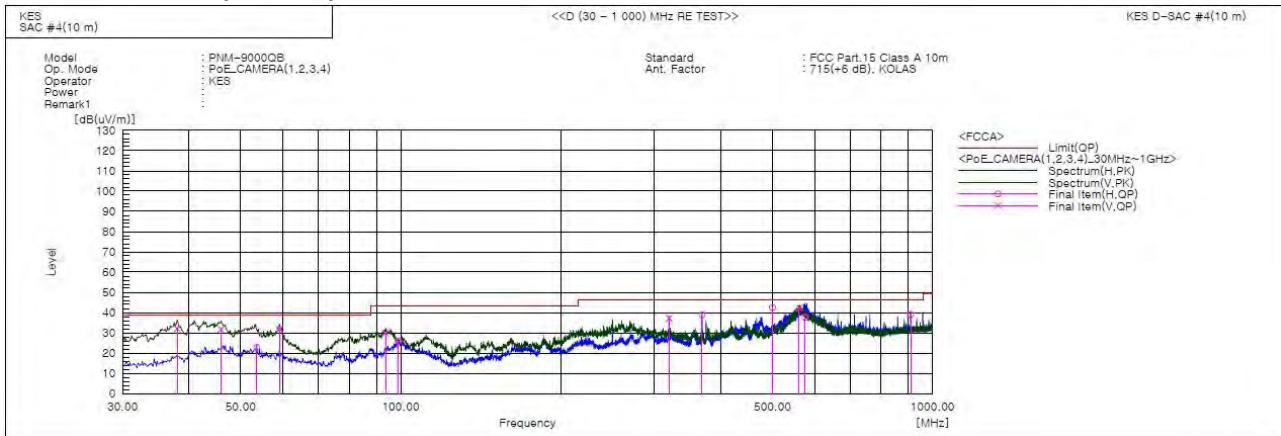


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■ PoE_CAMERA(1,2,3,4)



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	38.003	V	56.0	-23.9	32.1	39.0	6.9	122.0	294.0	
2	45.884	V	53.6	-21.8	31.8	39.0	7.2	400.0	224.0	
3	53.644	H	44.4	-21.6	22.8	39.0	16.2	245.0	259.0	
4	59.221	V	54.3	-22.4	31.9	39.0	7.1	106.0	127.0	
5	93.656	V	53.7	-23.8	29.9	43.5	13.6	122.0	104.0	
6	98.991	H	48.4	-22.6	25.8	43.5	17.7	362.0	359.0	
7	319.545	V	54.7	-17.5	37.2	46.5	9.3	135.0	150.0	
8	368.651	H	54.7	-15.9	38.8	46.5	7.7	400.0	248.0	
9	499.965	H	55.3	-12.8	42.5	46.5	4.0	152.0	282.0	
10	561.318	V	53.7	-11.4	42.3	46.5	4.2	100.0	12.0	
11	576.110	H	48.2	-10.6	37.6	46.5	8.9	200.0	35.0	
12	909.426	H	44.7	-5.6	39.1	46.5	7.4	100.0	346.0	

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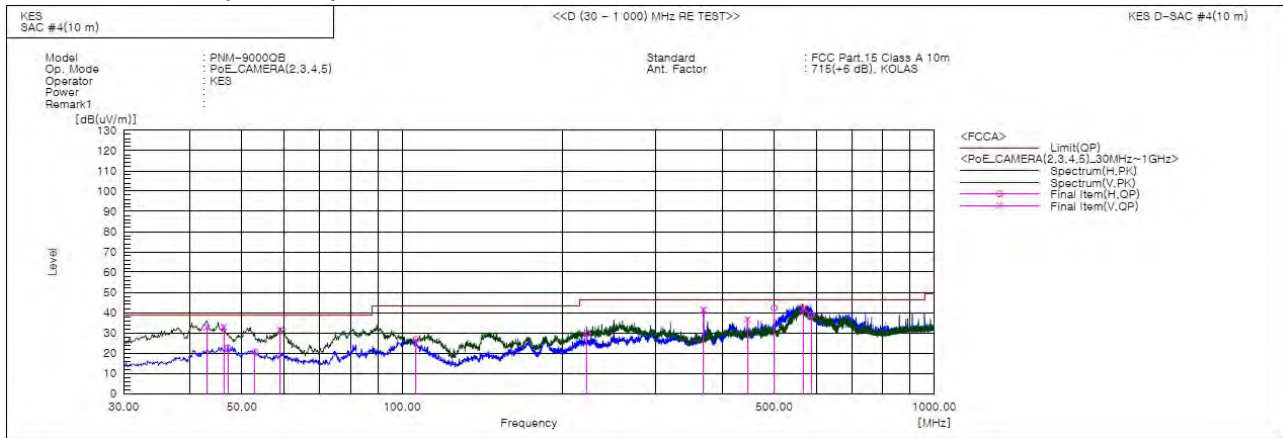


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■ PoE_CAMERA(2,3,4,5)



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	42.974	V	54.8	-22.1	32.7	39.0	6.3	144.0	244.0	
2	46.248	V	54.6	-21.7	32.9	39.0	6.1	100.0	221.0	
3	47.096	H	44.1	-21.6	22.5	39.0	16.5	372.0	131.0	
4	52.916	H	42.0	-21.6	20.4	39.0	18.6	400.0	161.0	
5	58.979	V	53.7	-22.3	31.4	39.0	7.6	142.0	70.0	
6	106.145	H	49.3	-22.6	26.7	43.5	16.8	361.0	359.0	
7	222.788	H	50.3	-20.5	29.8	46.5	16.7	352.0	359.0	
8	368.651	V	57.4	-15.9	41.5	46.5	5.0	100.0	175.0	
9	445.524	V	51.4	-14.7	36.7	46.5	9.8	100.0	144.0	
10	499.965	H	55.1	-12.8	42.3	46.5	4.2	209.0	267.0	
11	566.895	V	53.3	-11.1	42.2	46.5	4.3	142.0	9.0	
12	586.901	H	48.9	-10.1	38.8	46.5	7.7	241.0	45.0	

◆ Calculation – SAC #4(10 m)

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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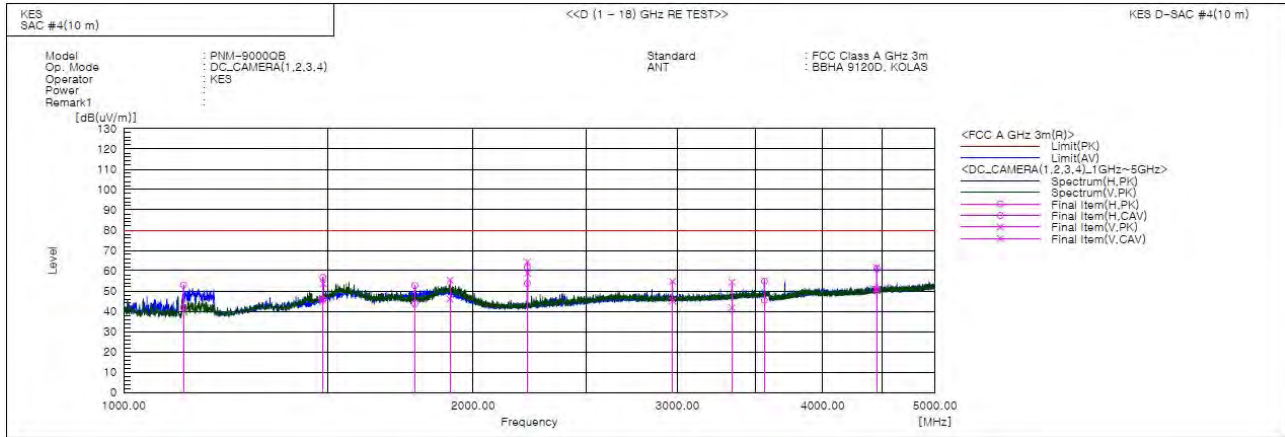
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Radiated Electric Field Emissions(Above 1 GHz)

■ DC_CAMERA(1,2,3,4)



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	1125.500	H	57.6	46.5	-4.6	53.0	41.9	80.0	60.0	27.0	18.1	100.0	327.0	
2	1484.500	H	59.4	48.5	-2.7	56.7	45.8	80.0	60.0	23.3	14.2	354.0	327.0	
3	1485.000	V	56.4	48.1	-2.7	53.7	45.4	80.0	60.0	26.3	14.6	142.0	278.0	
4	1781.500	H	54.0	45.1	-1.3	52.7	43.8	80.0	60.0	27.3	16.2	133.0	0.0	
5	1910.000	V	56.2	46.9	-0.8	55.4	46.1	80.0	60.0	24.6	13.9	175.0	318.0	
6	2227.365	H	61.0	53.1	0.6	61.6	53.7	80.0	60.0	18.4	6.3	104.0	347.0	
7	2227.445	V	63.7	58.1	0.6	64.3	58.7	80.0	60.0	15.7	1.3	101.0	320.0	
8	2970.000	V	50.5	40.8	4.3	54.8	45.1	80.0	60.0	25.2	14.9	136.0	11.0	
9	3341.500	V	49.0	36.4	5.4	54.4	41.8	80.0	60.0	25.6	18.2	264.0	54.0	
10	3564.000	H	49.1	39.6	5.8	54.9	45.4	80.0	60.0	25.1	14.6	400.0	11.0	
11	4455.000	V	51.5	40.6	10.2	61.7	50.8	80.0	60.0	18.3	9.2	375.0	11.0	
12	4455.220	H	51.0	41.0	10.2	61.2	51.2	80.0	60.0	18.8	8.8	100.0	25.0	

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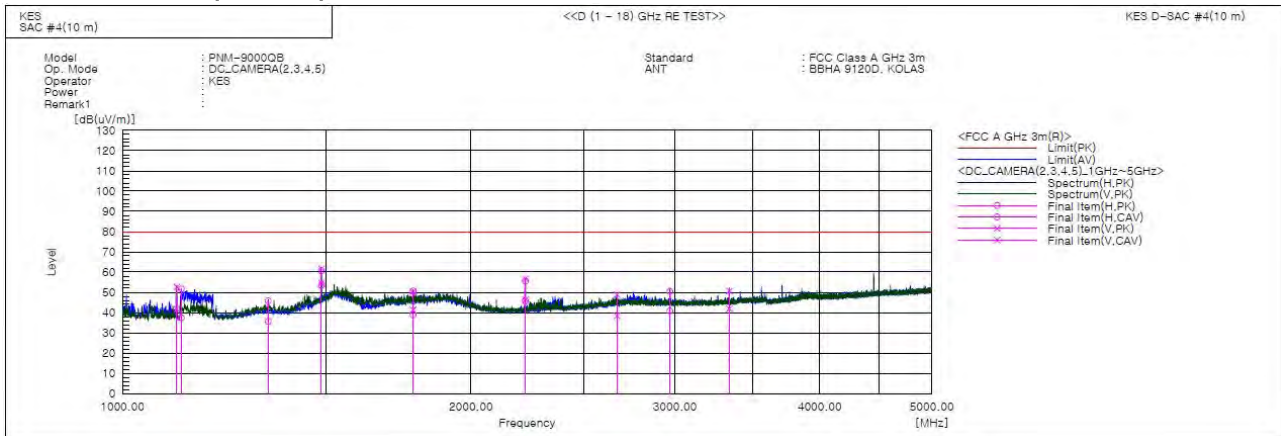


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DC_CAMERA(2,3,4,5)



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	1113.500	V	57.4	46.4	-4.7	52.7	41.7	80.0	60.0	27.3	18.3	162.0	40.0	
2	1124.000	H	56.3	42.0	-4.6	51.7	37.4	80.0	60.0	28.3	22.6	234.0	335.0	
3	1336.000	H	49.2	39.1	-3.4	45.8	35.7	80.0	60.0	34.2	24.3	162.0	2.0	
4	1484.895	H	63.4	56.2	-2.7	60.7	53.5	80.0	60.0	19.3	6.5	145.0	306.0	
5	1484.975	V	64.5	57.4	-2.7	61.8	54.7	80.0	60.0	18.2	5.3	146.0	320.0	
6	1781.500	V	51.7	42.7	-1.3	50.4	41.4	80.0	60.0	29.6	18.6	362.0	341.0	
7	1782.000	H	52.0	40.2	-1.3	50.7	38.9	80.0	60.0	29.3	21.1	225.0	15.0	
8	2227.500	V	56.1	45.9	0.6	56.7	46.5	80.0	60.0	23.3	13.5	373.0	325.0	
9	2227.500	H	54.9	45.2	0.6	55.5	45.8	80.0	60.0	24.5	14.2	246.0	173.0	
10	2673.000	V	45.9	35.4	3.0	48.9	38.4	80.0	60.0	31.1	21.6	106.0	332.0	
11	2970.000	H	46.1	36.5	4.3	50.4	40.8	80.0	60.0	29.6	19.2	100.0	2.0	
12	3341.500	V	45.3	36.5	5.4	50.7	41.9	80.0	60.0	29.3	18.1	342.0	48.0	

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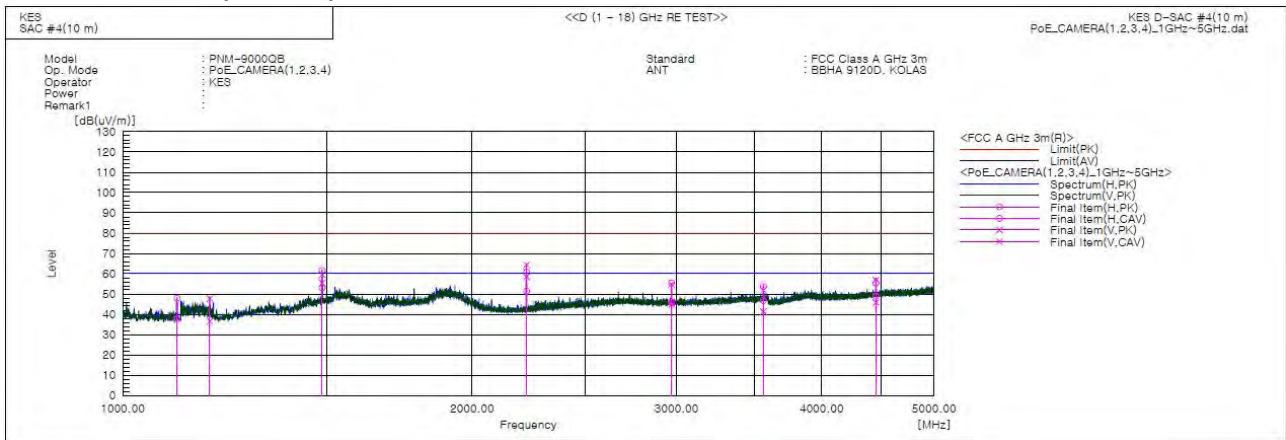


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■ PoE_CAMERA(1,2,3,4)



Final Result

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle	Remark
	[MHz]		[dB(uV)]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[dB]	[cm]	[deg]	
1	1113.500	H	52.6	42.6	-4.7	47.9	37.9	80.0	60.0	32.1	22.1	332.0	133.0	
2	1188.000	V	52.0	40.9	-4.3	47.7	36.6	80.0	60.0	32.3	23.4	162.0	157.0	
3	1485.000	V	62.2	58.1	-2.7	59.5	55.4	80.0	60.0	20.5	4.6	145.0	303.0	
4	1485.000	H	64.3	55.7	-2.7	61.6	53.0	80.0	60.0	18.4	7.0	362.0	310.0	
5	2227.500	V	63.8	57.9	0.6	64.4	58.5	80.0	60.0	15.6	1.5	124.0	325.0	
6	2227.500	H	60.2	50.8	0.6	60.8	51.4	80.0	60.0	19.2	8.6	211.0	310.0	
7	2970.000	V	50.5	40.6	4.3	54.8	44.9	80.0	60.0	25.2	15.1	162.0	42.0	
8	2970.000	H	51.1	41.7	4.3	55.4	46.0	80.0	60.0	24.6	14.0	172.0	35.0	
9	3564.000	V	46.1	35.6	5.8	51.9	41.4	80.0	60.0	28.1	18.6	100.0	351.0	
10	3564.000	H	47.9	40.9	5.8	53.7	46.7	80.0	60.0	26.3	13.3	100.0	341.0	
11	4455.000	V	46.6	35.7	10.2	56.8	45.9	80.0	60.0	23.2	14.1	302.0	193.0	
12	4455.000	H	45.2	38.7	10.2	55.4	48.9	80.0	60.0	24.6	11.1	179.0	180.0	

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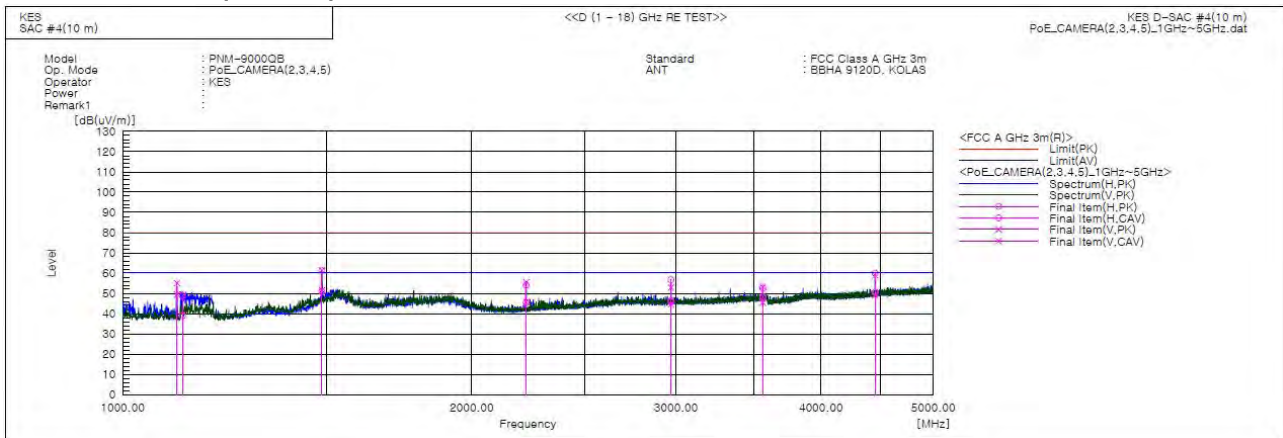


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PoE_CAMERA(2,3,4,5)



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	1113.500	V	59.8	54.2	-4.7	55.1	49.5	80.0	60.0	24.9	10.5	165.0	133.0	
2	1126.000	H	53.5	43.5	-4.6	48.9	38.9	80.0	60.0	31.1	21.1	139.0	335.0	
3	1485.000	V	64.1	54.3	-2.7	61.4	51.6	80.0	60.0	18.6	8.4	142.0	336.0	
4	1485.000	H	63.9	53.5	-2.7	61.2	50.8	80.0	60.0	18.8	9.2	276.0	312.0	
5	2227.500	V	54.9	45.2	0.6	55.5	45.8	80.0	60.0	24.5	14.2	102.0	349.0	
6	2227.500	H	53.5	44.8	0.6	54.1	45.4	80.0	60.0	25.9	14.6	142.0	171.0	
7	2970.000	V	48.6	40.2	4.3	52.9	44.5	80.0	60.0	27.1	15.5	134.0	49.0	
8	2970.000	H	52.4	41.9	4.3	56.7	46.2	80.0	60.0	23.3	13.8	366.0	2.0	
9	3564.000	V	47.4	39.6	5.8	53.2	45.4	80.0	60.0	26.8	14.6	345.0	17.0	
10	3564.000	H	46.8	42.6	5.8	52.6	48.4	80.0	60.0	27.4	11.6	400.0	23.0	
11	4455.000	V	48.7	38.9	10.2	58.9	49.1	80.0	60.0	21.1	10.9	275.0	174.0	
12	4455.500	H	49.7	40.5	10.2	59.9	50.7	80.0	60.0	20.1	9.3	100.0	10.0	

◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(uV/m)] - Result(PK/CAV) [dB(uV/m)]

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

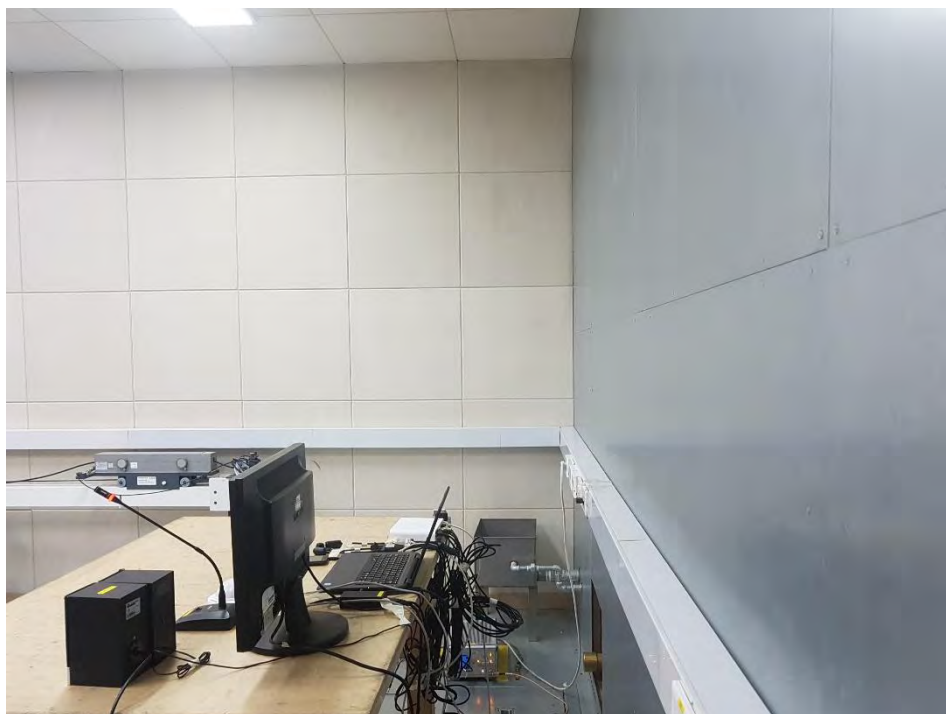
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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Test Setup Photos and Configuration

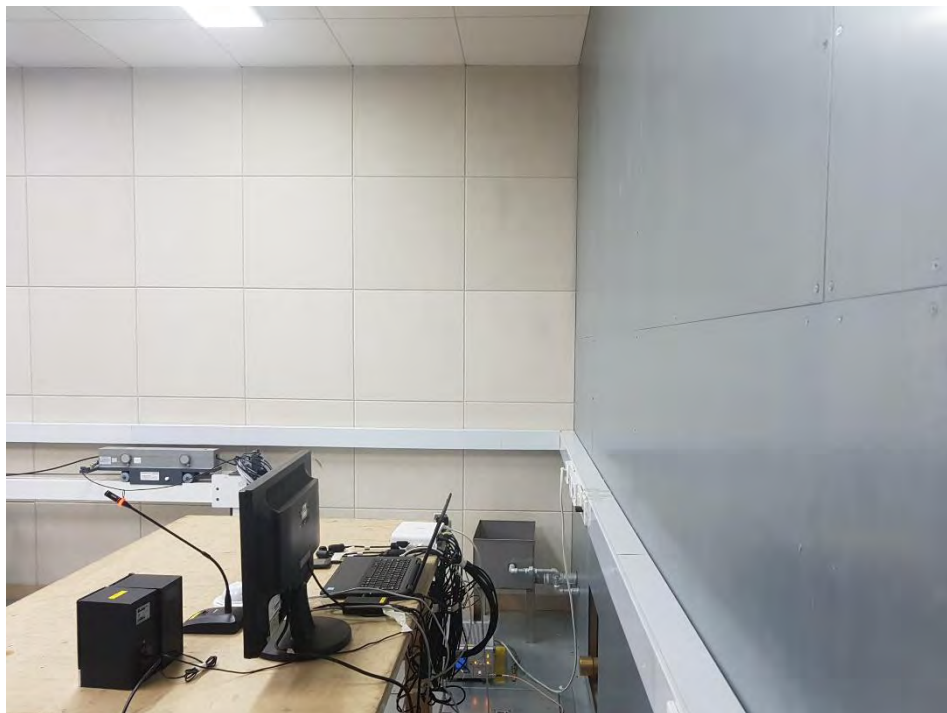
Conducted Emissions at Mains Power Ports

■ DC_CAMERA(1,2,3,4)



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■ DC_CAMERA(2,3,4,5)



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Radiated Electric Field Emissions(Below 1 GHz)

■ DC_CAMERA(1,2,3,4)



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■ DC_CAMERA(2,3,4,5)



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■ PoE_CAMERA(1,2,3,4)



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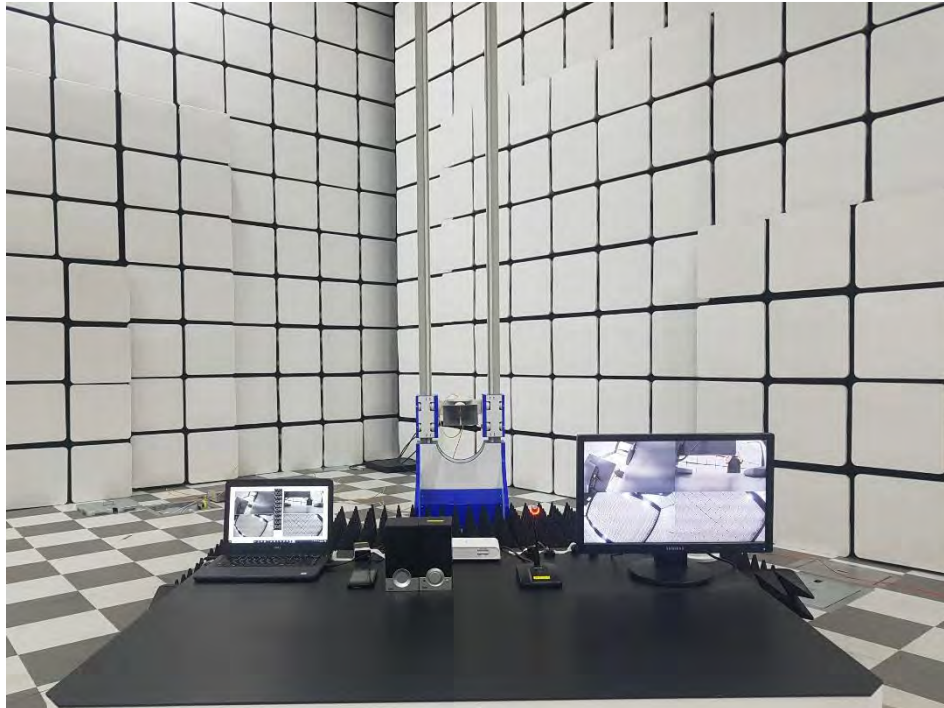
■ PoE_CAMERA(2,3,4,5)



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Radiated Electric Field Emissions(Above 1 GHz)

■ DC_CAMERA(1,2,3,4)



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■ DC_CAMERA(2,3,4,5)



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■ PoE_CAMERA(1,2,3,4)



■ PoE_CAMERA(2,3,4,5)



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

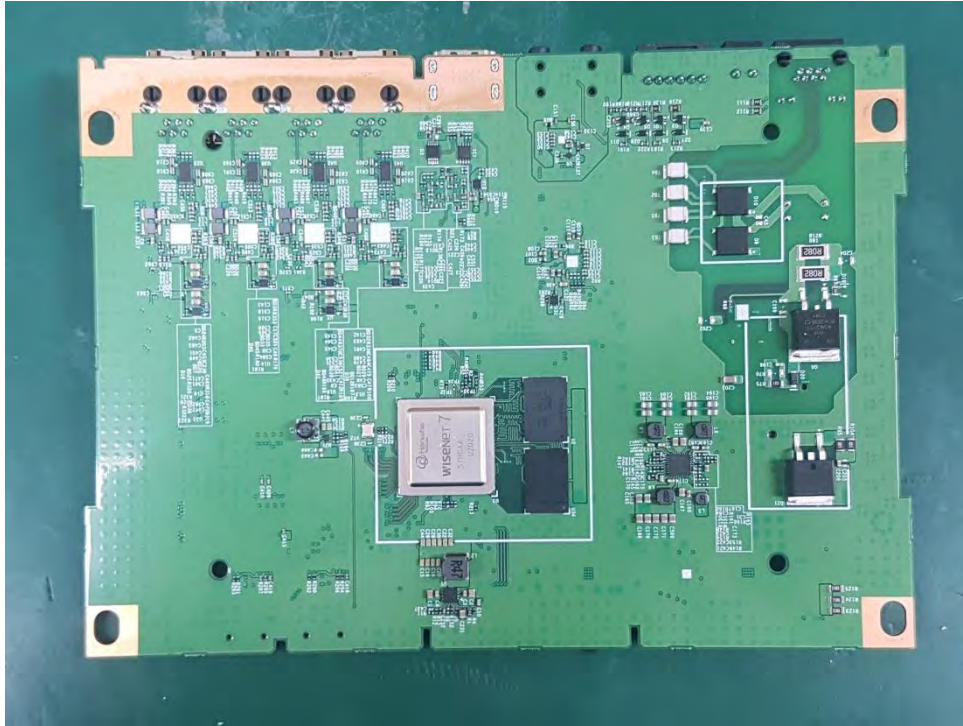
(Internal View)



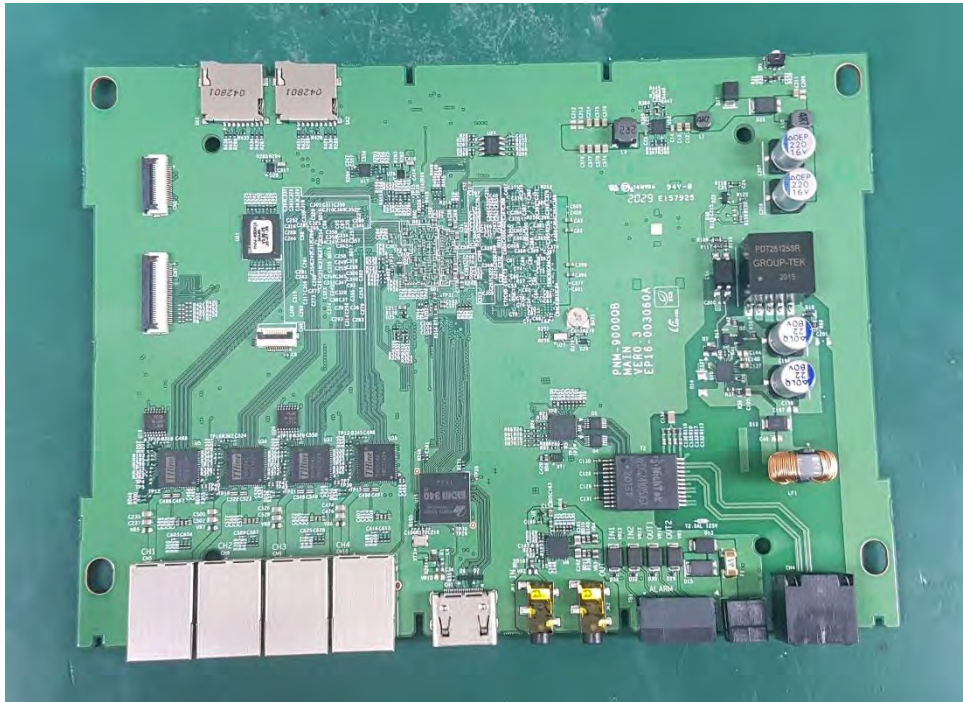
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EUT Internal View – Main Board

(Top)



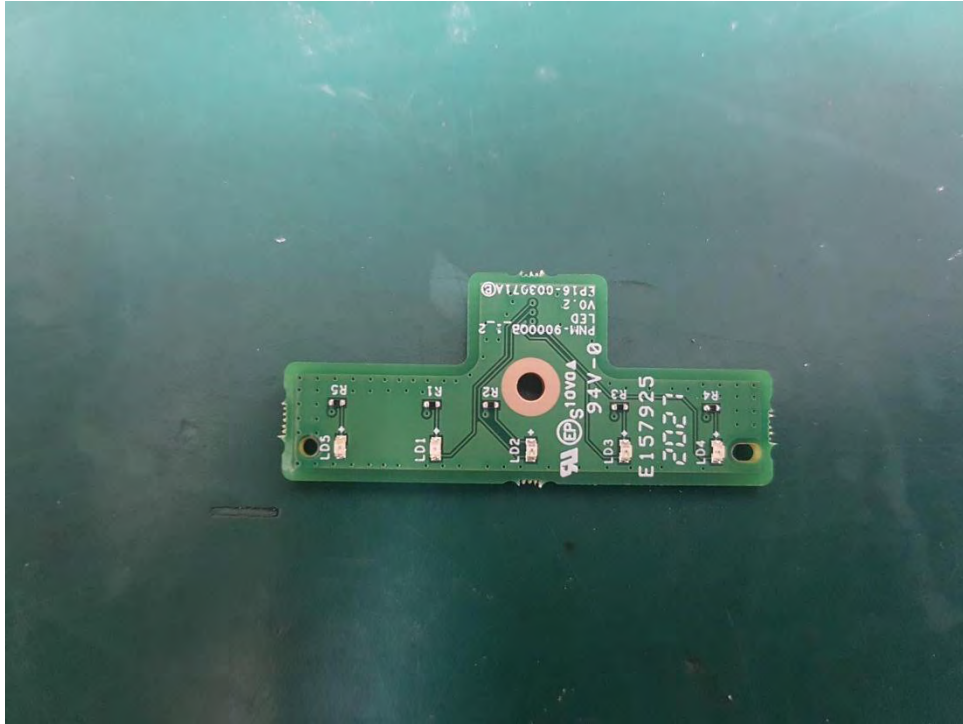
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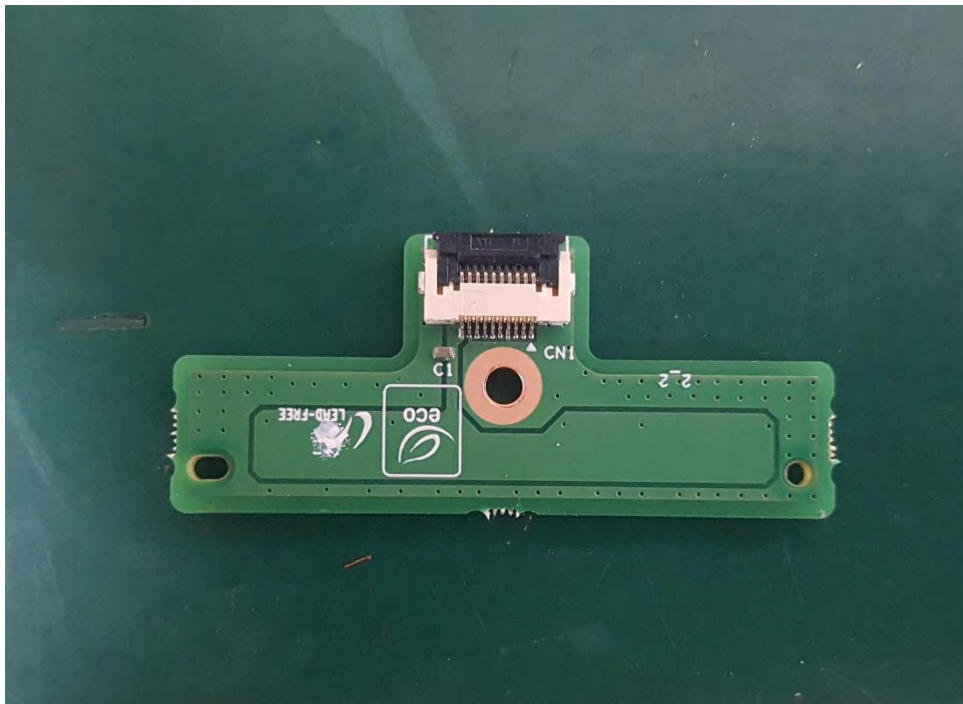
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EUT Internal View – SUB Board

(Top)

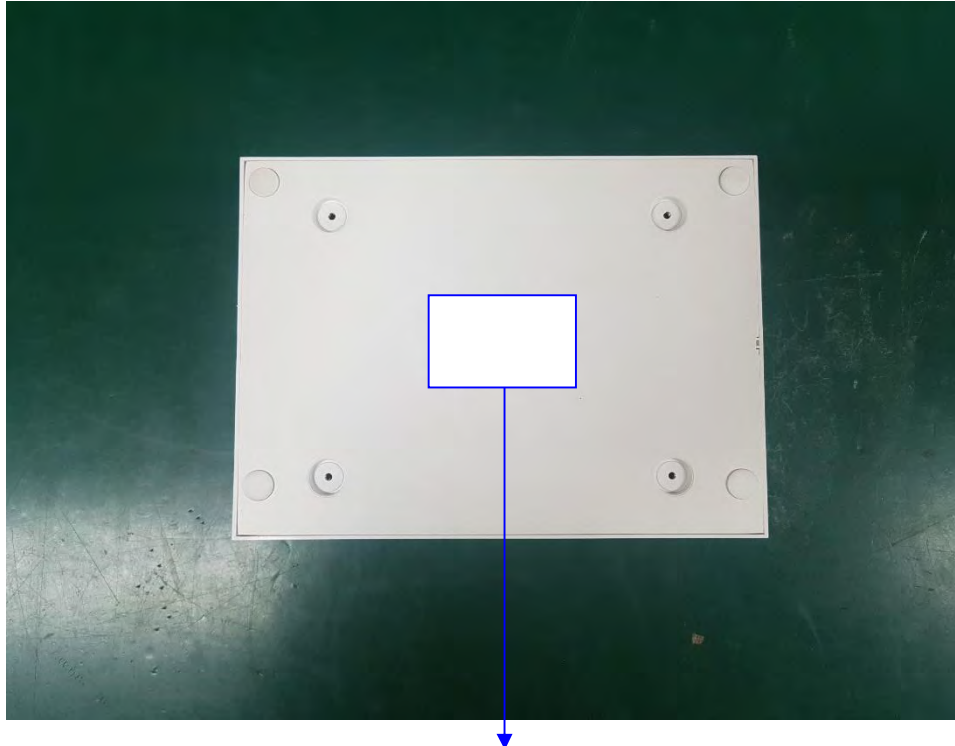


(Bottom)



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Label Photographs



CAN ICES-3(A) / NMB-3(A)

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 device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.