

EMC TEST REPORT

Test Report No. : KES-EM-21T0178-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : PNB-A6001
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Equipment authorization : **Supplier's Declaration of Conformity**
Date of Receipt : Jan. 28, 2021
Test date : Feb. 01, 2021 ~ Feb. 02, 2021
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by



Dae Hyun, 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.

**KES Co., Ltd.**

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

Report No.:

KES-EM-21T0178-R1

Page (2) of (35)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 16, 2021	KES-EM-21T0178	Issued
Feb. 24, 2023	KES-EM-21T0178-R1	Change the Applicant and manufacturer at the request of the customer

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

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



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	5
1.2	Variant Model Differences	5
1.3	Device Modifications	5
1.4	Equipment Under Test.....	5
1.5	Support Equipments	6
1.6	External I/O Cabling	7
1.7	EUT Operating Mode(s)	8
1.8	Configuration.....	9
1.9	Remarks when standards applied	10
1.10	Calibration Details of Equipment Used for Measurement	10
1.11	Test Facility	10
1.12	Laboratory Accreditations and Listings	오류! 책갈피가 정의되어 있지 않습니다.
2.0	Test Regulations.....	11
2.1	Conducted Emissions at Mains Power Ports	13
2.2	Radiated Electric Field Emissions(Below 1 GHz)	14
2.3	Radiated Electric Field Emissions(Above 1 GHz)	15
APPENDIX A – TEST DATA.....		16
Conducted Emissions at Mains Power Ports.....		16
Radiated Electric Field Emissions(Below 1 GHz)		20
Radiated Electric Field Emissions(Above 1 GHz)		22
Test Setup Photos and Configuration		24
Conducted Emissions at Mains Power Ports.....		24
Radiated Electric Field Emissions(Below 1 GHz)		25
Radiated Electric Field Emissions(Above 1 GHz)		27
EUT External Photographs		29
EUT Internal Photographs		30



1.0 General Product Description

Main Specifications of EUT are:

PNB-A6001	
Video	
Imaging Device	1/2" CMOS
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x480, 720x576, 720x480, 640x480, 640x360
Max. Frame Rate	H.265/H.264: Max. 60/50fps@50Hz/50Hz, AI analytics on; Max. 120/100fps@60Hz/50Hz, AI analytics off
MIPEG	Max. 15fps/12fps@60Hz/50Hz
NELD	None
Pixel Size	None
Min. Illumination	Color: 0.007Lux@F1.2, 1/30sec, 30IRE; B/W: 0.0007Lux@F1.2, 1/30sec, 30IRE, 30/25fps Color: 0.014Lux@F1.2, 1/60sec, 30IRE; B/W: 0.0014Lux@F1.2, 1/60sec, 30IRE, 60/50fps Color: 0.028Lux@F1.2, 1/120sec, 30IRE; B/W: 0.0028Lux@F1.2, 1/120sec, 30IRE, 120/100fps
Video Out	CVBS: 1.0 Vp-p / 75Ω composite, 720x480/60, 720x576/p for installation USB: Micro USB Type B, 1280x720 for installation
Video Transmission	None
Lens	
Focal Length (Zoom)	None
Max. Aperture Ratio	None
Angular Field of View	None
Min. Object Distance	None
Focus Control	Simple focus
Lens Type	DC auto iris, P iris, Manual, i-CS
Mount Type	C mount, CS mount
Optional Lens	None
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
Reset Accuracy	None
Operational	
Camera Title	Displayed up to 85 characters
Direction Indicator	None
Day & Night	Auto(ICR)
Backlight Compensation	BLC, WDR, SSOR
Wide Dynamic Range	120dB
Digital Noise Reduction	32NR, WiseNR II (using AI engine)
Digital Image Stabilization	Stabilization Support(built-in gyro sensor)
Defog	None
Motion Detection	Box, polygonal zones
Privacy Masking	Box, rectangle zones
Gain Control	Color: Gray/White/Red/Blue/Black/White
White Balance	Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor
LDC	Support
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1/5~1/12,000sec)
Digital PTZ	Auto prefer shutter control based on AI engine
Video Rotation	None
Analytics	Classified object type: Person/Box/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: Deafous 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	RS-485(Samsung T, Pelco D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell)
Alarm I/O	Input: 12V / Output: 12V / 12V Power(Max. 30mA) / 12V
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(built-in mic) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
Audio Out	Line out, Max output level: 1Vrms
IR Viewable Length	None
Temperature Accuracy	None
Water Removal	None
Auto Tracking	None
Coaxial Protocol	None
Color Palettes	None
Radiometry	
Temperature detect	None
Temperature accuracy	None
Temperature detect	None
Additional	None
Network	
Ethernet	Metal shielded RJ-45(10/100/1000 BASE-T)
Video Compression	H.265/H.264: Main/High, MIPEG
Audio Compression	G.711 u-law / G.726 Selectable G.726(AQ10M) 8KHz, G.711 8KHz G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps AAC-LC: 48Kbps at 16KHz
Smart Codec	Manual(Sea area), WiseStream(I), WiseStream(II)(using AI engine)
Video Quality Adjust	H.264/H.265: Target bitrate level control MIPEG: Target bitrate level control
Bitrate Control	H.264/H.265: CBR or VBR MIPEG: VBR
Streaming	Unicast/used / 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) FPM with RPS 140-2 level2 Secure Boot, Verity firmware forgery
Application Program	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 2 slots 512GB
Memory	4096MB RAM, 512MB Flash
Environmental & Electrical	
Operating Temperature / Humidity	-50°C ~ +55°C / 40% ~ +131°F / Less than 90% RH * Start up should be done at above -30°C
Storage Temperature / Humidity	-50°C ~ +60°C / 58°F ~ +140°F / Less than 90% RH
Certification	None
Input Voltage	PoE + IEEE802.3at, 12VDC
Power Consumption	PoE +: Max 17.5W, Typ 13.7W 12VDC: Max 14W, Typ 10.6W
Mechanical	
Color / Material	Body: Black / Aluminum
RAL Code	None
Product dimensions	814x716x165mm(3.19x2.81x6.49"), Weight: 0.88kg(1.94lb)
Conduit hole	None
Hanging mount(Dome)	None
Skirt cover(Dome)	None
Weather cap(Dome)	None
Power module	None
Back box	None
DORI (EN60730-4 standard)	
Detect (25PPM)	None
Observe (53PPM)	None
Recognize (125PPM)	None
Identify (250PPM)	None

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



1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

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	PNB-A6001	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

**KES Co., Ltd.**

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

Report No.:

KES-EM-21T0178-R1

Page (6) of (35)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
DC 12 V Adapter	OK-1671230	-	YANHUA	-
PoE Adapter	PT-PSE109GBROAH	-	Dongguan PROCET Network Technology Co.,Ltd	-
Lens	-	-	Honeywell	-
Notebook	ProBook4430s	-	HP	-
Notebook Adapter	SeriesPPP0009H	-	CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
Mic	CMK-303	-	CAMAC	-
SmartPhone	A1429	-	Apple	-
Button Alarm	-	-	-	-
Alarm	-	-	-	-
Alarm Adapter	2ACB022F	-	Channel Well Technology (Guangzhou) Co., Ltd	-
Micro SD Card	-	-	Sandisk	-
Controller	SPC-1010	C50E67WG10100 F	SamSung Techwin Co.,Ltd.	-
Controller Adapter	RS-AB1000	-	Dongguan Jinhuasheng Power Technology Co.,Ltd.	-

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

**KES Co., Ltd.**

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

Report No.:

KES-EM-21T0178-R1

Page (7) of (35)

1.6 External I/O Cabling

■ DC 12 V Adapter Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	4 Pin	Lens	4 Pin	0.1	S
	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	3.0	S
	3.5 mm (Speaker)	Speaker	3.5 mm	1.4	U
	3.5 mm (Mic)	Mic	3.5 mm	1.7	U
	2 Pin (Alarm In)	Botton Alarm	2 Pin	3.0	U
	2 Pin (Alarm Out)	Alarm	2 Pin	3.0	U
	4 Pin (RS-232)	Controller	4 Pin (RS-232)	3.0	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
Notebook	3.5 mm	SmartPhone	3.5 mm	1.2	U

* Unshielded=U, Shielded=S

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



■ PoE Adapter Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	4 Pin	Lens	4 Pin	0.1	S
	RJ-45 (PoE)	PoE Adapter	RJ-45 (PoE)	3.0	S
	3.5 mm (Speaker)	Speaker	3.5 mm	1.4	U
	3.5 mm (Mic)	Mic	3.5 mm	1.7	U
	2 Pin (Alarm In)	Bottom Alarm	2 Pin	3.0	U
	2 Pin (Alarm Out)	Alarm	2 Pin	3.0	U
	4 Pin (RS-232)	Controller	4 Pin (RS-232)	3.0	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
PoE Adapter	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	1.8	U
Notebook	3.5 mm	SmartPhone	3.5 mm	1.2	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

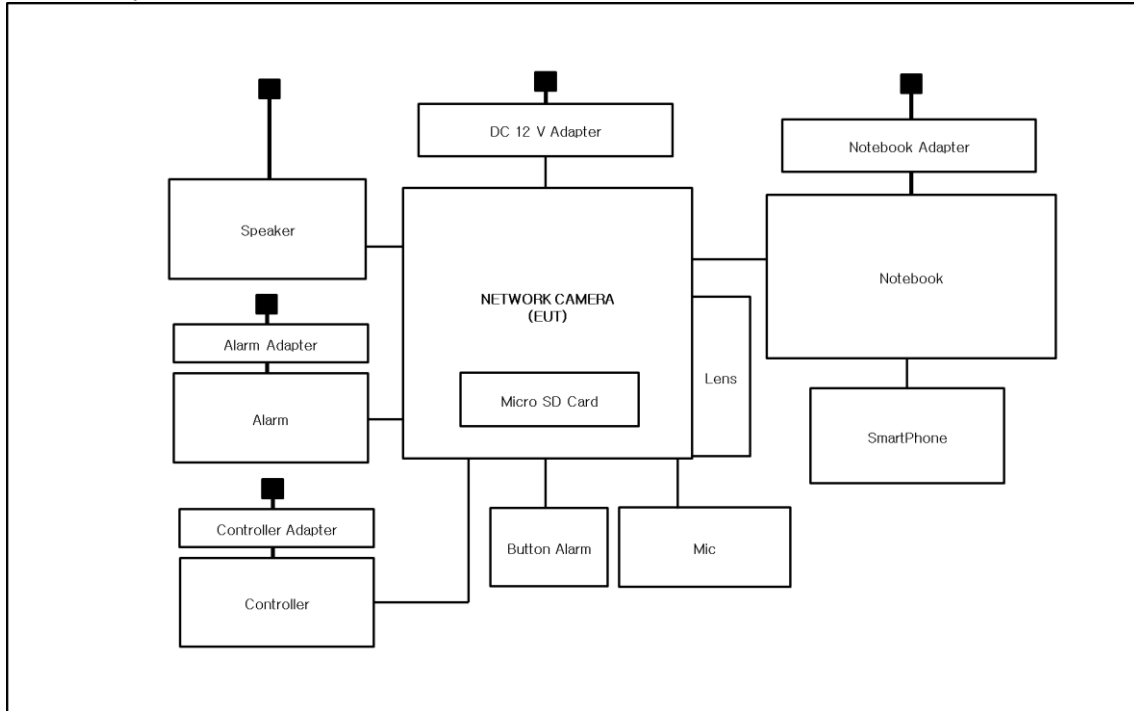
Test Mode	operating
DC 12 V Adapter	Tested by checking the operation status through the screen transmitted to the web viewer and Notebook and conducting a Ping test.
PoE Adapter	

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

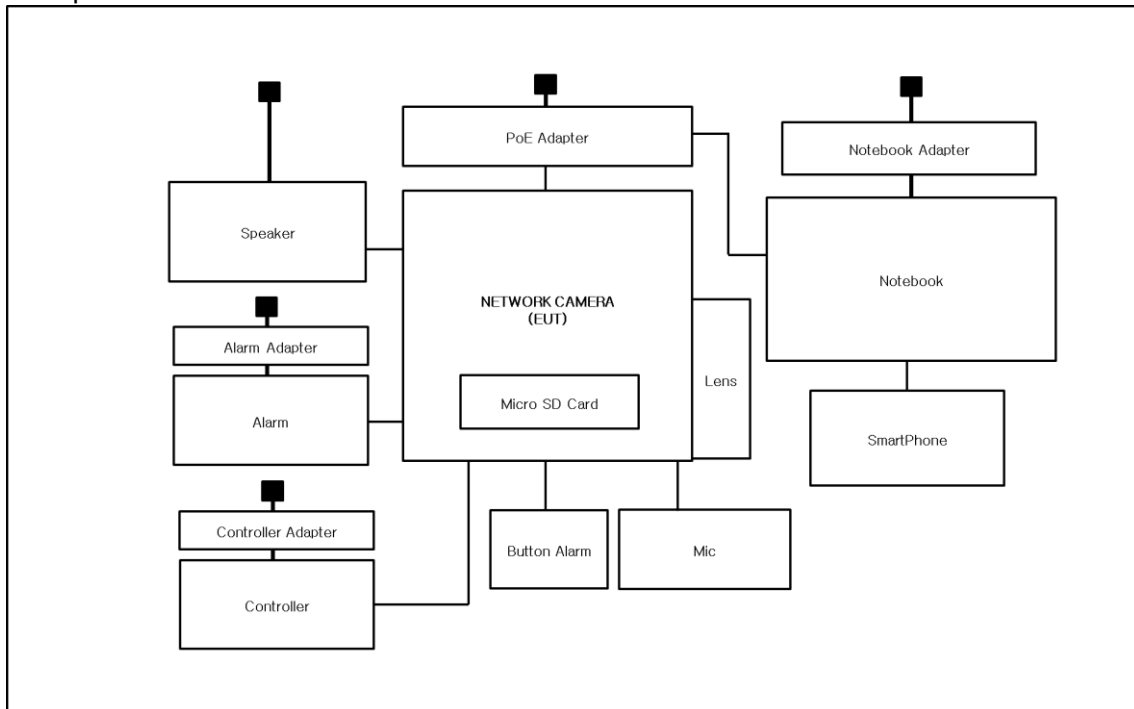
1.8 Configuration

■ AC Main
 □ DC Main

■ DC 12 V Adapter Mode



■ PoE Adapter Mode



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

1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

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

☐ Group 2

☐ Class A

☐ 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



KES Co., Ltd.

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

Report No.:

KES-EM-21T0178-R1

Page (12) of (35)

- | | | |
|--|---|----------------------------------|
| ☐ 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 | | |

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



2.1 Conducted Emissions at Mains Power Ports

Test Date

Feb. 02, 2021

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 15, 2022
☒	LISN	ENV216	R & S	101787	12, 29, 2021
☒	LISN	ESH2-Z5	R & S	100450	12, 29, 2021
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 29, 2021

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 42,6 % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb. 02, 2021

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2021
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2021
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Temperature: 20,1 °C
Relative Humidity: 41,3 % 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.



2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb. 01, 2021

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	12, 29, 2021
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 14, 2021

Test Conditions

Temperature: 22,6 °C
Relative Humidity: 44,7 % 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 12 V Adapter Mode

HOT LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

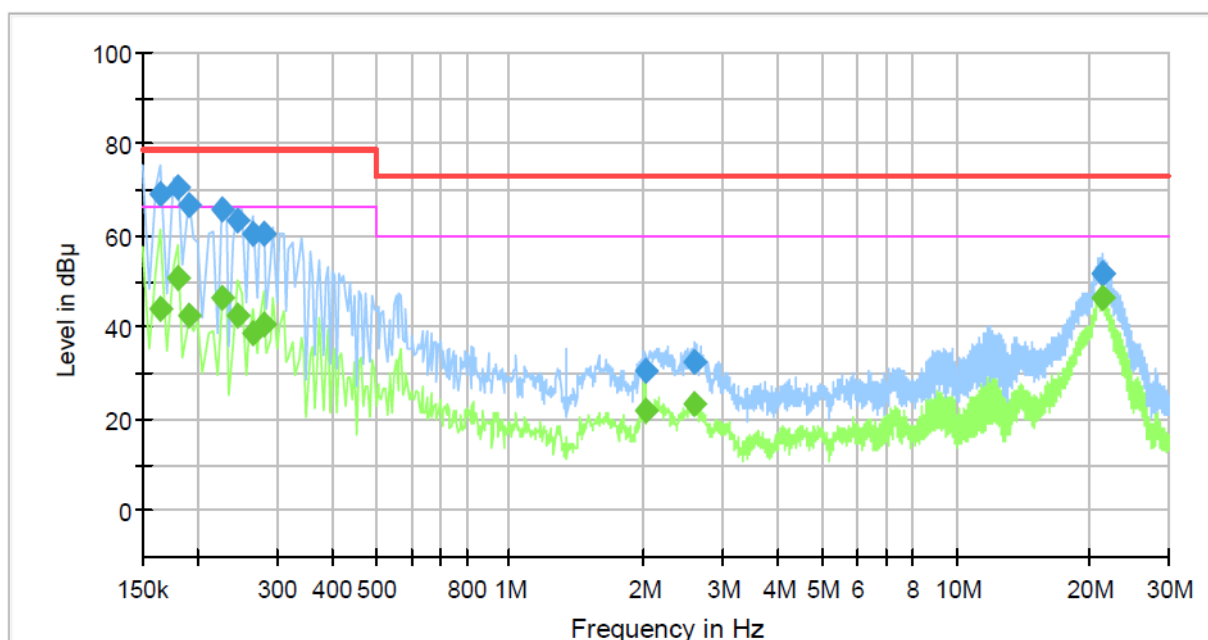
Operator Name:

Conducted Emission

PNB-A6001

DC 12 V Adapter / FCC

KES



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

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

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



KES Co., Ltd.

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

Report No.:

KES-EM-21T0178-R1

Page (17) of (35)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	69.30	---	79.00	9.70	1000.0	9.000	L1	19.4
0.165000	---	43.84	66.00	22.16	1000.0	9.000	L1	19.4
0.180000	70.70	---	79.00	8.30	1000.0	9.000	L1	19.4
0.180000	---	50.86	66.00	15.14	1000.0	9.000	L1	19.4
0.190000	66.55	---	79.00	12.45	1000.0	9.000	L1	19.4
0.190000	---	42.52	66.00	23.48	1000.0	9.000	L1	19.4
0.225000	65.67	---	79.00	13.33	1000.0	9.000	L1	19.4
0.225000	---	46.34	66.00	19.66	1000.0	9.000	L1	19.4
0.245000	63.54	---	79.00	15.46	1000.0	9.000	L1	19.5
0.245000	---	42.60	66.00	23.40	1000.0	9.000	L1	19.5
0.265000	---	38.80	66.00	27.20	1000.0	9.000	L1	19.5
0.265000	60.22	---	79.00	18.78	1000.0	9.000	L1	19.5
0.280000	---	40.85	66.00	25.15	1000.0	9.000	L1	19.5
0.280000	60.60	---	79.00	18.40	1000.0	9.000	L1	19.5
2.005000	30.54	---	73.00	42.46	1000.0	9.000	L1	20.2
2.005000	---	22.01	60.00	37.99	1000.0	9.000	L1	20.2
2.595000	32.63	---	73.00	40.37	1000.0	9.000	L1	20.1
2.595000	---	23.26	60.00	36.74	1000.0	9.000	L1	20.1
21.240000	51.98	---	73.00	21.02	1000.0	9.000	L1	20.2
21.240000	---	46.46	60.00	13.54	1000.0	9.000	L1	20.2
21.315000	51.76	---	73.00	21.24	1000.0	9.000	L1	20.2
21.315000	---	46.23	60.00	13.77	1000.0	9.000	L1	20.2

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

NEUTRAL LINE**Common Information**

Test Description:

Model No.:

Phase:

Mode:

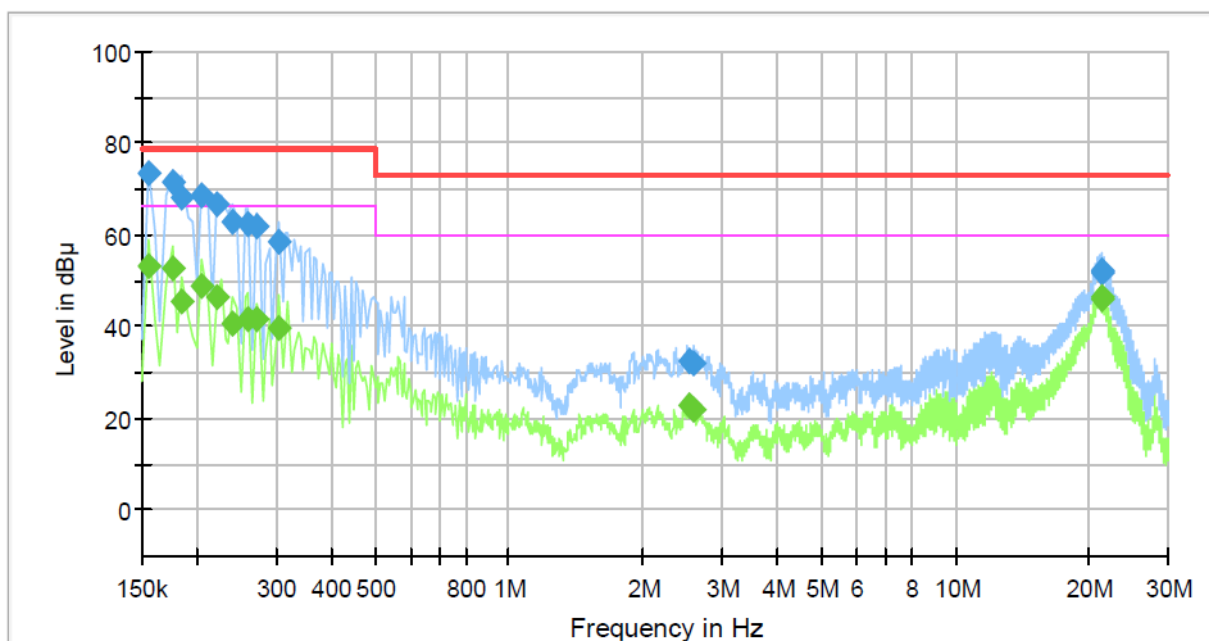
Operator Name:

Conducted Emission

PNB-A6001

DC 12 V Adapter / FCC

KES





KES Co., Ltd.

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

Report No.:

KES-EM-21T0178-R1

Page (19) of (35)

Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	73.30	---	79.00	5.70	1000.0	9.000	N	19.4
0.155000	---	53.22	66.00	12.78	1000.0	9.000	N	19.4
0.175000	---	52.64	66.00	13.36	1000.0	9.000	N	19.4
0.175000	71.45	---	79.00	7.55	1000.0	9.000	N	19.4
0.185000	---	45.29	66.00	20.71	1000.0	9.000	N	19.4
0.185000	67.92	---	79.00	11.08	1000.0	9.000	N	19.4
0.205000	68.64	---	79.00	10.36	1000.0	9.000	N	19.4
0.205000	---	48.75	66.00	17.25	1000.0	9.000	N	19.4
0.220000	66.68	---	79.00	12.32	1000.0	9.000	N	19.4
0.220000	---	46.25	66.00	19.75	1000.0	9.000	N	19.4
0.240000	---	40.58	66.00	25.42	1000.0	9.000	N	19.4
0.240000	62.71	---	79.00	16.29	1000.0	9.000	N	19.4
0.260000	62.25	---	79.00	16.75	1000.0	9.000	N	19.5
0.260000	---	41.41	66.00	24.59	1000.0	9.000	N	19.5
0.270000	---	41.78	66.00	24.22	1000.0	9.000	N	19.5
0.270000	61.94	---	79.00	17.06	1000.0	9.000	N	19.5
0.305000	58.74	---	79.00	20.26	1000.0	9.000	N	19.5
0.305000	---	39.89	66.00	26.11	1000.0	9.000	N	19.5
2.545000	---	22.80	60.00	37.20	1000.0	9.000	N	20.1
2.545000	32.58	---	73.00	40.42	1000.0	9.000	N	20.1
2.585000	---	22.04	60.00	37.96	1000.0	9.000	N	20.1
2.585000	32.20	---	73.00	40.80	1000.0	9.000	N	20.1
21.260000	52.23	---	73.00	20.77	1000.0	9.000	N	20.2
21.260000	---	46.65	60.00	13.35	1000.0	9.000	N	20.2
21.410000	51.71	---	73.00	21.29	1000.0	9.000	N	20.2
21.410000	---	46.20	60.00	13.80	1000.0	9.000	N	20.2

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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



KES Co., Ltd.

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

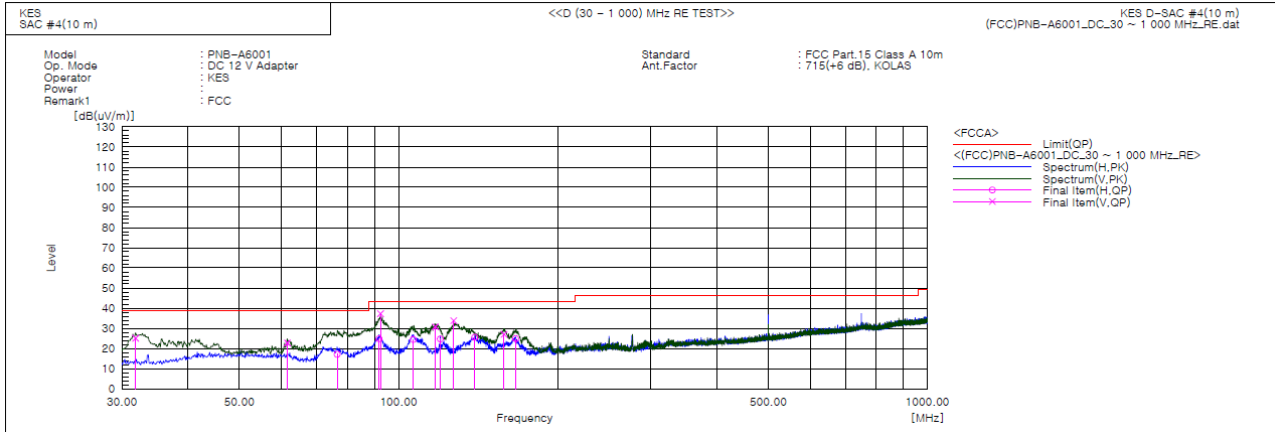
Report No.:

KES-EM-21T0178-R1

Page (20) of (35)

Radiated Electric Field Emissions(Below 1 GHz)

■ DC 12 V Adapter Mode



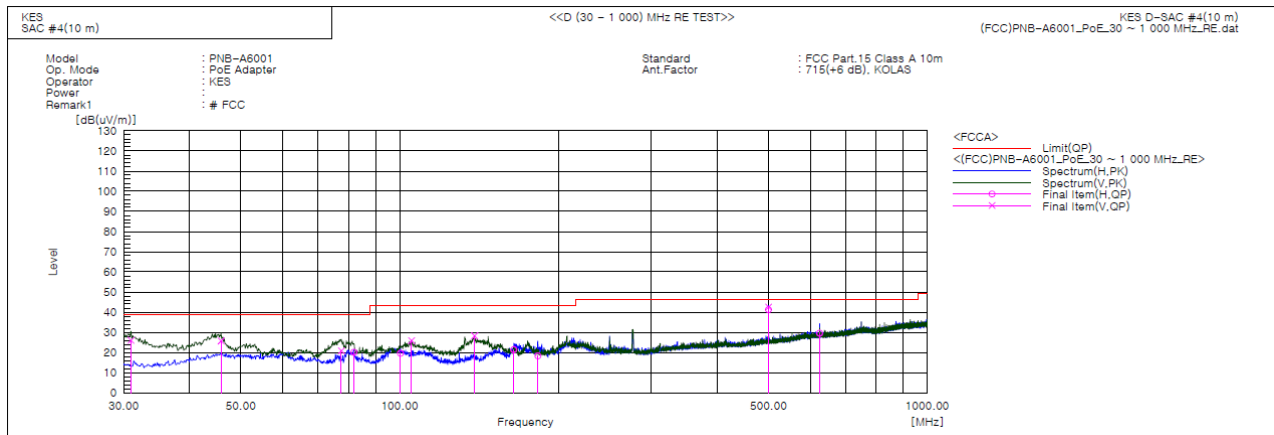
Final Result

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	31.819	V	50.2	-25.1	25.1	39.0	13.9	140.0	346.0	
2	61.646	V	45.1	-22.3	22.8	39.0	16.2	150.0	143.0	
3	76.560	H	44.4	-27.3	17.1	39.0	21.9	400.0	321.0	
4	91.838	H	48.7	-23.9	24.8	43.5	18.7	400.0	166.0	
5	92.444	V	61.1	-23.8	37.3	43.5	6.2	150.0	15.0	
6	106.630	H	46.9	-22.4	24.5	43.5	19.0	350.0	147.0	
7	117.300	V	54.3	-23.5	30.8	43.5	12.7	100.0	349.0	
8	119.968	H	48.8	-24.1	24.7	43.5	18.8	400.0	309.0	
9	127.121	V	58.8	-25.0	33.8	43.5	9.7	100.0	5.0	
10	139.368	H	51.0	-25.4	25.6	43.5	17.9	400.0	132.0	
11	158.283	V	51.6	-24.6	27.0	43.5	16.5	100.0	346.0	
12	166.528	H	49.1	-24.2	24.9	43.5	18.6	400.0	23.0	

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



PoE Adapter 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	30.957	V	51.3	-25.3	26.0	39.0	13.0	110.0	196.0	
2	45.884	V	47.1	-21.4	25.7	39.0	13.3	150.0	336.0	
3	77.530	V	48.4	-27.5	20.9	39.0	18.1	150.0	268.0	
4	81.895	H	47.5	-27.4	20.1	39.0	18.9	400.0	65.0	
5	100.325	H	42.1	-22.5	19.6	43.5	23.9	400.0	186.0	
6	105.296	V	48.3	-22.4	25.9	43.5	17.6	100.0	285.0	
7	138.640	V	53.7	-25.4	28.3	43.5	15.2	100.0	262.0	
8	164.466	H	45.7	-24.3	21.4	43.5	22.1	390.0	229.0	
9	182.775	H	41.3	-23.0	18.3	43.5	25.2	400.0	236.0	
10	499.959	V	54.2	-11.6	42.6	46.5	3.9	200.0	54.0	
11	499.965	H	52.9	-11.6	41.3	46.5	5.2	300.0	90.0	
12	624.974	H	37.8	-8.2	29.6	46.5	16.9	250.0	171.0	

◆ Calculation – SAC #4(10 m)

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

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

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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



KES Co., Ltd.

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

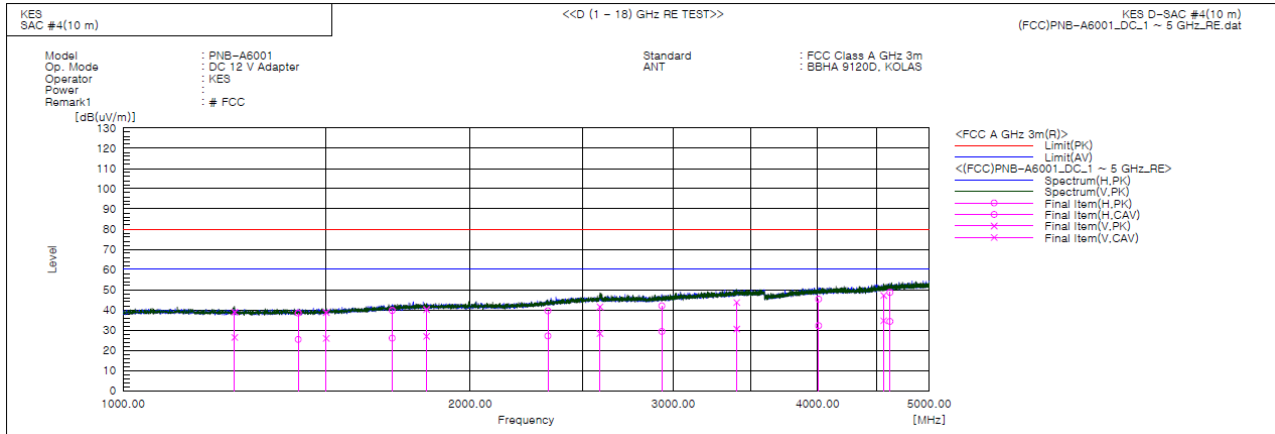
Report No.:

KES-EM-21T0178-R1

Page (22) of (35)

Radiated Electric Field Emissions(Above 1 GHz)

■ DC 12 V Adapter 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	1249.424	V	42.8	30.3	-3.9	38.9	26.4	80.0	60.0	41.1	33.6	110.0	311.0	
2	1418.551	H	41.3	28.3	-2.9	38.4	25.4	80.0	60.0	41.6	34.6	300.0	88.0	
3	1500.247	V	41.2	28.4	-2.5	38.7	25.9	80.0	60.0	41.3	34.1	200.0	184.0	
4	1711.295	H	41.2	27.5	-1.5	39.7	26.0	80.0	60.0	40.3	34.0	200.0	80.0	
5	1832.500	V	41.2	27.9	-1.0	40.2	26.9	80.0	60.0	39.8	33.1	150.0	280.0	
6	2335.055	H	38.0	25.6	1.5	39.5	27.1	80.0	60.0	40.5	32.9	400.0	173.0	
7	2590.814	V	38.9	25.6	2.7	41.6	28.3	80.0	60.0	38.4	31.7	200.0	334.0	
8	2931.309	H	37.8	25.1	4.2	42.0	29.3	80.0	60.0	38.0	30.7	200.0	258.0	
9	3403.698	V	38.1	24.9	5.6	43.7	30.5	80.0	60.0	36.3	29.5	100.0	59.0	
10	4009.332	H	36.8	23.7	8.5	45.3	32.2	80.0	60.0	34.7	27.8	400.0	200.0	
11	4565.295	V	36.5	24.0	10.7	47.2	34.7	80.0	60.0	32.8	25.3	100.0	264.0	
12	4623.263	H	37.6	23.3	11.0	48.6	34.3	80.0	60.0	31.4	25.7	290.0	250.0	

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



KES Co., Ltd.

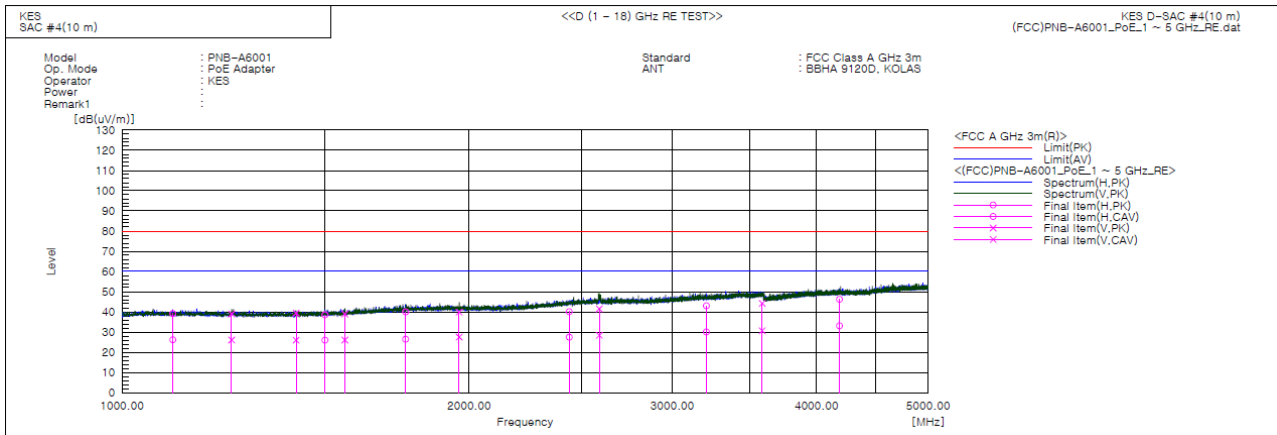
3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-21T0178-R1

Page (23) of (35)

PoE Adapter 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	1106.524	H	44.0	31.0	-4.8	39.2	26.2	80.0	60.0	40.8	33.8	200.0	280.0	
2	1244.314	V	42.9	30.0	-3.9	39.0	26.1	80.0	60.0	41.0	33.9	122.0	291.0	
3	1415.147	V	42.3	28.9	-2.9	39.4	26.0	80.0	60.0	40.6	34.0	130.0	228.0	
4	1499.516	H	41.0	28.5	-2.5	38.5	26.0	80.0	60.0	41.5	34.0	400.0	177.0	
5	1560.208	V	41.2	28.3	-2.2	39.0	26.1	80.0	60.0	41.0	33.9	200.0	233.0	
6	1761.020	H	41.3	27.8	-1.3	40.0	26.5	80.0	60.0	40.0	33.5	200.0	48.0	
7	1960.114	V	40.3	28.0	-0.4	39.9	27.6	80.0	60.0	40.1	32.4	100.0	5.0	
8	2441.822	H	38.1	25.5	2.0	40.1	27.5	80.0	60.0	39.9	32.5	350.0	61.0	
9	2592.914	V	38.9	25.7	2.7	41.6	28.4	80.0	60.0	38.4	31.6	100.0	340.0	
10	3210.599	H	37.9	25.0	5.1	43.0	30.1	80.0	60.0	37.0	29.9	100.0	357.0	
11	3589.515	V	38.1	24.6	6.1	44.2	30.7	80.0	60.0	35.8	29.3	110.0	355.0	
12	4188.309	H	36.9	23.8	9.3	46.2	33.1	80.0	60.0	33.8	26.9	200.0	276.0	

◆ Calculation

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

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

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

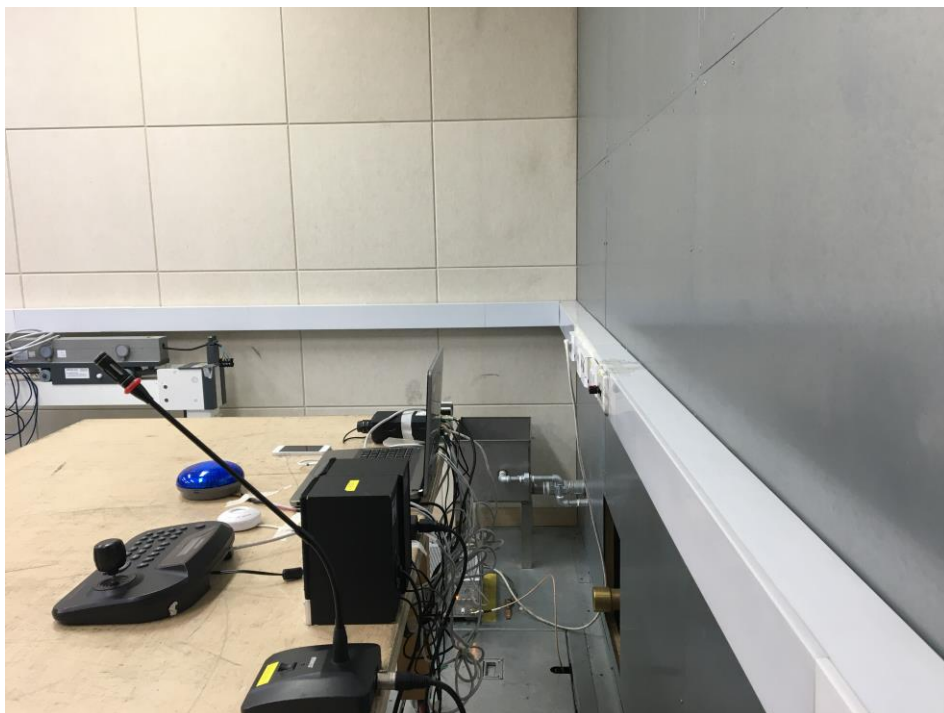
Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

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

Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports

■ DC 12 V Adapter Mode



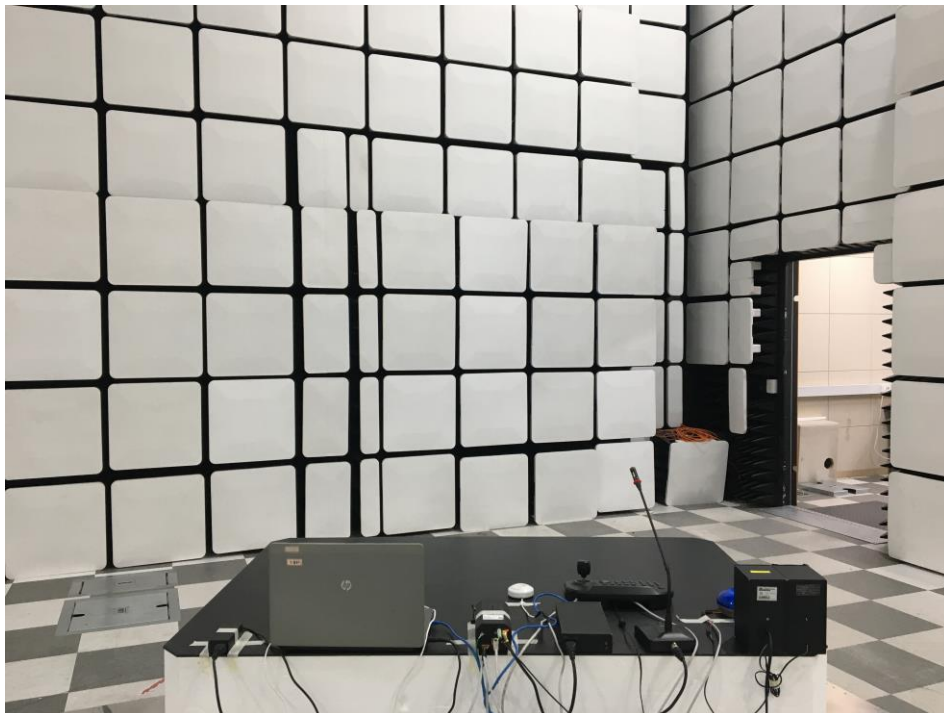
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Radiated Electric Field Emissions(Below 1 GHz)

■ DC 12 V Adapter Mode



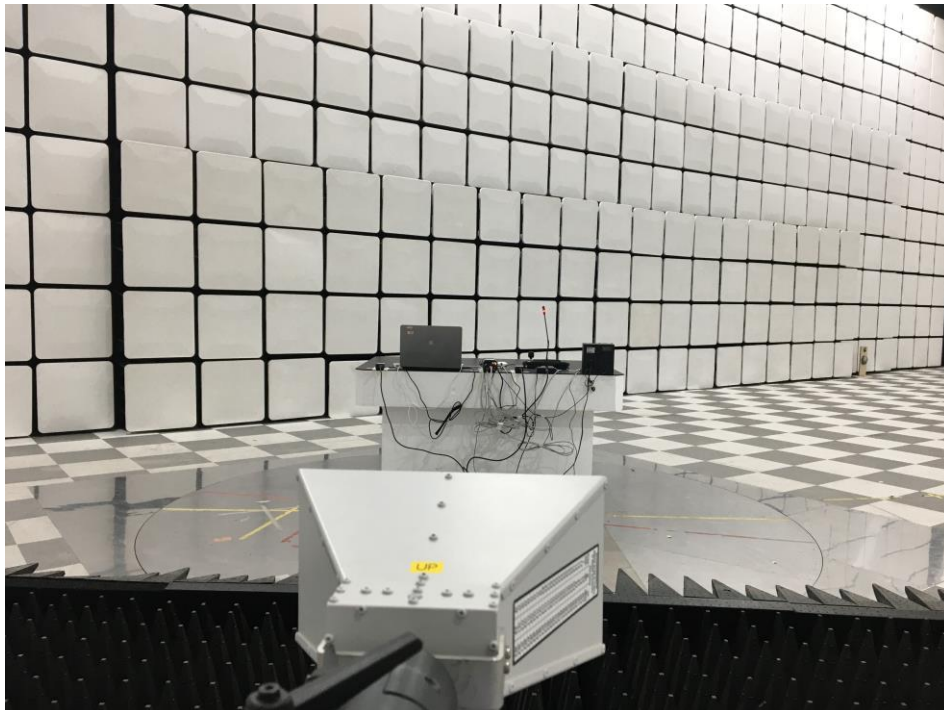
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

■ PoE Adapter Mode

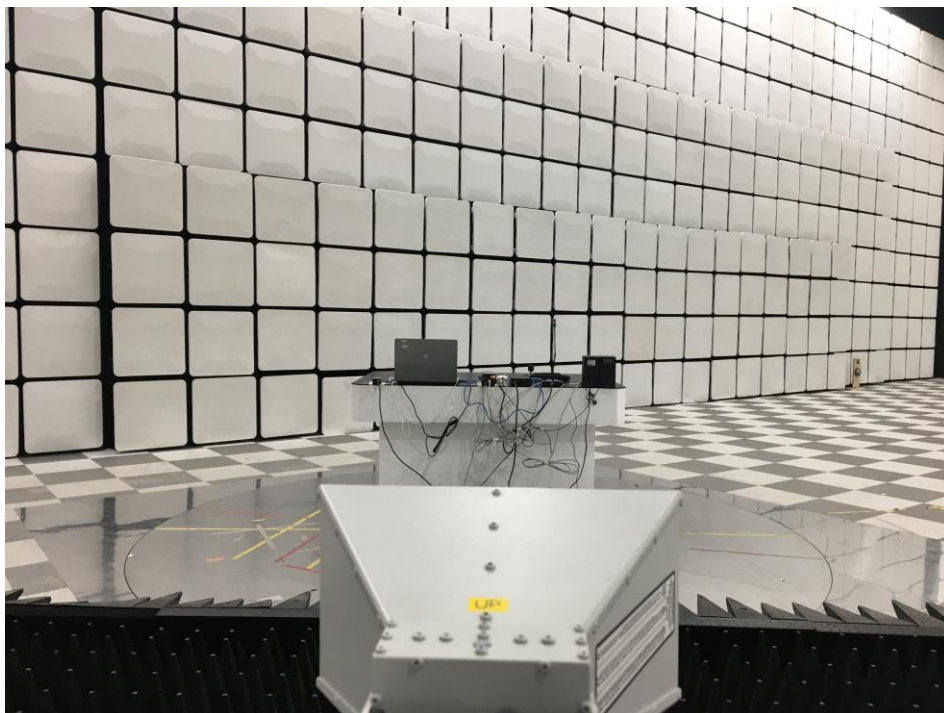
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
The authenticity of the test report, contact kes@kes.co.kr

Radiated Electric Field Emissions(Above 1 GHz)

■ DC 12 V Adapter Mode



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

■ PoE Adapter Mode

EUT External Photographs

(Top)



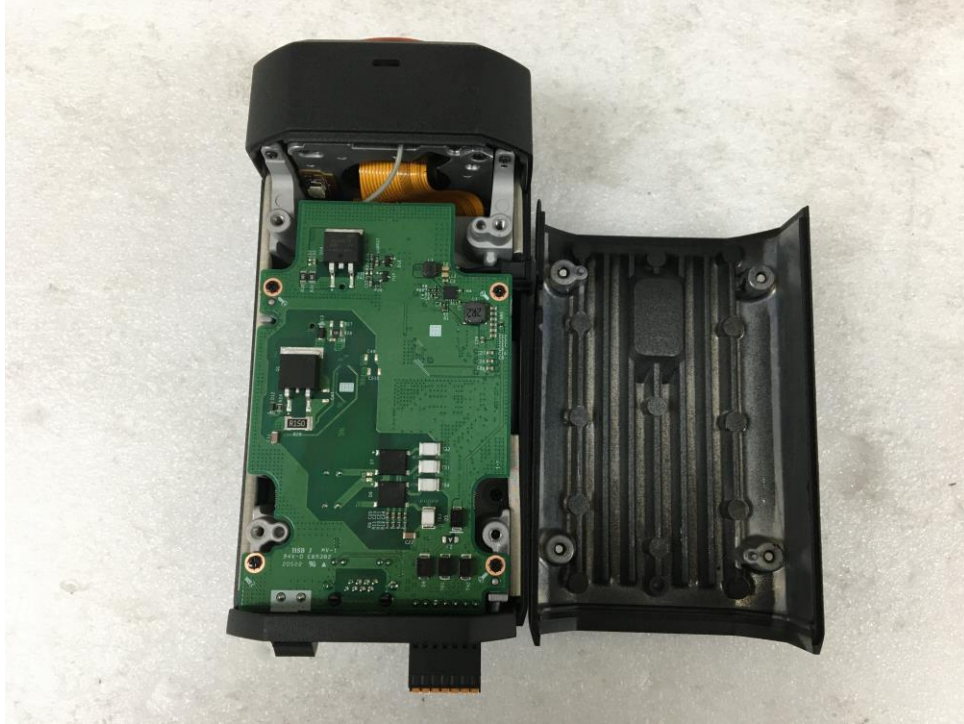
(Bottom)



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

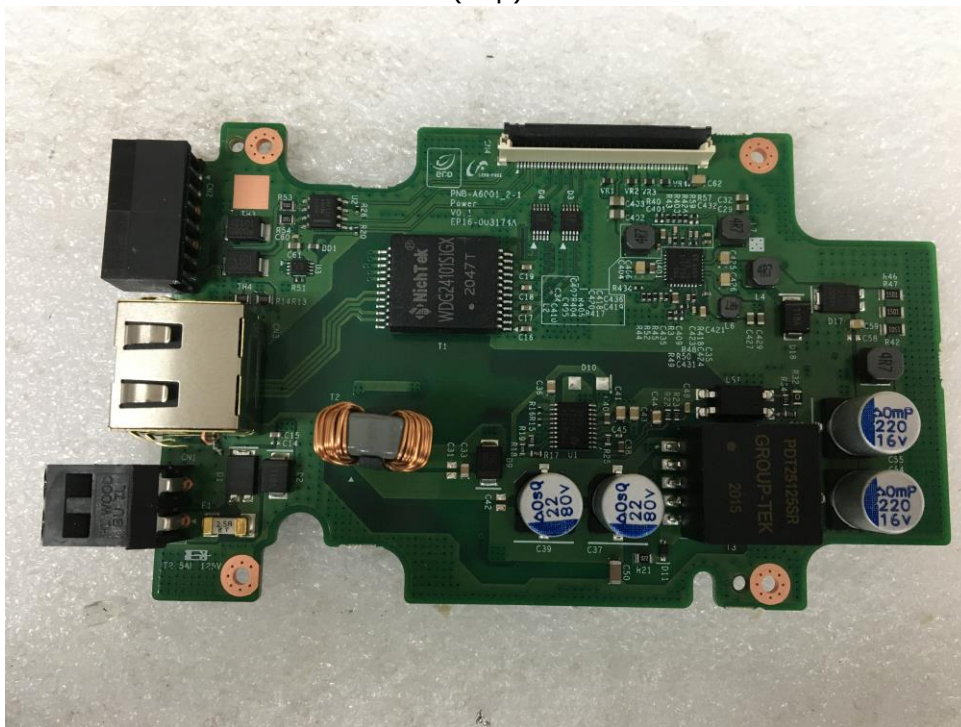
EUT Internal Photographs

(Internal View)

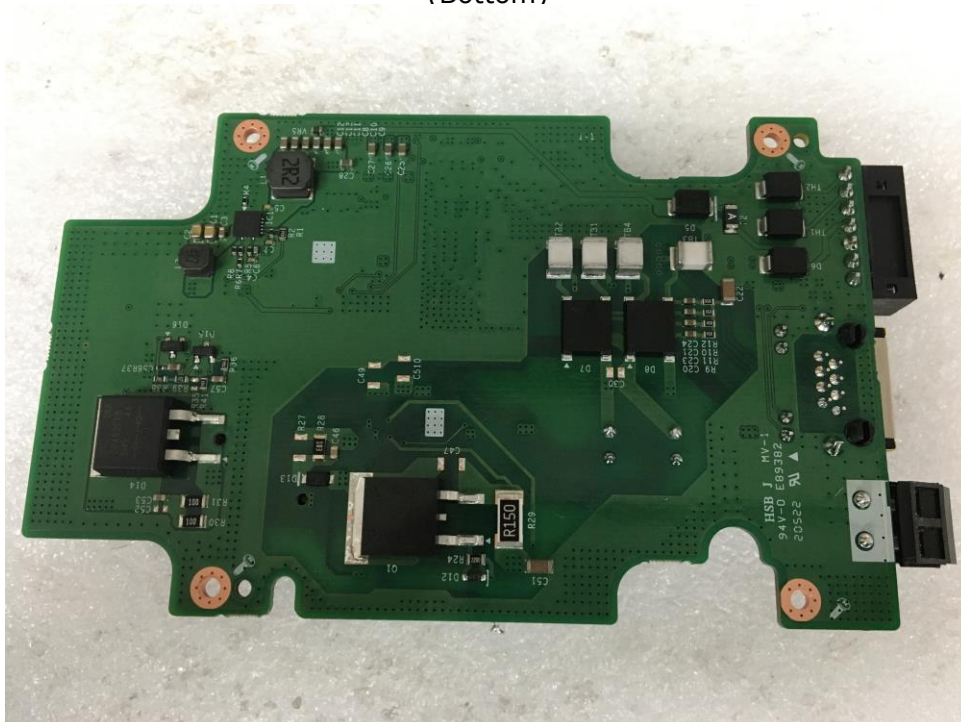


EUT Internal View – Board 1

(Top)



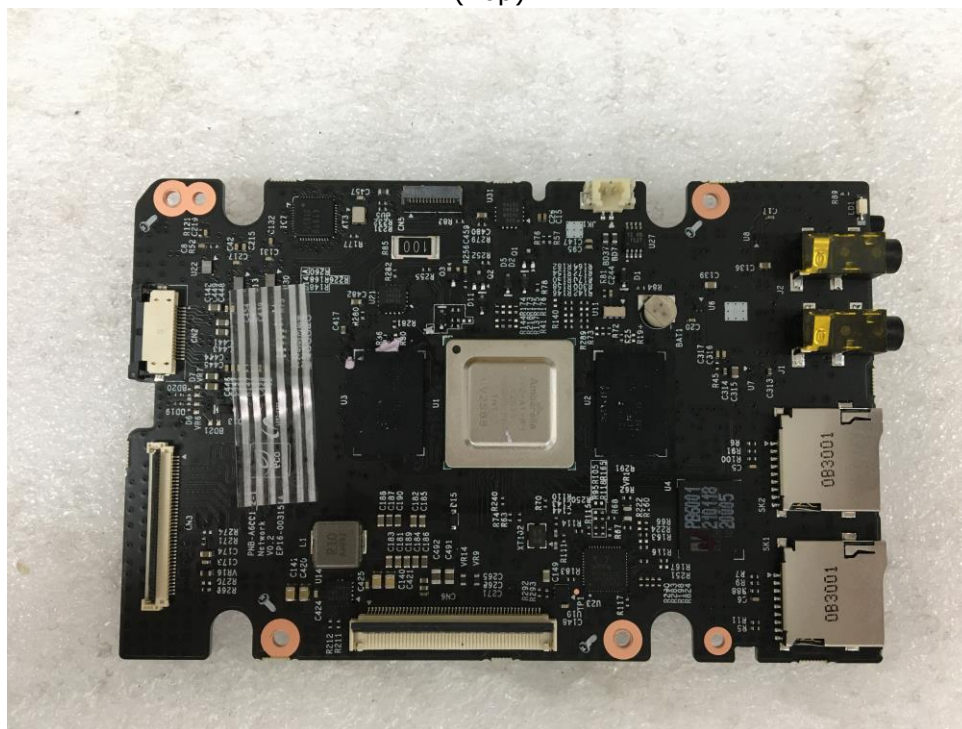
(Bottom)



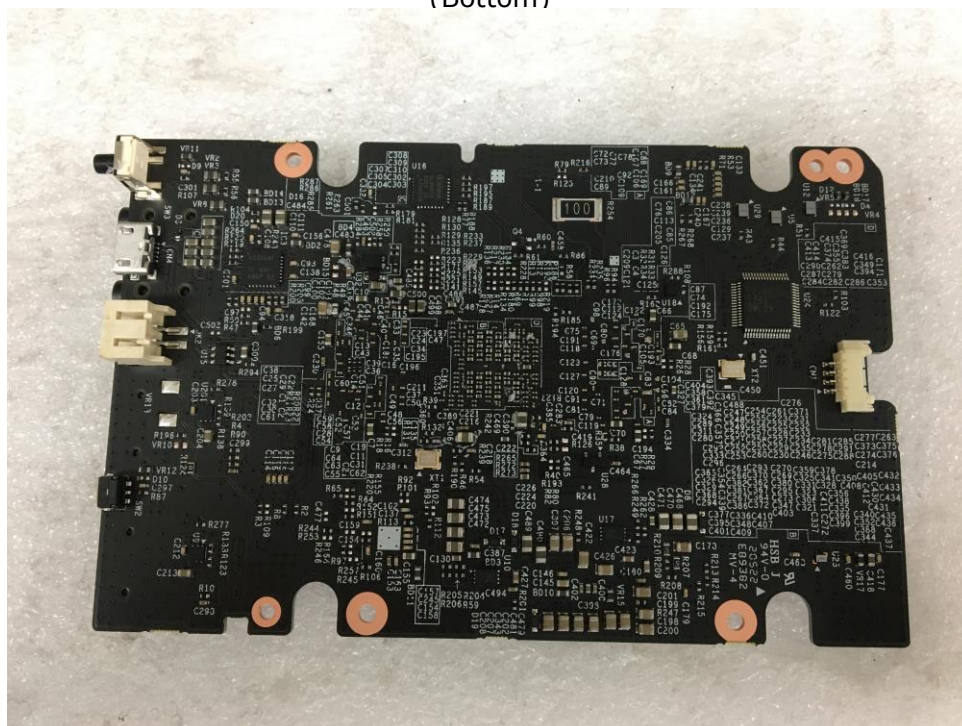
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
 The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
 The authenticity of the test report, contact kes@kes.co.kr

EUT Internal View – Board 2

(Top)



(Bottom)



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

EUT Internal View – Board 4

(Top)



(Bottom)



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

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.