



EMC TEST REPORT For RCM

Test Report No. : KES-E1-17T0817-R1
Date of Issue : Dec. 28, 2018
Product name : Network Camera
Model/Type No. : XNP-6320H
Variant Model : XNP-6320HG, XNP-6321H
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 1204, Changwon-daero, Seongsan-gu Changwon-si,
Gyeongsangnam-do, Korea
Manufacturer : Hanwha Techwin (Tianjin) Co., Ltd.
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial
Park, TEDA, Tianjin, 300385, People's Republic of China.
Date of Receipt : Nov. 22, 2017
Test date : Dec. 04, 2017 ~ Dec. 05, 2017
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 KOLAS.

**KES Co., Ltd.**

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

Test report No.:
KES-E1-17T0817-R1
Page (2) of (48)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 12, 2017	KES-E1-17T0817	Issued
Dec. 28, 2018	KES-E1-17T0817-R1	Add a simple derivative model

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



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	7
1.2	Variant Model Differences	7
1.3	Device Modifications	7
1.4	Equipment Under Test.....	7
1.5	Support Equipments	8
1.6	External I/O Cabling	9
1.7	EUT Operating Mode(s)	10
1.8	Configuration	11
1.9	Calibration Details of Equipment Used for Measurement	12
1.10	Test Facility	12
1.11	Laboratory Accreditations and Listings	12
2.0	Test Regulations.....	13
2.1	Conducted Emissions at Mains Power Ports	15
2.2	Conducted Emissions at Telecommunication Ports.....	16
2.3	Radiated Electric Field Emissions(Below 1 GHz)	17
2.4	Radiated Electric Field Emissions(Above 1 GHz)	18
APPENDIX A – TEST DATA.....		19
Conducted Emissions at Mains Power Ports.....		19
Conducted Emissions at Telecommunication Ports		21
Radiated Electric Field Emissions(Below 1 GHz)		25
Radiated Electric Field Emissions(Above 1 GHz)		27
Test Setup Photos and Configuration		35
Conducted Voltage Emissions		35
Conducted Telecommunication Emissions		36
Radiated Electric Field Emissions(Below 1 GHz)		37
Radiated Electric Field Emissions(Above 1 GHz)		38
EUT External Photographs		39
EUT Internal Photographs		40



1.0 General Product Description

Main Specifications of EUT are:

Video	XNP-6320	XNP-6320H
Imaging Device	1/2.8" 2.4M CMOS	
Total Pixels	1981(H) x 1288(V), 2.55M	
Effective Pixels	1944(H) x 1212(V), 2.35M	
Scanning System	Progressive	
Min. Illumination	Color : 0.05Lux (1/30sec, F1.6) B/W : 0.005 Lux (1/30sec, F1.6)	
S / N Ratio	50dB	
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation USB : Micro USB type B, 1280x720, for installation	
Lens		
Focal Length (Zoom Ratio)	4.44 ~ 142.6mm(Optical 32X)	
Max. Aperture Ratio	F1.6 (Wide) / F4.4 (Tele)	
Angular Field of View	H : 61.8°(Wide) ~ 2.19°(Tele) / V : 36.2°(Wide) ~ 1.24°(Tele)	
Min. Object Distance	Wide 1.5m ,Tele 2m	
Focus Control	Auto / Manual / One shot AF	
Lens Type	DC Auto Iris	
Mount Type	Board-in type	
Pan/Tilt/Rotate		
Pan Range	360° Endless	
Pan Speed	Preset : 700°/sec, Manual : 0.024°/sec ~ 200°/sec	
Tilt Range	210°(-15° ~195°)	
Tilt Speed	Preset : 700°/sec, Manual : 0.024°/sec ~200°/sec	
Sequence	Preset (300 ea), Swing, Group (6 ea), Trace, Tour (1 ea), Auto Run, Schedule	
Preset Accuracy	±0.2°	
Azimuth	Yes (E/W/S/N/NE/NW/SE/SW)	
Auto Tracking	Support	
Operational		
Camera Title	Off / On (Displayed up to 85 characters) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution	
Day & Night	Auto (ICR) / Color / B/W / Schedule	
Backlight Compensation	Off / BLC / HLC / WDR	
Wide Dynamic Range	150dB	
Contrast Enhancement	SSDR (Off / On)	
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)	
Digital Image Stabilization	Off / On (built-in Gyro)	
Defog	Auto/Manual/Off	
Motion Detection	Off / On(8ea, Polygonal)	
Privacy Masking	Off / On (24 Zones of Rectangle zone) - Color : Grey/Green/Red/Blue/Black/White - Zoom ratio option for mask mode - Mosaic option	

**KES Co., Ltd.**

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

Test report No.:
KES-E1-17T0817-R1
Page (5) of (48)

Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor (included Mercury & Sodium)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (1 ~ 1/12,000sec)
Digital Zoom	32x
Image Rotation	Flip/Mirror : On/Off
Video&Audio Analytics	Tampering, Loitering, Directional Detection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Sound Classification
Serial Interface	RS-485 - Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell
Alarm I/O	Input 4ea / Output 2ea (Relay)
Alarm Triggers	Alarm Input, Motion Detection, Video & Audio Analytics, Network Disconnect
Alarm events	File upload via FTP and E-Mail Notification via E-Mail, TCP and HTTP local storage(SD/SDHC/SDXC) or NAS recording at Alarm Triggers External output Preset
Audio In	Selectable (Mic IN/Line IN) Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out (3.5mm mono jack), Max output level: 1 Vrms
Pixel counter	support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.264 (MPEG-4 Part 10/AVC), H.265, Motion JPEG
Resolution	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Max. Framerate	H.264/H.265 : Max 60fps at all resolutions Motion JPEG : Max. 30fps at all resolutions
Smart Codec	Manual mode (Area-Based : 5ea)
WiseStream-II	support
Video Quality Adjustment	H.264 / H.265 / MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.264 / H.265 : CBR or VBR Motion JPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
Audio Compression Format	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

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.



KES Co., Ltd.

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

Test report No.:
KES-E1-17T0817-R1
Page (6) of (48)

Audio Communication	Bi-directional (2-Way)	
IP	IPv4, IPv6	
Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP,RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour	
Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1X Authentication (EAP-TLS, EAP-LEAP)	
Streaming Method	Unicast / Multicast	
Max. User Access	20 users at Unicast Mode	
Edge Storage	Micro SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the Micro SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording	
Application Programming I	ONVIF Profile S/G SUNAPI 2.0(HTTP API) Wisenet Open Plarform	
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek	
Web Viewer	Supported OS : Windows 7, 8.1, 10, Mac OS X 10.10. 10.11 10.12 Plug-in Free Webviewer Supported Browser : Google Chrome, MS Edge, Mozilla Firefox(Window 64bit only) , Apple Safari 10 (Mac OS X only) Plug-in Webviewer Supported Browser : MS Explore 11, Apple Safari 10 (Mac OS X only)	
Central Management Softw	SmartViewer	
Environmental		
Operating Temperature / Humidity	-10°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH	24V AC: -50°C ~ +55°C (-58°F ~ +131°F) / ~ 90% RH PoE+ : -35°C ~ +55°C (-31°F ~ +131°F) / ~ 90% RH * Start up should be done at above -30°C
Storage Temperature /	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH	
Ingress Protection	-	IP66
Vandal Resistance	IK10 (with SHP-3701H)	IK10
Electrical		
Input Voltage / Current	AC24V±10%,PoE+(IEEE802.3at,Class4)	
Power Consumption	20W	24W Max(Heater Off), 65W Max(Heater On, AC24V)
Mechanical		
Color / Material	Ivory / Plastic+Metal	
Dimension (WxH)	Ø152 x H218 mm	Ø220 x H293.6 mm
Weight	1.7Kg	3.3Kg

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.



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

Add a simple derivative model

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Network Camera	XNP-6320H	-	Hanwha Techwin (Tianjin) Co.,Ltd	E.U.T

**KES Co., Ltd.**

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

Test report No.:
KES-E1-17T0817-R1
Page (8) of (48)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adaptor	GS728TPP	-	NETGEAR, INC.	-
Notebook	X56K	HN11N5151FJ0045W	Hansung computer co., Ltd.	-
Notebook Adaptor	PA-1900-14	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO., LTD.	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
MIC	CMK-303	-	CAMAC	-
Alarm	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Controller	SPC-1010	C50E67WG10100F	SamSung Techwin Co.,Ltd.	-
Controller Adaptor	RS-AB1000	-	Dongguan JinhuaSheng Power Technology Co.,Ltd.	-
Micro SD Card	-	-	SanDisk	32 GB

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

1.6 External I/O Cabling

■ AC 24 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (E.U.T)	RJ-45	Notebook	RJ-45	3.0	U
	3.5 mm	Speaker	3.5 mm	1.6	U
	3.5 mm	MIC	3.5 mm	1.7	U
	3 Pin	Alarm	3 Pin	4.0	U
	RS-485 (3 Pin)	Controller	RS-485 (3 Pin)	3.5	U
	SLOT	Micro SD Card	SLOT	-	-

* Unshielded=U, Shielded=S

■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (E.U.T)	RJ-45 (PoE)	PoE Adaptor	RJ-45 (PoE)	3.0	U
	3.5 mm	Speaker	3.5 mm	1.6	U
	3.5 mm	MIC	3.5 mm	1.7	U
	3 Pin	Alarm	3 Pin	4.0	U
	RS-485 (3 Pin)	Controller	RS-485 (3 Pin)	3.5	U
	SLOT	Micro SD Card	SLOT	-	-
PoE Adaptor	RJ-45 (Data)	Notebook	RJ-45 (Data)	3.0	U

* Unshielded=U, Shielded=S

**KES Co., Ltd.**

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

Test report No.:
KES-E1-17T0817-R1
Page (10) of (48)

1.7 EUT Operating Mode(s)

Test mode	operating
AC 24 V	E.U.T Monitoring, Ping Test
PoE	

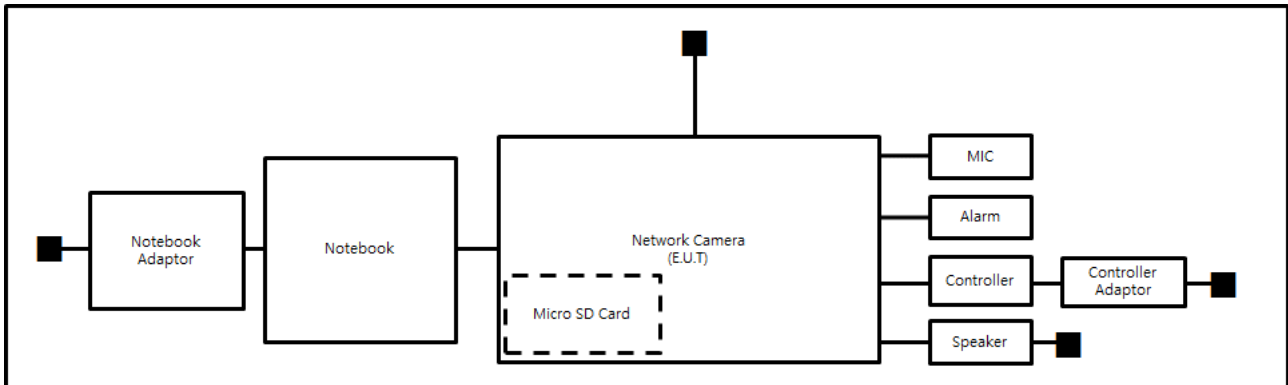
E.U.T Test operating S/W		
Name	Version	Manufacture Company
Webviewer	-	Hanwha Techwin Co., Ltd.

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

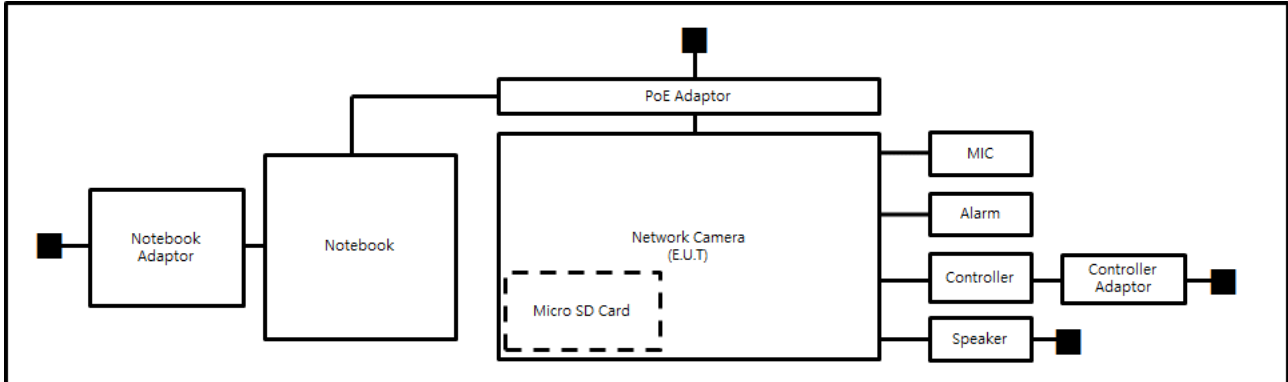
1.8 Configuration

■ AC Main
□ DC Main

■ AC 24 V Mode



■ PoE Mode



1.9 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.

1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
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-4308, C-4798, T-2311, G-914
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	

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



☐ **VCCI V-3 / 2015.04**

☐ Class A

☐ Class B

☒ **AS/NZS CISPR22:2009 +A1:2010**

☒ Class A

☐ Class B

☐ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☐ ANSI C63.4-2009

☐ **IC Regulation ICES-003 : 2016**

☐ CAN/CSA CISPR 22-10

☐ Class A

☐ Class B

☐ ANSI C63.4-2014

☐ **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

2.1 Conducted Emissions at Mains Power Ports

Test Date

Dec. 04, 2017

Test Location

Electro wave Shieldroom

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	101781	04, 27, 2018
☒	LISN	ENV216	R & S	101787	01, 11, 2018
☒	LISN	ESH2-Z5	R & S	100450	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1002	08, 07, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1003	08, 07, 2018

Test ConditionsTemperature: 22,0 °C
Relative Humidity: 43,0 % 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

RemarksSee Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Dec. 04, 2017

Test Location

Electro wave Shieldroom

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	101781	04, 27, 2018
☒	LISN	ENV216	R & S	101787	01, 11, 2018
☒	LISN	ESH2-Z5	R & S	100450	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 11, 2018
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 11, 2018
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	05, 12, 2018
☐	CDN	CDNS502A	TESEQ	40431	01, 11, 2018

Test Conditions

Temperature: 22,0 °C
Relative Humidity: 41,3 % 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.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Dec. 04, 2017

Test Location

☐ OPEN AREA TEST SITE #2 ☒ SAC #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, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions

Temperature: 22,7 °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.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Dec. 05, 2017

Test Location

SEMI ANECHOIC CHAMBER #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	e3	AUDIX	8.083b	-
☒	EMI TEST RECEIVER	ESU26	R & S	100552	04, 19, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01729	05, 31, 2018
☐	ATTENUATOR	8491A	HP	35496	03, 24, 2018
☐	LOG-PERIODIC ANTENNA	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2018
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	09, 04, 2019

Test ConditionsTemperature: 20,5 °C
Relative Humidity: 45,2 % 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

RemarksSee Appendix A for test data.

APPENDIX A – TEST DATA

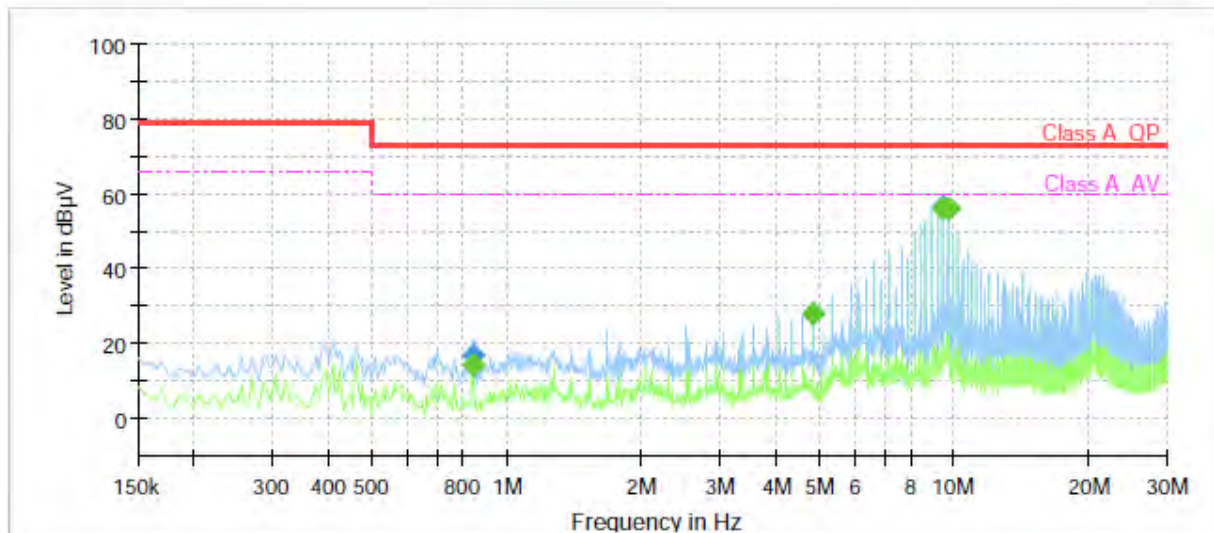
Conducted Emissions at Mains Power Ports

■ AC 24 V Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XNP-6320HP
Mode	AC_H
Operator Name:	KES



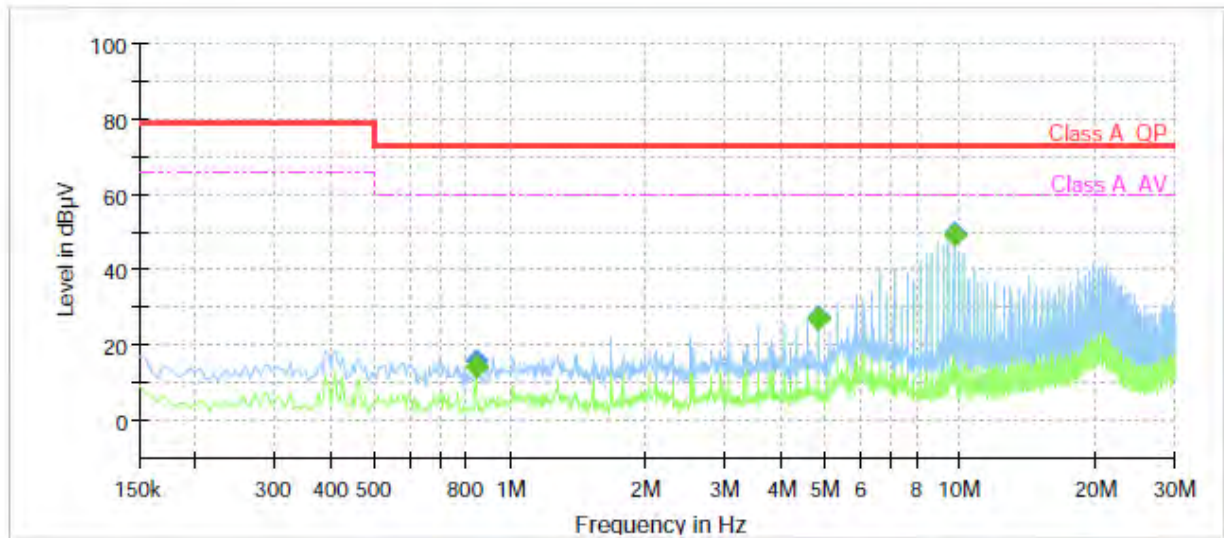
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.840000	---	14.56	60.00	45.44	1000.0	9.000	L1	20.0
0.840000	17.06	---	73.00	55.94	1000.0	9.000	L1	20.0
4.845000	---	27.86	60.00	32.14	1000.0	9.000	L1	19.8
4.845000	28.13	---	73.00	44.87	1000.0	9.000	L1	19.8
9.435000	---	56.02	60.00	3.98	1000.0	9.000	L1	20.0
9.435000	56.79	---	73.00	16.21	1000.0	9.000	L1	20.0
9.690000	---	56.10	60.00	3.90	1000.0	9.000	L1	20.0
9.690000	56.30	---	73.00	16.70	1000.0	9.000	L1	20.0

NEUTRAL LINE

Common Information

Test Description: Conducted Emission
Model No.: XNP-6320HP
Mode: AC_N
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.840000	---	14.29	60.00	45.71	1000.0	9.000	N	20.0
0.840000	15.76	---	73.00	57.24	1000.0	9.000	N	20.0
4.845000	---	27.08	60.00	32.92	1000.0	9.000	N	19.8
4.845000	27.35	---	73.00	45.65	1000.0	9.000	N	19.8
9.690000	---	49.32	60.00	10.68	1000.0	9.000	N	20.0
9.690000	49.53	---	73.00	23.47	1000.0	9.000	N	20.0

◆ 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))

Conducted Emissions at Telecommunication Ports

■ AC 24 V Mode

[10 Mbps]

Common Information

Test Description:

Model No.:

Mode

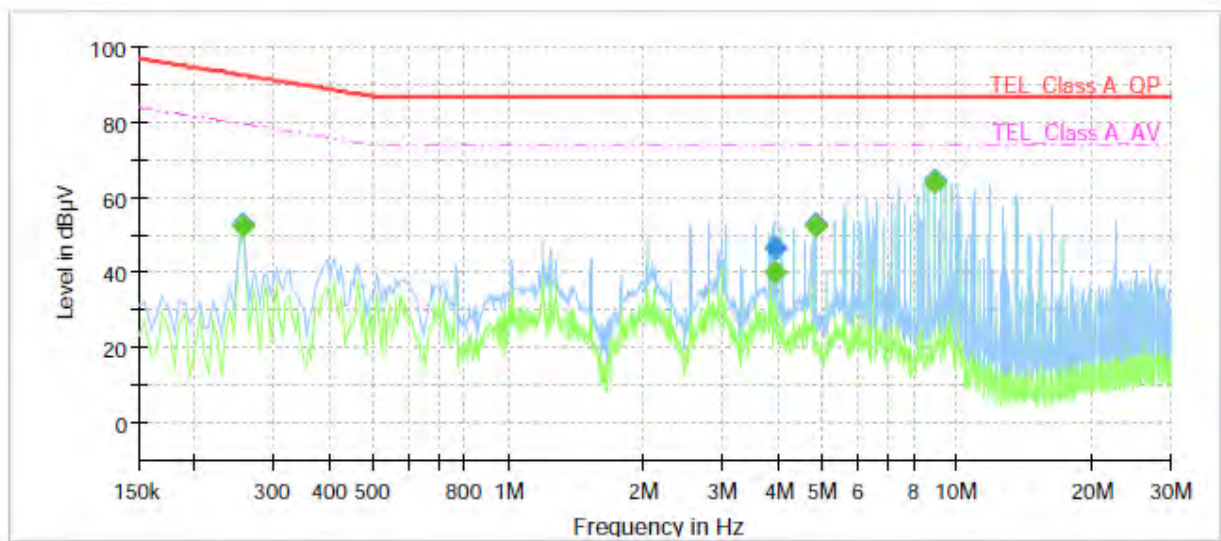
Operator Name:

Telecommunication Emission

XNP-6320HP

AC_10 Mbps

KES



Final Result

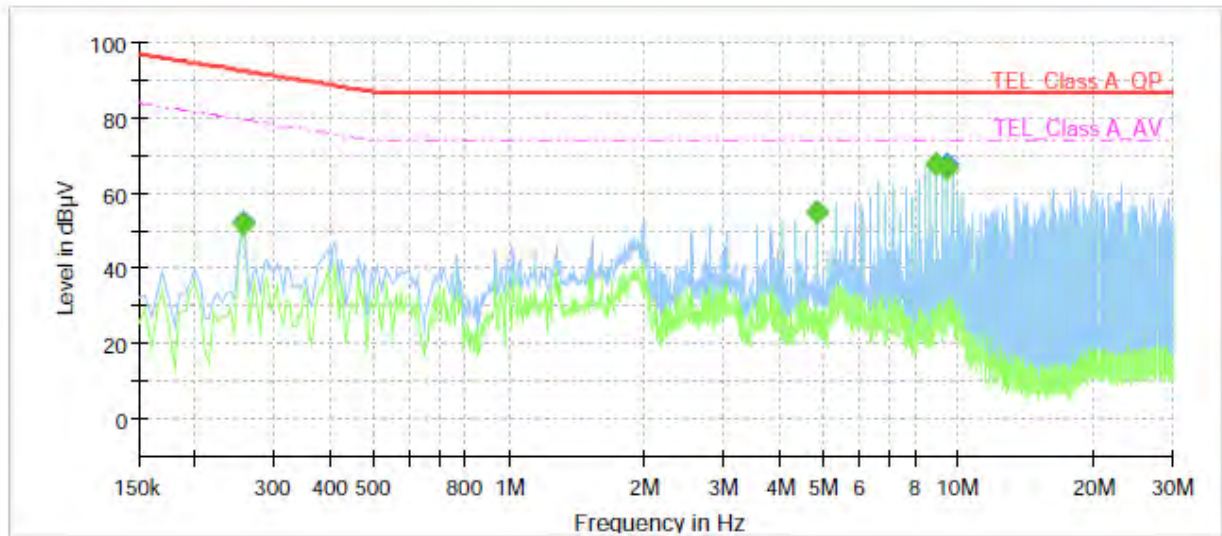
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.255000	---	52.17	79.59	27.42	1000.0	9.000	Single Line	19.6
0.255000	52.72	---	92.59	39.87	1000.0	9.000	Single Line	19.6
3.915000	---	40.38	74.00	33.62	1000.0	9.000	Single Line	19.7
3.915000	46.83	---	87.00	40.17	1000.0	9.000	Single Line	19.7
4.845000	---	52.38	74.00	21.62	1000.0	9.000	Single Line	19.5
4.845000	52.82	---	87.00	34.18	1000.0	9.000	Single Line	19.5
8.925000	---	64.13	74.00	9.87	1000.0	9.000	Single Line	19.6
8.925000	64.46	---	87.00	22.54	1000.0	9.000	Single Line	19.6

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.

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNP-6320HP
Mode	AC_100 Mbps
Operator Name:	KES



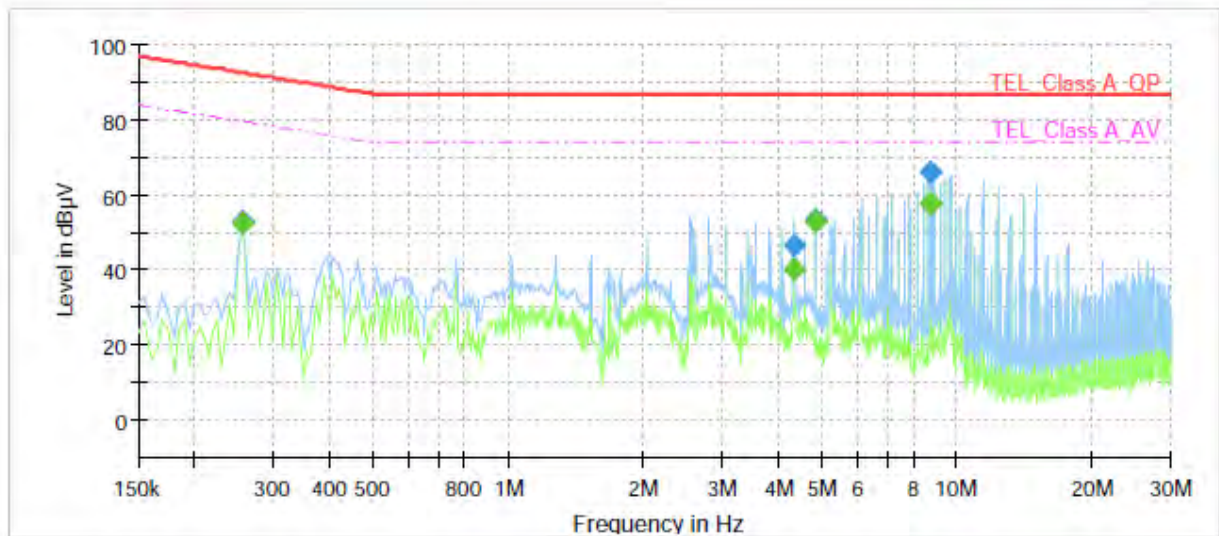
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.255000	---	51.72	79.59	27.87	1000.0	9.000	Single Line	19.9
0.255000	52.49	---	92.59	40.10	1000.0	9.000	Single Line	19.9
4.845000	---	55.01	74.00	18.99	1000.0	9.000	Single Line	19.8
4.845000	55.15	---	87.00	31.85	1000.0	9.000	Single Line	19.8
8.925000	---	67.63	74.00	6.37	1000.0	9.000	Single Line	19.9
8.925000	67.95	---	87.00	19.05	1000.0	9.000	Single Line	19.9
9.435000	---	66.88	74.00	7.12	1000.0	9.000	Single Line	20.0
9.435000	67.58	---	87.00	19.42	1000.0	9.000	Single Line	20.0

■ PoE Mode
[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNP-6320HP
Mode	PoE_10 Mbps
Operator Name:	KES



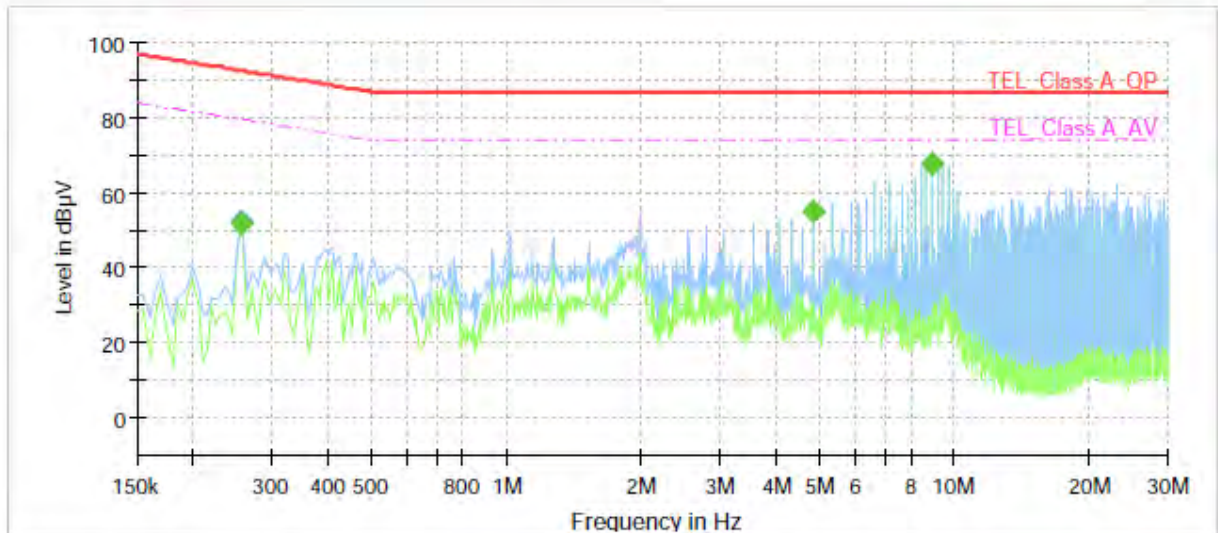
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.255000	---	52.36	79.59	27.23	1000.0	9.000	Single Line	19.6
0.255000	52.92	---	92.59	39.67	1000.0	9.000	Single Line	19.6
4.350000	---	40.17	74.00	33.83	1000.0	9.000	Single Line	19.6
4.350000	46.50	---	87.00	40.50	1000.0	9.000	Single Line	19.6
4.845000	---	52.73	74.00	21.27	1000.0	9.000	Single Line	19.5
4.845000	53.20	---	87.00	33.80	1000.0	9.000	Single Line	19.5
8.750000	---	57.78	74.00	16.22	1000.0	9.000	Single Line	19.6
8.750000	66.10	---	87.00	20.90	1000.0	9.000	Single Line	19.6

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNP-6320HP
Mode	PoE_ 100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.255000	---	51.80	79.59	27.79	1000.0	9.000	Single Line	19.9
0.255000	52.56	---	92.59	40.03	1000.0	9.000	Single Line	19.9
4.845000	---	54.99	74.00	19.01	1000.0	9.000	Single Line	19.8
4.845000	55.13	---	87.00	31.87	1000.0	9.000	Single Line	19.8
8.925000	---	67.68	74.00	6.32	1000.0	9.000	Single Line	19.9
8.925000	67.98	---	87.00	19.02	1000.0	9.000	Single Line	19.9

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



KES Co., Ltd.

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

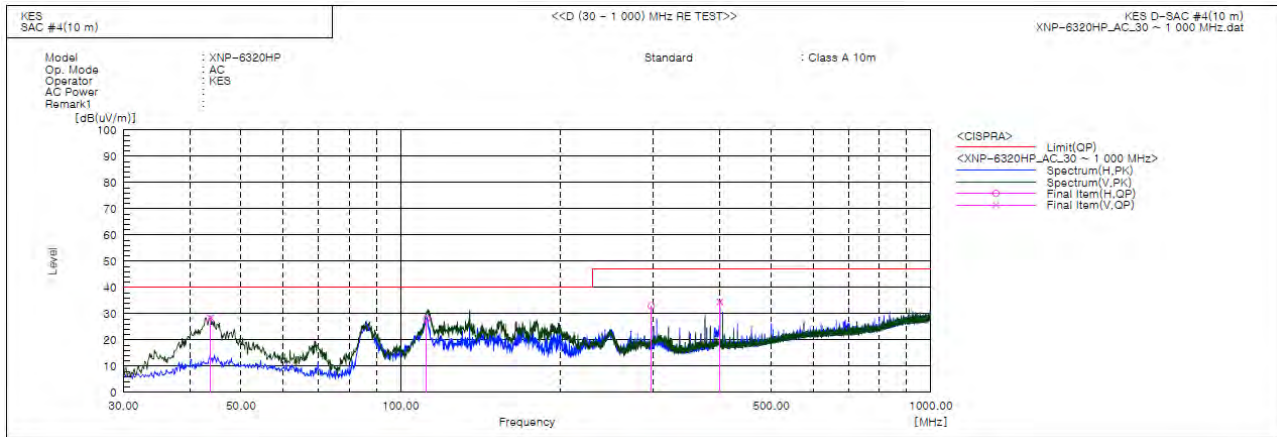
Test report No.:

KES-E1-17T0817-R1

Page (25) of (48)

Radiated Electric Field Emissions(Below 1 GHz)

■ AC 24 V 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	43.823	V	56.6	-28.2	28.4	40.0	11.6	100.0	113.0	
2	111.965	H	57.7	-29.6	28.1	40.0	11.9	379.0	73.0	
3	296.993	H	57.0	-24.0	33.0	47.0	14.0	399.0	133.0	
4	400.055	V	55.0	-20.4	34.6	47.0	12.4	100.0	170.0	

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.

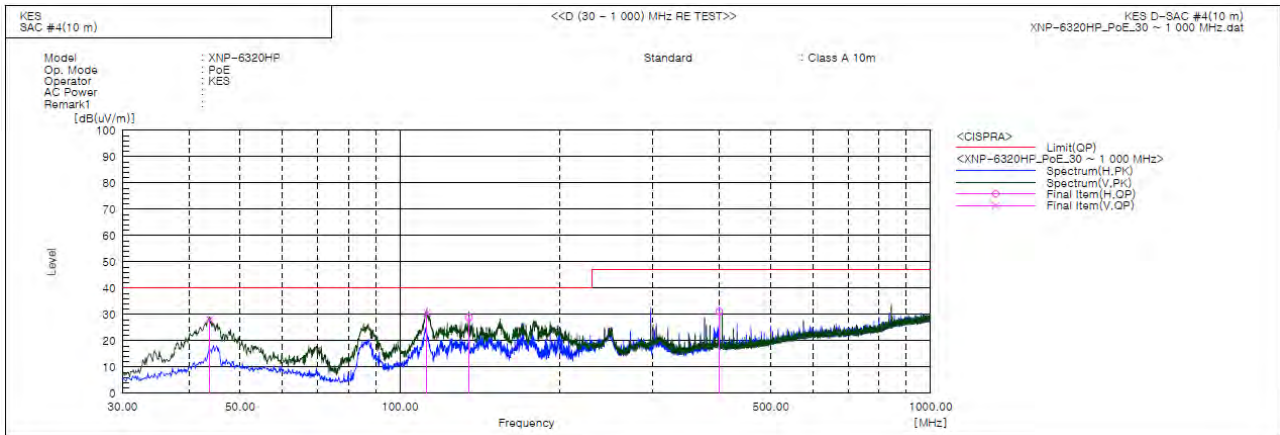


KES Co., Ltd.

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

Test report No.:
KES-E1-17T0817-R1
Page (26) of (48)

■ PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	43.823	V	56.3	-28.2	28.1	40.0	11.9	132.0	315.0	
2	112.450	V	60.2	-29.7	30.5	40.0	9.5	100.0	117.0	
3	135.003	H	60.8	-31.9	28.9	40.0	11.1	400.0	74.0	
4	399.934	H	51.5	-20.4	31.1	47.0	15.9	200.0	359.0	

◆ 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)]

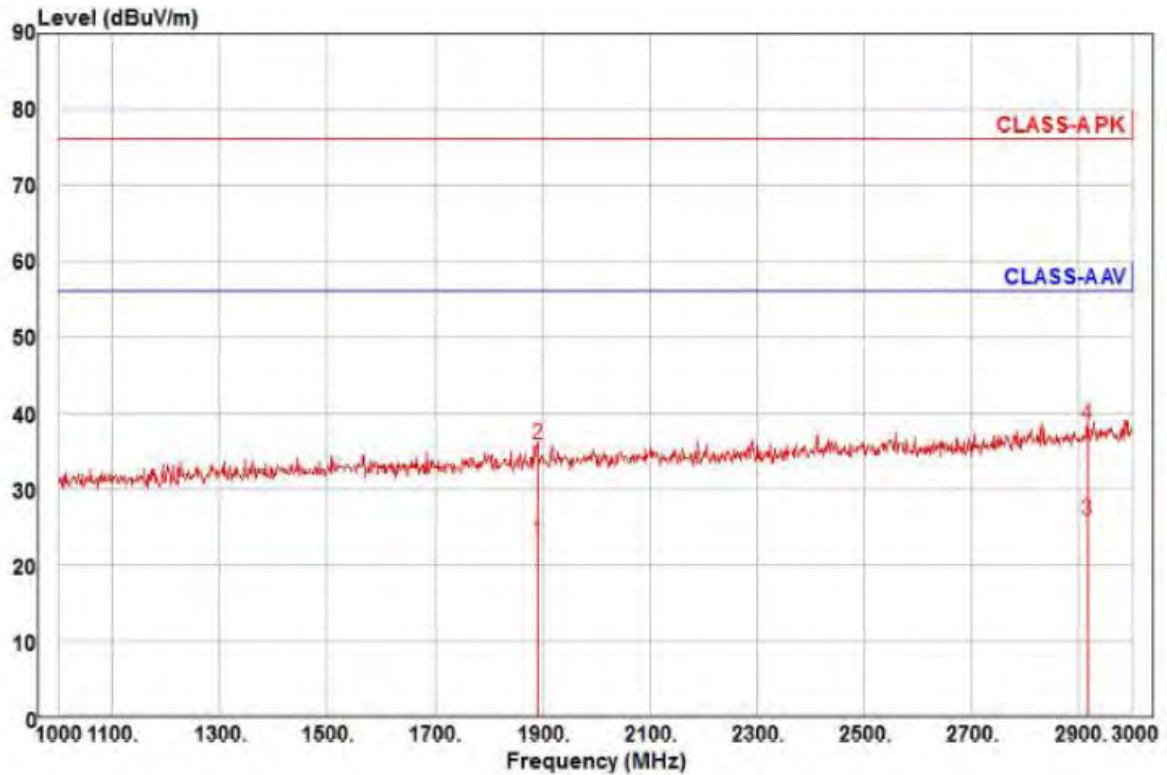
Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

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

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.

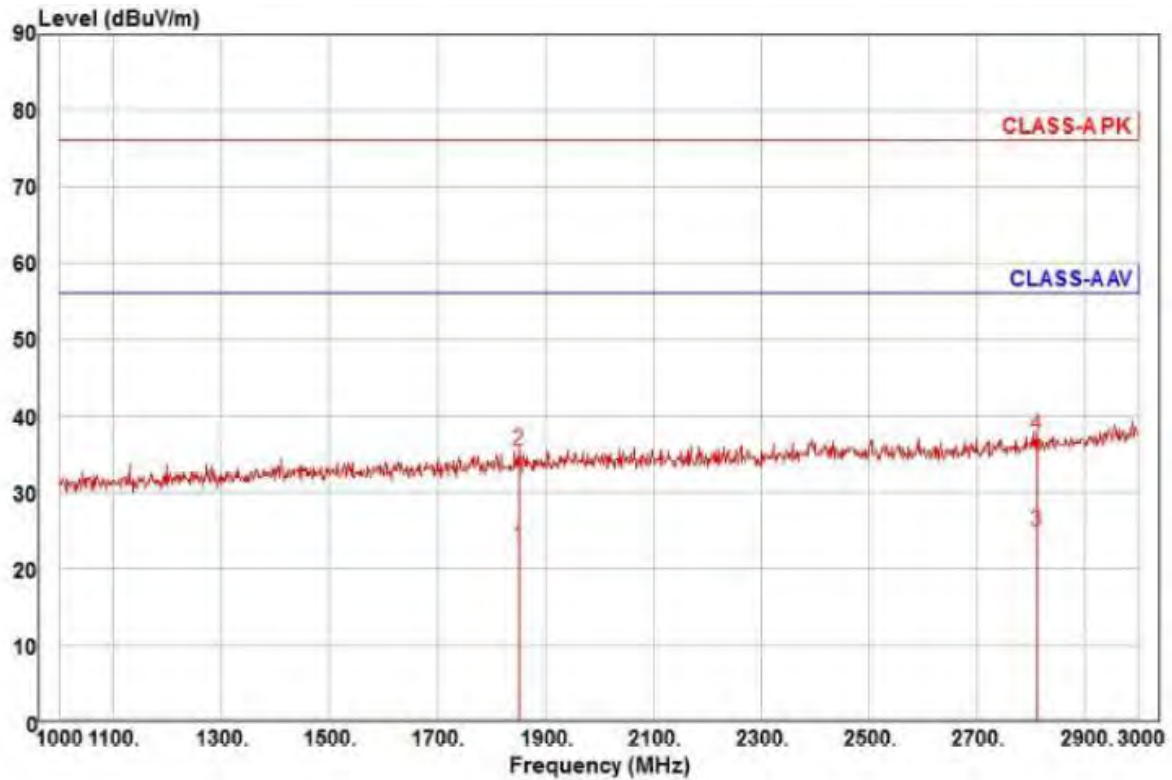
Radiated Electric Field Emissions(Above 1 GHz)

■ AC 24 V Mode



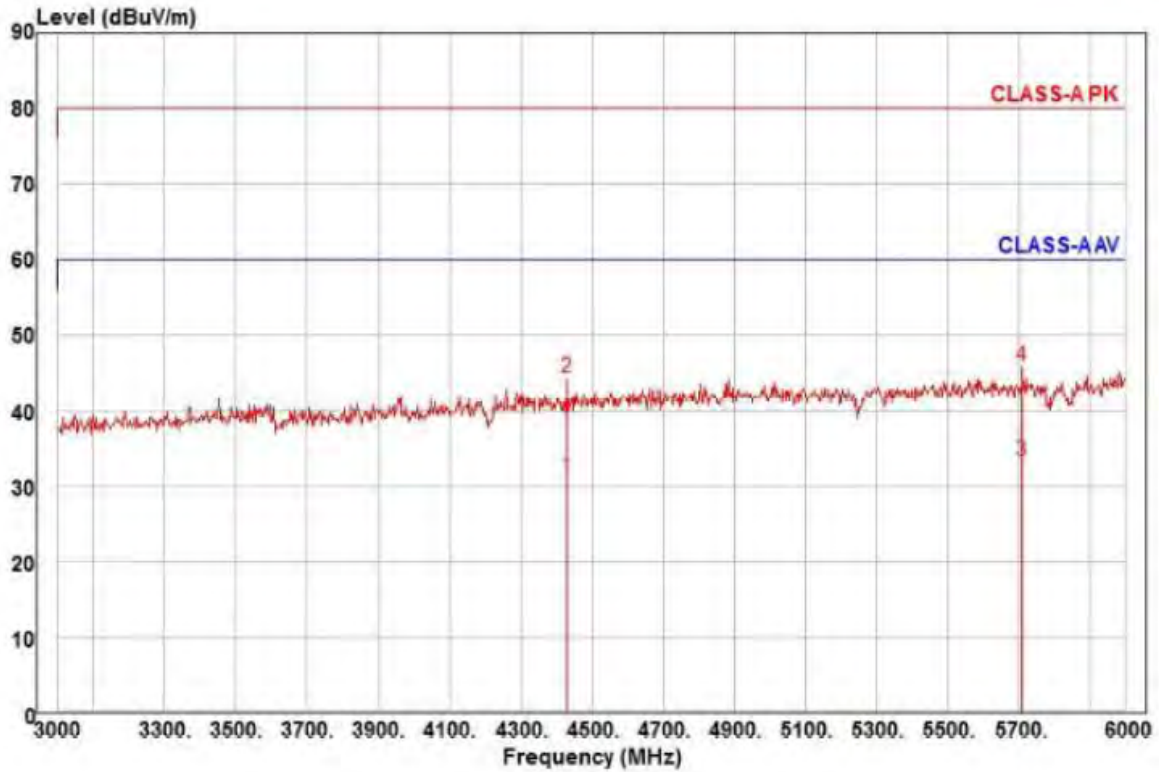
Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : AC
Memo : 1 ~ 3 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1892.00	23.12	26.03	9.35	35.27	144	56.00	-32.77	horizontal	Average
2	1892.00	35.81	26.03	9.35	35.27	144	76.00	-40.08	horizontal	Peak
3 pp	2918.00	21.19	28.30	11.92	35.53	329	56.00	-30.12	horizontal	Average
4 pk	2918.00	33.70	28.30	11.92	35.53	329	76.00	-37.61	horizontal	Peak



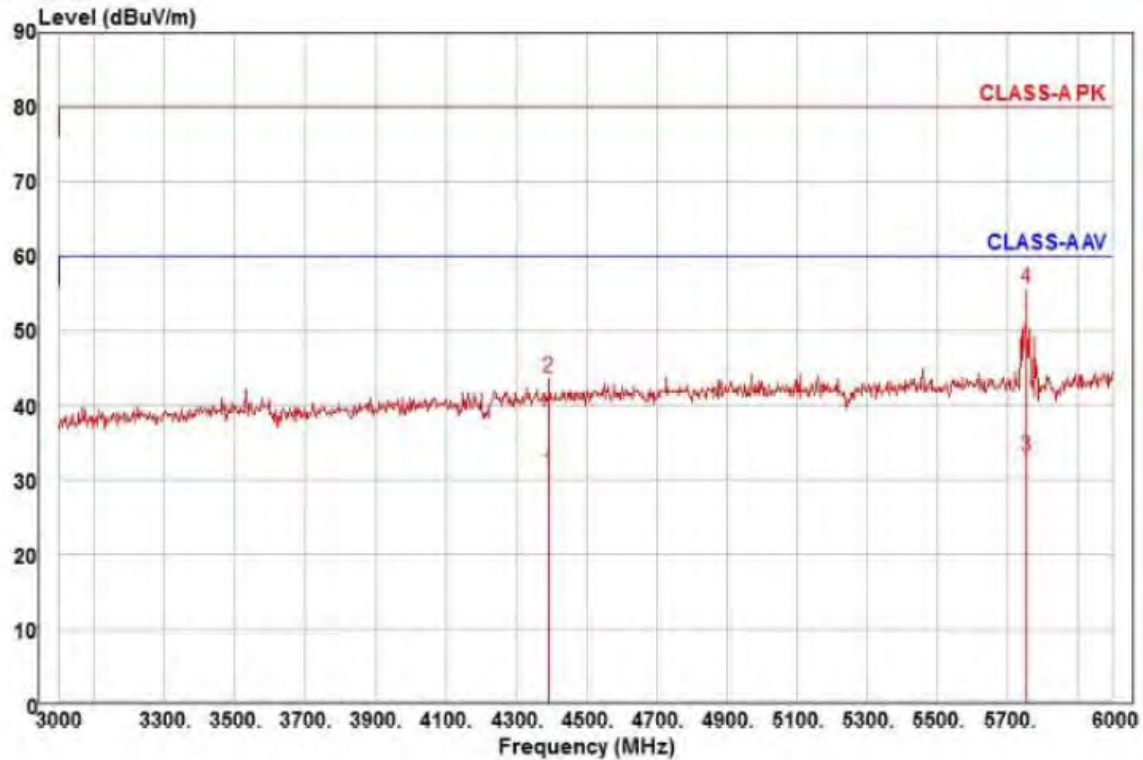
Site : YE0JU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : AC
Memo : 1 ~ 3 GHz

	Read	Ant	Cable	Preamp	TPos	Limit	Over		
Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1850.00	22.97	25.98	9.23	35.30	41	56.00	-33.12	vertical Average
2	1850.00	35.51	25.98	9.23	35.30	41	76.00	-40.58	vertical Peak
3 pp	2812.00	20.77	28.02	11.64	35.49	307	56.00	-31.06	vertical Average
4 pk	2812.00	33.36	28.02	11.64	35.49	307	76.00	-38.47	vertical Peak



Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : AC
Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4431.00	21.05	30.75	14.85	35.43	312	60.00	-28.78	horizontal	Average
2	4431.00	34.17	30.75	14.85	35.43	312	80.00	-35.66	horizontal	Peak
3 pp	5712.00	19.90	32.12	16.92	35.67	295	60.00	-26.73	horizontal	Average
4 pk	5712.00	32.53	32.12	16.92	35.67	295	80.00	-34.10	horizontal	Peak



Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : AC
Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4395.00	20.98	30.68	14.79	35.42	284	60.00	-28.97	vertical	Average
2	4395.00	33.61	30.68	14.79	35.42	284	80.00	-36.34	vertical	Peak
3 av	5757.00	19.70	32.20	16.99	35.68	13	60.00	-26.79	vertical	Average
4 pp	5757.00	42.18	32.20	16.99	35.68	13	80.00	-24.31	vertical	Peak

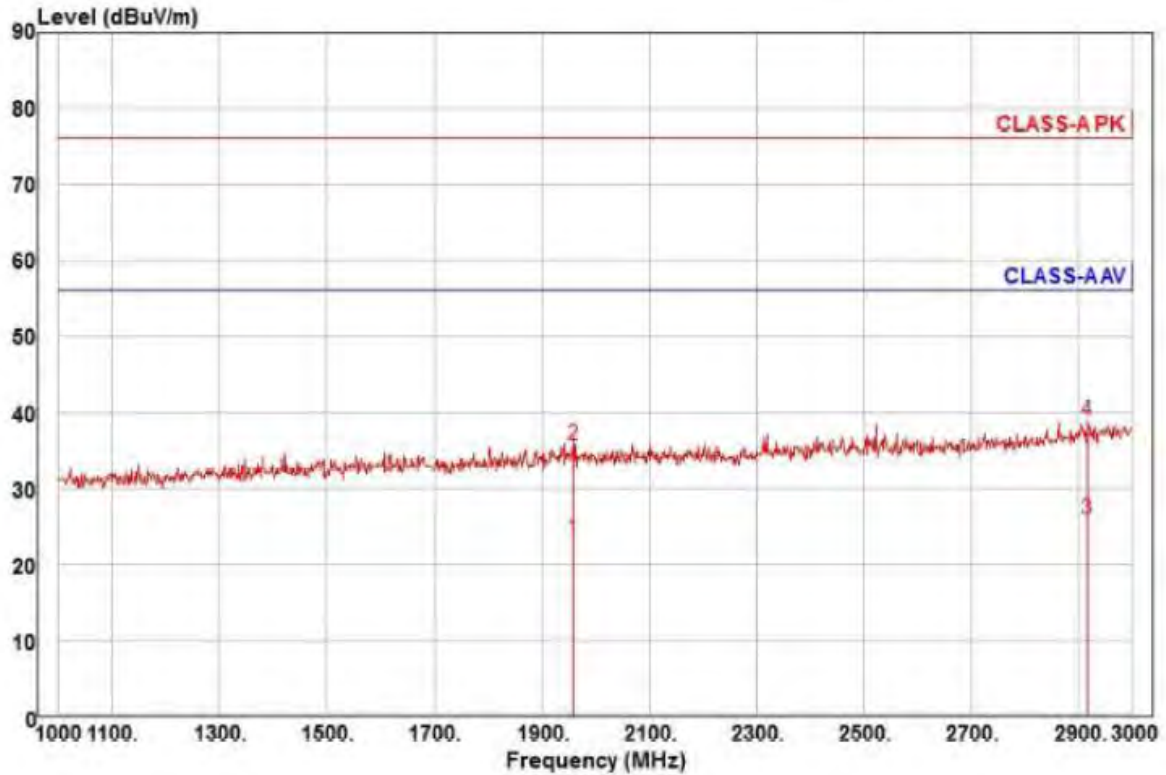


KES Co., Ltd.

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

Test report No.:
KES-E1-17T0817-R1
Page (31) of (48)

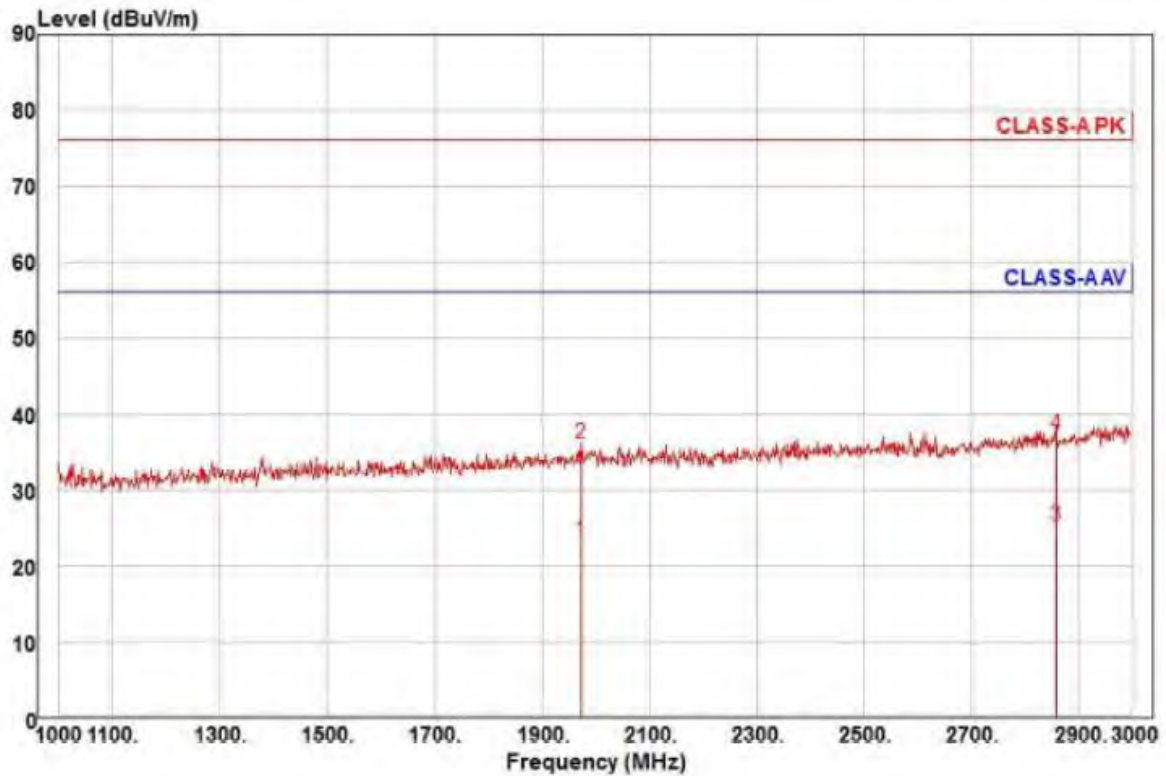
■ PoE Mode



Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : PoE
Memo : 1 ~ 3 GHz

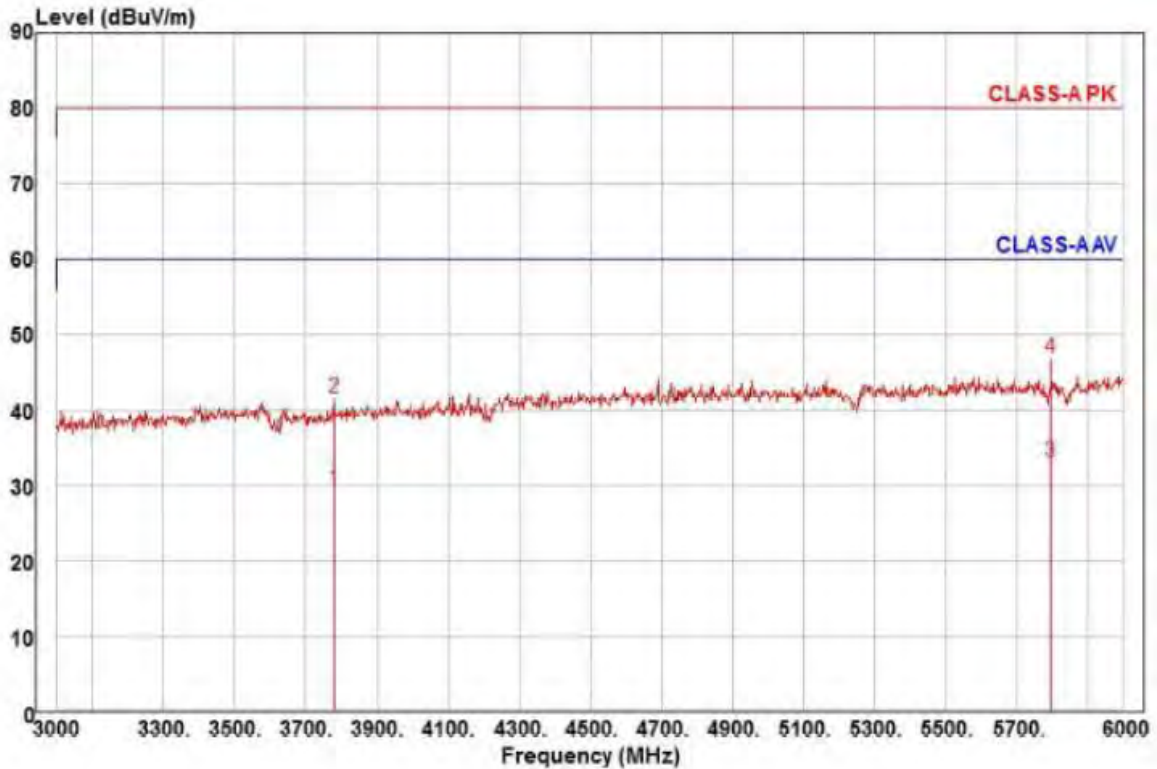
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1960.00	22.95	26.11	9.54	35.21	179	56.00	-32.61	horizontal	Average
2	1960.00	35.30	26.11	9.54	35.21	179	76.00	-40.26	horizontal	Peak
3 pp	2918.00	21.24	28.30	11.92	35.53	332	56.00	-38.07	horizontal	Average
4 pk	2918.00	34.10	28.30	11.92	35.53	332	76.00	-37.21	horizontal	Peak

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.



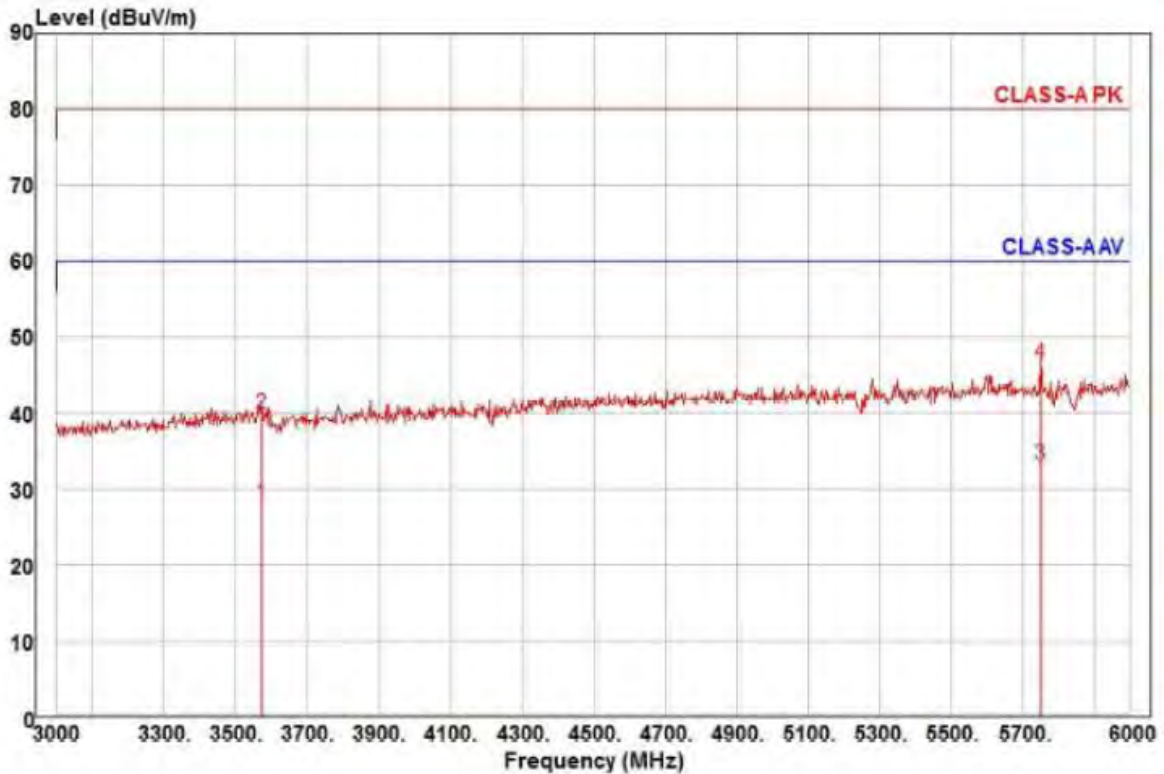
Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : PoE
Memo : 1 ~ 3 GHz

	Read Freq	Ant Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1974.00	22.82	26.13	9.57	35.19	14	56.00	-32.67	vertical	Average
2	1974.00	35.52	26.13	9.57	35.19	14	76.00	-39.97	vertical	Peak
3 pp	2858.00	20.83	28.14	11.76	35.50	235	56.00	-30.77	vertical	Average
4 pk	2858.00	32.79	28.14	11.76	35.50	235	76.00	-38.81	vertical	Peak



Site : YEOJU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : PoE
Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3780.00	21.65	29.41	13.60	35.34	3	60.00	-30.68	horizontal	Average
2	3780.00	33.89	29.41	13.60	35.34	3	80.00	-38.44	horizontal	Peak
3 pp	5799.00	19.56	32.27	17.04	35.68	315	60.00	-26.81	horizontal	Average
4 pk	5799.00	33.33	32.27	17.04	35.68	315	80.00	-33.04	horizontal	Peak



Site : YE0JU_C 3 m SAC
Condition: CISPR22 CLASS-A PK 3m BBHA 9120D(RRA 2019-09-04) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNP-6320HP
Mode : PoE
Memo : 3 ~ 6 GHz

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3573.00	21.13	29.01	13.24	35.40	85	60.00	-32.02	vertical	Average
2	3573.00	32.88	29.01	13.24	35.40	85	80.00	-40.27	vertical	Peak
3 pp	5751.00	19.73	32.19	16.98	35.68	277	60.00	-26.78	vertical	Average
4 pk	5751.00	32.90	32.19	16.98	35.68	277	80.00	-33.61	vertical	Peak

◆ Calculation

Over Limit [dB] = (Read Level[dBμV] + Ant Factor[dB/m] + Cable Loss [dB] – Preamp Factor [dB])
– Limit Line[dBμV]

Over Limit : Margin, Read Level : Reading value, Ant Factor : ANT Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp 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.

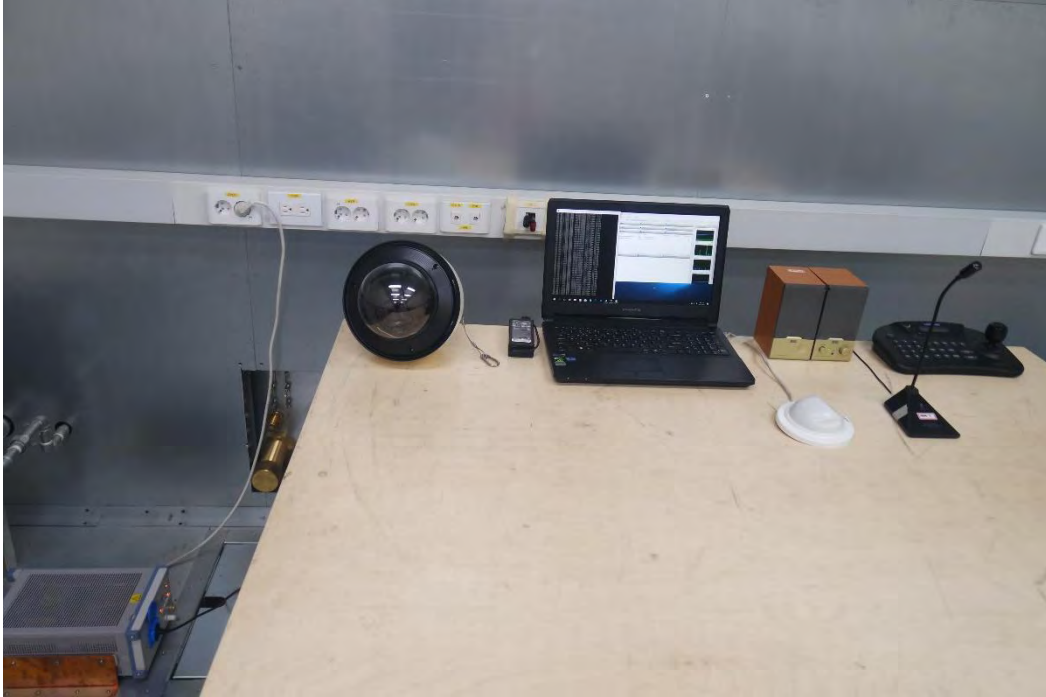
Test Setup Photos and Configuration

Conducted Voltage Emissions



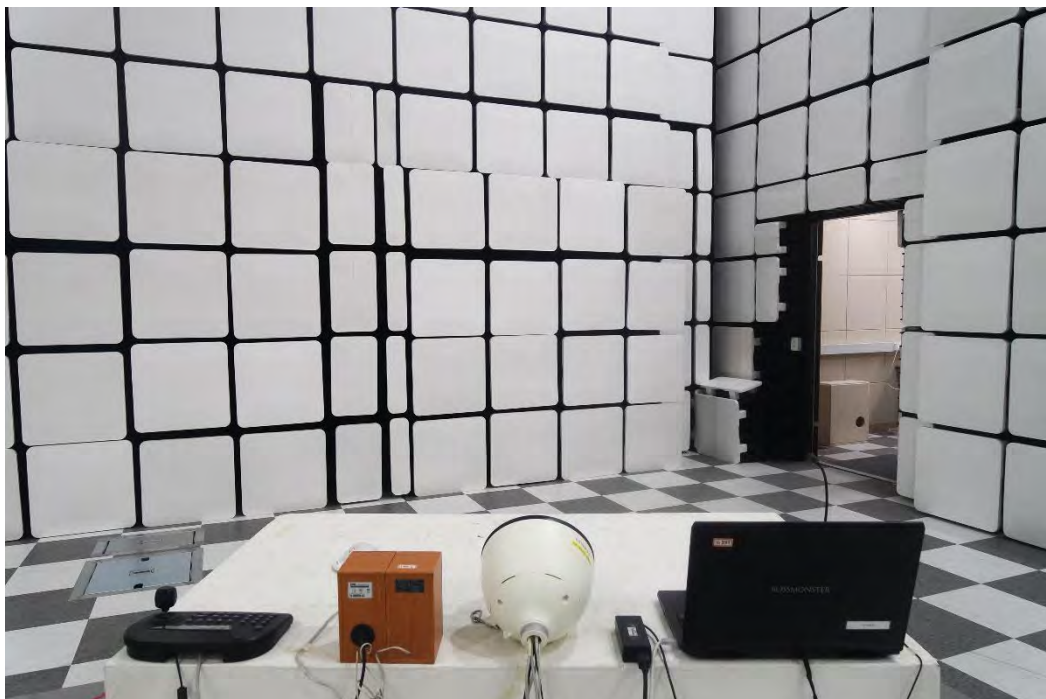
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Conducted Telecommunication Emissions



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.

Radiated Electric Field Emissions(Below 1 GHz)



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.

Radiated Electric Field Emissions(Above 1 GHz)



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.

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.

EUT Internal Photographs

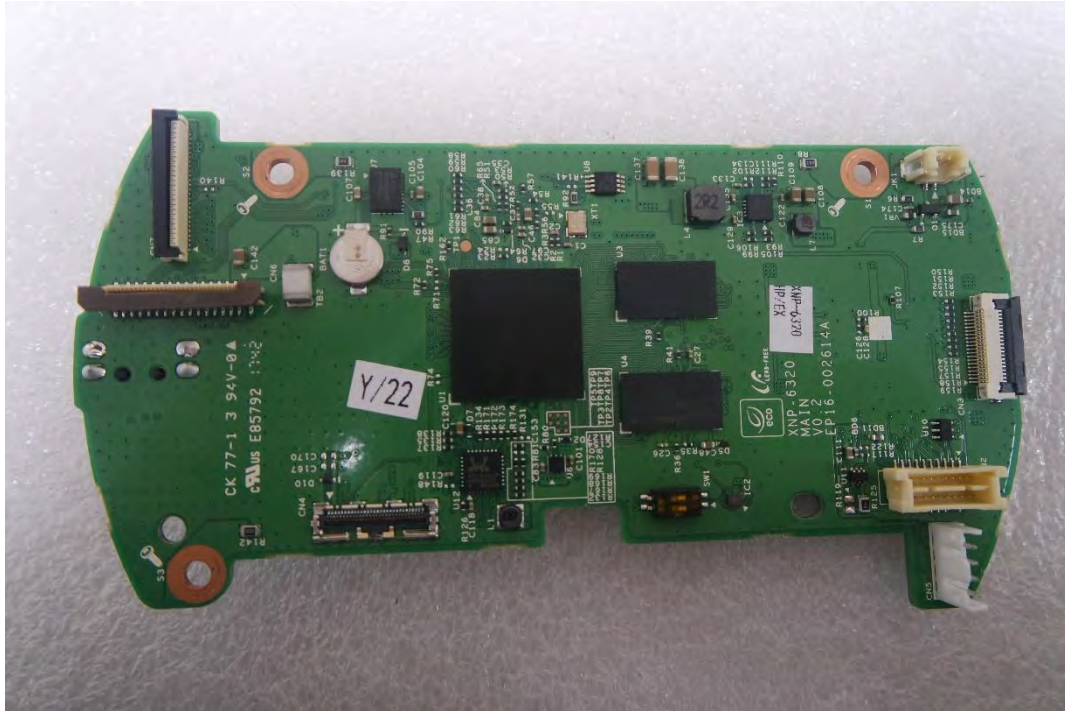
(Internal View)



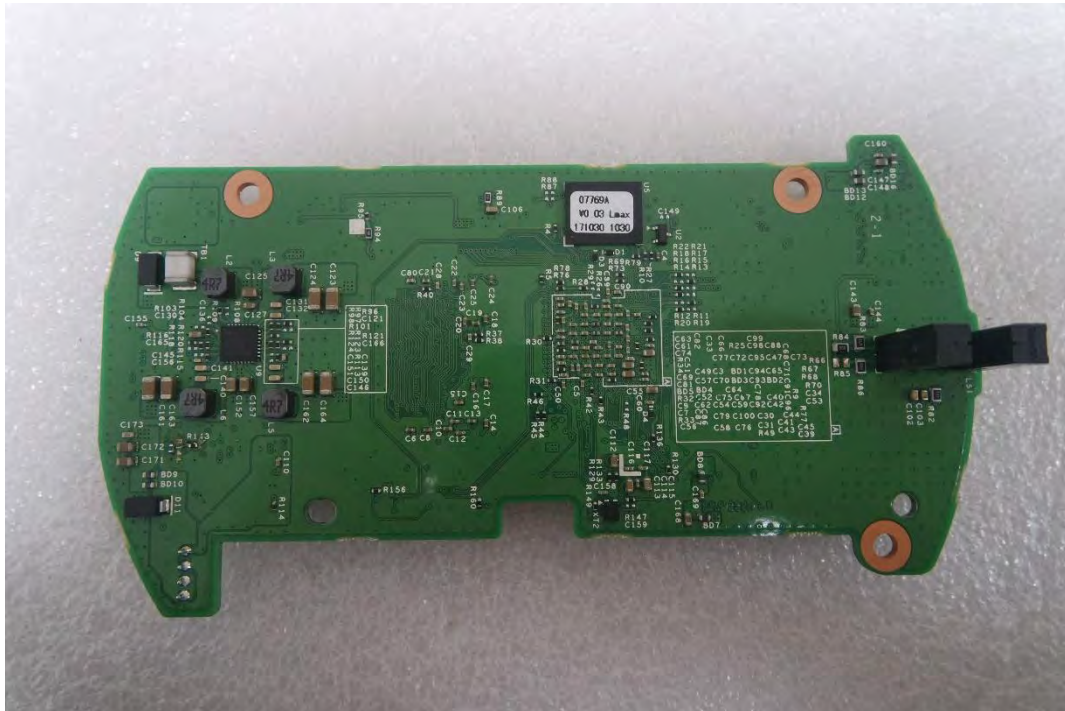
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – Main board

(Top)



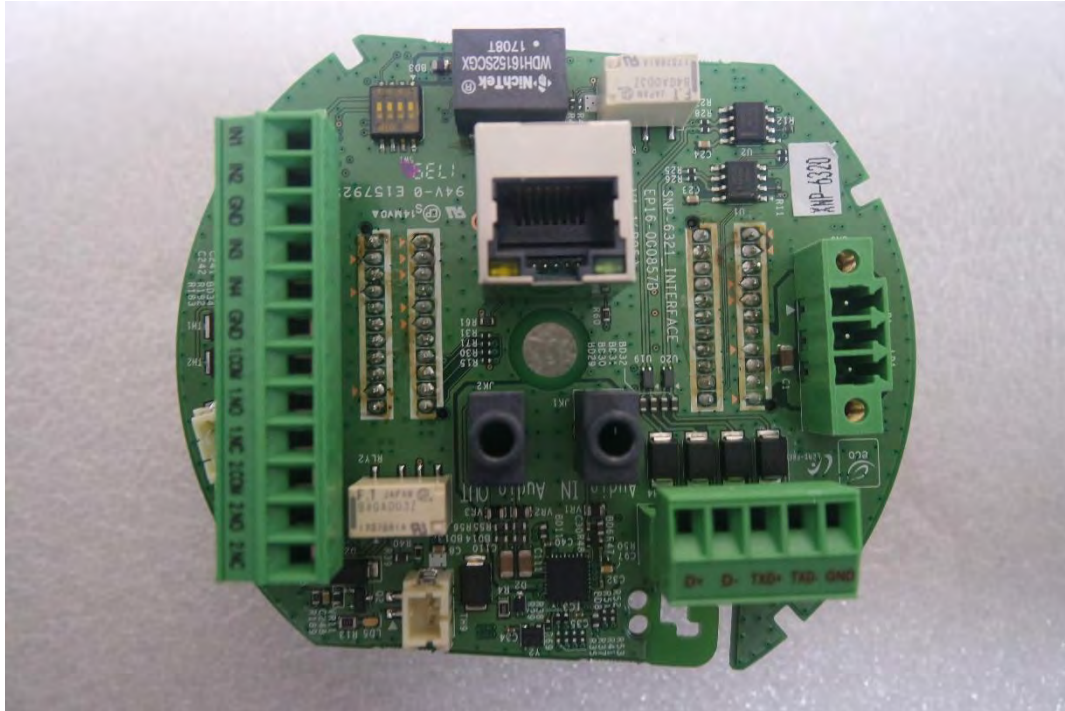
(Bottom)



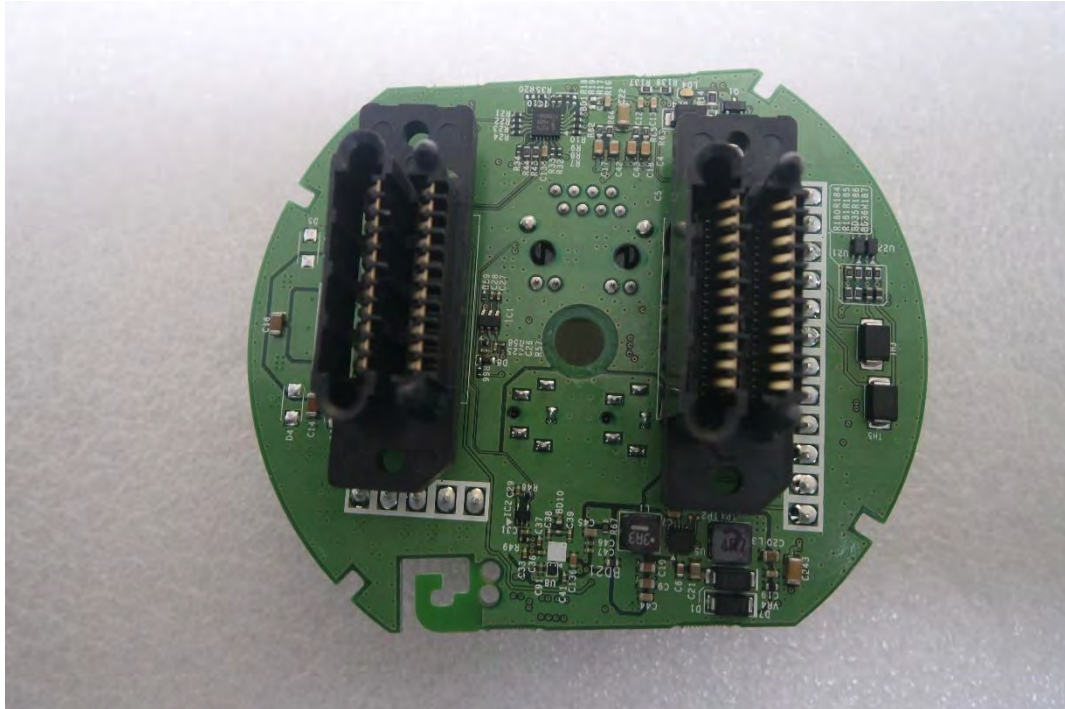
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – Interface board

(Top)



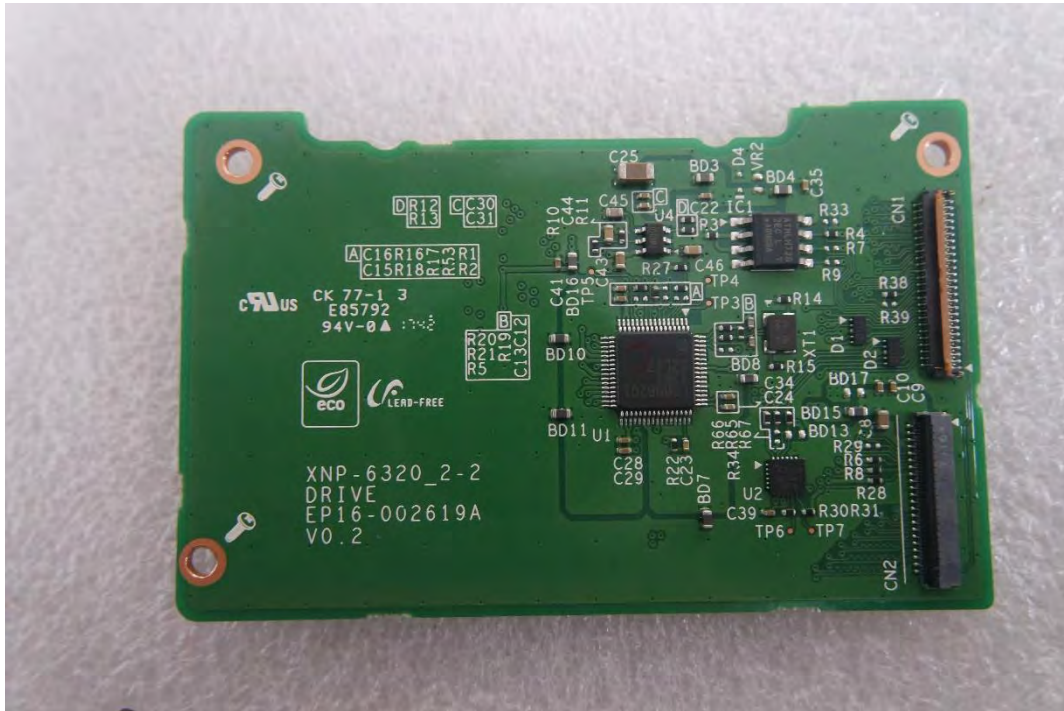
(Bottom)



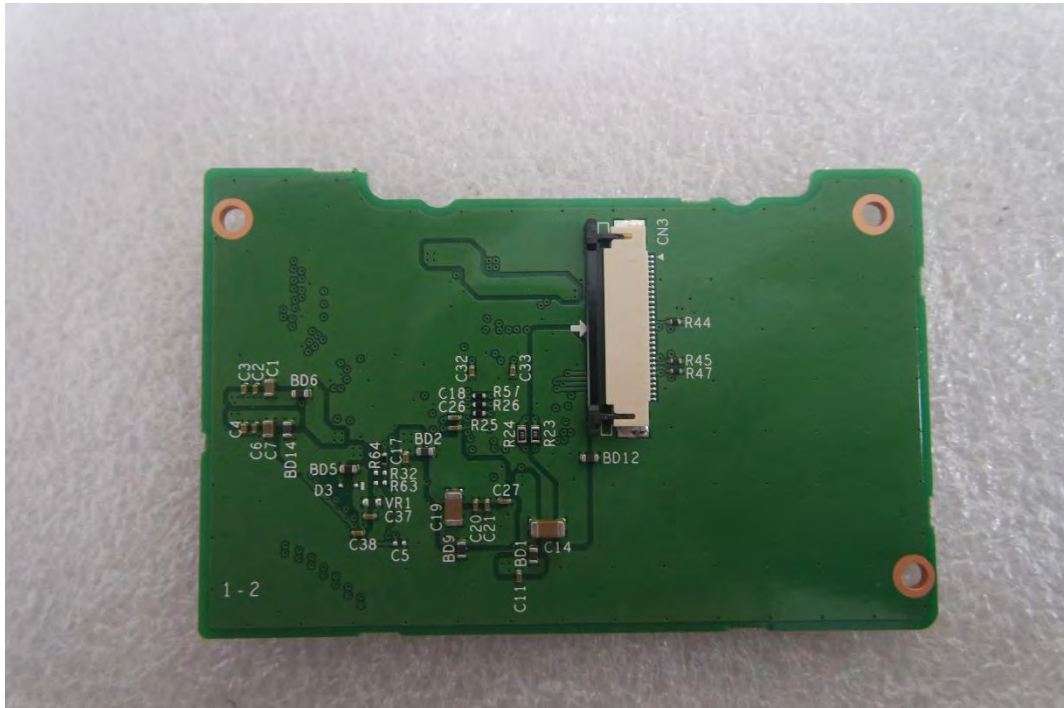
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – Drive board

(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.

EUT Internal View – CCD board

(Top)



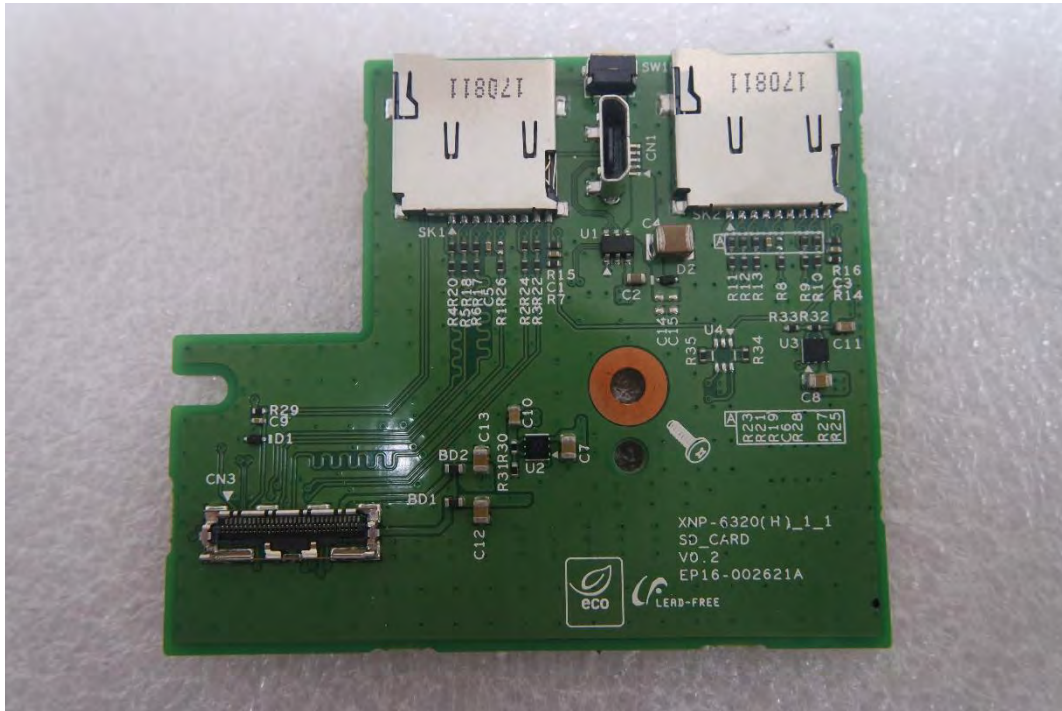
(Bottom)



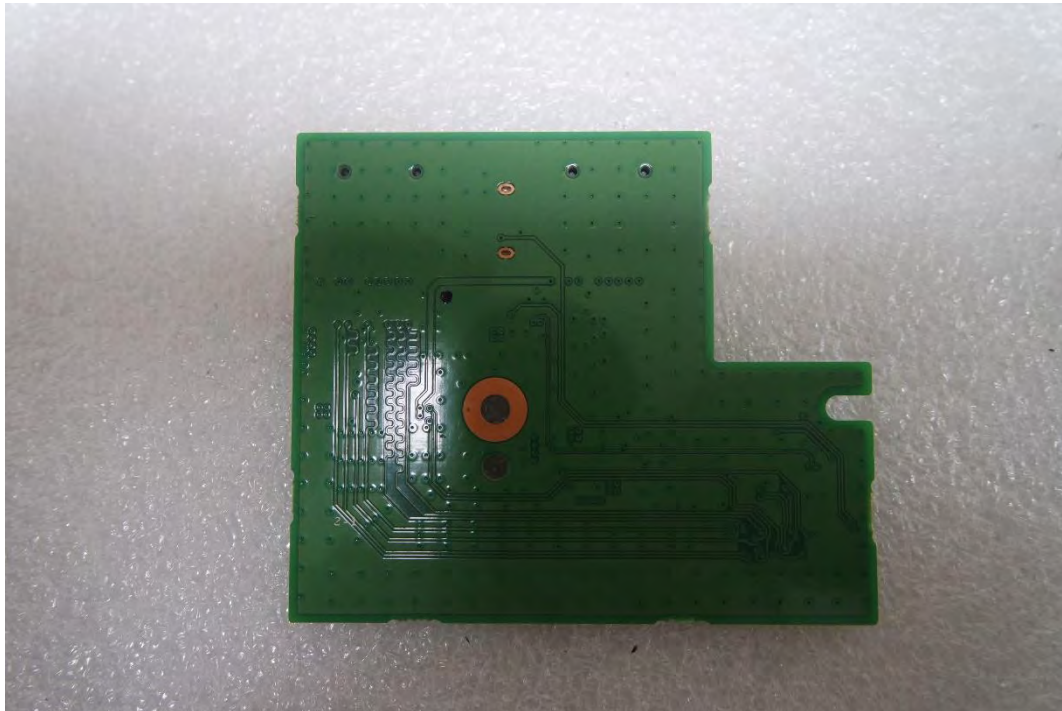
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – SD board

(Top)



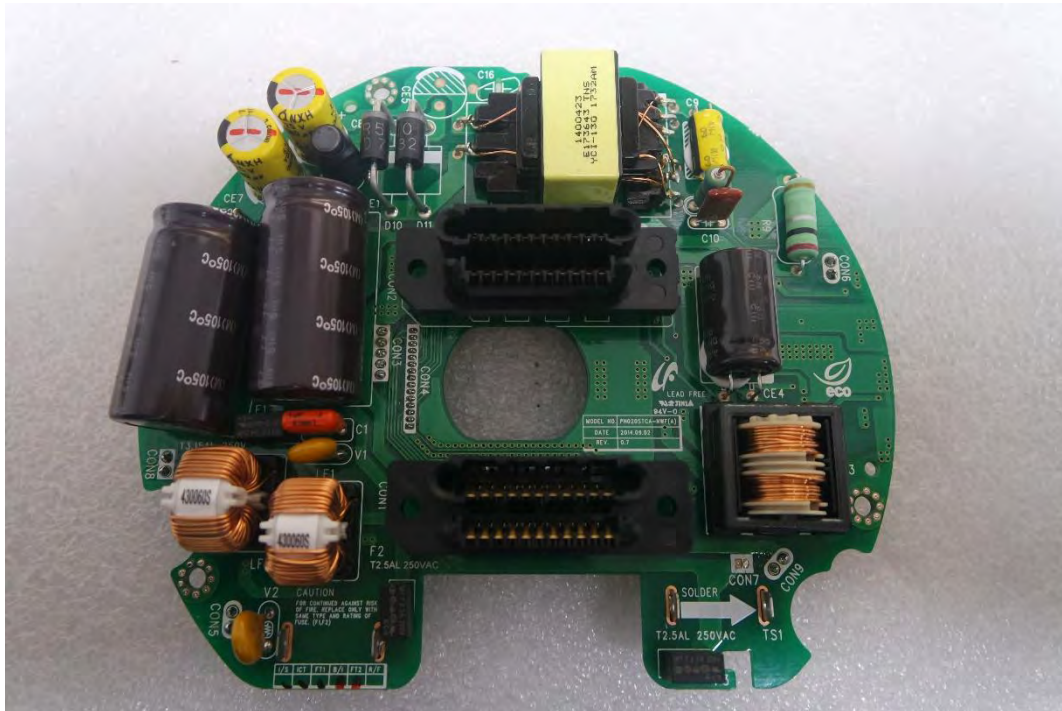
(Bottom)



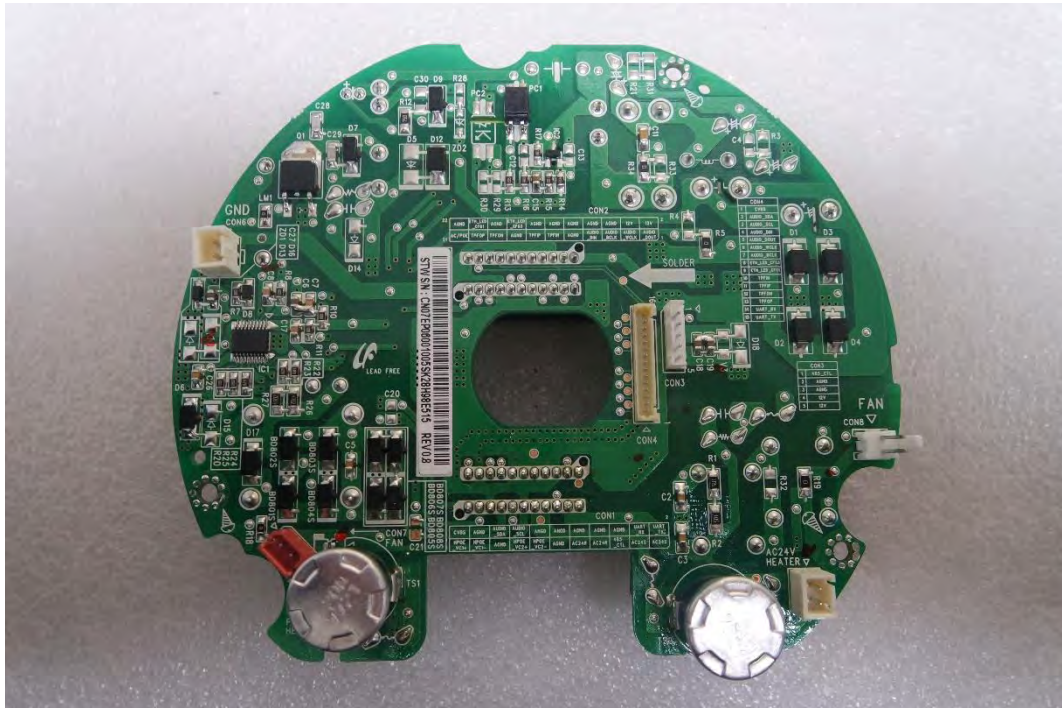
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – Power board

(Top)



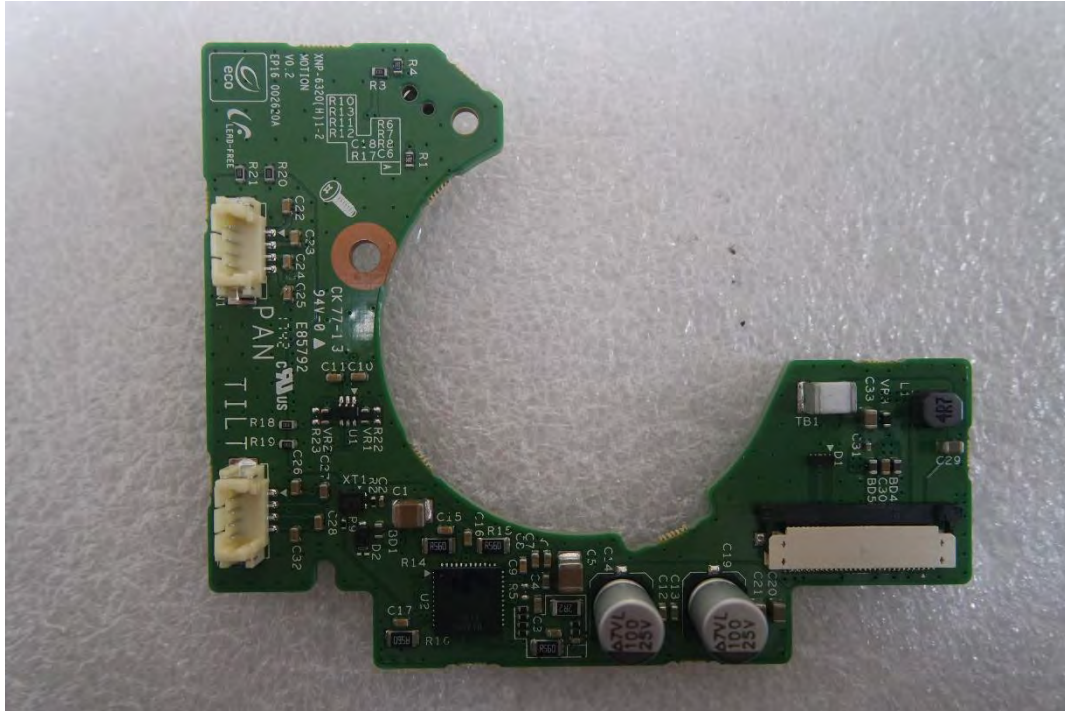
(Bottom)



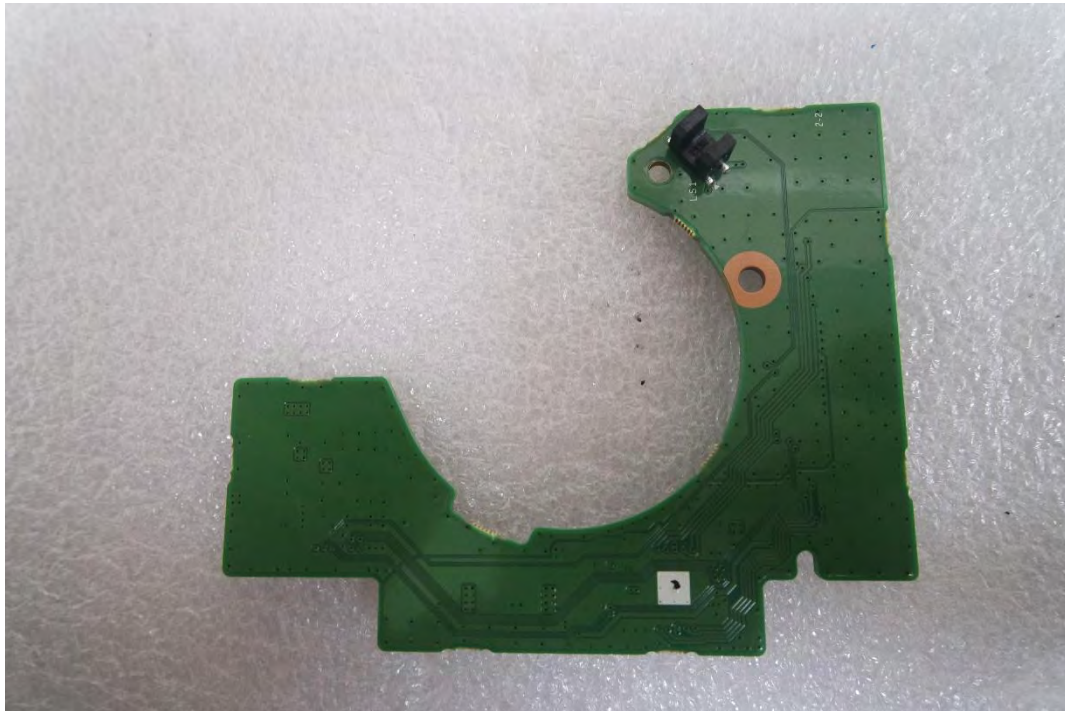
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – TILT board

(Top)



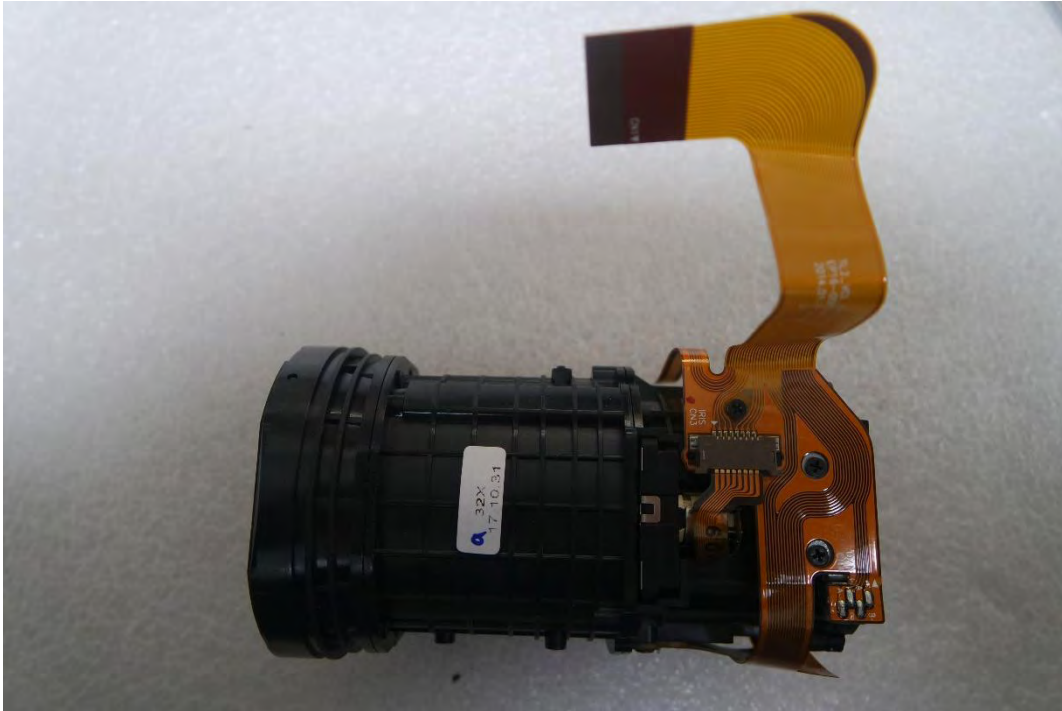
(Bottom)



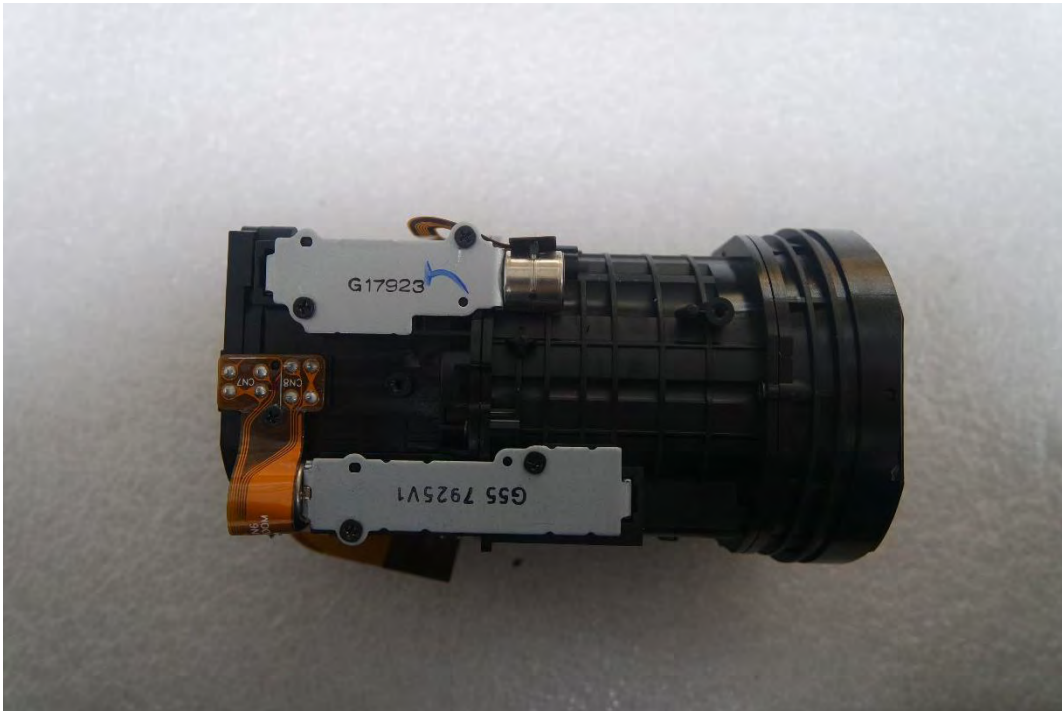
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT Internal View – Lens Module

(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.