



KES Co., Ltd.

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Test report No.:
KES-E1-16T0618-R3
Page (1) of (101)

EMC TEST REPORT For CE

Test Report No. : KES-E1-16T0618-R3

Date of Issue : Nov. 21, 2019

Product name : NETWORK CAMERA

Model/Type No. : XNO-8080R

Variant Model : XNO-8080RP

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea

Manufacturer : 1. HANWHA TECHWIN(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 : Nov, 23, 2016

Test date : Dec, 02, 2016 – Dec, 05, 2016

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Sung Min, Choi
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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Test report No.:
KES-E1-16T0618-R3
Page (2) of (101)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 11, 2016	KES-E1-16T0618	Issued
Sep. 27, 2017	KES-E1-16T0618-R1	Standard Revision
Jun. 22, 2018	KES-E1-16T0618-R2	Re-issue due to manufacturer change
Nov. 21, 2019	KES-E1-16T0618-R3	Changed customer's address, Reissue due to additional derivative model

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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	7
1.6	External I/O Cabling	8
1.7	E.U.T Operating Mode(s)	9
1.8	Configuration	10
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
2.5	Harmonic Current Emissions	19
2.6	Voltage Fluctuations and Flicker	20
3.0	Criteria for compliance	21
3.1	Electrostatic Discharge	23
3.2	Radiated Electric Field Immunity	27
3.3	Electrical Fast Transients/Bursts	30
3.4	Surge Transients	33
3.5	Conducted Disturbance	37
3.6	Voltage Dips and Short Interruptions	41
APPENDIX A	– TEST DATA	43
	Conducted Emissions at Mains Power Ports	43
	Conducted Emissions at Telecommunication Ports	45
	Radiated Electric Field Emissions(Below 1 GHz)	51
	Radiated Electric Field Emissions(Above 1 GHz)	53
	Harmonic Current Emissions and Voltage Fluctuations and Flicker	65
	Test Setup Photos and Configuration	68
	Conducted Voltage Emissions	68
	Conducted Telecommunication Emissions	69
	Radiated Electric Field Emissions(Below 1 GHz)	72
	Radiated Electric Field Emissions(Above 1 GHz)	75
	Harmonic Current Emissions and Voltage Fluctuations and Flicker	78
	Electrostatic Discharge	79
	Radiated Electric Field Immunity	81
	Electrical Fast Transients/Bursts	83
	Surge Transients	86
	Conducted Disturbance	88
	Voltage Dips and Short Interruptions	91
	EUT External Photographs	92
	EUT Internal Photographs	93

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Test report No.:
KES-E1-16T0618-R3
Page (4) of (101)

1.0 General Product Description

Main Specifications of E.U.T are:

Video	
Imaging Device	1/1.8" 6M CMOS
Total Pixels	3096(H) x 2094(V)
Effective Pixels	2616(H) x 1976(V)
Scanning System	Progressive Scan
Min. Illumination	Color : 0.1 lux (TBD) B/W : 0 Lux (IR LED On)
S / N Ratio	50dB
Video Out	CVBS : 1.0 Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation USB : Micro USB type B, 1920 x 1080(TBD), for installation
Lens	
Focal Length (Zoom Ratio)	3.9~9.4mm(2.4x) motorized varifocal (Wide 확대검토중)
Max. Aperture Ratio	F1.3
Angular Field of View	TBD
Min. Object Distance	0.5m (1.64ft)
Focus Control	Simple focus(Motorized V/F) / Manual, Remote control via network(Manual, Simple focus)
Lens Type	DC Auto Iris, P-iris
Mount Type	Board-in type
Pan / Tilt / Rotate	
Pan / Tilt / Rotate range	
Operational	
IR LED	TBD
Viewable Length	(TBD)50m(164.04ft)
Camera Title	Off / On (Displayed up to 55 characters) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 6), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC(Masking/Dimming), WDR(Seamless transition TBD)
Wide Dynamic Range	120dB(TBD)
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Auto(input from fog&Dust detection) / Manual / Off
Motion Detection	Yes(8ea, 4point Polygonal zones)
Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic ※ Zoom ratio option for mask mode (TBD)
Gain Control	Off / Low / Middle / High
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)
Contrast	level adjustment
LDC	On/Off (5 levels with Min/Max)

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Test report No.:

KES-E1-16T0618-R3

Page (5) of (101)

Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec →TBD)
Digital PTZ	24X, 'Digital PTZ(Preset, Group)
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Intelligent Video & Audio Analy	Tampering, Loitering, Directional Detection, Defocus Detection, Fog&Dust Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Motion Detection, Digital Auto Tracking, Sound Classification
Alarm I/O	Input 1ea / Output 1ea
Remote Control Interface	-
RS-485 Protocol	-
Alarm Triggers	Alarm Input, Motion Detection, Intelligent Video Analytics, Network Disconnect
Alarm events	File upload via FTP, E-Mail Notification via E-Mail local storage(SD/SDHC/SDXC) or NAS recording at Event Triggers External output DPTZ preset
Audio In	Selectable (Mic IN/Line IN), Supply voltage: 2.5VDC(4mA), Input impedance: approx. 2K Ohm
Audio out	Line out, Max output level: 1 Vrms
Fan / Heater	-
Pixel Counter	Support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Format	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	5M mode : 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960 1280 x 720, 1024 x 768, 800 x 600, 720 x 576, 720 x 480, 640 x 480, 320 x 240 2M mode : 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x450, 720x576 640x480, 640x360, 320x240, 320x180
Max. Framerate	5M mode : H.265/H.264 : Max. 30fps at all resolutions Motion JPEG : Max. 30fps 2M mode : H.265/H.264 : Max. 60fps at all resolutions Motion JPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control
Bitrate Control Method	H.264/H.265 : CBR or VBR, with WiseStream MJPEG : 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 8/16/32/48KHz
Audio Communication	Bi-directional (2-Way)
IP	IPv4, IPv6

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Test report No.:

KES-E1-16T0618-R3

Page (6) of (101)

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 Encryption 기능구현
Streaming Method	Streaming Method
Max. User Access	20 users at Unicast Mode(TBD)
Edge Storage	SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - (TBD) Redundant recording - Motion Images recorded in the 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(HTTP API) Open Platform
Webpage Language	English, Korean, Chinese, French, Italian, Spanish, German, Japanese, Russian, Swedish, Danish, Portuguese, Czech, Polish, Turkish, Rumanian, Serbian, Dutch, Croatia, Hungary, Greek, Norsk, Finnish
Web Viewer	Supported OS: Windows 7, 8, 10, Mac OS X 10.8, 10.9, 10.10, 10.11 Non-plugin Webviewer Supported Browser: Google Chrome 47, MS Edge 20 Support Codec : Video : H.264, MJPEG (MAX 1M 15FPS) Audio : G.711 Plug-in Webviewer Supported Browser : MS Explore 11 , Mozilla Firefox 43 , Apple Safari 9 * Mac OS X only
Central Management Software SmartViewer, SSM	
Environmental	
Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH *Start up should be done at above -20°C
Storage Temperature / Humidity	-30°C ~ +60°C (-22°F ~ +140°F) / Less than 90% RH
Ingress Protection	IP67, IP66, NEMA 4X
Vandal Resistance	IK10
Electrical	
Input Voltage / Current	24VAC ± 10%, 12VDC ± 10%, PoE(IEEE802.3af)
Power Consumption	TBD
Mechanical	
Color / Material	Dark gray / Aluminum
Dimension (WxHxD)	TBD
Weight	TBD

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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 ☐ 220 Vac ☐ 230 Vac ☒ 24 Vac ☒ 12 Vdc ☒ PoE
Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Customer-specific management model

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XNO-6080R	-	HANWHA TECHWIN (TIANJIN) CO., LTD	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
POE Adapter	PD-3001GC/AC	RD9356082016964 200	Power Dsine	-
Notebook	X56K	HN11N5151FJ0045 W	HANSUNG	-
Notebook Adapter	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Phone	A1530	-	APPLE	-
MIC	CMK-303	-	CAMAC	1.7 m
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	1.6 m
Alarm	-	-	-	-
SD card	-	-	SanDisk	16 GB



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
	7 Pin	MIC	3.5 mm	1.7	U
		Speaker	3.5 mm	1.6	U
		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
Notebook	Audio in	Phone	Audio out	1.7	-

- DC 12 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
	7 Pin	MIC	3.5 mm	1.7	U
		Speaker	3.5 mm	1.6	U
		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
Notebook	Audio in	Phone	Audio out	1.7	-

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Test report No.:
KES-E1-16T0618-R3
Page (9) of (101)

- 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 Adapter	RJ-45 (POE)	3.0	U
	7 Pin	MIC	3.5 mm	1.7	U
		Speaker	3.5 mm	1.6	U
		Alarm	2 pin	3.0	U
	Slot	SD card	Slot	-	-
Notebook	Audio in	Phone	Audio out	1.7	-
	RJ-45 (DATA)	POE Adapter	RJ-45 (DATA)	3.0	U

* Unshielded=U, Shielded=S

1.7 E.U.T Operating Mode(s)

Test mode	Normal operating
E.U.T Monitoring , Ping test, 1 kHz	

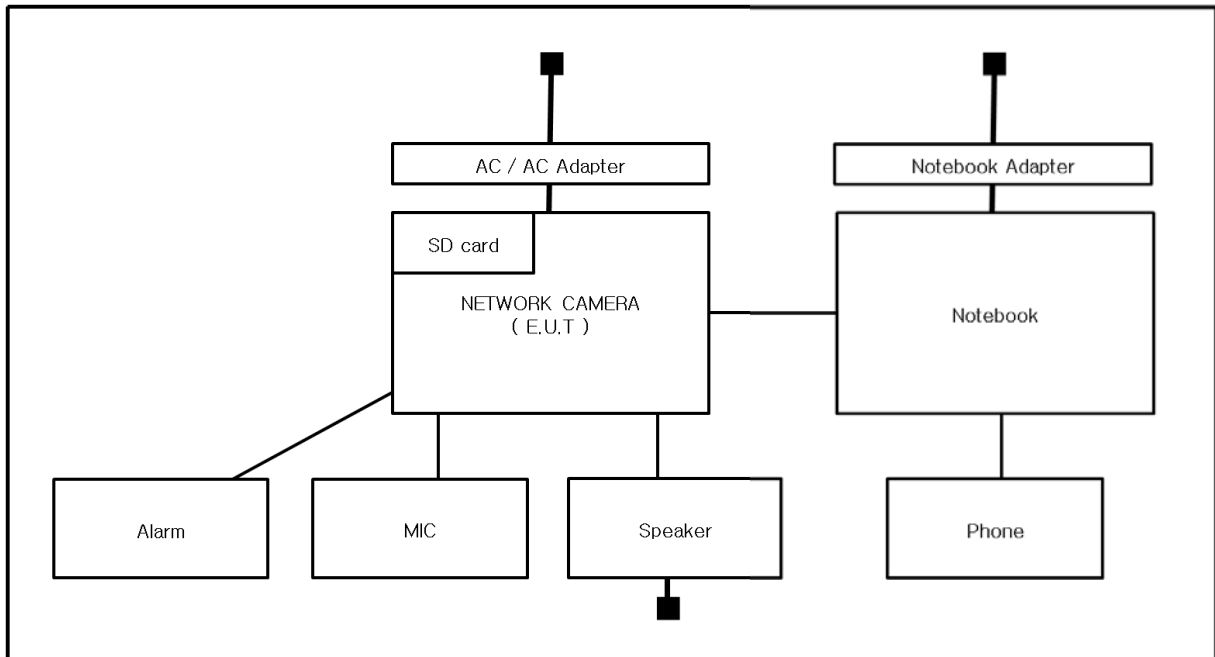
E.U.T Test operating S / W		
Name	Version	Manufacture Company
SmartViewer	-	Hanwha Techwin Co., Ltd.

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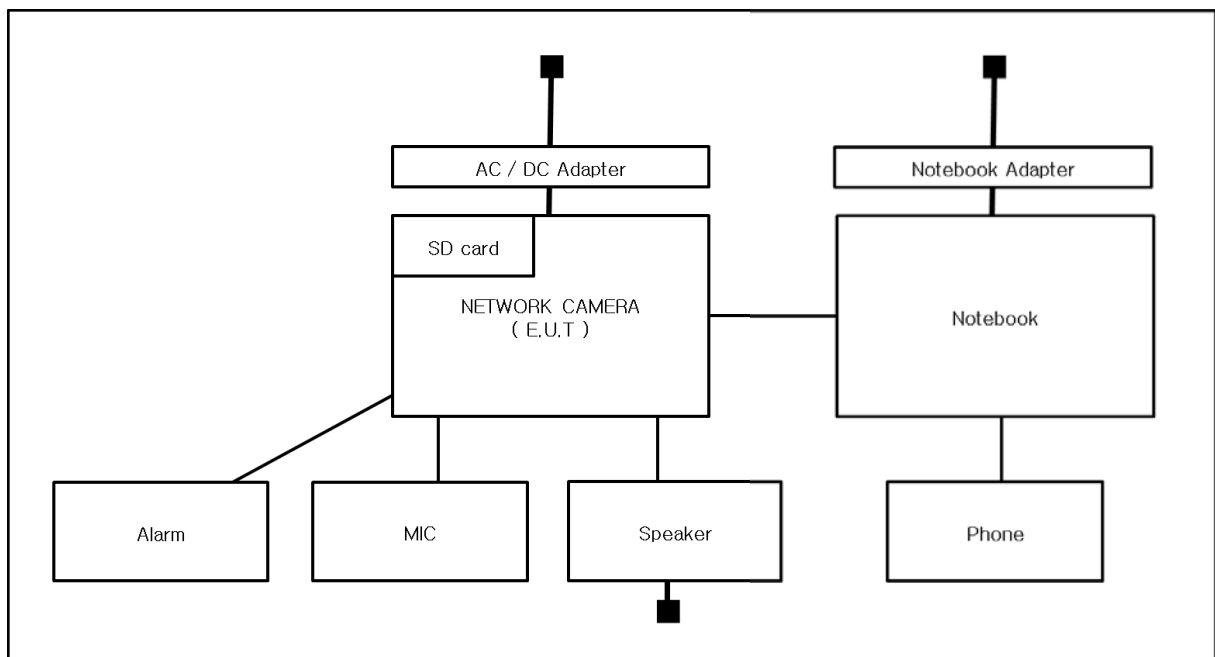
1.8 Configuration

■ AC 24 V Main
 □ DC 12 V Main

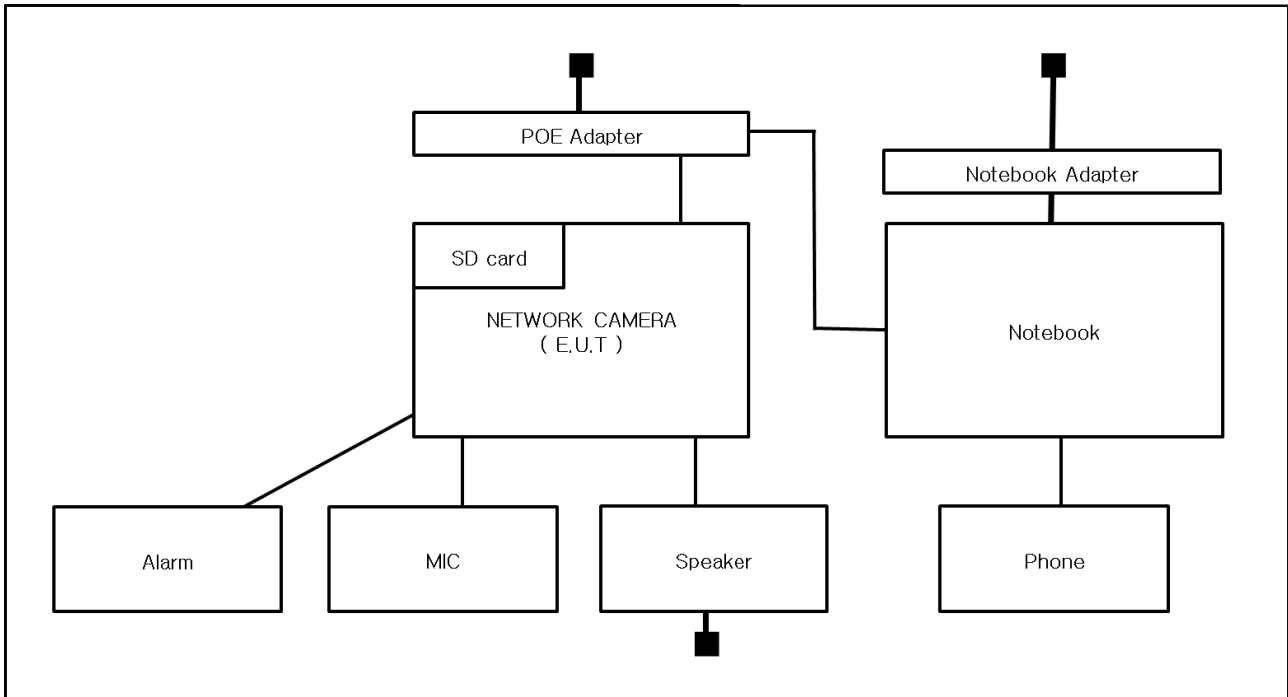
- AC 24 V Mode



- DC 12 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, 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.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-20056, C-20036, T-20040, G-20057
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0003



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ EMC – Directive 2014/30/EU

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547:2009

☒ EN 55032:2012/AC:2013

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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Test report No.:
KES-E1-16T0618-R3
Page (14) of (101)

-
- | | | |
|--|----------------------------------|----------------------------------|
| ☐ 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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Test report No.:
KES-E1-16T0618-R3
Page (15) of (101)

2.1 Conducted Emissions at Mains Power Ports

Test Date
Dec, 02, 2016

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 04, 2017
☒	LISN	ENV216	R & S	101786	05, 02, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R&S	9.12.00	-

Test Conditions

Temperature: 16,5 °C
Relative Humidity: 39,8 %

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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Test report No.:

KES-E1-16T0618-R3

Page (16) of (101)

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Dec, 02, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101783	05, 03, 2017
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 02, 2017
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 11, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R&S	9.12.00	-

Test Conditions

Temperature: 16,5 °C

Relative Humidity: 39,8 %

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.

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Test report No.:
KES-E1-16T0618-R3
Page (17) of (101)

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date
Dec, 03, 2016

Test Location
☐ Open Area Test Site #1 ☒ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESR3	R&S	101781	05, 03, 2017
☒	Trilog-Broadband ANT	VULB 9163	Schwarzbeck	9163-713	05, 15, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions
Temperature: 9,8 °C
Relative Humidity: 35,0 %

Frequency Range of Measurement
30 MHz to 1 GHz

Instrument Settings
IF Band Width: 120 kHz

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

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Test report No.:
KES-E1-16T0618-R3
Page (18) of (101)

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date
Dec, 03, 2016

Test Location
Semi Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 14, 2017
☒	Semi Anechoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-
☒	EMI Test S/W	e3	AUDIX	8.083b	-

Test Conditions

Temperature: 17,8 °C
Relative Humidity: 47,2 %

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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Test report No.:
KES-E1-16T0618-R3
Page (19) of (101)

2.5 Harmonic Current Emissions

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM TEST	V1024106760	08, 08, 2017
☐	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 08, 2017
☐	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-

Test Conditions

Temperature: °C

Relative Humidity: %

Classification of Equipment for Harmonic Current Emissions

- ☐ Class A
- ☐ Class B
- ☐ Class C(Below 25 W)
- ☐ Class C(Above 25 W)
- ☐ Class D

Test Results

The requirements are:

- ☐ PASS
- ☐ NOT PASS
- ☒ NOT APPLICABLE

Remarks

N/A

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Test report No.:
KES-E1-16T0618-R3
Page (20) of (101)

2.6 Voltage Fluctuations and Flicker

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	AC Source	ACS 500 N	EM test	V1024106760	08, 08, 2017
☐	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 08, 2017
☐	EMI Test S/W	dpa.control	EM TEST AG	5.4.8.0	-

Test Conditions

Temperature: °C

Relative Humidity: %

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks

N/A

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3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 +A1:2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing which could be interpreted by associated equipment as a change, and no such

Flickering of indicators occurs at a field strength of 3 V/m.

For components of CCTV systems, where the picture is allowed at 10 V/m, providing.

(a) there is no permanent damage or change to EUT

(e.g. no corruption of memory or changes to programmable setting etc.)

(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and

(c) there is no observable deterioration of the picture at 1 V/m.

Fast transient burst / slow high energy voltage surge

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

Conducted RF immunity

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change,
and no such flickering of indicators oeuvres at $U = 130 \text{ dB}\mu\text{V}$.

For component of CCTV systems, where the status is monitored by observing the TV picture,
then deterioration of the picture is allowed at $U = 140 \text{ dB}\mu\text{V}$, providing:

- (a) there is no permanent damage or change to the EUT
(e.g. no corruption of memory or changes to programmable settings etc.)
- (b) at $U = 130 \text{ dB}\mu\text{V}$, any deterioration of the picture is so minor that the system could still be used; and
- (c) there in no observable deterioration of the picture at $U = 120 \text{ dB}\mu\text{V}$.

Voltage dip/interruption / Voltage variation

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change. The EUT shall meet the acceptance criteria for the functional test, after the conditioning.



3.1 Electrostatic Discharge

Reference Standard
EN 61000-4-2:2009

Test Date
Dec, 05, 2016

Test Location
EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-
☒	EMS Test S/W	-	-	-	-

Test Conditions

Temperature: 17,5 °C
Relative Humidity: 49,3 %
Atmospheric Pressure: 100,6 kPa

Test Specifications

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge
10 at all locations for Contact discharge

Discharge Voltage:	Contact	Air	HCP	VCP
	☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
	☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

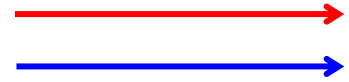
Required Performance Criteria: ☒ Complied

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Location of Discharge:

- AC 24 V, DC 12 V, POE Mode

Air
Contact



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Test report No.:
KES-E1-16T0618-R3
Page (25) of (101)

Test Data**- AC 24 V Mode****Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	surface	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-

- DC 12 V Mode**Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	surface	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-

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KES-E1-16T0618-R3
Page (26) of (101)

- POE Mode**Indirect Discharge**

No.	Test Point	Discharge Method	Observations	Remarks
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	surface	Contact Discharge	Complied	-
2	Screw	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

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Test report No.:
KES-E1-16T0618-R3
Page (27) of (101)

3.2 Radiated Electric Field Immunity

Reference Standard

EN 61000-4-3:2006 +A2:2010

Test Date

Dec, 04, 2016

Test Location

EMS-RS: ☐ Semi Anechoic Chamber #1 ☒ Semi Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	SIGNAL GENERATOR	SMB 100A	Rohde & Schwarz	108252	08, 08, 2017
☒	BROADBAND AMPLIFIER	BBA100	Rohde & Schwarz	101239	08, 08, 2017
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 08, 2017
☒	POWER METER	NRP2	Rohde & Schwarz	103475	08, 08, 2017
☒	AVG POWER SENSOR	NRP-Z91	Rohde & Schwarz	102526	08, 08, 2017
☒	AVG POWER SENSOR	NRP-Z91	Rohde & Schwarz	102527	08, 08, 2017
☒	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	Kytelecom Co., Ltd.	KY150001	08, 08, 2017
☒	Semi Anechoic Chamber #2	-	SEMITEC	-	-
☒	EMS Test S/W	EMC32	R&S	9.12.00	-

Test Conditions

Temperature: 16,6 °C
Relative Humidity: 46,8 %
Atmospheric Pressure: 101,3 kPa

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Test report No.:
KES-E1-16T0618-R3
Page (28) of (101)

Test Specifications

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Field Strength: ☐ 1 V/m ☐ 3 V/m
☒ 10 V/m

Frequency Range: ☐ 80 MHz to 1 GHz ☐ 1,4 GHz to 2,7 GHz
☒ 80 MHz to 2,7 GHz

Modulation: ☒ AM, 80 %, 1 kHz sine wave
☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ Complied

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Test report No.:
KES-E1-16T0618-R3
Page (29) of (101)

Test Data**- AC 24 V Mode**

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

- DC 12 V Mode

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

- POE Mode

Side Exposed	Observations	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

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Test report No.:
KES-E1-16T0618-R3
Page (30) of (101)

3.3 Electrical Fast Transients / Bursts

Reference Standard
EN 61000-4-4:2012

Test Date
Dec, 05, 2016

Test Location
EMS-EFT: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	Capacitive Coupling Clamp	HFK	EM TEST	070925	06, 27, 2017
☒	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

Test Conditions

Temperature: 17,5 °C
Relative Humidity: 49,3 %
Atmospheric Pressure: 100,6 kPa

Test Specifications

Pulse Amplitude & Polarity:
(AC Power Lines) ☐ ± 1.0 kV ☒ ± 2.0 kV
☐ ± 4.0 kV

Pulse Amplitude & Polarity:
(Other supply / Signal Lines) ☐ ± 0.5 kV ☒ ± 1.0 kV
☐ ± 2.0 kV

Burst Period: ☒ 300 ms ☐ 2 s

Repetition Rate: ☐ 5 kHz ☒ 100 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ Complied

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Test Data

- AC 24 V Mode

☒ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L – N	Complied	Complied

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
LAN (RJ-45)	Complied	Complied
Alarm (RJ-45)	Complied	Complied

- DC 12 V Mode

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L1 – L2	Complied	Complied

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
LAN (RJ-45)	Complied	Complied
Alarm (RJ-45)	Complied	Complied

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Test report No.:
KES-E1-16T0618-R3
Page (32) of (101)

- POE Mode

☐ Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☐ Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
LAN (RJ-45)	Complied	Complied
Alarm (RJ-45)	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

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KES-E1-16T0618-R3
Page (33) of (101)

3.4 Surge Transients

Reference Standard
EN 61000-4-5:2014

Test Date
Dec, 05, 2016

Test Location
EMS-Surge: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
☐	CDN	CNV 504N	EM TEST	V0936105121	06, 27, 2017
☒	CDN	CNV 508T5	EM TEST	P1549168422	04, 27, 2017
☐	CDN	CNV 508N1	EM TEST	P1551168979	04, 27, 2017
☒	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

Test Conditions

Temperature: 17,5 °C
Relative Humidity: 49,3 %
Atmospheric Pressure: 100,6 kPa

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Test report No.:
KES-E1-16T0618-R3
Page (34) of (101)

Test Specifications**AC Power Lines**

Source Impedance: 12 ohm for common mode and 2 ohm for differential mode

Surge Amplitude :Common Mode

☐ (0,5 / 1,0 / 2,0) kV

Differential Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 surges per angle

Angle:

☒ 0°, 90°, 180°, 270° (input a.c. power port)

Polarity:

☒ Positive & Negative

Repetition Rate:

☒ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

Other supply / Signal Lines**Source Impedance:**

42 ohm for common mode

Surge Amplitude:Common Mode

☒ (0,5 / 1,0) kV

Number of Surges:

☒ 5 Surges

Polarity:

☒ Positive & Negative

Repetition Rate:

☒ 1 surge per min ☐ 1 surge per 30 sec.

Required Performance Criteria: ☒ Complied

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Test Data

- AC 24 V Mode

☒ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	Complied	Complied

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – PE	-	-
N – PE	-	-

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
LAN (RJ-45)	Complied	Complied
Alarm (RJ-45)	Complied	Complied

- DC 12 V Mode

☐ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	-	-

☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L1-PE	Complied	Complied
L2-PE	Complied	Complied

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
LAN (RJ-45)	Complied	Complied
Alarm (RJ-45)	Complied	Complied

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Test report No.:
KES-E1-16T0618-R3
Page (36) of (101)

- POE Mode☐ Line to Line – Differential Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – N	-	-

☐ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
L – PE	-	-
N – PE	-	-

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
LAN (RJ-45)	Complied	Complied
Alarm (RJ-45)	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

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Test report No.:
KES-E1-16T0618-R3
Page (37) of (101)

3.5 Conducted Disturbance

Reference Standard
EN 61000-4-6:2014

Test Date
Dec, 05, 2016

Test Location
EMS-CS: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	08, 08, 2017
☒	6 dB Attenuator	ATT6	EM TEST	1208-34	08, 08, 2017
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 08, 2017
☐	CDN	CDN-T2-RJ11	EM TEST	0909-07	08, 08, 2017
☐	CDN	CDN-T4	EM TEST	0909-08	08, 08, 2017
☐	CDN	CDN-T8RJ45	EM TEST	0909-09	08, 08, 2017
☐	CDN	CDN-AF2	EM TEST	0909-10	08, 08, 2017
☐	CDN	CDN-AF4	EM TEST	0909-11	08, 08, 2017
☒	EM Injection Clamp	EM 101	Liithi	35943	02, 04, 2017
☒	EMS Test S/W	icd.control	EM TEST AG	5.3.7	-

Test Conditions

Temperature: 17,5 °C
Relative Humidity: 49,3 %
Atmospheric Pressure: 100,6 kPa

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Test report No.:
KES-E1-16T0618-R3
Page (38) of (101)

Test Specifications

Frequency range:

☒ 150 kHz to 100 MHz

☐ 150 kHz to 80 MHz

Voltage Level:

☐ 1 Vrms

☐ 3 Vrms

☒ 10 Vrms

Modulation:

☒ AM, 80 %, 1 kHz sine wave

☒ PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step:

☒ 1 % step

Dwell Time:

☒ 1 s

☐ 3 s

Required Performance Criteria: ☒ Complied

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Test report No.:
KES-E1-16T0618-R3
Page (39) of (101)

Test Data**- AC 24 V Mode**☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N	CDN (☒ M2, ☐ M3)	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
LAN (RJ-45)	EM Injection Clamp	Complied
Alarm (RJ-45)	EM Injection Clamp	Complied

- DC 12 V Mode☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L1 – L2	CDN (☒ M2, ☐ M3)	Complied

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
LAN (RJ-45)	EM Injection Clamp	Complied
Alarm (RJ-45)	EM Injection Clamp	Complied

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Test report No.:
KES-E1-16T0618-R3
Page (40) of (101)

- POE Mode☐ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	CDN (☐ M2, ☐ M3)	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
LAN (RJ-45)	EM Injection Clamp	Complied
Alarm (RJ-45)	EM Injection Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

Remarks

PASS Required Performance Criteria.

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Page (41) of (101)

3.6 Voltage Dips and Short Interruptions

Reference Standard
EN 61000-4-11:2004

Test Date
Dec, 05, 2016

Test Location
EMS-Voltage dip: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	06, 27, 2017
☒	Motor Variac	MV2616	EM TEST	V0936105123	06, 27, 2017
☒	EMS Test S/W	iec.control	EM TEST AG	5.0.9.0	-

Test Conditions

Temperature: 17,5 °C
Relative Humidity: 49,3 %
Atmospheric Pressure: 100,6 kPa

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Test Specifications & Observations/Remarks

- AC 24 V Mode

(Test Voltage : 50 Hz)

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 /5000	<u>Complied</u>
☒ 30 % dip	☒ 25 /500	<u>Complied</u>
☒ 60 % dip	☒ 10 /200	<u>Complied</u>
☒ 100 % dip	☒ 250 /5000	<u>Complied</u>

- Voltage variations

☒ Unom + 10 %	☒ 253 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☐ NOT APPLICABLE

Remarks

The test has been tested using the AC/AC Adapter



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KES-E1-16T0618-R3
Page (43) of (101)

APPENDIX A – TEST DATA

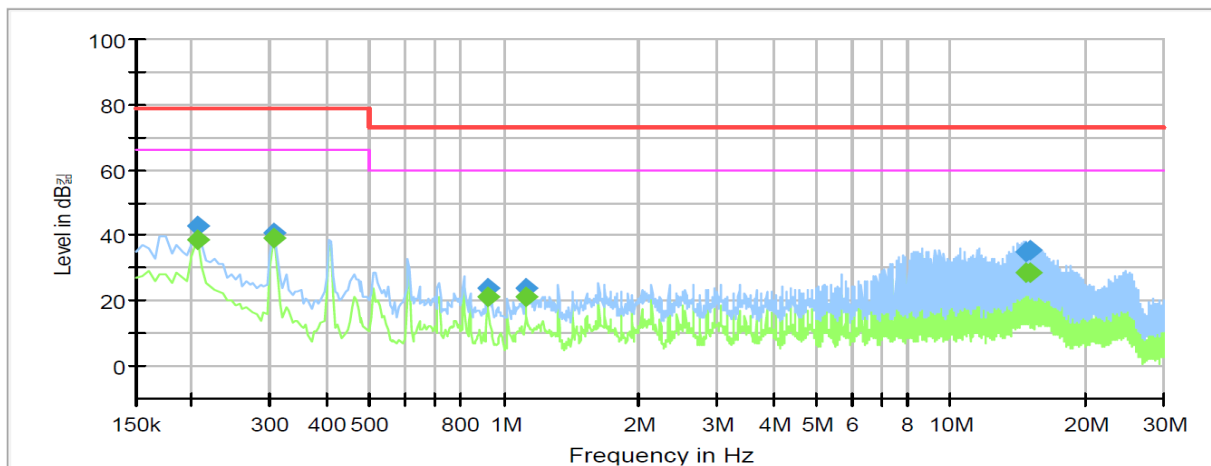
Conducted Emissions at Mains Power Ports

- AC 24 V Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNO-8080RP
Mode	AC 24 V
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	38.81	66.00	27.19	1000.0	9.000	L1	9.7
0.205000	42.85	---	79.00	36.15	1000.0	9.000	L1	9.7
0.305000	---	39.41	66.00	26.59	1000.0	9.000	L1	9.7
0.305000	40.68	---	79.00	38.32	1000.0	9.000	L1	9.7
0.915000	---	21.04	60.00	38.96	1000.0	9.000	L1	10.0
0.915000	23.73	---	73.00	49.27	1000.0	9.000	L1	10.0
1.120000	---	21.02	60.00	38.98	1000.0	9.000	L1	10.1
1.120000	24.11	---	73.00	48.89	1000.0	9.000	L1	10.1
14.775000	---	28.39	60.00	31.61	1000.0	9.000	L1	10.1
14.775000	34.76	---	73.00	38.24	1000.0	9.000	L1	10.1
15.080000	---	28.65	60.00	31.35	1000.0	9.000	L1	10.1
15.080000	35.70	---	73.00	37.30	1000.0	9.000	L1	10.1

◆ 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)

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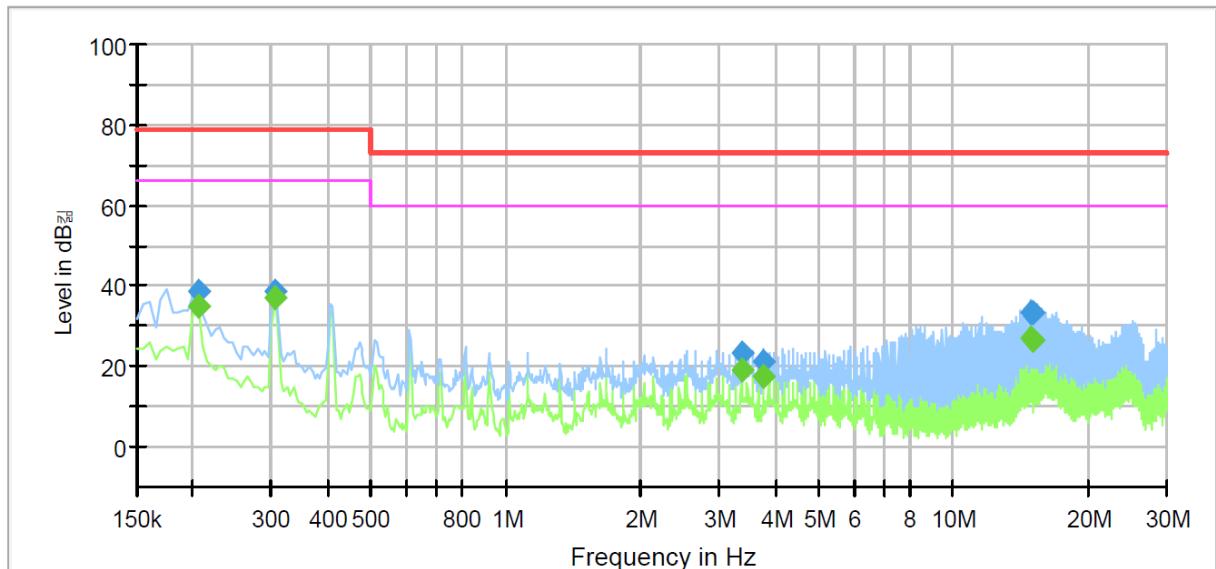
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Test report No.:
KES-E1-16T0618-R3
Page (44) of (101)

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XNO-8080RP
Mode: AC 24 V
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	34.81	66.00	31.19	1000.0	9.000	N	9.7
0.205000	38.89	---	79.00	40.11	1000.0	9.000	N	9.7
0.305000	---	37.25	66.00	28.75	1000.0	9.000	N	9.7
0.305000	38.58	---	79.00	40.42	1000.0	9.000	N	9.7
3.360000	---	18.83	60.00	41.17	1000.0	9.000	N	10.1
3.360000	23.57	---	73.00	49.43	1000.0	9.000	N	10.1
3.770000	---	17.41	60.00	42.59	1000.0	9.000	N	10.1
3.770000	21.06	---	73.00	51.94	1000.0	9.000	N	10.1
14.875000	---	26.92	60.00	33.08	1000.0	9.000	N	10.1
14.875000	33.41	---	73.00	39.59	1000.0	9.000	N	10.1
15.080000	---	26.31	60.00	33.69	1000.0	9.000	N	10.1
15.080000	33.60	---	73.00	39.40	1000.0	9.000	N	10.1

◆ 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)

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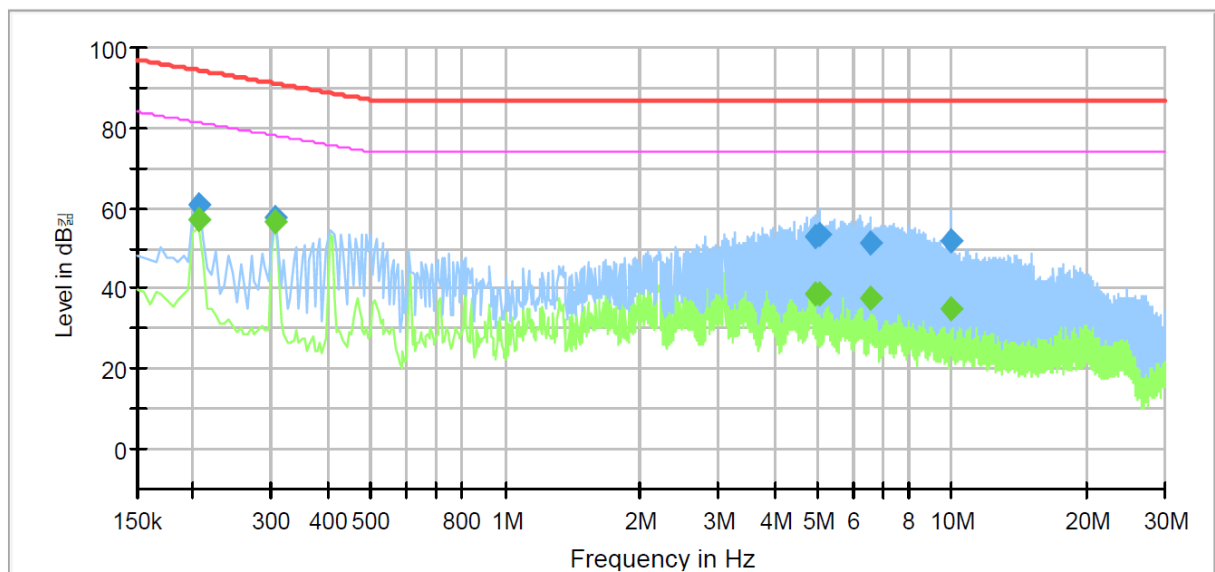
Conducted Emissions at Telecommunication Ports

- AC 24 V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNO-8080RP
Mode	AC 24 V 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)
0.205000	---	57.22	81.41	24.19	1000.0	9.000	Single Line	10.1
0.205000	60.83	---	94.41	33.58	1000.0	9.000	Single Line	10.1
0.305000	---	56.66	78.11	21.45	1000.0	9.000	Single Line	10.1
0.305000	57.64	---	91.11	33.47	1000.0	9.000	Single Line	10.1
4.940000	---	38.58	74.00	35.42	1000.0	9.000	Single Line	10.1
4.940000	52.83	---	87.00	34.17	1000.0	9.000	Single Line	10.1
5.065000	---	38.39	74.00	35.61	1000.0	9.000	Single Line	10.1
5.065000	53.38	---	87.00	33.62	1000.0	9.000	Single Line	10.1
6.545000	---	37.47	74.00	36.53	1000.0	9.000	Single Line	10.0
6.545000	51.13	---	87.00	35.87	1000.0	9.000	Single Line	10.0
9.995000	---	35.15	74.00	38.85	1000.0	9.000	Single Line	10.0
9.995000	52.10	---	87.00	34.90	1000.0	9.000	Single Line	10.0

◆ 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)

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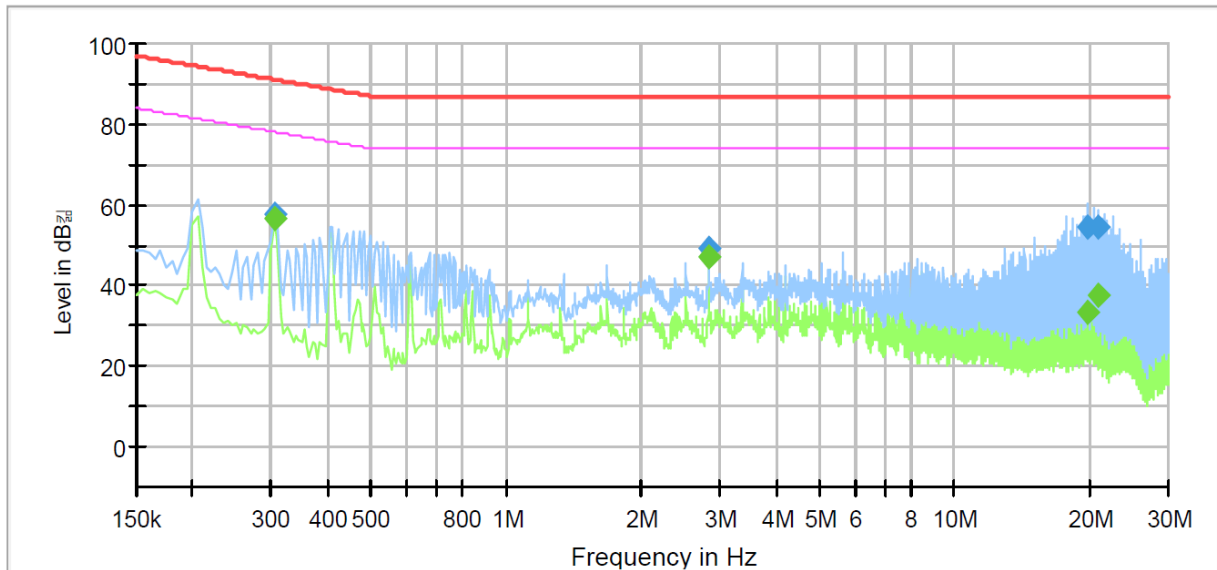
3701, 40, Simin-daero 365beon-gil,
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KES-E1-16T0618-R3
Page (46) of (101)

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNO-8080RP
Mode: AC 24 V 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)
0.305000	---	56.78	78.11	21.33	1000.0	9.000	Single Line	9.6
0.305000	57.84	---	91.11	33.27	1000.0	9.000	Single Line	9.6
2.830000	---	46.91	74.00	27.09	1000.0	9.000	Single Line	9.7
2.830000	49.27	---	87.00	37.73	1000.0	9.000	Single Line	9.7
19.710000	---	33.36	74.00	40.64	1000.0	9.000	Single Line	9.6
19.710000	54.68	---	87.00	32.32	1000.0	9.000	Single Line	9.6
20.810000	---	37.54	74.00	36.46	1000.0	9.000	Single Line	9.6
20.810000	54.29	---	87.00	32.71	1000.0	9.000	Single Line	9.6

◆ 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)

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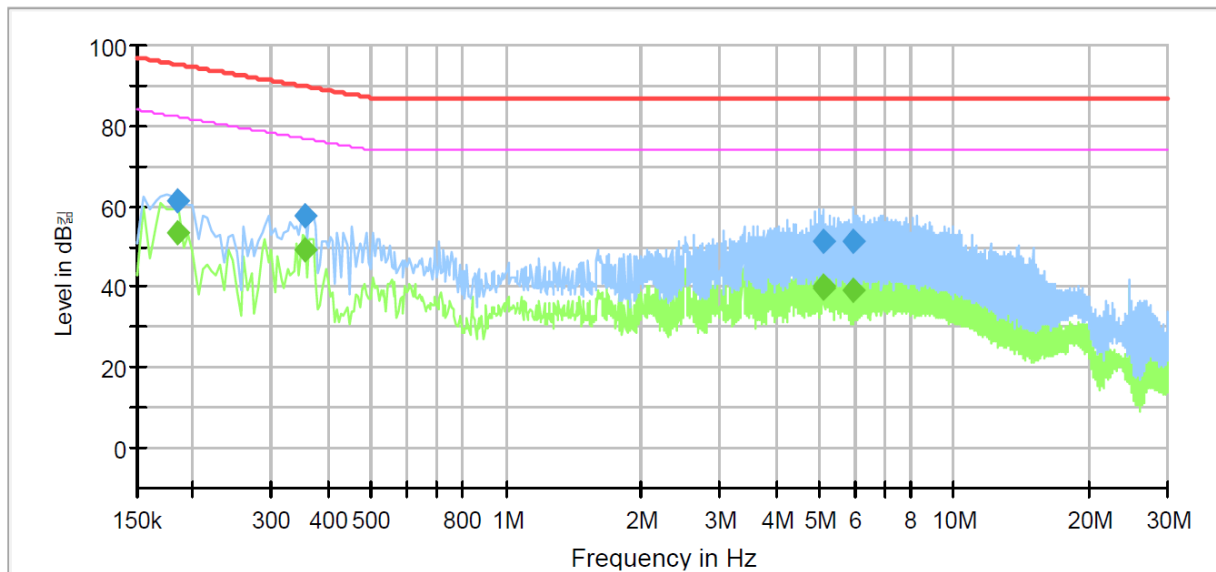
Test report No.:
KES-E1-16T0618-R3
Page (47) of (101)

- DC 12 V Mode

[10 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNO-8080RP
Mode: DC 12 V 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)
0.185000	---	53.41	82.26	28.85	1000.0	9.000	Single Line	10.1
0.185000	61.21	---	95.26	34.05	1000.0	9.000	Single Line	10.1
0.355000	---	49.10	76.84	27.74	1000.0	9.000	Single Line	10.1
0.355000	57.88	---	89.84	31.96	1000.0	9.000	Single Line	10.1
5.085000	---	40.01	74.00	33.99	1000.0	9.000	Single Line	10.1
5.085000	51.19	---	87.00	35.81	1000.0	9.000	Single Line	10.1
5.120000	---	39.93	74.00	34.07	1000.0	9.000	Single Line	10.1
5.120000	51.42	---	87.00	35.58	1000.0	9.000	Single Line	10.1
5.965000	---	38.98	74.00	35.02	1000.0	9.000	Single Line	10.1
5.965000	51.27	---	87.00	35.73	1000.0	9.000	Single Line	10.1
5.975000	---	39.31	74.00	34.69	1000.0	9.000	Single Line	10.1
5.975000	51.26	---	87.00	35.74	1000.0	9.000	Single Line	10.1

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

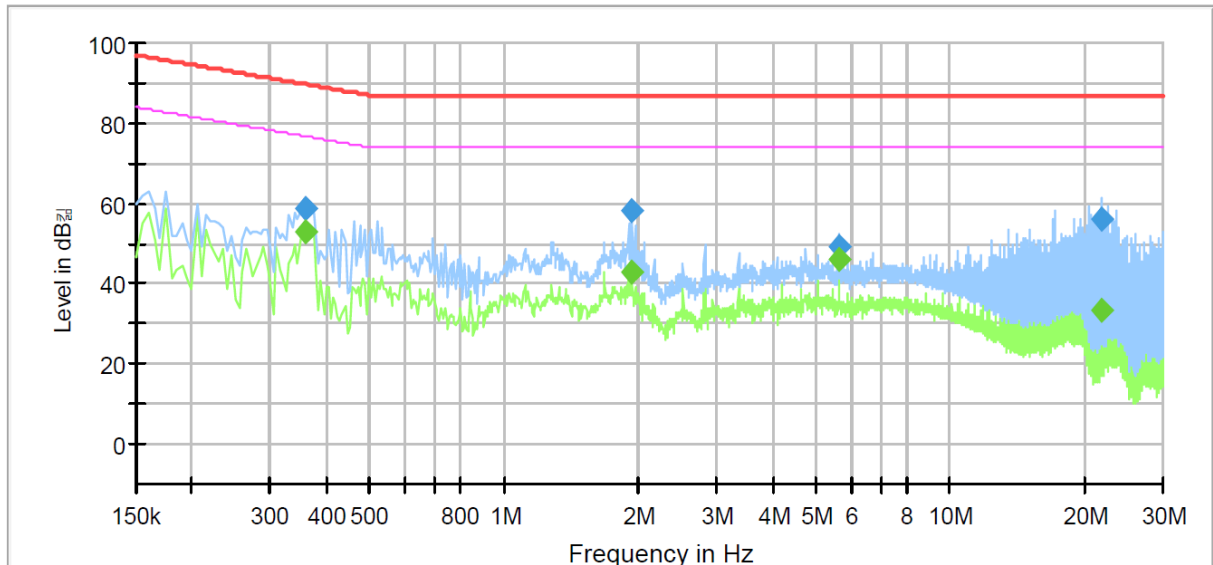
Corr. : Correction values (ISN FACTOR+ Cable Loss)

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[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNO-8080RP
Mode	DC 12 V 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)
0.360000	---	52.67	76.73	24.06	1000.0	9.000	Single Line	9.6
0.360000	58.77	---	89.73	30.96	1000.0	9.000	Single Line	9.6
1.935000	---	42.98	74.00	31.02	1000.0	9.000	Single Line	9.7
1.935000	58.48	---	87.00	28.52	1000.0	9.000	Single Line	9.7
5.640000	---	45.91	74.00	28.09	1000.0	9.000	Single Line	9.6
5.640000	49.37	---	87.00	37.63	1000.0	9.000	Single Line	9.6
21.860000	---	33.42	74.00	40.58	1000.0	9.000	Single Line	9.6
21.860000	56.26	---	87.00	30.74	1000.0	9.000	Single Line	9.6

◆ 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)



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Test report No.:

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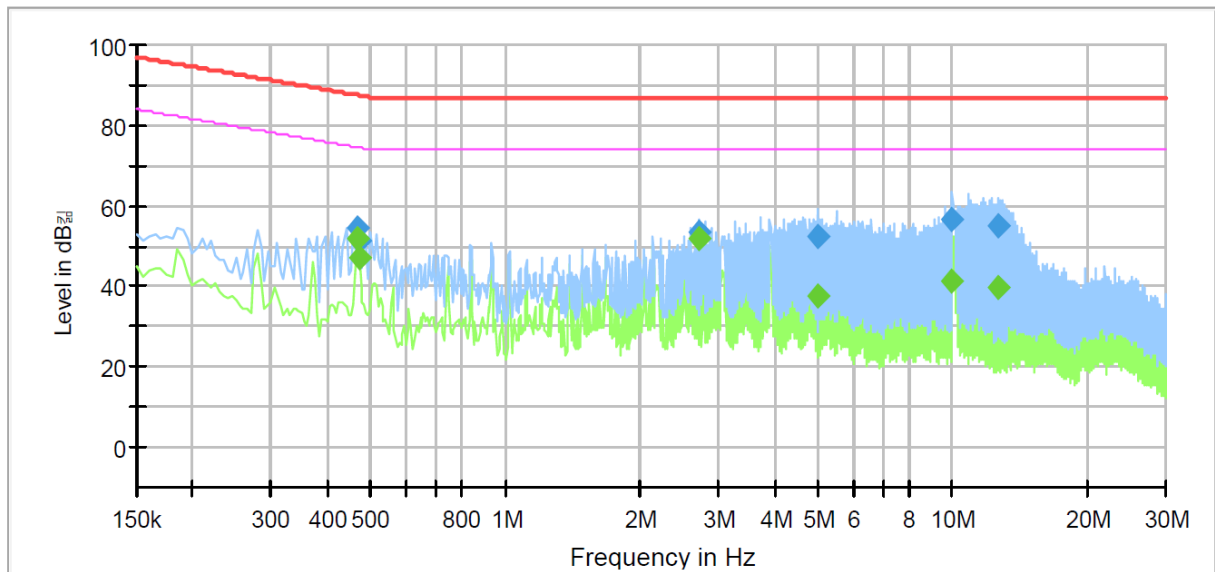
Page (49) of (101)

- POE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNO-8080RP
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)
0.465000	---	51.82	74.60	22.78	1000.0	9.000	Single Line	10.1
0.465000	54.37	---	87.60	33.23	1000.0	9.000	Single Line	10.1
0.470000	---	47.03	74.51	27.48	1000.0	9.000	Single Line	10.1
0.470000	51.30	---	87.51	36.21	1000.0	9.000	Single Line	10.1
2.700000	---	52.08	74.00	21.92	1000.0	9.000	Single Line	10.2
2.700000	53.38	---	87.00	33.62	1000.0	9.000	Single Line	10.2
4.975000	---	37.34	74.00	36.66	1000.0	9.000	Single Line	10.1
4.975000	52.57	---	87.00	34.43	1000.0	9.000	Single Line	10.1
10.005000	---	41.05	74.00	32.95	1000.0	9.000	Single Line	10.0
10.005000	56.49	---	87.00	30.51	1000.0	9.000	Single Line	10.0
12.635000	---	39.82	74.00	34.18	1000.0	9.000	Single Line	10.0
12.635000	55.31	---	87.00	31.69	1000.0	9.000	Single Line	10.0

◆ 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 (ISN FACTOR+ Cable Loss)

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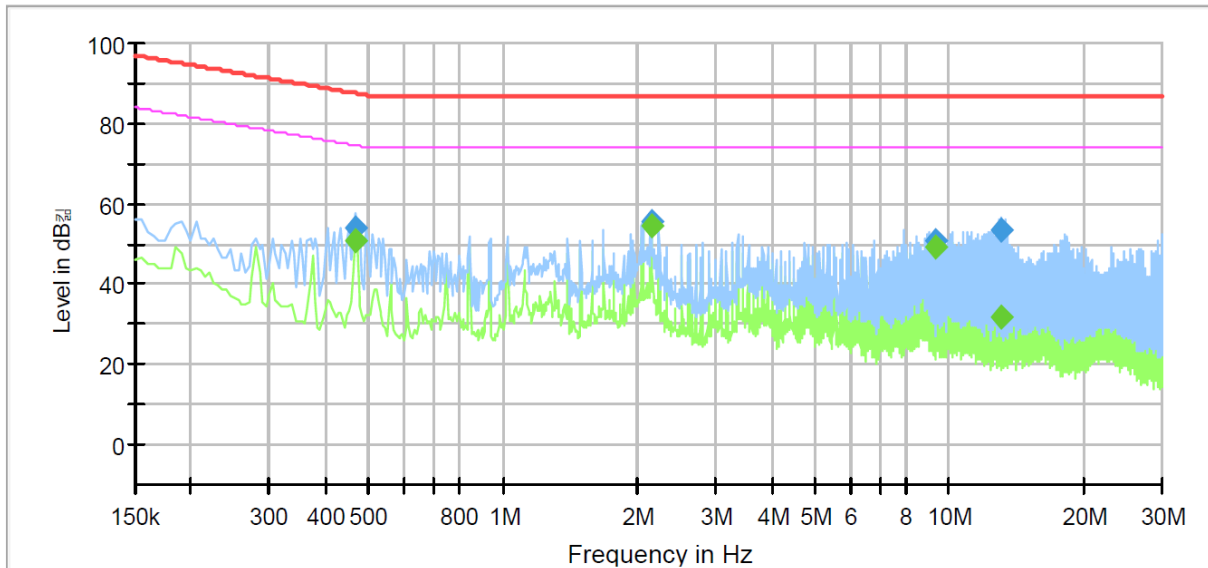
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Test report No.:
KES-E1-16T0618-R3
Page (50) of (101)

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNO-8080RP
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)
0.465000	---	50.97	74.60	23.63	1000.0	9.000	Single Line	9.6
0.465000	53.82	---	87.60	33.78	1000.0	9.000	Single Line	9.6
2.145000	---	54.34	74.00	19.66	1000.0	9.000	Single Line	9.7
2.145000	55.33	---	87.00	31.67	1000.0	9.000	Single Line	9.7
9.360000	---	49.03	74.00	24.97	1000.0	9.000	Single Line	9.5
9.360000	50.58	---	87.00	36.42	1000.0	9.000	Single Line	9.5
13.010000	---	31.64	74.00	42.36	1000.0	9.000	Single Line	9.5
13.010000	53.57	---	87.00	33.43	1000.0	9.000	Single Line	9.5

◆ 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)

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Radiated Electric Field Emissions(Below 1 GHz)

- AC 24 V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin [dB]
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	
196.60	20.02	H	4.00	10.98	4.08	35.08	40.00	4.92
221.18	20.33	H	4.00	11.77	4.37	36.47	40.00	3.53
221.19	19.48	V	1.00	11.77	4.37	35.62	40.00	4.38
319.49	22.41	H	4.00	13.83	5.34	41.58	47.00	5.42
344.15	20.85	H	4.00	14.40	5.58	40.83	47.00	6.17
491.09	16.37	H	3.30	16.98	6.97	40.32	47.00	6.68

* H : Horizontal, V : Vertical

◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

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Test report No.:
KES-E1-16T0618-R3
Page (52) of (101)

- DC 12 V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
196.63	19.86	H	4.00	10.98	4.08	34.92	40.00	5.08
221.18	19.94	H	4.00	11.77	4.37	36.08	40.00	3.92
221.23	19.46	V	1.00	11.77	4.37	35.60	40.00	4.40
319.77	21.16	H	4.00	13.84	5.34	40.34	47.00	6.66
344.29	20.67	H	4.00	14.41	5.58	40.66	47.00	6.34
491.50	16.81	H	3.50	16.98	6.97	40.76	47.00	6.24

* H : Horizontal, V : Vertical

◆ Calculation

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

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

Correction Factor : ANT FACTOR + Cable loss

- POE Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
196.62	19.76	H	4.00	10.98	4.08	34.82	40.00	5.18
221.18	20.23	H	4.00	11.77	4.37	36.37	40.00	3.63
319.47	22.34	V	1.10	13.83	5.34	41.51	47.00	5.49
319.50	21.84	H	3.90	13.83	5.34	41.01	47.00	5.99
344.13	20.71	H	4.00	14.40	5.58	40.69	47.00	6.31
369.63	18.35	H	4.00	15.00	5.85	39.20	47.00	7.80

* H : Horizontal, V : Vertical

◆ 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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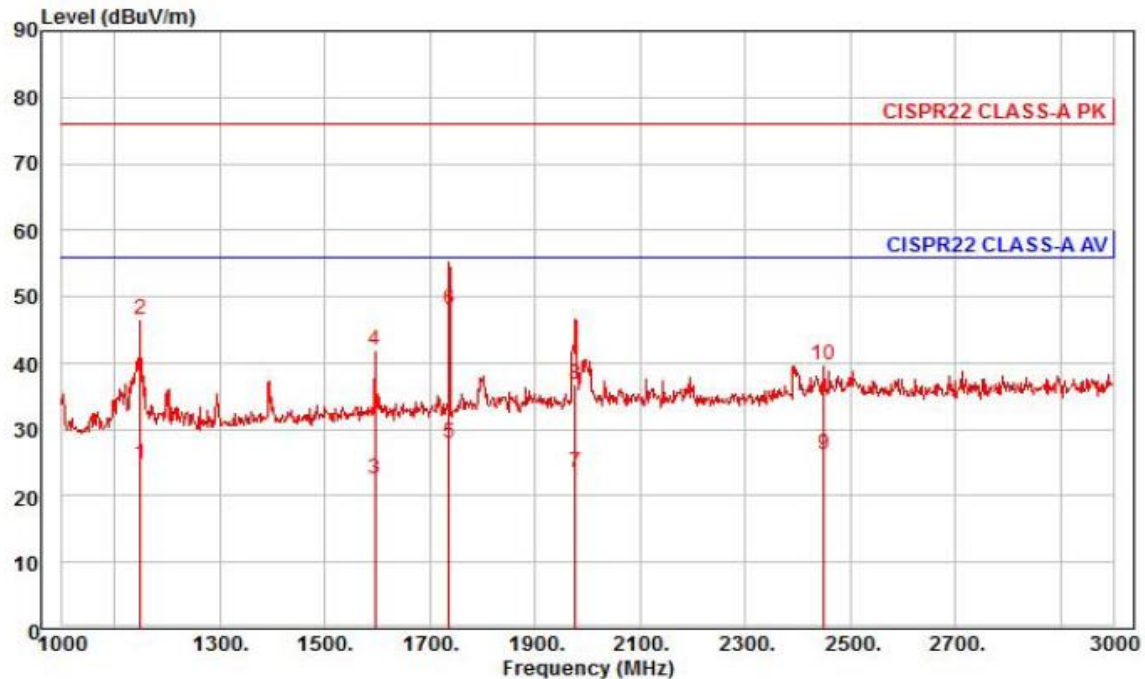
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Test report No.:
KES-E1-16T0618-R3
Page (53) of (101)

Radiated Electric Field Emissions(Above 1 GHz)

- AC 24 V Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : AC 24 V
Memo : (1 ~ 3) GHz

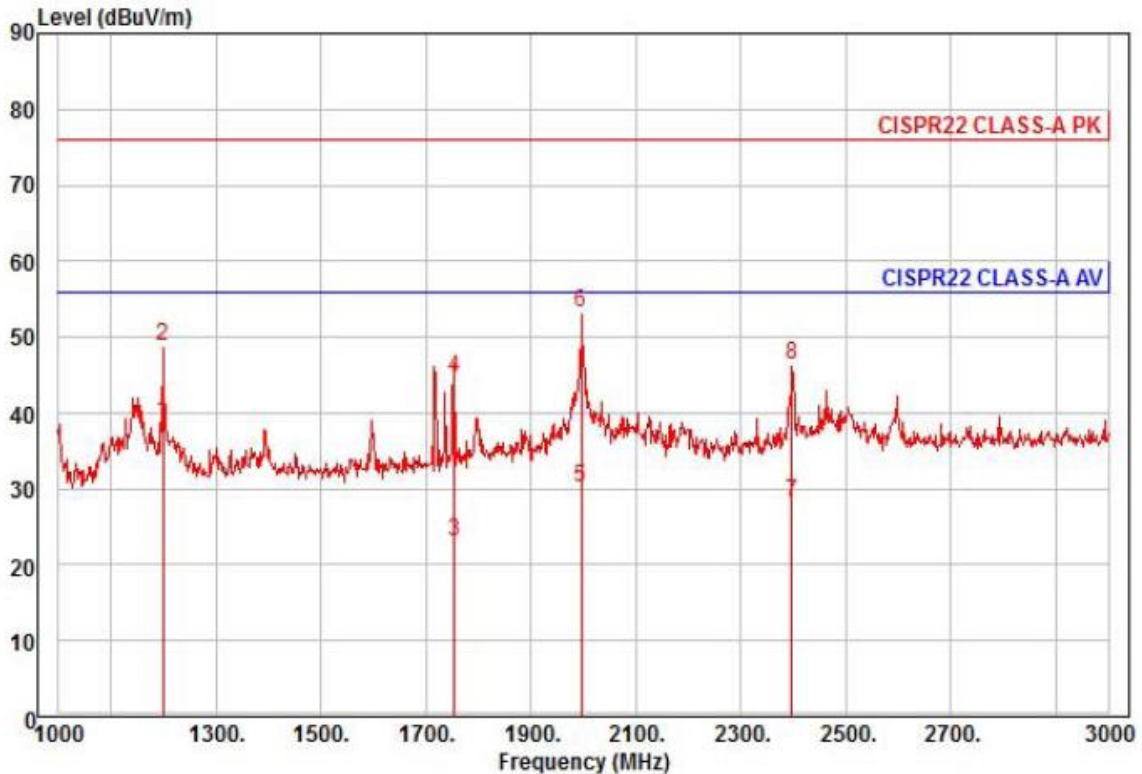
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1148.00	33.12	24.50	6.97	39.73	37	56.00	-31.14	horizontal	Average
2	1148.00	54.82	24.50	6.97	39.73	37	76.00	-29.44	horizontal	Peak
3	1596.00	27.26	26.28	8.30	39.22	275	56.00	-33.38	horizontal	Average
4	1596.00	46.47	26.28	8.30	39.22	275	76.00	-34.17	horizontal	Peak
5 av	1736.00	31.85	26.83	8.66	39.29	337	56.00	-27.95	horizontal	Average
6 pp	1736.00	51.92	26.83	8.66	39.29	337	76.00	-27.88	horizontal	Peak
7	1976.00	25.90	27.78	9.27	39.40	242	56.00	-32.45	horizontal	Average
8	1976.00	39.11	27.78	9.27	39.40	242	76.00	-39.24	horizontal	Peak
9	2450.00	26.28	28.98	10.43	39.48	83	56.00	-29.79	horizontal	Average
10	2450.00	39.91	28.98	10.43	39.48	83	76.00	-36.16	horizontal	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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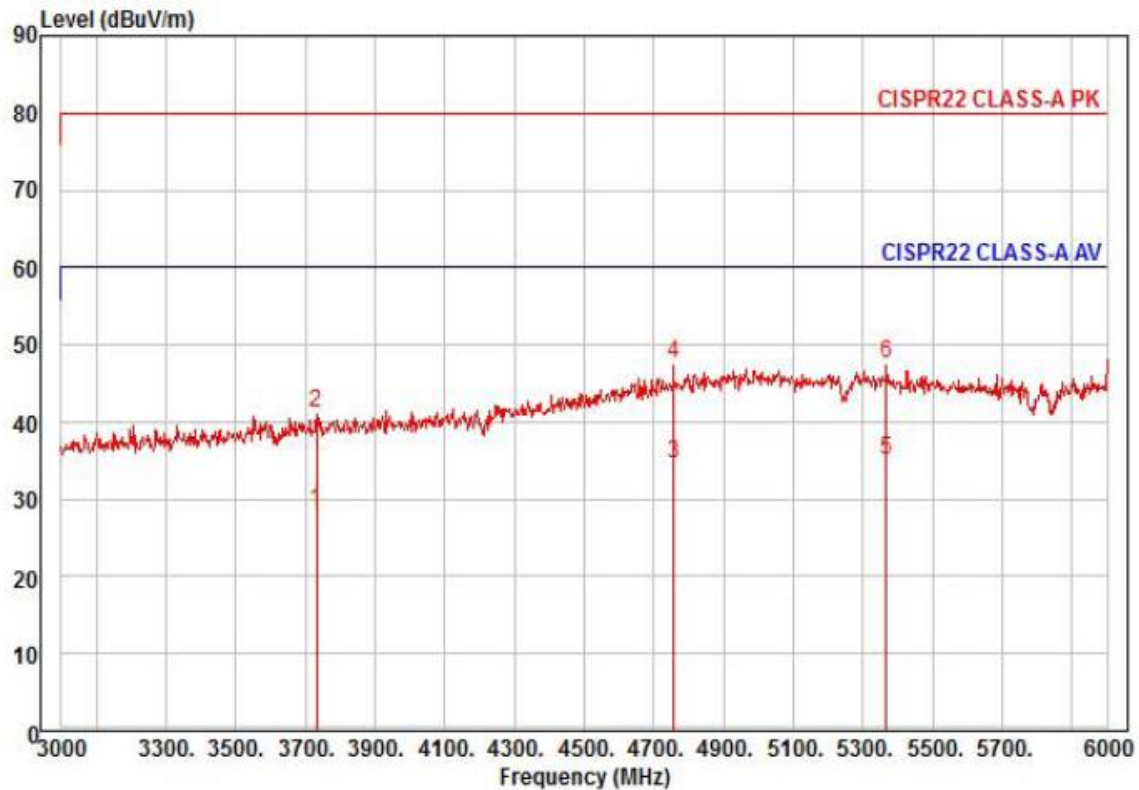
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : AC 24 V
Memo : (1 ~ 3) GHz

	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 pp	1200.00	46.56	24.70	7.14	39.61	217	56.00	-17.21	vertical	Average
2	1200.00	56.60	24.70	7.14	39.61	217	76.00	-27.17	vertical	Peak
3	1754.00	26.76	26.90	8.71	39.30	209	56.00	-32.93	vertical	Average
4	1754.00	48.36	26.90	8.71	39.30	209	76.00	-31.33	vertical	Peak
5	1996.00	32.42	27.86	9.33	39.41	320	56.00	-25.80	vertical	Average
6 pk	1996.00	55.52	27.86	9.33	39.41	320	76.00	-22.70	vertical	Peak
7	2398.00	28.43	28.86	10.32	39.42	112	56.00	-27.81	vertical	Average
8	2398.00	46.60	28.86	10.32	39.42	112	76.00	-29.64	vertical	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : AC 24 V
Memo : (3 ~ 6) GHz

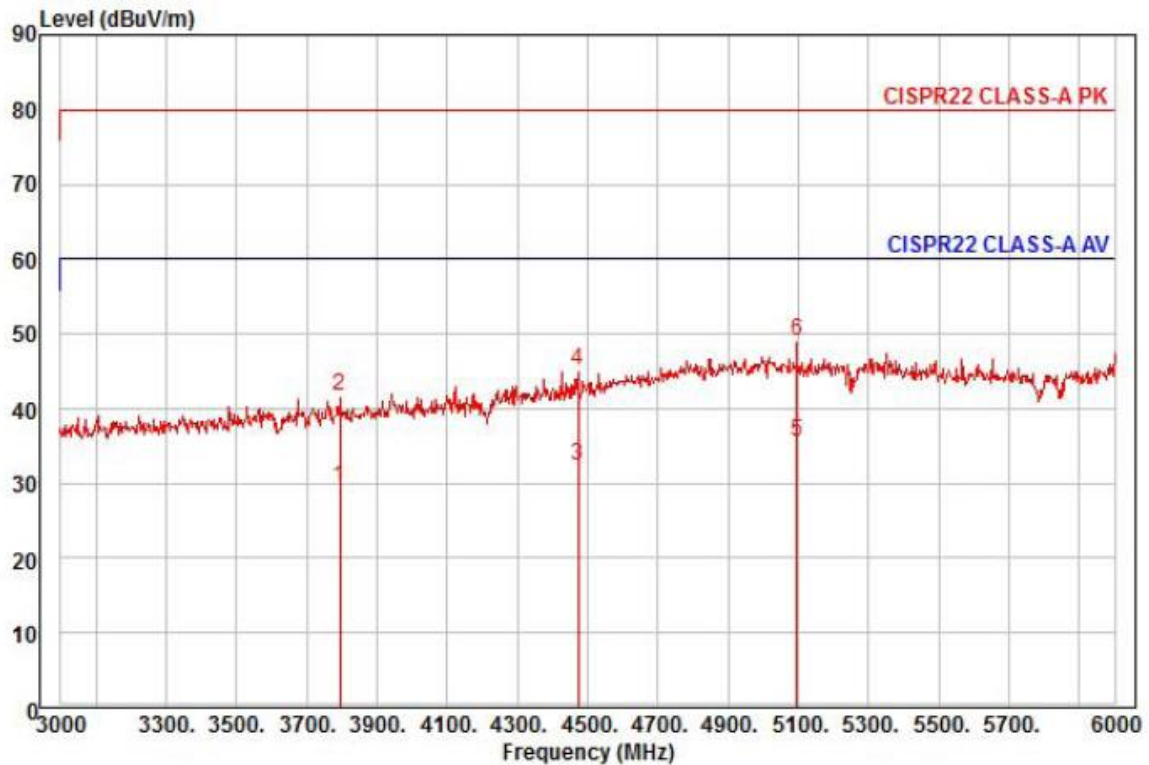
	Read	Ant	Cable	Preamp	TPos	Limit	Over		
Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3732.00	24.71	31.56	13.05	40.80	232	60.00	-31.48	horizontal Average
2	3732.00	37.50	31.56	13.05	40.80	232	80.00	-38.69	horizontal Peak
3	4758.00	23.67	36.34	15.01	40.51	166	60.00	-25.49	horizontal Average
4 pk	4758.00	36.86	36.34	15.01	40.51	166	80.00	-32.30	horizontal Peak
5 pp	5367.00	22.87	36.98	15.98	40.88	343	60.00	-25.05	horizontal Average
6	5367.00	35.59	36.98	15.98	40.88	343	80.00	-32.33	horizontal Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : AC 24 V
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	3795.00	25.31	31.67	13.17	40.77	346	60.00	-30.62	vertical	Average
2	3795.00	37.68	31.67	13.17	40.77	346	80.00	-38.25	vertical	Peak
3	4473.00	24.01	34.71	14.41	40.77	301	60.00	-27.64	vertical	Average
4	4473.00	36.76	34.71	14.41	40.77	301	80.00	-34.89	vertical	Peak
5 pp	5097.00	22.85	37.52	15.51	40.43	210	60.00	-24.55	vertical	Average
6 pk	5097.00	36.34	37.52	15.51	40.43	210	80.00	-31.06	vertical	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

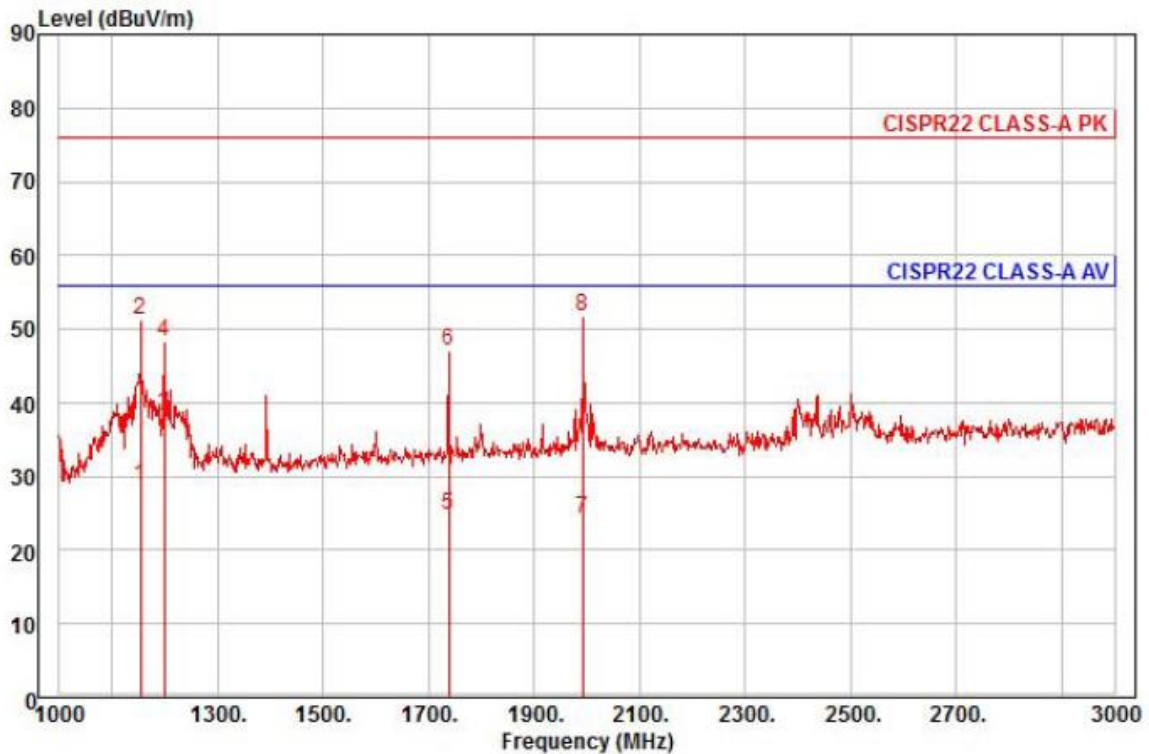


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Test report No.:
KES-E1-16T0618-R3
Page (57) of (101)

- DC 12 V Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : DC 12 V
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	1154.00	36.83	24.52	6.99	39.72	149	56.00	-27.38	horizontal	Average
2	1154.00	59.53	24.52	6.99	39.72	149	76.00	-24.68	horizontal	Peak
3 pp	1200.00	45.92	24.70	7.14	39.61	149	56.00	-17.85	horizontal	Average
4	1200.00	56.10	24.70	7.14	39.61	149	76.00	-27.67	horizontal	Peak
5	1738.00	28.55	26.84	8.67	39.29	158	56.00	-31.23	horizontal	Average
6	1738.00	50.97	26.84	8.67	39.29	158	76.00	-28.81	horizontal	Peak
7	1992.00	26.61	27.85	9.32	39.41	25	56.00	-31.63	horizontal	Average
8 pk	1992.00	53.96	27.85	9.32	39.41	25	76.00	-24.28	horizontal	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

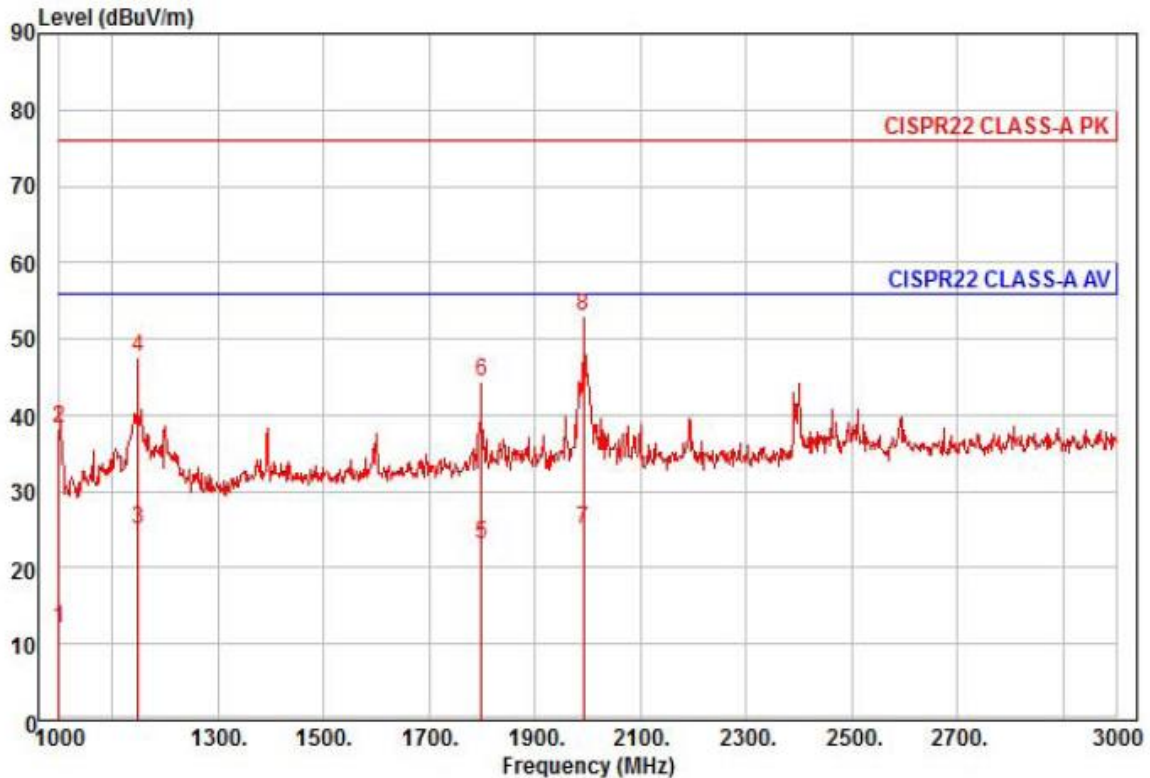
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Page (58) of (101)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : DC 12 V
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	1000.00	21.76	23.91	6.48	40.09	191	56.00	-43.94	vertical	Average
2	1000.00	48.02	23.91	6.48	40.09	191	76.00	-37.68	vertical	Peak
3 av	1148.00	33.28	24.50	6.97	39.73	169	56.00	-30.98	vertical	Average
4	1148.00	55.82	24.50	6.97	39.73	169	76.00	-28.44	vertical	Peak
5	1800.00	26.42	27.09	8.83	39.32	266	56.00	-32.98	vertical	Average
6	1800.00	47.88	27.09	8.83	39.32	266	76.00	-31.52	vertical	Peak
7	1992.00	27.17	27.85	9.32	39.41	149	56.00	-31.07	vertical	Average
8 pp	1992.00	55.16	27.85	9.32	39.41	149	76.00	-23.08	vertical	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

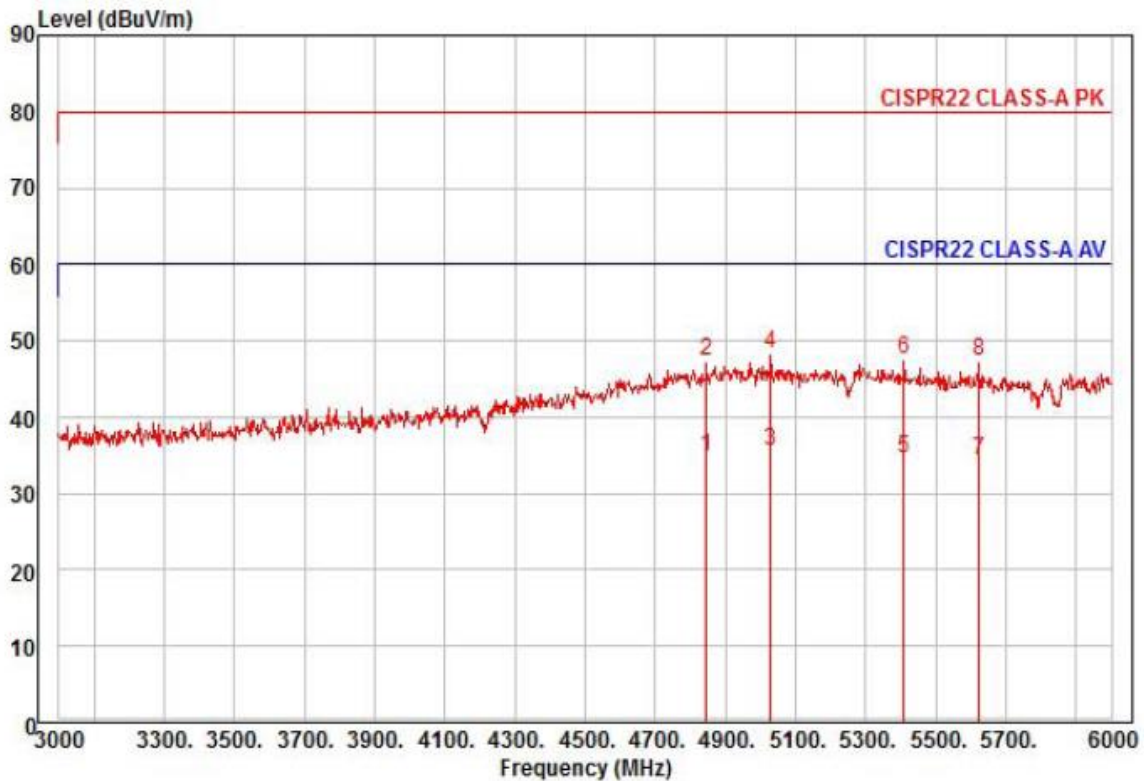
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Test report No.:
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Page (59) of (101)



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : DC 12 V
Memo : (3 ~ 6) GHz

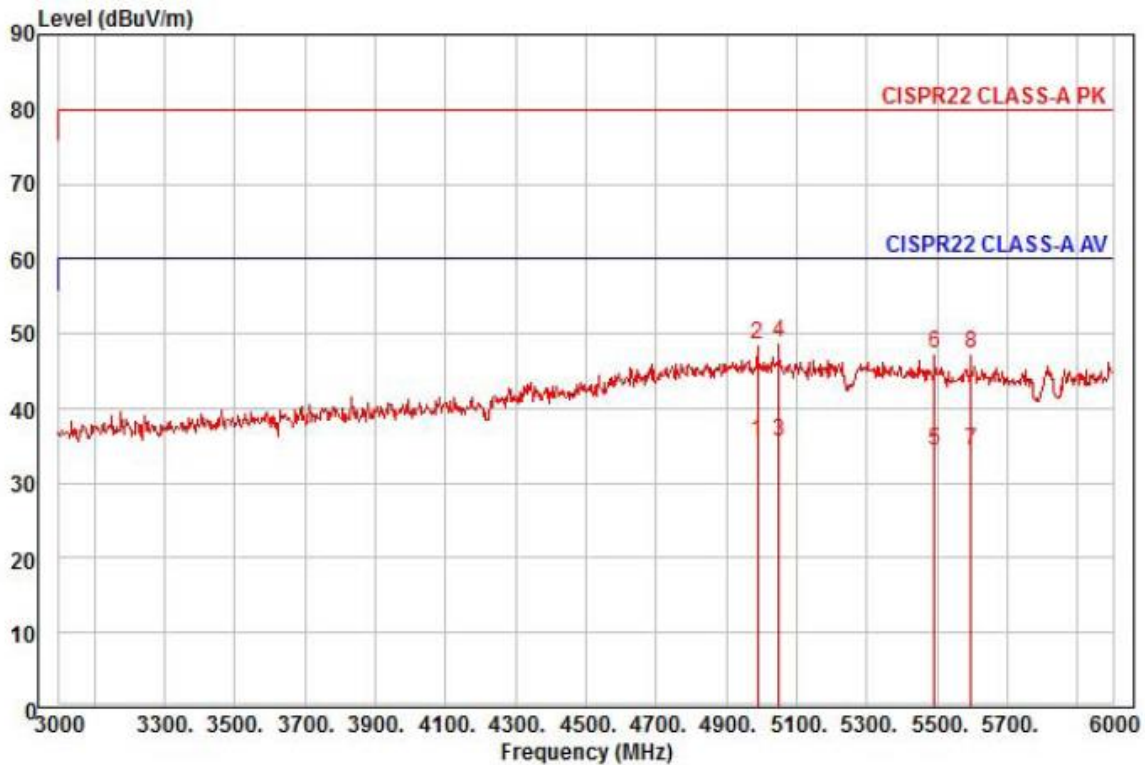
		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	4845.00	23.36	36.83	15.15	40.42	18	60.00	-25.08	horizontal	Average
2	4845.00	35.82	36.83	15.15	40.42	18	80.00	-32.62	horizontal	Peak
3 pp	5028.00	22.80	37.66	15.37	40.32	140	60.00	-24.49	horizontal	Average
4 pk	5028.00	35.63	37.66	15.37	40.32	140	80.00	-31.66	horizontal	Peak
5	5409.00	22.69	36.89	16.05	40.95	350	60.00	-25.32	horizontal	Average
6	5409.00	35.68	36.89	16.05	40.95	350	80.00	-32.33	horizontal	Peak
7	5622.00	22.39	36.46	16.38	40.94	309	60.00	-25.71	horizontal	Average
8	5622.00	35.33	36.46	16.38	40.94	309	80.00	-32.77	horizontal	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : DC 12 V
Memo : (3 ~ 6) 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 pp	4989.00	22.90	37.66	15.30	40.28	172	60.00	-24.42	vertical	Average
2	4989.00	35.77	37.66	15.30	40.28	172	80.00	-31.55	vertical	Peak
3	5049.00	22.76	37.62	15.41	40.35	337	60.00	-24.56	vertical	Average
4 pk	5049.00	36.12	37.62	15.41	40.35	337	80.00	-31.20	vertical	Peak
5	5493.00	22.63	36.72	16.18	41.09	255	60.00	-25.56	vertical	Average
6	5493.00	35.59	36.72	16.18	41.09	255	80.00	-32.60	vertical	Peak
7	5598.00	22.50	36.51	16.34	40.97	353	60.00	-25.62	vertical	Average
8	5598.00	35.57	36.51	16.34	40.97	353	80.00	-32.55	vertical	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

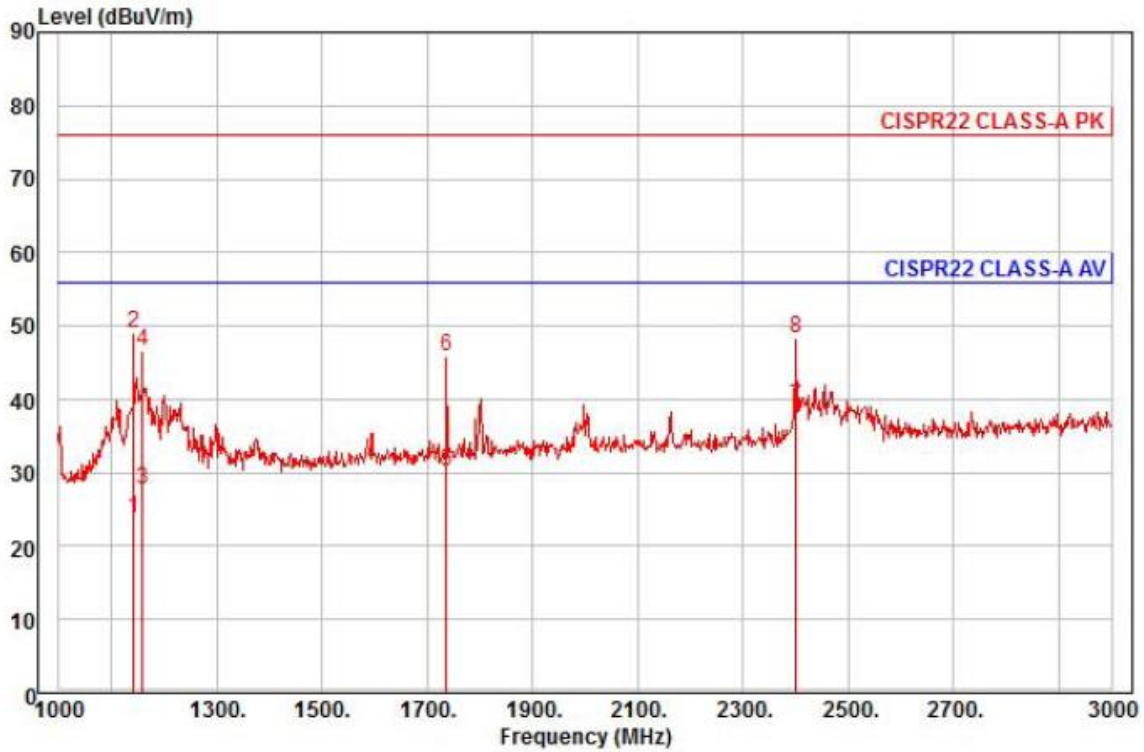


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Test report No.:
KES-E1-16T0618-R3
Page (61) of (101)

- POE Mode



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : PoE
Memo : (1 ~ 3) GHz

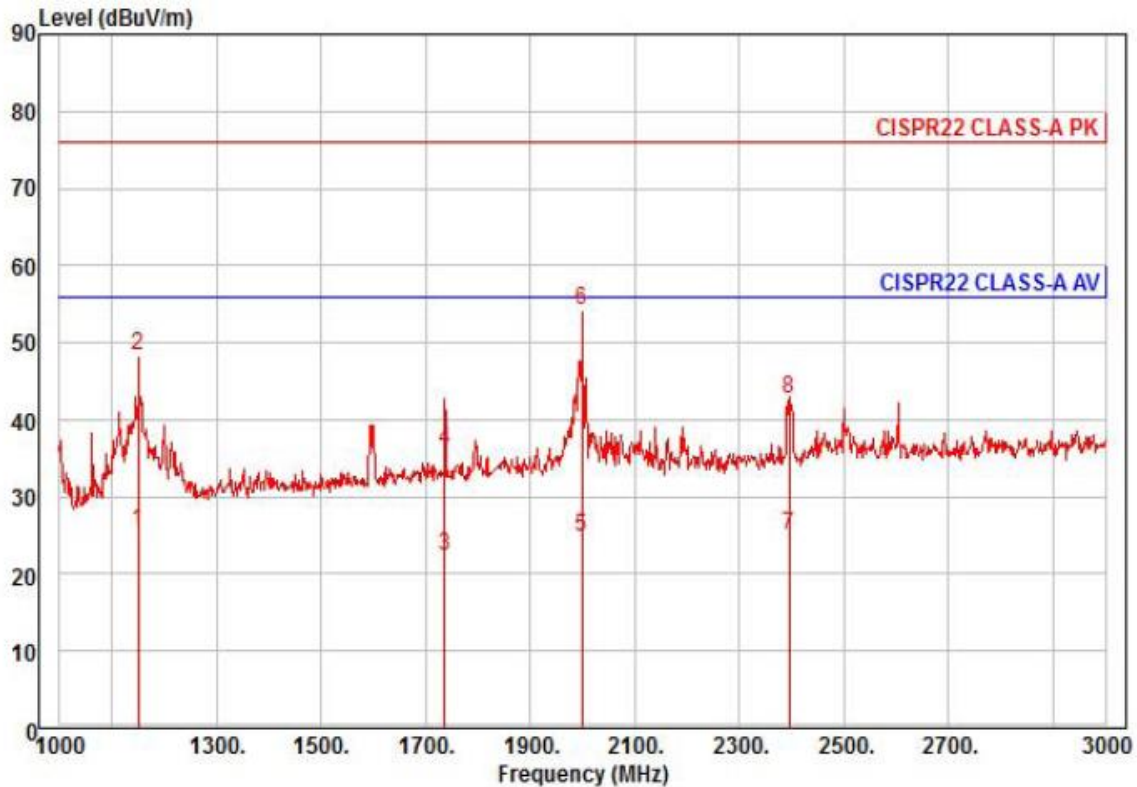
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1142.00	32.20	24.47	6.95	39.75	7	56.00	-32.13	horizontal	Average
2 pk	1142.00	57.39	24.47	6.95	39.75	7	76.00	-26.94	horizontal	Peak
3	1160.00	35.82	24.55	7.01	39.71	103	56.00	-28.33	horizontal	Average
4	1160.00	54.75	24.55	7.01	39.71	103	76.00	-29.40	horizontal	Peak
5	1736.00	33.85	26.83	8.66	39.29	158	56.00	-25.95	horizontal	Average
6	1736.00	49.54	26.83	8.66	39.29	158	76.00	-30.26	horizontal	Peak
7 pp	2400.00	39.13	28.86	10.32	39.42	244	56.00	-17.11	horizontal	Average
8	2400.00	48.65	28.86	10.32	39.42	244	76.00	-27.59	horizontal	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XNO-8080RP
Mode : PoE
Memo : (1 ~ 3) GHz

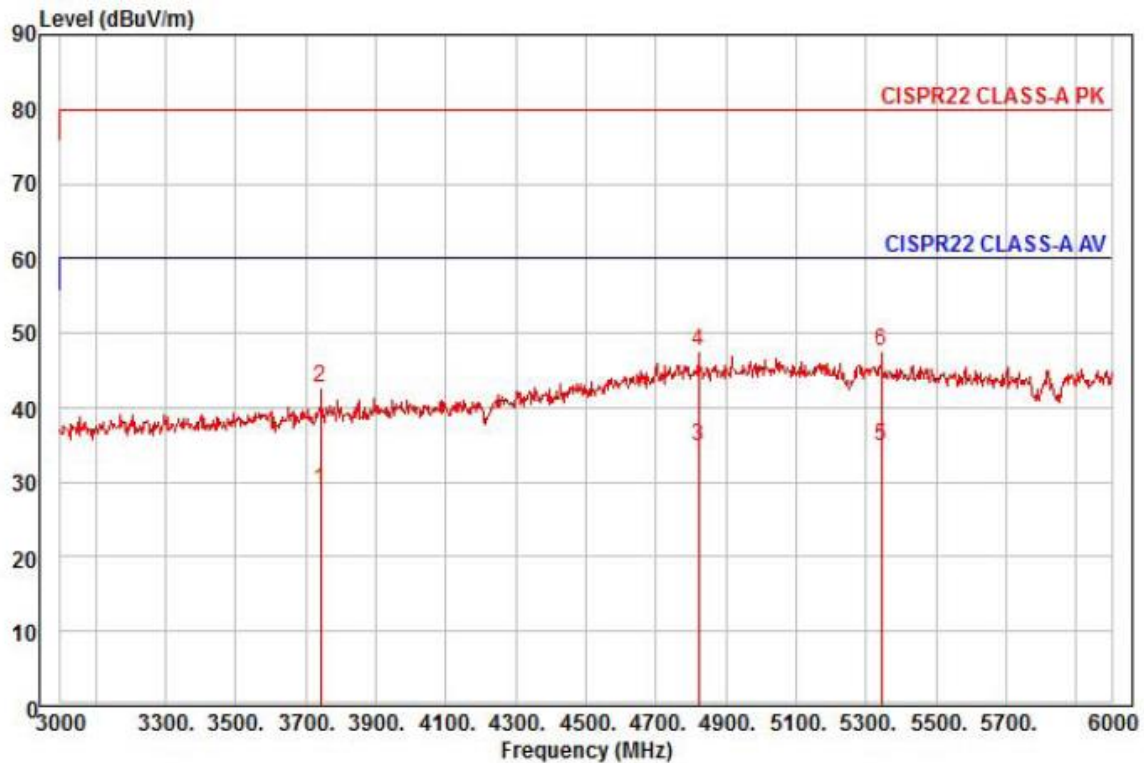
		Read	Ant	Cable	Preamp	TPos	Limit	Over		
	Freq	Level	Factor	Loss	Factor		Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1 av	1150.00	33.81	24.51	6.97	39.73	214	56.00	-30.44	vertical	Average
2	1150.00	56.46	24.51	6.97	39.73	214	76.00	-27.79	vertical	Peak
3	1736.00	26.06	26.83	8.66	39.29	119	56.00	-33.74	vertical	Average
4	1736.00	39.83	26.83	8.66	39.29	119	76.00	-39.97	vertical	Peak
5	2000.00	26.89	27.88	9.34	39.41	300	56.00	-31.30	vertical	Average
6 pp	2000.00	56.27	27.88	9.34	39.41	300	76.00	-21.92	vertical	Peak
7	2396.00	25.34	28.85	10.31	39.42	272	56.00	-30.92	vertical	Average
8	2396.00	43.04	28.85	10.31	39.42	272	76.00	-33.22	vertical	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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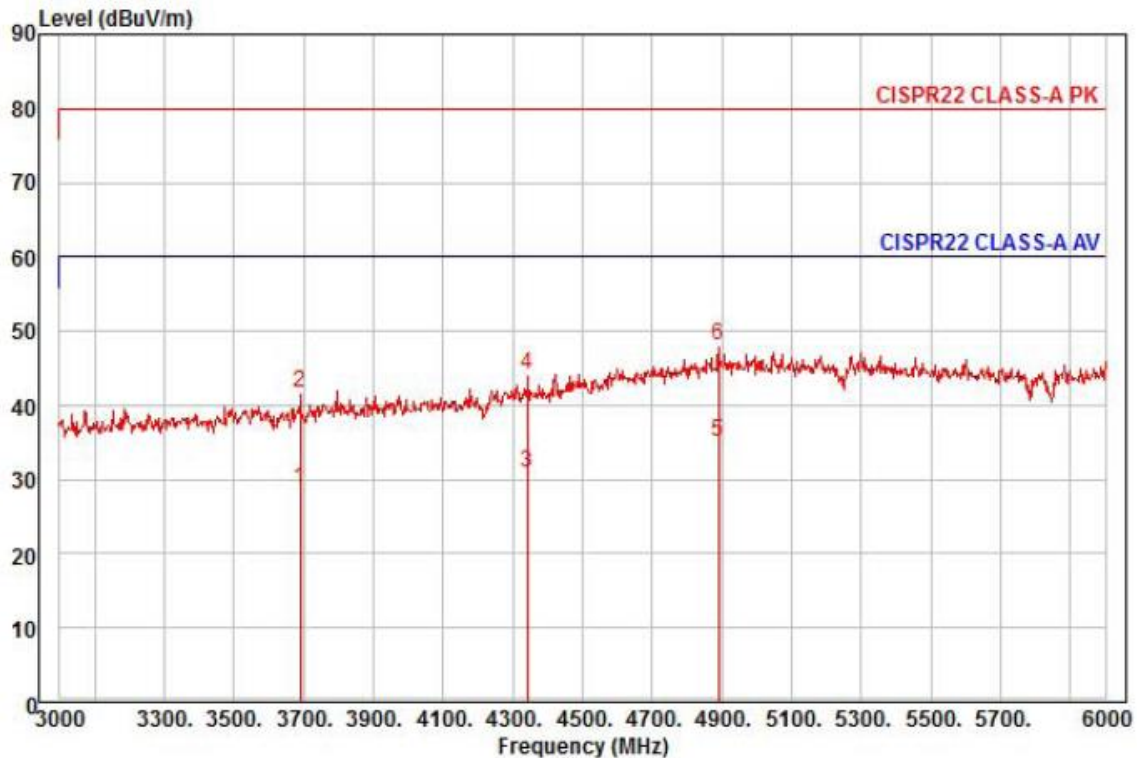
Site : chamber
 Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
 Project :
 Model : XNO-8080RP
 Mode : PoE
 Memo : (3 ~ 6) GHz

	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	3741.00	25.04	31.57	13.07	40.79	225	60.00	-31.11	horizontal	Average
2	3741.00	38.70	31.57	13.07	40.79	225	80.00	-37.45	horizontal	Peak
3	4821.00	23.36	36.70	15.12	40.45	113	60.00	-25.27	horizontal	Average
4	4821.00	36.15	36.70	15.12	40.45	113	80.00	-32.48	horizontal	Peak
5 pp	5343.00	22.75	37.03	15.94	40.84	158	60.00	-25.12	horizontal	Average
6 pk	5343.00	35.50	37.03	15.94	40.84	158	80.00	-32.37	horizontal	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
 Cable Loss : Cable loss, Preamp Factor : Preamp Factor



Site : chamber
 Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
 Project :
 Model : XNO-8080RP
 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	3690.00	25.08	31.49	12.97	40.81	25	60.00	-31.27	vertical	Average
2	3690.00	38.07	31.49	12.97	40.81	25	80.00	-38.28	vertical	Peak
3	4341.00	23.59	33.96	14.17	40.75	282	60.00	-29.03	vertical	Average
4	4341.00	36.84	33.96	14.17	40.75	282	80.00	-35.78	vertical	Peak
5 pp	4890.00	23.28	37.09	15.20	40.38	79	60.00	-24.81	vertical	Average
6 pk	4890.00	36.26	37.09	15.20	40.38	79	80.00	-31.83	vertical	Peak

◆ Calculation

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

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
 Cable Loss : Cable loss, Preamp Factor : Preamp Factor

**KES Co., Ltd.**

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Test report No.:
KES-E1-16T0618-R3
Page (67) of (101)

Test Data - Voltage Fluctuations**Maximum Flicker results**

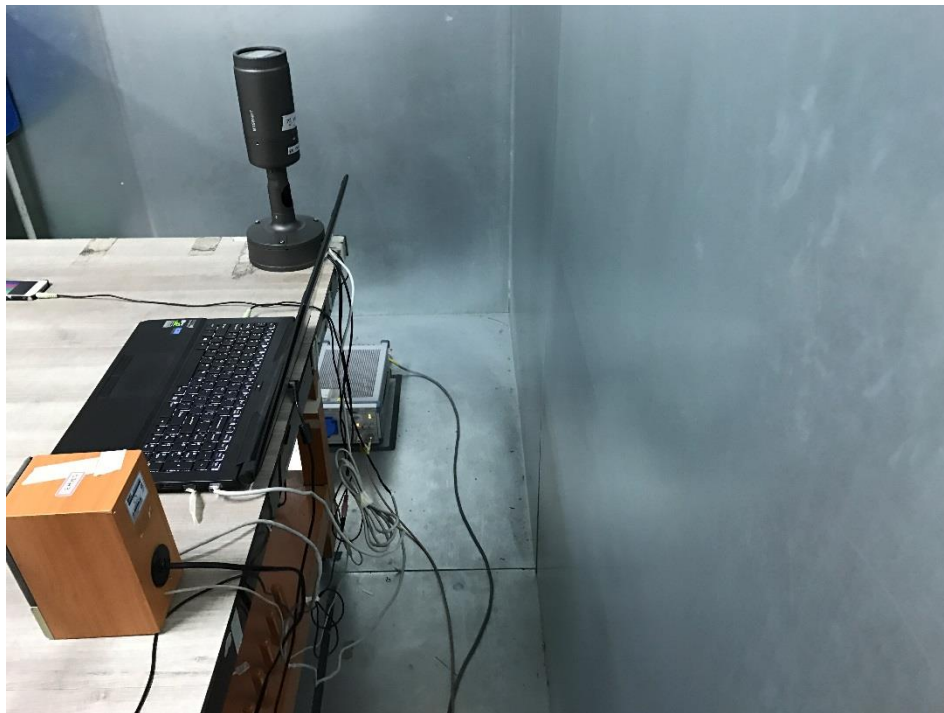
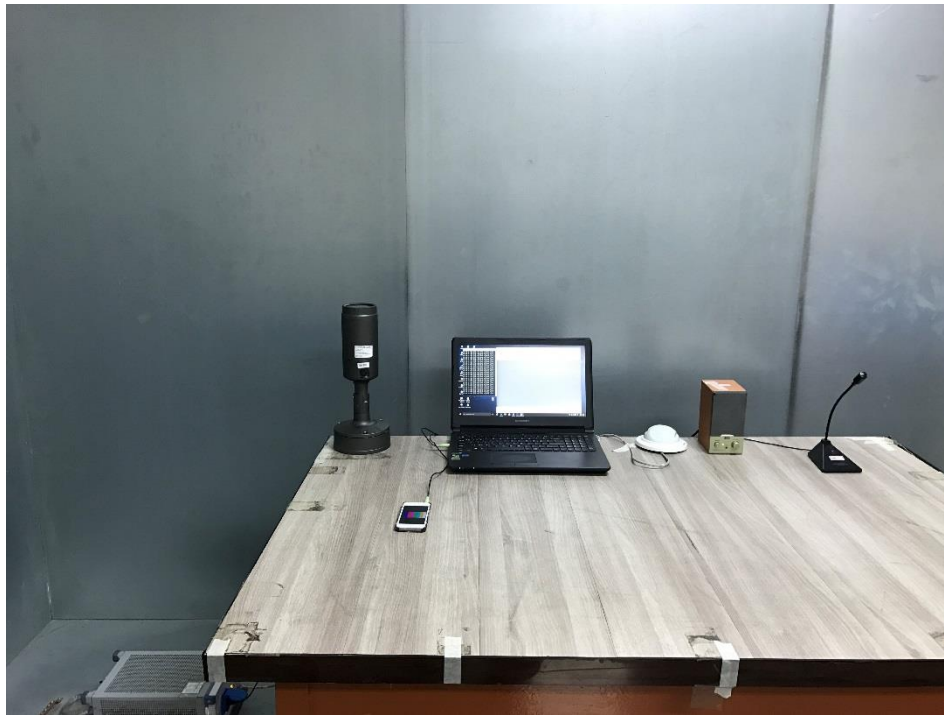
	EUT values	Limit	Result
Pst	N/A		
Plt			
dc [%]			
dmax [%]			
Tmax [s]			

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Test Setup Photos and Configuration

Conducted Voltage Emissions

- AC 24 V Mode



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Conducted Telecommunication Emissions

- AC 24 V Mode



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- DC 12 V Mode



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- POE Mode



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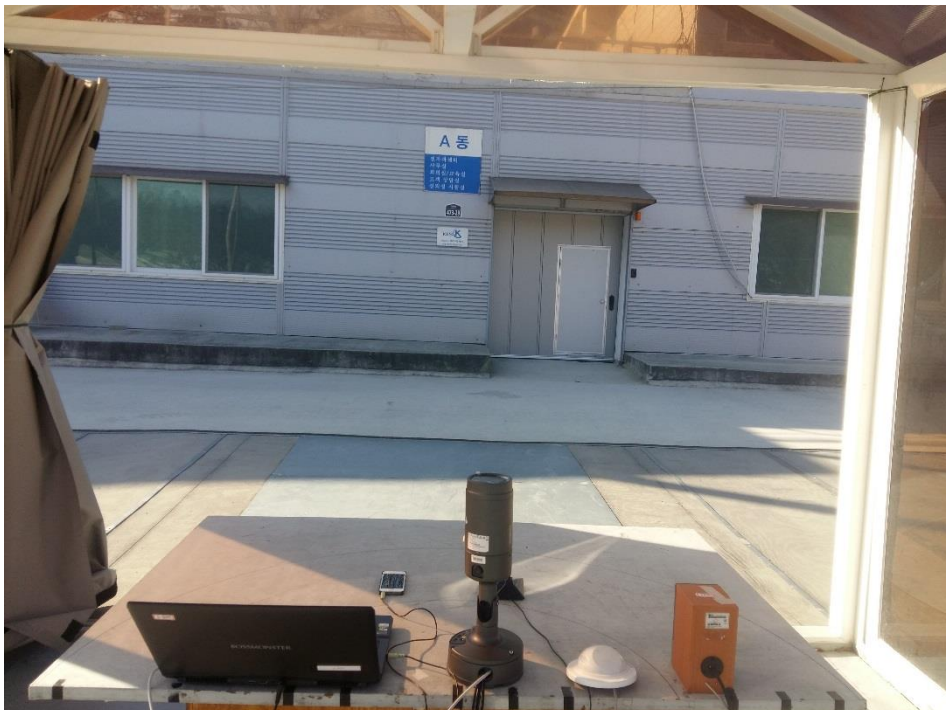
Radiated Electric Field Emissions(Below 1 GHz)

- AC 24 V Mode



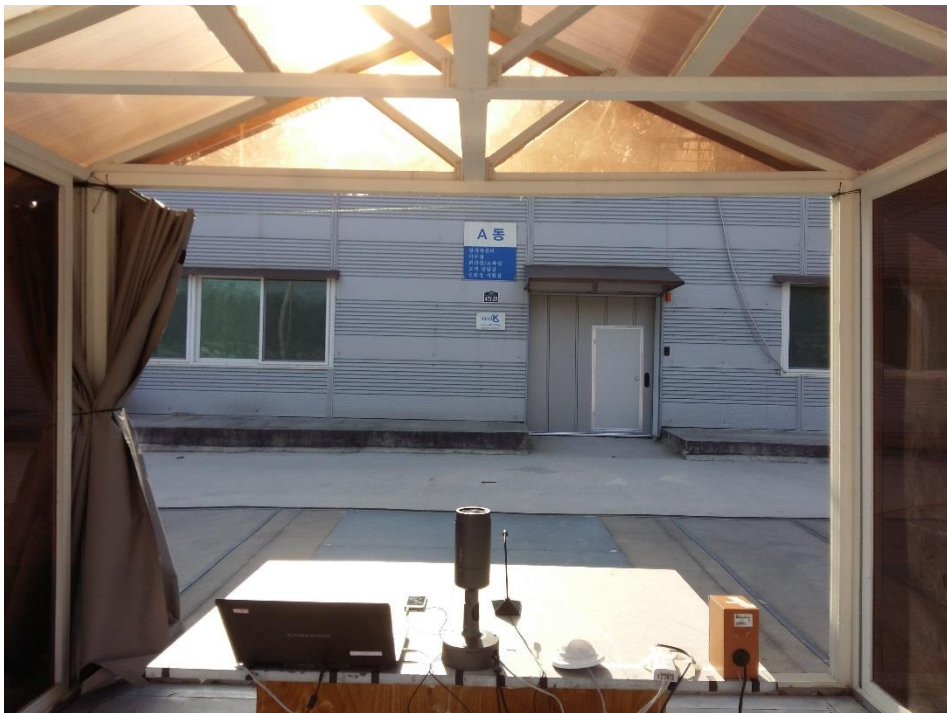
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- DC 12 V Mode



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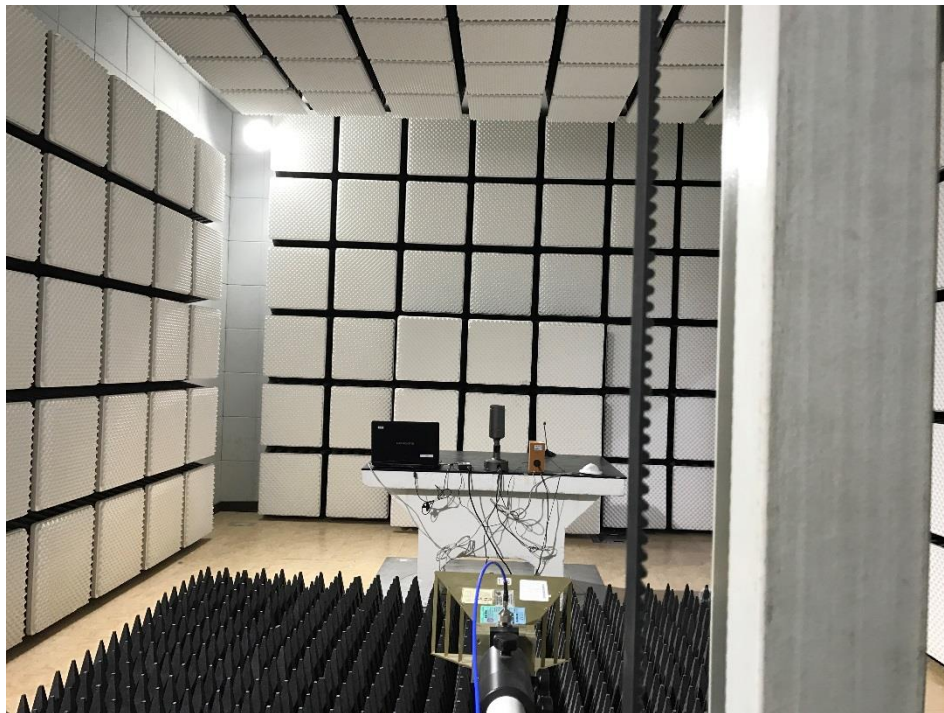
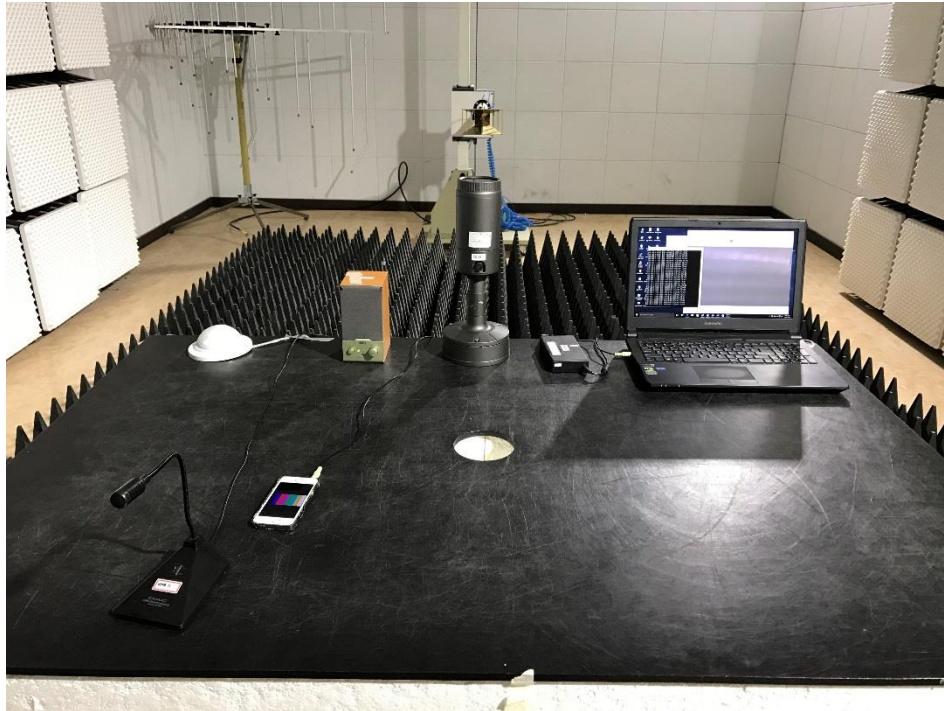
- POE Mode



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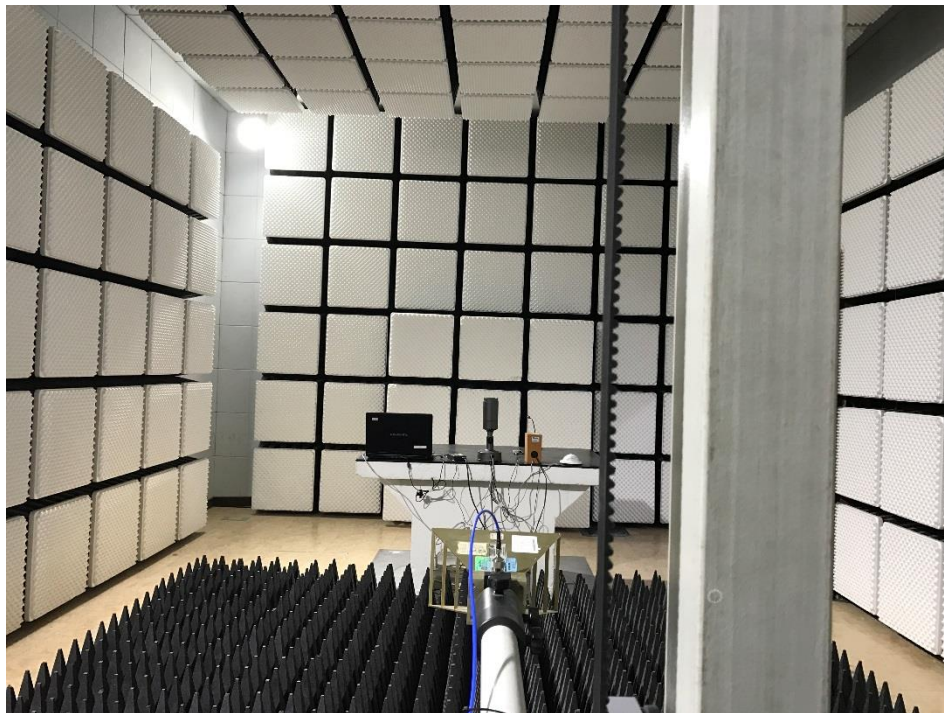
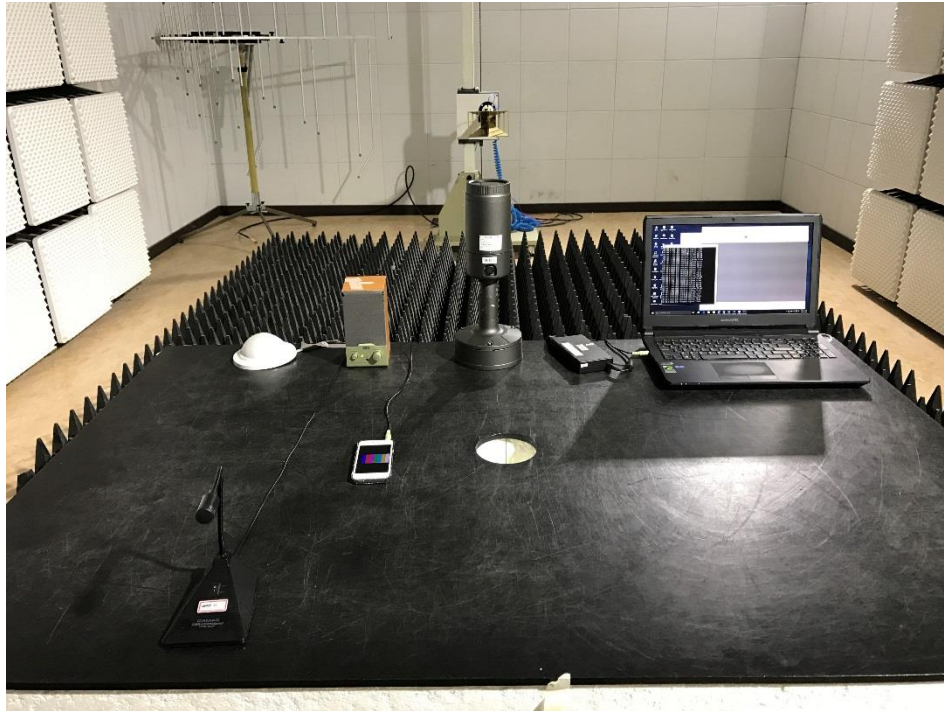
Radiated Electric Field Emissions(Above 1 GHz)

- AC 24 V Mode



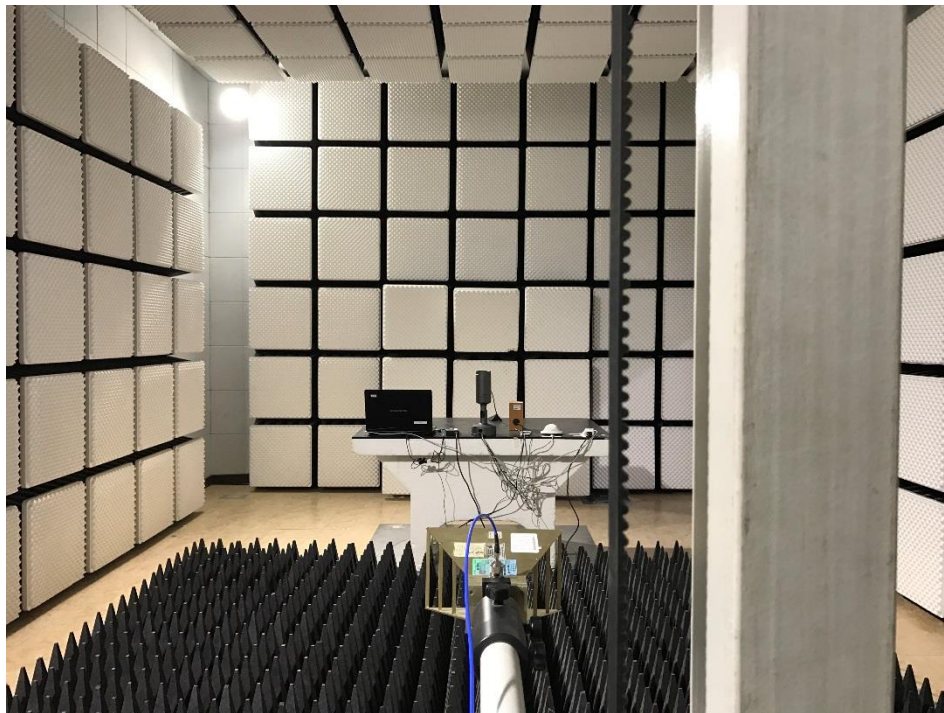
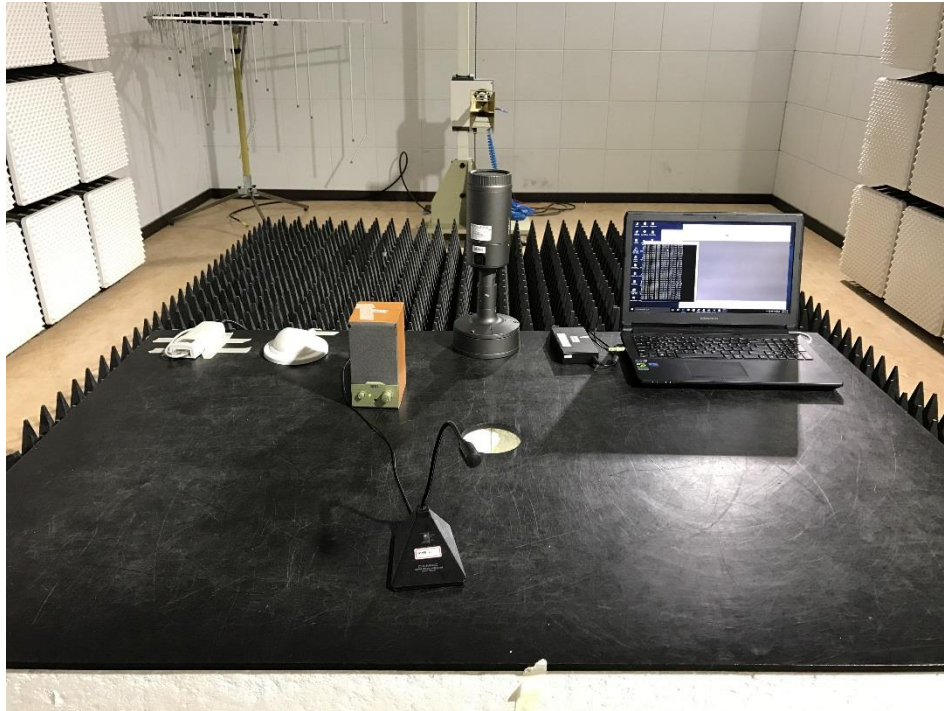
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- DC 12 V Mode



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- POE Mode



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Test report No.:
KES-E1-16T0618-R3
Page (78) of (101)

Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

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Electrostatic Discharge

- AC 24 V Mode



- DC 12 V Mode



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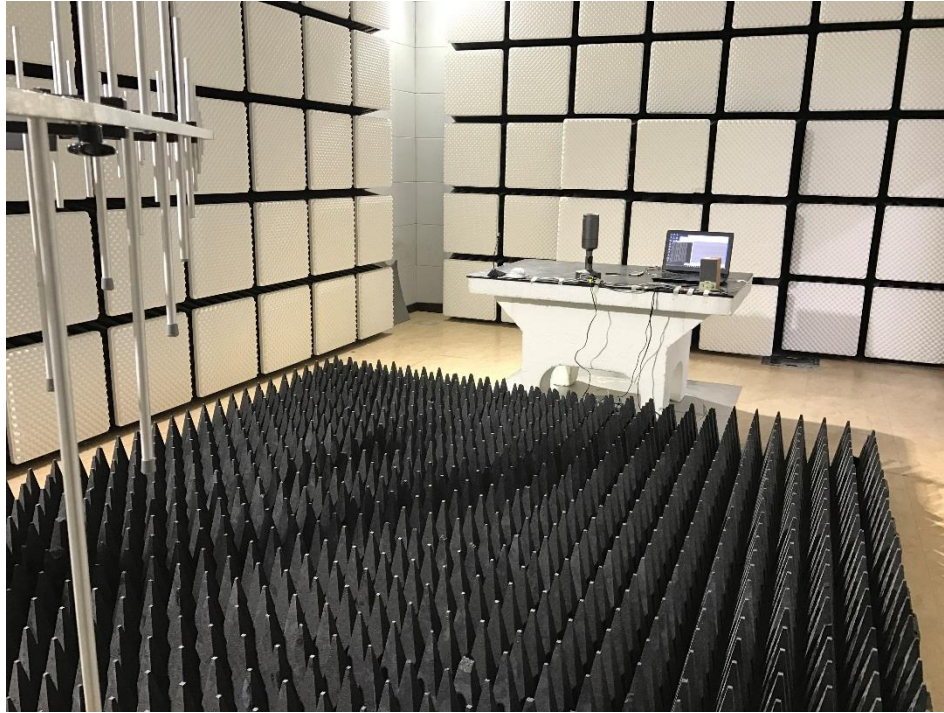
- POE Mode



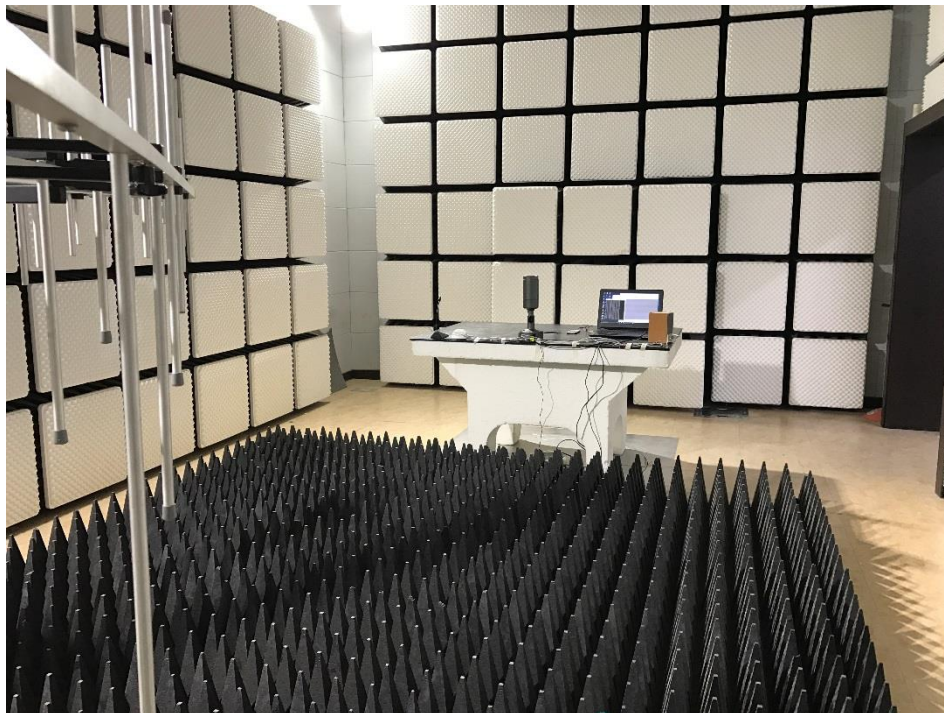
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Radiated Electric Field Immunity

- AC 24 V Mode

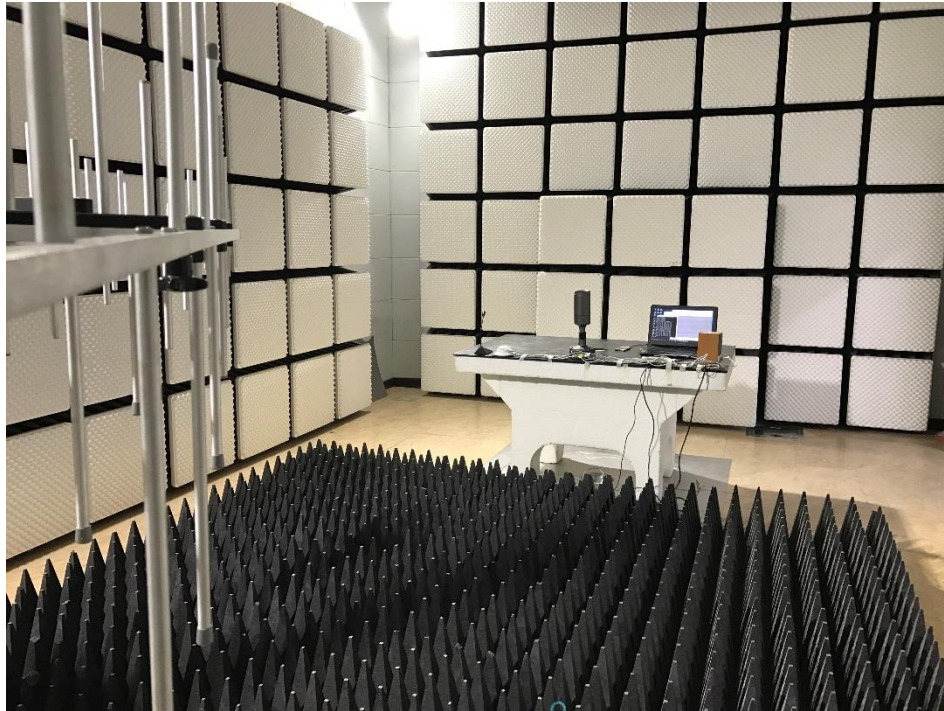


- DC 12 V Mode



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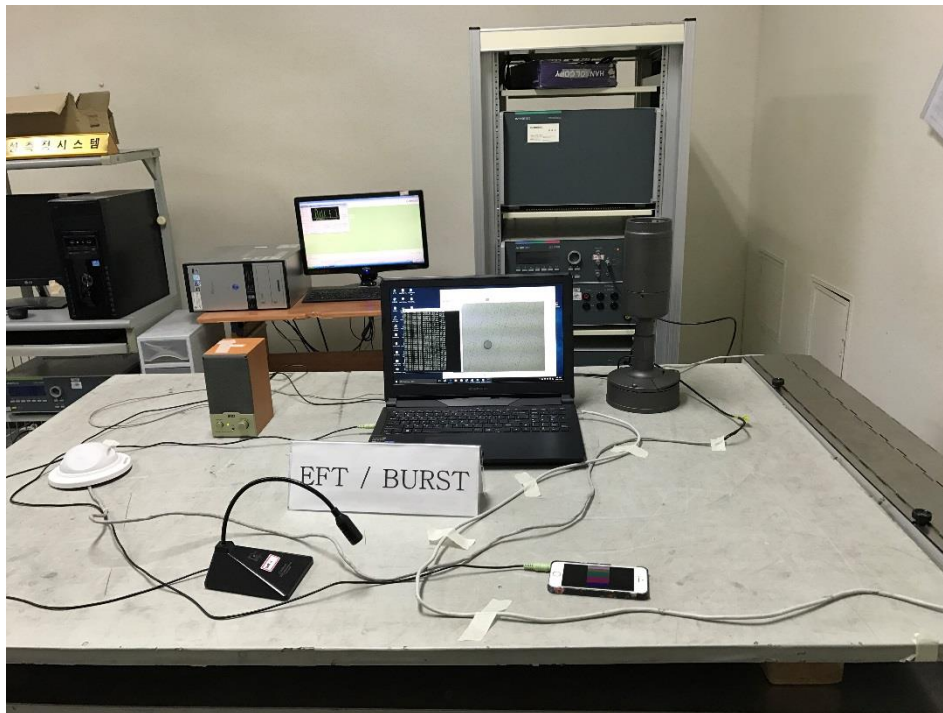
- POE Mode



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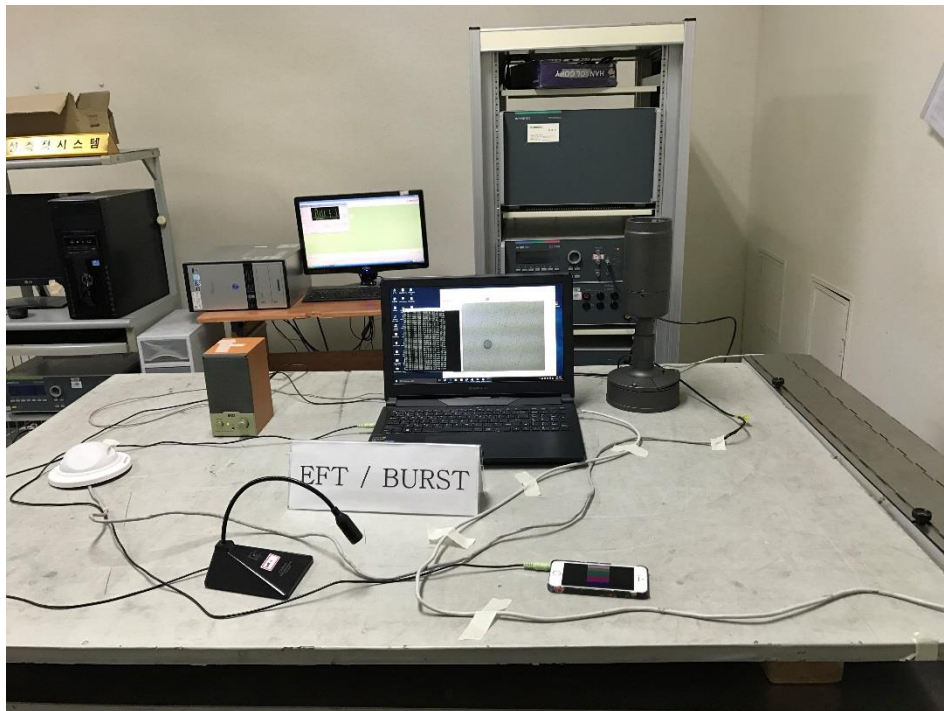
Electrical Fast Transients / Bursts

- AC 24 V Mode



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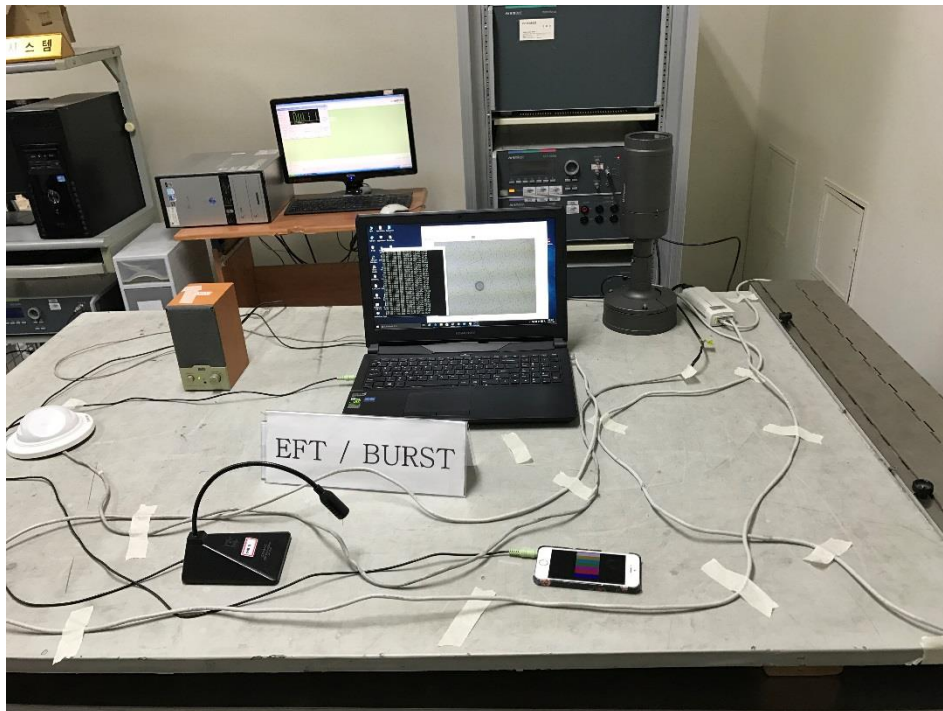
- DC 12 V Mode



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- POE Mode

N/A



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Surge Transients

- AC 24 V Mode



- DC 12 V Mode



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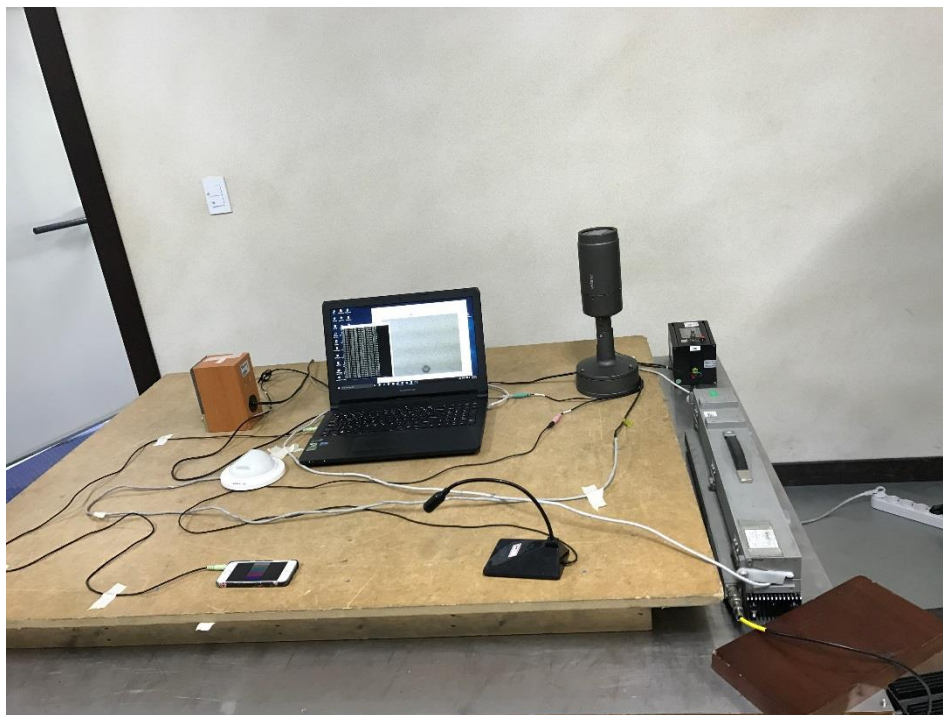
- POE Mode



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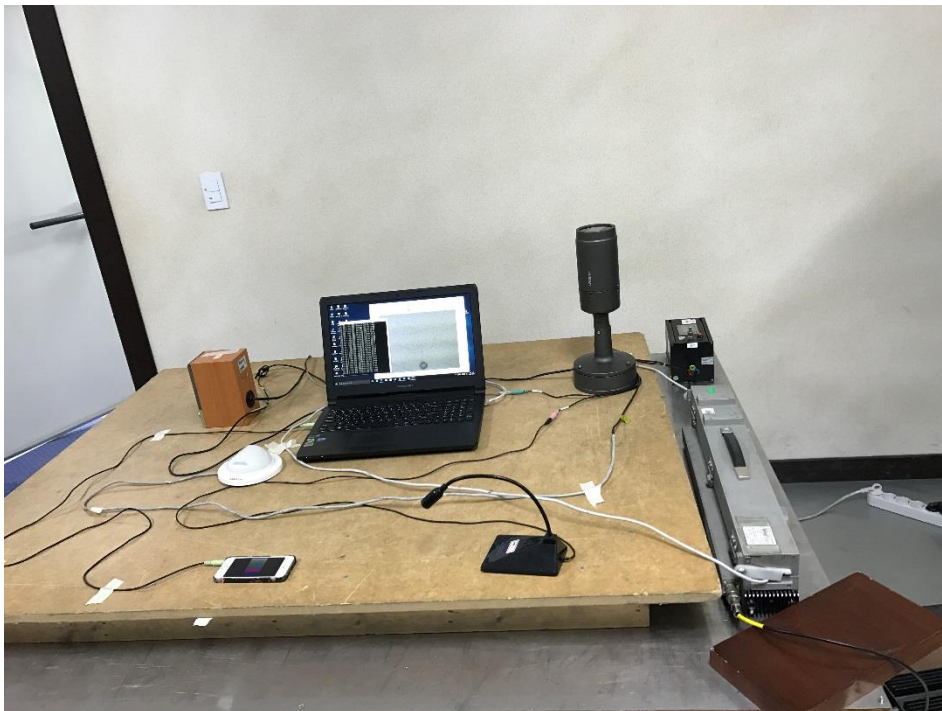
Conducted Disturbance

- AC 24 V Mode



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- DC 12 V Mode



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- POE Mode

N/A



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Voltage Dips and Short Interruptions

- AC 24 V Mode



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

(Internal View)



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EUT Internal View – Main Board

(Top)



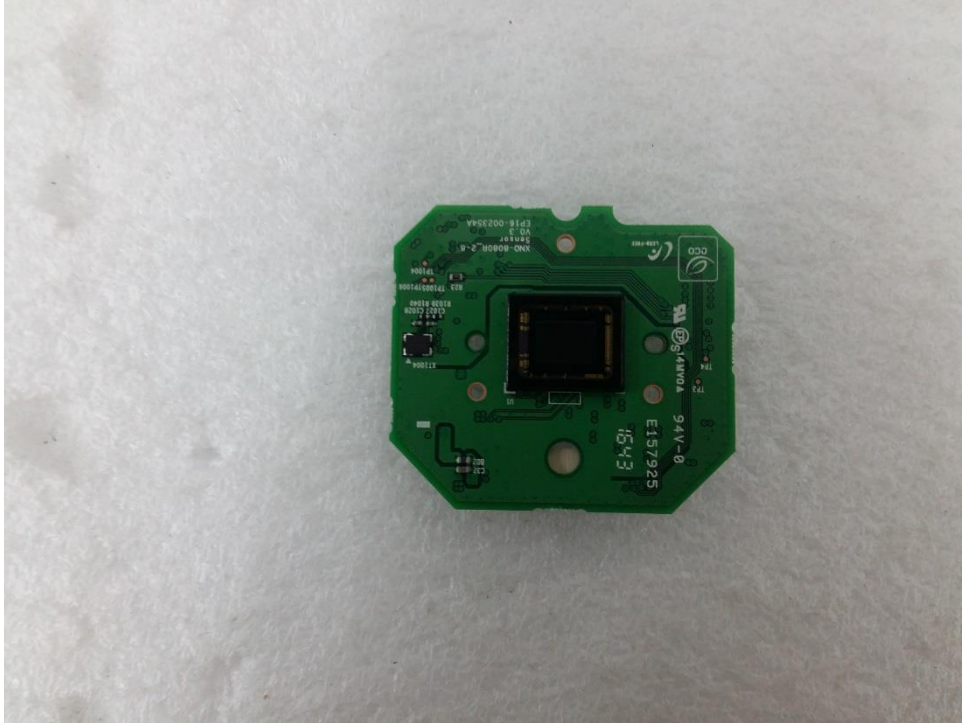
(Bottom)



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EUT Internal View – Lens Board

(Top)



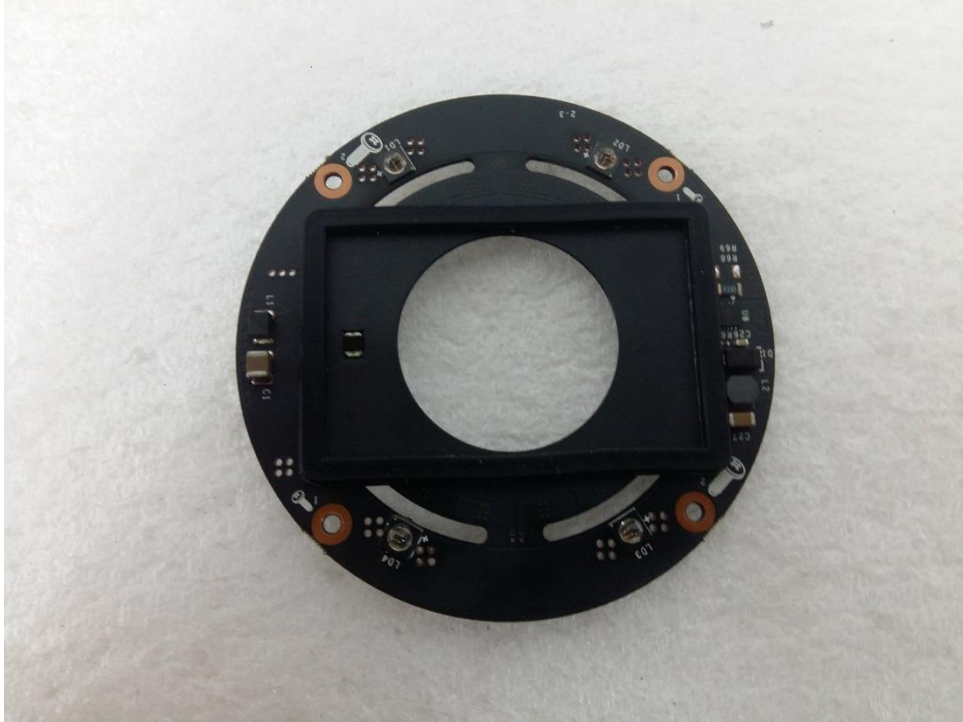
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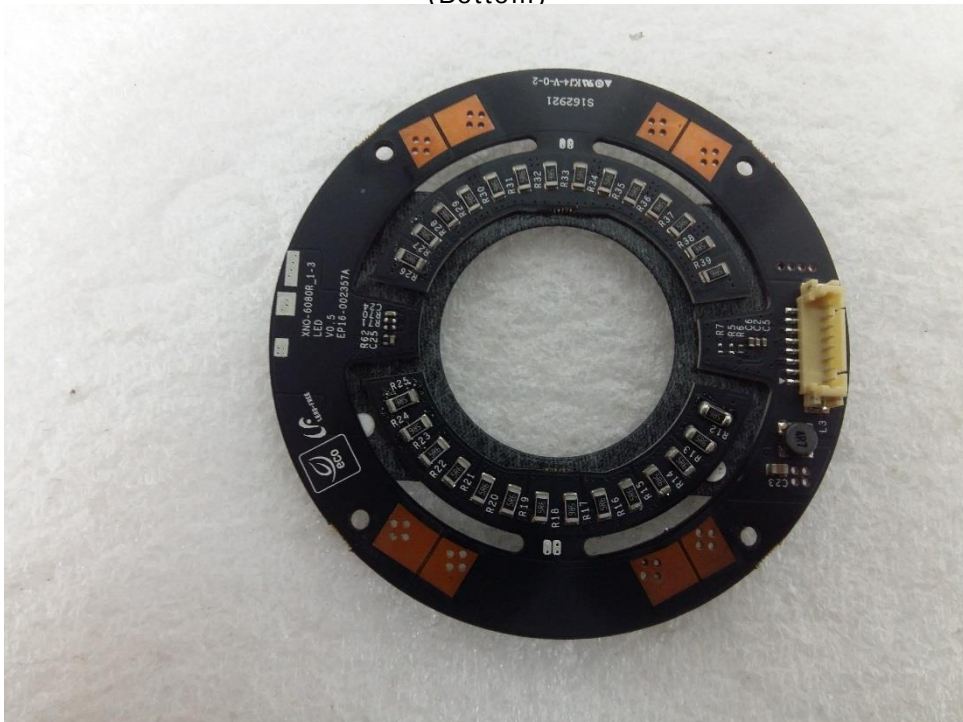
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EUT Internal View – Sub Board 1

(Top)



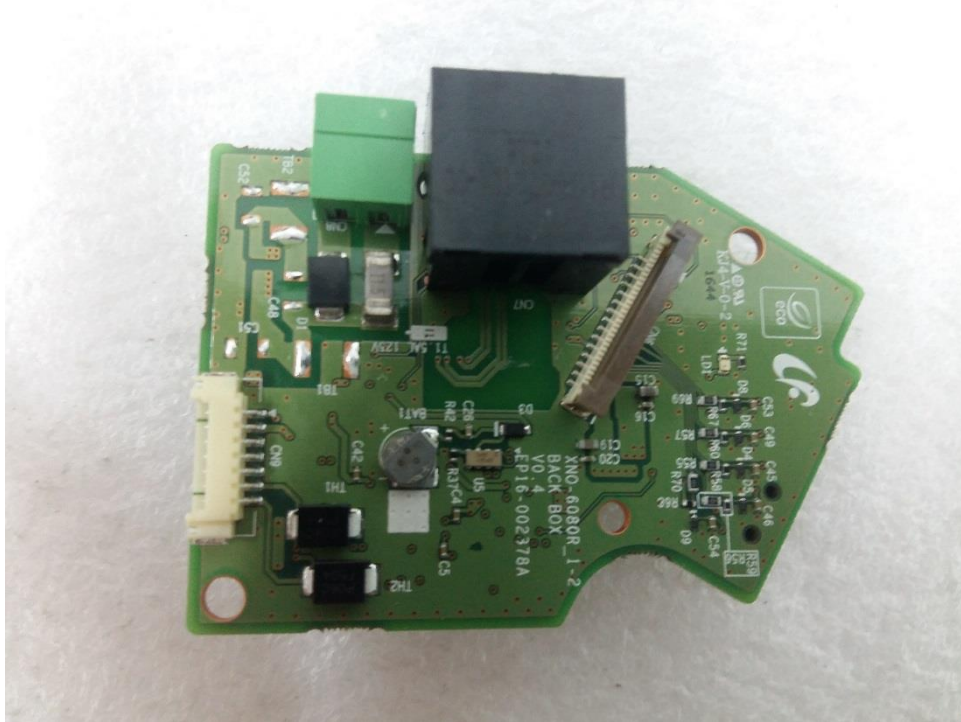
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EUT Internal View – Sub Board 2

(Top)



(Bottom)



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EUT Internal View – Sub Board 3

(Top)



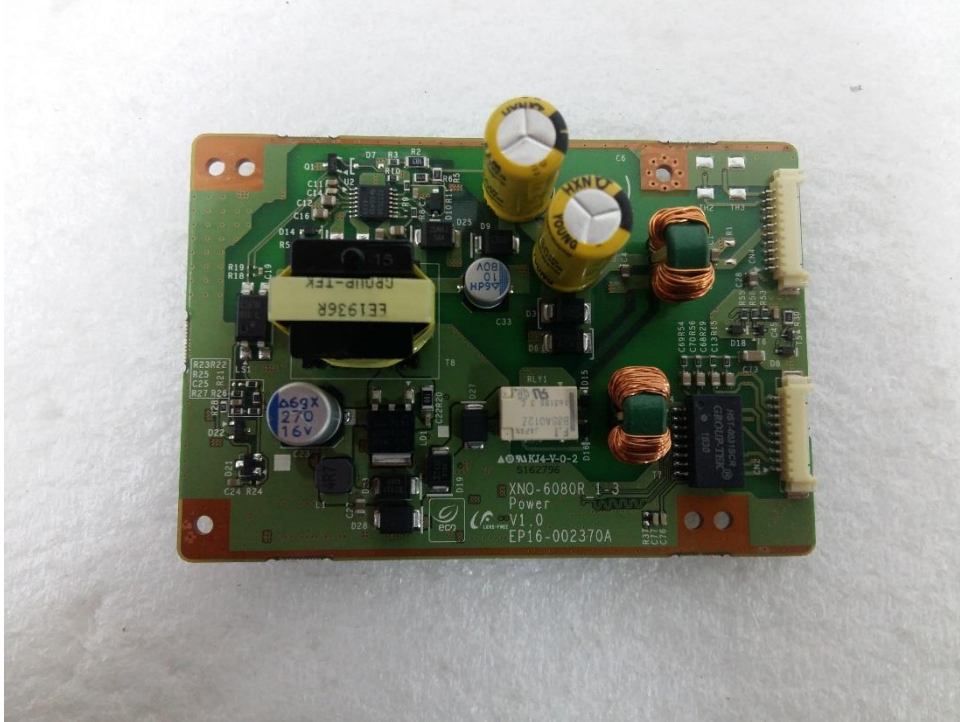
(Bottom)



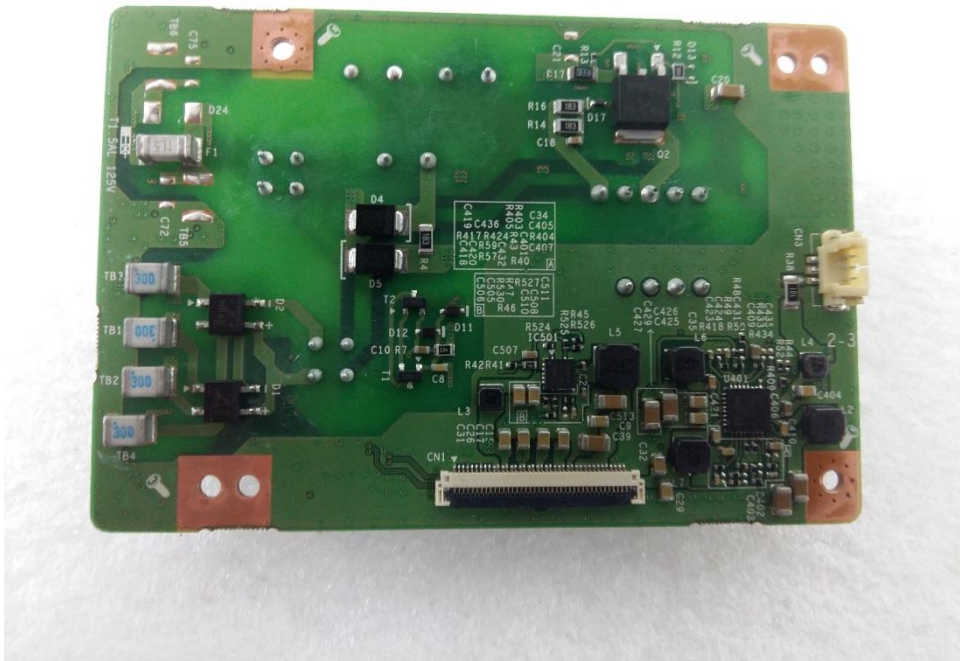
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EUT Internal View – Power Board

(Top)



(Bottom)



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EUT Internal View – Camera Lens

(Top)

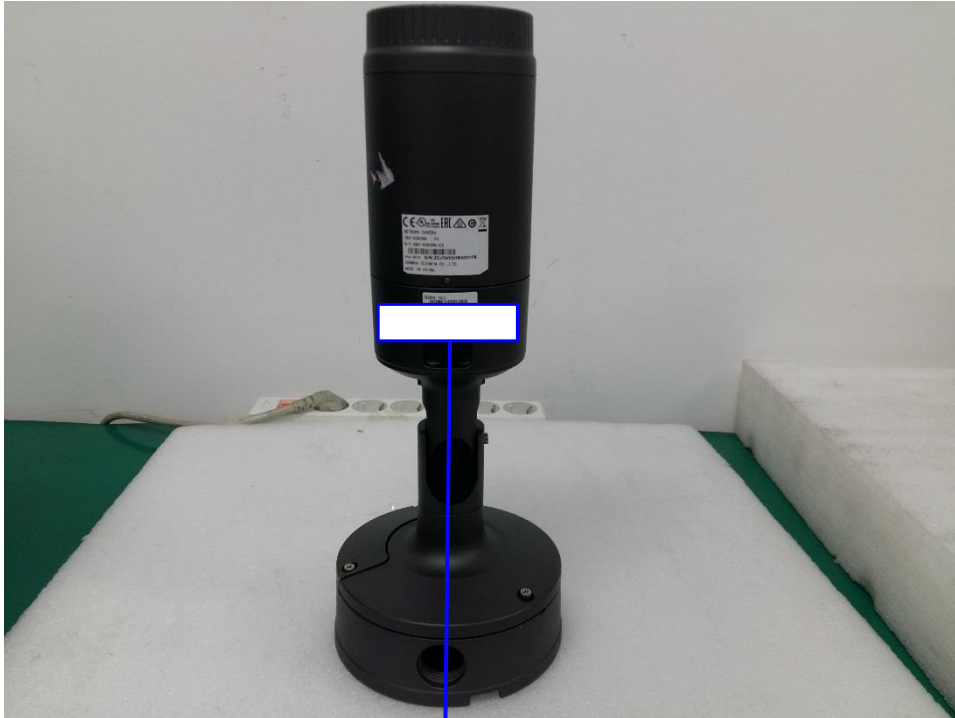


(Bottom)



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Label and Location



NETWORK CAMERA

Model No : XNO-8080R

Manufacturer : HANWHA TECHWIN(TIANJIN)CO., LTD

Made in China

