



TEST REPORT



Report No. : KES-EM241042
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KES Co., Ltd.
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1. Client

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

2. Sample Description

Product name : NETWORK VIDEO RECORDER
Model/Type No. : XRN-6420DB4
Variant Model : -
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 Ward,
Bac Ninh City, Bac Ninh Province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do, Korea
(Suwon Industrial Complex)

3. Date of Receipt : Mar. 28, 2024

4. Test date : Apr. 06, 2024 ~ Apr. 09, 2024

5. Date of Issue : Apr. 25, 2024

6. Test Results : In Compliance

Tested by

Reviewed by

Seon Ho, Choi
EMC Test Engineer

Dong Hun, Jang
EMC Technical Manager

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

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).



REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Apr. 25, 2024	KES-EM241042	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Display		
Network camera	Inputs	Max. 64CH
	Resolution	32MP ~ CIF
	Protocols	SUNAPI, ONVIF
Decoding	Local Display	[Dual Display] HDMI1 : 3840x2160 30Hz HDMI2 : 1920x1080 60Hz
	Multi Screen Display	[Local Monitor] - Dynamic layout, Virtual channel view - Clone Mode : Up to 64 Division - Expand Mode : HDMI1 up to 36 Div. HDMI2 up to 32 Div. [Web] 1/ 2H/ 2V/ 3V/ 4/ 6/ 8/ 9
	Resolution	32M(15fps, H.265 Only), 12M(30fps, H.265 Only), 8.3M(4ch@30fps), 1080p(16ch@30fps), 720P(32ch@30fps), D1(64ch@30fps)
Intelligent Analysis		
AI	Object Detection	N/A
	Object Attribute	N/A
	AI Search	Compatible for Hanwha AI Camera
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Record Rate(Analog)	None
	Recording Bandwidth	Distributed mode : Up to 520 Mbps Normal mode : Up to 300 Mbps {RAID mode} Normal : Up to 520 Mbps Degraded/ Rebuild : Up to 520 Mbps
	Resolution	32MP ~ CIF
	Mode	Normal, Dual Stream, Schedule(Continuous/Event), Event (Pre/Post), Bookmark
	Event Trigger	Alarm Input, Video Loss, Camera Event(Sensor, MD, Video Analytics, Defocus, Audio), Dynamic Event, User Event
	Event Action	e-Mail, Event Push, PTZ Preset, Alarm Out, Buzzer, Monitor Out, FTP, SUNAPI Command, Shutdown
Search & Play	Playback Bandwidth	Up to 200Mbps(64CH simultaneously)
	User	Max. 4 Users (Local 1, Remote 3)
	Simultaneous playback	Max. 112CH(Local 64CH, Remote 16CH per user)
	Fisheye Dewarping	Support (Local 1CH), CMS
	Mode	Date & Time(Calendar), Event list, Text Search, Smart Search
	Resolution	CIF ~ 32MP
	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
Storage	Supported HDD	Up to 10TB
	HDD Slot	SATA 16ea(Max. 160TB, Non-RAID mode), Hot swap
	External	iSCSI storage
	RAID	RAID-5/6(Array Size : 8 HDDs x 2 Array)
Backup	File backup	Recorder/SEC/AVI/JPG(Local), AVI/PNG(Network)
	Function	Multi channel(Up to 16CH) Play, Date-Time/Title display
Network		
Protocol		IPv4, IPv6, 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), SUNAPI(Server, Client)
DDNS		Hanwha DDNS
Transmission Bandwidth		Max. 520Mbps
Audio	Input/Output	64 CH(network)
	Compression	G.711, G.726, AAC(16/48KHz)
	Audio Communication	2-Way
Max Remote Users		Search(3), Live Unicast(10), Multicast(20)
Security		IP address filtering, User access Log, 802.1x, Encryption Device certificate(Hanwha Techwin Root CA), Signed firmware TPM support
Web viewer	Supported OS	Windows 10, macOS 10.13
	Supported browser	Google Chrome, Microsoft Edge, Mac Safari
Viewer Software		SSM, WAVE, Webviewer, Wisenet Viewer, Wisenet mobile Support CGI(SUNAPI) for integration to 3'rd party VMS



Functions		
Camera Setup	Register	Auto, Manual
	Item	IP address, Add profile edit, Bitrate, Compression, GOP, Quality, Camera MD setup (4, 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
PTZ	Control	Via GUI, Webviewer, SPC-2000
	Preset	300 Presets
Smart phone	Support Model	iOS, Android
	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)
	Control	Live 16CH(Multi-Profile Support), Playback 4CH
	Max. Remote Users	Search(3), Live Unicast(10)
Redundancy	Failover	N+1
	ARB	Support
Easy configuration		P2P(QR code)
Interface		
Front	Indicator	HDD, Alarm, Power, Record, Backup, Network, RAID
Storage		OK
Reset		Power button
HDD Key Lock		OK
HDMI		2EA (Playback/Setup → HDMI1) HDMI1 : 3840x2160 30Hz HDMI2 : 1920x1080 60Hz
VGA		None
BNC		None
e-SATA		None
Audio		Out 1EA (3.5mm Audio Jack)
Ethernet		RJ-45 3EA (LAN/WAN, 1Gbps)
Alarm		In 8EA, Out 4EA
USB		4EA(Front 2 x USB 2.0, Rear 2 x USB 3.0)
Power inlet		AC 2EA
System		
Log	Log List	Max. 100,000 (System Log, Event Log each)
System Control		Mouse(include wireless), Keyboard(include wireless), Web, Controller (SPC-2000/2001)
Language		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai, Vietnamese
Environmental		
Operating Temperature		0°C to +40°C(32°F to 104°F)
Operating Humidity		20% ~ 85% RH
Certification		None
Electrical		
Power Input		100 ~ 240 VAC ±10%; 50/60 Hz, 2.7A (Dual SMPS)
Power Consumption		Max. 265W (with HDD 16ea)
Mechanical		
Color / Material		Black / Metal
Dimension (WxHxD)		440.0 x 132.0 x 571.1mm
Weight		Approx. 15.1Kg(HDD not included)



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
Network Video Recorder	XRN-6420DB4	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT

1.5 System Configuration

Description	Model Number	Serial Number	Manufacturer	Remarks
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
SWITCHING POWER SUPPLY	DPS-650AB-16 D	-	DELTA	2 EA
Camera	QNV-6024RM	-	HANWHA TECHWIN CO.,LTD.	-



1.6 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	P95G001	9JM8HT2	DELL INC.	-
Notebook Adapter	HA65NM130	-	Chicony Power Technology(Suzhou)Co.,Ltd.	-
Monitor	SMT-2232	-	Weihai Daewoo Electronics Co., Ltd.	-
Headset 1	K550	-	Britz®	-
Headset 2	K550	-	Britz®	-
Alarm	-	-	-	-
Button alarm	-	-	-	-
HDD	ST2000VX016	-	SEAGATE	2 TB
Smart phone	SM-G950N	-	SAMSUNG	-
USB Memory	-	-	Sandisk	32 GB



1.7 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Network Video Recorder (EUT)	RJ-45 (LAN)	PoE Switch	RJ-45 (LAN)	3.2	S
	RJ-45 (LAN)	Notebook	RJ-45 (LAN)	3.2	S
	USB 2.0	Mouse (EUT)	USB	1.4	U
	USB 3.0	USB Memory	USB	-	-
	HDMI	Monitor	HDMI	1.4	S
	Enclosure Ground	Ground	Line	2.0	-
	3.5mm	Headset 1	3.5mm	1.8	U
	Alarm out	Alarm	Alarm in	3.0	U
	Alarm in	Button alarm	Alarm out	3.0	U
	SATA	HDD	SATA	-	-
Notebook	DC Jack	Notebook Adapter	DC Jack	1.6	U
	3.5 mm	Smart phone	3.5 mm	1.5	U
PoE Switch	RJ-45 (PoE)	Camera (EUT)	RJ-45 (PoE)	0.4	S
Camera (EUT)	3.5mm	Headset 2	3.5mm	1.8	U

* Unshielded=U, Shielded=S

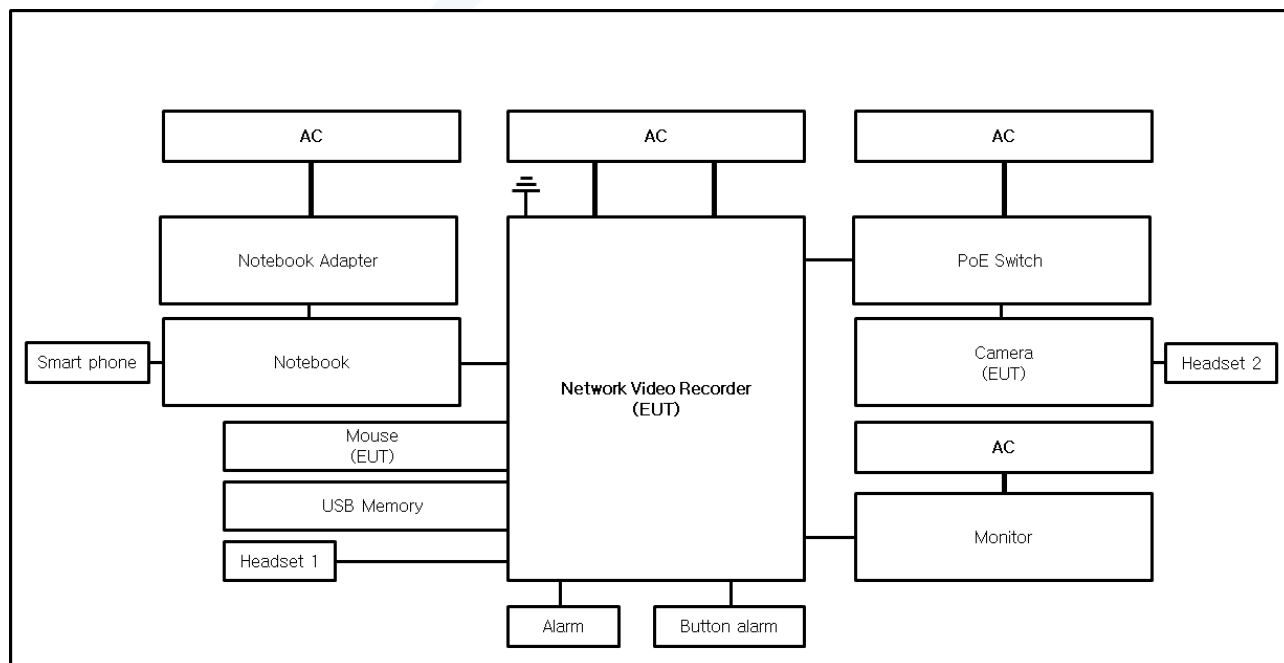


1.8 EUT Operating Mode(s)

Test mode	Normal operating	Test Voltages
Operating	EUT Monitoring, Ping Test after testing, check if the recording is normally done on the HDD and USB Memory	AC 230 V, 50 Hz

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

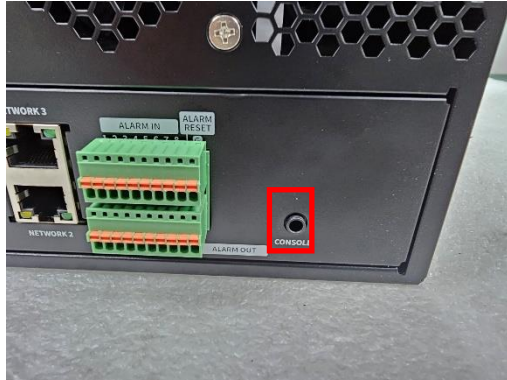
1.9 Configuration





1.10 Remarks When Standards Applied

The console port was excluded from the test as an unused port.



1.11 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.

1.12 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



1.13 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 50121-4:2016/A1:2019

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021

☒ **EMC – Regulations 2016**

☒ EN 50121-4:2016/A1:2019

☒ EN IEC 61000-3-2:2019

☒ EN 61000-3-3:2013/A2:2021



2.1 Conducted Emissions at Mains Power Ports

Test Date

Apr. 06, 2024

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	Nov 08, 2024
☒	LISN	ENV216	R & S	101787	Nov 08, 2024
☒	LISN	ESH2-Z5	R & S	100450	Nov 08, 2024
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	Nov 08, 2024

Test Conditions

Temperature: (23,0 ± 0,1) °C

Relative Humidity: (46,2 ± 0,2) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.2 Conducted Emissions at Telecommunication Ports

Test Date

Apr. 06, 2024

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	Nov 08, 2024
☒	LISN	ENV216	R & S	101787	Nov 08, 2024
☒	LISN	ESH2-Z5	R & S	100450	Nov 08, 2024
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	Nov 08, 2024
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	Nov 09, 2024
☐	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101666	Mar 05, 2025
☒	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	Mar 05, 2025

Test Conditions

Temperature: (23,0 ± 0,2) °C

Relative Humidity: (46,2 ± 0,2) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.3 Impulse Noise (click)

Test Date

N/A

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test S/W	CLICK METER SOFTWARE CMS FOR DDA55	AFJ	4.19	-
☐	CLICK ANALYZER	DDA55+	AFJ INSTRUMENTS	14042211198	Feb 13, 2025
☐	LISN	ENV216	R & S	101786	Jan 10, 2025
☐	LISN	ENV216	R & S	101137	Jan 10, 2025

Test Conditions

Temperature:

°C

Relative Humidity:

% R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

RemarksImpulse Noise(click) does not occurrence.



2.4 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Apr. 06, 2024

Test Location☒ SEMI ANECHOIC CHAMBER #4(10 m)**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	Feb 13, 2025
☒	AMPLIFIER	SCU 01	R & S	100603	Nov 08, 2024
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	Nov 17, 2024
☒	ATTENUATOR	8491A	HP	32173	Feb 13, 2025

Test Conditions

Temperature: (23,2 ± 0,1) °C
Relative Humidity: (46,3 ± 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

RemarksSee Appendix A for test data.



2.5 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Apr. 06, 2024

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	Jul 31, 2024
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	Mar 05, 2025
☒	ATTENUATOR	8491A	HP	35496	Feb 13, 2025
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	Mar 05, 2025

Test Conditions

Temperature: (22,7 ± 0,2) °C

Relative Humidity: (46,4 ± 0,4) % R.H.

Frequency Range of Measurement

1 GHz to 6 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



2.6 Harmonic Current Emissions

Test Date

Apr. 09, 2024

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	Mar 28, 2025
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,0 ± 0,2) °C

Relative Humidity: (45,7 ± 0,2) % 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

RemarksSee Appendix A for test data.



2.7 Voltage Fluctuations and Flicker

Test Date

Apr. 09,, 2024

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test SW	net.control	EM TEST	2.1.4	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	Mar 28, 2025
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: (23,0 ± 0,2) °C
Relative Humidity: (45,7 ± 0,2) % R.H.

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



3.0 Criteria for Compliance

Criteria for compliance was based on the following guidelines:

General performance criteria

The general principles (performance criteria) for the evaluation of the immunity test results are the following.

Performance criteria A

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



3.1 Electrostatic Discharge

Reference Standard

EN 61000-4-2:2009

Test Date

Apr. 07, 2024

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	Jan 30, 2025
☒	HCP	-	KES	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: (22,9 ± 0,1) °C
Relative Humidity: (45,7 ± 0,1) % R.H.
Atmospheric Pressure: (100,6 ± 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	Air	HCP	VCP
	☒ 2 kV	☒ 2 kV	☒ 2 kV	☒ 2 kV
	☒ 4 kV	☒ 4 kV	☒ 4 kV	☒ 4 kV
	☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
	☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
	☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

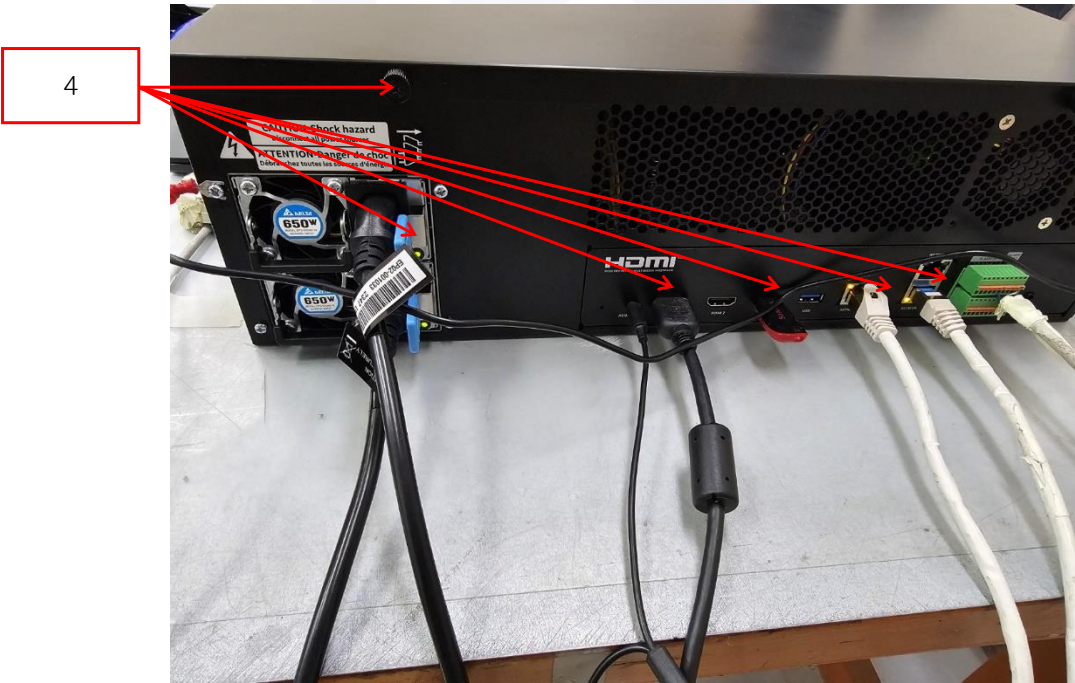
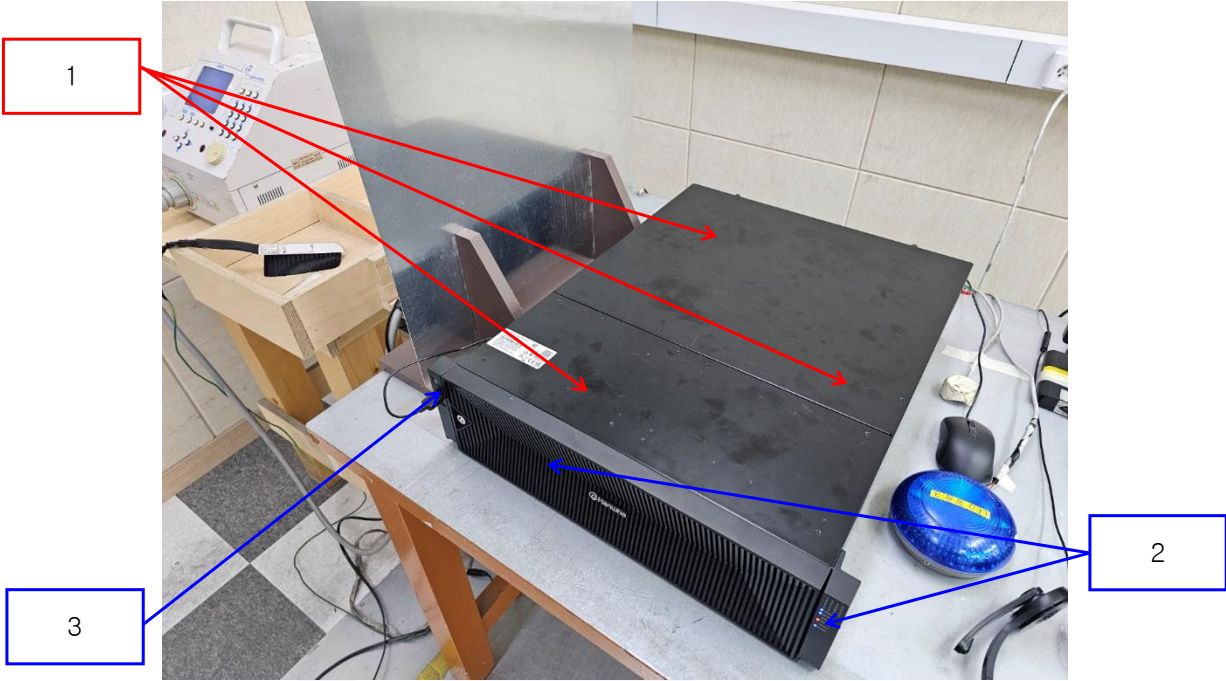
Notes: HCP: Horizontal Coupling Plane

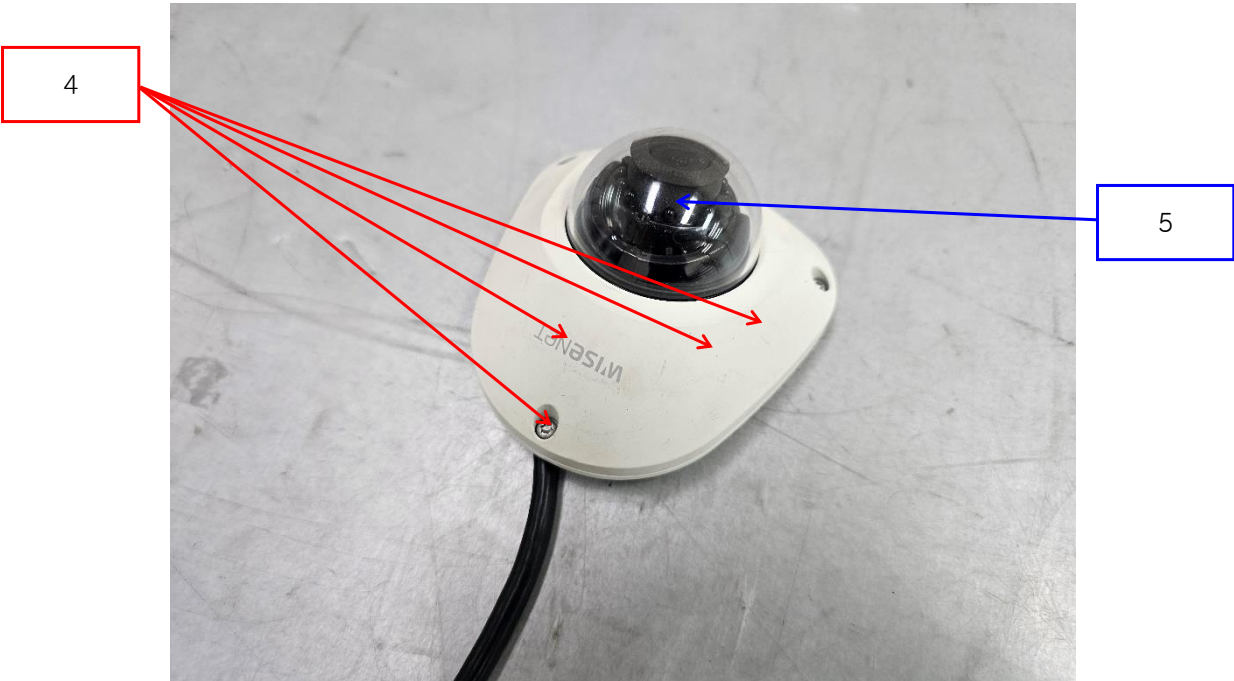
VCP: Vertical Coupling Plane

Required Performance Criteria: ☒ B



Location of Discharge:





**Test Data**

Indirect Discharge

No.	Test Point	Discharge Method	Performance	
			Criteria	Results
1	HCP Contact	Contact Discharge	B	A
2	VCP Contact	Contact Discharge	B	A

Direct Discharge

No.	Test Point	Discharge Method	Performance	
			Criteria	Results
1	Enclosure 1	Contact Discharge	B	A
2	Enclosure 2	Air Discharge	B	A
3	Port 1	Air Discharge	B	A
4	Port 2	Contact Discharge	B	A
5	Camera	Air Discharge	B	A
6	Mouse	Air Discharge	B	A

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

Any degradations of performance was not observed during in the test.



3.2 Radio-frequency Electromagnetic Field

Reference Standard

EN IEC 61000-4-3:2020

Test Date

Apr. 09, 2024

Test LocationEMS-RS: ☒ SEMI ANECHOIC CHAMBER #3 ☐ SEMI ANECHOIC CHAMBER #4(10 m)**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	Jul 31, 2024
☒	HIGH POWER DUAL AMP	SSA532	SUNGSAN	SSA532-001	-
☒	POWER METER	E4419B	Agilent	GB40203000	Feb 13, 2025
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY52170007	Feb 13, 2025
☒	AVERAGE POWER SENSOR	E9301A	Agilent	MY41498669	Feb 13, 2025
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	Mar 05, 2025

Test Conditions

Temperature: (22,2 ± 0,3) °C
Relative Humidity: (46,5 ± 0,6) % R.H.
Atmospheric Pressure: (100,3 ± 0,0) kPa



Test Specifications

Antenna Polarization: Horizontal & Vertical unless indicated otherwise

Antenna Distance: ☒ 3 m

Frequency Range: ☒ 80 MHz to 800 MHz [10V/m]
[Field Strength] ☒ 800 MHz to 1 GHz [20 V/m]
☒ 1,4 GHz to 2,0 GHz [10 V/m]
☒ 2,0 GHz to 2,7 GHz [5 V/m]
☒ 5,1 GHz to 6,0 GHz [3 V/m]

Modulation: ☒ 80 % AM, 1 kHz sine wave

Frequency Step: ☒ 1 % step

Dwell Time: ☐ 1 s ☒ 3 s

of Sides Radiated: ☒ 4

Required Performance Criteria: ☒ A

**Test Data**

Side Exposed	Performance Criteria	Results	
		Horizontal	Vertical
Front	A	A	A
Right	A	A	A
Back	A	A	A
Left	A	A	A

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results

☒ PASS Required Performance Criteria

☐ NOT PASS Required Performance Criteria

Remarks

Any degradations of performance was not observed during in the test.



3.3 Fast Transients

Reference Standard

EN 61000-4-4:2012

Test Date

Apr. 07, 2024

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	Nov 09, 2024
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	Nov 09, 2024
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	P1633183115	Nov 10, 2024

Test Conditions

Temperature: (22,9 ± 0,1) °C
Relative Humidity: (45,7 ± 0,3) % R.H.
Atmospheric Pressure: (100,6 ± 0,0) kPa

Test Specifications

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

Pulse Amplitude & Polarity: ☒ ± 2.0 kV ☐ ± 4.0 kV
(Signal Lines)

Pulse Amplitude & Polarity: ☐ ± 1.0 kV
(Earth Lines)

Burst Period: ☒ 300 ms

Repetition Rate: ☒ 5 kHz

Duration of Test Voltage: ☒ ≥ 1 min

Required Performance Criteria: ☒ A

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

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
L	A	A	A
N	A	A	A
PE	A	A	A
L – N	A	A	A
L – PE	A	A	A
N – PE	A	A	A
L – N – PE	A	A	A

☒ Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
RJ-45(LAN)	A	A	A
RJ-45(PoE)	A	A	A
Alarm In	A	A	A
Alarm Out	A	A	A

☐ Earth ports – Coupling Clamp used

Mode of Application	Performance Criteria	Results	
		(+) Burst (kV)	(-) Burst (kV)
-	A	-	-

Note: “Blank” = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



3.4 Surges

Reference Standard

EN 61000-4-5:2014+A1:2017

Test Date

Apr. 07, 2024

Test Location

EMS-Surge: Electro wave Shieldroom #7

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test SW	iec.control	EM TEST	5.4.8	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	Nov 09, 2024
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	Nov 09, 2024
☒	CDN	CNV 508N1	EM TEST	P1610176296	Nov 10, 2024

Test Conditions

Temperature: (22,9 ± 0,3) °C
Relative Humidity: (45,7 ± 0,4) % R.H.
Atmospheric Pressure: (100,6 ± 0,0) kPa

**Test Specifications****AC Power Lines**

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

Surge Amplitude :
Common Mode
☒ (2,0) kV
Differential Mode
☒ (1,0) kVNumber of Surges: ☒ 5 surges per angleAngle: ☒ 0°, 90°, 180°, 270° (input AC power port)Polarity: ☒ Positive & NegativeRepetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☒ B**DC Power Lines**Source Impedance: 42 ohm
Surge Amplitude: Common Mode
☐ (2,0) kV
Differential Mode
☐ (1,0) kVNumber of Surges: ☐ 5 SurgesPolarity: ☐ Positive & NegativeRepetition Rate: ☐ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☐ B**Signal Lines**Source Impedance: 42 ohm
Surge Amplitude: Common Mode
☒ (2,0) kV
Differential Mode
☒ (1,0) kVNumber of Surges: ☒ 5 SurgesPolarity: ☒ Positive & NegativeRepetition Rate: ☒ 1 surge per min ☐ 1 surge per 30 sec.Required Performance Criteria: ☒ B

**Test Data**☒ Line to Line – Differential Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
L – N	B	A	A
L – PE	B	A	A
N – PE	B	A	A

☐ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
-	B	-	-

Signal Lines☒ Line to Line – Differential Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
RJ-45(LAN)	B	A	A
RJ-45(PoE)	B	A	A

☐ Line to Earth – Common Mode

Mode of Application	Performance Criteria	Results	
		(+) Surge (kV)	(-) Surge (kV)
-	B	-	-

Note: "Blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Apr. 08, 2024

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	Nov 08, 2024
☒	ATTENUATOR	ATT 6/80	EM TEST	P1614178148	Nov 08, 2024
☒	CDN	CDN M016	TESEQ	43694	Nov 08, 2024
☒	CDN	CDN M016	TESEQ	43697	Nov 08, 2024
☒	CDN	CDN ST08A	TESEQ	43886	Nov 08, 2024
☒	EM CLAMP	KEMZ 801A	TESEQ	44099	Nov 09, 2024

Test Conditions

Temperature: (22,4 ± 0,3) °C
Relative Humidity: (46,0 ± 0,5) % R.H.
Atmospheric Pressure: (100,1 ± 0,0) kPa

Test Specifications

Frequency Range: ☒ 150 kHz to 80 MHz
Voltage Level: ☒ 10 Vrms
Modulation: ☒ 80 % AM, 1 kHz sine wave
Frequency Step: ☒ 1 % step
Dwell Time: ☐ 1 s ☒ 3 s
Required Performance Criteria: ☒ A

**Test Data**☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
L – N – PE	CDN	A	A

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
RJ-45(LAN)	CDN	A	A
RJ-45(PoE)	CDN	A	A
Alarm In	Clamp	A	A
Alarm Out	Clamp	A	A

☐ Earth ports

Coupling Location (Line Stressed)	Coupling Method	Performance Criteria	Results
-	-	-	-

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

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**

Any degradations of performance was not observed during in the test.



3.6 Power Frequency Magnetic Field Immunity

Reference Standard

EN 61000-4-8:2010

Test Date

Apr. 06, 2024

Test Location

EMS-Magnetic: 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	-
☒	EMS Test S/W	NET.CONTROL	EM TEST	1.2.11	-
☒	ULTRA COMPACT SIMULATOR	UCS 500N7	EM TEST	P1608172950	Nov 09, 2024
☒	MOTOR VARIAC	MV2616	EM TEST	P1552169719	Nov 09, 2024
☒	MAGNETIC FIELD COIL	MS 100N	EM TEST	P1536163691	Nov 10, 2024
☒	CURRENT TRANSFORMER	MC 26100 (100 A 교정)	EM TEST	P1550168963	Feb 14, 2025
☒	MULTIFUNCTION AC/DC POWER SOURCE	NETWAVE 7-400	EM TEST	P1614178393	Nov 08, 2024
☒	MAGNETICFIELD COIL	INA 703	Teseq AG	3006	Feb 14, 2025

Test Conditions

Temperature: (22,6 ± 0,2) °C
Relative Humidity: (46,1 ± 0,4) % R.H.
Atmospheric Pressure: (100,8 ± 0,0) kPa



Test Specifications

Field Strength(Power Source): ☒ 100 A/m (ac)

☒ 300 A/m (dc)

Frequency (ac): ☒ 16.7 Hz ☒ 50 Hz ☐ 60 Hz

Frequency (dc): ☒ 0 Hz

Required Performance Criteria: ☒ A



**Test Data**☒ Immersion method

Coil orientation	Performance	
	Criteria	Results
X - axis	A	A
Y - axis	A	A
Z - axis	A	A

☐ Proximity method

Coil orientation	Performance	
	Criteria	Results
X - axis	A	-
Y - axis	A	-
Z - axis	A	-

Note: "blank" = Not performed

Results:

A – No degradation of function

B – Distortion/Error of function (self-recoverable)

C – Loss of function

Test Results☒ PASS Required Performance Criteria☐ NOT PASS Required Performance Criteria**Remarks**Any degradations of performance was not observed during in the test.



APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

■ Power 1

[HOT]

Common Information

Test Description:

Conducted Emission

Model No.:

XRN-6420DB4

Phase:

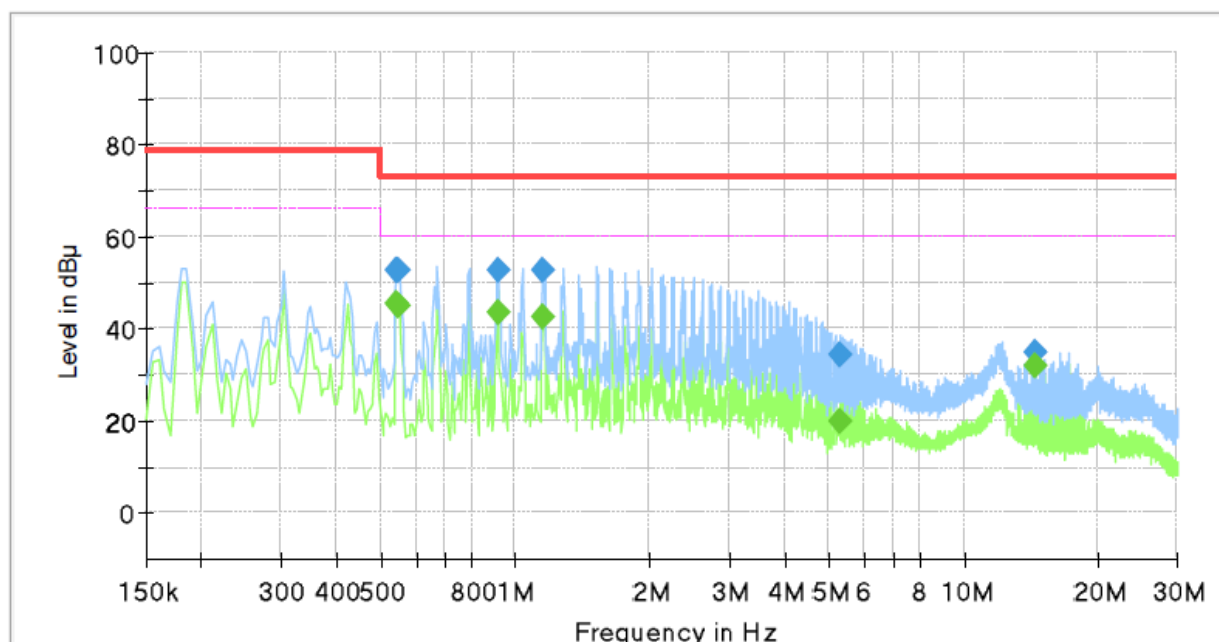
H

Mode:

Poewr 1

Operator Name:

KES



Final Result

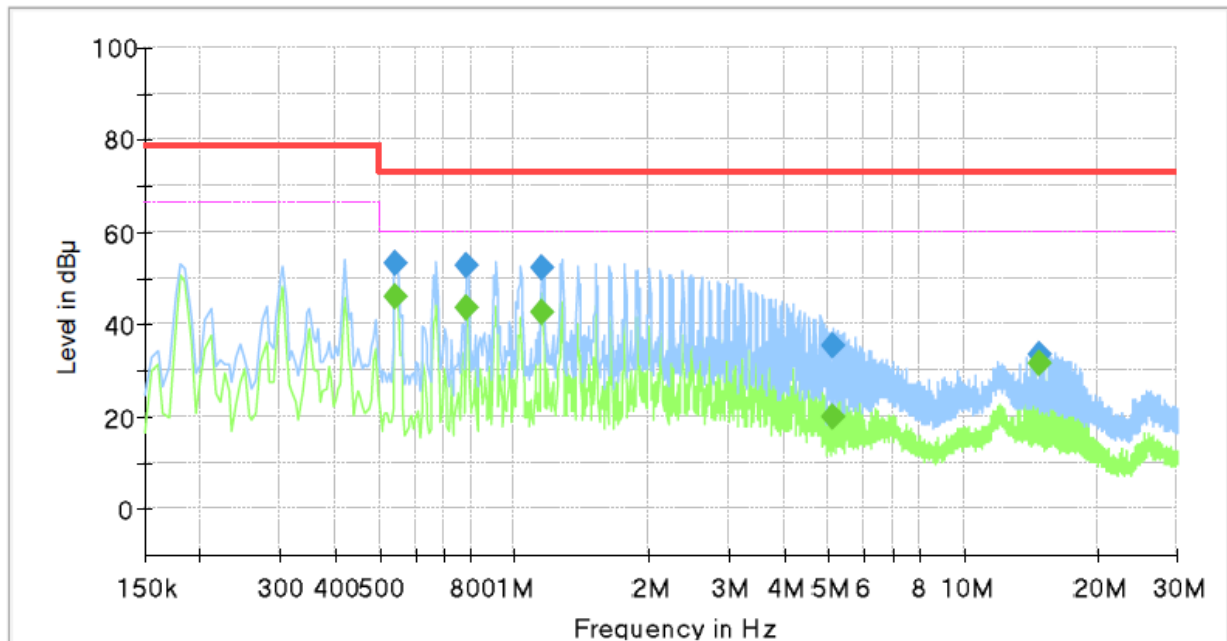
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.545000	---	45.40	60.00	14.60	1000.0	9.000	L1	19.4
0.545000	52.68	---	73.00	20.32	1000.0	9.000	L1	19.4
0.550000	---	45.22	60.00	14.78	1000.0	9.000	L1	19.4
0.550000	52.95	---	73.00	20.05	1000.0	9.000	L1	19.4
0.915000	---	43.75	60.00	16.25	1000.0	9.000	L1	19.4
0.915000	52.85	---	73.00	20.15	1000.0	9.000	L1	19.4
1.155000	---	42.48	60.00	17.52	1000.0	9.000	L1	19.5
1.155000	52.48	---	73.00	20.52	1000.0	9.000	L1	19.5
5.285000	---	20.08	60.00	39.92	1000.0	9.000	L1	19.8
5.285000	34.45	---	73.00	38.55	1000.0	9.000	L1	19.8
14.530000	---	31.91	60.00	28.09	1000.0	9.000	L1	20.1
14.530000	34.85	---	73.00	38.15	1000.0	9.000	L1	20.1



[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XRN-6420DB4
Phase: N
Mode: Power 1
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.545000	---	46.15	60.00	13.85	1000.0	9.000	N	19.4
0.545000	53.07	---	73.00	19.93	1000.0	9.000	N	19.4
0.785000	---	43.41	60.00	16.59	1000.0	9.000	N	19.4
0.785000	52.58	---	73.00	20.42	1000.0	9.000	N	19.4
1.155000	---	42.55	60.00	17.45	1000.0	9.000	N	19.5
1.155000	52.45	---	73.00	20.55	1000.0	9.000	N	19.5
5.150000	---	19.83	60.00	40.17	1000.0	9.000	N	19.8
5.150000	35.12	---	73.00	37.88	1000.0	9.000	N	19.8
14.755000	---	31.42	60.00	28.58	1000.0	9.000	N	20.1
14.755000	33.46	---	73.00	39.54	1000.0	9.000	N	20.1

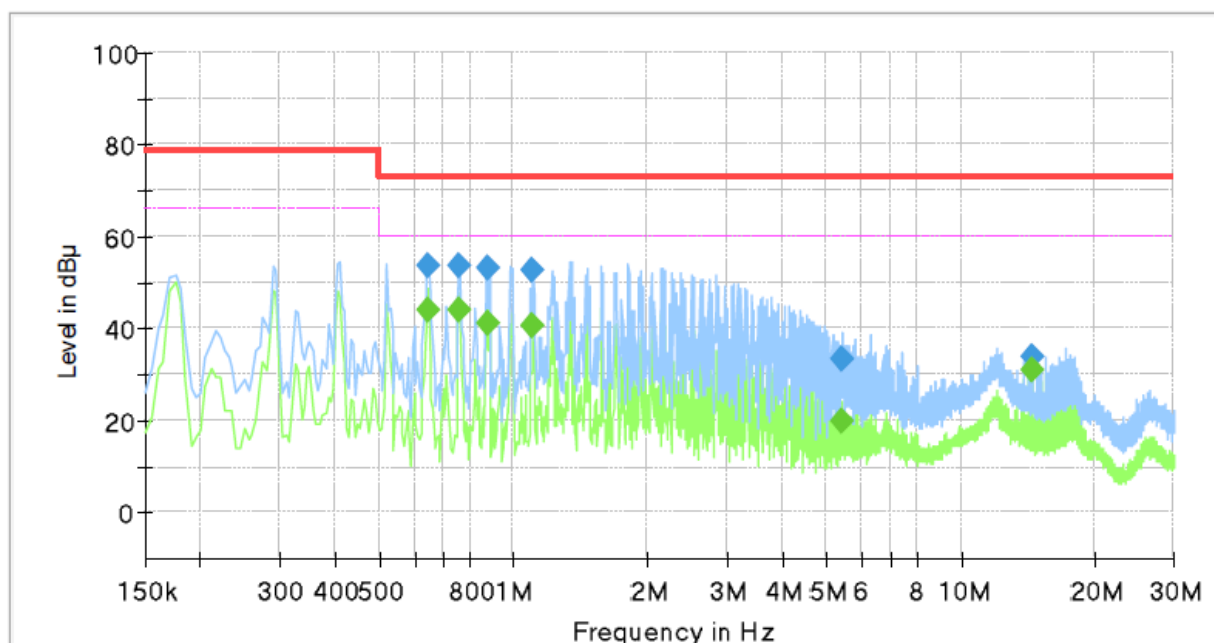


■ Power 2

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: XRN-6420DB4
Phase: H
Mode: Power 2
Operator Name: KES

**Final Result**

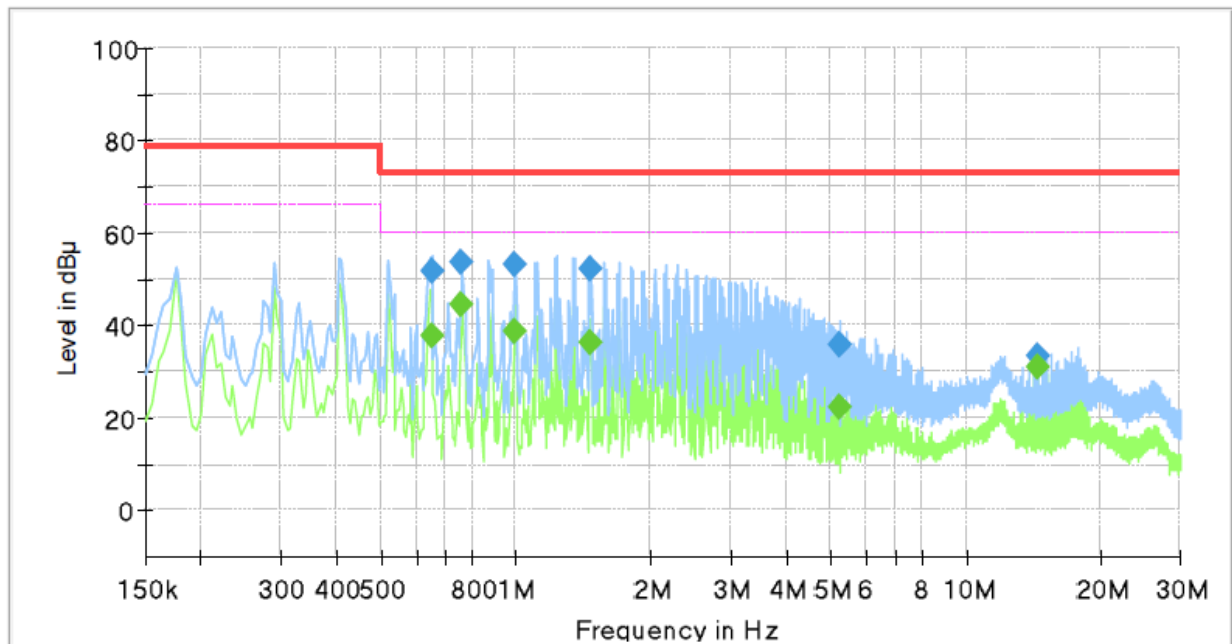
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.645000	---	43.81	60.00	16.19	1000.0	9.000	L1	19.4
0.645000	53.68	---	73.00	19.32	1000.0	9.000	L1	19.4
0.760000	---	44.13	60.00	15.87	1000.0	9.000	L1	19.4
0.760000	53.68	---	73.00	19.32	1000.0	9.000	L1	19.4
0.880000	---	41.18	60.00	18.82	1000.0	9.000	L1	19.4
0.880000	53.18	---	73.00	19.82	1000.0	9.000	L1	19.4
1.105000	---	40.77	60.00	19.23	1000.0	9.000	L1	19.5
1.105000	52.65	---	73.00	20.35	1000.0	9.000	L1	19.5
5.455000	---	19.80	60.00	40.20	1000.0	9.000	L1	19.8
5.455000	33.24	---	73.00	39.76	1000.0	9.000	L1	19.8
14.530000	---	30.88	60.00	29.12	1000.0	9.000	L1	20.1
14.530000	33.68	---	73.00	39.32	1000.0	9.000	L1	20.1



[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XRN-6420DB4
Phase: N
Mode: Power 2
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.650000	---	37.88	60.00	22.12	1000.0	9.000	N	19.4
0.650000	51.72	---	73.00	21.28	1000.0	9.000	N	19.4
0.760000	---	44.55	60.00	15.45	1000.0	9.000	N	19.4
0.760000	53.70	---	73.00	19.30	1000.0	9.000	N	19.4
1.000000	---	38.74	60.00	21.26	1000.0	9.000	N	19.4
1.000000	53.05	---	73.00	19.95	1000.0	9.000	N	19.4
1.470000	---	36.32	60.00	23.68	1000.0	9.000	N	19.5
1.470000	52.17	---	73.00	20.83	1000.0	9.000	N	19.5
5.235000	---	22.23	60.00	37.77	1000.0	9.000	N	19.8
5.235000	35.61	---	73.00	37.39	1000.0	9.000	N	19.8
14.530000	---	30.77	60.00	29.23	1000.0	9.000	N	20.1
14.530000	33.54	---	73.00	39.46	1000.0	9.000	N	20.1

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).

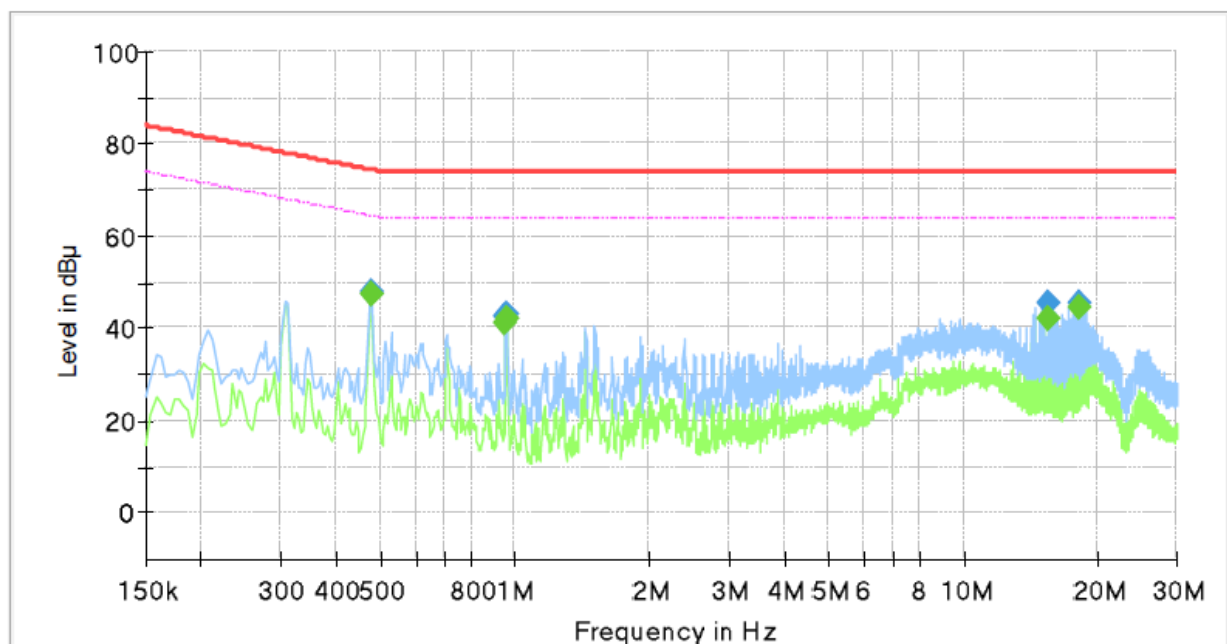
**Conducted Emissions at Telecommunication Ports**

■ Power 1_LAN 1(Camera)

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XRN-6420DB4
Mode : Power1_LAN1(Camera)
Speed : 1 000 Mbps
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.478000	---	47.59	64.37	16.78	1000.0	9.000	Single Line	19.2
0.478000	47.71	---	74.37	26.66	1000.0	9.000	Single Line	19.2
0.954000	---	41.00	64.00	23.00	1000.0	9.000	Single Line	19.3
0.954000	42.64	---	74.00	31.36	1000.0	9.000	Single Line	19.3
0.958000	---	42.11	64.00	21.89	1000.0	9.000	Single Line	19.3
0.958000	42.85	---	74.00	31.15	1000.0	9.000	Single Line	19.3
15.422000	---	42.23	64.00	21.77	1000.0	9.000	Single Line	20.0
15.422000	45.28	---	74.00	28.72	1000.0	9.000	Single Line	20.0
18.242000	---	44.37	64.00	19.63	1000.0	9.000	Single Line	20.1
18.242000	45.59	---	74.00	28.41	1000.0	9.000	Single Line	20.1

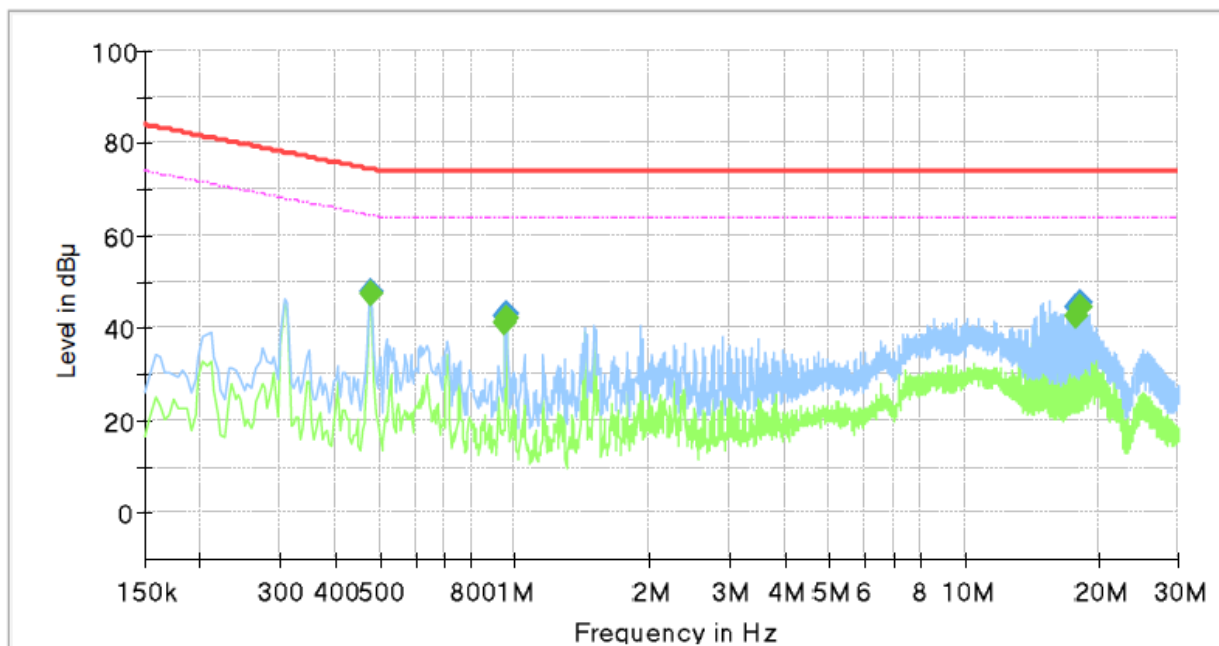


■ Power 2_LAN 1(Camera)

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XRN-6420DB4
Mode : Power2_LAN1(Camera)
Speed : 1 000 Mbps
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.478000	---	47.61	64.37	16.76	1000.0	9.000	Single Line	19.2
0.478000	47.73	---	74.37	26.64	1000.0	9.000	Single Line	19.2
0.954000	---	40.95	64.00	23.05	1000.0	9.000	Single Line	19.3
0.954000	42.73	---	74.00	31.27	1000.0	9.000	Single Line	19.3
0.958000	---	42.00	64.00	22.00	1000.0	9.000	Single Line	19.3
0.958000	42.85	---	74.00	31.15	1000.0	9.000	Single Line	19.3
17.694000	---	42.82	64.00	21.18	1000.0	9.000	Single Line	20.1
17.694000	44.37	---	74.00	29.63	1000.0	9.000	Single Line	20.1
18.242000	---	44.36	64.00	19.64	1000.0	9.000	Single Line	20.1
18.242000	45.61	---	74.00	28.39	1000.0	9.000	Single Line	20.1

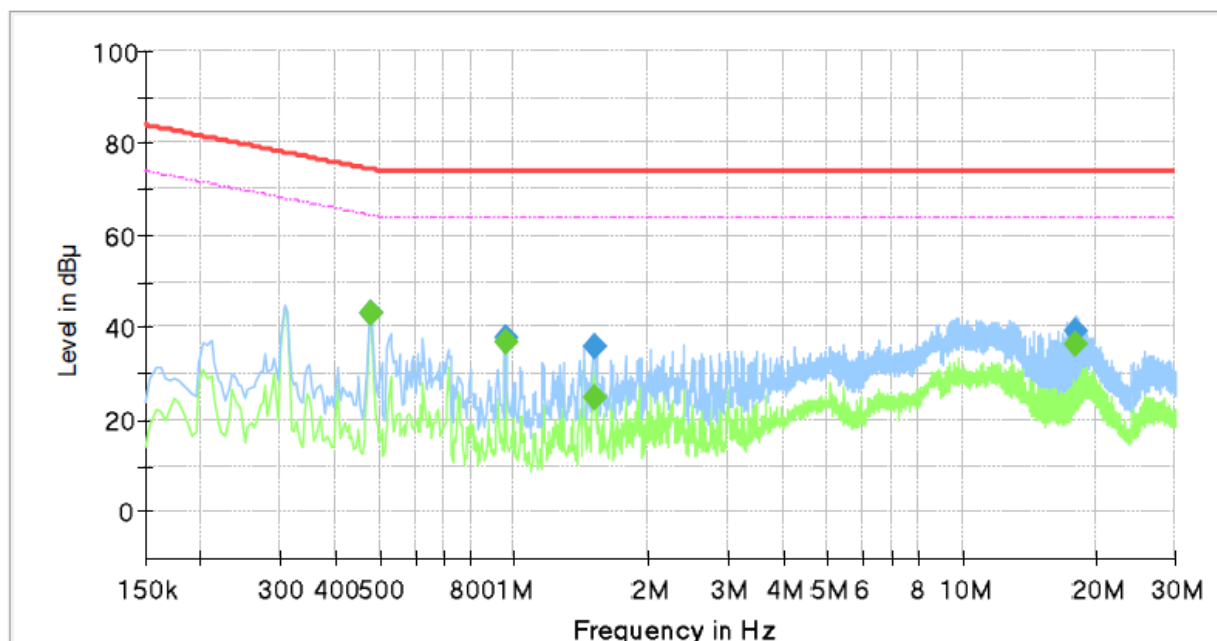


■ Power 1_LAN 2(Viewer)

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XRN-6420DB4
Mode : Power1_LAN2(Viewer)
Speed : 1 000 Mbps
Operator Name: KES

**Final_Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.478000	---	42.91	64.37	21.46	1000.0	9.000	Single Line	19.2
0.478000	43.04	---	74.37	31.33	1000.0	9.000	Single Line	19.2
0.958000	---	36.82	64.00	27.18	1000.0	9.000	Single Line	19.3
0.958000	37.55	---	74.00	36.45	1000.0	9.000	Single Line	19.3
1.510000	---	24.87	64.00	39.13	1000.0	9.000	Single Line	19.3
1.510000	35.96	---	74.00	38.04	1000.0	9.000	Single Line	19.3
17.878000	---	36.08	64.00	27.92	1000.0	9.000	Single Line	20.1
17.878000	39.26	---	74.00	34.74	1000.0	9.000	Single Line	20.1

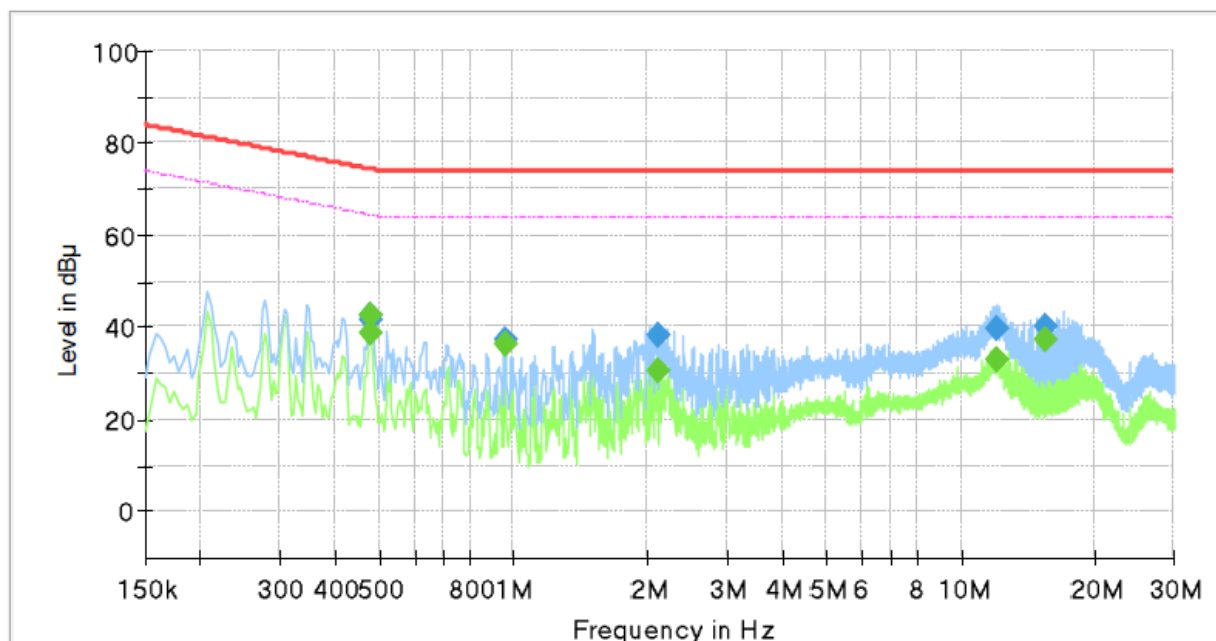


■ Power 2_LAN 2(Viewer)

[100 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: XRN-6420DB4
Mode : Power2_LAN2(Viewer)
Speed : 1 000 Mbps
Operator Name: KES

**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.478000	---	42.41	64.37	21.96	1000.0	9.000	Single Line	19.2
0.478000	42.74	---	74.37	31.63	1000.0	9.000	Single Line	19.2
0.482000	---	38.63	64.30	25.67	1000.0	9.000	Single Line	19.2
0.482000	41.43	---	74.30	32.87	1000.0	9.000	Single Line	19.2
0.958000	---	36.36	64.00	27.64	1000.0	9.000	Single Line	19.3
0.958000	37.23	---	74.00	36.77	1000.0	9.000	Single Line	19.3
2.102000	---	30.33	64.00	33.67	1000.0	9.000	Single Line	19.3
2.102000	38.41	---	74.00	35.59	1000.0	9.000	Single Line	19.3
12.042000	---	33.14	64.00	30.86	1000.0	9.000	Single Line	19.8
12.042000	39.92	---	74.00	34.08	1000.0	9.000	Single Line	19.8
15.422000	---	37.10	64.00	26.90	1000.0	9.000	Single Line	20.0
15.422000	40.38	---	74.00	33.62	1000.0	9.000	Single Line	20.0

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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

KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of this test report can be found on the verification page of our website (www.kes.co.kr).

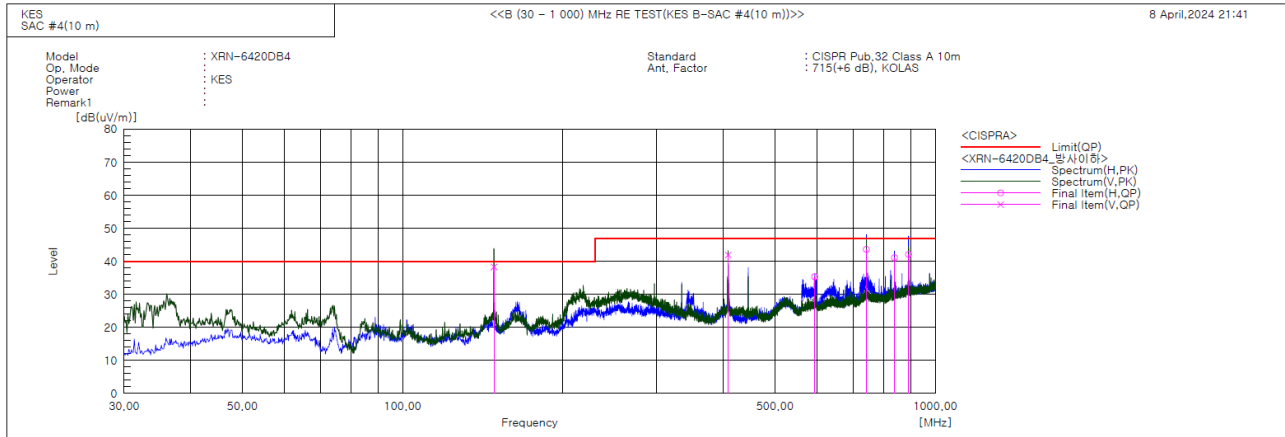


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Impulse Noise (click)

N/A

**Radiated Electric Field Emissions(Below 1 GHz)****Final Result**

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	148.340	V	63.5	-25.2	38.3	40.0	1.7	101.0	83.0	
2	408.300	V	55.7	-13.8	41.9	47.0	5.1	100.0	281.0	
3	593.813	H	43.4	-8.1	35.3	47.0	11.7	400.0	320.0	
4	742.344	H	48.9	-5.3	43.6	47.0	3.4	400.0	192.0	
5	838.374	H	45.6	-4.5	41.1	47.0	5.9	399.0	136.0	
6	890.754	H	45.3	-3.2	42.1	47.0	4.9	302.0	244.0	

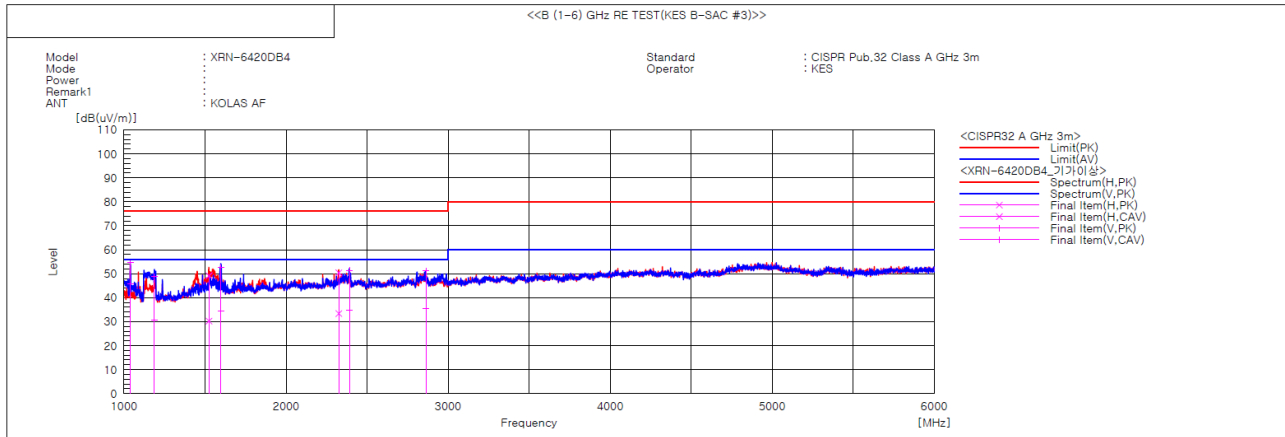
◆ Calculation

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

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

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

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

**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	1039.112	V	57.9	48.9	-3.1	54.8	45.8	76.0	56.0	21.2	10.2	100.0	283.5	
2	1187.166	V	51.4	33.4	-2.6	48.8	30.8	76.0	56.0	27.2	25.2	100.0	186.1	
3	1523.785	H	49.3	30.4	-0.1	49.2	30.3	76.0	56.0	26.8	25.7	100.0	356.6	
4	1598.636	V	52.1	33.8	0.5	52.6	34.3	76.0	56.0	23.4	21.7	100.0	175.9	
5	2325.490	H	44.8	27.8	5.6	50.4	33.4	76.0	56.0	25.6	22.6	100.0	10.6	
6	2390.995	V	45.4	28.7	5.9	51.3	34.6	76.0	56.0	24.7	21.4	100.0	283.5	
7	2863.120	V	43.8	28.1	7.4	51.2	35.5	76.0	56.0	24.8	20.5	100.0	355.8	

◆ Calculation

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

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

**Harmonic Current Emissions and Voltage Fluctuations and Flicker**

Average harmonic current results				
Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	0.498			
2	0.008	0.706	1.080	PASS
3	0.082	3.584	2.300	PASS
4	0.006	1.339	0.430	PASS
5	0.043	3.733	1.140	PASS
6	0.006	2.157	0.300	PASS
7	0.026	3.334	0.770	PASS
8	0.006	2.493	0.230	PASS
9	0.021	5.155	0.400	PASS
10	0.005	2.957	0.184	PASS
11	0.016	4.809	0.330	PASS
12	0.006	3.752	0.153	PASS
13	0.012	5.561	0.210	PASS
14	0.005	4.062	0.131	PASS
15	0.010	6.505	0.150	PASS
16	0.005	4.721	0.115	PASS
17	0.010	7.734	0.132	PASS
18	0.006	5.490	0.102	PASS
19	0.010	8.657	0.118	PASS
20	0.006	6.186	0.092	PASS
21	0.009	5.427	0.161	PASS
22	0.006	7.090	0.084	PASS
23	0.007	4.795	0.147	PASS
24	0.006	7.990	0.077	PASS
25	0.006	4.776	0.135	PASS
26	0.006	8.768	0.071	PASS
27	0.006	5.156	0.125	PASS
28	0.006	9.472	0.066	PASS
29	0.007	6.401	0.116	PASS
30	0.006	9.873	0.061	PASS
31	0.007	6.169	0.109	PASS
32	0.006	10.094	0.058	PASS
33	0.006	5.846	0.102	PASS
34	0.006	10.452	0.054	PASS
35	0.006	6.575	0.096	PASS
36	0.005	10.618	0.051	PASS
37	0.006	6.995	0.091	PASS
38	0.005	10.967	0.048	PASS
39	0.006	7.349	0.087	PASS
40	0.005	11.205	0.046	PASS

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	0.503			
2	0.009	0.547	1.620	PASS
3	0.084	2.437	3.450	PASS
4	0.007	1.010	0.645	PASS
5	0.043	2.536	1.710	PASS
6	0.007	1.588	0.450	PASS
7	0.026	2.287	1.155	PASS
8	0.006	1.821	0.345	PASS
9	0.021	3.548	0.600	PASS
10	0.006	2.208	0.276	PASS
11	0.016	3.318	0.495	PASS
12	0.006	2.772	0.230	PASS
13	0.012	3.845	0.315	PASS
14	0.006	3.010	0.197	PASS
15	0.010	4.566	0.225	PASS
16	0.006	3.445	0.173	PASS
17	0.011	5.530	0.199	PASS
18	0.006	4.001	0.153	PASS
19	0.011	6.149	0.178	PASS
20	0.006	4.702	0.138	PASS
21	0.009	5.781	0.161	PASS
22	0.007	5.239	0.125	PASS
23	0.008	5.217	0.147	PASS
24	0.007	5.978	0.115	PASS
25	0.007	5.319	0.135	PASS
26	0.007	6.524	0.106	PASS
27	0.007	5.741	0.125	PASS
28	0.007	7.132	0.099	PASS
29	0.008	7.192	0.116	PASS
30	0.007	7.158	0.092	PASS
31	0.008	6.954	0.109	PASS
32	0.006	7.431	0.086	PASS
33	0.007	6.428	0.102	PASS
34	0.006	7.870	0.081	PASS
35	0.007	7.584	0.096	PASS
36	0.006	7.981	0.077	PASS
37	0.007	7.837	0.091	PASS
38	0.006	7.844	0.073	PASS
39	0.007	8.162	0.087	PASS
40	0.006	8.522	0.069	PASS

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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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





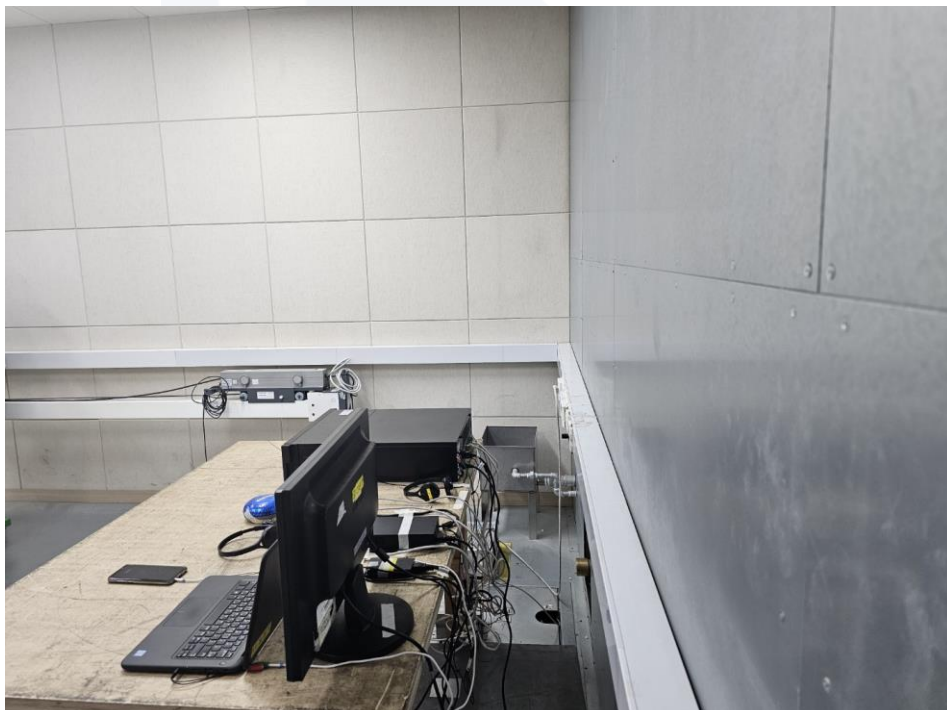
Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports





Conducted Emissions at Telecommunication Ports





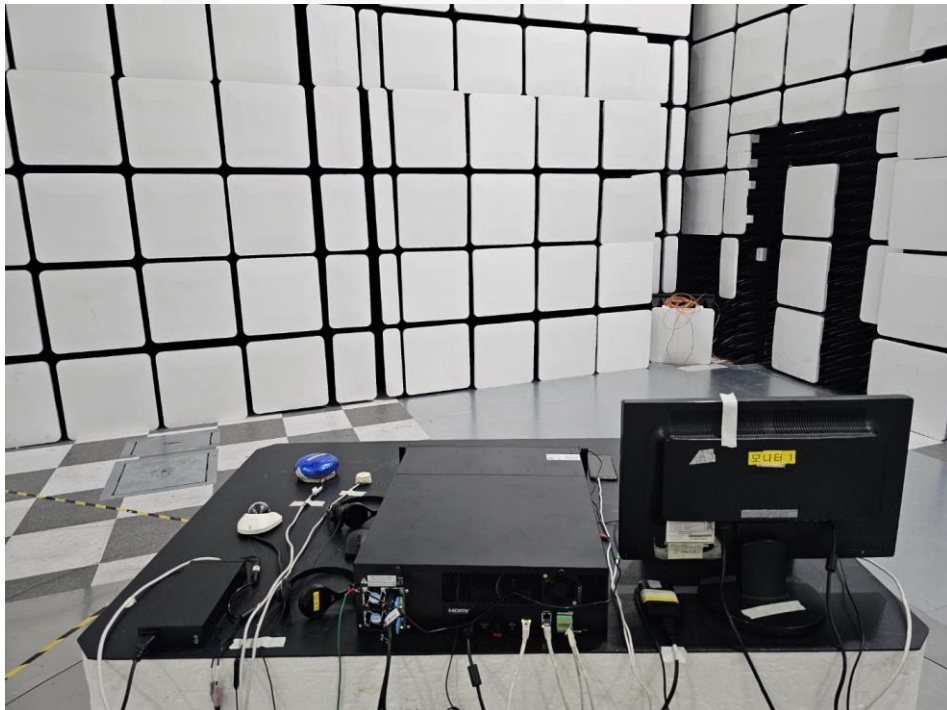
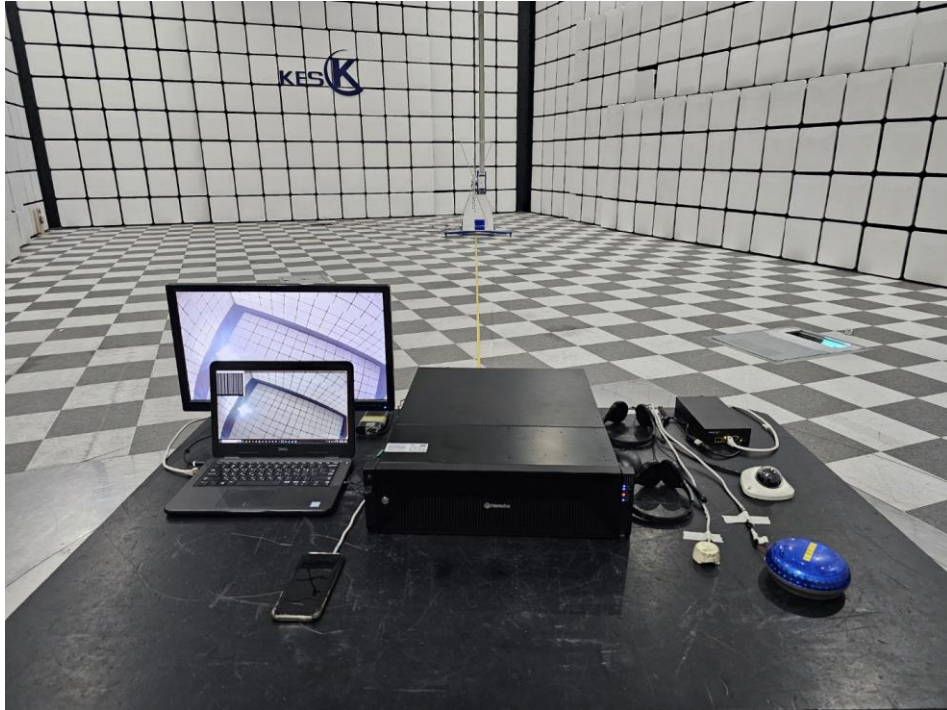
Impulse Noise (click)

N/A



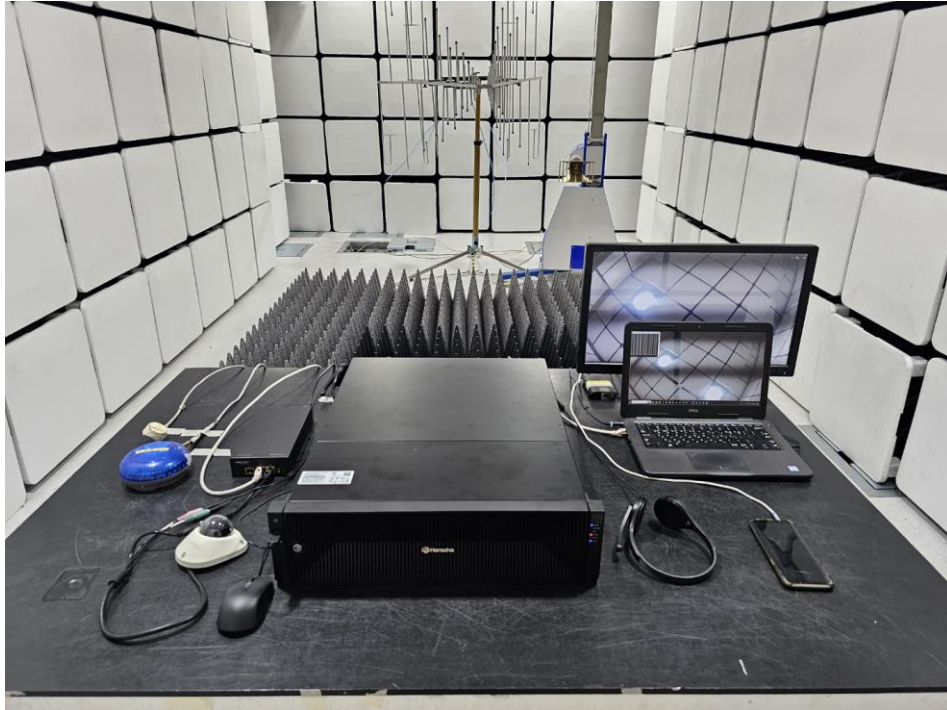


Radiated Electric Field Emissions(Below 1 GHz)





Radiated Electric Field Emissions(Above 1 GHz)





Harmonic Current Emissions and Voltage Fluctuations and Flicker

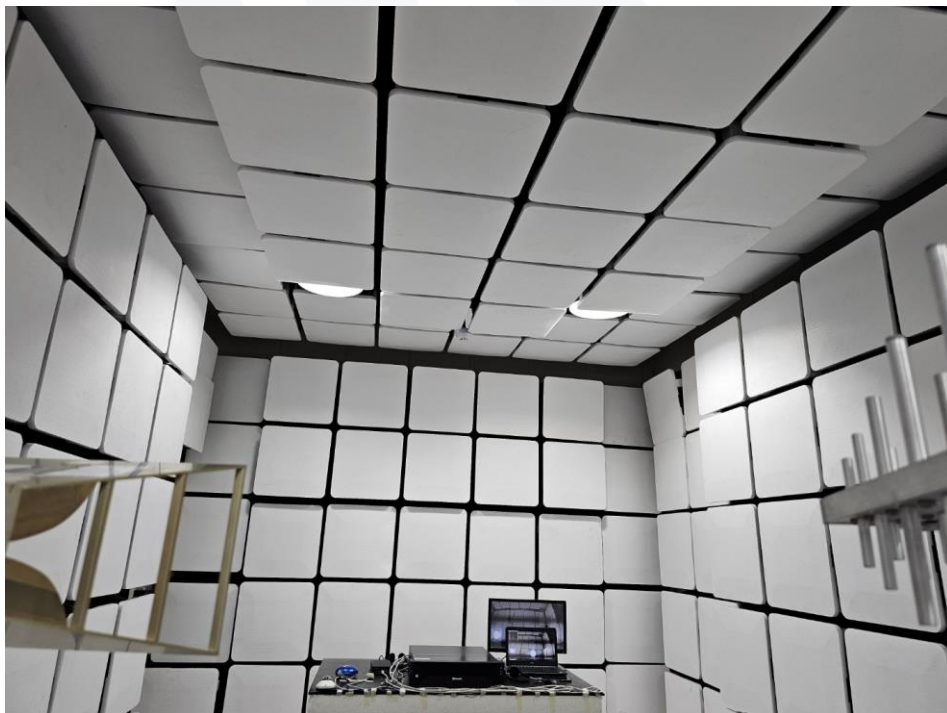




Electrostatic Discharge



Radio-frequency Electromagnetic Field





Fast Transients



Surges





Conducted Disturbance





Power Frequency Magnetic Field Immunity

■ AC/DC Adapter

[16.7 Hz (AC), 100 A/m]

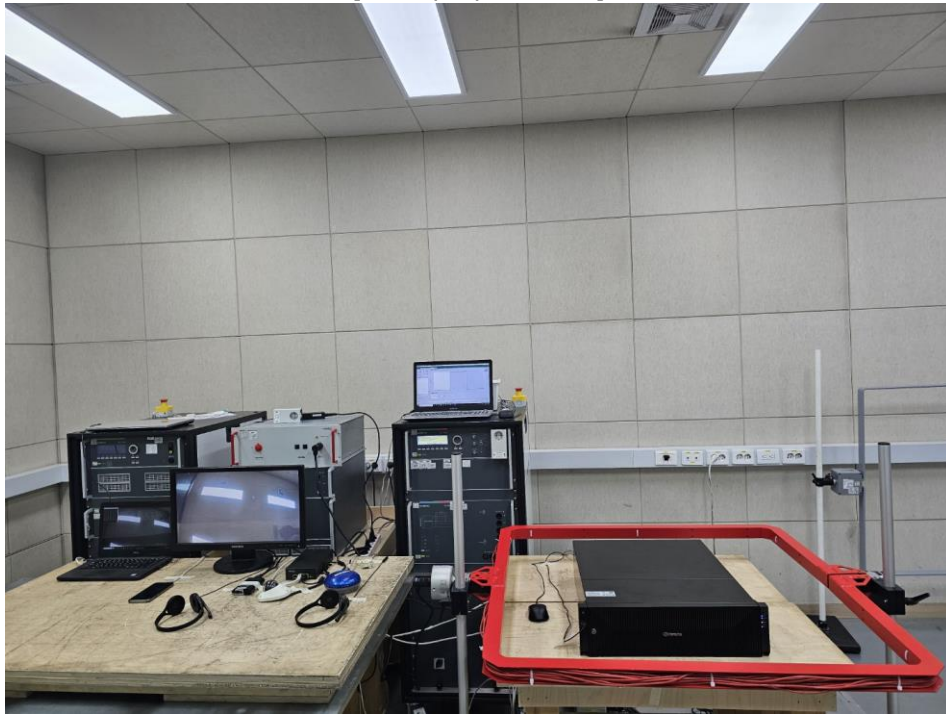


[50 Hz (AC), 100 A/m]





[0 Hz (DC), 300 A/m]





EUT Photographs

(Top)



(Bottom)





EUT Internal Layout Photographs



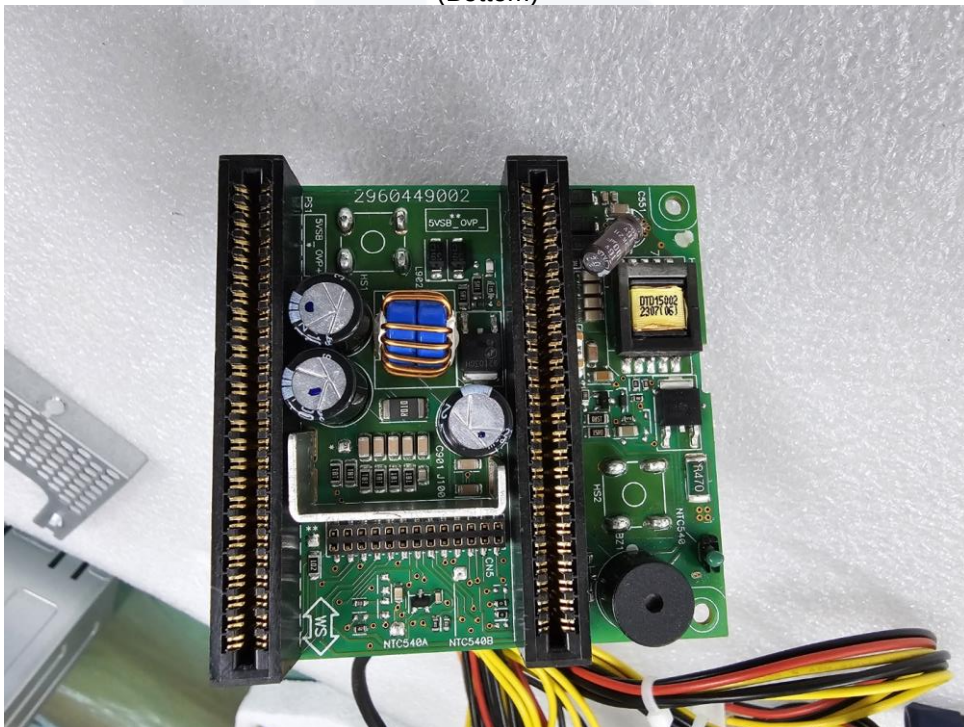


EUT Internal View – Board 1

(Top)



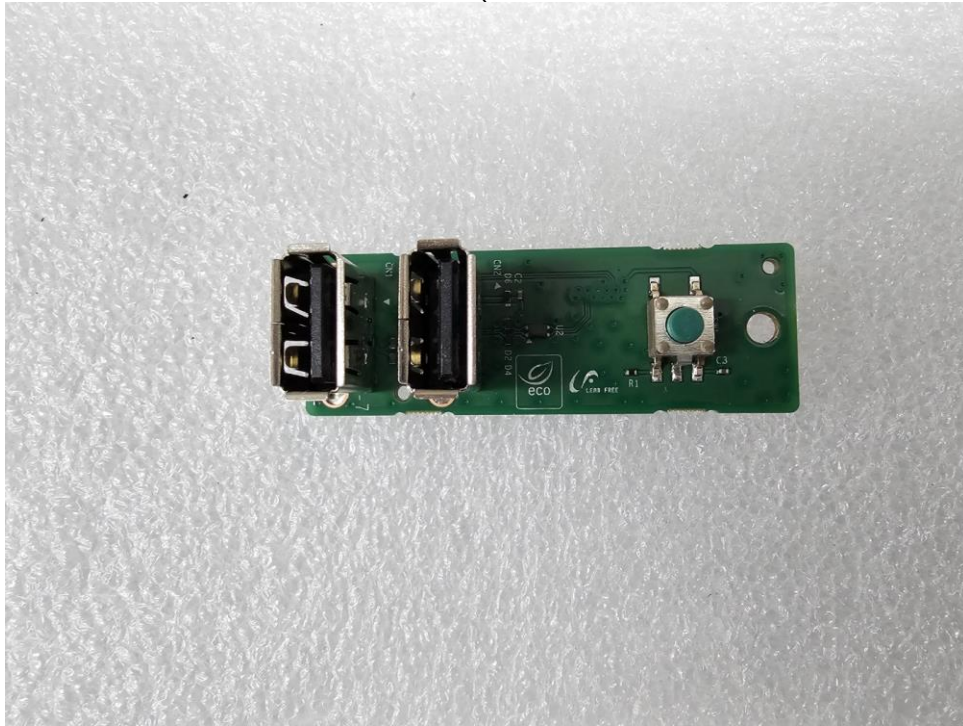
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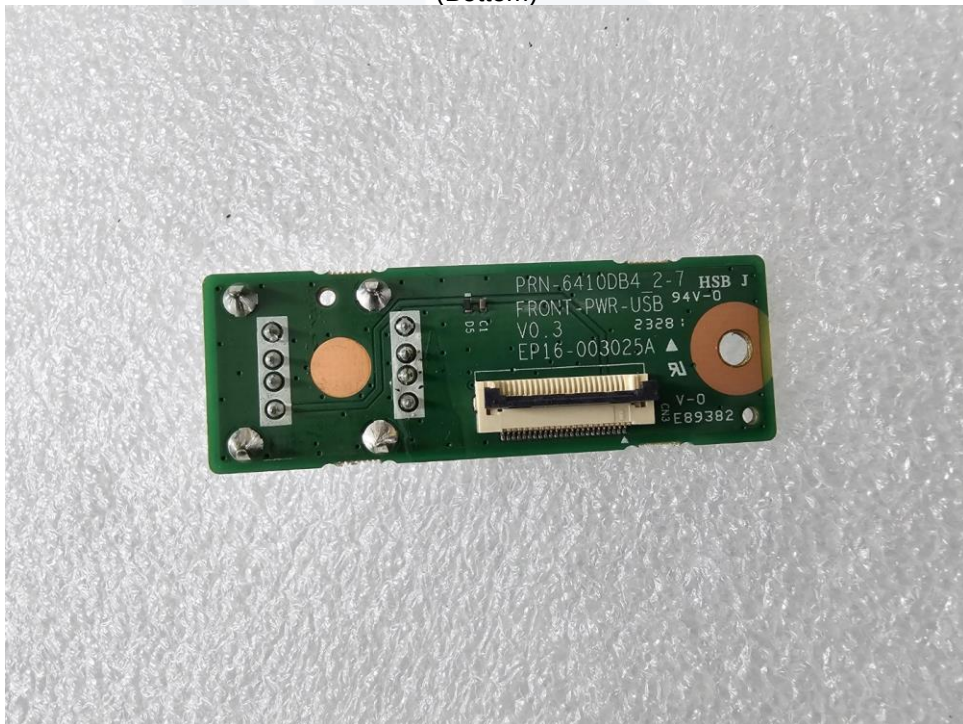


EUT Internal View – Board 2

(Top)



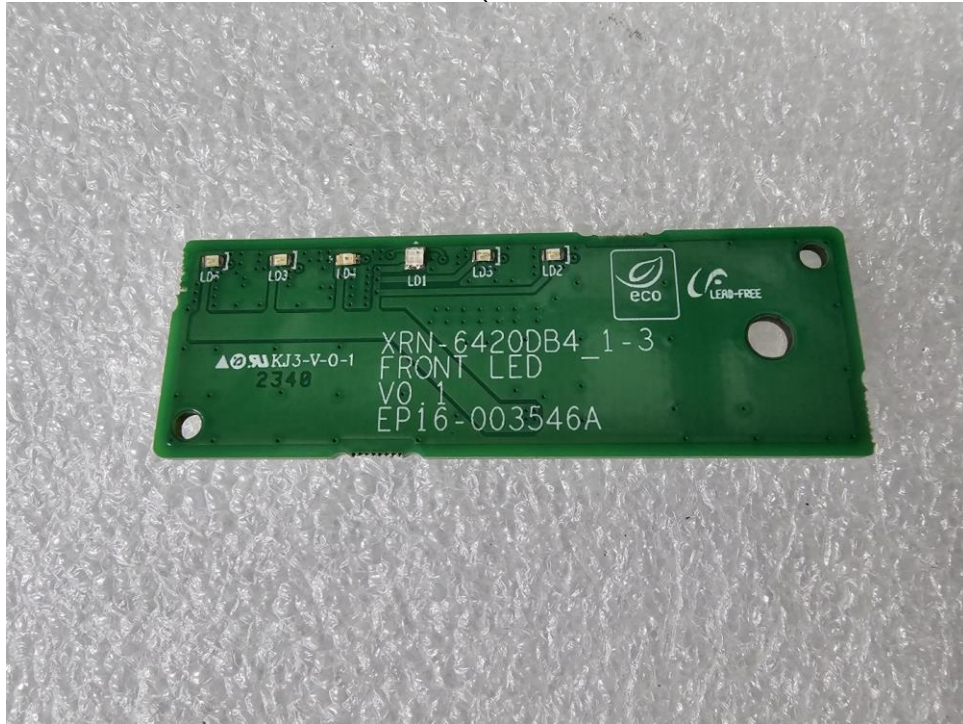
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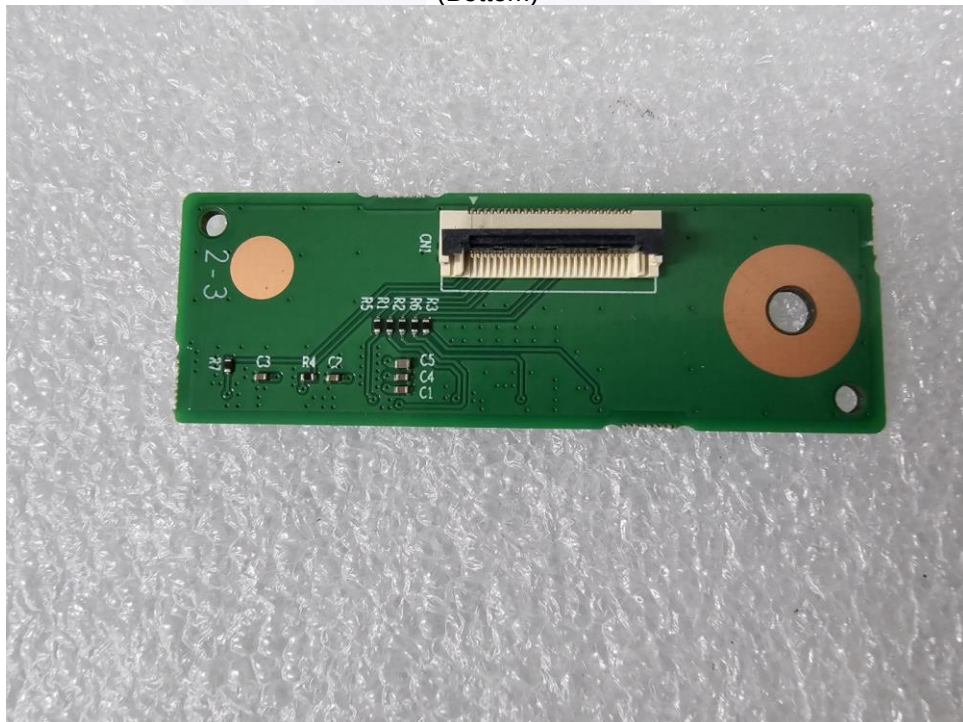


EUT Internal View – Board 3

(Top)



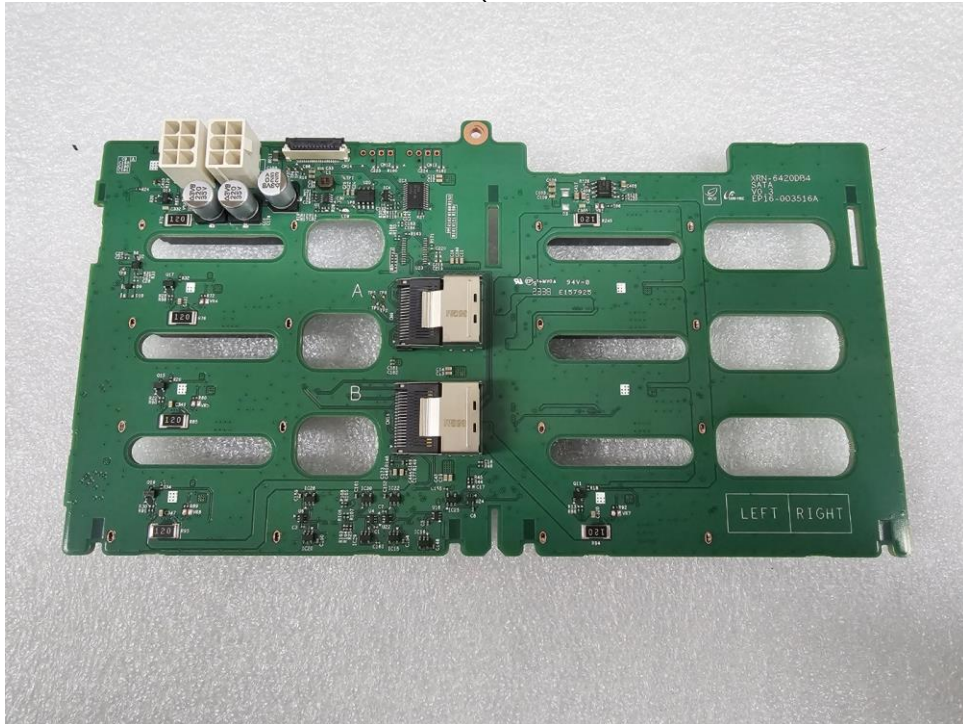
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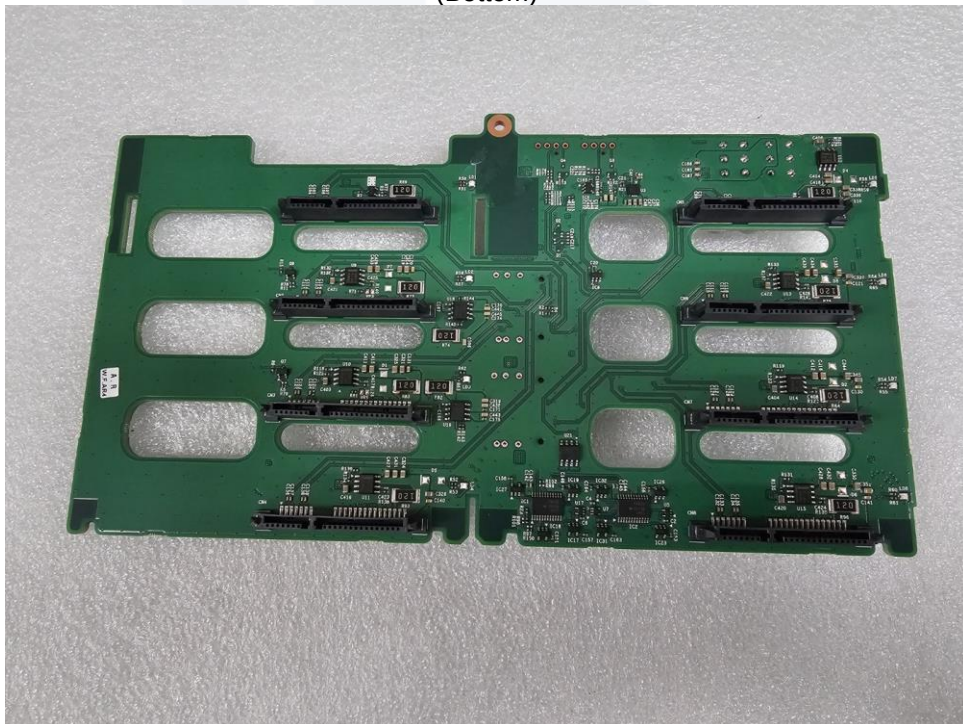


EUT Internal View – Board 4

(Top)



(Bottom)





EUT Internal View – Board 5

(Top)



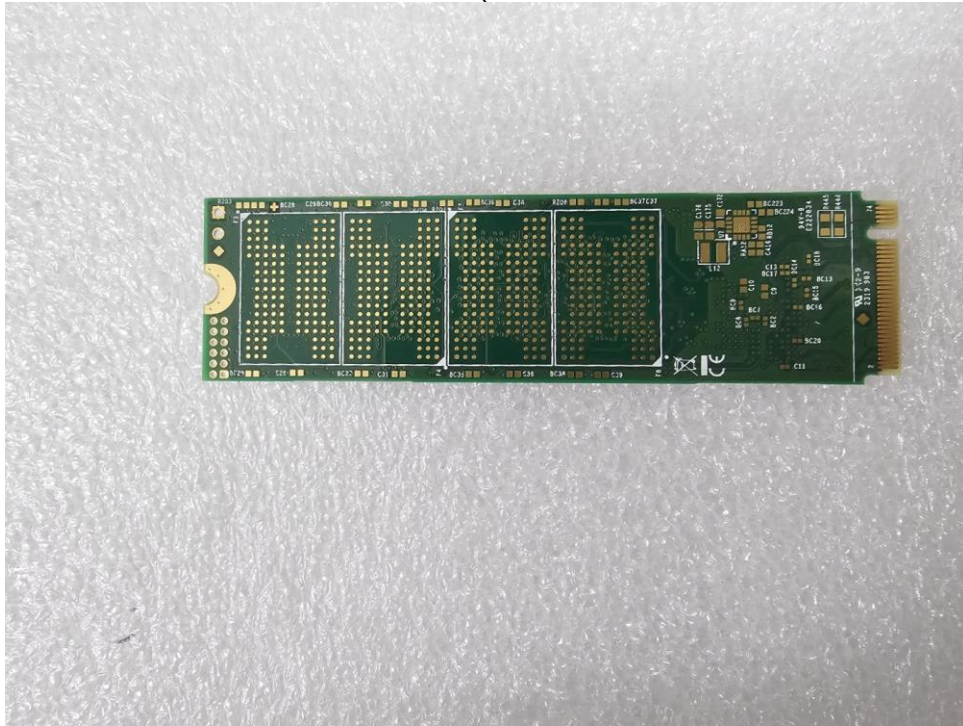
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EUT Internal View – Board 6

(Top)



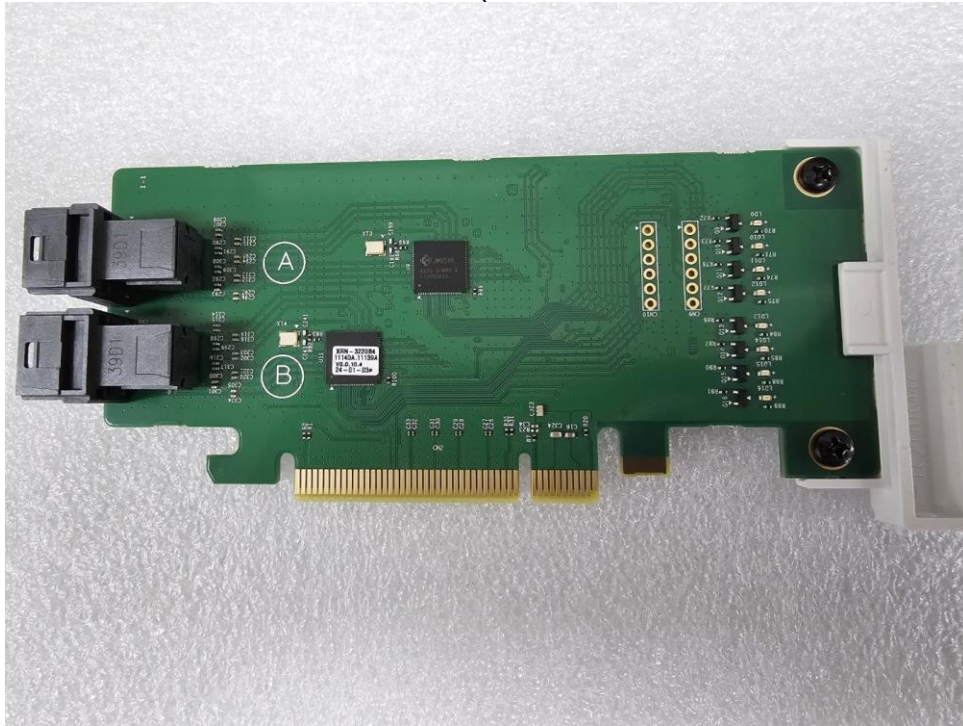
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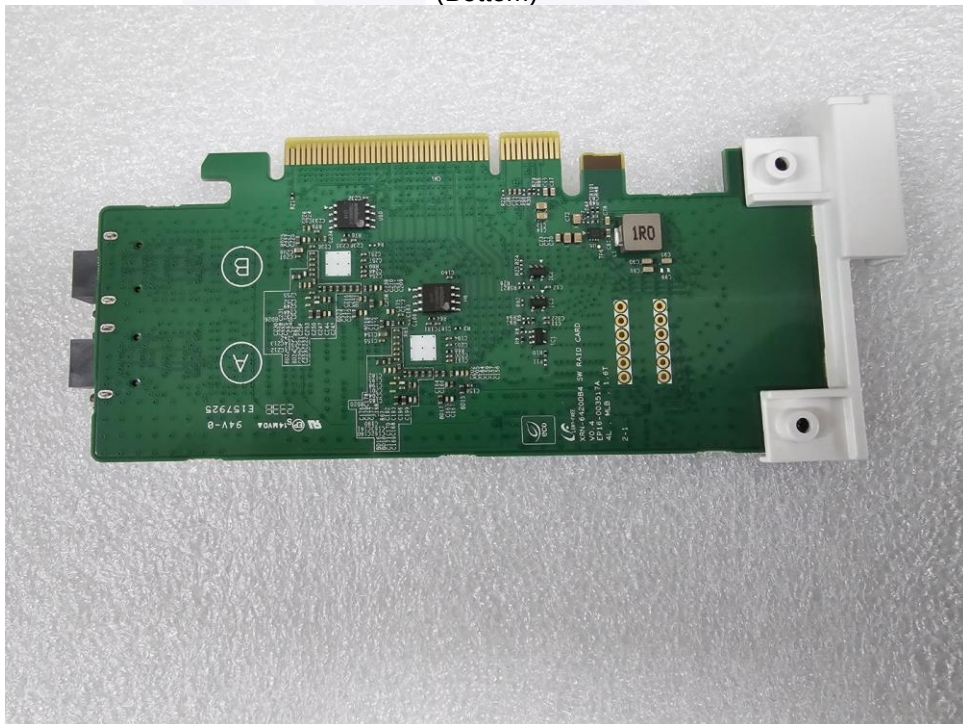


EUT Internal View – Board 7

(Top)



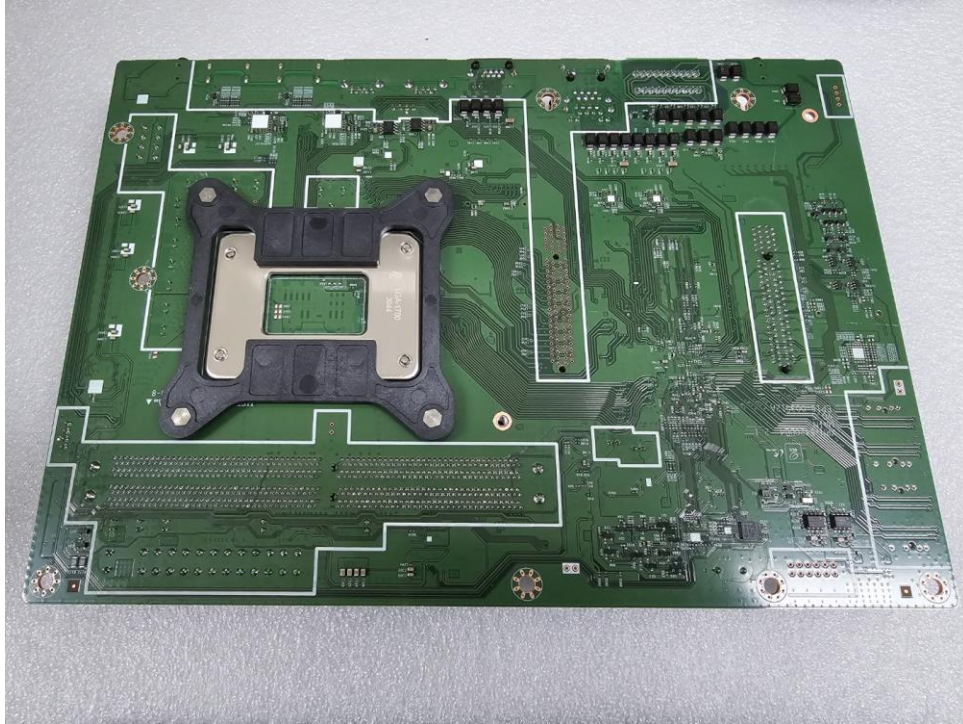
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EUT Internal View – Board 8

(Top)



(Bottom)





EUT Internal View – CPU

(Top)



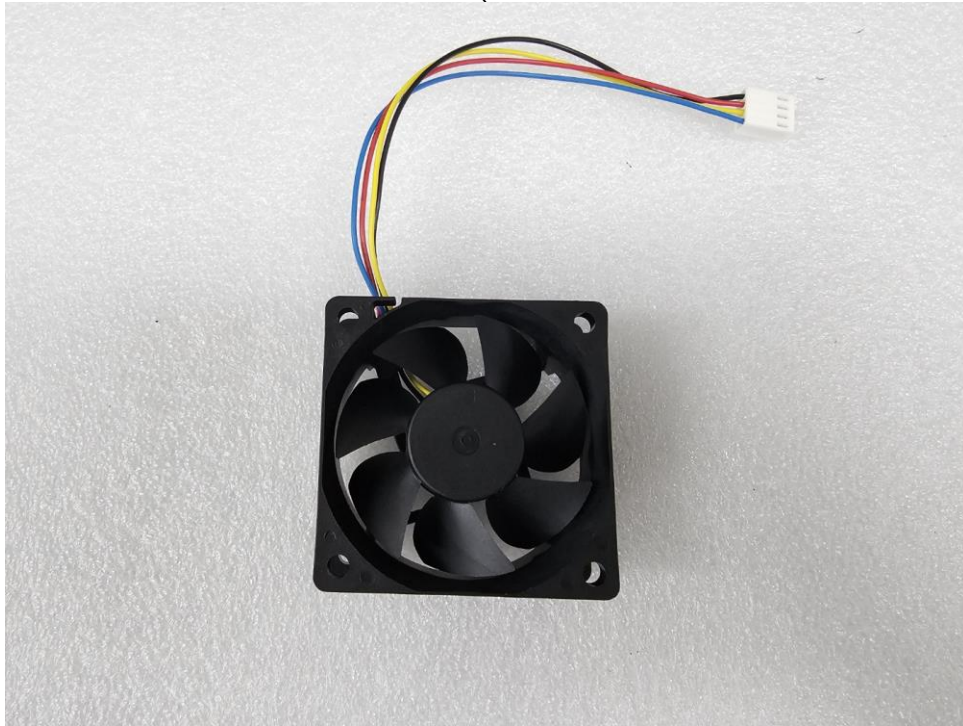
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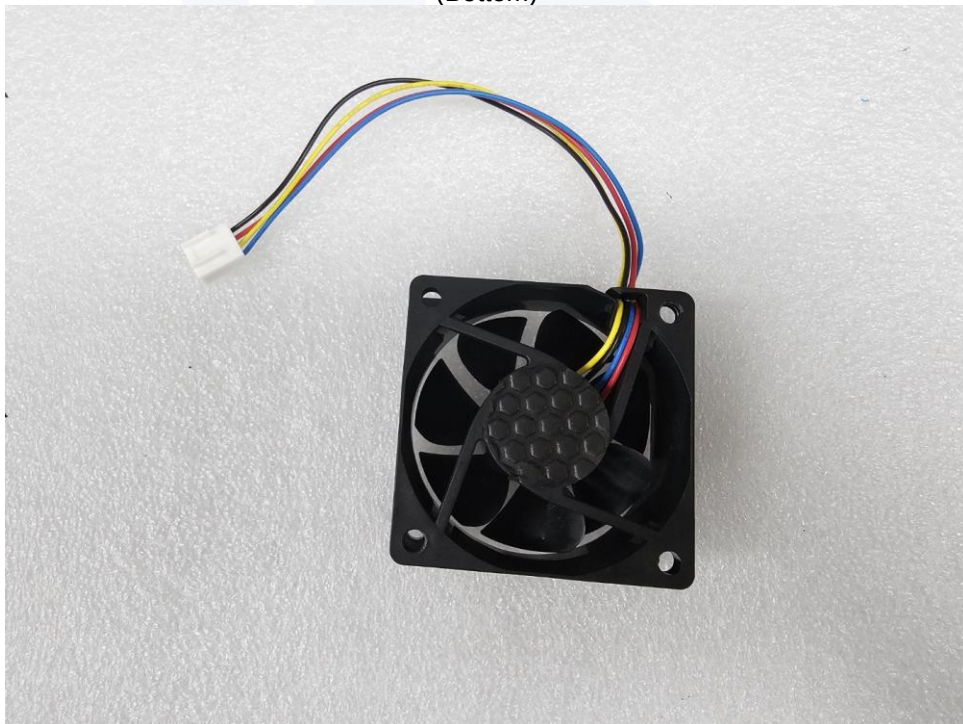


EUT Internal View – Cooler 1

(Top)



(Bottom)





EUT Internal View – Cooler 2

(Top)





EUT Internal View – Mouse

(Top)





EUT Internal View – Camera

(Top)





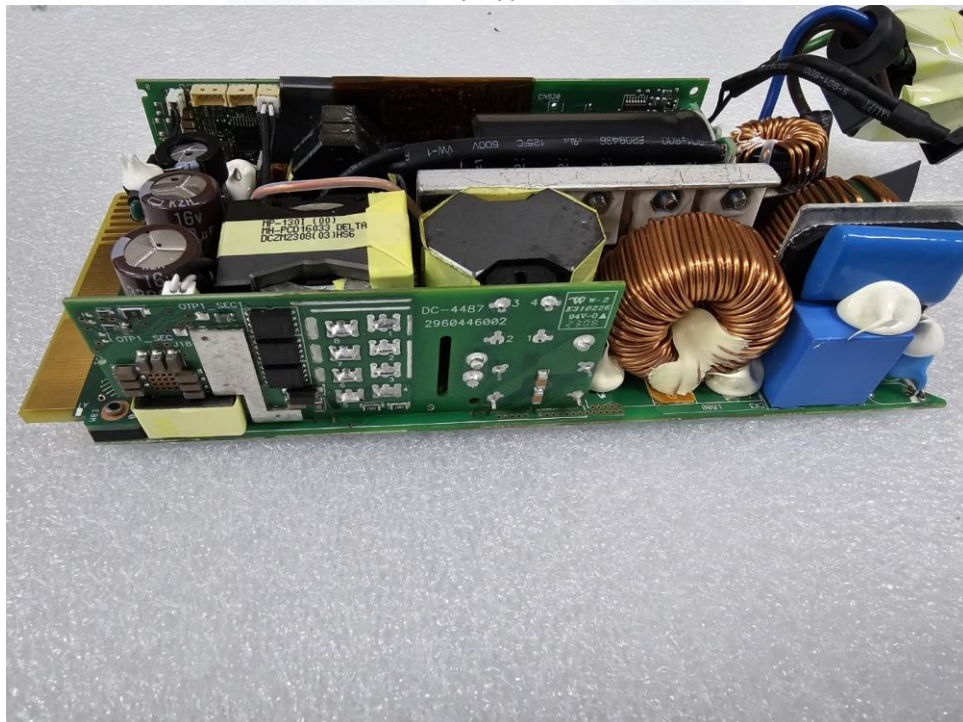
EUT Internal View – Power 1

(Top)



EUT Internal View – Power 2

(Top)





EUT Internal View – Power 3

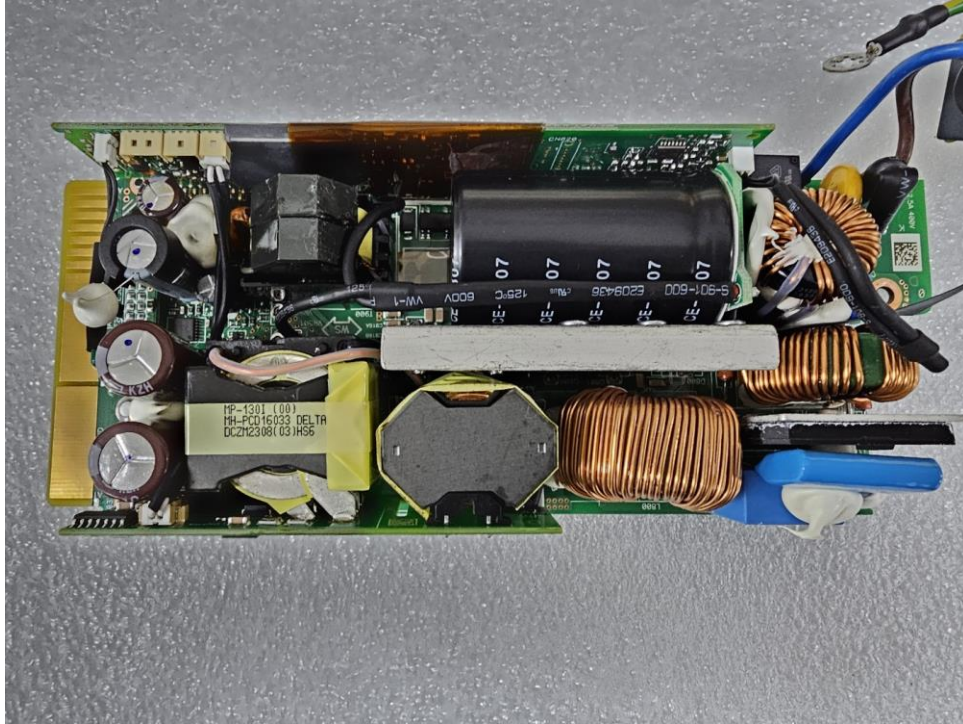
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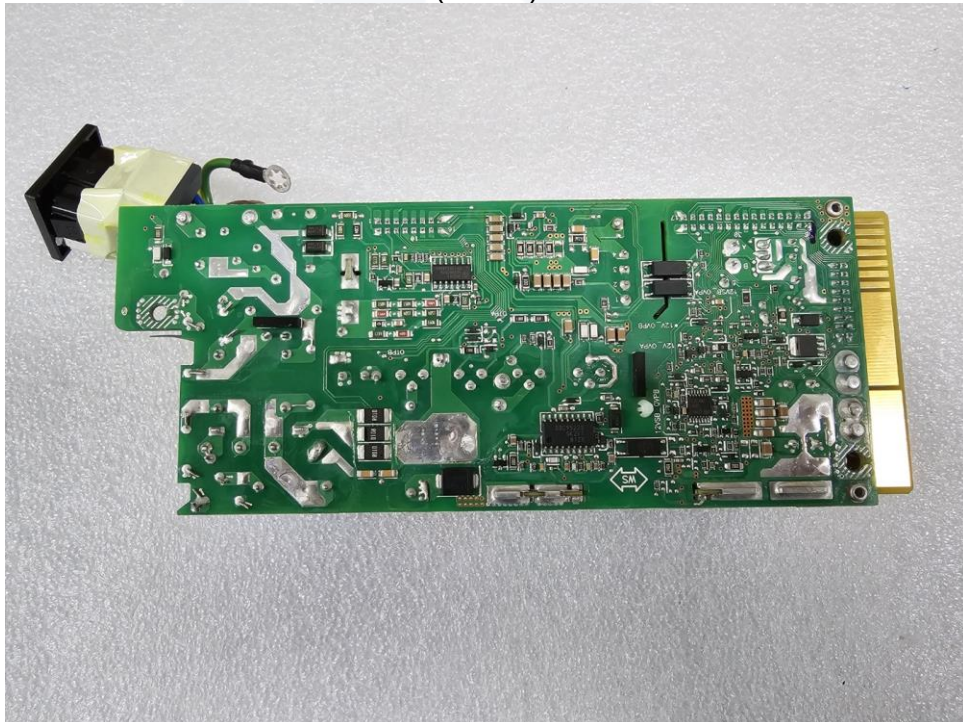


EUT Internal View – Power Board

(Top)

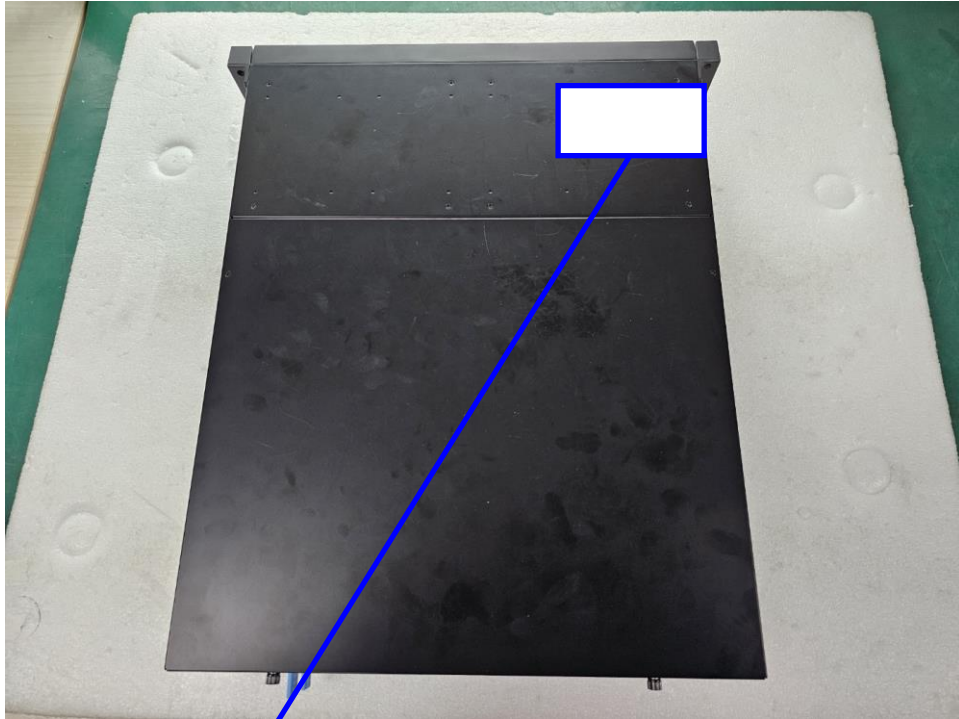


(Bottom)





Label and Location



NETWORK VIDEO RECORDER

Model No : XRN-6420DB4

Manufacturer : HANWHA VISION VIETNAM COMPANY LIMITED

Made in Vietnam

UK CA **CE**