

EMC TEST REPORT

Test Report No. : KES-EM-23T0175
Date of Issue : Mar. 06, 2023
Product name : NVR
Model/Type No. : XRN-820S
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)
Equipment authorization : **Supplier's Declaration of Conformity**
Date of Receipt : Feb. 10, 2023
Test date : Feb. 22, 2023 ~ Feb. 23, 2023
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by



Dong Hyun, Won
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.



REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 06, 2023	KES-EM-23T0175	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Display		
Network camera	Inputs	Max. 8CH
	Resolution	32MP ~ CIF
	Protocols	SUNAPI, ONVIF
Decoding	Local Display	FHD : HDMI & VGA Dual monitor UHD : HDMI Single monitor
	Multi Screen Display	[Local Monitor] - Dynamic layout, Virtual channel view - Up to 16 Division [Web] 1/ 2H/ 2V/ 3V/ 4/ 6/ 8/ 9
	Resolution	[Local Monitor] FHD Clone mode : 32M(15fps, H.265 Only), 12M(30fps, H.265 Only), 8.3M(50fps), 1080p(240fps), D1(480fps) UHD Single mode : 32M(15fps, H.265 Only), 12M(30fps, H.265 Only), 8.3M(50fps), 1080p(240fps), D1(270fps) FHD Expand mode: 32M(12fps, H.265 Only), 12M(25fps, H.265 Only), 8.3M(30fps), 1080p(90fps), D1(200fps)
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 120Mbps
	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	Max. 32Mbps
	User	Max. 4 Users (Local 1, Remote 3)
	Simultaneous playback	Max. 32CH(Local 8CH, Remote 8CH per user)
	Fisheye Dewarping	CMS
	Mode	Date & Time(Calendar), Event list, Text Search, Smart Search
	Resolution	CIF ~ 32MP (Up to H.264 8.3MP, H.265 32MP)
	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
Storage	Supported HDD	Up to 6TB
	HDD Slot	SATA 2ea(Max. 12TB)
Backup	File backup	BU/Exe/AVI(GUI), JPG/AVI(Network)
	Function	Multi channel(Up to 8CH) 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. 120Mbps
Audio	GUI	8 CH(network)
	Web	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
Web viewer	Supported OS	Windows 10, macOS 10.13

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Supported browser		Google Chrome, Microsoft Edge, Mac Safari
Viewer Software		WAVE, SSM, Webviewer, Smart Viewer, Wisenet mobile Support CGI(SUNAPI) for integration to 3rd 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 8CH(Multi-Profile Support), Playback 4CH
	Max. Remote Users	Search(3), Live Unicast(10)
Redundancy	Fallover	N+1
	ARB	Support
Easy configuration		P2P(QR code)
Interface		
Front	Indicator	HDD, Alarm, Power, Record, Backup, Network
Storage		OK
HDMI		1EA 3840x2160 30Hz
VGA		1EA 1920x1080 60Hz
Audio		Out 1EA (3.5mm Audio Jack)
Ethernet		PoE+ RJ-45 8EA (LAN, 10/100), RJ-45 2ea (LAN/WAN 1Gbps)
Alarm		In 4EA, Out 2EA
USB		3EA(Front 2 x USB 2.0, Rear 1 x USB 3.0)
Power Inlet		AC 1EA
System		
Log	Log List	Max. 100,000 (System Log, Event Log each)
System Control		Mouse, Keyboard, Web, Controller (SPC-2000)
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
Electrical		
Power Input		100 ~ 240 VAC ± 10%; 50/60 Hz
Power Consumption		Max 160W
PoE Budget		100W
Mechanical		
Color / Material		Black / Metal
Dimension (WxdxdD)		370 x 50.7 x 324.3 mm (14.57 x 2 x 12.77 inch)
Weight		2.7Kg (5.95lb)
Intelligent Analysis		
AI Search	Object Attribute	Compatible for Wisenet AI Camera

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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 120 V, 60 Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NVR	XRN-820S	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
SWITCHING POWER SUPPLY	DPS-200PB-185 C	-	Delta Electronics Power (Dongguan) Co., Ltd.	-

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook 1	LG15N54	503NZWY038929	LG Electronics Inc.	-
Notebook 1 Adapter	PA-1900-14	OF2R2633487017764	LITE-ON TECHNOLOGY COPORATION	-
Notebook 2	LG15N54	506NZGK000615	LG Electronics Inc.	-
Notebook 2 Adapter	PA-1650-43(65W)	OF58U63849302Y609	LG Electronics Inc.	-
Monitor 1	-	-	DELL INC.	-
Monitor 2	HSTND-7041-L	6CM6020YQQ	HP Inc.	-
Camera 1	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 2	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 3	QNV-6024RM	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 4	LVN-6030R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 5	QNV-6020RN/EX	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 6	XND-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 7	XNV-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 8	QNV-8080R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Alarm 1	PRO-SL	-	SENSOR PRO	-
Alarm 2	PRO-SL	-	SENSOR PRO	-
Button Alarm 1	-	-	-	-
Button Alarm 2	-	-	-	-
Button Alarm 3	-	-	-	-

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Description	Model Number	Serial Number	Manufacturer	Remarks
Button Alarm 4	-	-	-	-
Headset	HD 202	-	SENNHEISER	-
Smartphone	SM-G991N	-	Samsung Electronics Inc.	-
USB Memory 1	-	-	SanDisk	32 GB
USB Memory 2	-	-	SanDisk	32 GB
HDD	WD63PURU-64BFEY0	-	WD Purple™	6 TB

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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)	USB	Mouse (EUT)	USB	1.8	U
	RJ-45 (LAN)	Notebook 1	RJ-45 (LAN)	3.2	U
	RJ-45 (LAN)	Notebook 2	RJ-45 (LAN)	3.5	U
	HDMI	Monitor 1	HDMI	2.0	S
	D-SUB	Monitor 2	D-SUB	2.2	S
	RJ-45 (PoE)	Camera 1	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 2	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 3	RJ-45 (PoE)	3.1	U
	RJ-45 (PoE)	Camera 4	RJ-45 (PoE)	3.2	U
	RJ-45 (PoE)	Camera 5	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 6	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 7	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 8	RJ-45 (PoE)	10.0	U
	3 Pin	Alarm 1	3 Pin	3.5	U
	3 Pin	Alarm 2	3 Pin	4.0	U
	2 Pin	Button Alarm 1	2 Pin	4.0	U
	2 Pin	Button Alarm 2	2 Pin	4.0	U
	2 Pin	Button Alarm 3	2 Pin	3.2	U
	2 Pin	Button Alarm 4	2 Pin	3.3	U
	3.5 mm	Headset	Line	2.8	U

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Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NVR (EUT)	USB	USB Memory 1	USB	-	-
	USB	USB Memory 2	USB	-	-
	SATA	HDD	SATA	0.2	U
	Ground	External Ground	Ground	2.2	U
Notebook 1	DC Jack	Notebook 1 Adapter	DC Jack	2.0	U
	3.5 mm	Smartphone	USB Type C	1.6	U
Notebook 2	DC Jack	Notebook 2 Adapter	DC Jack	1.8	U

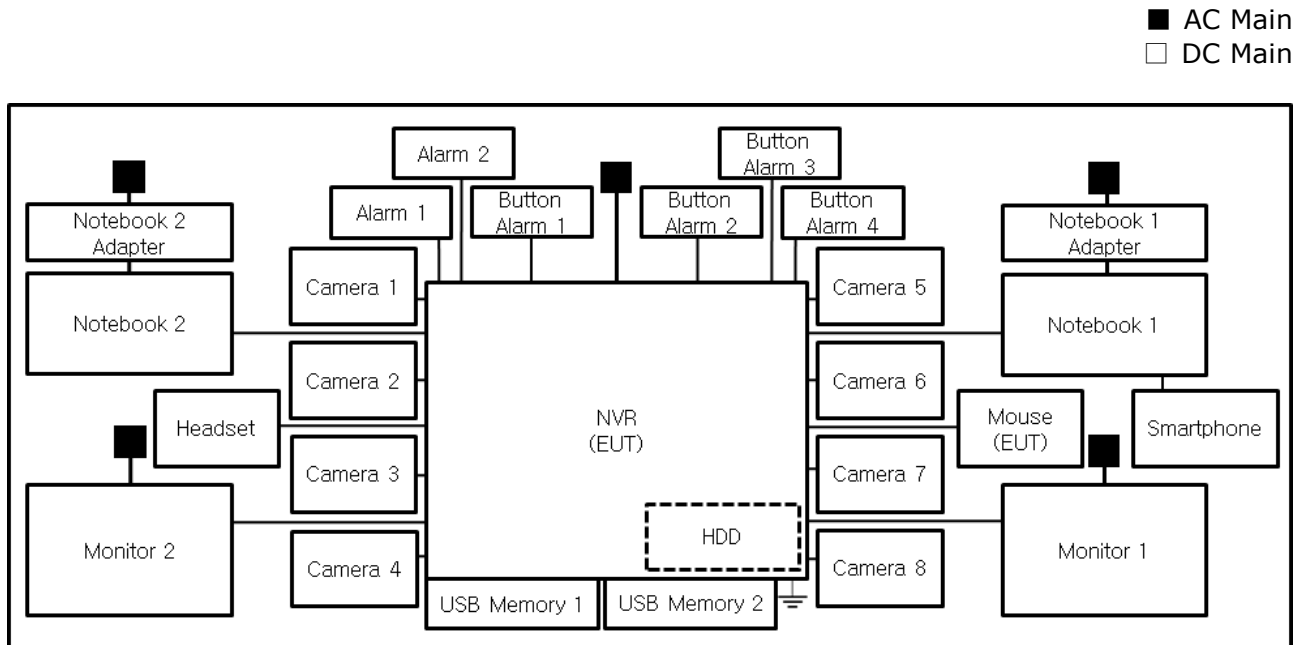
* Unshielded = U, Shielded = S

1.7 EUT Operating Mode(s)

Test mode	operating
Operating	EUT Monitoring, Ping Test after testing, check if the recording is normally done on the HDD and USB Memory 1, 2, Check the status 1 khz tone in Headset

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

1.8 Configuration



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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:

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

☒ **IC Regulation ICES-003 Issue 7**

☐ CAN/CSA-CISPR 32:17

☐ Class A

☐ Class B

☒ ANSI C63.4a-2017

☒ Class A

☐ Class B

2.1 Conducted Emissions at Mains Power Ports

Test Date

Feb. 22, 2023

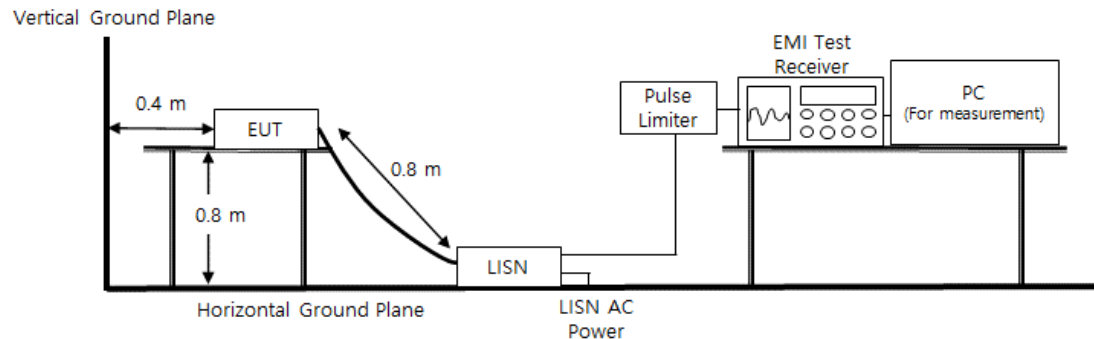
Test Location

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	11, 11, 2023
☒	LISN	ENV216	R & S	101787	11, 10, 2023
☒	LISN	ESH2-Z5	R & S	100450	11, 10, 2023
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 10, 2023

Diagram of test setup





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Test Conditions

Temperature: (22,9 ± 0,1) °C
Relative Humidity: (45,3 ± 0,1) % R.H.

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

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2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Feb. 23, 2023

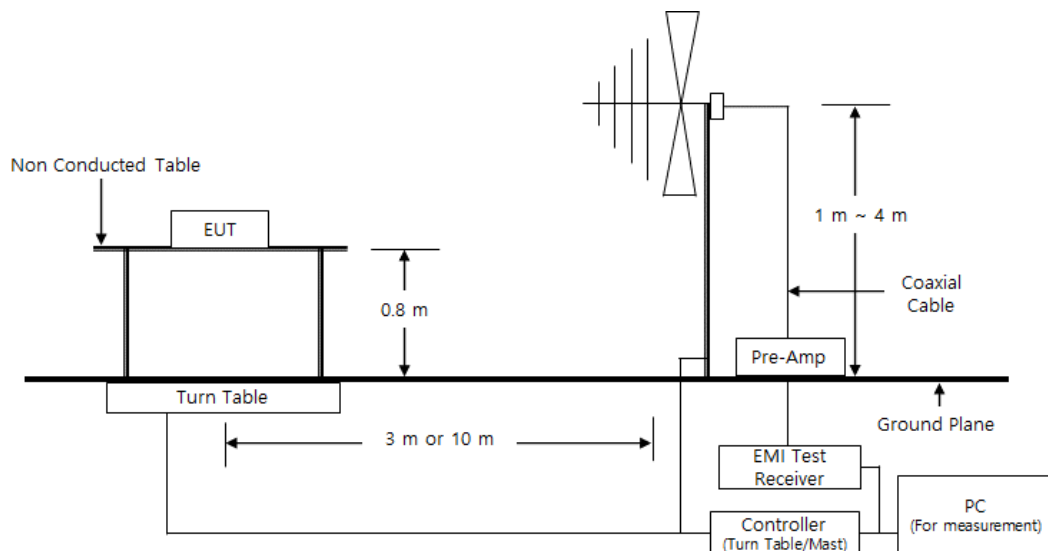
Test Location

☐ OPEN AREA TEST SITE #2 ☒ 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	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 10, 2023
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 17, 2024
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Diagram of test setup





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Test Conditions

Temperature: $(22,7 \pm 0,1) ^\circ\text{C}$
Relative Humidity: $(45,2 \pm 0,1) \% \text{ R.H.}$

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.

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Feb. 23, 2023

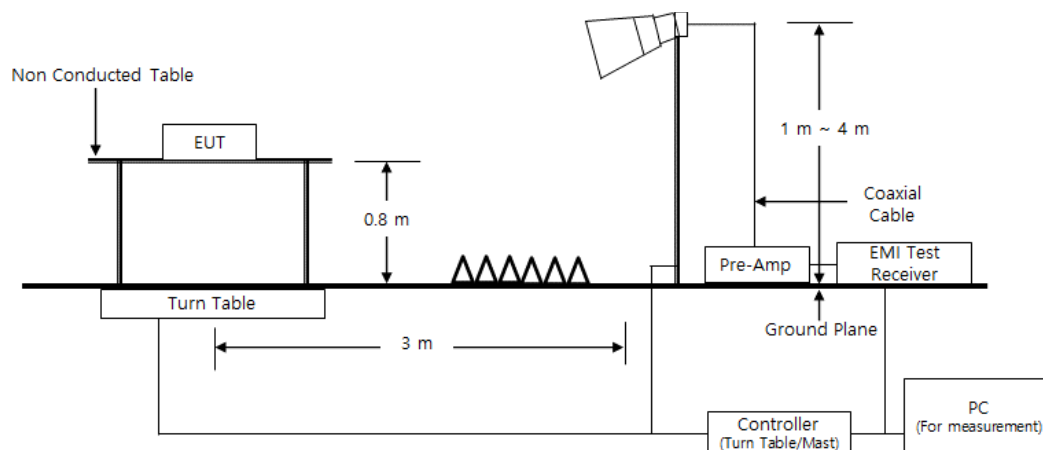
Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	ES10/RE	TOYO Corporation	2022.01.000	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	03, 31, 2023
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	11, 08, 2023
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 02, 2023
☒	ATTENUATOR	8491B	HP	23094	04, 21, 2023

Diagram of test setup





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Test Conditions

Temperature: $(22,5 \pm 0,2) ^\circ\text{C}$
Relative Humidity: $(42,9 \pm 0,1) \% \text{ R.H.}$

Frequency Range of Measurement

1 GHz to 5 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
- ☐ NOT PASS
- ☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

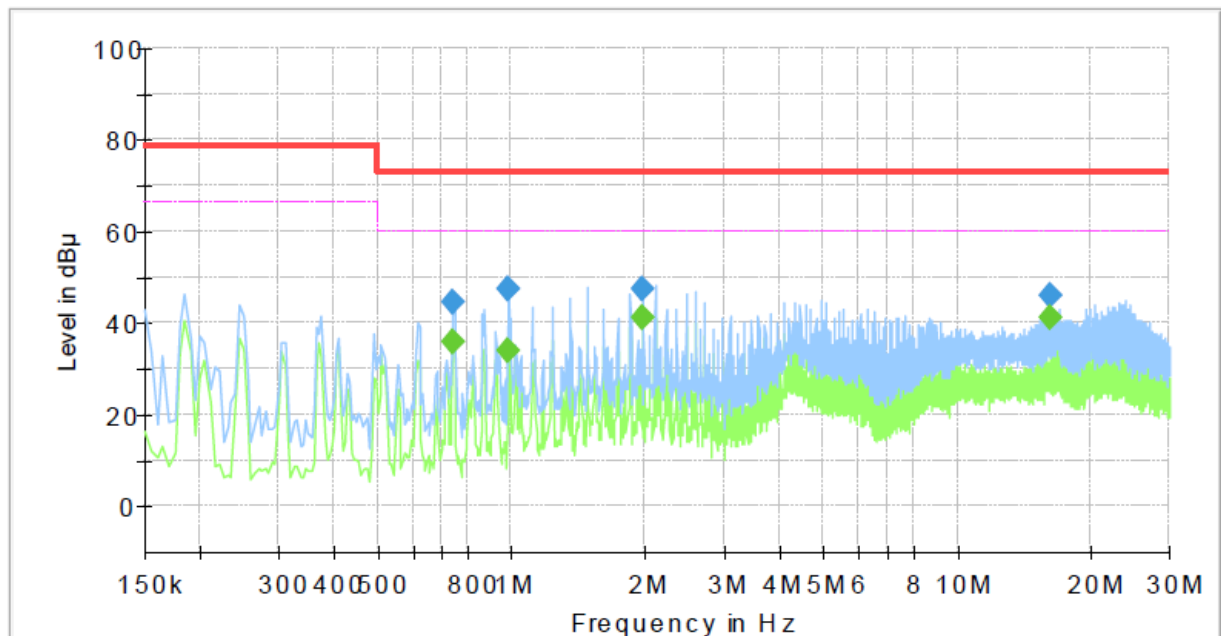
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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports HOT LINE

Common Information

Test Description: Conducted Emission
 Model No.: XRN-820S
 Phase:
 Mode: H
 Operator Name: KES



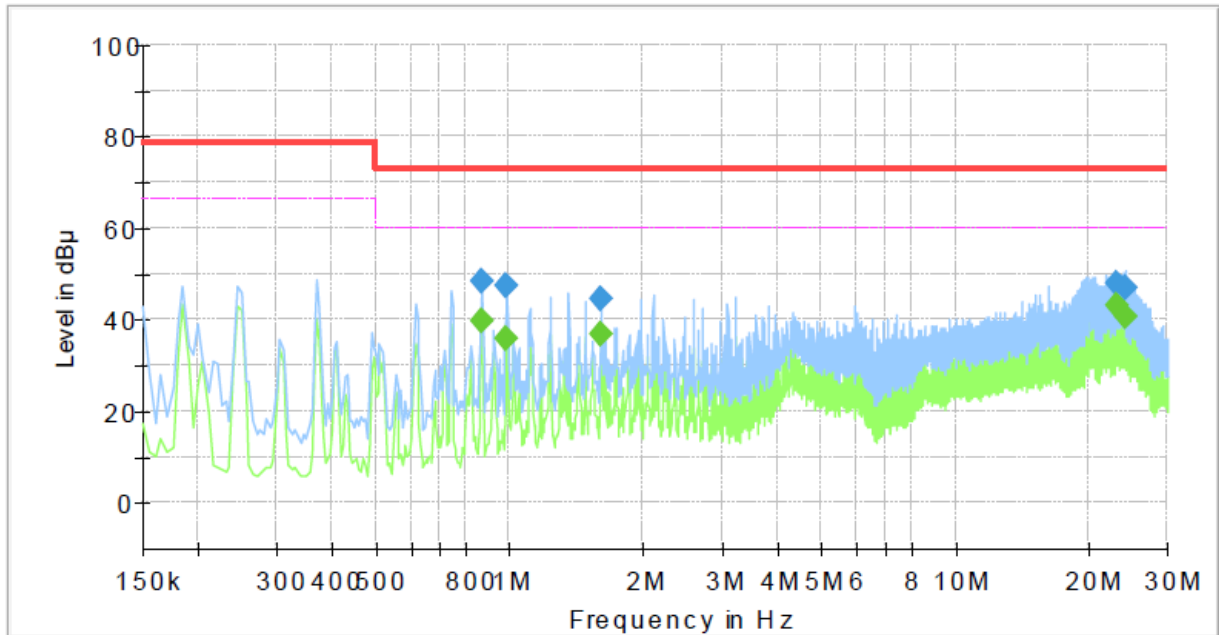
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.740000	---	35.64	60.00	24.36	1000.0	9.000	L1	19.9
0.740000	44.73	---	73.00	28.27	1000.0	9.000	L1	19.9
0.985000	---	33.74	60.00	26.26	1000.0	9.000	L1	20.1
0.985000	47.53	---	73.00	25.47	1000.0	9.000	L1	20.1
1.975000	---	41.38	60.00	18.62	1000.0	9.000	L1	20.3
1.975000	47.49	---	73.00	25.51	1000.0	9.000	L1	20.3
16.230000	---	41.03	60.00	18.97	1000.0	9.000	L1	20.0
16.230000	45.80	---	73.00	27.20	1000.0	9.000	L1	20.0

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XRN-820S
Phase:	
Mode:	N
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.865000	---	39.50	60.00	20.50	1000.0	9.000	N	20.0
0.865000	48.14	---	73.00	24.86	1000.0	9.000	N	20.0
0.985000	---	35.95	60.00	24.05	1000.0	9.000	N	20.1
0.985000	47.63	---	73.00	25.37	1000.0	9.000	N	20.1
1.605000	---	36.70	60.00	23.30	1000.0	9.000	N	20.2
1.605000	44.53	---	73.00	28.47	1000.0	9.000	N	20.2
23.170000	---	43.29	60.00	16.71	1000.0	9.000	N	20.3
23.170000	47.97	---	73.00	25.03	1000.0	9.000	N	20.3
24.085000	---	40.62	60.00	19.38	1000.0	9.000	N	20.4
24.085000	47.09	---	73.00	25.91	1000.0	9.000	N	20.4

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

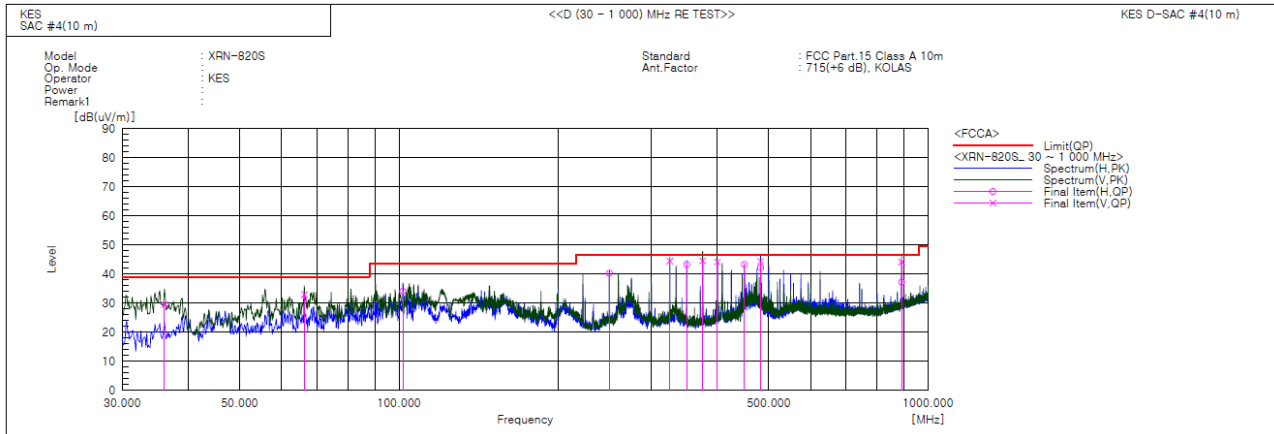
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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Radiated Electric Field Emissions(Below 1 GHz)

- 47 CFR Part 15, Subpart B



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	36.063	V	53.4	-24.0	29.4	39.0	9.6	125.0	173.0	
2	66.254	V	56.5	-23.5	33.0	39.0	6.0	152.0	260.0	
3	101.780	H	56.5	-22.4	34.1	43.5	9.4	289.0	258.0	
4	250.002	H	59.4	-19.2	40.2	46.5	6.3	395.0	352.0	
5	324.997	V	61.0	-16.6	44.4	46.5	2.1	112.0	170.0	
6	349.998	H	58.5	-15.2	43.3	46.5	3.2	358.0	187.0	
7	374.994	V	58.9	-14.4	44.5	46.5	2.0	148.0	207.0	
8	399.988	V	58.0	-13.9	44.1	46.5	2.4	100.0	162.0	
9	449.988	H	56.0	-12.7	43.3	46.5	3.2	291.0	105.0	
10	482.605	V	55.9	-11.6	44.3	46.5	2.2	109.0	193.0	
11	482.611	H	53.8	-11.6	42.2	46.5	4.3	398.0	7.0	
12	891.017	H	41.9	-4.7	37.2	46.5	9.3	364.0	337.0	
13	891.021	V	48.8	-4.7	44.1	46.5	2.4	150.0	262.0	

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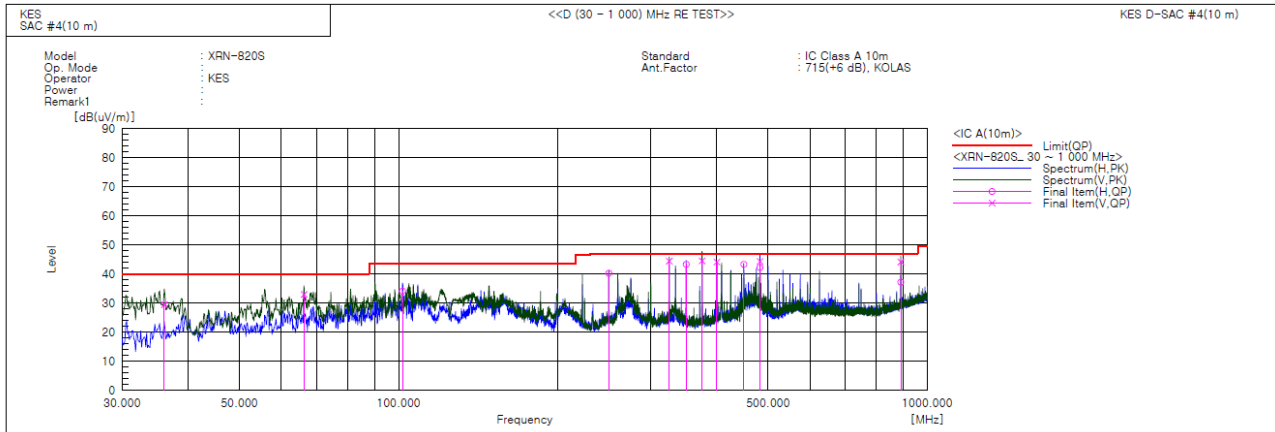


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KES-EM-23T0175
Page (23) of (36)

- IC Regulation ICES-003 Issue 7



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	36.063	V	53.4	-24.0	29.4	40.0	10.6	125.0	173.0	
2	66.254	V	56.5	-23.5	33.0	40.0	7.0	152.0	260.0	
3	101.780	H	56.5	-22.4	34.1	43.5	9.4	289.0	258.0	
4	250.002	H	59.4	-19.2	40.2	47.0	6.8	395.0	352.0	
5	324.997	V	61.0	-16.6	44.4	47.0	2.6	112.0	170.0	
6	349.998	H	58.5	-15.2	43.3	47.0	3.7	358.0	187.0	
7	374.994	V	58.9	-14.4	44.5	47.0	2.5	148.0	207.0	
8	399.988	V	58.0	-13.9	44.1	47.0	2.9	100.0	162.0	
9	449.988	H	56.0	-12.7	43.3	47.0	3.7	291.0	105.0	
10	482.605	V	55.9	-11.6	44.3	47.0	2.7	109.0	193.0	
11	482.611	H	53.8	-11.6	42.2	47.0	4.8	398.0	7.0	
12	891.017	H	41.9	-4.7	37.2	47.0	9.8	364.0	337.0	
13	891.021	V	48.8	-4.7	44.1	47.0	2.9	150.0	262.0	

◆ Calculation - SAC #4(10 m)

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

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

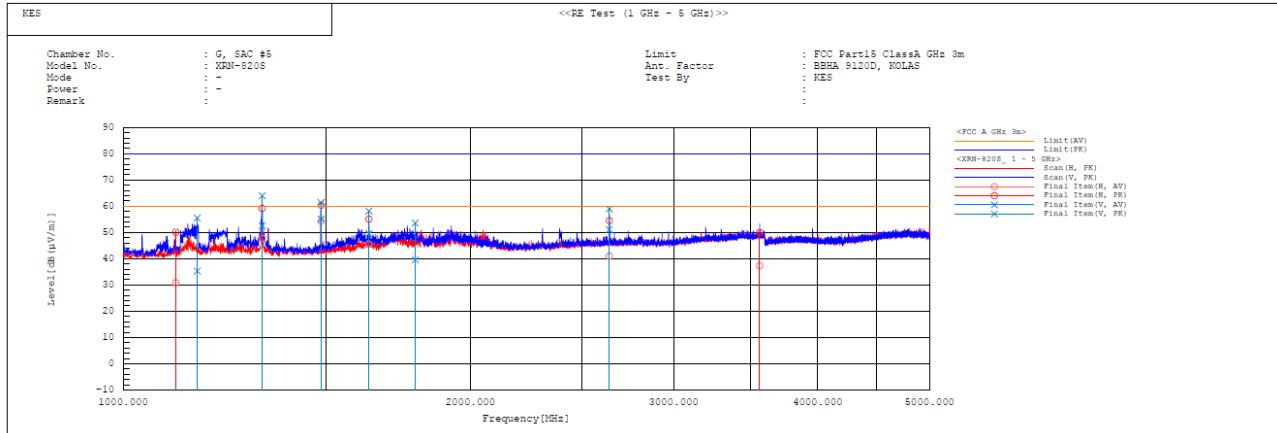
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Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	1110.988	H	32.6	51.8	-1.7	30.9	50.1	60.0	80.0	29.1	29.9	298.0	305.4	
2	1159.628	V	36.7	56.9	-1.4	35.3	55.5	60.0	80.0	24.7	24.5	154.0	10.0	
3	1319.924	V	52.9	64.4	-0.4	52.5	64.0	60.0	80.0	7.5	16.0	121.0	137.7	
4	1320.039	H	48.2	59.6	-0.4	47.8	59.2	60.0	80.0	12.2	20.8	361.0	8.2	
5	1485.036	V	54.9	61.2	0.2	55.1	61.4	60.0	80.0	4.9	18.6	115.0	327.1	
6	1485.063	H	54.1	60.2	0.2	54.3	60.4	60.0	80.0	5.7	19.6	394.0	33.3	
7	1633.515	V	48.9	57.5	0.6	49.5	58.1	60.0	80.0	10.5	21.9	108.0	328.9	
8	1633.517	H	44.9	54.5	0.6	45.5	55.1	60.0	80.0	14.5	24.9	356.0	33.3	
9	1791.916	V	37.9	51.9	1.7	39.6	53.6	60.0	80.0	20.4	26.4	149.0	5.4	
10	2639.452	H	36.9	50.4	4.1	41.0	54.5	60.0	80.0	19.0	25.5	356.0	136.4	
11	2640.102	V	47.0	54.9	4.1	51.1	59.0	60.0	80.0	8.9	21.0	119.0	195.7	
12	3563.670	H	31.5	44.1	5.9	37.4	50.0	60.0	80.0	22.6	30.0	394.0	61.2	

◆ Calculation

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

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

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

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

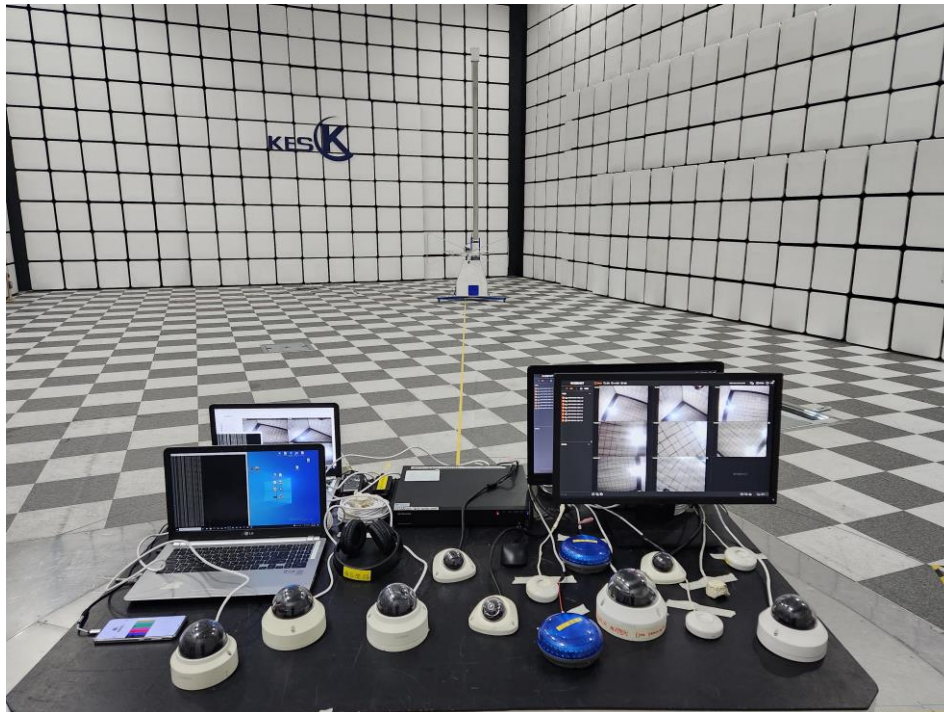
Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



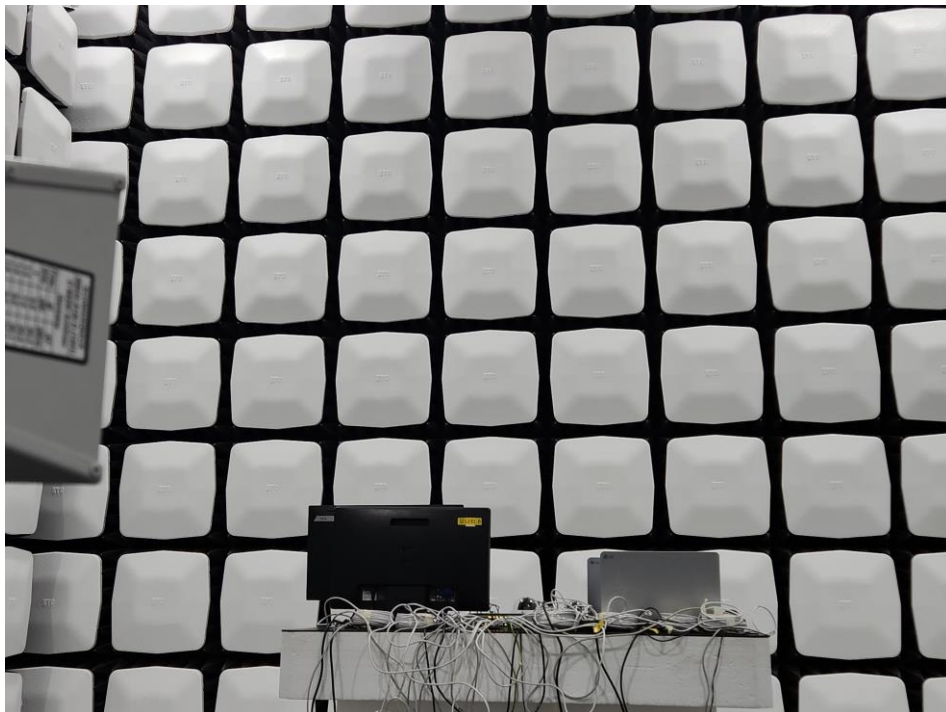
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

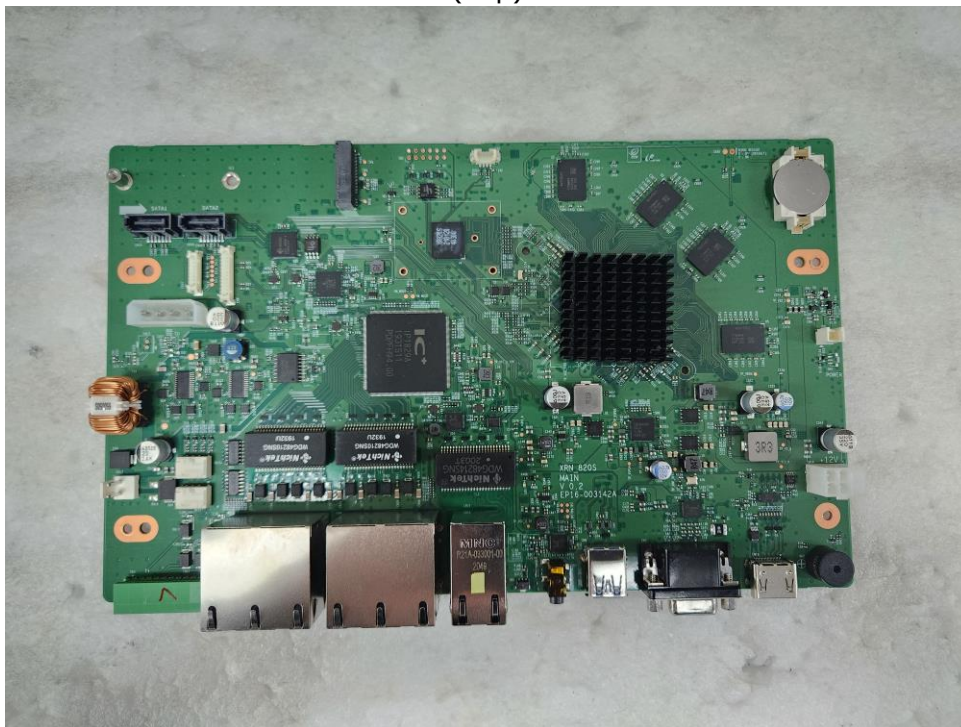
(Internal View)



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EUT Internal View – Main Board

(Top)



(Bottom)



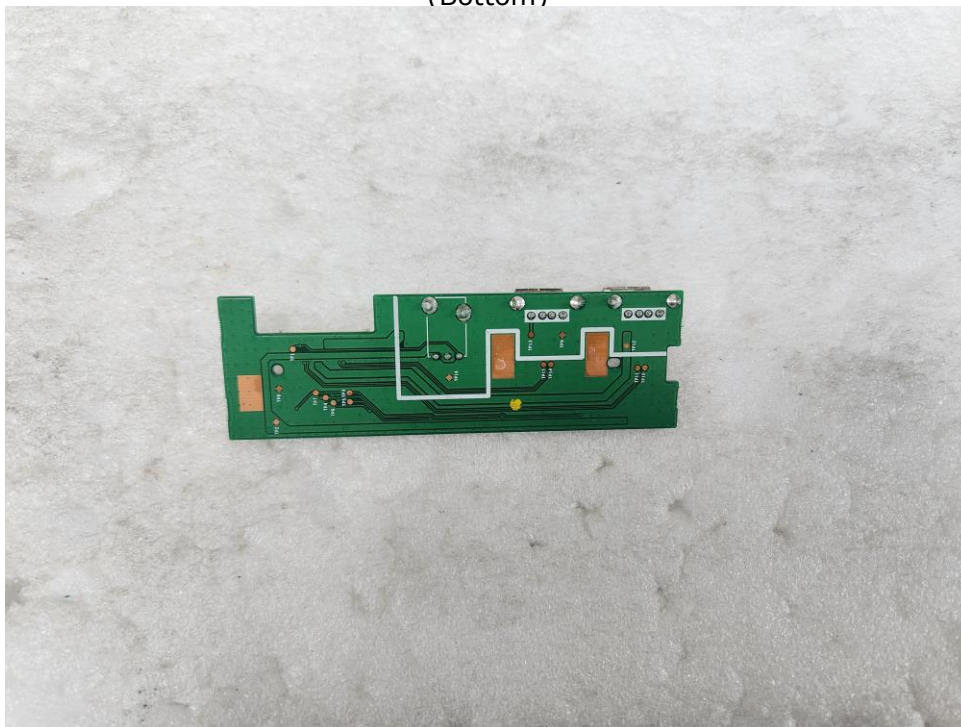
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EUT Internal View – Port Board

(Top)



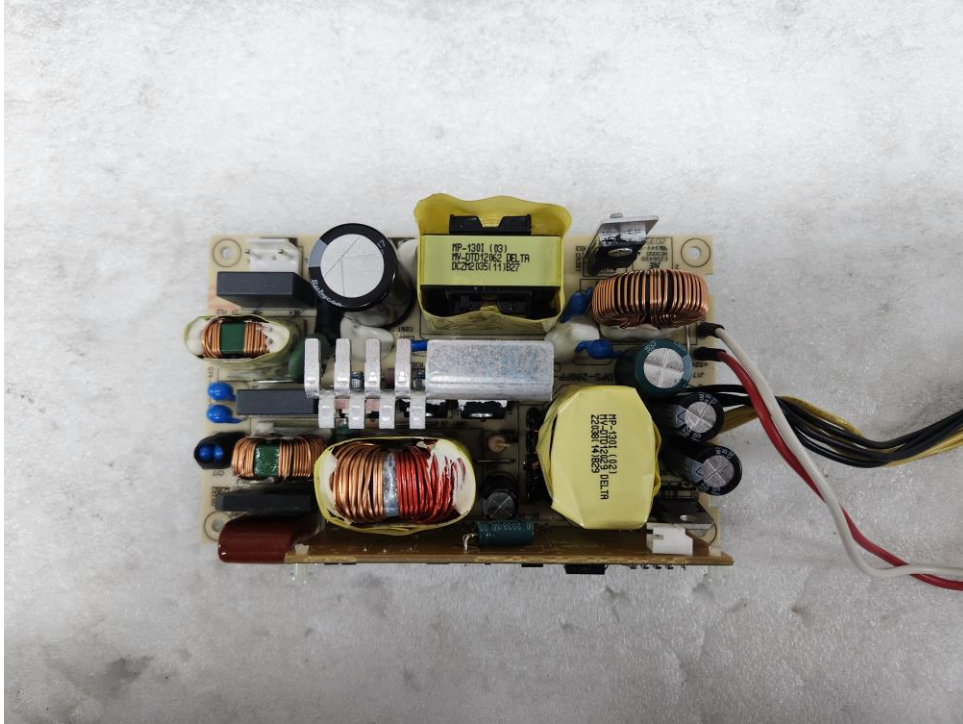
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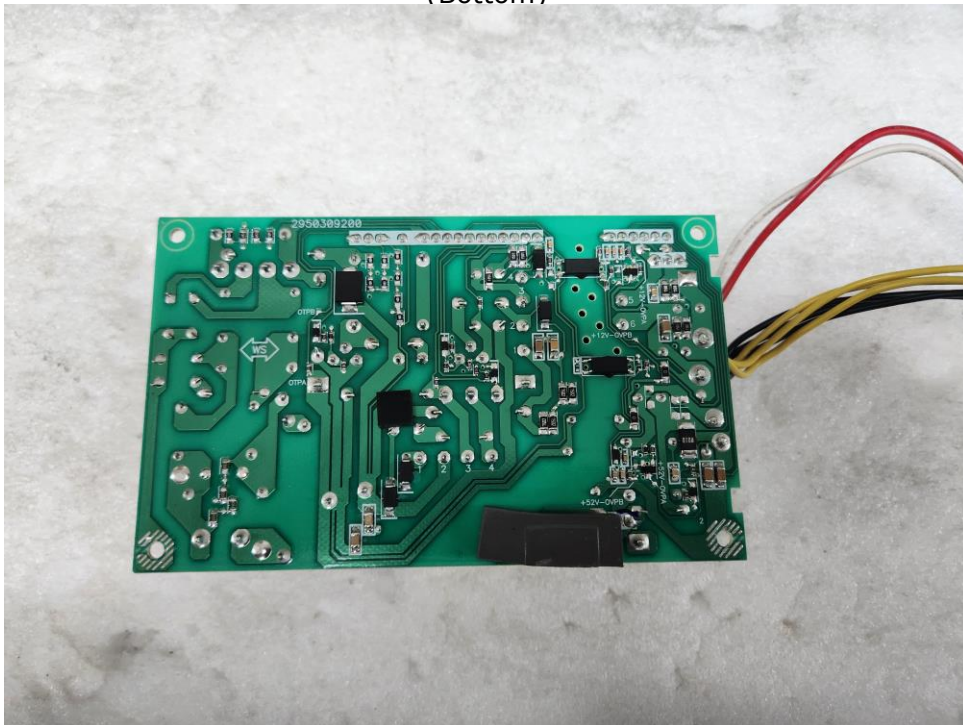
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EUT Internal View – SMPS Board 1

(Top)



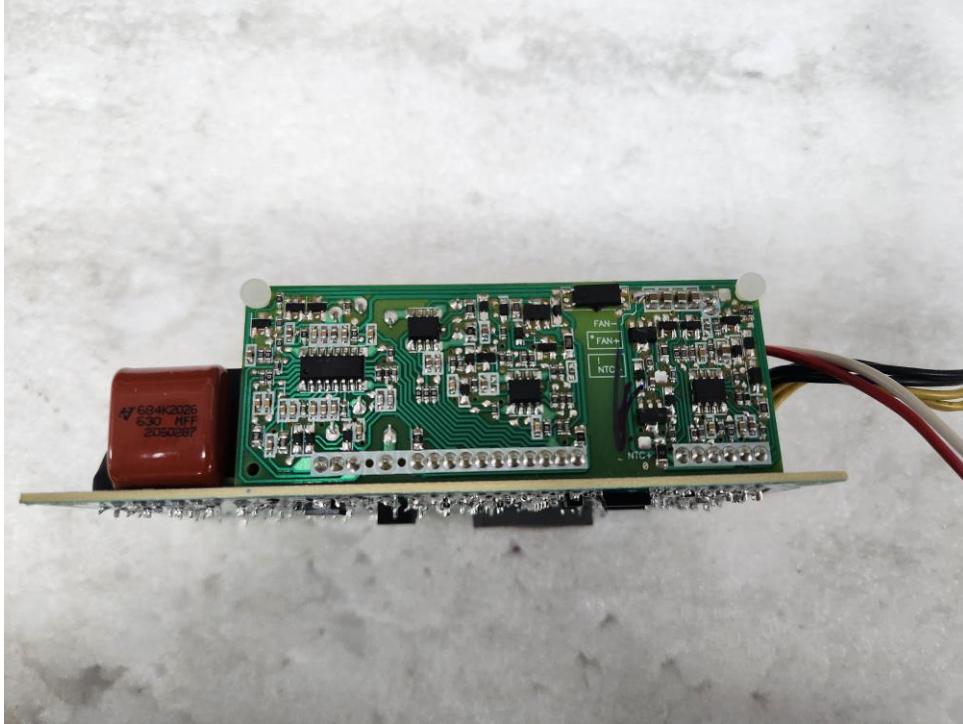
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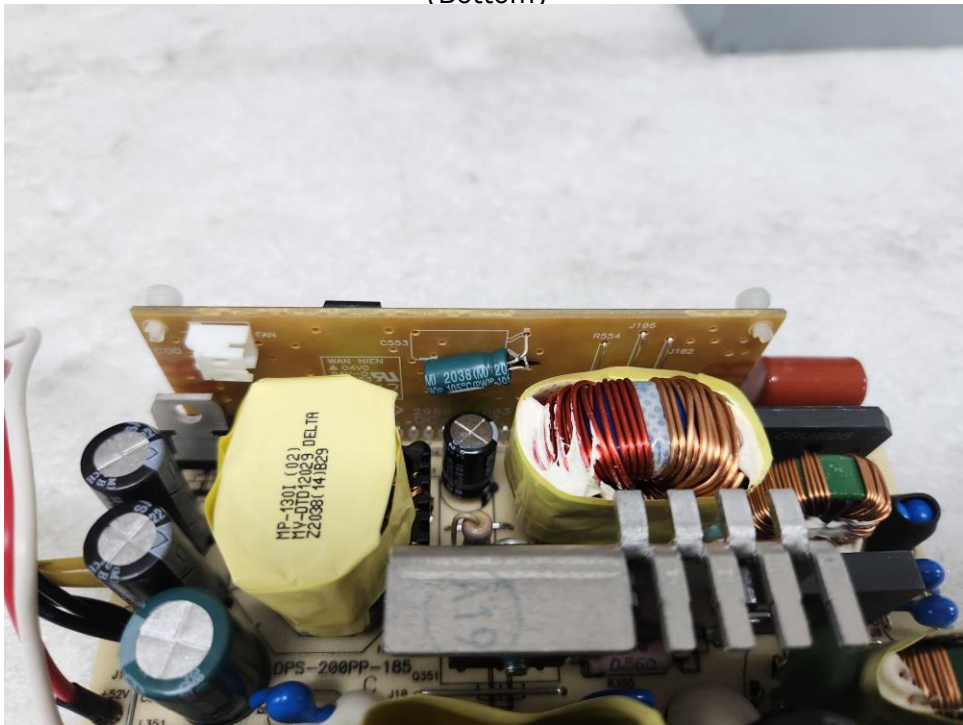
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EUT Internal View – SMPS Board 2

(Top)



(Bottom)



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EUT Internal View – SMPS PAN

(Top)



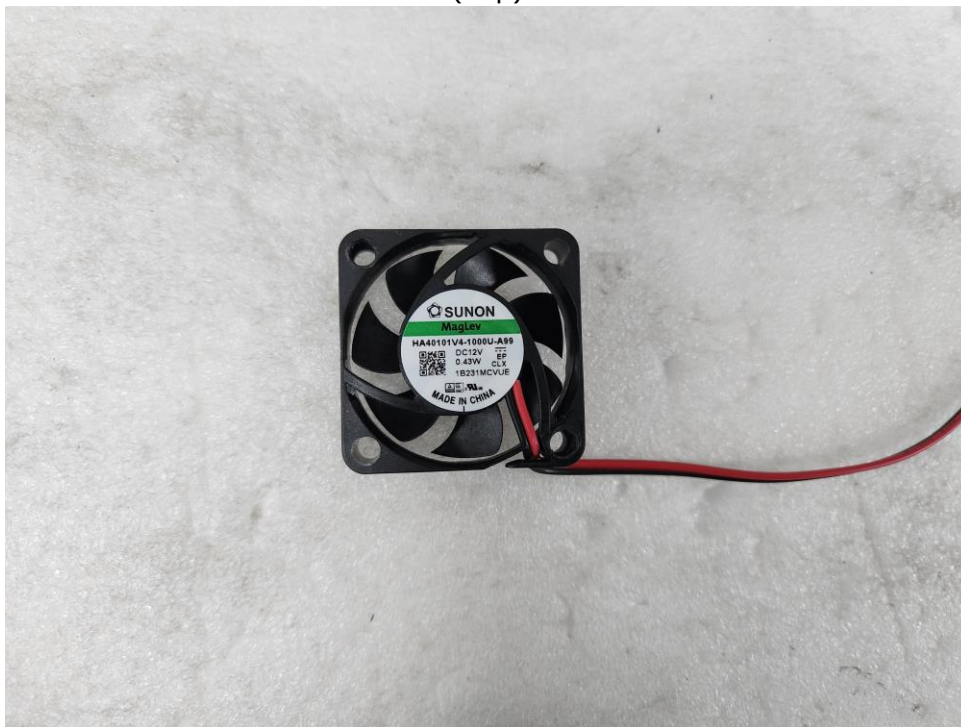
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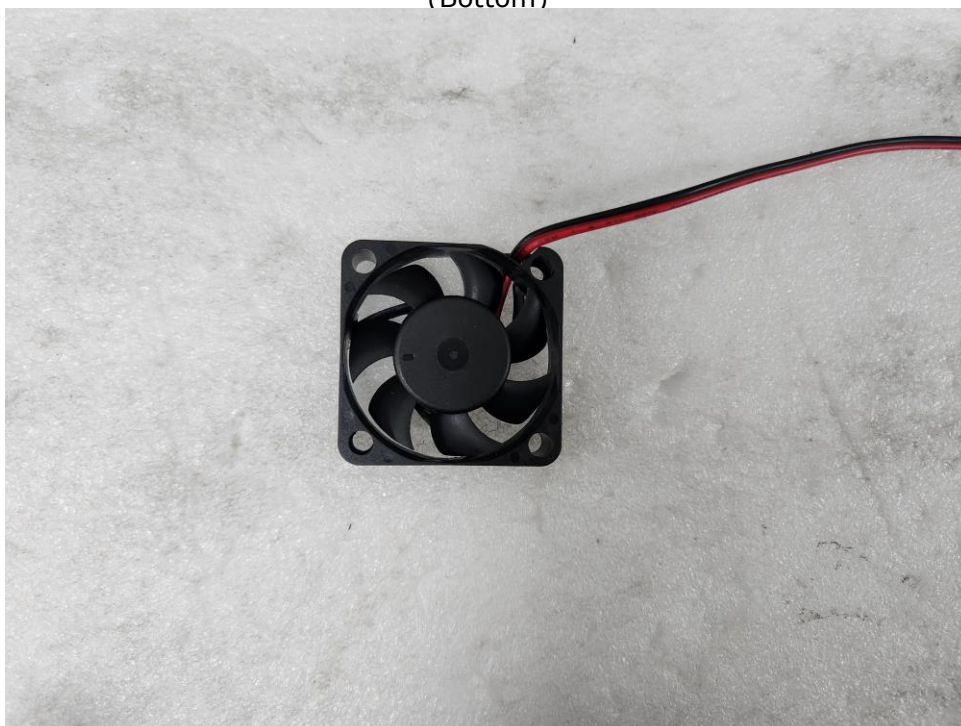
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EUT Internal View – FAN

(Top)



(Bottom)



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Label Photographs

FCC Label



Hanwha Vision Co., Ltd

XRN-820S

IC Label

CAN ICES-003(A) / NMB-003(A)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.