

**KES Co., Ltd.**

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www.kes.co.kr

Report No.:

KES-EM-22T0495-R1

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EMC TEST REPORT

Test Report No. : KES-EM-22T0495-R1
Date of Issue : Feb. 24, 2023
Product name : NVR
Model/Type No. : XRN-1620SB1
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 : Jun. 13, 2022
Test date : Jun. 16, 2022
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Jae Won, Lee
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
Jun. 22, 2022	KES-EM-22T0495	Issued
Feb. 24, 2023	KES-EM-22T0495-R1	Change the Applicant and manufacturer at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

Display		
Network camera	Inputs	Max. 16CH
	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 - Clone mode: Up to 16 Division - Expand mode: Up to 9 Division [Web] 1/ 2H/ 2V/ 3V/ 4/ 5/ 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) Clone/Single mode: Up to 25fps when displaying more than 10CH
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 140Mbps
	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. 64CH (Local 16CH, Remote 16CH 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 4ea (Max. 24TB)
Backup	File backup	BU/Exe/AVI(GUI), JPG/AVI(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. 140Mbps
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)

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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
	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 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
Storage		OK
HDMI		1EA 3840x2160 30Hz
VGA		1EA 1920x1080 60Hz
Audio		Out 1EA (3.5mm Audio Jack)
Ethernet		PoE+ RJ-45 16EA (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. 310W
PoE Budget	200W

Mechanical

Color / Material	Black / Metal
Dimension (WxDxD)	440 x 89.8 x 428.4 mm (17.32 x 3.54 x 16.87 inch)
Weight	5.76 Kg (12.70lb)

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-1620SB1	-	HANWHA VISION VIETNAM COMPANY LIMITED	EUT
Mouse	MOKJUO	-	Primax Electronics Ltd.	-
SWITCHING POWER SUPPLY	DPS-280AB-6 A	-	Delta Electronics Power(Dongguan) Co., Ltd.	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Camera1	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera2	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera3	QNV-6024RM	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera4	QNV-6023R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera5	QNV-6020RN	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera6	-	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera7	LND-6070R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera8	SND-7084N	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera9	QND-8030R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera10	SND-L6013RN	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera11	XND-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera12	QNV-601RP	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera13	LNV-6030R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera14	SND-L6012P	-	HANWHA VISION VIETNAM COMPANY LIMITED	-

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Description	Model Number	Serial Number	Manufacturer	Remarks
Camera15	-	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Camera16	XNV-6020R	-	HANWHA VISION VIETNAM COMPANY LIMITED	-
Laptop1	P95G001	8KM8HT2	DELL INC.	-
Laptop1 Adapter	LA65NS2-01	-	LITE-ON TECHNOLOGY(CHANGZ HOU)CO.,LTD.	-
Laptop2	HSN-Q07C	5CD8367KND	HP	-
Laptop2 Adapter	HSTNN-CA40	WFTKU0ERLB4Q CH	HP	-
Monitor1	DELL E2222H DVT	8221TCM10D001 03X	DELL INC.	-
Monitor2	SMT-2232	C95V67VF90003 8B	Weihai Daewoo Electronics Co., Ltd.	-
Earphone	-	-	-	-
Alarm1	-	-	-	-
Alarm2	-	-	-	-
Button alarm1	-	-	-	-
Button alarm2	-	-	-	-
Button alarm3	-	-	-	-
Button alarm4	-	-	-	-
HDD	ST2000VX016	-	SEAGATE	2 TB
Smart phone	-	-	SAMSUNG	-
USB Memory1	-	-	Sandisk	32 GB
USB Memory2	-	-	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)	RJ-45 (PoE)	Camera1	RJ-45 (PoE)	3.0	U
	RJ-45 (PoE)	Camera2	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera3	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera4	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera5	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera6	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera7	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera8	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera9	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera10	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera11	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera12	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera13	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera14	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera15	RJ-45 (PoE)	10.0	U
	RJ-45 (PoE)	Camera16	RJ-45 (PoE)	10.0	U
	RJ-45 (LAN)	Laptop1	RJ-45 (LAN)	3.0	U
	RJ-45 (LAN)	Laptop2	RJ-45 (LAN)	3.0	U

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Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NVR (EUT)	USB	Mouse (EUT)	USB	1.4	U
	USB	USB Memory1	USB	-	-
	USB	USB Memory2	USB	-	-
	HDMI	Monitor1	HDMI	1.5	S
	D-SUB	Monitor2	D-SUB	1.7	S
	grounding	grounding	grounding	1.2	-
	3.5 mm	Earphone	3.5 mm	1.5	U
	Alarm out	Alarm1	Alarm in	3.0	U
	Alarm out	Alarm2	Alarm in	3.0	U
	Alarm in	Button alarm1	Alarm out	3.0	U
	Alarm in	Button alarm2	Alarm out	3.0	U
	Alarm in	Button alarm3	Alarm out	3.0	U
	Alarm in	Button alarm4	Alarm out	3.0	U
	SATA	HDD	SATA	0.2	U
Laptop1	DC Jack	Laptop1 Adapter	DC Jack	1.6	U
	3.5 mm	Smart phone	3.5 mm	1.5	U
Laptop2	DC Jack	Laptop2 Adapter	DC Jack	1.6	U

* Unshielded=U, Shielded=S

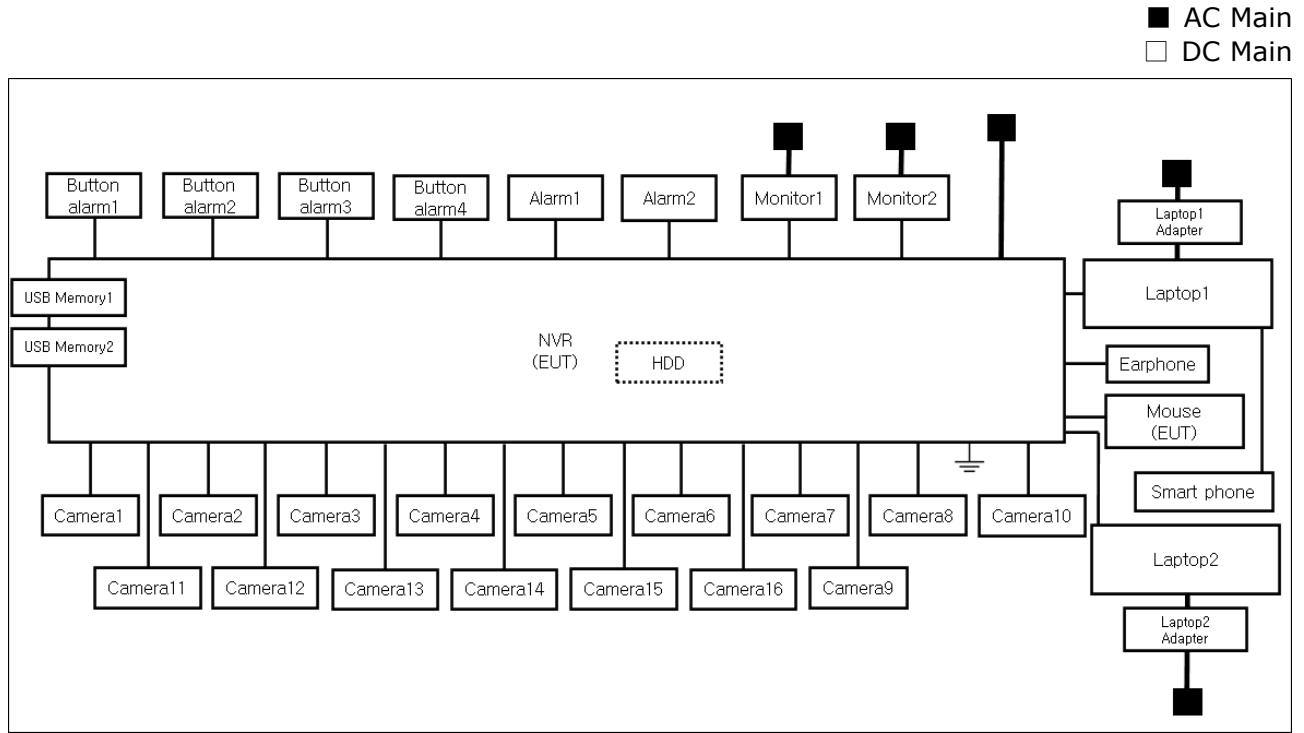
1.7 EUT Operating Mode(s)

Test Mode	operating
Operation Mode	EUT Monitoring, Ping Test after testing, check if the recording is normally done on the HDD and USB Memory

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

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1.8 Configuration



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

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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

Jun. 16, 2022

Test Location

Electro wave Shieldroom #6

Test Equipment

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

Test Conditions

Temperature: (24,1 ± 0,1) °C

Relative Humidity: (44,3 ± 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.



2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jun. 16, 2022

Test Location

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	03, 31, 2023
☒	AMPLIFIER	SCU 01	R & S	100603	11, 24, 2022
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	12, 08, 2022
☒	ATTENUATOR	8491A	HP	32173	03, 08, 2023

Test Conditions

Temperature: (24,4 ± 0,1) °C
Relative Humidity: (44,6 ± 0,1) % 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

Jun. 16, 2022

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	12, 16, 2022
☒	PREAMPLIFIER	8449B	HP	3008A00538	06, 02, 2023

Test Conditions

Temperature: (23,1 ± 0,1) °C

Relative Humidity: (44,7 ± 0,1) % 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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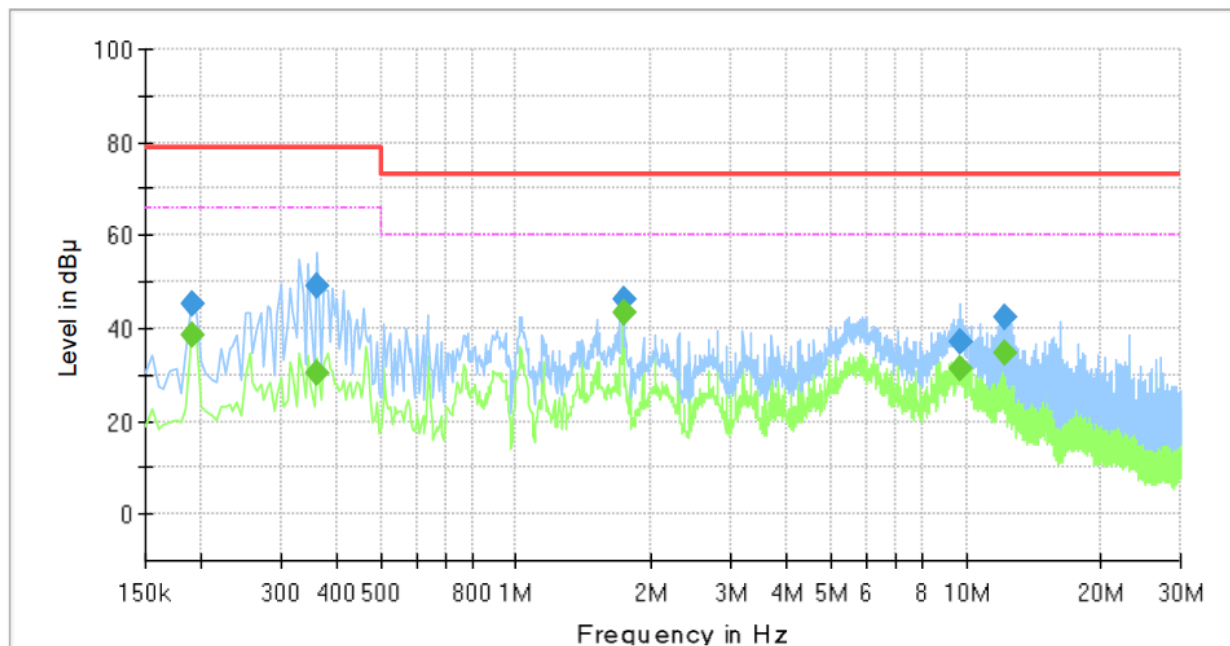
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XRN-1620SB1
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)
0.190000	---	38.46	66.00	27.54	1000.0	9.000	L1	19.4
0.190000	45.44	---	79.00	33.56	1000.0	9.000	L1	19.4
0.360000	---	30.16	66.00	35.84	1000.0	9.000	L1	19.6
0.360000	49.25	---	79.00	29.75	1000.0	9.000	L1	19.6
1.730000	---	43.50	60.00	16.50	1000.0	9.000	L1	20.3
1.730000	46.44	---	73.00	26.56	1000.0	9.000	L1	20.3
9.745000	---	31.36	60.00	28.64	1000.0	9.000	L1	19.8
9.745000	36.92	---	73.00	36.08	1000.0	9.000	L1	19.8
12.200000	---	34.73	60.00	25.27	1000.0	9.000	L1	20.0
12.200000	42.19	---	73.00	30.81	1000.0	9.000	L1	20.0

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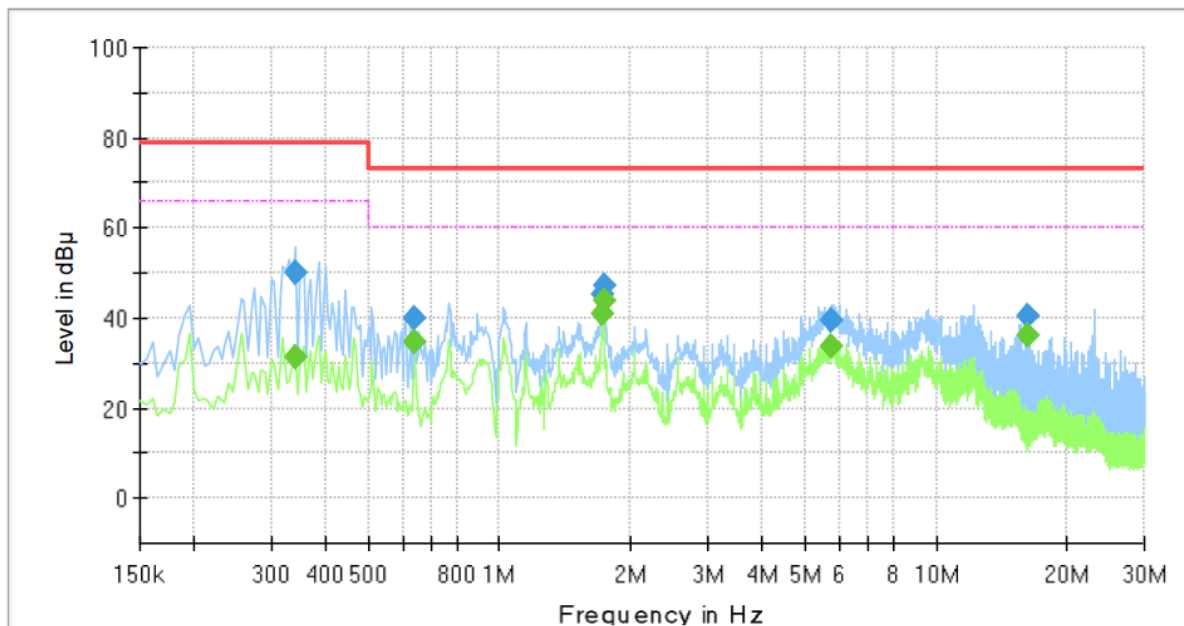
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NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	XRN-1620SB1
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)
0.340000	---	31.11	66.00	34.89	1000.0	9.000	N	19.5
0.340000	50.10	---	79.00	28.90	1000.0	9.000	N	19.5
0.640000	---	34.62	60.00	25.38	1000.0	9.000	N	19.9
0.640000	40.06	---	73.00	32.94	1000.0	9.000	N	19.9
1.725000	---	41.06	60.00	18.94	1000.0	9.000	N	20.3
1.725000	45.25	---	73.00	27.75	1000.0	9.000	N	20.3
1.730000	---	43.99	60.00	16.01	1000.0	9.000	N	20.3
1.730000	46.95	---	73.00	26.05	1000.0	9.000	N	20.3
5.780000	---	33.61	60.00	26.39	1000.0	9.000	N	19.5
5.780000	39.50	---	73.00	33.50	1000.0	9.000	N	19.5
16.230000	---	35.89	60.00	24.11	1000.0	9.000	N	19.9
16.230000	40.39	---	73.00	32.61	1000.0	9.000	N	19.9

◆ Calculation

$$\text{QuasiPeak [dBuV]} / \text{CAverage [dBuV]} = \text{Reading Value [dBuV]} + \text{Corr. [dB]}$$

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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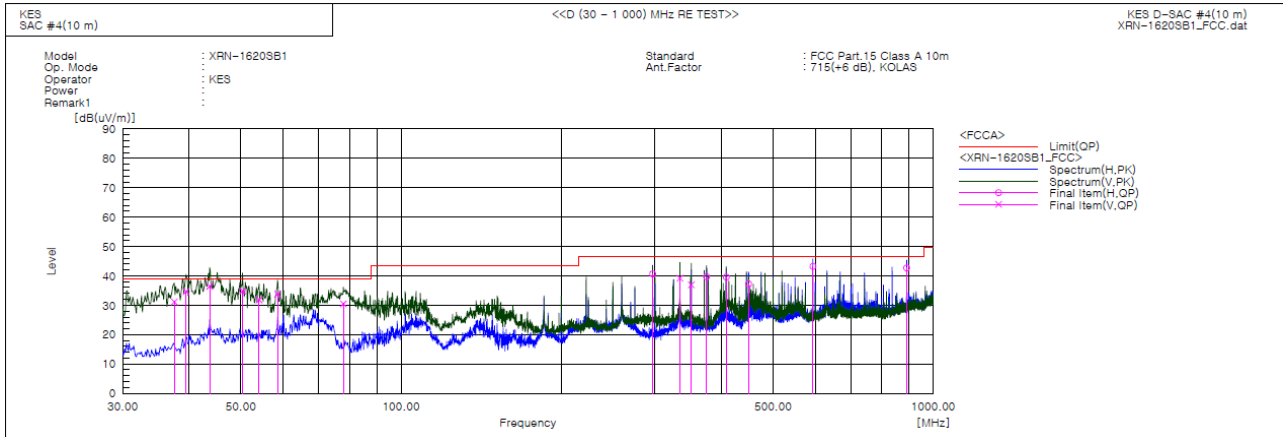
Report No.:

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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	37.518	V	55.1	-23.9	31.2	39.0	7.8	112.0	342.0	
2	39.458	V	57.5	-22.8	34.7	39.0	4.3	115.0	215.0	
3	43.701	V	58.1	-21.6	36.5	39.0	2.5	106.0	320.0	
4	50.370	V	55.9	-21.0	34.9	39.0	4.1	141.0	188.0	
5	54.129	V	53.1	-21.3	31.8	39.0	7.2	145.0	282.0	
6	58.615	V	55.6	-21.8	33.8	39.0	5.2	142.0	256.0	
7	77.894	V	58.1	-27.6	30.5	39.0	8.5	395.0	69.0	
8	296.993	H	58.8	-18.1	40.7	46.5	5.8	195.0	204.0	
9	334.095	V	55.1	-15.9	39.2	46.5	7.3	142.0	106.0	
10	350.949	V	52.3	-15.3	37.0	46.5	9.5	148.0	241.0	
11	374.956	H	54.5	-14.8	39.7	46.5	6.8	194.0	306.0	
12	408.300	H	53.6	-14.0	39.6	46.5	6.9	198.0	185.0	
13	450.010	H	50.3	-13.0	37.3	46.5	9.2	111.0	174.0	
14	594.055	H	51.8	-8.6	43.2	46.5	3.3	395.0	321.0	
15	891.118	H	46.8	-4.1	42.7	46.5	3.8	397.0	64.0	

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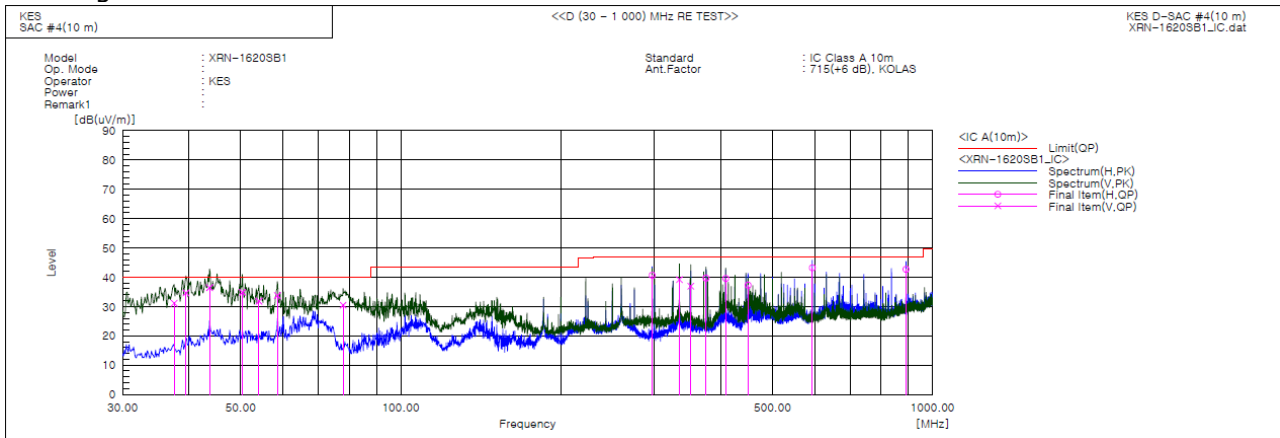
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Report No.:

KES-EM-22T0495-R1

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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	37.518	V	55.1	-23.9	31.2	40.0	8.8	112.0	342.0	
2	39.458	V	57.5	-22.8	34.7	40.0	5.3	115.0	215.0	
3	43.701	V	58.1	-21.6	36.5	40.0	3.5	106.0	320.0	
4	50.370	V	55.9	-21.0	34.9	40.0	5.1	141.0	188.0	
5	54.129	V	53.1	-21.3	31.8	40.0	8.2	145.0	282.0	
6	58.615	V	55.6	-21.8	33.8	40.0	6.2	142.0	256.0	
7	77.894	V	58.1	-27.6	30.5	40.0	9.5	395.0	69.0	
8	296.993	H	58.8	-18.1	40.7	47.0	6.3	195.0	204.0	
9	334.095	V	55.1	-15.9	39.2	47.0	7.8	142.0	106.0	
10	350.949	V	52.3	-15.3	37.0	47.0	10.0	148.0	241.0	
11	374.956	H	54.5	-14.8	39.7	47.0	7.3	194.0	306.0	
12	408.300	H	53.6	-14.0	39.6	47.0	7.4	198.0	185.0	
13	450.010	H	50.3	-13.0	37.3	47.0	9.7	111.0	174.0	
14	594.055	H	51.8	-8.6	43.2	47.0	3.8	395.0	321.0	
15	891.118	H	46.8	-4.1	42.7	47.0	4.3	397.0	64.0	

◆ Calculation - SAC #4(10 m)

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

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

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

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

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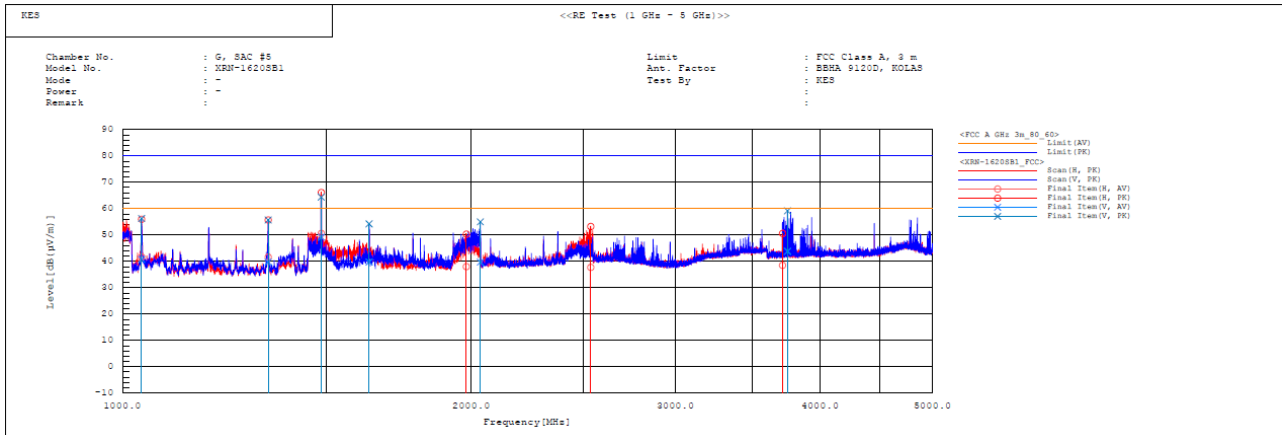
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Report No.:

KES-EM-22T0495-R1

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Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Range	Frequency	Pol	Reading AV	Reading PK	c.f	Result AV	Result PK	Limit AV	Limit PK	Margin AV	Margin PK	Height	Angle	Remark
		[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[deg]	
1	Range1	1039.195	V	48.4	63.9	-7.6	40.8	56.3	60.0	80.0	19.2	23.7	100.0	8.9	
2	Range1	1039.198	H	49.3	63.6	-7.6	41.7	56.0	60.0	80.0	18.3	24.0	148.0	347.6	
3	Range1	1336.157	V	45.5	61.5	-5.8	39.7	55.7	60.0	80.0	20.3	24.3	105.0	47.7	
4	Range1	1336.387	H	47.4	61.5	-5.8	41.6	55.7	60.0	80.0	18.4	24.3	197.0	320.9	
5	Range1	1484.878	V	54.3	69.5	-5.1	49.2	64.4	60.0	80.0	10.8	15.6	146.0	87.3	
6	Range1	1484.897	H	55.7	71.2	-5.1	50.6	66.1	60.0	80.0	9.4	13.9	378.0	33.2	
7	Range1	1633.197	V	44.4	58.8	-4.6	39.8	54.2	60.0	80.0	20.2	25.8	149.0	25.5	
8	Range1	1981.196	H	40.9	53.2	-2.9	38.0	50.3	60.0	80.0	22.0	29.7	197.0	59.5	
9	Range1	2036.378	V	42.4	57.7	-2.7	39.7	55.0	60.0	80.0	20.3	25.0	105.0	293.3	
10	Range1	2536.378	H	38.6	54.1	-0.9	37.7	53.2	60.0	80.0	22.3	26.8	387.0	42.9	
11	Range1	3712.378	H	36.2	48.3	2.3	38.5	50.6	60.0	80.0	21.5	29.4	104.0	2.8	
12	Range1	3749.547	V	41.4	56.8	2.4	43.8	59.2	60.0	80.0	16.2	20.8	106.0	173.4	

◆ Calculation

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

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

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

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

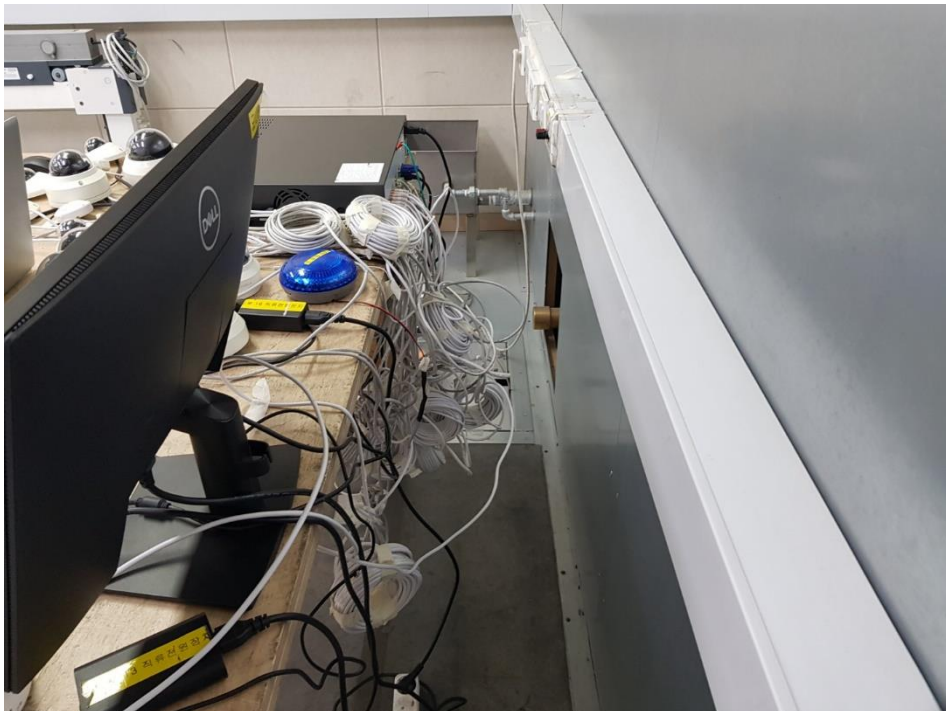
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Test Setup Photos and Configuration

Conducted Emissions at Mains Power Ports



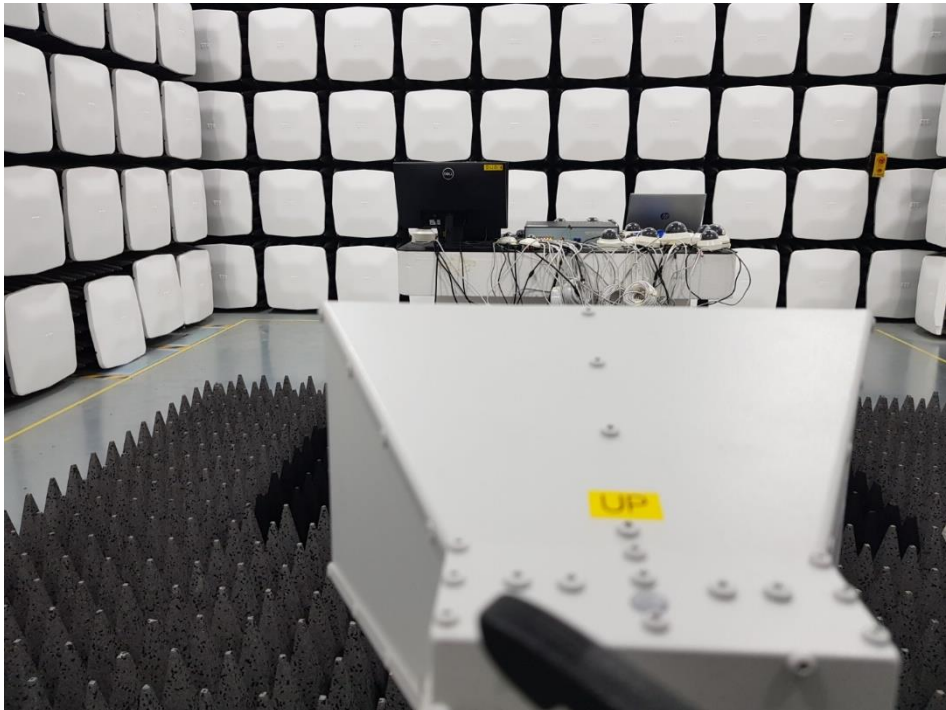
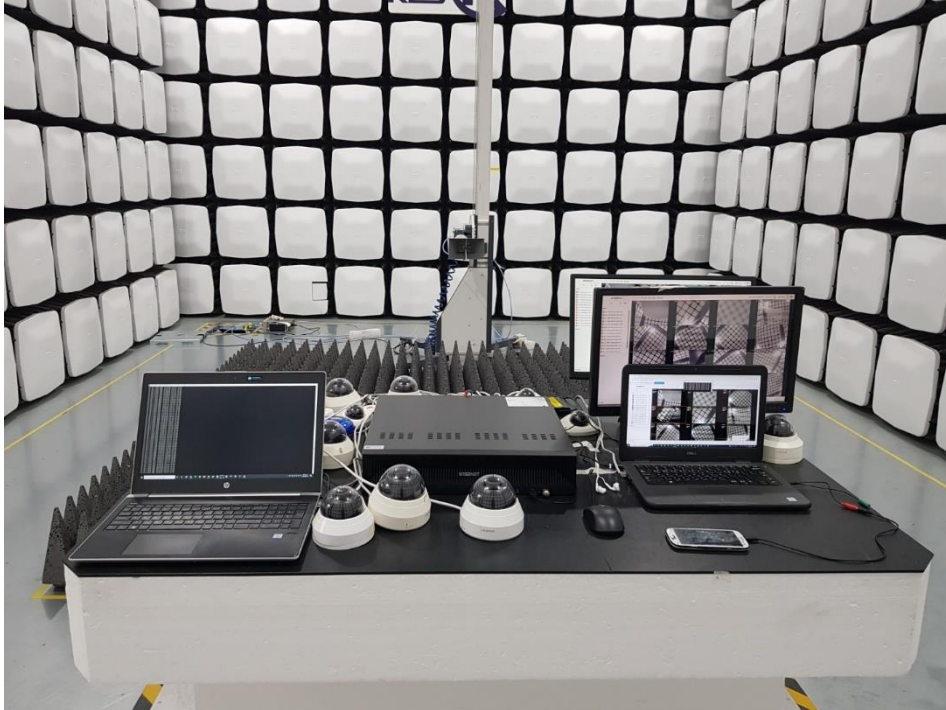
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



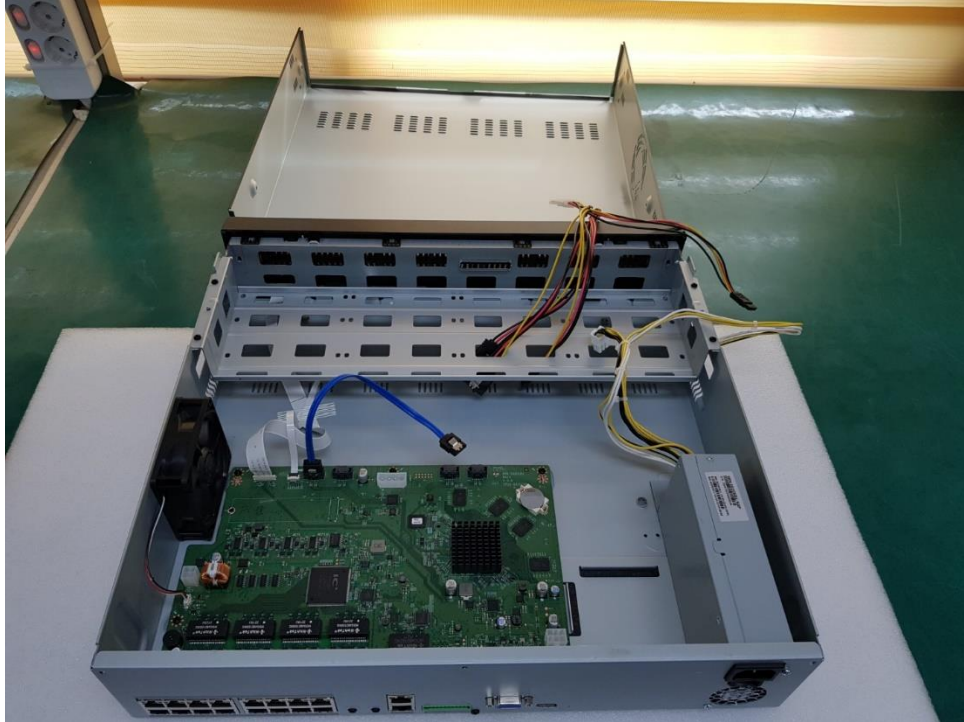
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EUT Internal Photographs

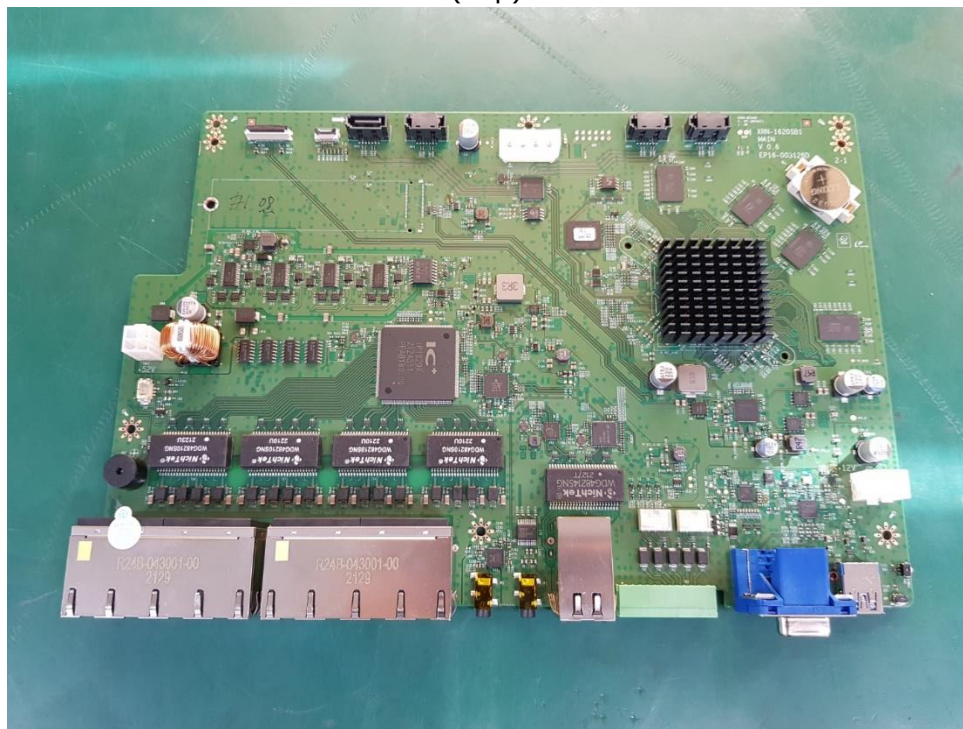
(Internal View)



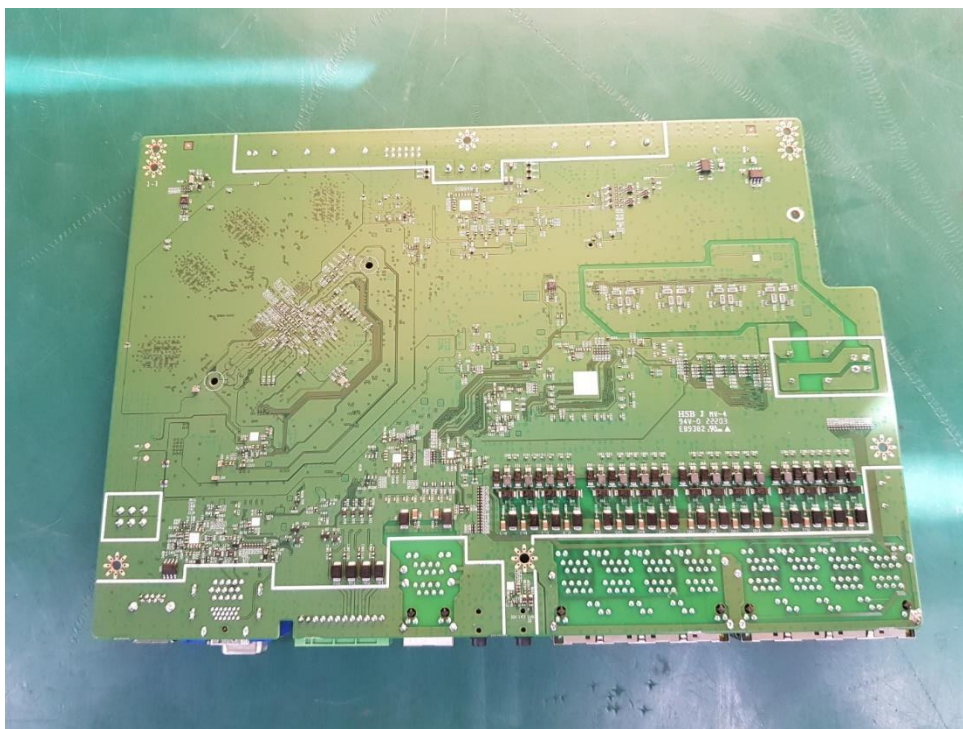
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EUT Internal View – Main Board

(Top)



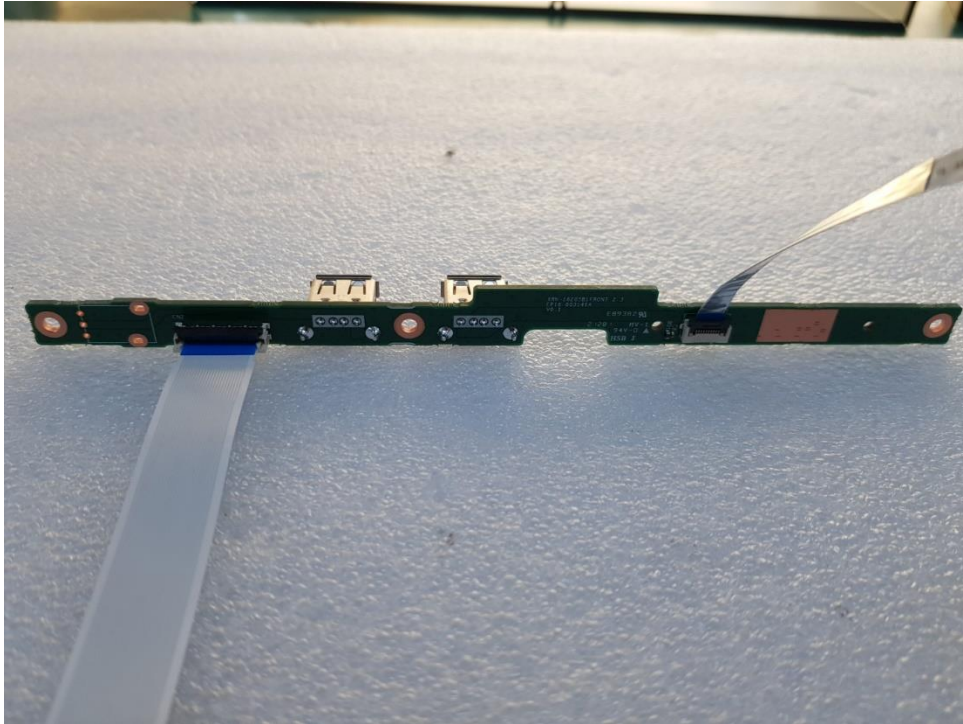
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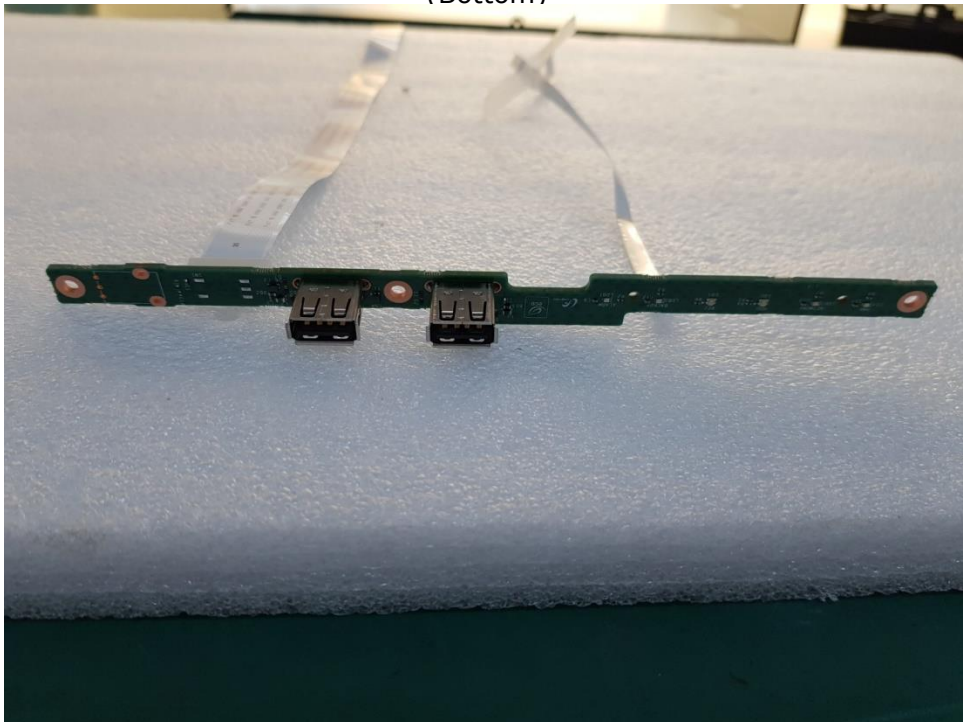
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EUT Internal View – Sub Board

(Top)



(Bottom)



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EUT Internal View – Power

(Top)

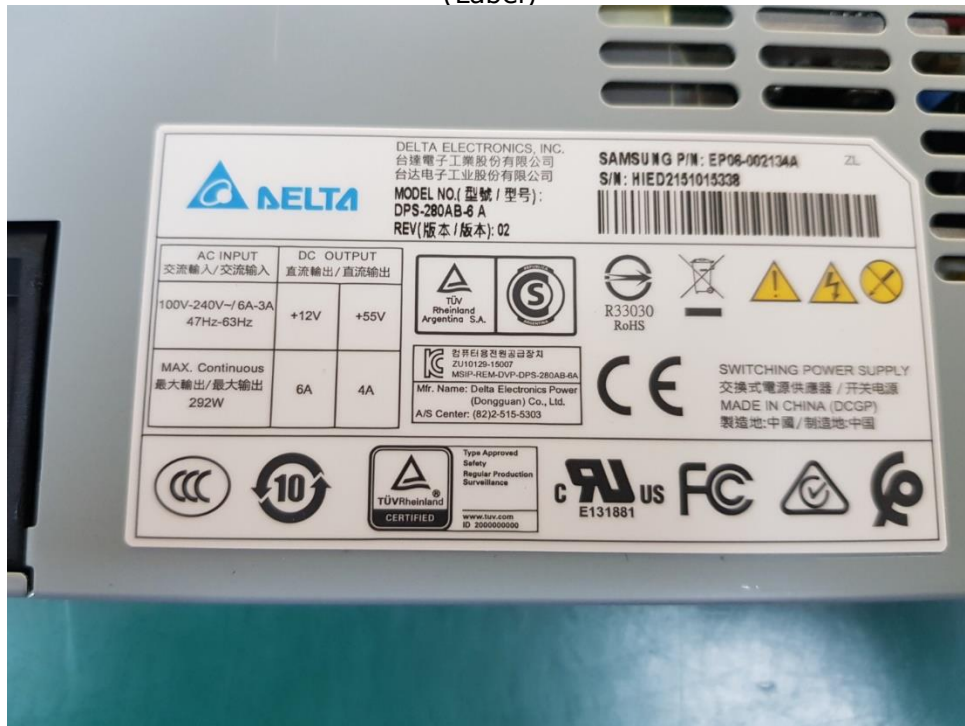


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EUT Internal View – Mouse

(Top)



(Bottom)



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(Label)



Label Photographs

FCC Label



Hanwha Techwin Co., Ltd.

XRN-1620SB1

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.