



EMC TEST REPORT For CE

Test Report No. : KES-E1-18T0099-R1
Date of Issue : May. 15, 2019
Product name : Network Camera
Model/Type No. : XNV-8080RS
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 : Jan. 03, 2018
Test date : Jan. 03, 2018 ~ Jan. 06, 2018
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Il, Lee
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.

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Test report No.:
KES-E1-18T0099-R1
Page (2) of (73)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jan. 17, 2018	KES-E1-18T0099	Issued
May. 15, 2019	KES-E1-18T0099-R1	Re-issue due to manufacturer change

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TABLE OF CONTENTS

1.0	General Product Description	4
1.1	Test Voltage & Frequency	8
1.2	Variant Model Differences.....	8
1.3	Device Modifications.....	8
1.4	Equipment Under Test.....	8
1.5	Support Equipments.....	8
1.6	External I/O Cabling	9
1.7	E.U.T Operating Mode(s).....	10
1.8	Configuration.....	11
1.9	Remarks when standards applied	13
1.10	Calibration Details of Equipment Used for Measurement.....	13
1.11	Test Facility	13
1.12	Laboratory Accreditations and Listings	13
2.0	Test Regulations.....	14
2.1	Conducted Emissions at Mains Power Ports.....	16
2.2	Conducted Emissions at Telecommunication Ports	17
2.3	Radiated Electric Field Emissions(Below 1 GHz)	18
2.4	Radiated Electric Field Emissions(Above 1 GHz).....	19
2.5	Harmonic Current Emissions.....	20
2.6	Voltage Fluctuations and Flicker	21
3.0	Criteria for compliance.....	22
3.1	Electrostatic Discharge.....	24
3.2	Radiated Electric Field Immunity	28
3.3	Electrical Fast Transients/Bursts	31
3.4	Surge Transients.....	34
3.5	Conducted Disturbance	38
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		55
Test Setup Photos and Configuration		58
Conducted Voltage Emissions		58
Conducted Telecommunication Emissions		59
Radiated Electric Field Emissions(Below 1 GHz)		60
Radiated Electric Field Emissions(Above 1 GHz).....		61
Harmonic Current Emissions and Voltage Fluctuations and Flicker		62
Electrostatic Discharge		63
Radiated Electric Field Immunity		63
Electrical Fast Transients/Bursts.....		64
Surge Transients.....		65
Conducted Disturbance.....		66
Voltage Dips and Short Interruptions.....		67
EUT External Photographs		68
EUT Internal Photographs		69



1.0 General Product Description

Main Specifications of E.U.T are:

	XNV-8080RS
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 : 0.07lux(F1.3, 1/30sec) B/W : 0Lux(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, 1280x720, for installation
Lens	
Focal Length (Zoom Ratio)	3.9~9.4mm(2.4x) motorized varifocal
Max. Aperture Ratio	F1.3
Angular Field of View	H: 92.1°, V: 67.2°, D: 119.9° H: 38.7°, V: 29.0°, D: 48.6°
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	0° ~ 354° / 0° ~ 67° / 0° ~ 355°
Operational	
IR Viewable Length	50m(164.04ft)
Camera Title	Off / On (Displayed up to 85 characters) - W/W : English/Numeric/Special Characters - China : English/Numeric/Special/Chinese Characters - Common : Multi-line (Max 5), Color (Grey/Green/Red/Blue/Black/White), Transparency, Auto Scale by Resolution
Day & Night	Auto (ICR) / Color / B/W / External / Schedule
Backlight Compensation	Off / BLC / HLC(Masking/Dimming), WDR
Wide Dynamic Range	120dB
Contrast Enhancement	SSDR (Off / On)
Digital Noise Reduction	SSNR5 (2D+3D Noise Filter) (Off / On)
Digital Image Stabilization	Off / On
Defog	Auto / Manual / Off
Motion Detection	Off/ On(8ea, 8point Polygonal zones), Handover

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Test report No.:
KES-E1-18T0099-R1
Page (5) of (73)

Privacy Masking	Off / On (32ea, polygonal zones) - Color : Grey/Green/Red/Blue/Black/White - Mosaic
Gain Control	Off / Low / Medle / High / Manual
White Balance	ATW / AWC / Manual / Indoor / Outdoor((included Mercury & Sodium)
Contrast	level adjustment
LDC	On/Off (5 levels with Min/Max)
Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
Digital PTZ	24X, 'Digital PTZ(Preset, Group)
Flip / Mirror	Flip : On/Off Mirror : On/Off Hallway view : 90°/270°
Video & Audio Analytics	Tampering, Loitering, Directional Detection, Defocus Detection, Fog Detection, Virtual Line, Enter/Exit, Appear / Disappear, Audio Detection, Face Detection, Motion Detection, Digital Auto Tracking, Sound Classification
Alarm I/O	Input 1ea / Output 1ea
Alarm Triggers	Alarm Input, Motion Detection, Video & Audio 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
Pixel Counter	Support
Network	
Ethernet	RJ-45 (10/100BASE-T)
Video Compression Form	H.265/H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High , Motion JPEG
Resolution	2560 x 1920, 2560 x 1440, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240
Max. Framerate	H.265/H.264 : Max. 30fps at all resolutions Motion JPEG : Max. 30fps
Smart Codec	Manual Mode (area-based : 5EA)
WiseStream II	Support
Video Quality Adjustment	H.264/H.265 : Target Bitrate Level Control MJPEG : Target Bitrate Level Control

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Test report No.:
KES-E1-18T0099-R1
Page (6) of (73)

Bitrate Control Method	H.264/H.265 : CBR or VBR, with WiseStream MJPEG : VBR
Streaming Capability	Multiple Streaming (Up to 10 Profiles)
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
Audio Compression Form	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
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	SD/SDHC/SDXC 2slot (up to 512 GB) - Continuous recording(1'st slot to 2'nd slot) - Motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage) Local PC for Instant Recording
Application Programming	ONVIF Profile S/G SUNAPI(HTTP API) 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 Non-plugin Webviewer Supported Browser: Google Chrome, MS Edge, Mozilla Firefox(Window 64bit only) , Apple Safari 10 (Mac OS X only) Plug-in Webviewer Supported Browser : MS Explore 11, Apple Safari(Mac OS X only)
Central Management Soft	SmartViewer, SSM

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Test report No.:
KES-E1-18T0099-R1
Page (7) of (73)

Environmental	
Operating Temperature / Humidity	-40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH
Storage Temperature / Humidity	-50°C ~ +60°C (-58°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	Max. 11.5W(12VDC), Max. 12.95W(PoE), Max. 14W(24VAC)
Mechanical	
Color / Material	Silver / SUS316L
Dimension (WxHxD)	Ø 162 X H120.5mm (Ø6.38" x 4.74")
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 ☐ 230Vac ☐ 100 Vac ☒ 24 Vac ☒ 12 Vdc ☒ PoE

Frequency ☐ 50 Hz ☐ 60 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	XNV-8080RS	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adaptor	ANY4805C-LT1	10H300002	ANY ELECTRONICS CO., LTD	-
Notebook	X56K	HN11N5151FJ0045W	HanSung Corporation	-
Notebook AC/DC Adaptor	A12-120P1A	F180271552011758	CHICONY POWER TECHNOLOGY CO.,LTD.	-
Micro SD Card1	-	-	SanDisk	-
Micro SD Card2	-	-	SanDisk	-
MIC	CMK-303	-	CAMAC	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
Alarm1	-	-	-	-
Alarm2	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-



1.6 External I/O Cabling

■ AC 24 V Mode, 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
Network Camera (E.U.T)	Micro SD Slot	Micro SD Card1	Micro SD Slot	-	-
Network Camera (E.U.T)	Micro SD Slot	Micro SD Card2	Micro SD Slot	-	-
Network Camera (E.U.T)	3.5 mm	MIC	3.5 mm	1.7	U
Network Camera (E.U.T)	3.5 mm	Speaker	3.5 mm	1.6	U
Network Camera (E.U.T)	2 PIN	Alarm1	2 PIN	3.0	U
Network Camera (E.U.T)	2 PIN	Alarm2	2 PIN	3.0	U

* Unshielded=U, Shielded=S

■ PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Camera (E.U.T)	RJ-45	PoE Adaptor	RJ-45	3.0	U
PoE Adaptor	RJ-45	Notebook	RJ-45	3.0	U
Network Camera (E.U.T)	Micro SD Slot	Micro SD Card1	Micro SD Slot	-	-
Network Camera (E.U.T)	Micro SD Slot	Micro SD Card2	Micro SD Slot	-	-
Network Camera (E.U.T)	3.5 mm	MIC	3.5 mm	1.7	U
Network Camera (E.U.T)	3.5 mm	Speaker	3.5 mm	1.6	U
Network Camera (E.U.T)	2 PIN	Alarm1	2 PIN	3.0	U
Network Camera (E.U.T)	2 PIN	Alarm2	2 PIN	3.0	U

* Unshielded=U, Shielded=S



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Test report No.:
KES-E1-18T0099-R1
Page (10) of (73)

1.7 E.U.T Operating Mode(s)

Test Mode	operating
AC, DC, PoE	E.U.T Monitoring, Ping Test

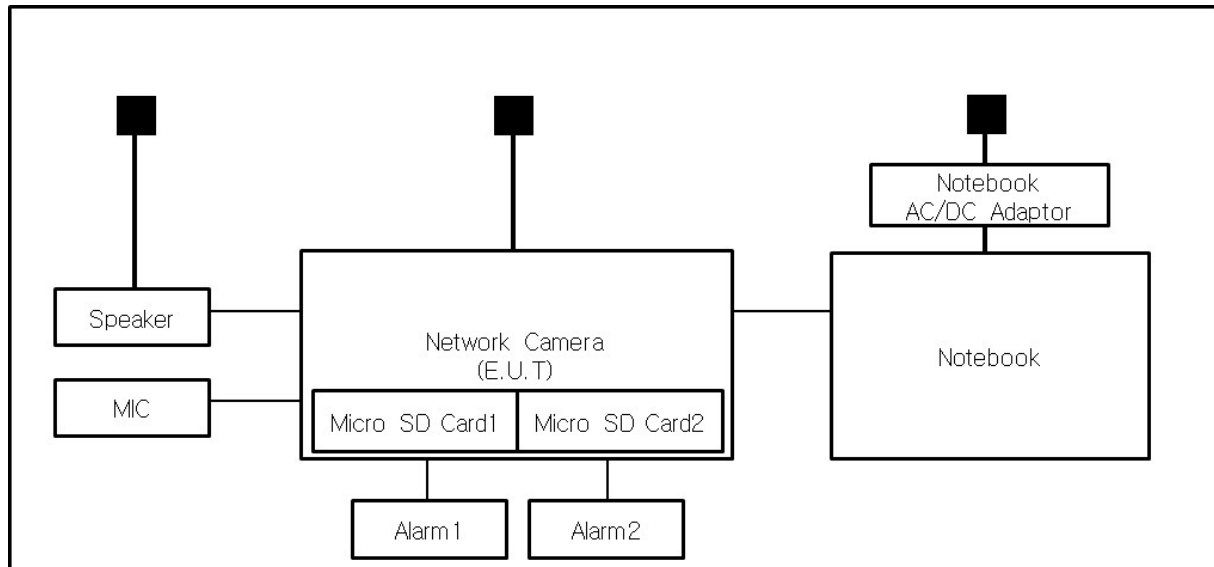
E.U.T Test operating S/W		
Name	Version	Manufacture Company
Webviewer	-	Hanwha Techwin Co., Ltd.

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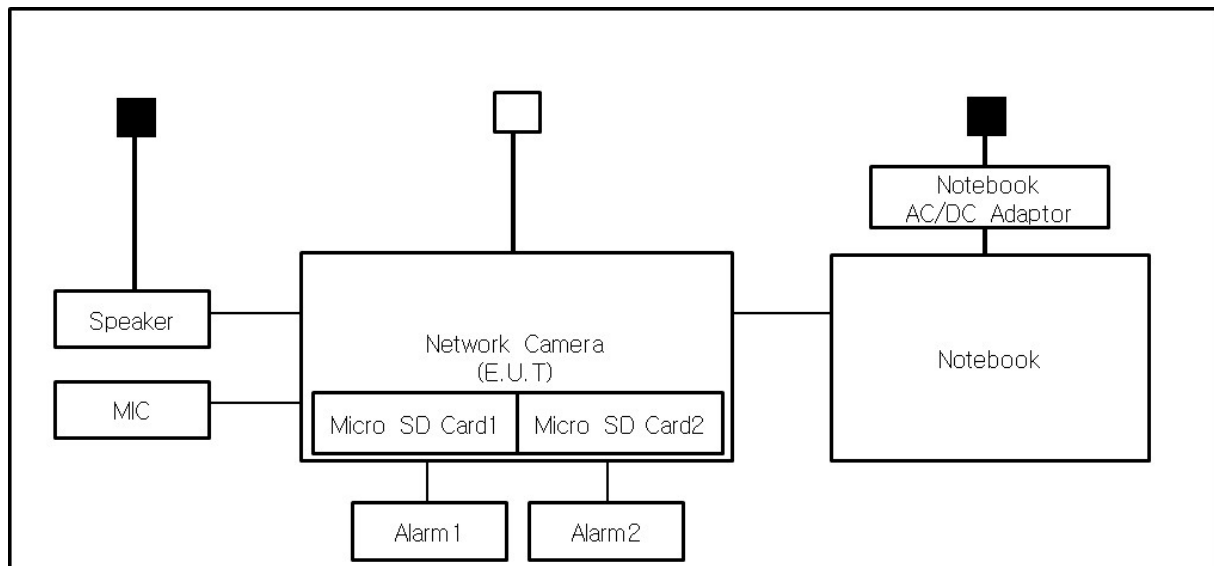
1.8 Configuration

■ AC Main
 □ DC Main

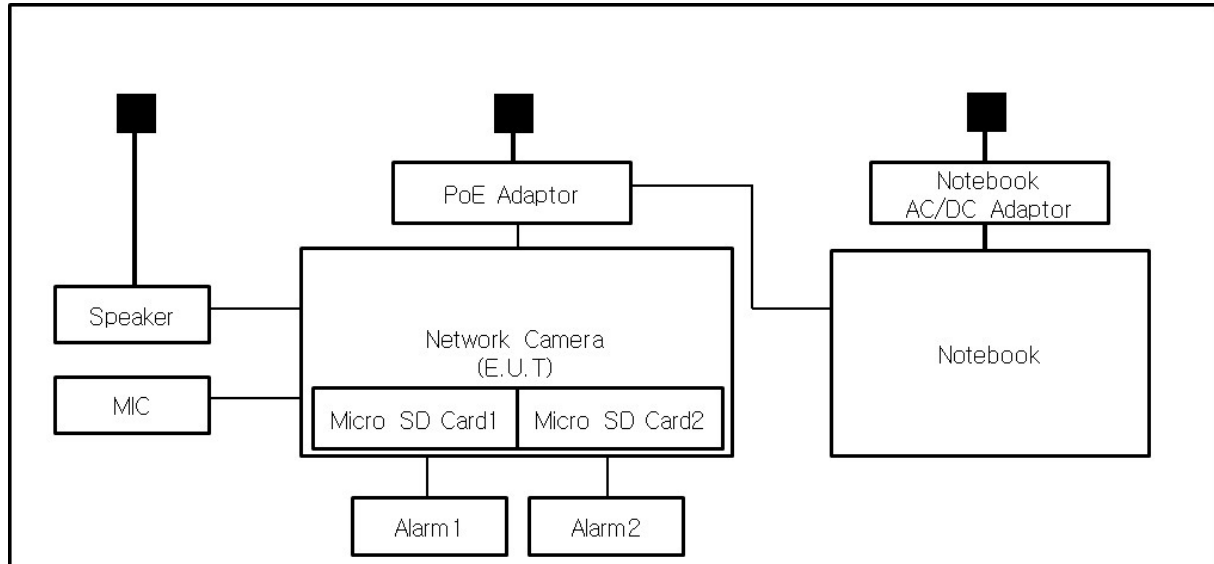
■ AC 24 V Mode



■ DC 12 V Mode



■ PoE 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, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-4308, C-4798, T-2311, G-914
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 17 07 01633 001

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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



-
- | | | |
|---|----------------------------------|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2009 | | |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
| ☐ RE- Directive 2014/53/EU | | |
| ☐ EN 301 489-1 V1.9.2 | | |
| ☐ Equipment for fixed use | | |
| ☐ Equipment for vehicular use | | |
| ☐ Equipment for portable use | | |
| ☐ EN 301 489-3 V1.6.1 | | |
| ☐ EN 301 489-17 V2.2.1 | | |
| ☐ EN 60945:2002 | | |

2.1 Conducted Emissions at Mains Power Ports

Test Date

Jan. 04, 2018

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	04, 27, 2018
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☒	LISN	ENV216	R & S	101786	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	11, 27, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1002	08, 07, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1003	08, 07, 2018

Test Conditions

Temperature: 23,9 °C
Relative Humidity: 42,8 % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Jan. 04, 2018

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	04, 27, 2018
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☒	LISN	ENV216	R & S	101786	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101914	11, 27, 2018
☒	8-WIRE ISN CAT3	CAT3 8158	SCHWARZBECK	8158-0019	01, 11, 2018
☒	8-WIRE ISN CAT5	CAT5 8158	SCHWARZBECK	8158-0030	01, 11, 2018

Test Conditions

Temperature: 23,9 °C
Relative Humidity: 42,8 % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jan. 03, 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, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions

Temperature: 24,1 °C

Relative Humidity: 42,0 % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.

2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jan. 03, 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, 07, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 31, 2018
☐	ATTENUATOR	8491A	HP	32173	03, 24, 2018
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

Test Conditions

Temperature: 23,0 °C
Relative Humidity: 40,7 % 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.

3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:

EN 50130-4:2011 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

Jan. 05, 2018

Test Location

EMS-ESD: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS01Z0454	10, 11, 2018
☒	HCP	-	KES	-	-
☒	VCP	-	KES	-	-

Test Conditions

Temperature: 24,3 °C
Relative Humidity: 42,7 % R.H.
Atmospheric Pressure: 100,9 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 ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	Air ☒ 2 kV ☒ 4 kV ☐ 6 kV ☒ 8 kV ☐ 15 kV	HCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV	VCP ☐ 2 kV ☐ 4 kV ☒ 6 kV ☐ 8 kV ☐ 15 kV
--------------------	---	---	---	---

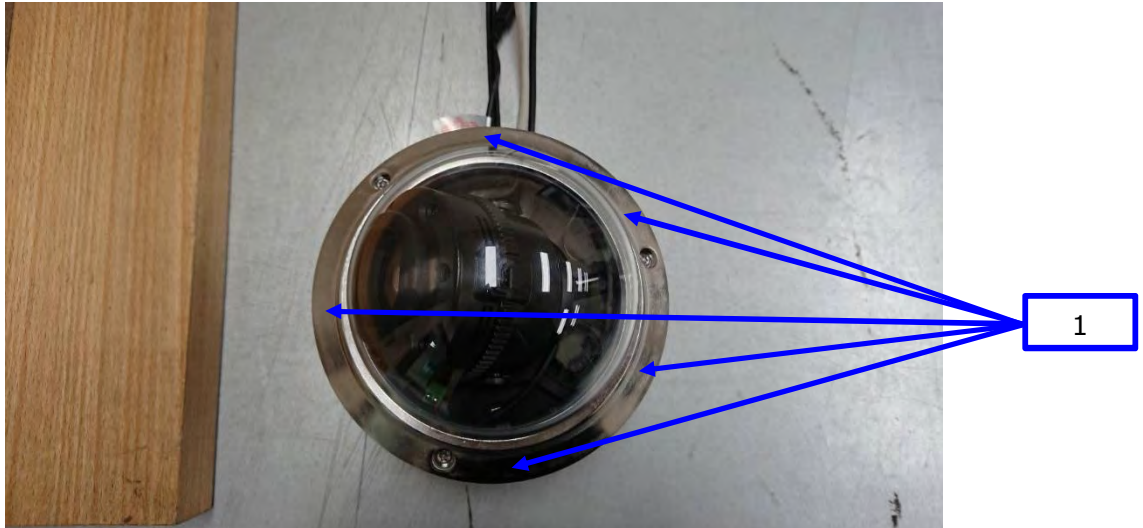
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

Air
Contact





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	-

■ 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	-

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Test report No.:
KES-E1-18T0099-R1
Page (27) of (73)

■ 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	-

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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3.2 Radiated Electric Field Immunity

Reference Standard

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

Test Date

Jan. 06, 2018

Test Location

EMS-RS: ☐ SEMI ANECHOIC CHAMBER #2

☒ SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	R & S	177586	08, 07, 2018
☒	BROADBAND AMPLIFIER	BBA100	R & S	101239	08, 07, 2018
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 07, 2018
☒	POWER METER	NRP2	R & S	103475	08, 07, 2018
☒	AVG POWER SENSOR	NRP-Z91	R & S	102526	08, 07, 2018
☒	AVG POWER SENSOR	NRP-Z91	R & S	102527	08, 07, 2018
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KY TELECOM	KY150001	08, 07, 2018
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2019

Test Conditions

Temperature: 23,9 °C
Relative Humidity: 42,1 % R.H.
Atmospheric Pressure: 101,2 kPa



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



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.

3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Jan. 05, 2018

Test Location

EMS-EFT: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2018
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	11, 27, 2018

Test Conditions

Temperature: 24,3 °C
Relative Humidity: 42,7 % R.H.
Atmospheric Pressure: 100,9 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

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)
RJ-45	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	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)
L - N	Complied	Complied

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	Complied	Complied

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Test report No.:
KES-E1-18T0099-R1
Page (33) of (73)

■ 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)
RJ-45	Complied	Complied
Alarm	Complied	Complied
controller	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.



3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

Test Date

Jan. 05, 2018

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2018
☒	CDN	CNV 508N1	EM TEST	P1610176296	11, 28, 2018
☐	CDN	CNV 504N7.3	EM TEST	P1744207079	12, 18, 2018

Test Conditions

Temperature: 24,3 °C
Relative Humidity: 42,7 % R.H.
Atmospheric Pressure: 100,9 kPa



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

Test Data

■ AC 24 V Mode

☒ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	Complied	Complied

■ DC 12 V Mode

☐ Line to Line – Differential Mode

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

☒ 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)
RJ-45	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	Complied	Complied

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Test report No.:
KES-E1-18T0099-R1
Page (37) of (73)

■ PoE Mode☐ Line to Line – Differential Mode

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

☐ Line to Earth – Common Mode

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

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
RJ-45	Complied	Complied
Alarm 1	Complied	Complied
Alarm 2	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.

3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Jan. 04, 2018

Test Location

EMS-CS: Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.11	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 27, 2018
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 27, 2018
☒	CDN	CDN M016	TESEQ	43694	11, 27, 2018
☐	CDN	CDN M016	TESEQ	43697	11, 27, 2018
☒	CDN	CDN T800	TESEQ	42800	11, 27, 2018
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 28, 2018

Test Conditions

Temperature: 22,9 °C
Relative Humidity: 41,2 % R.H.
Atmospheric Pressure: 101,6 kPa

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 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
RJ-45	CDN T800	Complied
Alarm 1	Clamp	Complied
Alarm 2	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
L - N	CDN (☒ M2, ☐ M3)	Complied

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45	CDN T800	Complied
Alarm 1	Clamp	Complied
Alarm 2	Clamp	Complied

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Test report No.:
KES-E1-18T0099-R1
Page (40) of (73)

■ PoEMode☐ 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
RJ-45	CDN T800	Complied
Alarm 1	Clamp	Complied
Alarm 2	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.



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

Test Date

Jan. 05, 2018

Test Location

EMS-Voltage dip: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	EM TEST	5.4.7	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	11, 27, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	11, 27, 2018

Test Conditions

Temperature: 24,3 °C
Relative Humidity: 42,7 % R.H.
Atmospheric Pressure: 100,9 kPa



Test Specifications & Observations/Remarks

■ AC 24 V Mode

(Test Voltage : AC 230 V)

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 / 5 000	<u>Complied</u>
☒ 30 % dip	☒ 25 / 500	<u>Complied</u>
☒ 60 % dip	☒ 10 / 200	<u>Complied</u>
☒ 100 % dip	☒ 250 / 5 000	<u>Complied</u>

- Voltage variations

☒ Unom + 10 %	☒ 253.0 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

PASS Required Performance Criteria.

*The test has been tested using the AC / AC Adaptor.

APPENDIX A – TEST DATA

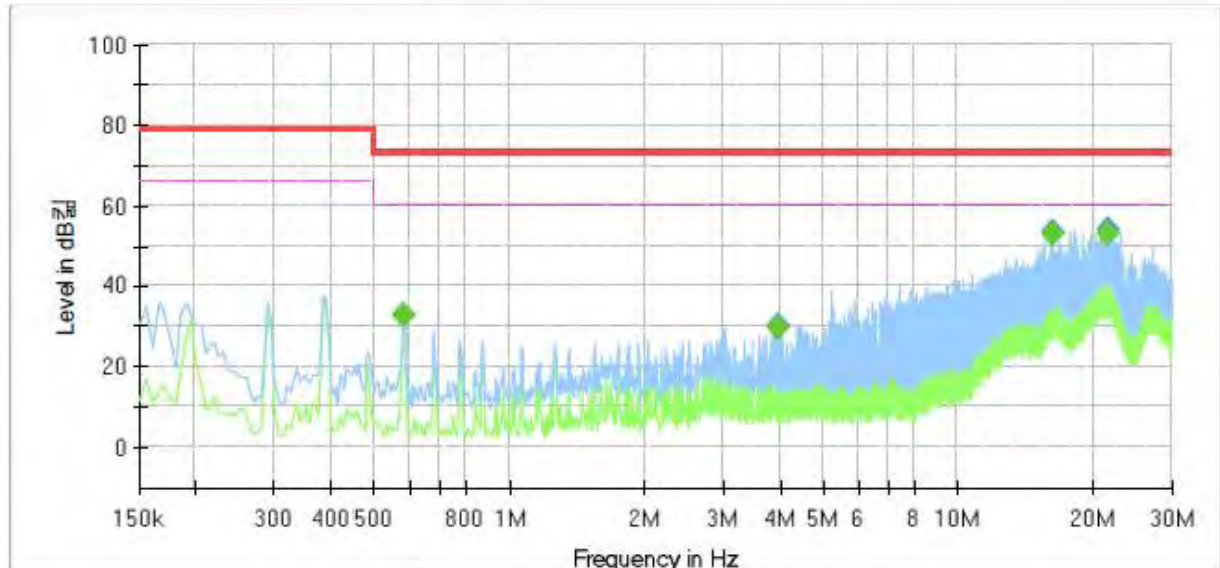
Conducted Emissions at Mains Power Ports

■ AC 24 V Mode

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	XNV-8080RS
Mode	AC
Operator Name:	KES



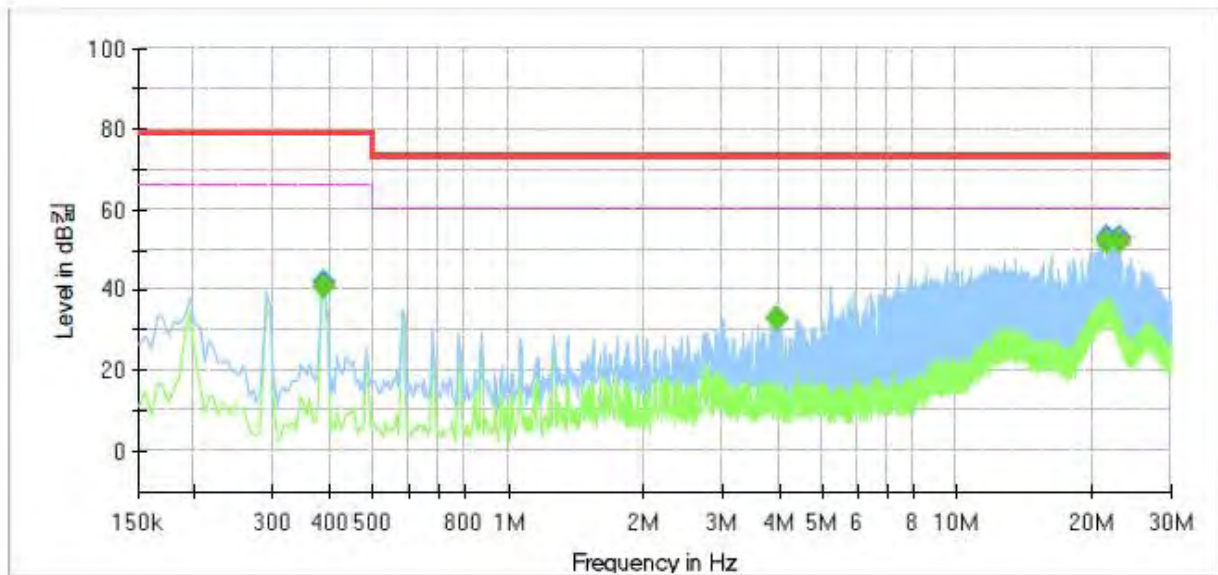
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.580000	---	32.67	60.00	27.33	1000.0	9.000	L1	19.6
0.580000	32.69	---	73.00	40.31	1000.0	9.000	L1	19.6
3.955000	---	29.87	60.00	30.13	1000.0	9.000	L1	19.9
3.955000	29.98	---	73.00	43.02	1000.0	9.000	L1	19.9
16.230000	---	52.70	60.00	7.30	1000.0	9.000	L1	20.1
16.230000	53.59	---	73.00	19.41	1000.0	9.000	L1	20.1
21.665000	---	53.07	60.00	6.93	1000.0	9.000	L1	20.2
21.665000	54.22	---	73.00	18.78	1000.0	9.000	L1	20.2

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XNV-8080RS
Mode: AC
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.390000	---	40.78	66.00	25.22	1000.0	9.000	N	19.5
0.390000	41.62	---	79.00	37.38	1000.0	9.000	N	19.5
3.955000	---	32.69	60.00	27.31	1000.0	9.000	N	19.9
3.955000	32.80	---	73.00	40.20	1000.0	9.000	N	19.9
21.665000	---	51.77	60.00	8.23	1000.0	9.000	N	20.1
21.665000	52.92	---	73.00	20.08	1000.0	9.000	N	20.1
23.130000	---	52.11	60.00	7.89	1000.0	9.000	N	20.0
23.130000	52.73	---	73.00	20.27	1000.0	9.000	N	20.0

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

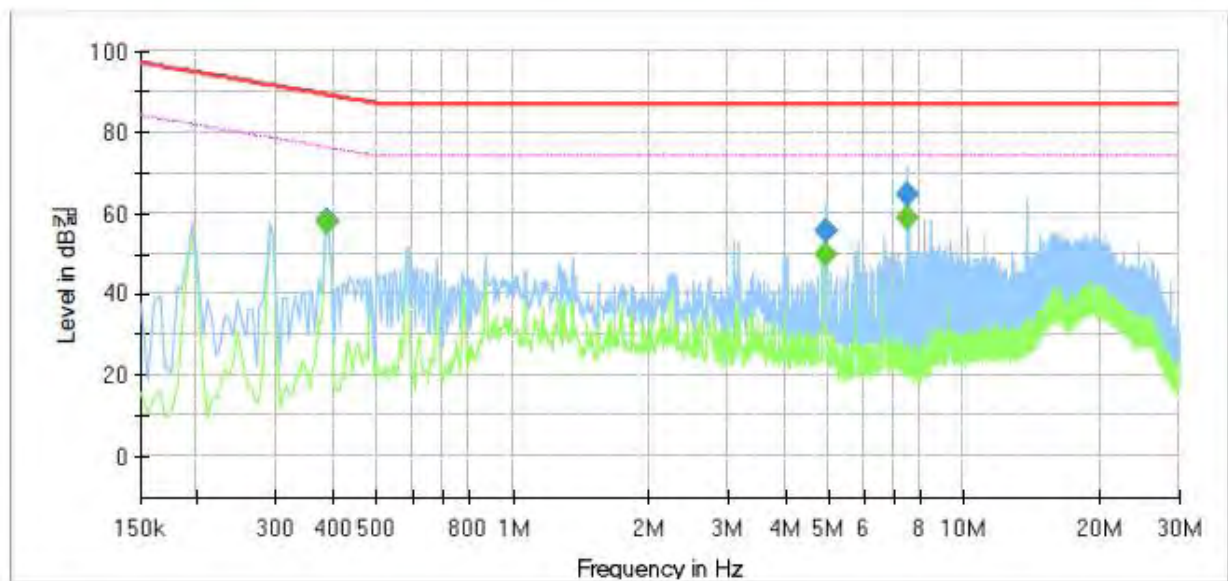
Conducted Emissions at Telecommunication Ports

■ AC 24 V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8080RS
Mode	AC , 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)
0.390000	---	57.50	76.06	18.56	1000.0	9.000	Single Line	19.9
0.390000	58.33	---	89.06	30.73	1000.0	9.000	Single Line	19.9
4.945000	---	50.00	74.00	24.00	1000.0	9.000	Single Line	20.0
4.945000	55.65	---	87.00	31.35	1000.0	9.000	Single Line	20.0
7.500000	---	58.84	74.00	15.16	1000.0	9.000	Single Line	19.8
7.500000	64.78	---	87.00	22.22	1000.0	9.000	Single Line	19.8



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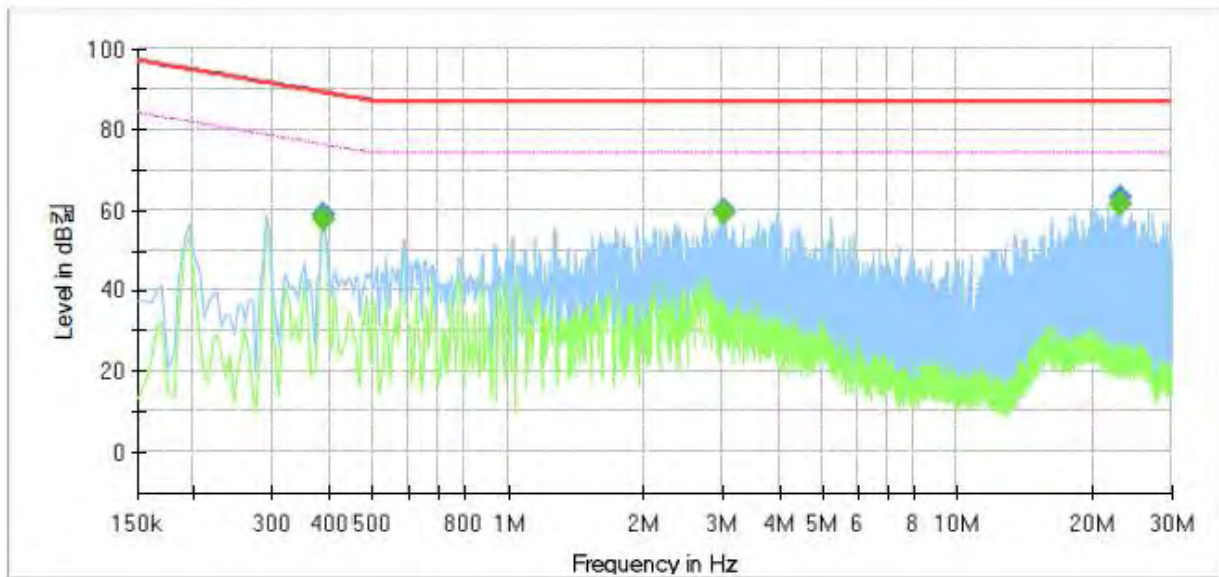
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Test report No.:
KES-E1-18T0099-R1
Page (46) of (73)

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8080RS
Mode	AC , 100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.390000	---	57.78	76.06	18.28	1000.0	9.000	Single Line	19.4
0.390000	58.65	---	89.06	30.41	1000.0	9.000	Single Line	19.4
3.040000	---	59.13	74.00	14.87	1000.0	9.000	Single Line	19.5
3.040000	59.99	---	87.00	27.01	1000.0	9.000	Single Line	19.5
23.130000	---	61.58	74.00	12.42	1000.0	9.000	Single Line	19.4
23.130000	63.23	---	87.00	23.77	1000.0	9.000	Single Line	19.4

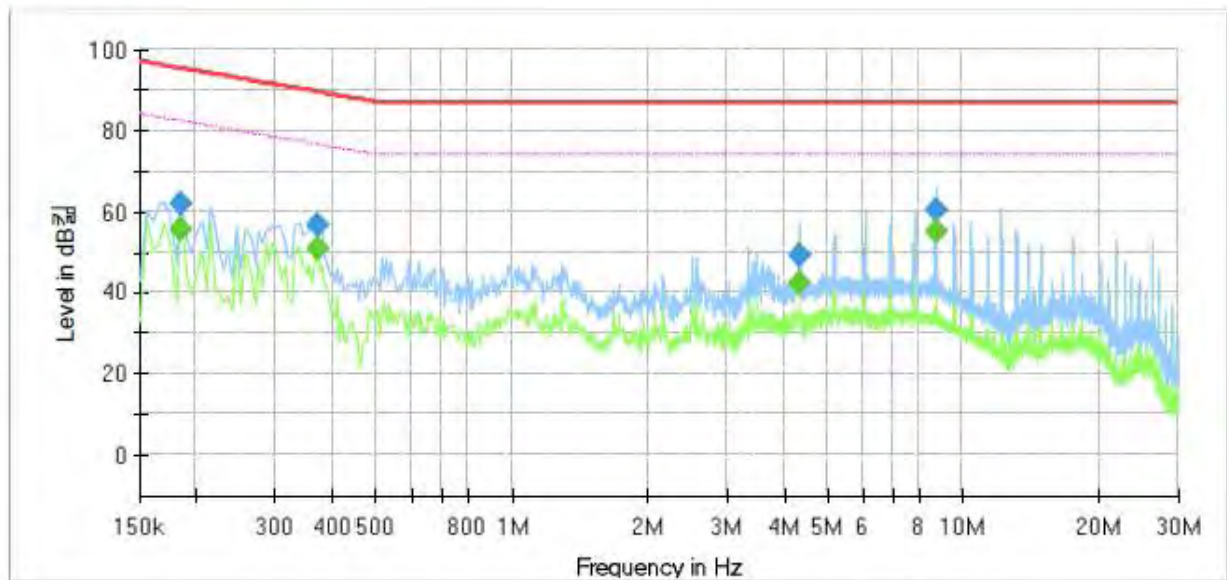
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■ DC 12 V Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8080RS
Mode	DC , 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	---	55.46	82.26	26.80	1000.0	9.000	Single Line	19.9
0.185000	62.05	---	95.26	33.21	1000.0	9.000	Single Line	19.9
0.370000	---	50.66	76.50	25.84	1000.0	9.000	Single Line	19.9
0.370000	56.85	---	89.50	32.65	1000.0	9.000	Single Line	19.9
4.350000	---	42.47	74.00	31.53	1000.0	9.000	Single Line	20.0
4.350000	49.49	---	87.00	37.51	1000.0	9.000	Single Line	20.0
8.750000	---	55.17	74.00	18.83	1000.0	9.000	Single Line	19.8
8.750000	60.52	---	87.00	26.48	1000.0	9.000	Single Line	19.8



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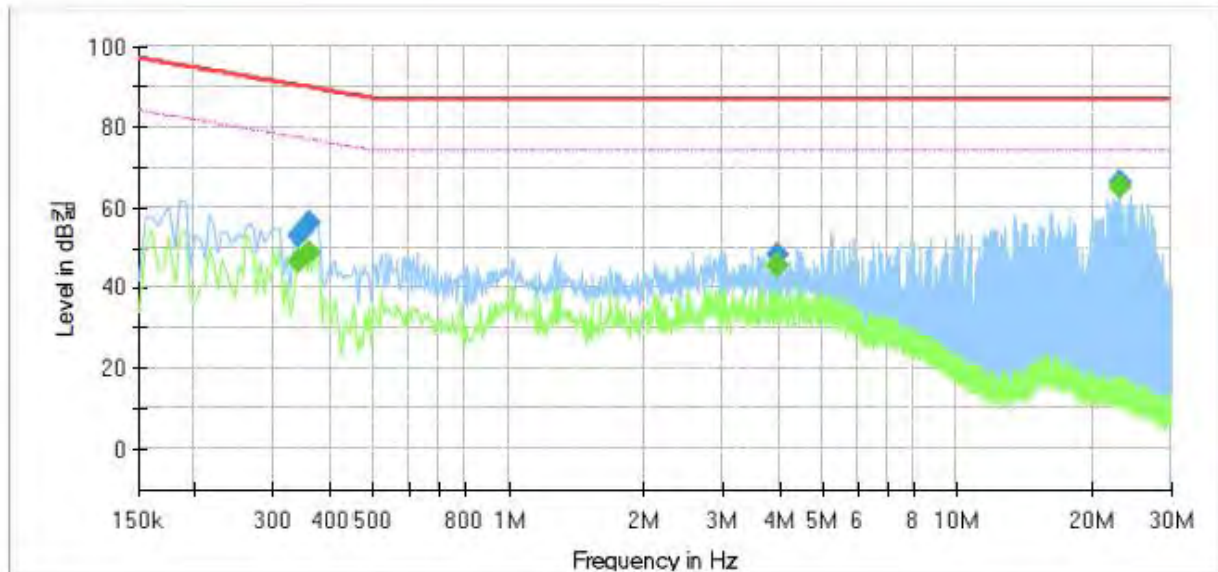
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Test report No.:
KES-E1-18T0099-R1
Page (48) of (73)

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XNV-8080RS
Mode: DC, 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)
0.340000	---	46.80	77.20	30.40	1000.0	9.000	Single Line	19.4
0.340000	52.73	---	90.20	37.47	1000.0	9.000	Single Line	19.4
0.360000	---	48.90	76.73	27.83	1000.0	9.000	Single Line	19.4
0.360000	56.36	---	89.73	33.37	1000.0	9.000	Single Line	19.4
3.955000	---	45.53	74.00	28.47	1000.0	9.000	Single Line	19.5
3.955000	48.06	---	87.00	38.94	1000.0	9.000	Single Line	19.5
23.130000	---	65.19	74.00	8.81	1000.0	9.000	Single Line	19.4
23.130000	65.98	---	87.00	21.02	1000.0	9.000	Single Line	19.4

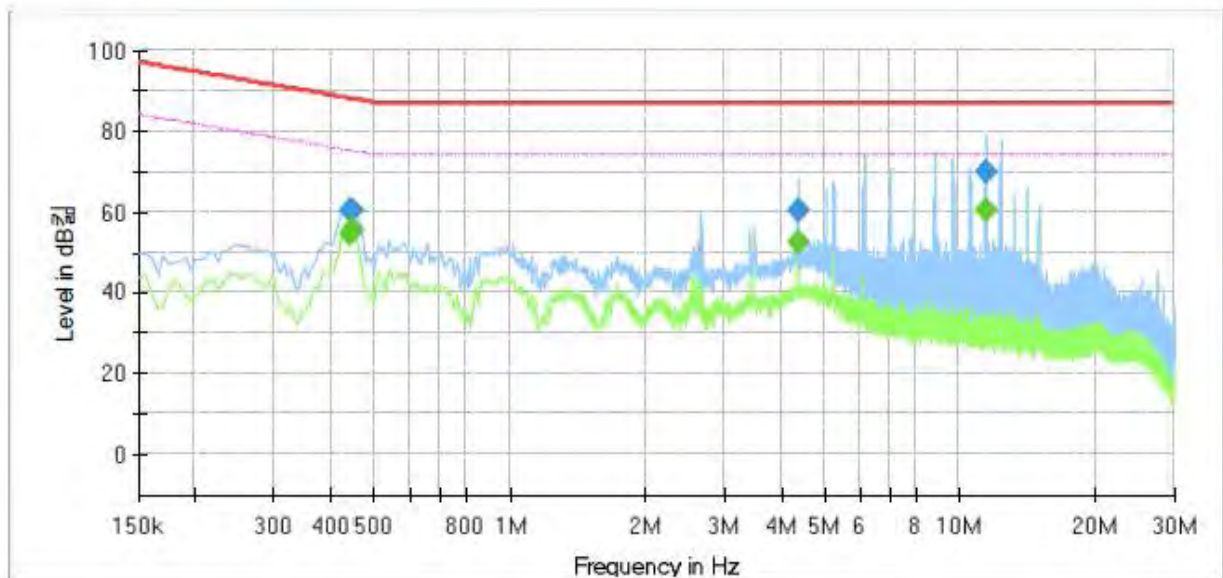
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■ PoE Mode

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8080RS
Mode	POE , 10 Mbps
Operator Name:	KES



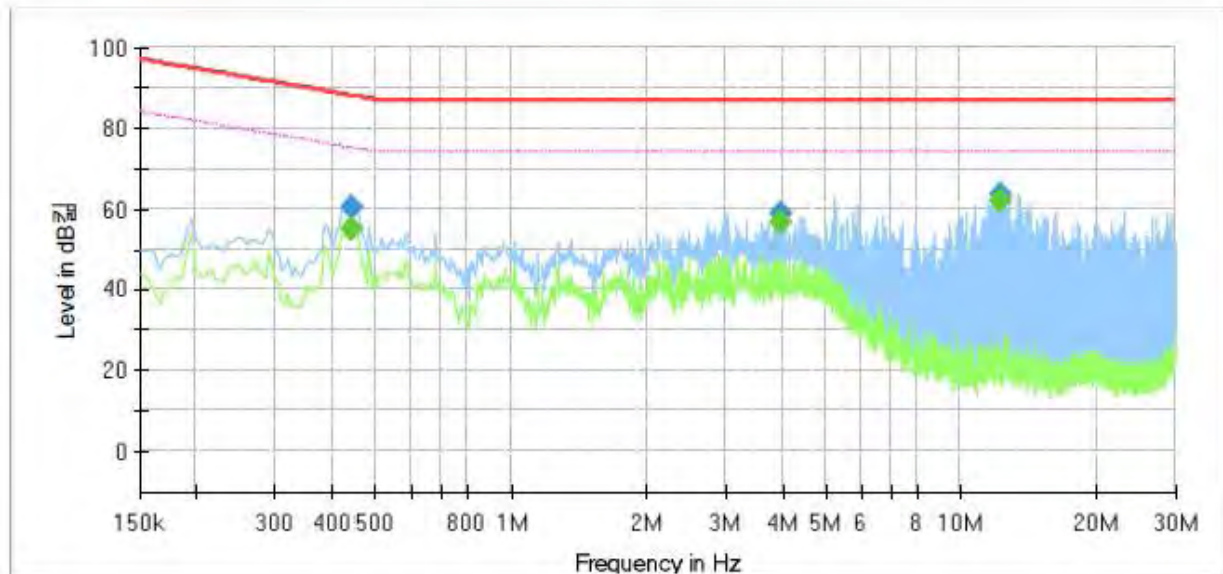
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.440000	---	54.76	75.06	20.30	1000.0	9.000	Single Line	19.9
0.440000	60.15	---	88.06	27.91	1000.0	9.000	Single Line	19.9
0.445000	---	55.42	74.97	19.55	1000.0	9.000	Single Line	19.9
0.445000	60.37	---	87.97	27.60	1000.0	9.000	Single Line	19.9
4.400000	---	52.61	74.00	21.39	1000.0	9.000	Single Line	20.0
4.400000	60.56	---	87.00	26.44	1000.0	9.000	Single Line	20.0
11.415000	---	60.44	74.00	13.56	1000.0	9.000	Single Line	19.8
11.415000	70.05	---	87.00	16.95	1000.0	9.000	Single Line	19.8

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XNV-8080RS
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)
0.440000	---	55.23	75.06	19.83	1000.0	9.000	Single Line	19.4
0.440000	60.42	---	88.06	27.64	1000.0	9.000	Single Line	19.4
3.955000	---	56.86	74.00	17.14	1000.0	9.000	Single Line	19.5
3.955000	58.84	---	87.00	28.16	1000.0	9.000	Single Line	19.5
12.200000	---	61.81	74.00	12.19	1000.0	9.000	Single Line	19.3
12.200000	63.38	---	87.00	23.62	1000.0	9.000	Single Line	19.3

◆ 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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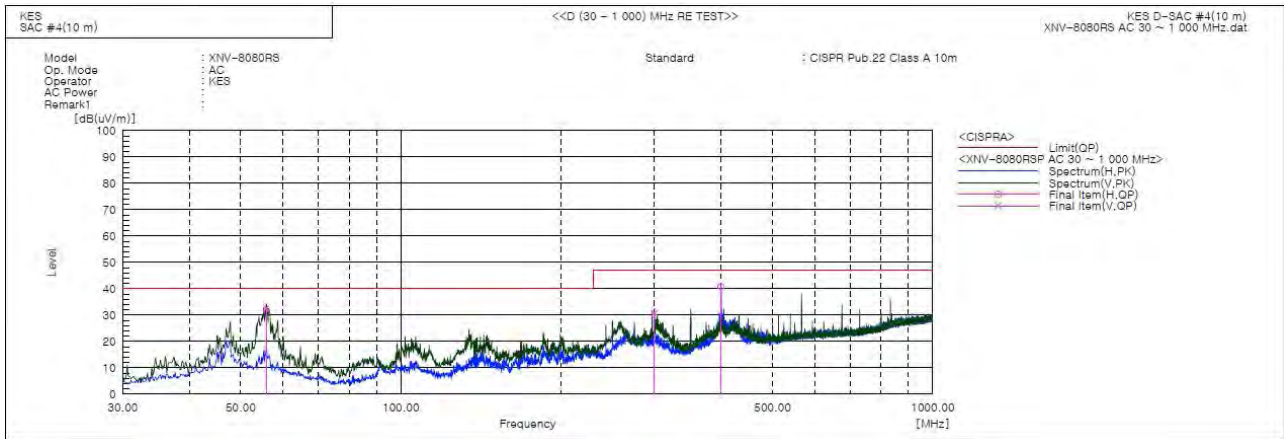
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KES-E1-18T0099-R1

Page (51) of (73)

Radiated Electric Field Emissions(Below 1 GHz)

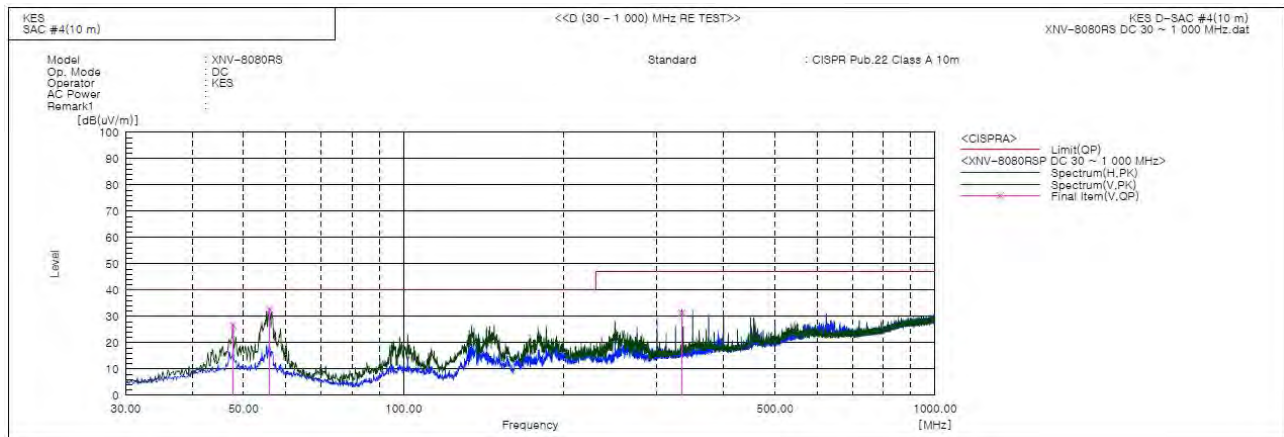
■ AC 24 V Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	55.886	V	60.9	-28.2	32.7	40.0	7.3	100.0	132.0	
2	300.018	V	54.6	-23.9	30.7	47.0	16.3	100.0	16.0	
3	399.843	H	61.2	-20.4	40.8	47.0	6.2	382.0	116.0	

■ DC 14 V Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	47.812	V	54.4	-27.9	26.5	40.0	13.5	290.0	229.0	
2	56.014	V	60.8	-28.3	32.5	40.0	7.5	101.0	103.0	
3	334.116	V	54.2	-22.8	31.4	47.0	15.6	102.0	158.0	

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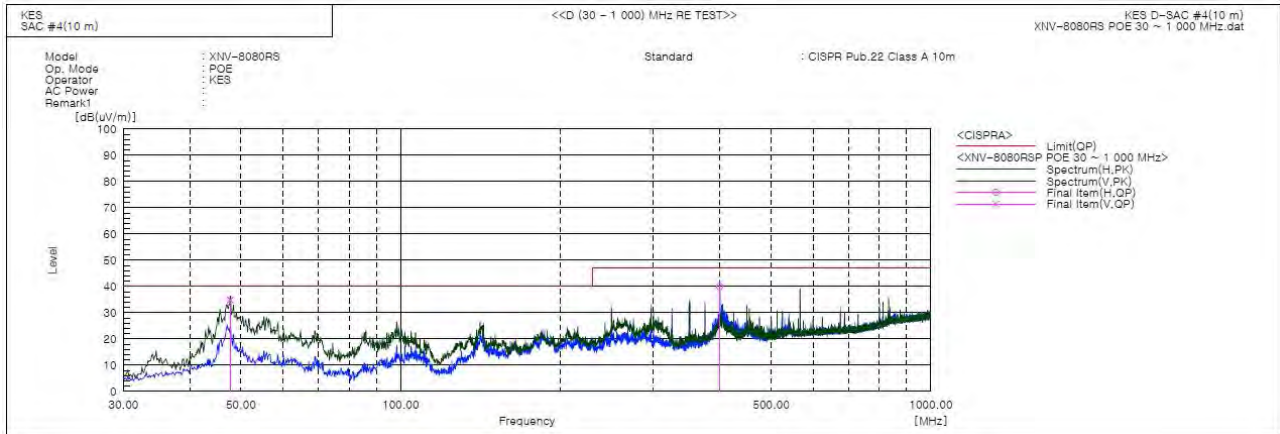


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KES-E1-18T0099-R1
Page (52) of (73)

■ PoE Mode



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	47.714	V	62.8	-27.9	34.9	40.0	5.1	100.0	133.0	
2	399.857	H	60.4	-20.4	40.0	47.0	7.0	382.0	182.0	

◆ Calculation – SEMI ANECHOIC CHAMBER #4(10 m)

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

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

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

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



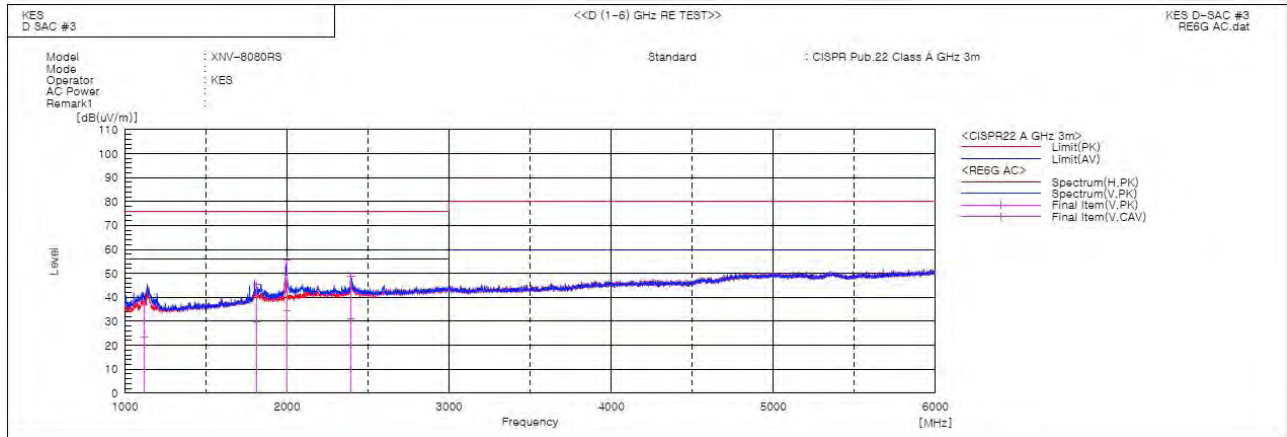
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Page (53) of (73)

Radiated Electric Field Emissions(Above 1 GHz)

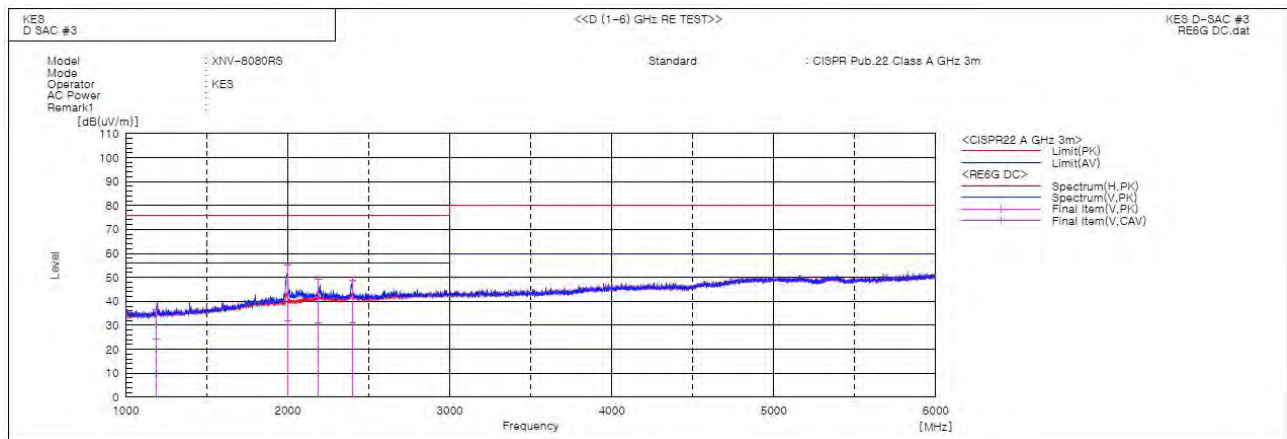
■ AC 24 V Mode



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	1121.194	V	46.1	32.7	-9.1	37.0	23.6	76.0	56.0	39.0	32.4	100.0	204.5	
2	1814.207	V	48.5	33.0	-3.1	45.4	29.9	76.0	56.0	30.6	26.1	100.0	202.3	
3	1998.729	V	57.2	36.2	-1.7	55.5	34.5	76.0	56.0	20.5	21.5	100.0	346.5	
4	2396.021	V	48.6	30.8	0.2	48.8	31.0	76.0	56.0	27.2	25.0	100.0	144.7	

■ DC 14 V 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	1186.912	V	45.4	32.8	-8.6	36.8	24.2	76.0	56.0	39.2	31.8	100.0	219.5	
2	1999.699	V	56.7	33.7	-1.7	55.0	32.0	76.0	56.0	21.0	24.0	100.0	2.5	
3	2190.682	V	49.7	31.7	-0.6	49.1	31.1	76.0	56.0	26.9	24.9	100.0	149.9	
4	2399.310	V	48.5	30.9	0.2	48.7	31.1	76.0	56.0	27.3	24.9	100.0	8.0	

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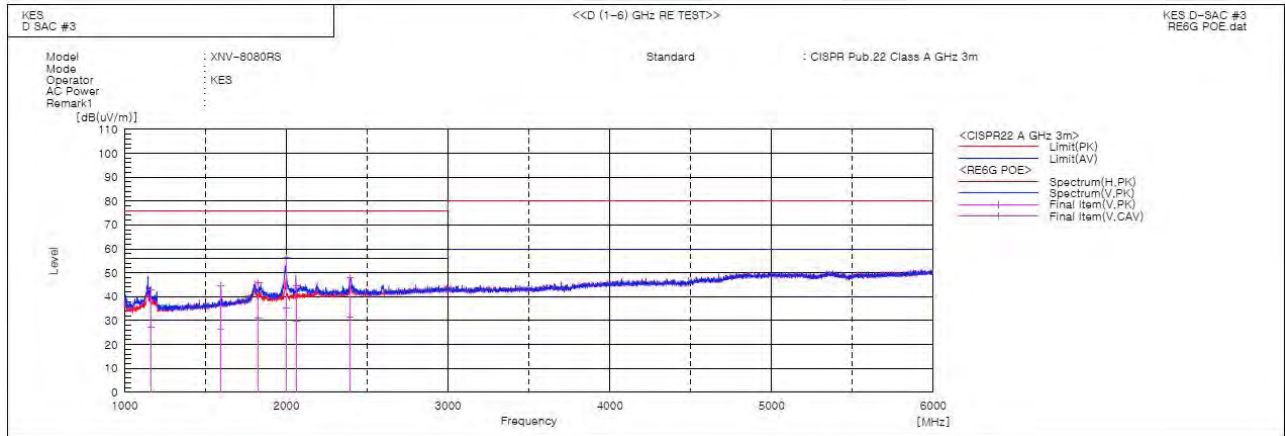


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Page (54) of (73)

■ PoE 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	1163.866	V	51.8	36.2	-8.8	43.0	27.4	76.0	56.0	33.0	28.6	100.0	28.0	
2	1593.711	V	49.8	31.7	-5.2	44.6	26.5	76.0	56.0	31.4	29.5	100.0	350.2	
3	1827.496	V	48.9	33.9	-3.0	45.9	30.9	76.0	56.0	30.1	25.1	100.0	130.3	
4	1999.469	V	58.1	36.9	-1.7	56.4	35.2	76.0	56.0	19.6	20.8	100.0	351.2	
5	2065.779	V	46.0	31.2	-1.3	44.7	29.9	76.0	56.0	31.3	26.1	100.0	355.0	
6	2394.361	V	47.6	31.1	0.2	47.8	31.3	76.0	56.0	28.2	24.7	100.0	155.6	

◆ Calculation

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

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

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

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

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Page (57) of (73)

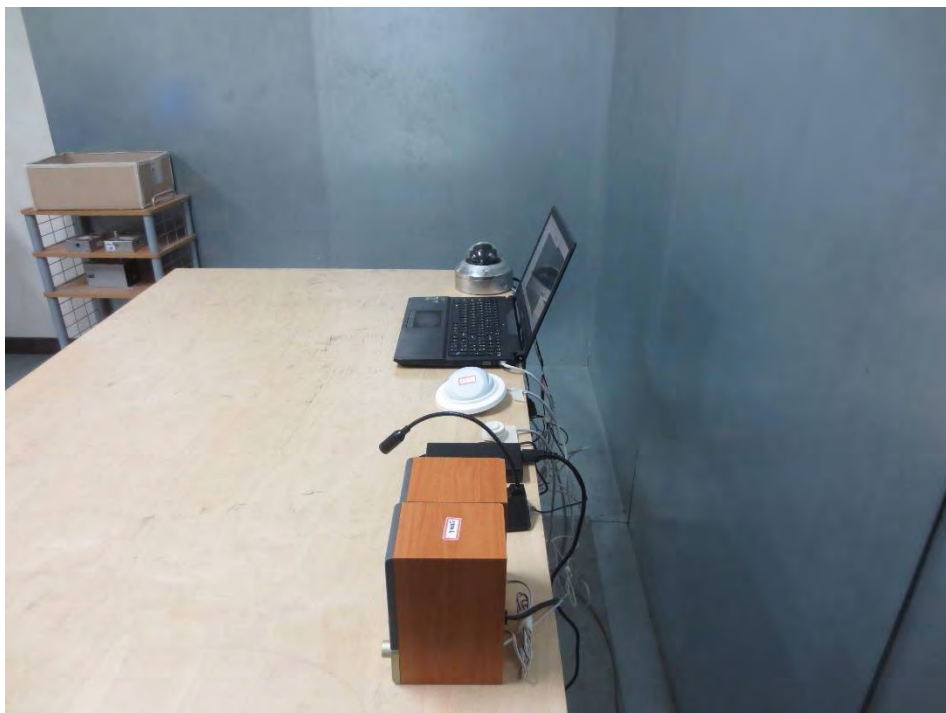
Test Data - Voltage Fluctuations**Maximum Flicker results**

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

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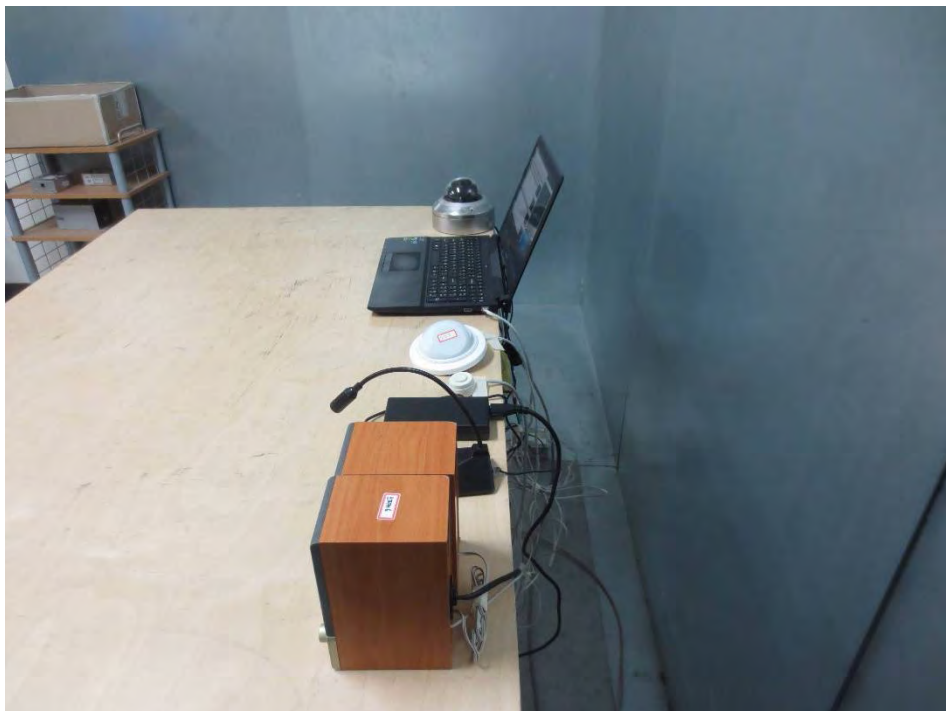
Test Setup Photos and Configuration

Conducted Voltage Emissions



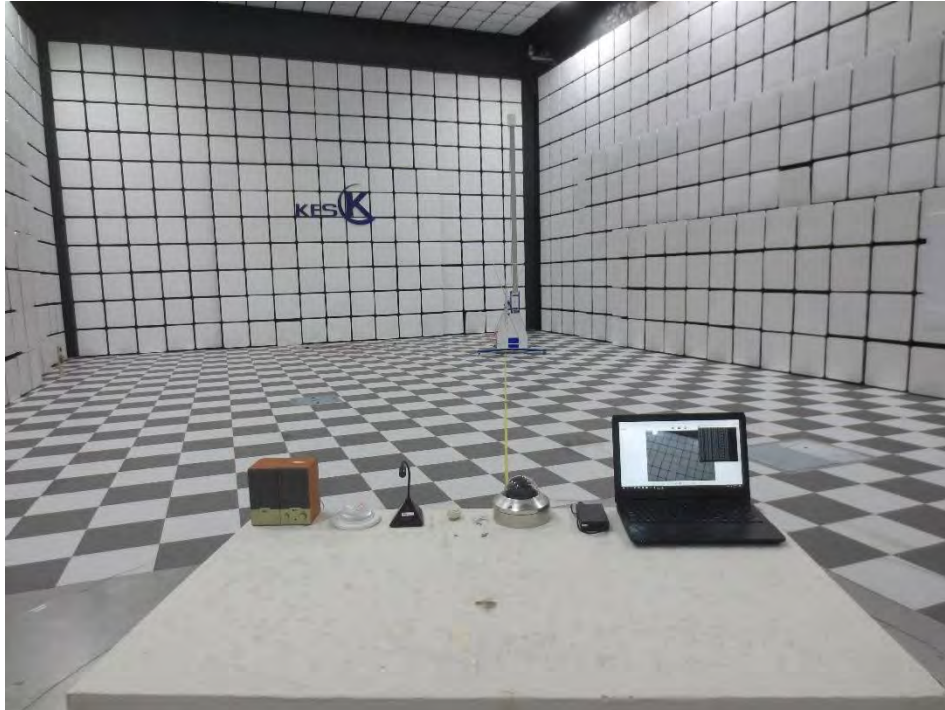
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Conducted Telecommunication Emissions



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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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Harmonic Current Emissions and Voltage Fluctuations and Flicker

N/A

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Electrostatic Discharge



Radiated Electric Field Immunity



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Electrical Fast Transients/Bursts



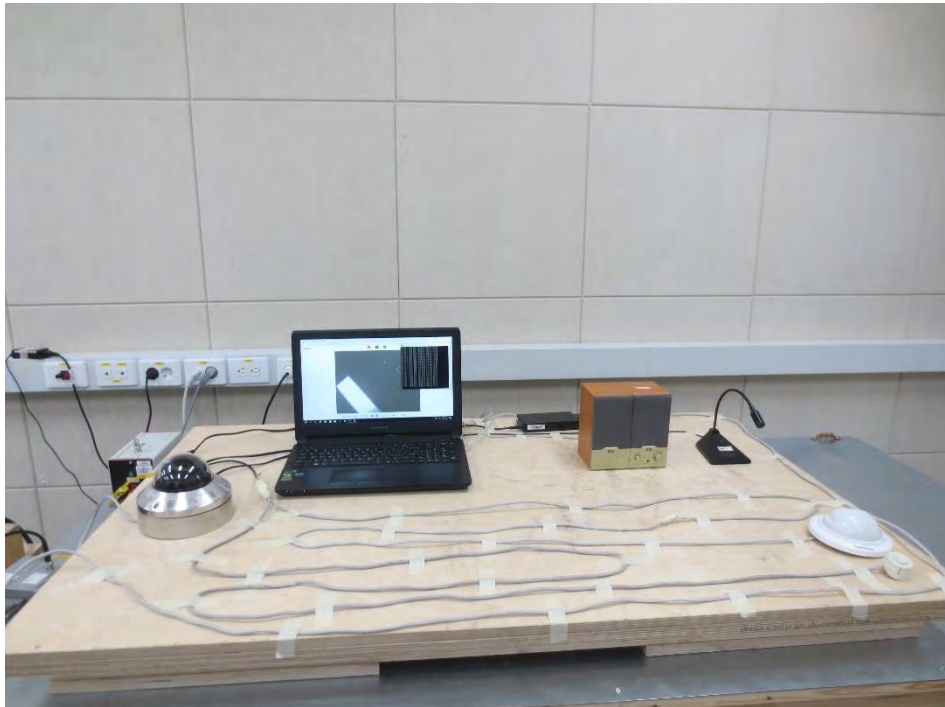
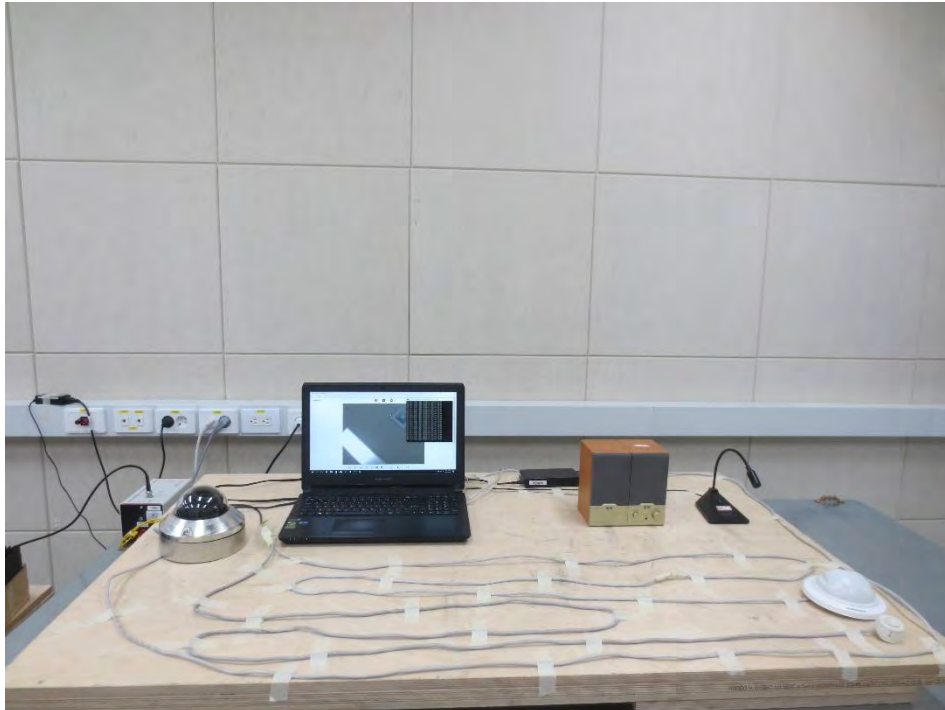
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Surge Transients



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Conducted Disturbance



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Voltage Dips and Short Interruptions



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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 1

(Top)



(Bottom)



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EUT Internal View – Sub board 2

(Top)

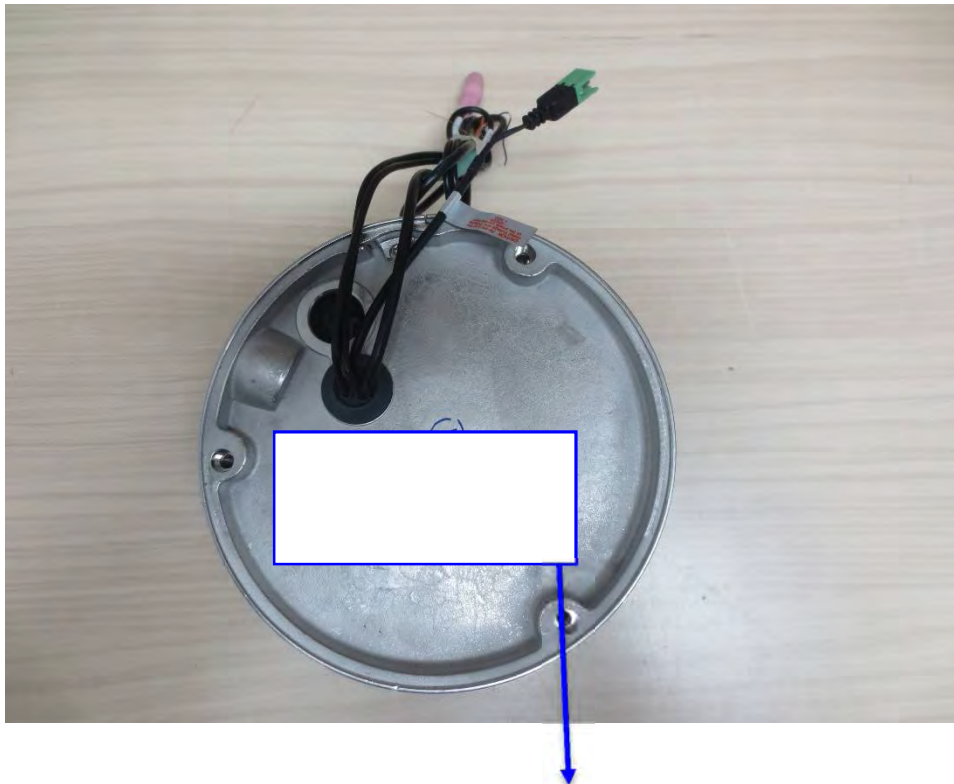


(Bottom)



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Label and Location



Network Camera

Model No : XNV-8080RS

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Made in China

