



EMC TEST REPORT For CE

Test Report No. : KES-EM-22T0217-R1
Date of Issue : Feb. 25, 2022
Product name : NVR
Model/Type No. : XRN-815S
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Date of Receipt : Jan. 26, 2022
Test date : Feb. 07, 2022 ~ Feb. 11, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Kang Hyeon, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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

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Report No.:

KES-EM-22T0217-R1

Page (2) of (66)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 25, 2022	KES-EM-22T0217	Issued
Feb. 24, 2023	KES-EM-22T0217-R1	Change the Applicant and manufacturer at the request of the customer

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TABLE OF CONTENTS

1.0	General Product Description	4
1.1	Test Voltage & Frequency	9
1.2	Variant Model Differences.....	9
1.3	Device Modifications	9
1.4	Equipment Under Test.....	9
1.5	Support Equipments	10
1.6	External I/O Cabling	11
1.7	EUT Operating Mode(s)	11
1.8	Configuration.....	12
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	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	32
3.5	Conducted Disturbance	35
3.6	Voltage Dips and Short Interruptions	38
APPENDIX A – TEST DATA.....		40
Conducted Emissions at Mains Power Ports.....		40
Conducted Emissions at Telecommunication Ports		42
Radiated Electric Field Emissions(Below 1 GHz)		44
Radiated Electric Field Emissions(Above 1 GHz).....		45
Harmonic Current Emissions and Voltage Fluctuations and Flicker		46
Test Setup Photos and Configuration		49
Conducted Emissions at Mains Power Ports.....		49
Conducted Emissions at Telecommunication Ports		50
Radiated Electric Field Emissions(Below 1 GHz)		51
Radiated Electric Field Emissions(Above 1 GHz).....		52
Harmonic Current Emissions and Voltage Fluctuations and Flicker		53
Electrostatic Discharge		54
Radiated Electric Field Immunity		54
Electrical Fast Transients/Bursts		55
Surge Transients.....		55
Conducted Disturbance.....		56
Voltage Dips and Short Interruptions.....		56
EUT External Photographs		57
EUT Internal Photographs		58

1.0 General Product Description

Main Specifications of EUT are:

Model		XRN-815S
		8CH PoE
Display		
Video	Inputs	Max. 8CH
	Resolution	CIF ~ 8MP
	Protocols	sunapi, ONVIF
Live	Local Display	HDMI1, HDMI2 1) HDMI1 : 3840x2160 30Hz HDMI2 : 1920x1080 60Hz
	Multi Screen Display	[Clone Monitor] Dynamic layout
	Resolution	[Local Monitor] 12M(30fps), 8M(60fps), 1080p(240fps), 720P(240fps), D1(480fps)
Intelligent Analysis		
Search	Object image	AI Search support
Performance		
System	Operating System	Linux
	Processor	NT98336
Record	Compression	H.265, H.264, MJPEG, WiseStream(H.265, H.264)
	Recording Bandwidth	100Mbps
	Resolution	CIF ~ 12MP
	Mode	Normal, Dual Stream, Schedule(Continuous/Event), Event (Pre/Post), Bookmark

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Report No.:

KES-EM-22T0217-R1

Page (5) of (66)

	Event Trigger	Alarm Input, Video Loss, Camera Event(Sensor, MD, Video Analytics, Defocus, Audio), Dynamic Event, Manual Event
	Event Action	e-Mail, Event Push, PTZ Preset, Alarm Out, Buzzer, Monitor Out
Search & Play	Playback Bandwidth	Max 32Mbps
	User	Max. 4 Users (Local 1, Remote 3)
	Mode	Time, Event, Text, Export, ARB, Bookmark Person, Face, Vehicle, LP
	Simultaneous playback	Max 40CH – Set : 16CH – Remote : 8CH Per User
	Resolution	CIF ~ 8MP
	Fisheye Dewarping	Yes
	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
Storage	Built-In	2TB ~ 10TB
	Internal HDD	2ea (Max 20TB)
	External	N/A
	RAID	N/A
Backup	File backup	BU/Exe(GUI), JPG/AVI(Web)
	Function	Multi channel(Upto 8 CH) Play, Date- Time/Title display
Sensor	I/O	4/2 (NO/NC Selectable)
Audio	Input/Output	8CH (network)/output (Set)
	Compression	G.711, G.726, AAC(16/48KHz)
	Audio Communication	2-Way
Network		
Interface		16 Port PoE, RJ-45(1 Gbps)

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Report No.:

KES-EM-22T0217-R1

Page (6) of (66)

Protocol	TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), FTP SUNAPI(Server, Client)	
DDNS	Hanwha DDNS	
Transmission Bandwidth	80Mbps	
Max Remote Users	Search (3), Live Unicast (10), Multicast (20)	
IP Version	IPv4/v6	
Security	IP address filtering, User access Log, 802.1x, Encryption	
Language	English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai, Vietnam	
OS	Window 10, Mac OS X(10.13)	
Web Browser	Google Chrome, Mac Safari, Firefox, Edge	
Viewer Software	Type	WAVE(Sunapi peristalsis), SSM, Webviewer, Smart Viewer, Wisenet Viewer, Wisenet Mobile
	CMS Support	Support CGI(SUNAPI) for integration to 3'rd party VMS
Functions		
Camera Setup	Register	Auto, Manual
	Setup Items	IP address, Add profile edit, Bitrate, Camera MD setup (8 point polygon) Camera video setup (Simple focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSDR, DIS), Fisheye Dewarping Mode, Hallway View Setup, Camera Webpage

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Report No.:

KES-EM-22T0217-R1

Page (7) of (66)

PTZ	Control	Via GUI, Webviewer
	Preset	300 Presets
Smart phone	Support Model	iOS, Android
	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)
	Control	Live : Multi-Profile Support Multi Channel Playback
	Max. Remote Users	Search (3), Live Unicast (10)
Redundancy	Failover	N+1
	ARB	Yes
Easy configuration		P2P(QR code)
System Control		Mouse, Keyboard, Web
Indicator/Interface		
Front	Indicator	LED(Status indicator) : - Power(1), Record(1), Network(1)
Connectors	HDMI	2 EA, 3840x2160 30Hz
	VGA	N/A
	Audio	Out(1EA) : RCA output
	Ethernet	PoE RJ-45(LAN, 10/100) 16 ea ,RJ-45 1ea (WAN, 1Gbps)
	Alarm	(1) In(4EA, Terminal Block) (2) Out(2EA, Terminal Block) - Relay Out1(NO/NC/COM) - Relay Out2(NO/COM)
	USB	3EA(Front 2 X USB 2.0, Rear 1 X USB3.0)
	Storage	N/A
	Serial	N/A
	Reset	Switch(1EA, PW clear)
	Power Cord	1EA
	POE Budget	Max. 100W
System		
Log	Log List	Max. 100,000 (System, Event each log)
Environmental		

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Page (8) of (66)

Operating Temperature / Humidity		+0°C to +40°C(+32°F to +104°F)
Humidity		20% ~ 85% RH
Noise		47 db
Electrical		
Power		100 ~ 240 VAC $\pm 10\%$; 50/60 Hz
Power Consumption		Max 165W(2HDD, PoE ON)
Mechanical		
Color / Material		Black
Dimension (WxHxD)		370*50.7*320 (370*44*320 FOOT except)
Weight		2,856g

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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.

☒ AC 230 V, 50 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
NVR	XRN-815S	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
SWITCHING POWER SUPPLY	DPS-200PB-185 C	HAPD214801504 8	Delta Electronics Power(Dongguan) Co., Ltd.	-

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Report No.:

KES-EM-22T0217-R1

Page (10) of (66)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Camera	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Laptop	P98F004	21599158359	DELL INC.	-
Laptop Adapter	LA240PM190	-	LITE-ON TECHNOLOGY(CHANGZ HOU)CO.,LTD.	-
Monitor	DELL E2222H DVT	8221TCM10D001 03X	DELL INC.	-
Earphone	-	-	-	-
USB memory	-	-	Transcend	8 GB
Alarm	PRO-SL	-	SENSOR PRO	-
Button alarm	-	-	-	-
HDD	810051	-	WESTERN DIGITAL TECHNOLOGIES, INC.	4 TB
Smartphone	A1303	-	APPLE .Inc	-

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NVR (EUT) Laptop	RJ-45 (PoE)	Camera	RJ-45 (PoE)	10.0	U
	RJ-45 (LAN)	Laptop	RJ-45 (LAN)	4.0	U
	USB	Mouse (EUT)	USB	1.4	U
	HDMI	Monitor	HDMI	1.5	S
	grounding	grounding	grounding	1.2	U
	USB 3.0	USB memory	USB 3.0	-	-
	RCA	Earphone	3.5mm	1.0	U
	Alarm out	Alarm	Alarm in	3.0	U
	Alarm in	Button alarm	Alarm out	3.0	U
	SATA	HDD	SATA	0.2	U
Laptop	DC Jack	Laptop Adapter	DC Jack	1.6	U
	3.3 mm	Smartphone	3.3 mm	1.0	U

* Unshielded=U, Shielded=S

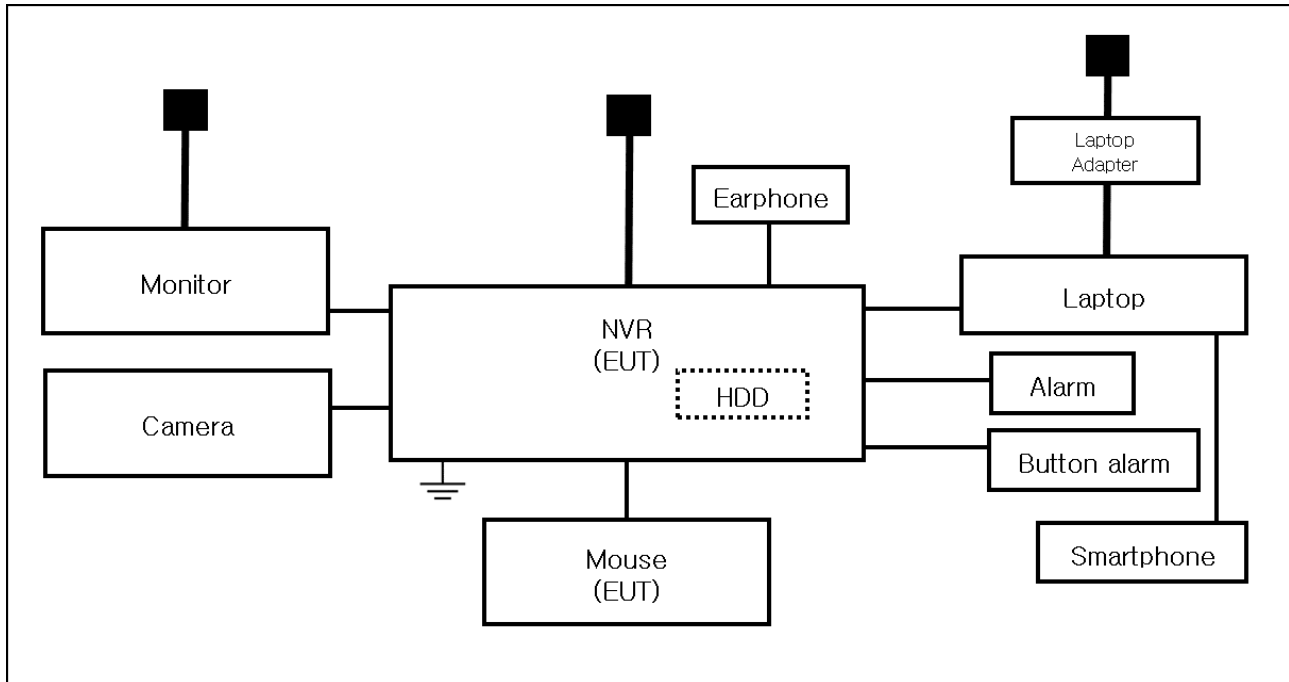
1.7 EUT Operating Mode(s)

Test Mode	operating
Operation Mode	EUT Monitoring, Ping Test HDD : after testing, check if the recording is normally

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

1.8 Configuration

■ AC Main 230 V, 50 Hz
 □ DC Main



1.9 Remarks when standards applied

N/A

1.10 Calibration Details of Equipment Used for Measurement

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

1.11 Test Facility

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

1.12 Laboratory Accreditations and Listings

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



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☒ EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☒ **EMC – Regulations 2016/1091**

☒ BS EN 55032:2015/A11:2020

☒ Class A

☐ Class B

☒ BS EN 50130-4:2011

☒ BS EN 61000-3-2:2014

☒ BS EN 61000-3-3:2013



2.1 Conducted Emissions at Mains Power Ports

Test Date

Feb. 07, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022

Test Conditions

Temperature: (23,3 ± 0,3) °C

Relative Humidity: (42,6 ± 0,3) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Feb. 07, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	12, 28, 2022
☒	LISN	ENV216	R & S	101787	12, 27, 2022
☒	LISN	ESH2-Z5	R & S	100450	12, 27, 2022
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	12, 28, 2022
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	12, 28, 2022
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	03, 10, 2022

Test Conditions

Temperature: (23,5 ± 0,3) °C
Relative Humidity: (42,8 ± 0,3) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

- See Appendix A for test data.
- For Ethernet interfaces, measurements are required at the highest data rate.

supported by the interface.

2.3 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb. 07, 2022

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2022
☒	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2022

Test Conditions

Temperature: (22,6 ± 0,4) °C

Relative Humidity: (43,7 ± 0,3) % R.H.

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.4 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb. 07, 2022

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, 03, 2022
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	04, 07, 2022
☐	ATTENUATOR	8491A	HP	35496	03, 10, 2022
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: (23,1 ± 0,4) °C

Relative Humidity: (42,4 ± 0,3) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.5 Harmonic Current Emissions

Test Date

Feb. 07, 2022

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2022
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,2 ± 0,1) °C

Relative Humidity: (43,0 ± 0,1) % R.H.

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

See Appendix A for test data.



2.6 Voltage Fluctuations and Flicker

Test Date

Feb. 07, 2022

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	04, 06, 2022
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,4 ± 1,0) °C

Relative Humidity: (43,3 ± 1,0) % R.H.

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 / BS 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
BS EN 61000-4-2:2009

Test Date

Feb. 08, 2022

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	ESS05X4620	2022.02.19
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (22,2 ± 0,2) °C
Relative Humidity: (42,4 ± 0,2) % R.H.
Atmospheric Pressure: (101,0 ± 0,0) 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
--------------------	---	---	---	---

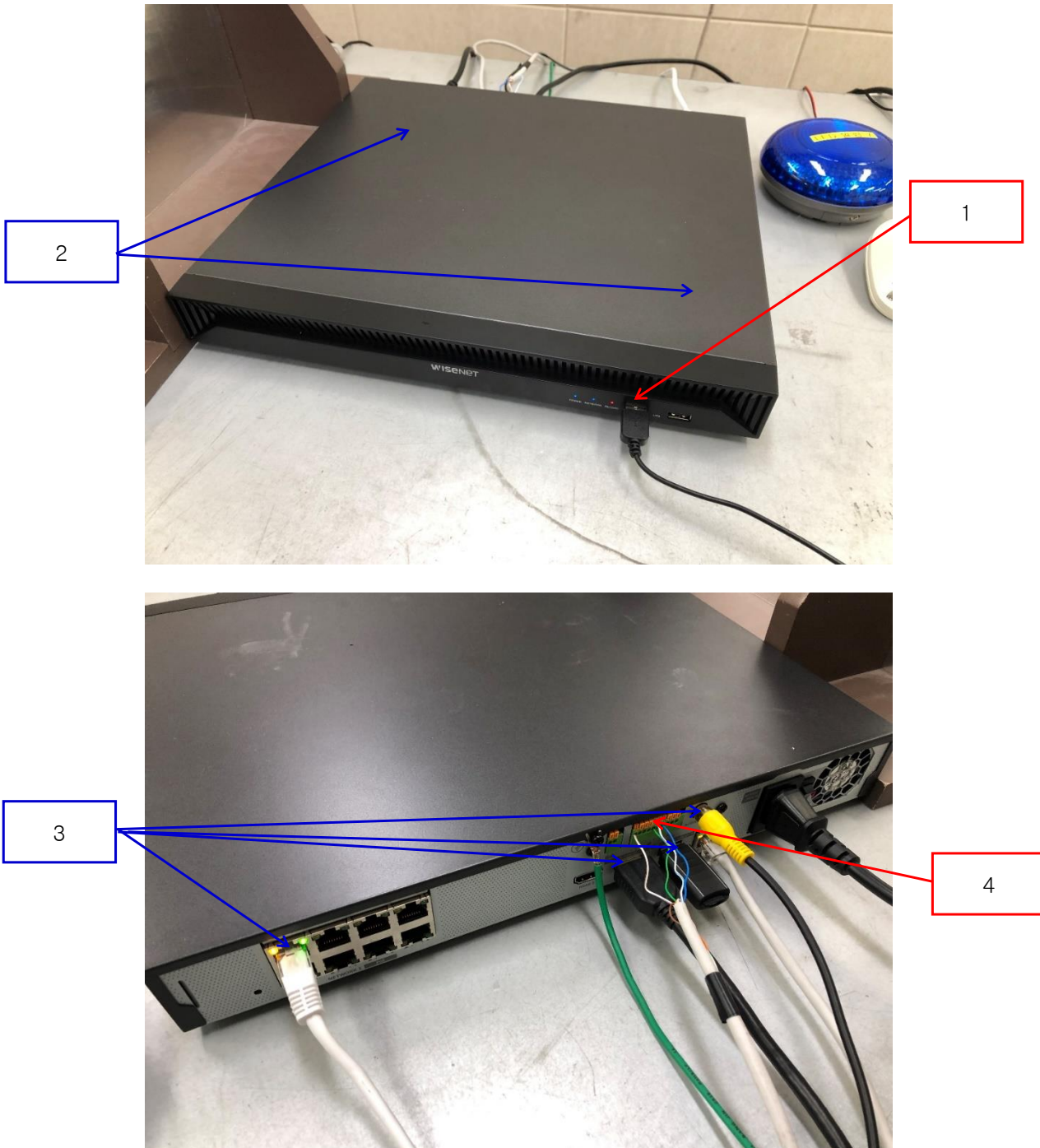
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

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Location of Discharge:

Air
Contact





5

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Report No.:

KES-EM-22T0217-R1

Page (26) of (66)

Test Data

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	Front USB port	Air Discharge	Complied	-
2	Enclosure	Contact Discharge	Complied	-
3	Rear Port	Contact Discharge	Complied	-
4	Terminal port	Air Discharge	Complied	-
5	Mouse Enclosure	Air Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

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

RemarksPASS Required Performance Criteria

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3.2 Radiated Electric Field Immunity

Reference Standard

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

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

Test Date

Feb. 10, 2022

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	Rohde & Schwarz	108252	08, 03, 2022
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	04, 01, 2022
☒	CW POWER SENSOR	E4412A	Agilent	US38488240	04, 01, 2022
☒	CW POWER SENSOR	E4412A	Agilent	MY41501662	04, 01, 2022
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	03, 11, 2022

Test Conditions

Temperature: (23,0 ± 1,2) °C

Relative Humidity: (43,1 ± 1,1) % R.H.

Atmospheric Pressure: (100,8 ± 0,0) kPa



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Report No.:

KES-EM-22T0217-R1

Page (28) of (66)

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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Report No.:

KES-EM-22T0217-R1

Page (29) of (66)

Test Data

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

RemarksPASS Required Performance Criteria

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3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

BS EN 61000-4-4:2012

Test Date

Feb. 08, 2022

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	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	12, 03, 2022
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	04, 01, 2022
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	12, 03, 2022

Test Conditions

Temperature: (22,3 ± 0,5) °C
Relative Humidity: (42,4 ± 0,4) % R.H.
Atmospheric Pressure: (101,0 ± 0,0) 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

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

Mode of Application	Observations	
	(+) Burst (kV)	(-) Burst (kV)
L	Complied	Complied
N	Complied	Complied
PE	Complied	Complied
L – N	Complied	Complied
L – PE	Complied	Complied
N – PE	Complied	Complied
L – N – PE	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 (LAN)	Complied	Complied
RJ-45 (PoE)	Complied	Complied
Alarm	Complied	Complied
Button alarm	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-EM-22T0217-R1

Page (32) of (66)

3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

BS EN 61000-4-5:2014

Test Date

Feb. 08, 2022

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	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	12, 03, 2022
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	04, 01, 2022
☒	CDN	CNV 508N1	EM TEST	P1610176296	12, 03, 2022

Test Conditions

Temperature: (22,7 ± 1,4) °C
Relative Humidity: (42,5 ± 1,3) % R.H.
Atmospheric Pressure: (100,1 ± 0,0) kPa

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Report No.:
KES-EM-22T0217-R1
Page (33) of (66)

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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Report No.:
KES-EM-22T0217-R1
Page (34) of (66)

Test Data

☒ 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	Complied	Complied
N – PE	Complied	Complied

Signal Lines

☒ Line to Earth – Common Mode

Mode of Application	Coupling Method	Observations	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45 (LAN)	CDN	Complied	Complied
	LINE	Complied	Complied
RJ-45 (PoE)	CDN	Complied	Complied
	LINE	Complied	Complied

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

Test Results

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

Remarks

PASS Required Performance Criteria

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Report No.:

KES-EM-22T0217-R1

Page (35) of (66)

3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

BS EN 61000-4-6:2014

Test Date

Feb. 11, 2022

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	5.3.12	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1.4	EM TEST	P1602169880	11, 24, 2022
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	11, 24, 2022
☒	CDN	CDN M016	TESEQ	43694	11, 24, 2022
☒	CDN	CDN M016	TESEQ	43697	11, 24, 2022
☒	CDN	CDN T8RJ45	EM TEST	0909-09	08, 03, 2022
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	11, 25, 2022

Test Conditions

Temperature: (22,9 ± 1,4) °C

Relative Humidity: (42,9 ± 1,2) % R.H.

Atmospheric Pressure: (100,9 ± 0,0) kPa

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Report No.:

KES-EM-22T0217-R1

Page (36) of (66)

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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Report No.:

KES-EM-22T0217-R1

Page (37) of (66)

Test Data☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L – N – PE	CDN	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
-	-	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RJ-45 (LAN)	CDN	Complied
RJ-45 (PoE)	CDN	Complied
Alarm	Clamp	Complied
Button alarm	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

RemarksPASS Required Performance Criteria

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Report No.:

KES-EM-22T0217-R1

Page (38) of (66)

3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

BS EN 61000-4-11:2004

Test Date

Feb. 08, 2022

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	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	04, 01, 2022
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	04, 01, 2022

Test Conditions

Temperature: (22,7 ± 0,3) °C
Relative Humidity: (42,3 ± 0,3) % R.H.
Atmospheric Pressure: (100,1 ± 0,0) kPa

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Test Specifications & Observations/Remarks

- Voltage Dips and Short Interruptions

<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>Degradation</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

Degradation - See "Remarks "

Test Results

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

Remarks

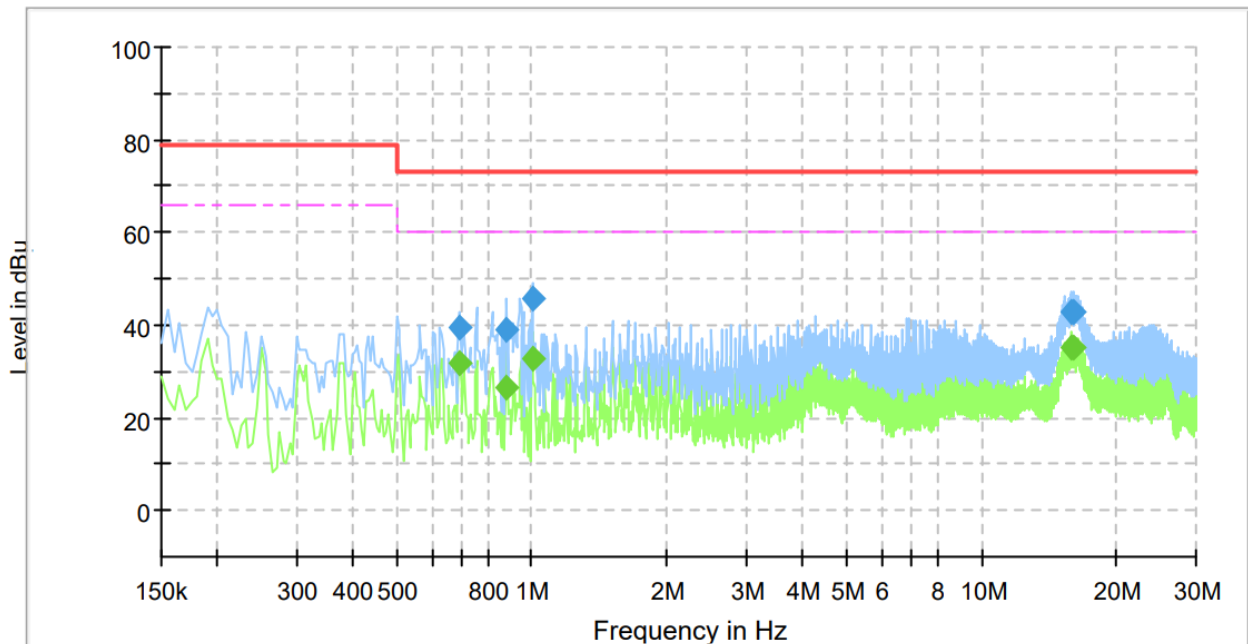
During the test(100%, 250cycle), EUT was turned off but after the test, it was recovered by no operator's intervention.

APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports [HOT]

Common Information

Test Description: Conducted Emission
 Model No.: XRN-815S
 Phase:
 Mode:
 Operator Name: KES



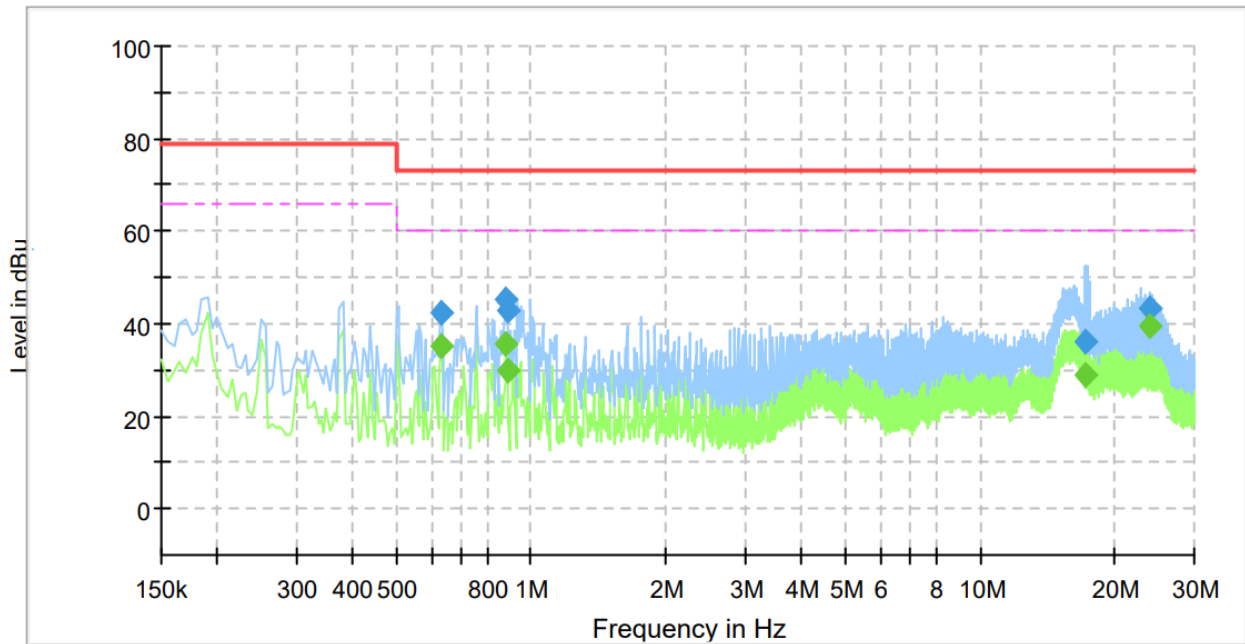
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.690000	---	31.80	60.00	28.20	1000.0	9.000	L1	19.9
0.690000	39.34	---	73.00	33.66	1000.0	9.000	L1	19.9
0.875000	---	26.59	60.00	33.41	1000.0	9.000	L1	20.1
0.875000	39.02	---	73.00	33.98	1000.0	9.000	L1	20.1
1.005000	---	32.81	60.00	27.19	1000.0	9.000	L1	20.1
1.005000	45.88	---	73.00	27.12	1000.0	9.000	L1	20.1
15.915000	---	35.24	60.00	24.76	1000.0	9.000	L1	19.9
15.915000	42.77	---	73.00	30.23	1000.0	9.000	L1	19.9
16.105000	---	35.38	60.00	24.62	1000.0	9.000	L1	19.9
16.105000	42.65	---	73.00	30.35	1000.0	9.000	L1	19.9

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XRN-815S
Phase:
Mode:
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.630000	---	35.24	60.00	24.76	1000.0	9.000	N	19.9
0.630000	42.28	---	73.00	30.72	1000.0	9.000	N	19.9
0.880000	---	35.41	60.00	24.59	1000.0	9.000	N	20.1
0.880000	45.29	---	73.00	27.71	1000.0	9.000	N	20.1
0.885000	---	30.09	60.00	29.91	1000.0	9.000	N	20.1
0.885000	42.75	---	73.00	30.25	1000.0	9.000	N	20.1
17.190000	---	29.14	60.00	30.86	1000.0	9.000	N	20.0
17.190000	36.19	---	73.00	36.81	1000.0	9.000	N	20.0
23.800000	---	39.41	60.00	20.59	1000.0	9.000	N	20.2
23.800000	43.48	---	73.00	29.52	1000.0	9.000	N	20.2

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

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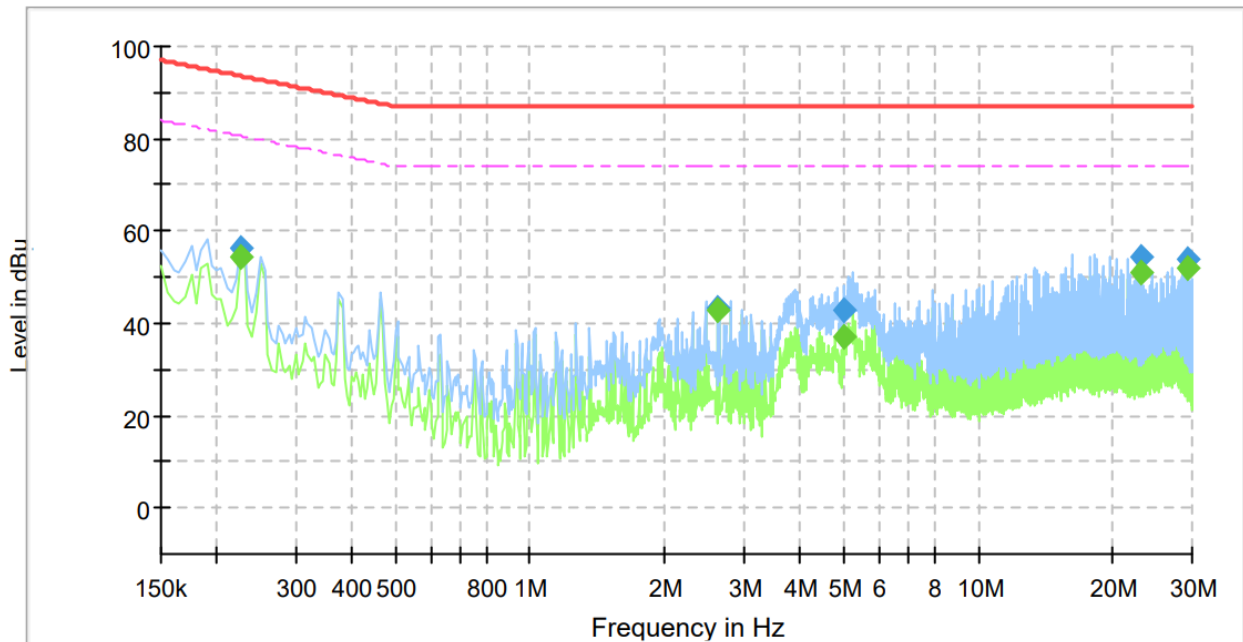
Conducted Emissions at Telecommunication Ports

■ LAN

[1 000 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XRN-815S
Mode :	LAN
Speed :	1000
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.225000	---	54.33	80.63	26.30	1000.0	9.000	Single Line	19.7
0.225000	56.46	---	93.63	37.17	1000.0	9.000	Single Line	19.7
2.630000	---	43.01	74.00	30.99	1000.0	9.000	Single Line	20.0
2.630000	43.43	---	87.00	43.57	1000.0	9.000	Single Line	20.0
5.025000	---	36.92	74.00	37.08	1000.0	9.000	Single Line	19.4
5.025000	42.98	---	87.00	44.02	1000.0	9.000	Single Line	19.4
23.130000	---	51.06	74.00	22.94	1000.0	9.000	Single Line	19.9
23.130000	54.28	---	87.00	32.72	1000.0	9.000	Single Line	19.9
29.235000	---	51.87	74.00	22.13	1000.0	9.000	Single Line	20.1
29.235000	53.90	---	87.00	33.10	1000.0	9.000	Single Line	20.1

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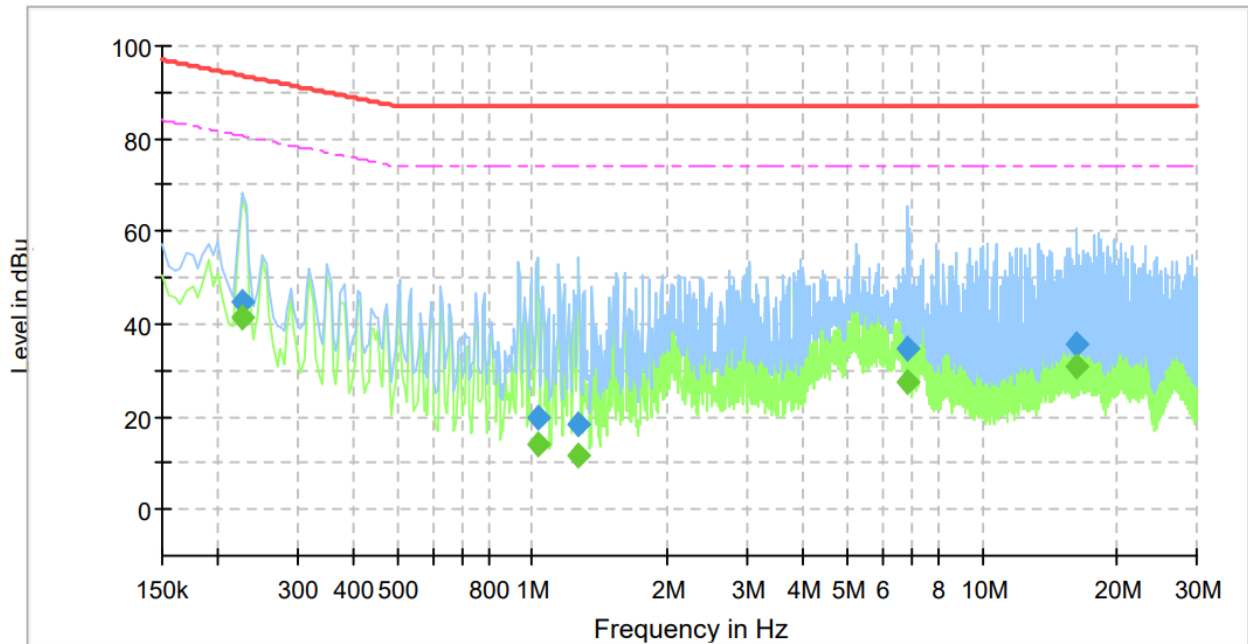
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■ PoE

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
 Model No.: XRN-815S
 Mode : PoE
 Speed : 100
 Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.225000	---	41.20	80.63	39.43	1000.0	9.000	Single Line	19.7
0.225000	44.62	---	93.63	49.01	1000.0	9.000	Single Line	19.7
1.025000	---	13.83	74.00	60.17	1000.0	9.000	Single Line	19.9
1.025000	20.01	---	87.00	66.99	1000.0	9.000	Single Line	19.9
1.265000	---	11.75	74.00	62.25	1000.0	9.000	Single Line	20.0
1.265000	18.18	---	87.00	68.82	1000.0	9.000	Single Line	20.0
6.835000	---	27.45	74.00	46.55	1000.0	9.000	Single Line	19.2
6.835000	34.83	---	87.00	52.17	1000.0	9.000	Single Line	19.2
16.230000	---	30.82	74.00	43.18	1000.0	9.000	Single Line	19.6
16.230000	35.76	---	87.00	51.24	1000.0	9.000	Single Line	19.6

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

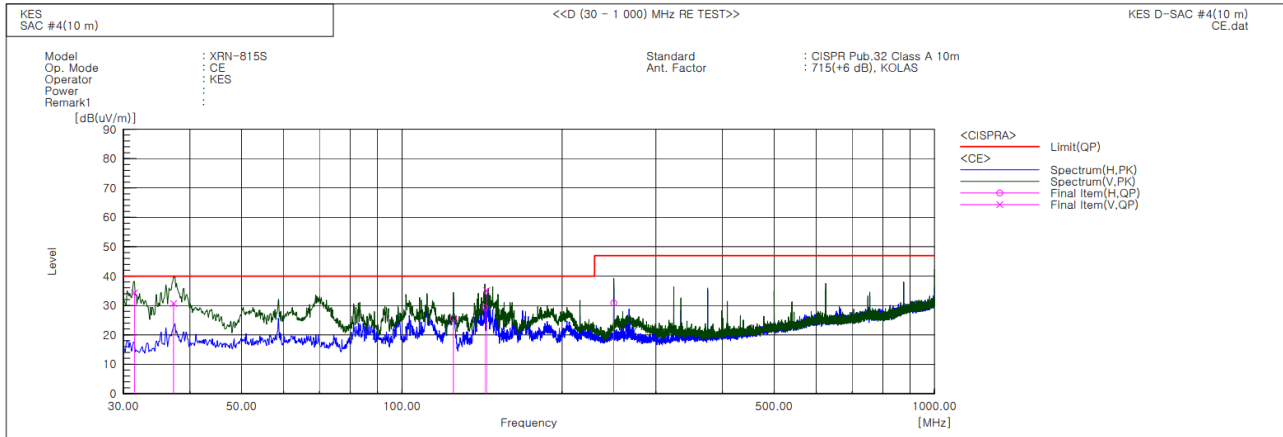
Reading Value : Not shown in the table.

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

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Radiated Electric Field Emissions(Below 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	31.455	V	59.1	-24.8	34.3	40.0	5.7	115.0	122.0	
2	37.275	V	54.5	-23.8	30.7	40.0	9.3	101.0	54.0	
3	124.939	H	50.4	-24.8	25.6	40.0	14.4	400.0	348.0	
4	143.248	H	54.5	-25.3	29.2	40.0	10.8	366.0	14.0	
5	144.206	V	60.4	-25.3	35.1	40.0	4.9	100.0	345.0	
6	249.948	H	50.0	-19.1	30.9	47.0	16.1	370.0	224.0	

◆ 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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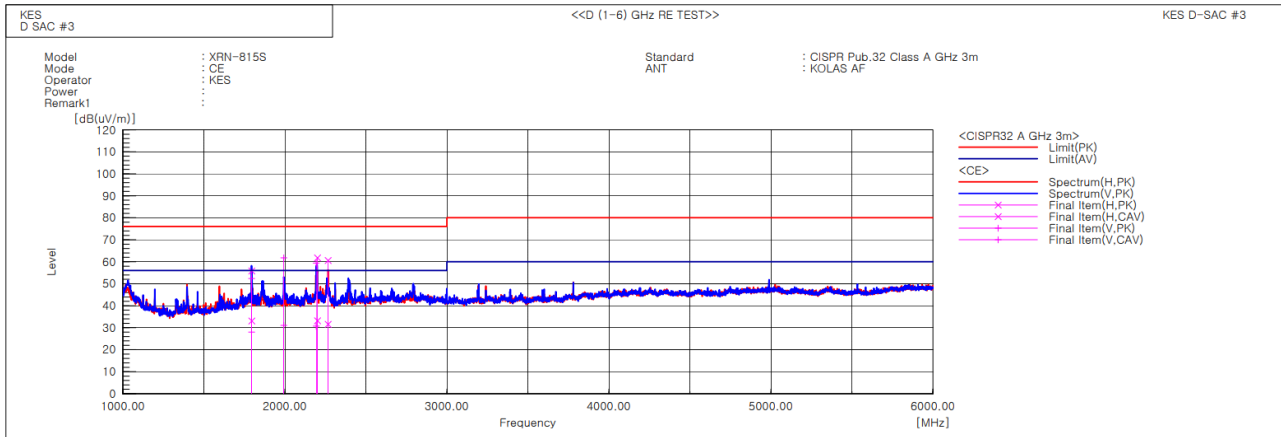
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Report No.:

KES-EM-22T0217-R1

Page (45) of (66)

Radiated Electric Field Emissions(Above 1 GHz)



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	1794.810	V	55.5	31.1	-3.1	52.4	28.0	76.0	56.0	23.6	28.0	100.0	224.1	
2	1795.530	H	58.9	36.2	-3.1	55.8	33.1	76.0	56.0	20.2	22.9	100.0	315.2	
3	1993.060	V	62.9	32.2	-1.1	61.8	31.1	76.0	56.0	14.2	24.9	100.0	216.1	
4	2193.030	V	59.8	31.1	-0.4	59.4	30.7	76.0	56.0	16.6	25.3	100.0	301.5	
5	2201.142	H	62.2	33.6	-0.4	61.8	33.2	76.0	56.0	14.2	22.8	100.0	128.6	
6	2267.192	H	60.8	31.8	-0.2	60.6	31.6	76.0	56.0	15.4	24.4	100.0	289.0	

◆ Calculation

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

Margin(PK/CAV)[dB] = Limit[dB(μ V/m)] - Result(PK/CAV) [dB(μ V/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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Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.141			
2	0.001	0.059	1.080	n/a
3	0.022	0.964	2.300	PASS
4	0.001	0.180	0.430	n/a
5	0.010	0.884	1.140	PASS
6	0.001	0.251	0.300	n/a
7	0.005	0.669	0.770	PASS
8	0.001	0.314	0.230	n/a
9	0.003	0.725	0.400	n/a
10	0.001	0.422	0.184	n/a
11	0.003	0.894	0.330	n/a
12	0.001	0.453	0.153	n/a
13	0.003	1.635	0.210	n/a
14	0.001	0.532	0.131	n/a
15	0.004	2.549	0.150	n/a
16	0.001	0.575	0.115	n/a
17	0.003	1.920	0.132	n/a
18	0.001	0.649	0.102	n/a
19	0.002	1.293	0.118	n/a
20	0.001	0.735	0.092	n/a
21	0.003	1.812	0.161	n/a
22	0.001	0.800	0.084	n/a
23	0.002	1.390	0.147	n/a
24	0.001	0.971	0.077	n/a
25	0.002	1.652	0.135	n/a
26	0.001	0.954	0.071	n/a
27	0.002	1.259	0.125	n/a
28	0.001	1.024	0.066	n/a
29	0.002	1.315	0.116	n/a
30	0.001	1.061	0.061	n/a
31	0.001	1.270	0.109	n/a
32	0.001	1.128	0.058	n/a
33	0.001	1.128	0.102	n/a
34	0.001	1.304	0.054	n/a
35	0.001	1.225	0.096	n/a
36	0.001	1.303	0.051	n/a
37	0.002	2.071	0.091	n/a
38	0.001	1.441	0.048	n/a
39	0.002	2.107	0.087	n/a
40	0.001	1.492	0.046	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.



Test Data - Harmonics (continued)

Maximum harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.142			
2	0.001	0.050	1.620	n/a
3	0.022	0.648	3.450	PASS
4	0.001	0.148	0.645	n/a
5	0.010	0.595	1.710	PASS
6	0.001	0.194	0.450	n/a
7	0.005	0.473	1.155	PASS
8	0.001	0.246	0.345	n/a
9	0.003	0.546	0.600	n/a
10	0.001	0.317	0.276	n/a
11	0.003	0.650	0.495	n/a
12	0.001	0.336	0.230	n/a
13	0.004	1.137	0.315	n/a
14	0.001	0.400	0.197	n/a
15	0.004	1.754	0.225	n/a
16	0.001	0.426	0.173	n/a
17	0.003	1.342	0.199	n/a
18	0.001	0.490	0.153	n/a
19	0.002	0.931	0.178	n/a
20	0.001	0.541	0.138	n/a
21	0.003	1.889	0.161	n/a
22	0.001	0.592	0.125	n/a
23	0.002	1.477	0.147	n/a
24	0.001	0.724	0.115	n/a
25	0.002	1.735	0.135	n/a
26	0.001	0.707	0.106	n/a
27	0.002	1.359	0.125	n/a
28	0.001	0.747	0.099	n/a
29	0.002	1.417	0.116	n/a
30	0.001	0.797	0.092	n/a
31	0.001	1.374	0.109	n/a
32	0.001	0.870	0.086	n/a
33	0.001	1.206	0.102	n/a
34	0.001	0.958	0.081	n/a
35	0.001	1.310	0.096	n/a
36	0.001	0.955	0.077	n/a
37	0.002	2.187	0.091	n/a
38	0.001	1.070	0.073	n/a
39	0.002	2.276	0.087	n/a
40	0.001	1.067	0.069	n/a

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

* Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.

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Report No.:
KES-EM-22T0217-R1
Page (48) of (66)

Test Data - Voltage Fluctuations

Maximum Flicker results

Flicker Measurements					
	Plt	Max Pst	Max Dc	Max Dmax	Max Tmax
Line 1:	0.028	0.028	0	< 0.2	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



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Conducted Emissions at Telecommunication Ports

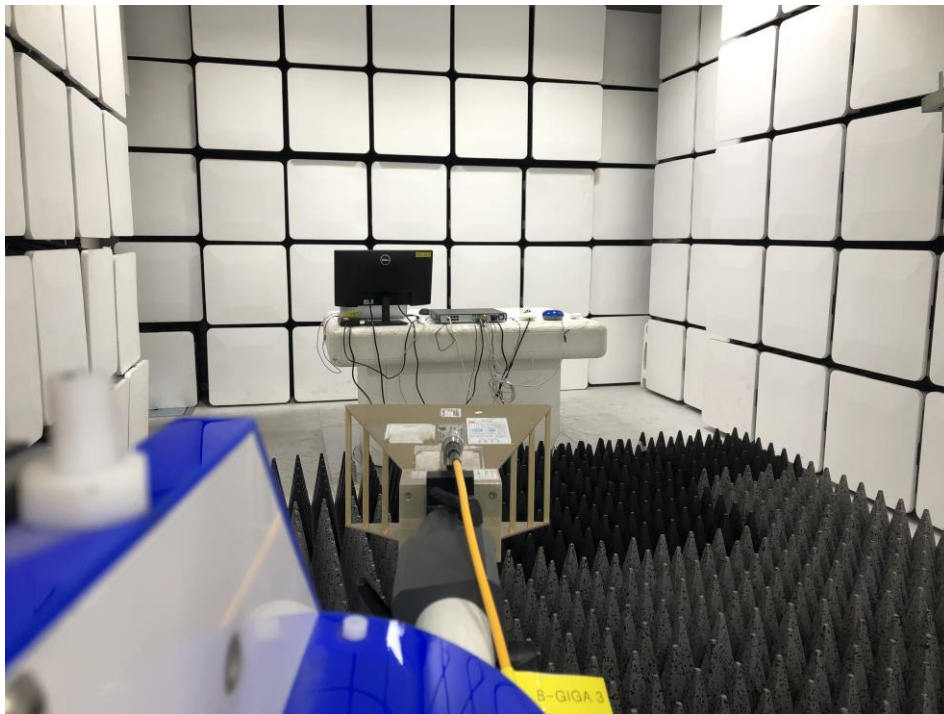


Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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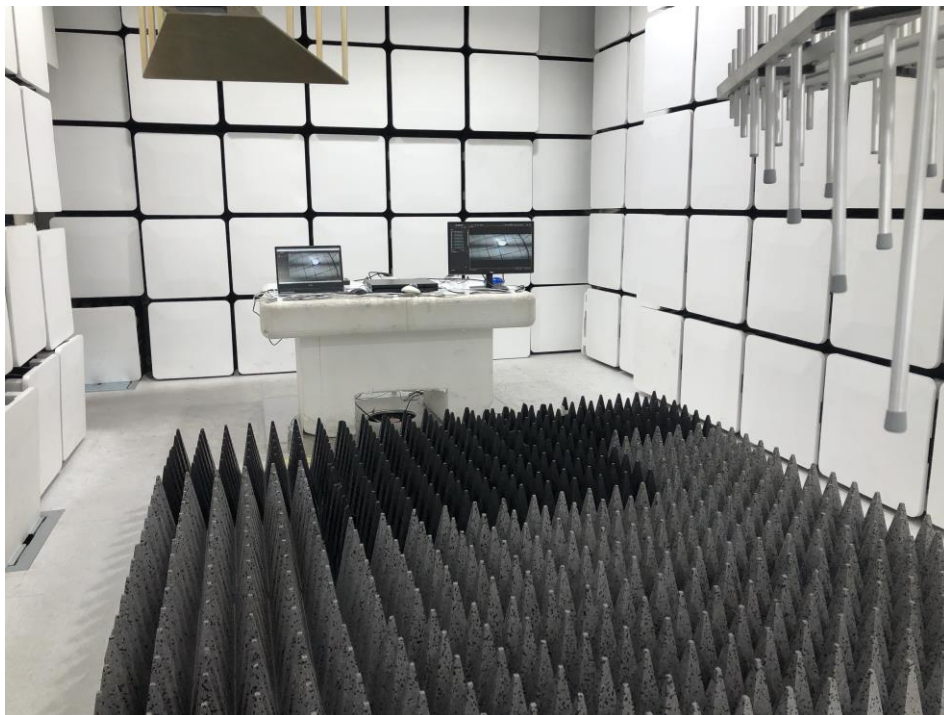
Harmonic Current Emissions and Voltage Fluctuations and Flicker



Electrostatic Discharge



Radiated Electric Field Immunity



Electrical Fast Transients/Bursts



Surge Transients



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Conducted Disturbance



Voltage Dips and Short Interruptions



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EUT External Photographs

(Top)



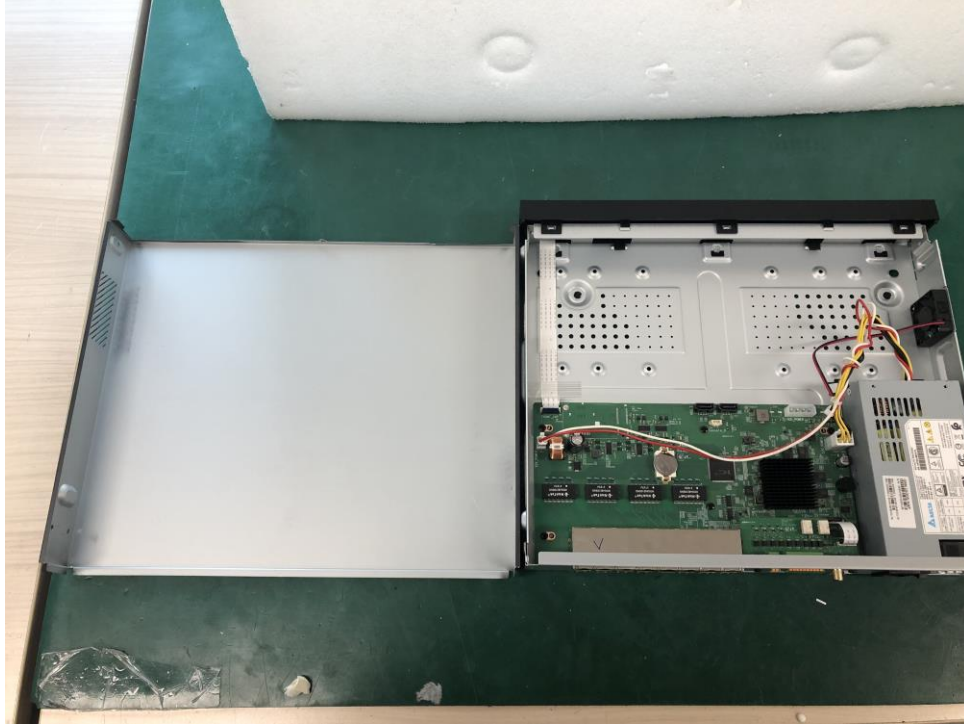
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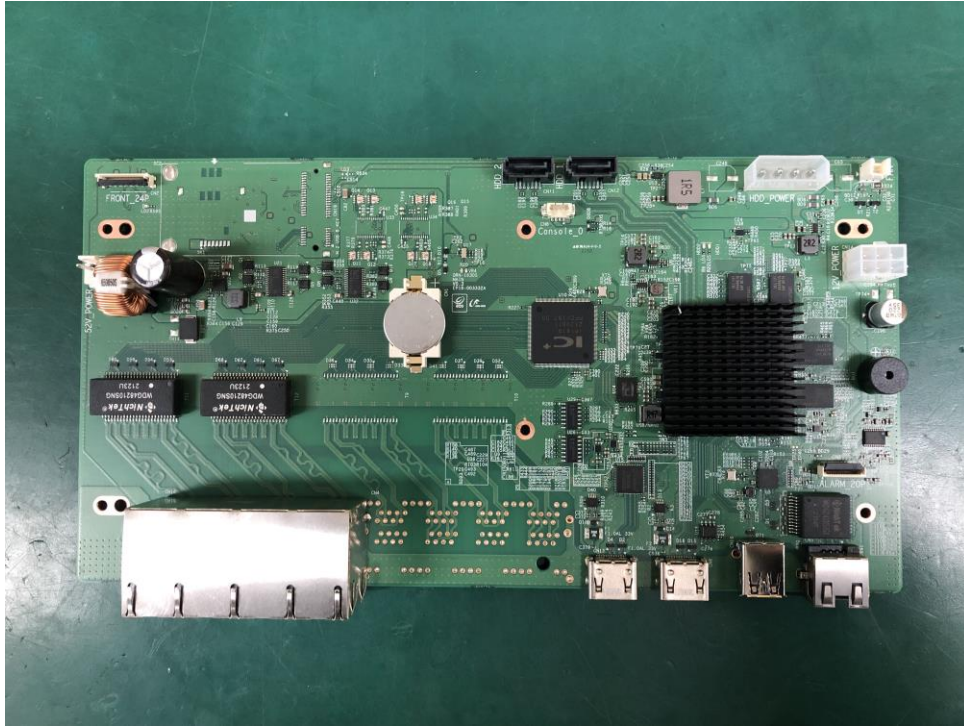
EUT Internal Photographs

(Internal View)

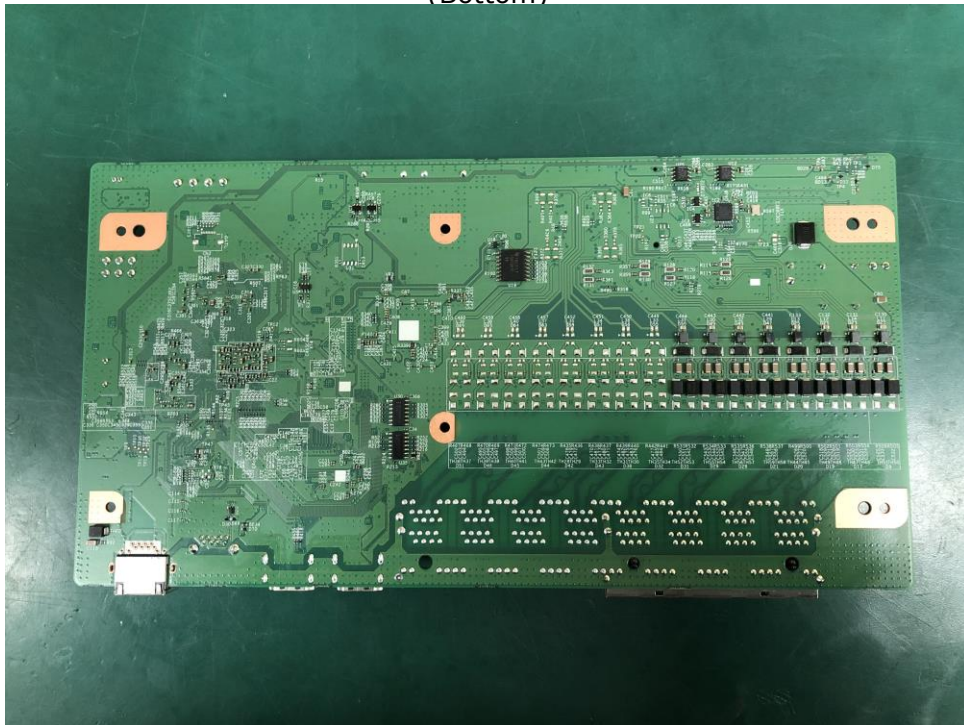


EUT Internal View – Board 1

(Top)



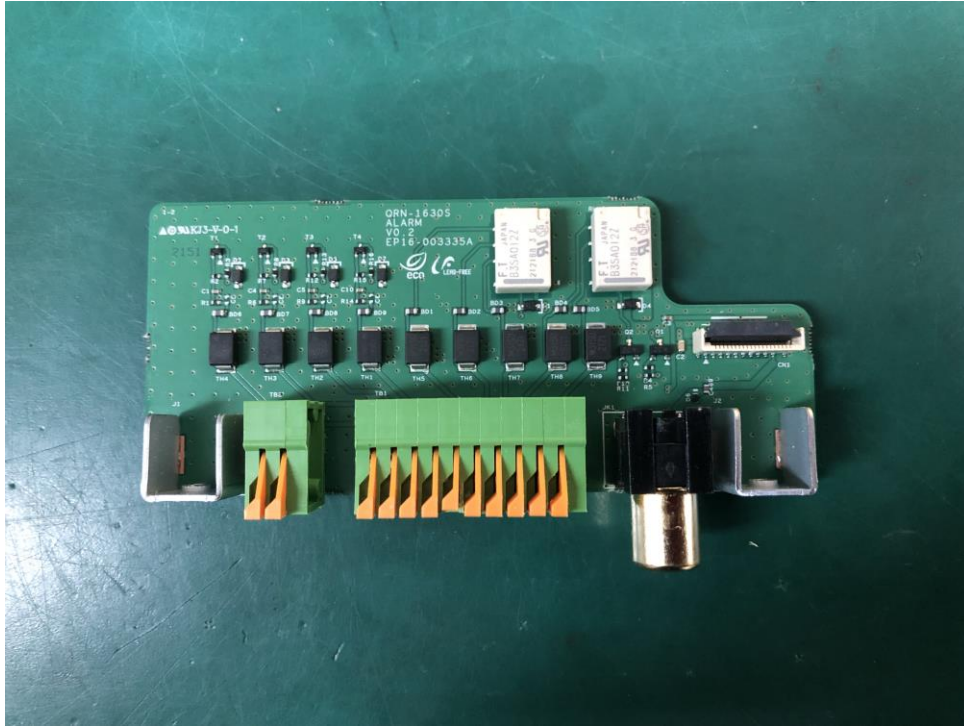
(Bottom)



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EUT Internal View – Board 2

(Top)



(Bottom)



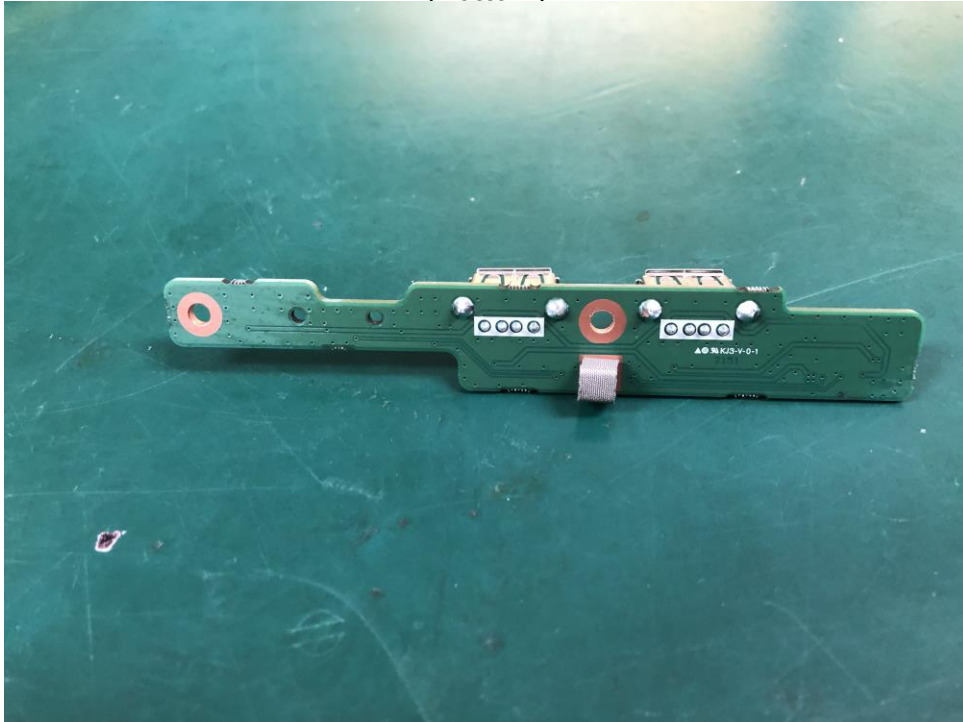
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EUT Internal View – Board 3

(Top)



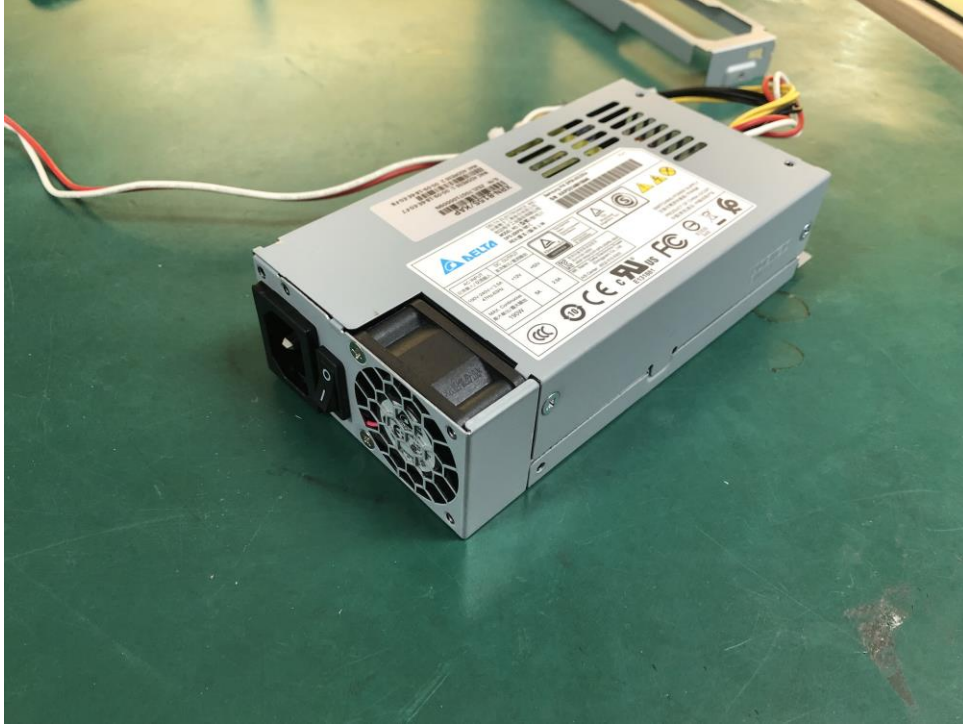
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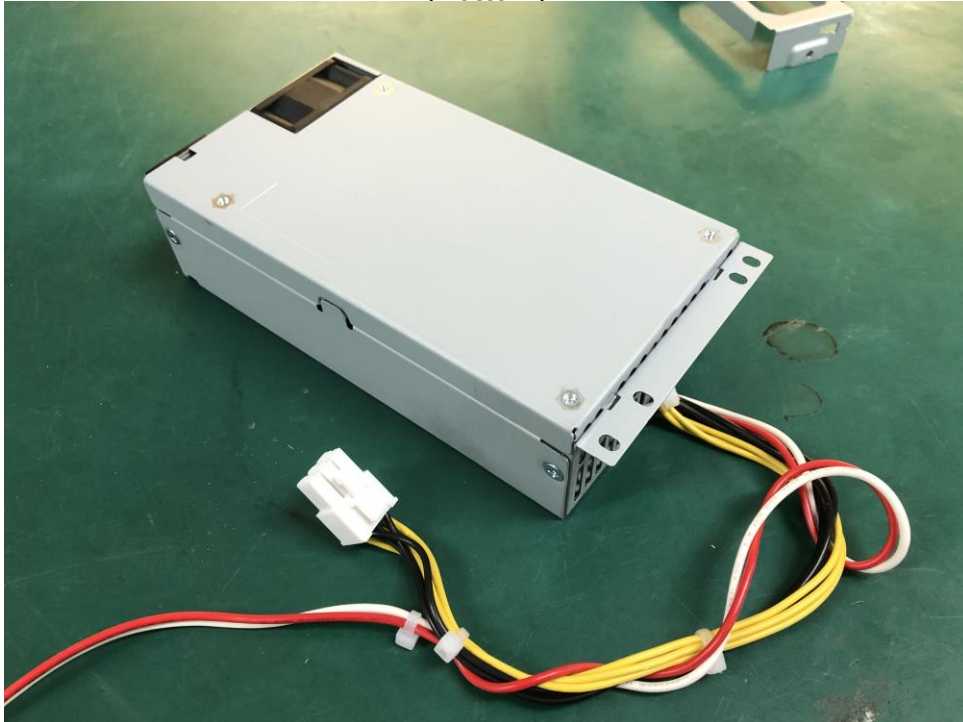
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EUT Internal View – Power SUPPLY

(Top)



(Bottom)



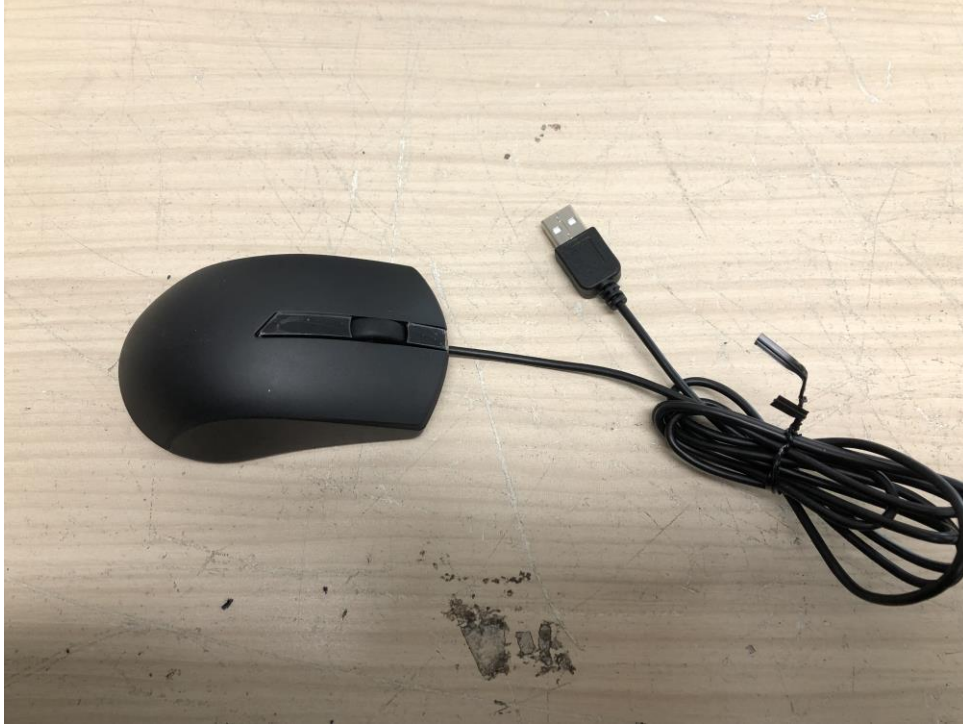
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(Label)



EUT Internal View – MOUSE

(Top)



(Bottom)



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(Label)



**NVR**

Model No : XRN-815S

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

