

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
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Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Report No.:

KES-EM-23T0211

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EMC TEST REPORT

Test Report No. : KES-EM-23T0211
Date of Issue : Mar. 10, 2023
Product name : NVR
Model/Type No. : QRN-1630S
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 : Feb. 20, 2023
Test date : Mar. 07, 2023
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Min Seong, 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 REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 10, 2023	KES-EM-23T0211	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Display		
Network camera	Inputs	Max. 16CH
	Resolution	8MP ~ CIF
	Protocols	SUNAPI, ONVIF
Decoding	Local Display	HDMI1: 3840x2160(30Hz), HDMI2: 1920x1080(60Hz)
	Multi Screen Display	Clone Mode : Dynamic layout Expand Mode : HDMI1 Dynamic layout, HDMI2 up to 16 Div. [Web] 1/ 2H/ 2V/ 3V/ 4/ 6/ 8/ 9
	Resolution	[Local Monitor] 8M(60fps), 1080p(240fps), 720P(480fps), D1(960fps)
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 128Mbps
	Resolution	8MP ~ 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. 40CH(Local 16CH, Remote 8CH per user)
	Fisheye Dewarping	CMS
	Mode	Date & Time(Calendar), Event list, Text Search, Smart Search
	Resolution	CIF ~ 8MP
Storage	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
	Supported HDD	Up to 10TB
	HDD Slot	SATA 2ea(Max. 20TB)
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. 128Mbps	

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Audio	Input/Output	16 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	
Web viewer	Supported OS	Windows 10, macOS 11
	Supported browser	Google Chrome, Microsoft Edge, Mac Safari
Viewer Software	WAVE, SSM, Webviewer, Smart Viewer, 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, SSSD, DIS), Fisheye Dewarping Mode, Hallway View Setup, Camera Webpage
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	Support
Easy configuration	P2P(QR code)	
Interface		
Front	Indicator	Power, Record, Network
Storage	OK	
HDMI	2EA	
Audio	Out 1EA (RCA output)	
Ethernet	PoE RJ-45 16EA (LAN, 10/100), RJ-45 1ea (LAN/WAN 1Gbps)	
Alarm	In 4EA, Out 2EA	
USB	2EA(Front 2 x USB 2.0)	
Power inlet	AC 1EA	
System		
Log	Log List	Max. 100,000 (System Log, Event Log each)
System Control	Mouse, Keyboard, Web	
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	

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Power Consumption	Max. 200W(682 BTU with 2HDD, PoE ON)
PoE Budget	130W

Mechanical

Color / Material	Black / Metal
Dimension (WxHxD)	370.0 x 50.7 x 320 mm (14.6 x 2.0 x 12.6 inch)
Weight	2.87Kg (6.33 lb)

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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	QRN-1630S	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
SWITCHING POWER SUPPLY	DPS-200PB-185 C	-	Delta Electronics Power(Dongguan) Co., Ltd.	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Camera 1	LND-6070R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 2	QNV-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 3	QND-8030R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 4	SND-L6013R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 5	XND-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 6	QNV-6010R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 7	LVN-6030R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 8	XNV-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 9	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 10	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 11	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 12	SND-7084N	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 13	SND-L6012	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 14	XNV-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-

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Description	Model Number	Serial Number	Manufacturer	Remarks
Camera 15	QNV-6024RM	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera 16	LND-6070R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Laptop	Latitude 5300	8C47BE45C060	DELL INC.	-
Laptop Adapter	HA65NM130	-	Chicony Power Technology(Suzhou)Co. ,Ltd.	-
Monitor 1	24M47VQ	-	LG	-
Monitor 1 Adapter	LCAP26-E	-	Genmao Electronics (Suzhou) Co., Ltd	-
Monitor 2	SMT-2232	C95V67VF90002 5B	Weihai Daewoo Electronics Co., Ltd.	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI- TECH GROUP.	-
MIC	MP1000	-	-	-
Alarm 1	PRO-SL	-	SENSOR PRO	-
Alarm 2	PRO-SL	-	SENSOR PRO	-
Button Alarm 1	-	-	-	-
Button Alarm 2	-	-	-	-
Button Alarm 3	-	-	-	-
Button Alarm 4	-	-	-	-
HDD	810051	-	WESTERN DIGITAL TECHNOLOGIES, INC.	2 TB
USB Memory	-	-	Sandisk	32 GB

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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)	DC Jack	AC/DC Adapter (EUT)	DC Jack	1.6	U
	USB	Mouse (EUT)	USB	1.4	U
	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)	10.0	U
	RJ-45 (PoE)	Camera 4	RJ-45 (PoE)	10.0	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
	RJ-45 (PoE)	Camera 9	RJ-45 (PoE)	3.0	U
	RJ-45 (PoE)	Camera 10	RJ-45 (PoE)	3.0	U
	RJ-45 (PoE)	Camera 11	RJ-45 (PoE)	3.0	U
	RJ-45 (PoE)	Camera 12	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 13	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 14	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera 15	RJ-45 (PoE)	3.0	U
	RJ-45 (PoE)	Camera 16	RJ-45 (PoE)	10.0	U
	RJ-45 (LAN)	Laptop	RJ-45 (LAN)	4.0	U
	HDMI	Monitor 1	HDMI	1.5	S
	HDMI	Monitor 2	HDMI	1.5	S

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Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
	Audio Output (RCA)	Speaker	Line-Out (RCA)	1.6	U
	Alarm Output (2 Pin)	Alarm 1	2 Pin	4.0	U
	Alarm Output (2 Pin)	Alarm 2	2 Pin	4.0	U
	Alarm Input (2 Pin)	Button Alarm 1	2 Pin	4.0	U
	Alarm Input (2 Pin)	Button Alarm 2	2 Pin	4.0	U
	Alarm Input (2 Pin)	Button Alarm 3	2 Pin	4.0	U
	Alarm Input (2 Pin)	Button Alarm 4	2 Pin	4.0	U
	SATA	HDD	SATA	-	-
	USB	USB Memory	USB	-	-
	Ground	Earth	Ground	1.6	-
Laptop	DC Jack	Laptop Adapter	DC Jack	2.0	U
	3.5 mm	MIC	XLR	2.0	U
Monitor	DC Jack	Monitor Adapter	DC Jack	2.0	U

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

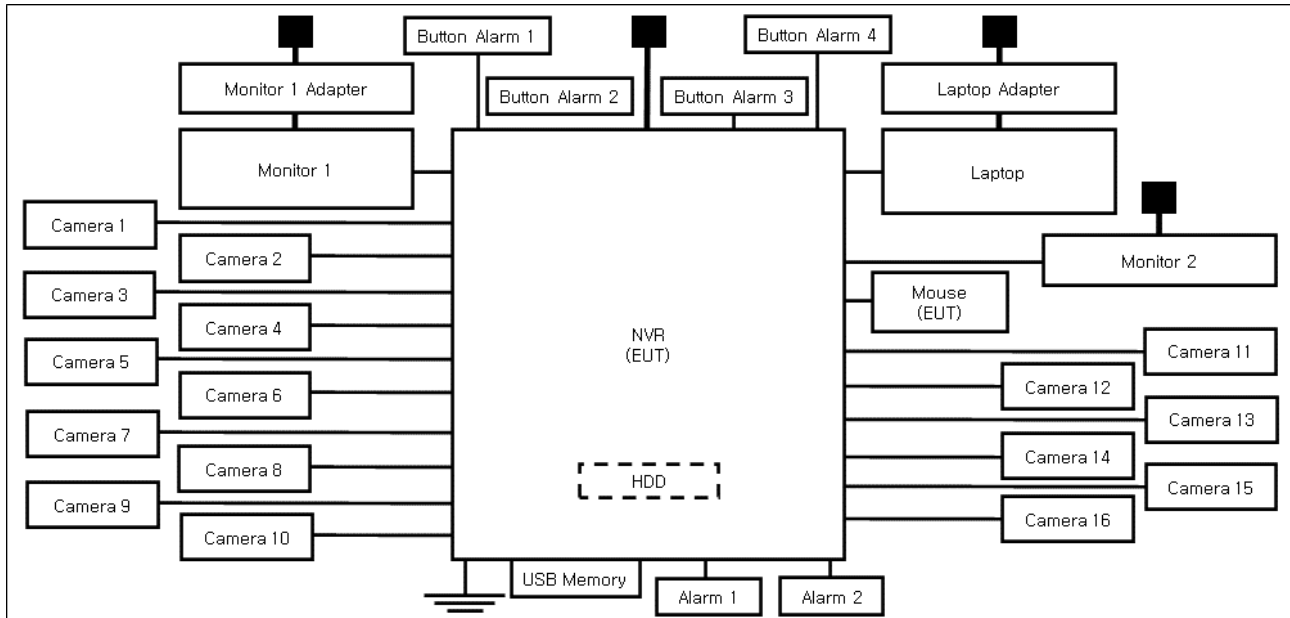
Test Mode	operating
Operating	- Check that the video from the cameras are displayed normally on the monitor. - Connect to the web viewer on your laptop and check if the video from the cameras are displayed normally. - Network ping test on the laptop - Check the status a moving color bars and 1 KHz tone - Check the operation of the alarm by pressing the button alarm and check if the alarm is displayed in the web viewer of the laptop. - Check the storage device for the recorded screen after the test.

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

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1.8 Configuration

■ AC Main
 □ DC Main



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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

Mar. 07, 2023

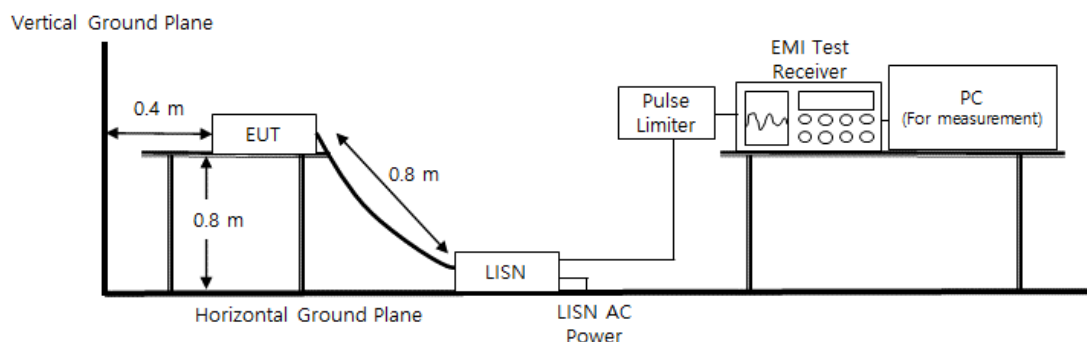
Test Location

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: (24,3 $\pm$ 0,2) °C

Relative Humidity: (43,0 $\pm$ 0,4) % 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

Mar. 07, 2023

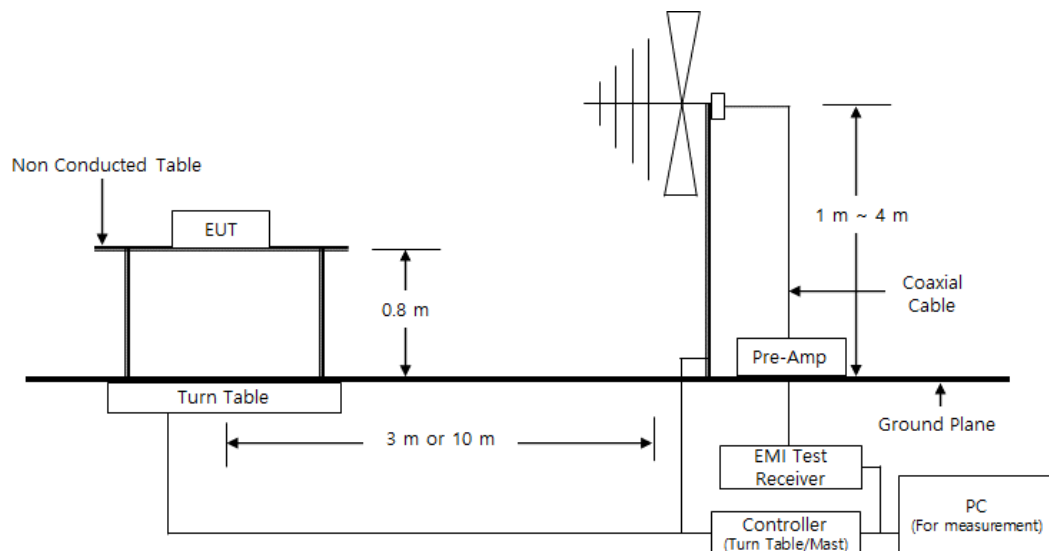
Test Location

☐ 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	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, 03, 2024

Diagram of test setup





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Test Conditions

Temperature: $(23,5 \pm 0,2) ^\circ\text{C}$
Relative Humidity: $(42,7 \pm 0,5) \% \text{ R.H.}$

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

Mar. 07, 2023

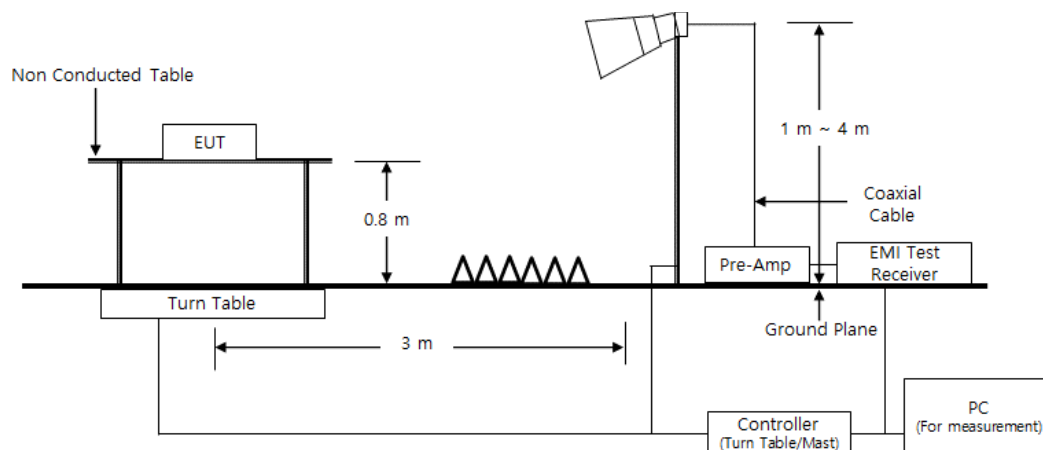
Test Location

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: (24,6 ± 0,1) °C

Relative Humidity: (42,8 ± 0,2) % 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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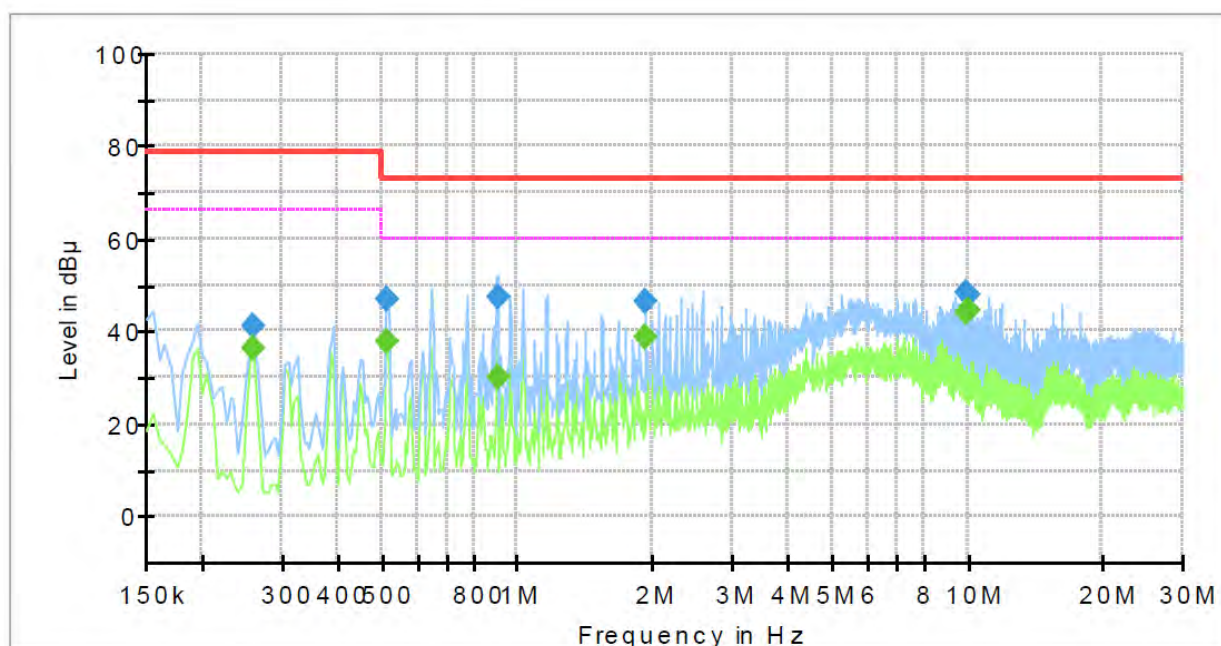
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	QRN-1630S
Phase:	L1
Mode:	-
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.260000	---	36.44	66.00	29.56	1000.0	9.000	L1	19.5
0.260000	41.13	---	79.00	37.87	1000.0	9.000	L1	19.5
0.515000	---	37.98	60.00	22.02	1000.0	9.000	L1	19.7
0.515000	46.88	---	73.00	26.12	1000.0	9.000	L1	19.7
0.905000	---	30.07	60.00	29.93	1000.0	9.000	L1	20.0
0.905000	47.47	---	73.00	25.53	1000.0	9.000	L1	20.0
1.930000	---	38.91	60.00	21.09	1000.0	9.000	L1	20.3
1.930000	46.36	---	73.00	26.64	1000.0	9.000	L1	20.3
9.940000	---	44.09	60.00	15.91	1000.0	9.000	L1	19.9
9.940000	48.54	---	73.00	24.46	1000.0	9.000	L1	19.9
10.060000	---	44.54	60.00	15.46	1000.0	9.000	L1	19.9
10.060000	47.84	---	73.00	25.16	1000.0	9.000	L1	19.9

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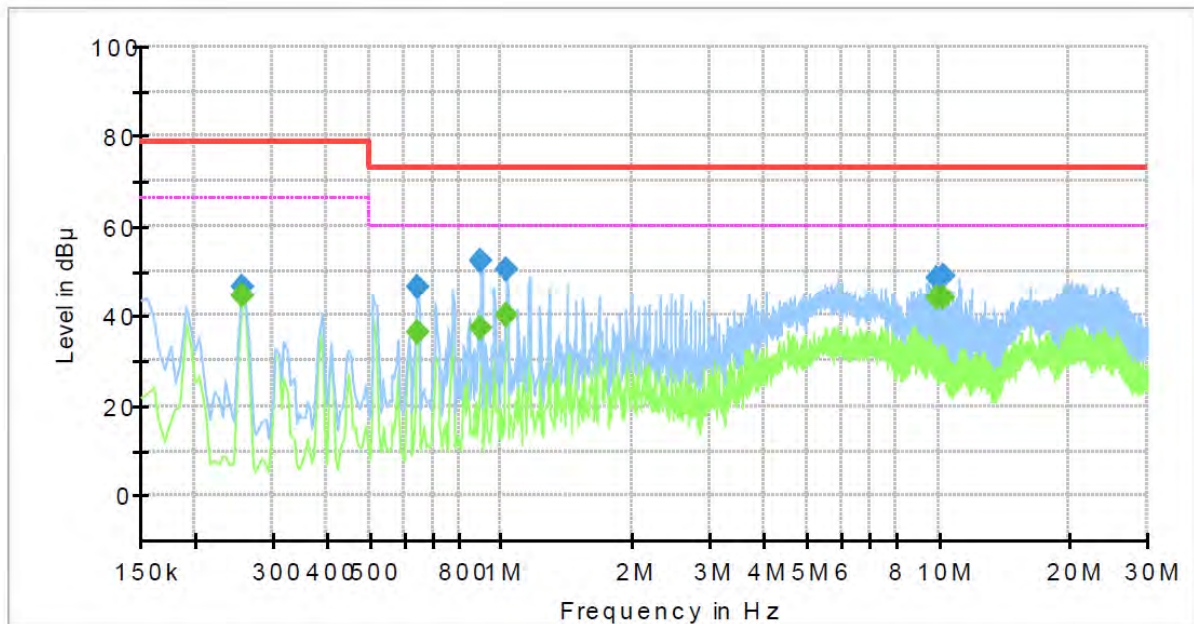
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	QRN-1630S
Phase:	N
Mode:	-
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.255000	---	44.49	66.00	21.51	1000.0	9.000	N	19.5
0.255000	46.40	---	79.00	32.60	1000.0	9.000	N	19.5
0.645000	---	36.22	60.00	23.78	1000.0	9.000	N	19.9
0.645000	46.32	---	73.00	26.68	1000.0	9.000	N	19.9
0.900000	---	37.29	60.00	22.71	1000.0	9.000	N	20.0
0.900000	52.05	---	73.00	20.95	1000.0	9.000	N	20.0
1.030000	---	40.17	60.00	19.83	1000.0	9.000	N	20.1
1.030000	50.16	---	73.00	22.84	1000.0	9.000	N	20.1
9.940000	---	43.81	60.00	16.19	1000.0	9.000	N	19.9
9.940000	48.20	---	73.00	24.80	1000.0	9.000	N	19.9
10.245000	---	43.91	60.00	16.09	1000.0	9.000	N	19.9
10.245000	49.04	---	73.00	23.96	1000.0	9.000	N	19.9

◆ 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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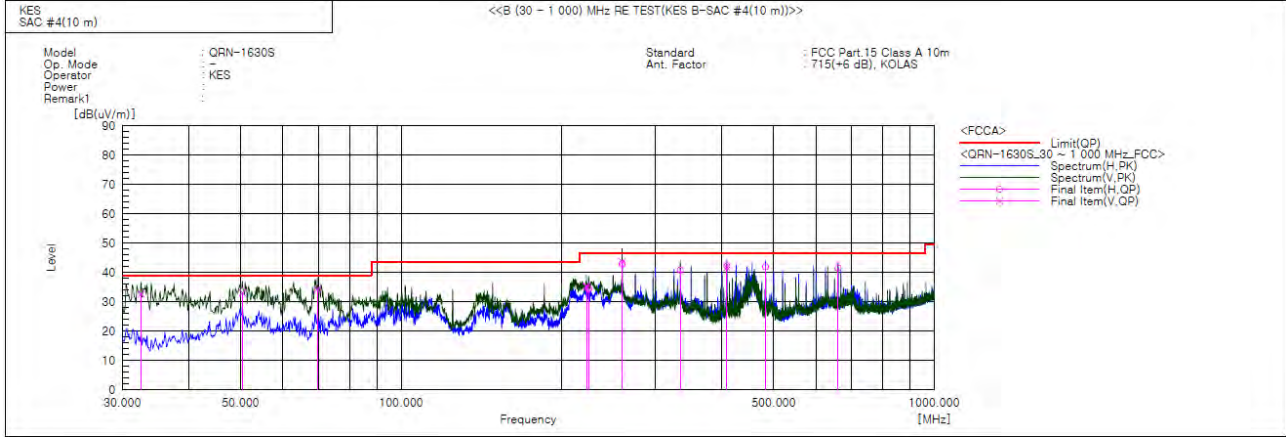
Report No.:

KES-EM-23T0211

Page (23) of (37)

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	32.546	V	57.4	-24.8	32.6	39.0	6.4	162.0	282.0	
2	50.370	V	53.7	-20.6	33.1	39.0	5.9	100.0	98.0	
3	69.649	V	58.8	-24.6	34.2	39.0	4.8	142.0	260.0	
4	222.666	V	55.0	-19.8	35.2	46.5	11.3	100.0	188.0	
5	224.970	H	54.1	-19.7	34.4	46.5	12.1	381.0	147.0	
6	259.890	V	62.7	-19.1	43.6	46.5	2.9	110.0	113.0	
7	259.890	H	62.0	-19.1	42.9	46.5	3.6	361.0	203.0	
8	334.095	H	56.8	-16.0	40.8	46.5	5.7	359.0	131.0	
9	408.421	V	55.4	-13.7	41.7	46.5	4.8	171.0	147.0	
10	408.421	H	55.9	-13.7	42.2	46.5	4.3	294.0	213.0	
11	482.626	H	53.5	-11.6	41.9	46.5	4.6	316.0	311.0	
12	660.015	H	49.4	-7.9	41.5	46.5	5.0	274.0	206.0	

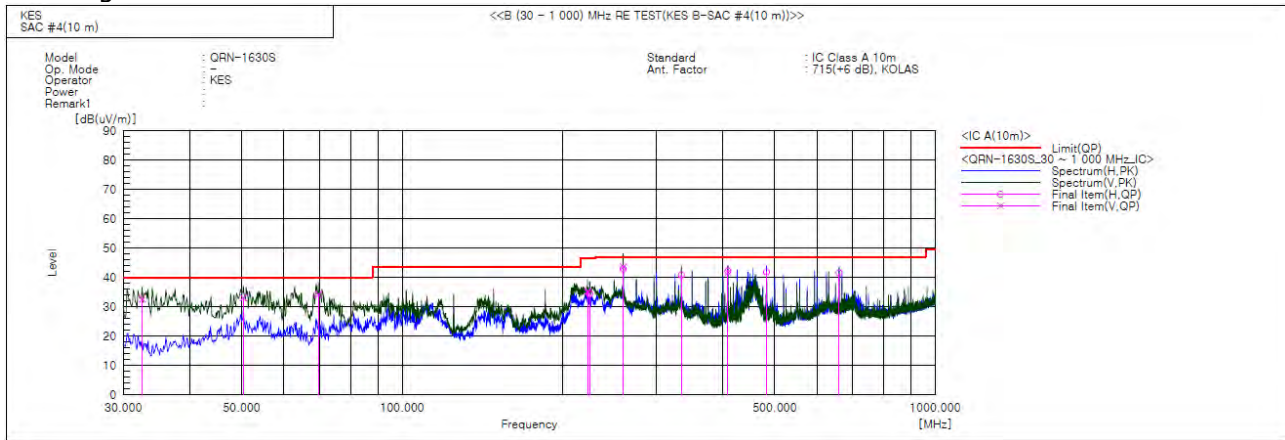
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- IC Regulation ICES-003 Issue 7



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	32.546	V	57.4	-24.8	32.6	40.0	7.4	162.0	282.0	
2	50.370	V	53.7	-20.6	33.1	40.0	6.9	100.0	98.0	
3	69.649	V	58.8	-24.6	34.2	40.0	5.8	142.0	260.0	
4	222.666	V	55.0	-19.8	35.2	46.4	11.2	100.0	188.0	
5	224.970	H	54.1	-19.7	34.4	46.4	12.0	381.0	147.0	
6	259.890	V	62.7	-19.1	43.6	47.0	3.4	110.0	113.0	
7	259.890	H	62.0	-19.1	42.9	47.0	4.1	361.0	203.0	
8	334.095	H	56.8	-16.0	40.8	47.0	6.2	359.0	131.0	
9	408.421	V	55.4	-13.7	41.7	47.0	5.3	171.0	147.0	
10	408.421	H	55.9	-13.7	42.2	47.0	4.8	294.0	213.0	
11	482.626	H	53.5	-11.6	41.9	47.0	5.1	316.0	311.0	
12	660.015	H	49.4	-7.9	41.5	47.0	5.5	274.0	206.0	

◆ Calculation - SAC #4(10 m)

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

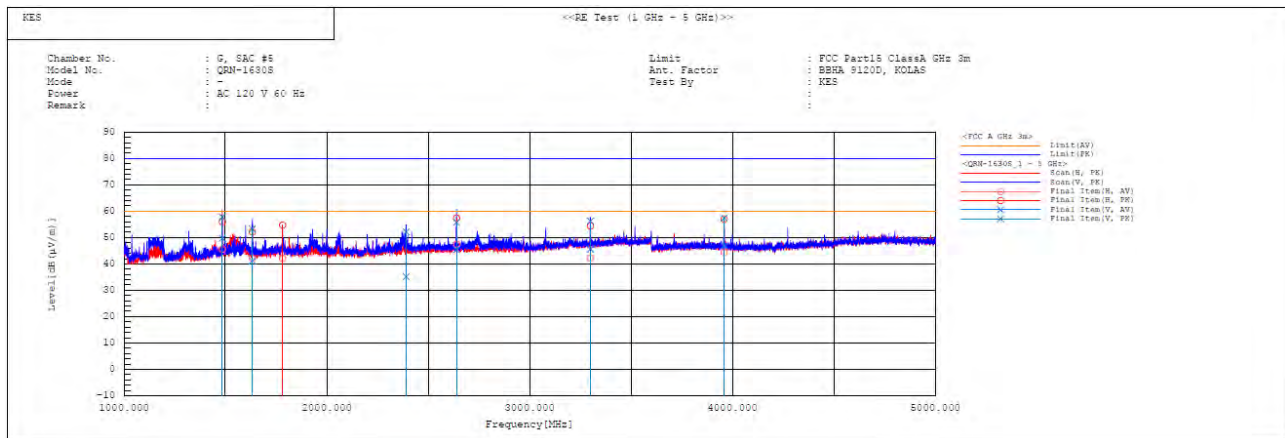
Margin(QP)[dB] = Limit[dB(μ V/m)] - Result(QP) [dB(μ V/m)]

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]	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	1484.968	V	49.5	57.6	0.2	49.7	57.8	60.0	80.0	10.3	22.2	162.0	63.3	
2	1484.968	H	45.4	55.7	0.2	45.6	55.9	60.0	80.0	14.4	24.1	347.0	336.5	
3	1633.480	V	40.5	52.6	0.6	41.1	53.2	60.0	80.0	18.9	26.8	100.0	54.1	
4	1633.493	H	41.6	51.5	0.6	42.2	52.1	60.0	80.0	17.8	27.9	385.0	39.0	
5	1781.988	H	40.4	53.0	1.7	42.1	54.7	60.0	80.0	17.9	25.3	400.0	43.3	
6	2391.484	V	32.1	49.0	3.1	35.2	52.1	60.0	80.0	24.8	27.9	100.0	43.1	
7	2640.134	V	41.3	51.7	4.1	45.4	55.8	60.0	80.0	14.6	24.2	146.0	192.2	
8	2640.175	H	43.3	53.3	4.1	47.4	57.4	60.0	80.0	12.6	22.6	312.0	227.6	
9	3295.988	H	36.4	48.5	5.9	42.3	54.4	60.0	80.0	17.7	25.6	311.0	16.0	
10	3295.992	V	39.7	50.4	5.9	45.6	56.3	60.0	80.0	14.4	23.7	100.0	248.4	
11	3959.950	V	39.9	50.4	7.0	46.9	57.4	60.0	80.0	13.1	22.6	132.0	283.8	
12	3959.969	H	37.3	50.0	7.0	44.3	57.0	60.0	80.0	15.7	23.0	400.0	331.1	

◆ 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



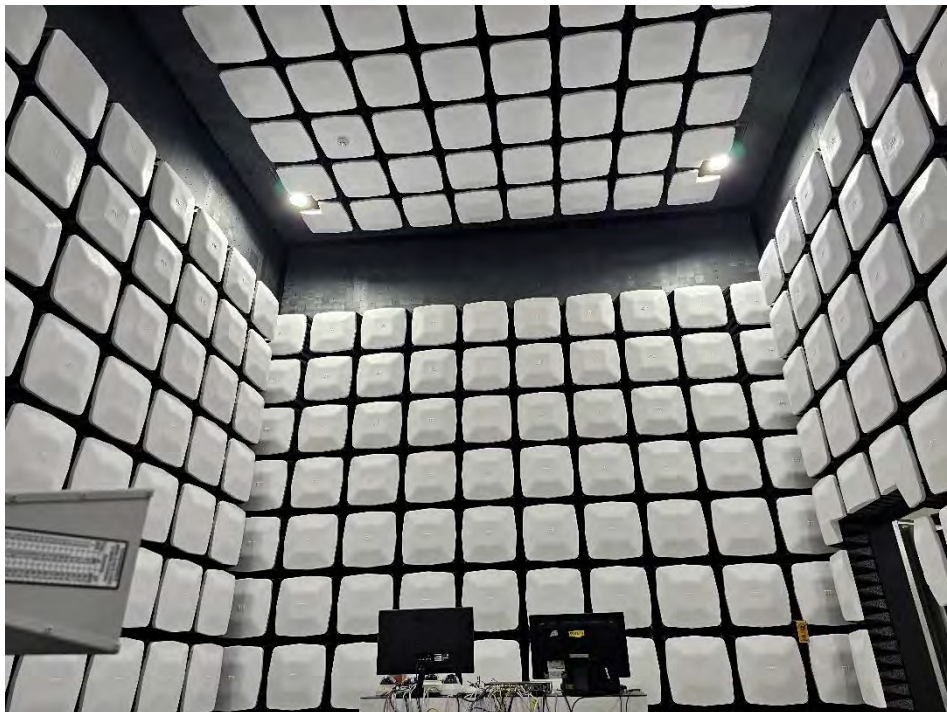
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Radiated Electric Field Emissions(Below 1 GHz)



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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)



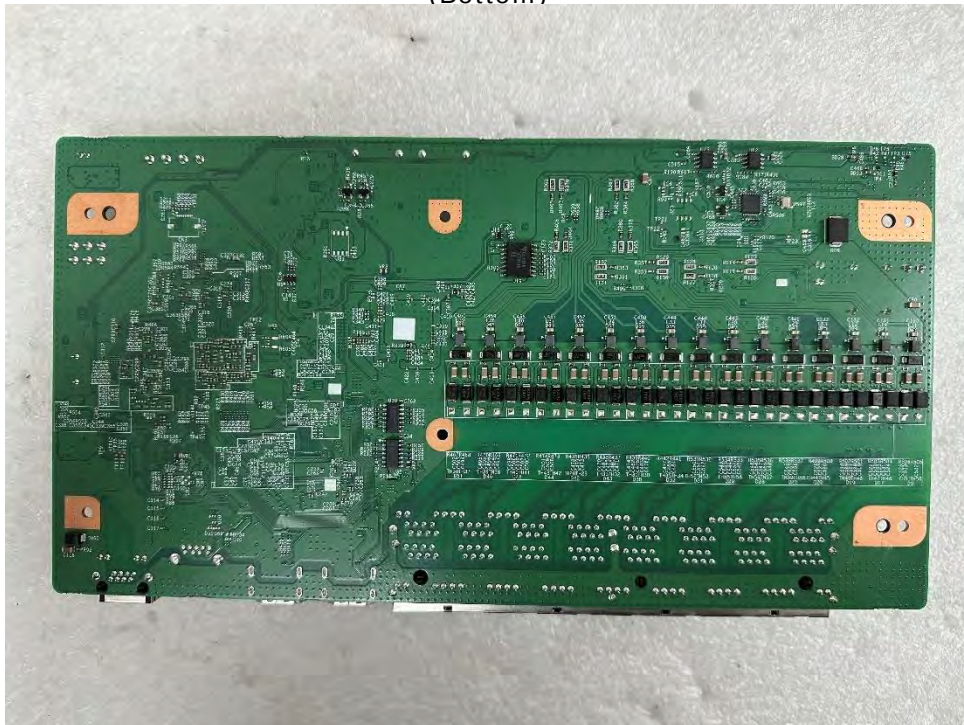
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EUT Internal View – Main Board

(Top)



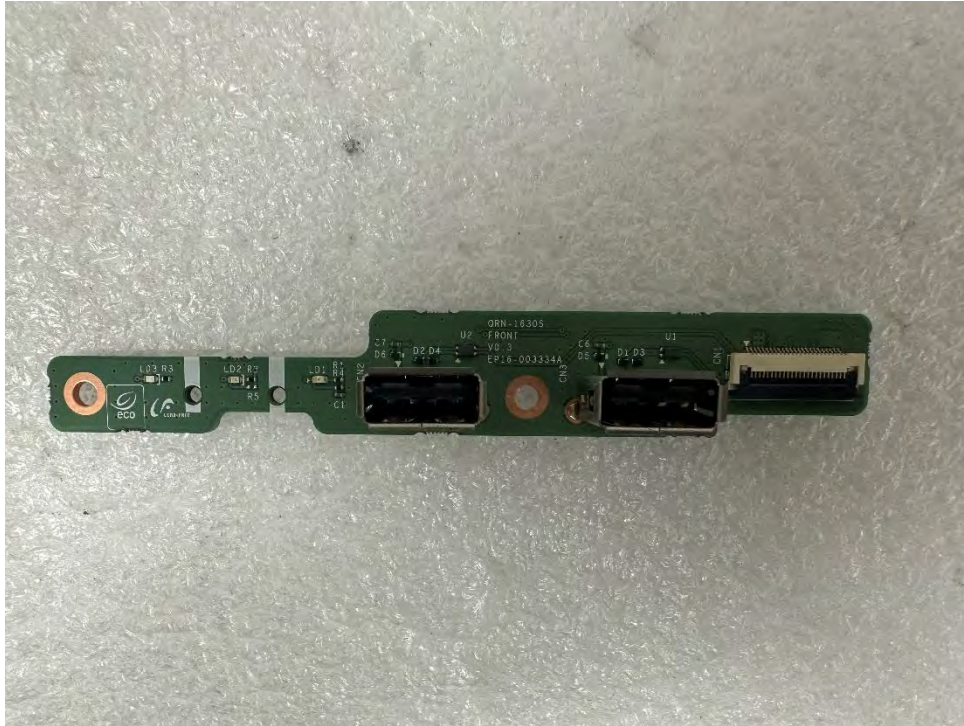
(Bottom)



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EUT Internal View – Sub Board

(Top)



(Bottom)



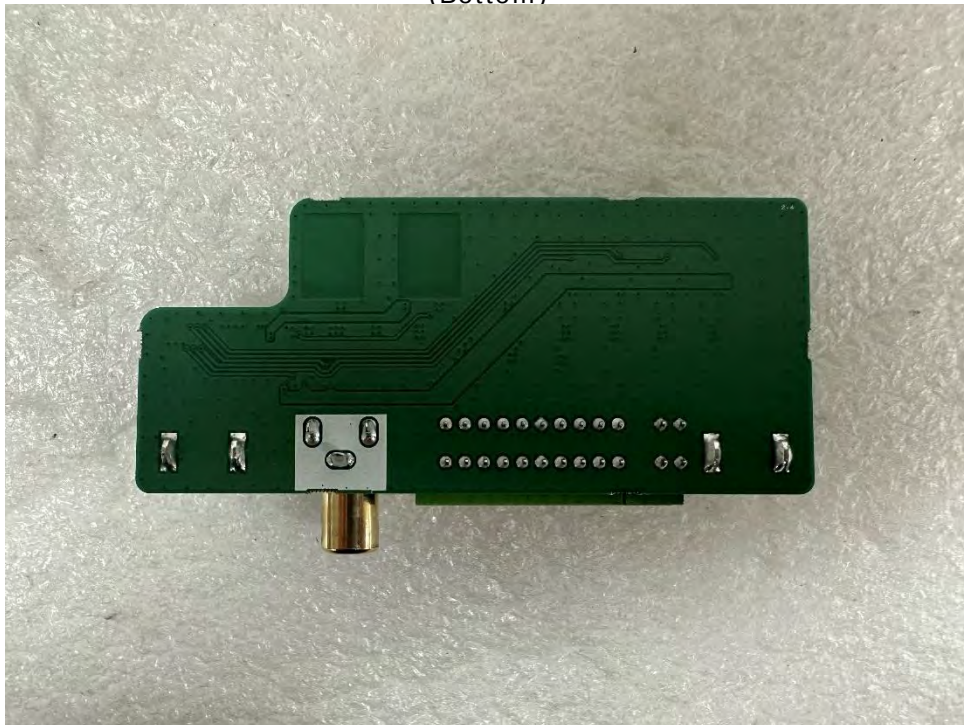
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EUT Internal View – Alarm Board

(Top)



(Bottom)



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EUT Internal View – Fan

(Top)



(Bottom)



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EUT Internal View – Mouse

(Top)



(Bottom)



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EUT Internal View – SWITCHING POWER SUPPLY

(Top)



(Bottom)



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Label Photographs

FCC Label



NVR

MGC-F9010LI

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.