



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-18T0491
Date of Issue : Aug. 20, 2018
Product name : NETWORK CAMERA
Model/Type No. : XNZ-6320
Variant Model : -
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488, KOREA
Manufacturer : 1. Hanwha Techwin (Tianjin) Co.,Ltd.
2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
3. D-TECH CO.,LTD.
Manufacturer Address : 1. No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, People's Republic of China
2. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do,
Korea (Suwon Industrial Complex)
Date of Receipt : Jul. 30, 2018
Test date : Aug. 13, 2018
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Young Suk, Song
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to 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

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Aug. 20, 2018	KES-E1-18T0491	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Video	XNZ-6320
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
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, Shock Detection
Serial Interface	RS-485/RS-422 - Samsung-T, Pelco-D/P, Panasonic, Bosch, AD, GE, Vicon, Honeywell
Alarm I/O	Input 1ea / 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 jack), Max output level: 1 Vrms
Pixel counter	support
Network	
Ethernet	RJ-45 (10/100BASE-T), SFP(100BASE-FX)
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
Audio Communication	Bi-directional (2-Way)



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
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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 Interface	ONVIF Profile S/G SUNAPI 2.0(HTTP API) Wisenet Open Platform
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 Recommended Browser : Google Chrome, Supported Browser : IE11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari 10 (Mac OS X only)
Central Management Software	SmartViewer, SSM
Environmental	
Operating Temperature / Humidity	-10°C ~ +55°C(+14°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	-
Vandal Resistance	-
Electrical	
Input Voltage / Current	12VDC±10%, PoE(IEEE 802.3af, class3)
Power Consumption	Max.6.7W(DC12V), Max.7W(PoE)
Mechanical	
Color / Material	Black / Plastic+Metal
Dimension (WxHxD)	96 x 76 x 143.5mm
Weight	578g

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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 ☐ 100 Vac ☐ 24 Vac ☒ 12 Vdc ☒ PoE

Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNZ-6320	-	Hanwha Techwin (Tianjin) Co.,Ltd	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
POE Adaptor	POE36U-1AT-R	-	PHIHONG	-
OPTICAL Converter	SFC200MF	-	SoITech	
OPTICAL Converter Adaptor	PA-120150SN	-	Perfect Power	
Cellular phone	SHV-E210L	R33D713KA3F	SAMSUNG	
Notebook	X56K	HN11N5151FJ0045W	HANSUNG	-
Notebook Adaptor	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
Controller	SPC-1010	C50E67WD601003	SamSung Techwin Co.,Ltd	-
Controller Adaptor	RS-AB1000	-	Dongguan JinhuaSheng Power Technology Co.,Ltd	-
Alarm1	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Alarm2	-	-	-	-
Micro SD Card	-	-	-	4GB

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1.6 External I/O Cabling

■ DC_RJ-45 MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	Notebook	RJ-45	3.0	S
	3.5 mm	Notebook	3.5 mm	1.6	U
	3.5 mm	Speaker	3.5 mm	1.7	U
	2Pin	Alarm 1	2Pin	3.0	U
	2Pin	Alarm 2	2Pin	3.0	U
	2Pin	Controller	2Pin	3.2	U
	-	Micro SD Card	-	-	-
Notebook	3.5 mm	Cellular phone	3.5 mm	1.5	U

* Unshielded=U, Shielded=S

■ DC_OPTICAL MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	OPTICAL	OPTICAL Converter	OPTICAL	3.5	U
	3.5 mm	Notebook	3.5 mm	1.6	U
	3.5 mm	Speaker	3.5 mm	1.7	U
	2Pin	Alarm 1	2Pin	3.0	U
	2Pin	Alarm 2	2Pin	3.0	U
	2Pin	Controller			U
	-	Micro SD Card	-	-	-
OPTICAL Converter	RJ-45	Notebook	RJ-45	3.0	S
Notebook	3.5 mm	Cellular phone	3.5 mm	1.5	U

* Unshielded=U, Shielded=S

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3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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■ POE_RJ-45 MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	POE Adaptor	RJ-45	3.0	S
	3.5 mm	Notebook	3.5 mm	1.6	U
	3.5 mm	Speaker	3.5 mm	1.7	U
	2Pin	Alarm 1	2Pin	3.0	U
	2Pin	Alarm 2	2Pin	3.0	U
	2Pin	Controller	2Pin	3.2	U
	-	Micro SD Card	-	-	U
POE Adaptor	RJ-45	Notebook	RJ-45	3.2	-
Notebook	3.5 mm	Cellular phone	3.5 mm	1.5	U

* Unshielded=U, Shielded=S

■ POE_OPTICAL MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (EUT)	RJ-45	POE Adaptor	RJ-45	3.0	S
	OPTICAL	OPTICAL Converter	OPTICAL	3.5	U
	3.5 mm	Notebook	3.5 mm	1.6	U
	3.5 mm	Speaker	3.5 mm	1.7	U
	2Pin	Alarm 1	2Pin	3.0	U
	2Pin	Alarm 2	2Pin	3.0	U
	2Pin	Controller	2Pin	3.2	U
	-	Micro SD Card	-	-	-
OPTICAL Converter	RJ-45	Notebook	RJ-45	3.0	S
Notebook	3.5 mm	Cellular phone	3.5 mm	1.5	U

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test mode	operating
DC 12 V	EUT Monitoring, Ping Test
POE	EUT Monitoring, Ping Test

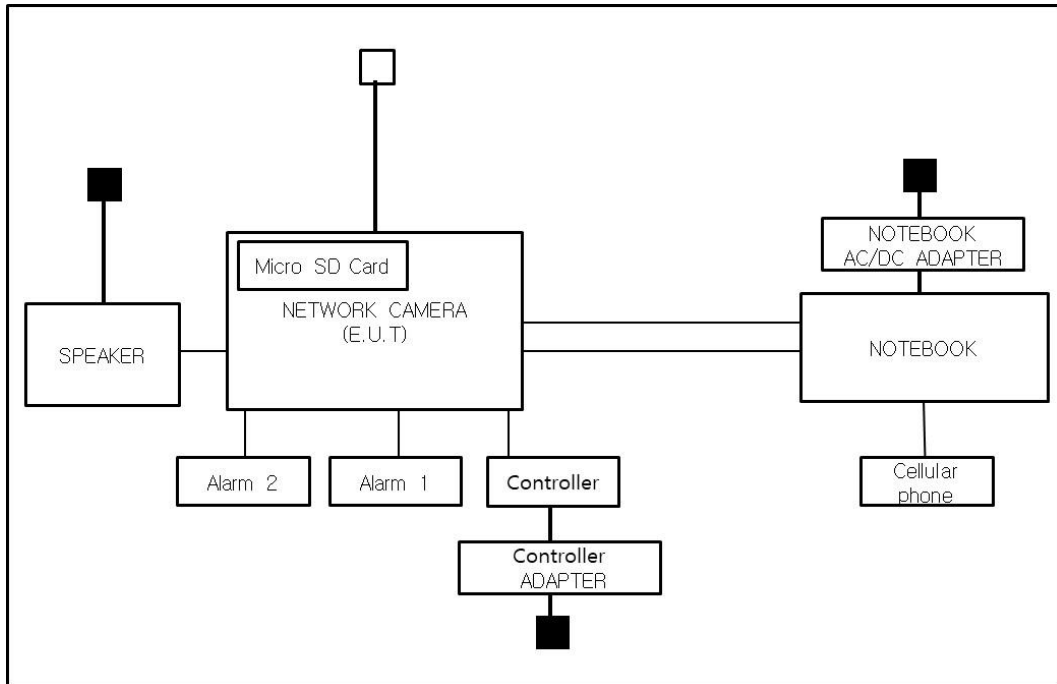
EUT Test operating S/W		
Name	Version	Manufacture Company
WebViewer	-	Hanwha Techwin Co., Ltd.

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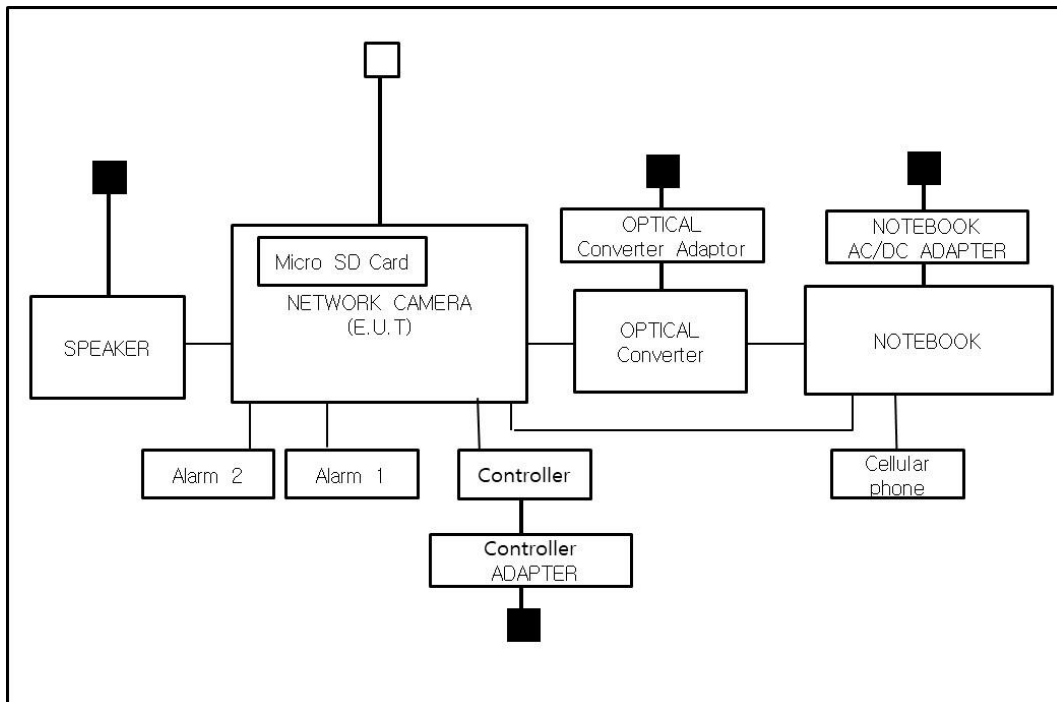
1.8 Configuration

■ AC Main
 □ DC Main

■ DC_RJ-45 MODE

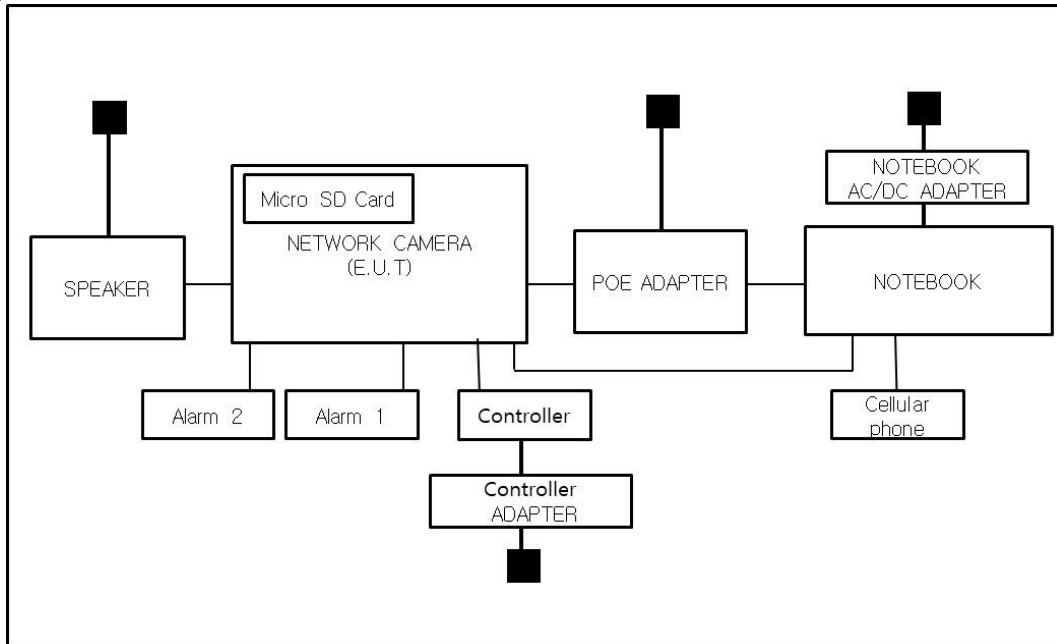


■ DC_OPTICAL MODE

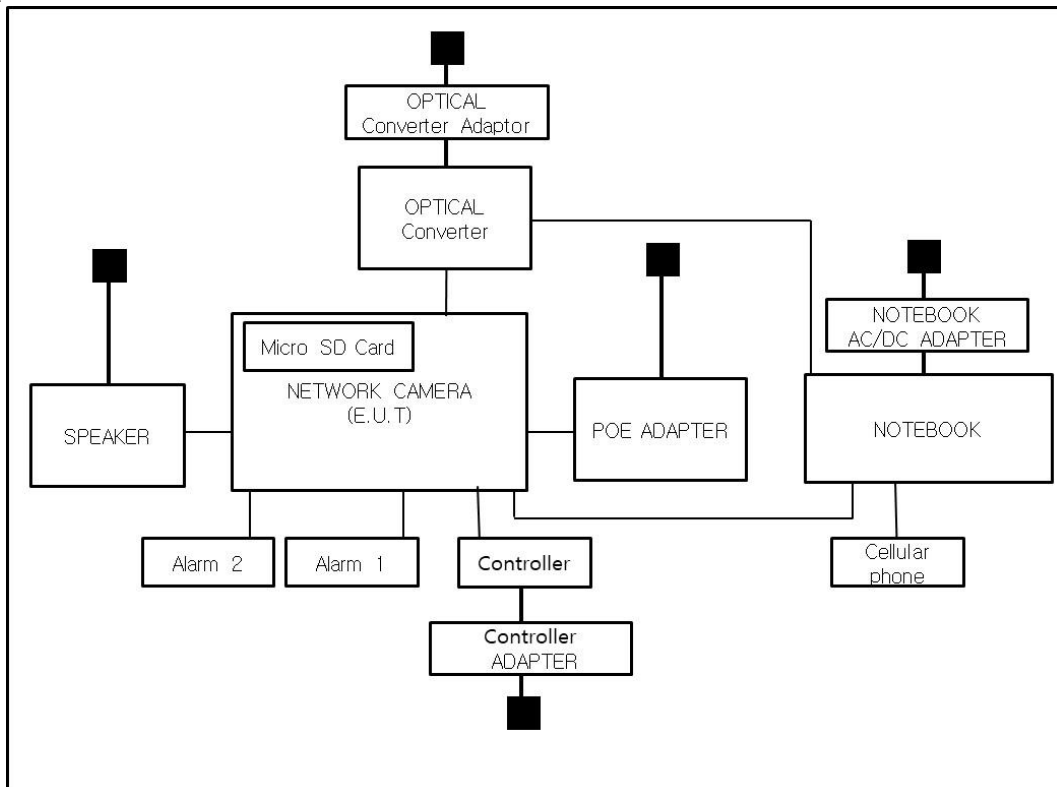


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■ POE_RJ-45 MODE



■ POE_OPTICAL MODE



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-Aechoic 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-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Aechoic 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-4308, C-4798, T-2311, G-914
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 17 07 01633 001



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 61547 :2009

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☐ 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 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 | | |

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2.1 Conducted Emissions Mains Power Ports

Test Date

N/A

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	101781	04, 25, 2019
☐	LISN	ENV216	R & S	101787	01, 05, 2019
☐	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018

Test Conditions

Temperature: °C
Relative Humidity: % 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

N/A



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Aug. 13, 2018

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	101781	04, 25, 2019
☒	LISN	ENV216	R & S	101787	01, 05, 2019
☒	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 07, 2019
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 07, 2019
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	05, 09, 2019
☐	CDN	CDNS502A	TESEQ	40431	01, 05, 2019

Test Conditions

Temperature: 25,6 °C
Relative Humidity: 48,5 % 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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2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Aug. 13, 2018

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, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	714	11, 28, 2018

Test Conditions

Temperature: 26,8 °C
Relative Humidity: 50,7 % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Aug. 13, 2018

Test Location

SEMI ANECHOIC CHAMBER #3

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	ESR7	R & S	101190	08, 06, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 31, 2019
☐	ATTENUATOR	8491A	HP	35496	03, 21, 2019
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

Test Conditions

Temperature: 24,2 °C
Relative Humidity: 58,3 % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

N/A

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NEUTRAL LINE

N/A

◆ 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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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
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Test report No.:
KES-E1-18T0491
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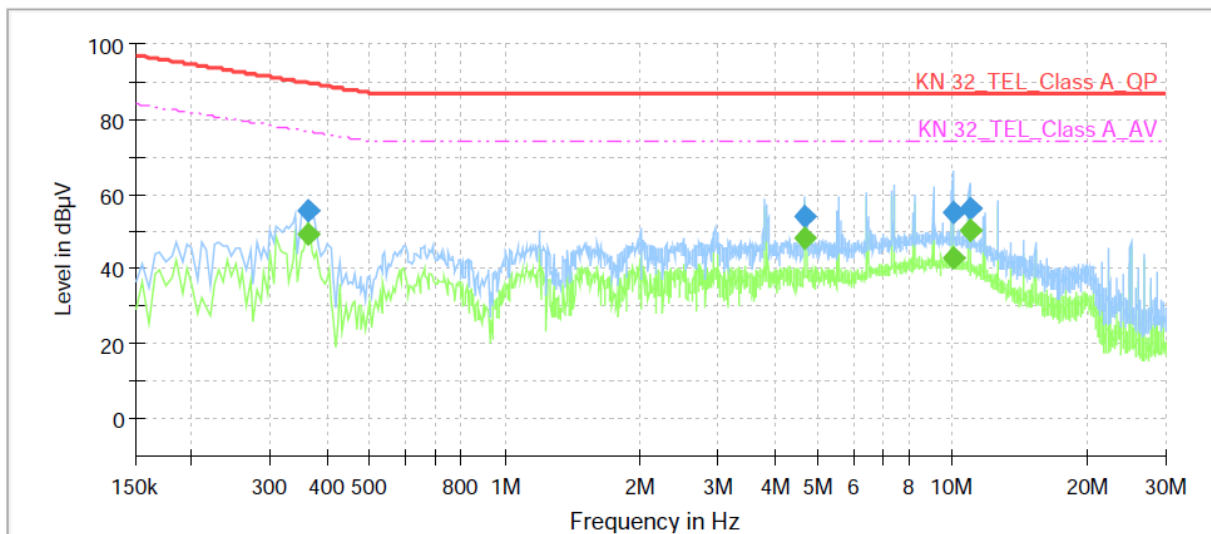
Conducted Emissions at Telecommunication Ports

■ DC_RJ-45 MODE

[10 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNZ-6320
Mode: DC_RJ-45_10M
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.365000	---	49.37	76.61	27.24	1000.0	9.000	Single Line	19.6
0.365000	55.35	---	89.61	34.26	1000.0	9.000	Single Line	19.6
4.675000	---	48.42	74.00	25.58	1000.0	9.000	Single Line	19.5
4.675000	54.10	---	87.00	32.90	1000.0	9.000	Single Line	19.5
10.010000	---	42.84	74.00	31.16	1000.0	9.000	Single Line	19.8
10.010000	54.87	---	87.00	32.13	1000.0	9.000	Single Line	19.8
10.925000	---	50.04	74.00	23.96	1000.0	9.000	Single Line	19.8
10.925000	55.89	---	87.00	31.11	1000.0	9.000	Single Line	19.8

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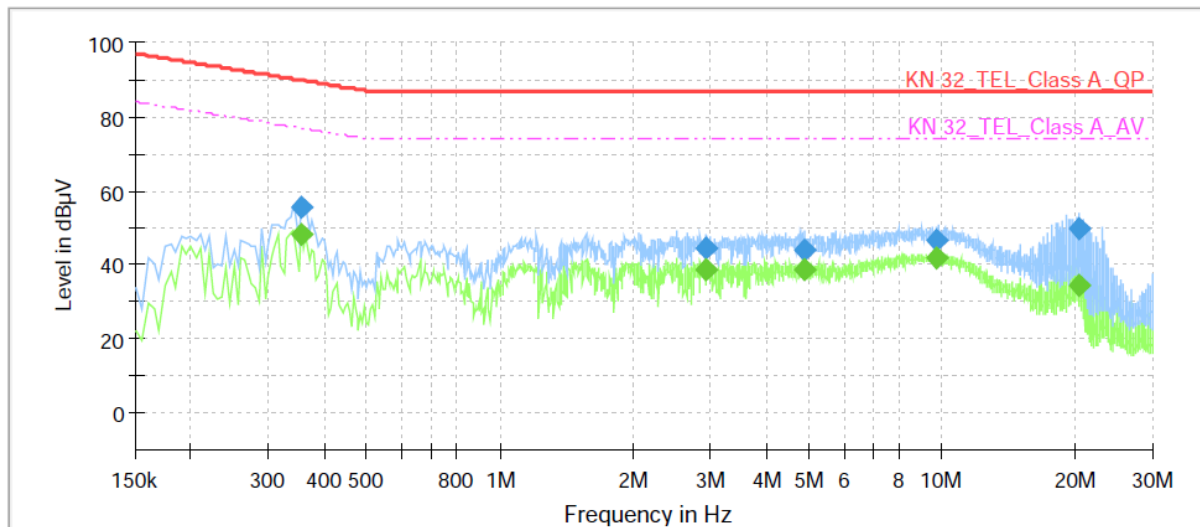
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[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNZ-6320
Mode: DC_RJ-45_1000M
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.355000	---	48.19	76.84	28.65	1000.0	9.000	Single Line	19.7
0.355000	55.44	---	89.84	34.40	1000.0	9.000	Single Line	19.7
2.925000	---	38.58	74.00	35.42	1000.0	9.000	Single Line	20.0
2.925000	44.72	---	87.00	42.28	1000.0	9.000	Single Line	20.0
4.880000	---	38.57	74.00	35.43	1000.0	9.000	Single Line	19.6
4.880000	44.14	---	87.00	42.86	1000.0	9.000	Single Line	19.6
9.750000	---	41.84	74.00	32.16	1000.0	9.000	Single Line	19.8
9.750000	46.75	---	87.00	40.25	1000.0	9.000	Single Line	19.8
20.455000	---	34.33	74.00	39.67	1000.0	9.000	Single Line	20.2
20.455000	49.89	---	87.00	37.11	1000.0	9.000	Single Line	20.2

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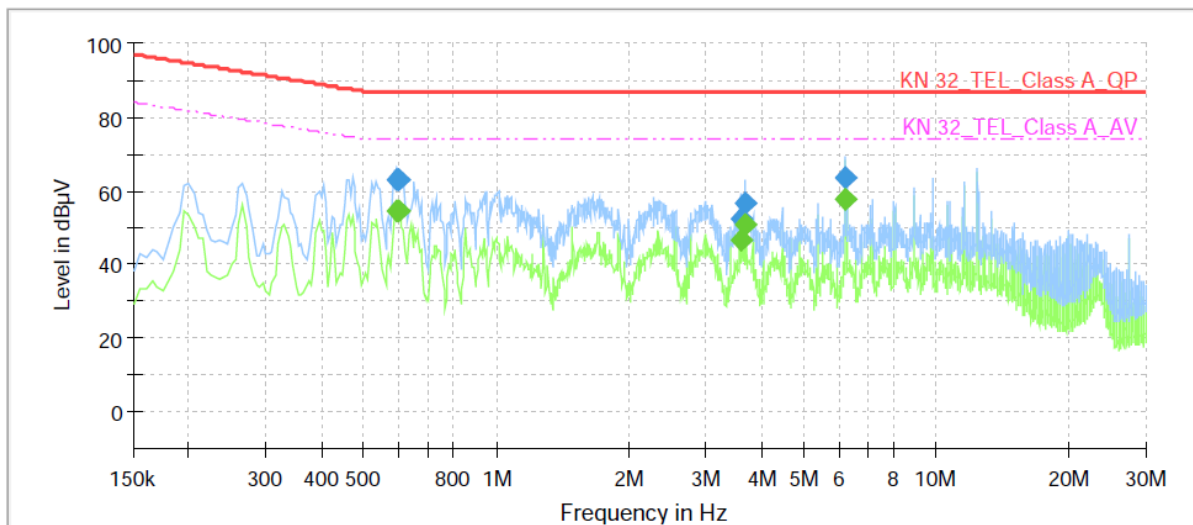
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■ POE_RJ-45 MODE

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNZ-6320
Mode	POE_RJ-45_10M
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.595000	---	54.32	74.00	19.68	1000.0	9.000	Single Line	19.7
0.595000	63.02	---	87.00	23.98	1000.0	9.000	Single Line	19.7
0.600000	---	54.28	74.00	19.72	1000.0	9.000	Single Line	19.7
0.600000	63.02	---	87.00	23.98	1000.0	9.000	Single Line	19.7
3.585000	---	46.63	74.00	27.37	1000.0	9.000	Single Line	19.7
3.585000	52.59	---	87.00	34.41	1000.0	9.000	Single Line	19.7
3.695000	---	50.59	74.00	23.41	1000.0	9.000	Single Line	19.7
3.695000	56.62	---	87.00	30.38	1000.0	9.000	Single Line	19.7
6.250000	---	57.64	74.00	16.36	1000.0	9.000	Single Line	19.4
6.250000	63.75	---	87.00	23.25	1000.0	9.000	Single Line	19.4

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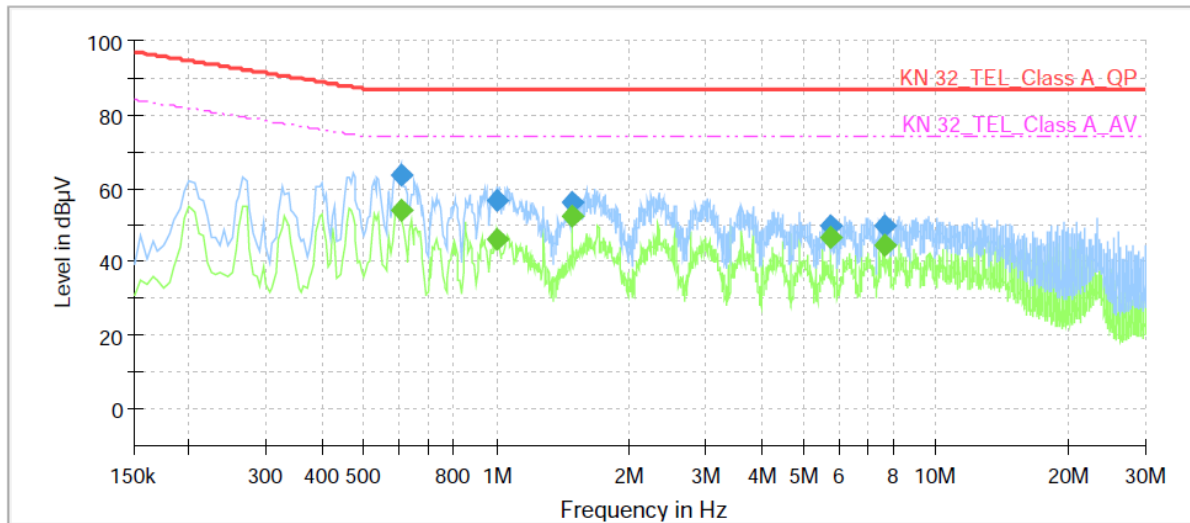
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Test report No.:
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[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNZ-6320
Mode: POE_RJ-45_1000M
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.605000	---	54.16	74.00	19.84	1000.0	9.000	Single Line	19.8
0.605000	63.39	---	87.00	23.61	1000.0	9.000	Single Line	19.8
1.005000	---	46.00	74.00	28.00	1000.0	9.000	Single Line	20.0
1.005000	56.46	---	87.00	30.54	1000.0	9.000	Single Line	20.0
1.490000	---	52.19	74.00	21.81	1000.0	9.000	Single Line	20.1
1.490000	56.13	---	87.00	30.87	1000.0	9.000	Single Line	20.1
5.745000	---	46.76	74.00	27.24	1000.0	9.000	Single Line	19.5
5.745000	49.81	---	87.00	37.19	1000.0	9.000	Single Line	19.5
7.660000	---	44.60	74.00	29.40	1000.0	9.000	Single Line	19.6
7.660000	49.64	---	87.00	37.36	1000.0	9.000	Single Line	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 (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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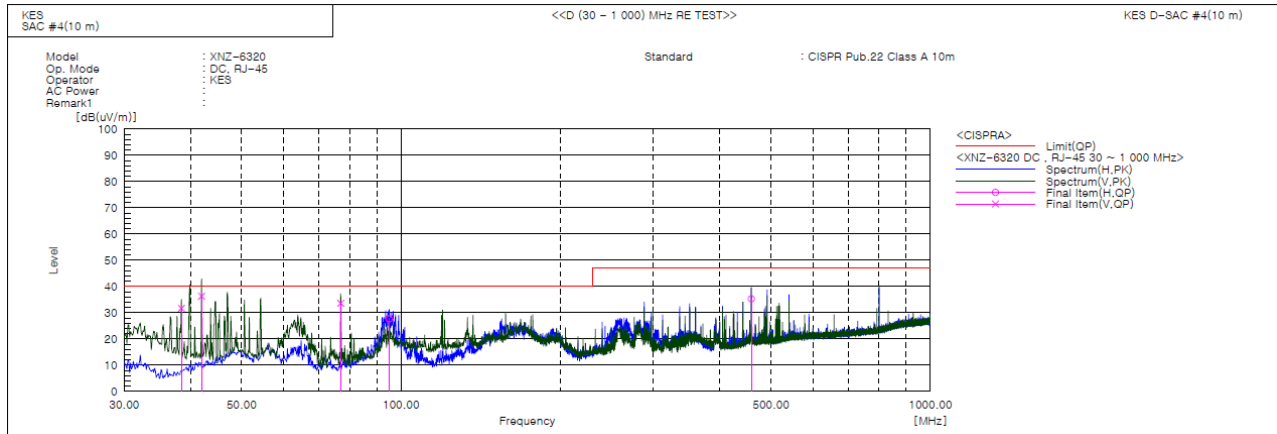
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Radiated Electric Field Emissions(Below 1 GHz)

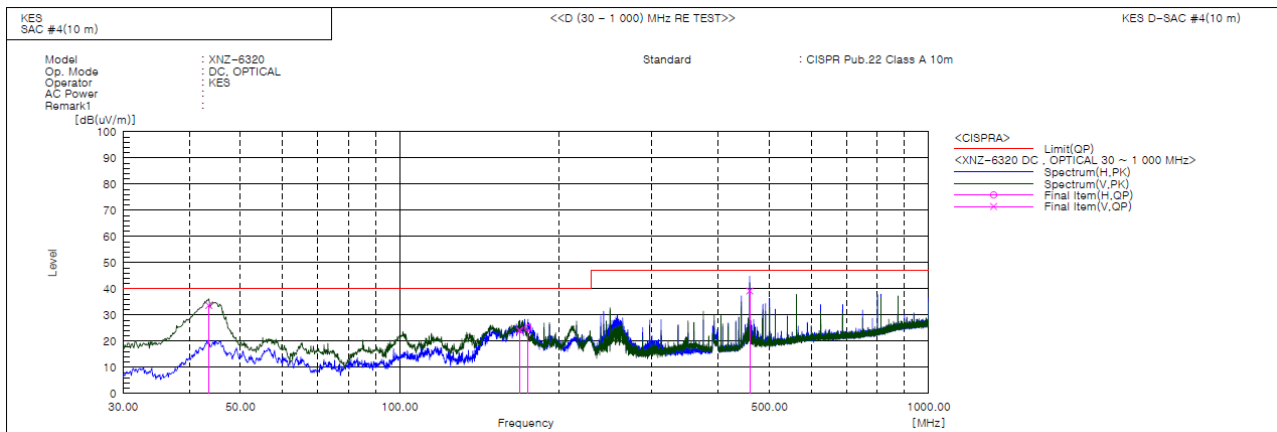
■ DC_RJ-45 MODE



Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP		QP	QP	QP			
			[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	38.488	V	62.4	-30.7	31.7	40.0	8.3	395.0	132.0	
2	42.004	V	65.5	-29.2	36.3	40.0	3.7	395.0	136.0	
3	76.924	V	67.7	-34.1	33.6	40.0	6.4	384.0	132.0	
4	94.990	H	57.3	-29.6	27.7	40.0	12.3	396.0	154.0	
5	458.983	H	55.3	-20.0	35.3	47.0	11.7	200.0	117.0	

■ DC_OPTICAL MODE



Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP		QP	QP	QP			
			[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	43.580	V	62.4	-28.7	33.7	40.0	6.3	103.0	222.0	
2	168.589	V	55.3	-31.2	24.1	40.0	15.9	155.0	176.0	
3	174.894	H	56.0	-30.9	25.1	40.0	14.9	387.0	123.0	
4	458.983	V	59.2	-20.0	39.2	47.0	7.8	102.0	202.0	

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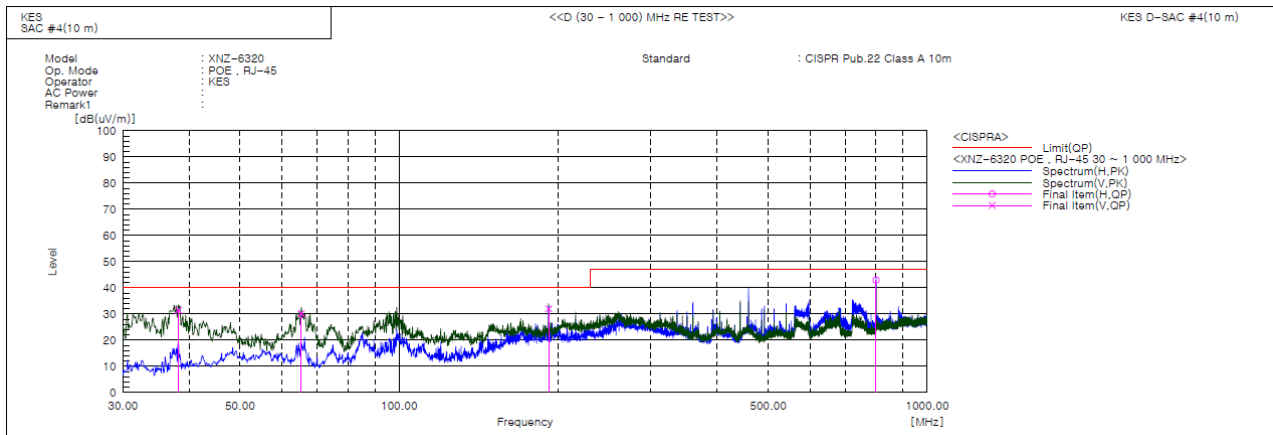


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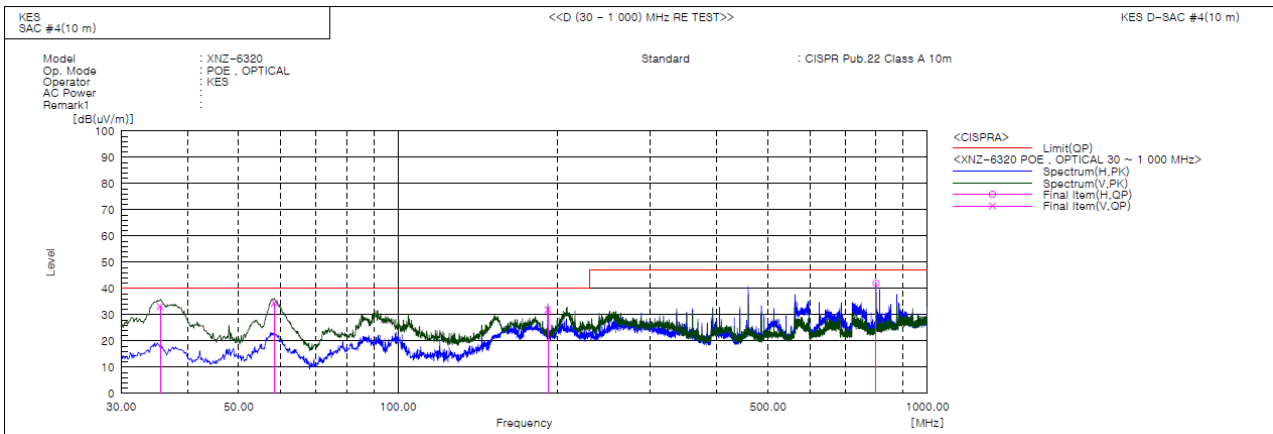
POE_RJ-45 MODE



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	38.208	V	62.3	-30.8	31.5	40.0	8.5	100.0	263.0	
2	65.306	V	61.2	-31.0	30.2	40.0	9.8	100.0	242.0	
3	191.990	V	60.2	-28.2	32.0	40.0	8.0	109.0	200.0	
4	800.032	H	57.0	-14.0	43.0	47.0	4.0	352.0	284.0	

POE_OPTICAL 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	35.545	V	65.2	-32.0	33.2	40.0	6.8	100.0	266.0	
2	58.351	V	63.6	-29.2	34.4	40.0	5.6	100.0	166.0	
3	191.977	V	60.1	-28.2	31.9	40.0	8.1	122.0	196.0	
4	800.030	H	56.0	-14.0	42.0	47.0	5.0	362.0	325.0	

◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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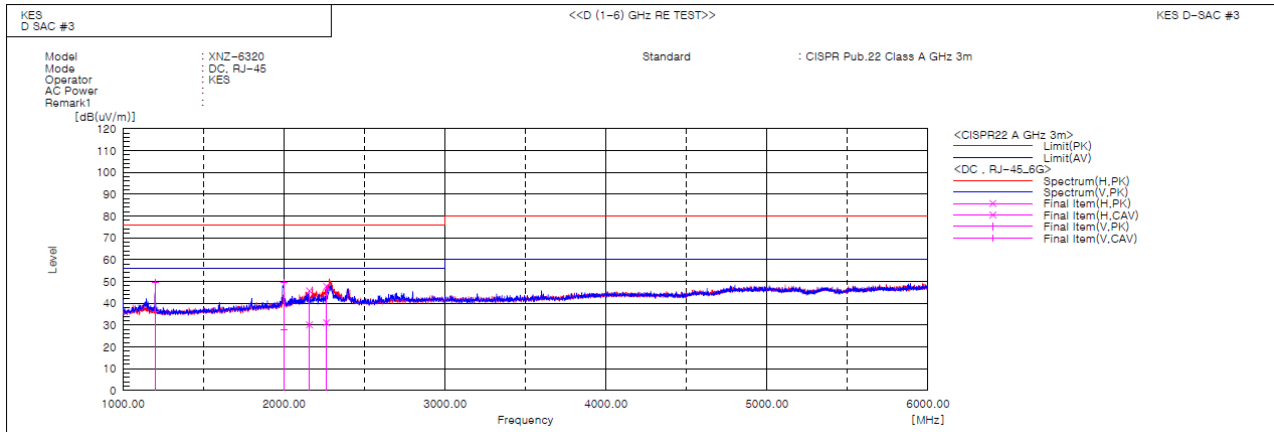
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Radiated Electric Field Emissions(Above 1 GHz)

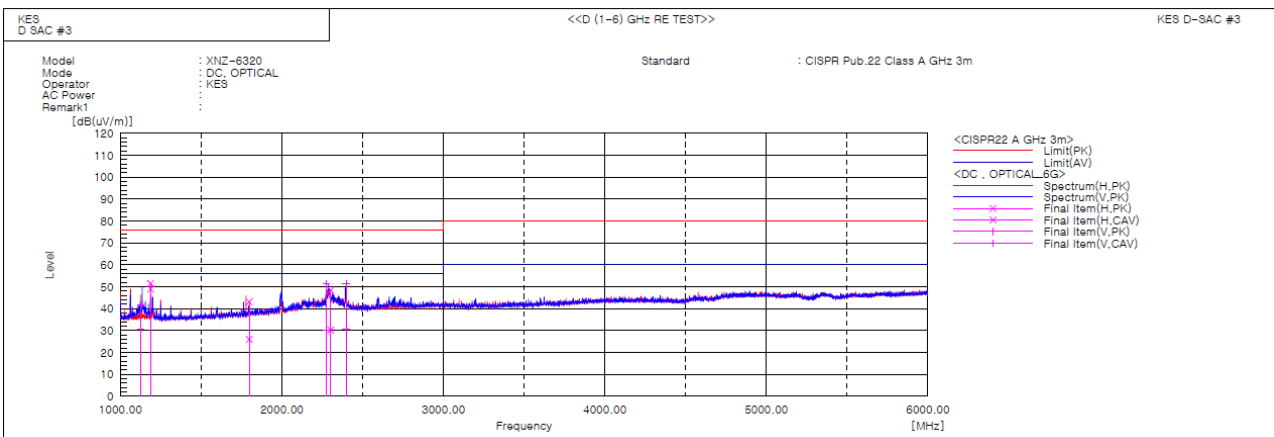
■ DC_RJ-45 MODE



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	1200.180	V	56.6	43.4	-7.2	49.4	36.2	76.0	56.0	26.6	19.8	100.0	280.7	
2	2001.759	V	51.6	29.8	-2.1	49.5	27.7	76.0	56.0	26.5	28.3	100.0	204.7	
3	2157.834	H	47.0	31.5	-1.3	45.7	30.2	76.0	56.0	30.3	25.8	100.0	66.0	
4	2264.204	H	48.7	32.0	-0.9	47.8	31.1	76.0	56.0	28.2	24.9	100.0	313.2	

■ DC_OPTICAL MODE



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1124.632	V	49.3	38.3	-7.5	41.8	30.8	76.0	56.0	34.2	25.2	100.0	308.1	
2	1187.500	H	58.7	56.1	-7.2	51.5	48.9	76.0	56.0	24.5	7.1	100.0	341.0	
3	1797.856	H	46.7	29.5	-3.5	43.2	26.0	76.0	56.0	32.8	30.0	100.0	312.3	
4	2302.406	H	49.1	31.0	-0.7	48.4	30.3	76.0	56.0	27.6	25.7	100.0	73.9	
5	2276.142	V	52.3	31.2	-0.8	51.5	30.4	76.0	56.0	24.5	25.6	100.0	212.2	
6	2397.909	V	51.6	30.9	-0.4	51.2	30.5	76.0	56.0	24.8	25.5	100.0	287.4	

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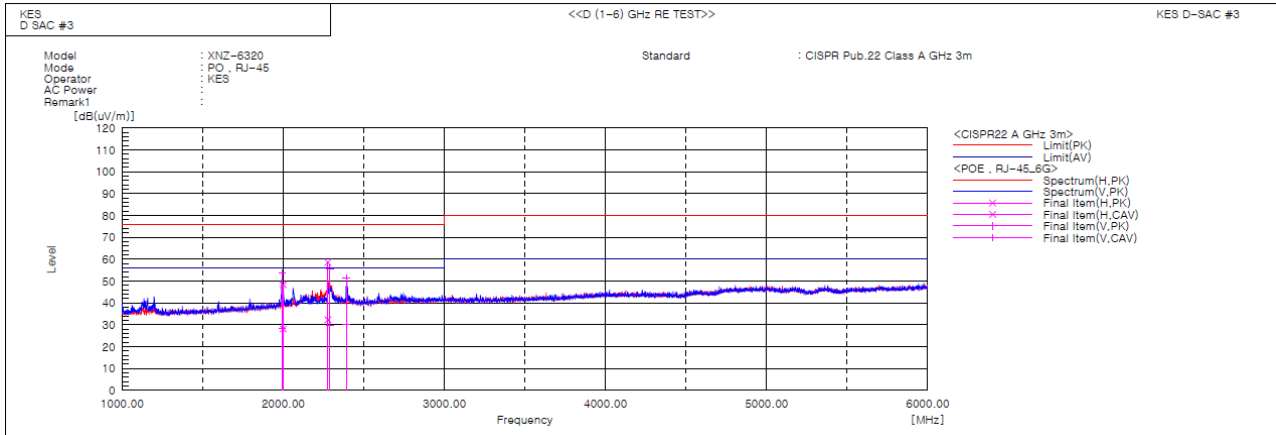
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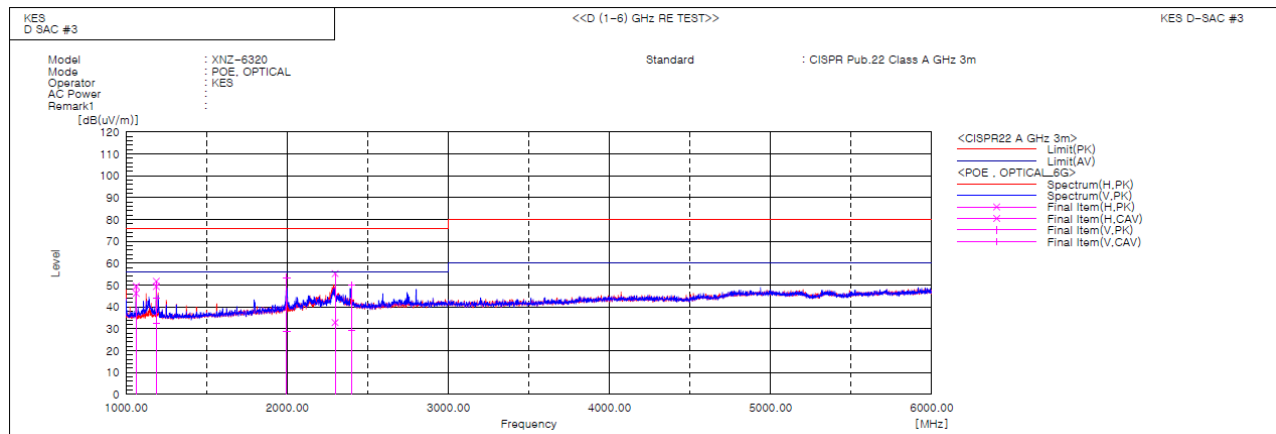
POE_RJ-45 MODE



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 [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1992.790	V	55.8	30.5	-2.1	53.7	28.4	76.0	56.0	22.3	27.6	100.0	214.9	
2	2000.079	H	50.4	30.3	-2.1	48.3	28.2	76.0	56.0	27.7	27.8	100.0	354.6	
3	2290.067	V	56.6	30.3	-0.8	55.8	29.5	76.0	56.0	20.2	26.5	100.0	78.8	
4	2277.912	H	59.4	33.1	-0.8	58.6	32.3	76.0	56.0	17.4	23.7	100.0	51.3	
5	2391.311	V	51.9	30.8	-0.4	51.5	30.4	76.0	56.0	24.5	25.6	100.0	282.0	

POE_OPTICAL 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 [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1062.730	H	57.1	54.0	-7.7	49.4	46.3	76.0	56.0	26.6	9.7	100.0	75.0	
2	1187.480	H	59.0	56.5	-7.2	51.8	49.3	76.0	56.0	24.2	6.7	100.0	359.5	
3	1187.722	V	51.1	39.5	-7.2	43.9	32.3	76.0	56.0	32.1	23.7	100.0	273.5	
4	1996.030	V	55.5	30.8	-2.1	53.4	28.7	76.0	56.0	22.6	27.3	100.0	200.0	
5	2297.458	H	55.9	33.6	-0.7	55.2	32.9	76.0	56.0	20.8	23.1	100.0	321.4	
6	2400.228	V	50.4	29.7	-0.4	50.0	29.3	76.0	56.0	26.0	26.7	100.0	281.4	

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

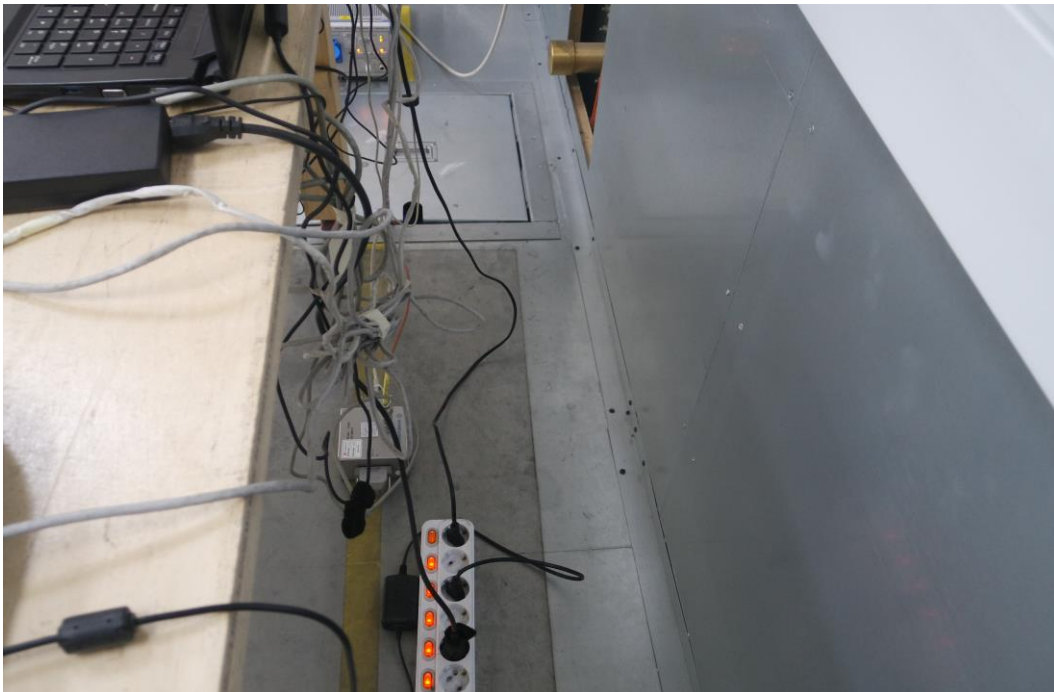
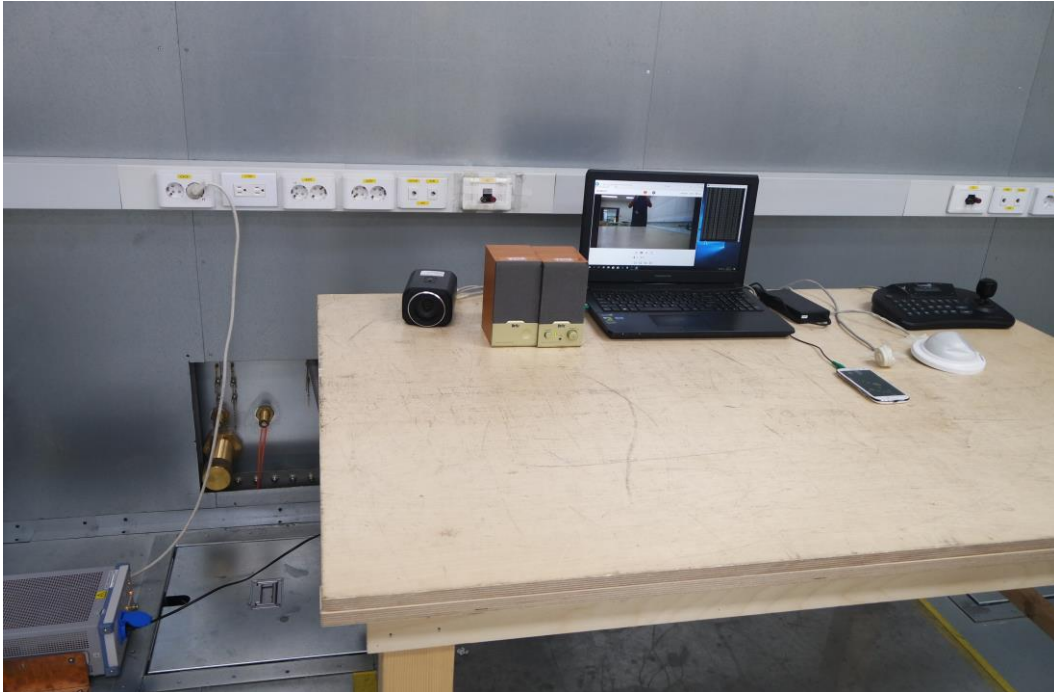
Conducted Voltage Emissions

N/A

N/A

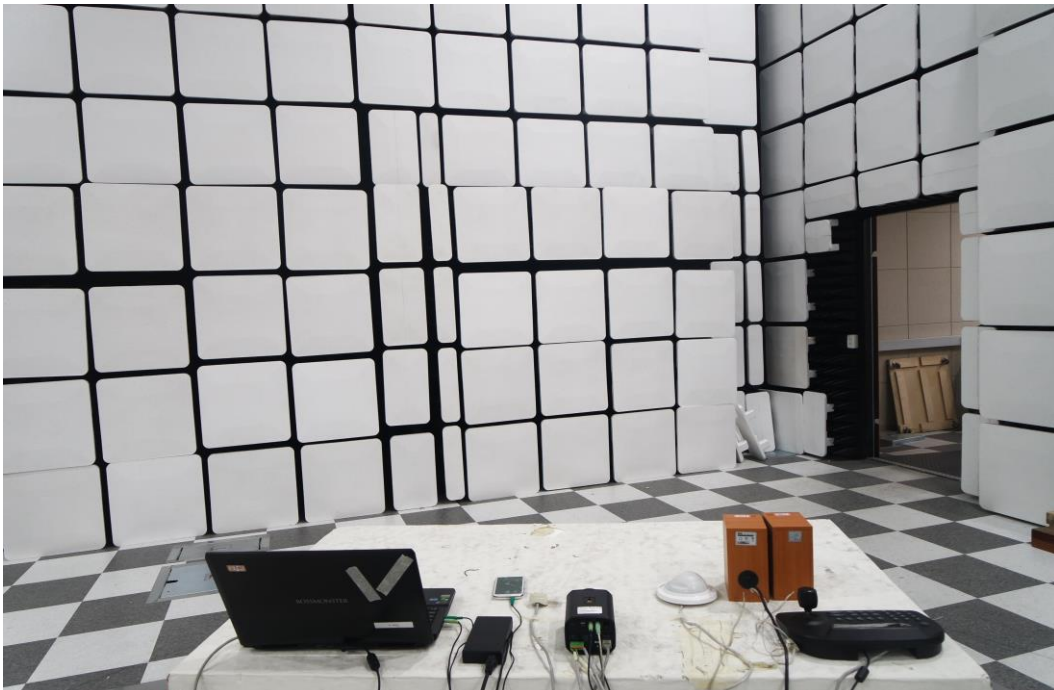
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Conducted Telecommunication Emissions



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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

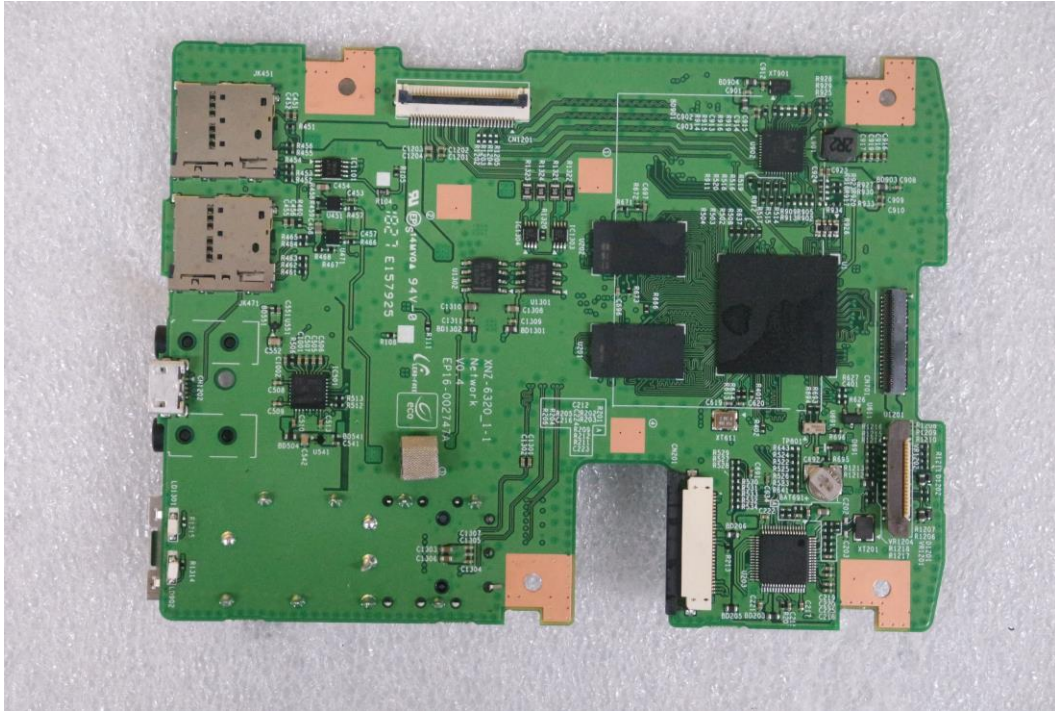
(Internal View)



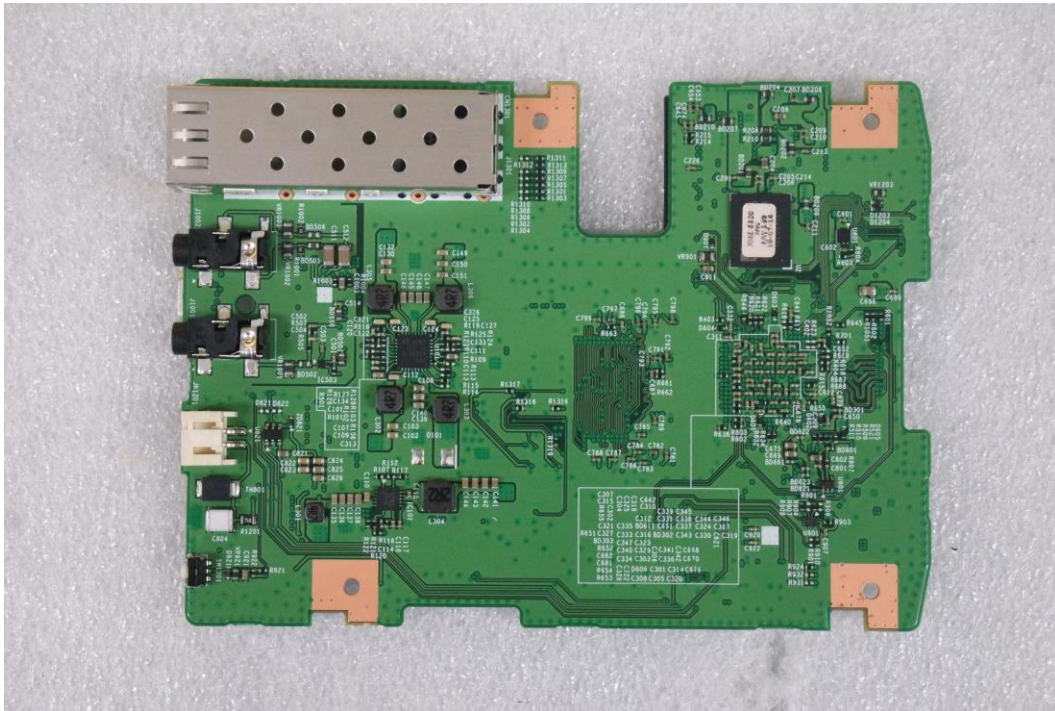
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EUT Internal View – Main Board

(Top)



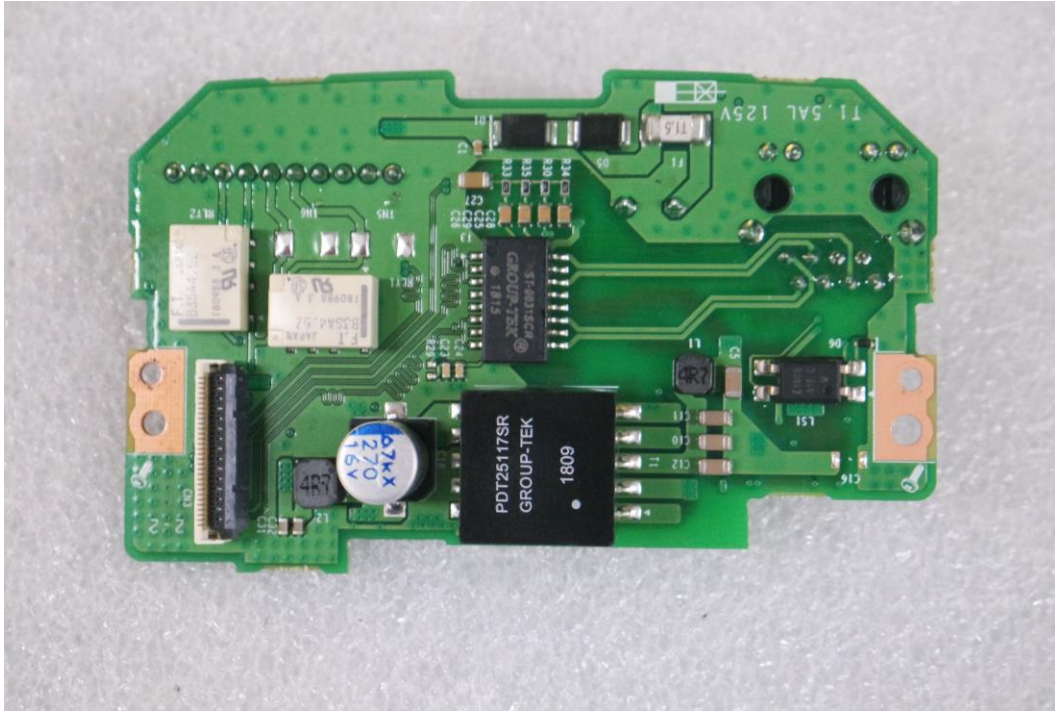
(Bottom)



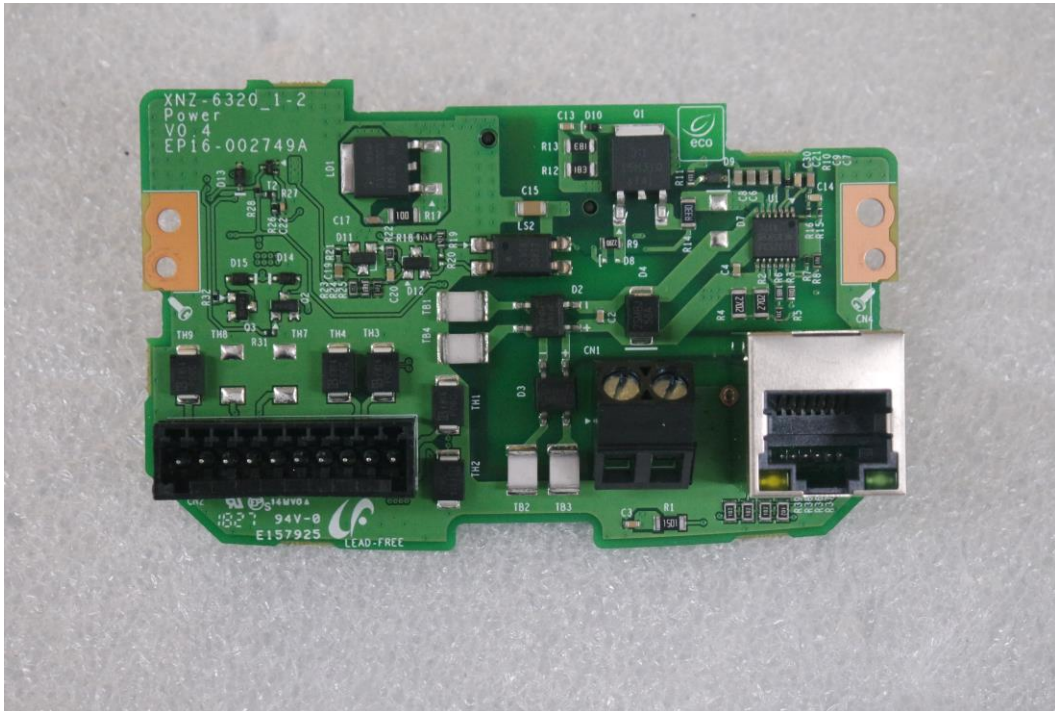
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EUT Internal View – SUB Board

(Top)



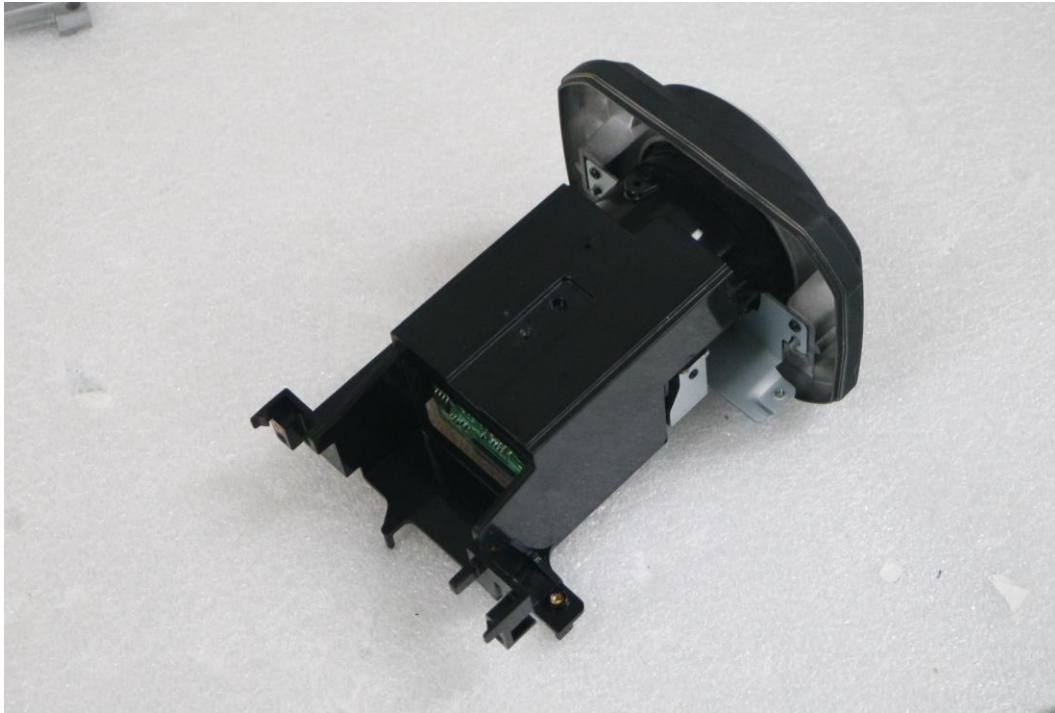
(Bottom)



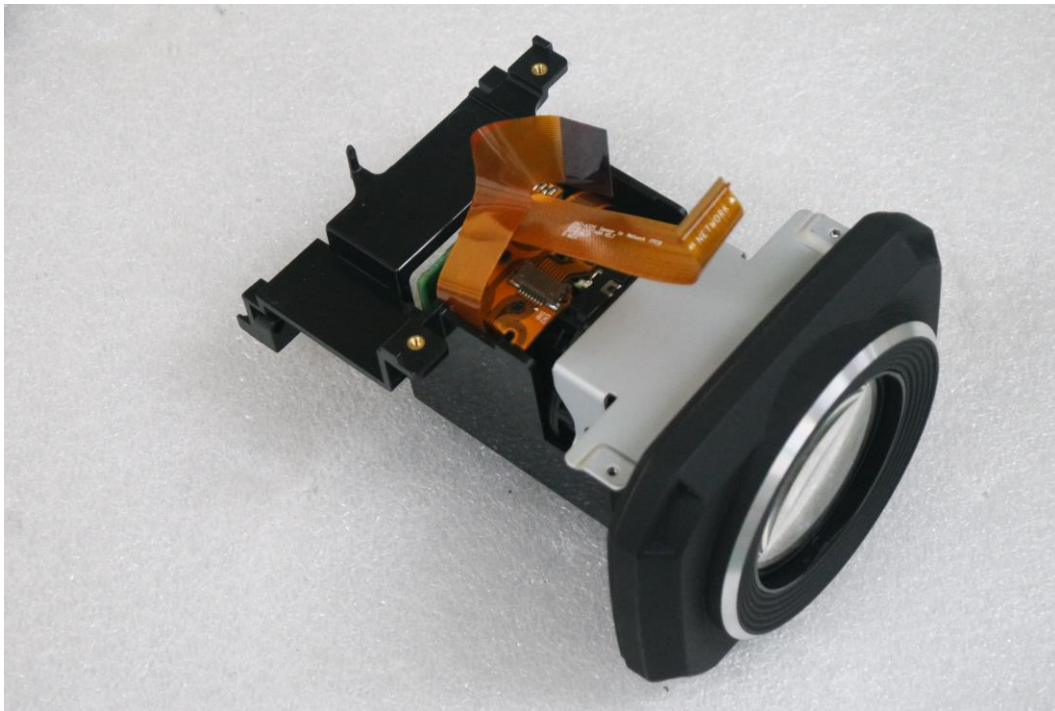
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EUT Internal View – LENS

(Top)



(Bottom)



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