



EMC TEST REPORT For FCC

Test Report No. : KES-E1-16T0273-R1

Date of Issue : Nov. 27, 2018

Product name : NETWORK VIDEO RECORDER

Model/Type No. : XRN-1610S

Variant Model : XRN-1610SP/DM, XRN-1610S-1T, XRN-1610S-2T, XRN-1610,
XRN-1610-1T, XRN-1610SA

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488, KOREA

Manufacturer : 1. Hanwha Techwin (Tianjin) Co., Ltd.
2. HANWHA TECHWIN SECURITY VIETNAM CO., LTD.
3. D-TECH CO., LTD.

Manufacturer Address : 1. No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, People's Republic of China
2. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do,
Korea (Suwon Industrial Complex)

Date of Receipt : Jun. 02, 2016

Test date : Jun. 13, 2016 ~ Jun. 14, 2016

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Yung Suk, Song
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 21, 2016	KES-E1-16T0273	Issued
Nov. 27, 2018	KES-E1-16T0273-R1	Adding standard updates and derived models

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1.0 General Product Description

Main Specifications of EUT are:

Model			XRN-1610S			Network			
Display									
Network Camera	Inputs	Max. 16CH				Protocol			
	Resolution	CIF ~ 12MP				TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTSP, NTP, HTTP, DHCP(Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF Profile S, SUNAPI(Server, Client)			
	Fish-Eye Devarping	N/A (processed on Web / CMS)				DDNS			
	Protocols	Samsung, ONVIF				PoIs DDNS			
Live	Local Display	1x HDMI / 1x VGA Dual Monitor				Transmission Bandwidth			
	Multi-Channel Display	[Local Monitor] 1 / 4 / 6 / 8 / 9 / 13 / 16 / Auto Sequence [Web] 1 / 4 / 9 / 16 / Auto Sequence				Max. 256Mbps (iSCSI off) (128Mbps, iSCSI on)			
	Performance	[Local Monitor] 12MP (30fps) 8MP (120fps) 5MP (180fps), 3MP (240fps), 2MP (480fps), 720p (480fps), D1 (480fps)				Max Remote Users			
		[Web] 5MP (30fps), 3MP (60fps), 2MP (120fps), 720p (240fps), D1 (480fps)				Search(3) / Live unicast(10) / Live multicast(20)			
Performance						IP Version			
Operating System	Embedded	Linux				IPv4/v6			
Record	Compression	H.265, H.264, MJPEG				Security			
	Recording Bandwidth	128Mbps				User access Log IP Filtering 802.1x Encryption(ID/PW, Recording, Transmission, Backup)			
	Resolution	CIF ~ 12MP				Language			
	Type	Manual, Schedule(Continuous Event), Event (Pre/Post)				GUI			
	Event Trigger	- Alarm Input(8) - Video Loss - Camera Event(Sensor, MD, Video Analytics) - VA Event(Tampering, Enter/Exit, Passing/Virtual-Line, Appearing/Disappearing, Face Detection, Audio Detection) - Defocus Camera Event				(1) English, (2) French, (3) German, (4) Italian, (5) Spanish, (6) Russian, (7) Turkish, (8) Polish, (9) Dutch, (10) Swedish, (11) Czech, (12) Portuguese, (13) Danish, (14) Romanian, (15) Serbian, (16) Croatian, (17) Hungarian, (18) Greek, (19) Norwegian, (20) Finnish, (21) Korean, (22) Chinese, (23) Japanese, (24) Thai			
		Event Action	e-Mail, PTZ Preset, Alarm Out, Buzzer, Monitor Out				Web		
Search & Play	Playback Bandwidth	32Mbps (16ch simultaneously)				(1) English, (2) French, (3) German, (4) Italian, (5) Spanish, (6) Russian, (7) Turkish, (8) Polish, (9) Dutch, (10) Swedish, (11) Czech, (12) Portuguese, (13) Danish, (14) Romanian, (15) Serbian, (16) Croatian, (17) Hungarian, (18) Greek, (19) Norwegian, (20) Finnish, (21) Korean, (22) Chinese, (23) Japanese			
	Performance	Max. 3 Users (Remote 3)				OS			
	Mode	Date & Time(Calendar) Event Log list Text Search(POS, ANPR)				Supported OS : Windows XP(service pack 2 or above), Vista, 7, 8, 10, Mac OS X(10.7 or above)			
		Simultaneous playback		Up to 16CH (Local, Network)		Web Browser			
	Resolution	CIF ~ 12MP				Non-plugin Webviewer Supported Browser: Google Chrome 47, MS Edge 20 WMF : 1CH LIVE(800X600), SETUP			
	Fish-Eye Devarping	N/A (processed on Web / CMS)				Plug-in Webviewer Supported Browser: MS Explore 11, Mozilla Firefox 43, Apple Safari 9 * Mac OS X only			
	Playback Control	Fast Stop Forward Backward, Move one step up/down				Viewer Software			
	Storage	Default Built-In	0TB ~ 8TB (TBD, dependent on region)				Type		
		Internal	4 SATA				SSM, Webviewer, Smart Viewer, iPolis Mobile		
		Hot Swap	N/A				CMS Support		
External(DAS)		1 e-SATA				Support SDK/CGI(SUNAPI)			
External(NAS, iSCSI)		iSCSI				Smart phone			
Max Capacity		Internal (32TB=4x8TB)				Support Model			
RAID		N/A				I-Phone, Android			
Backup	File backup	BU/EXE/USB, JPG/AVI/Web, CMS				Protocol Support			
	Function	Max. 16CH Play, Date-Time/Title display				RTP, RTSP, HTTP, CGI(SUNAPI)			
Sensor	IO	64 (NO 3EA, NO/NC 1EA)				Control			
Audio	Input	16CH (network)				Live(16ch) : Multi-Profile Support Playback(1ch, Max 2MP)			
	Compression	G.711, G.726, AAC(16/48KHz)				Max. Remote Users			
	Audio Communication	2-Way (pass-through between camera and SSM)				Search (3), Live Unicast (10), Multicast (20)			
Functions									
Camera Setup	Register	1) PnP mode 2) Manual mode				Functions			
	Setup items	(1) IP Address, Add Profile Edit, Bitrate, Compression, GOP, Quality - MD - VA : Tampering, Enter/Exit, Passing(Virtual-Line), Appearing/Disappearing, Face Detection, Audio Detection (3) Video Setup/Simple Focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSOR, DIS (4) Fisheye Devarping, Halfway View Setup, Camera Webpage				Camera Setup			
Camera Control	PoE	1) Monitor PoE Power consumption 2) On/Off Control for each PoE camera 3) Remote Reset for each PoE camera				Register			
	Time Sync	NTP Time Protocol for PoE Camera (Time sync based on NTP time)				Setup items			
Easy Configuration						Setup Wizard (Language, Date/Time, Network, Auto Camera Configuration) selectable between PnP and Manual mode			

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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.

Voltage ☐ 100 Vac ☐ 110 Vac ☒ 120 Vac ☐ PoE ☐ 12 Vdc

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Variant Model	Differences
XRN-1610SP/DM, XRN-1610S-1T, XRN-1610S-2T, XRN-1610, XRN-1610-1T, XRN-1610SA	Customer-specific management model

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK VIDEO RECORDER	XRN-1610S	-	Hanwha Techwin (Tianjin) Co.,Ltd.	E.U.T
Mouse	-	-	-	-
HDD	WD10PURX	WCC4J4EX436	WD	-
POWER	DPS-280AB-6 A	HIED1609002094	Delta Electronics Power(Dongguan) Co., Ltd.	-

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor 1	LS23C340	ZXPCHTMF B01032M	SAMSUNG	-
Monitor adapter 1	A2514_DPN	CN07BN4400591 BSK28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor 2	SMT-2232	C95V67VF90002 5B	Weiha Daewoo Electronics Co., Ltd.	-
Notebook	LG15N54	410NZET022292	LG	-
Adapter	ADP-90WH B	84ZW19F1557	DELTA ELECTRONICS(JIANGSU) LTD.	-
Camera	SND-L6013RN	-	SAMSUNG TECHWIN CO.,LTD.	-
Speaker	-	-	MASS	-
Alarm 1	SIP-1201DD DO	C53R67JZ301878 L	SAMSUNG TECHWIN CO.,LTD.	-
Alarm 2	SIE-0001 DO	C54167JB601268 F	SAMSUNG TECHWIN CO.,LTD.	-
External HDD	MDT-US2528	-	-	-
3.0 USB Memory	-	-	Transcend	16GB

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK VIDEO RECORDER (E.U.T)	RJ-45	Notebook	RJ-45	3.0	U
	D-SUB	Monitor 1	D-SUB	1.5	S
	HDMI	Monitor 2	HDMI	1.7	S
	Audio Out	Speaker	Audio OUT	1.2	U
	USB	Mouse	USB	1.2	U
	RJ-45	Camera	RJ-45	4.0	S
	Alarm IN	Alarm 1	Alarm IN	3.0	U
	Alarm OUT	Alarm 2	Alarm OUT	3.0	U
	e-SATA	External HDD	e-SATA	0.5	U
	3.0 USB	3.0 USB Memory	3.0 USB	-	-

* Unshielded=U, Shielded=S

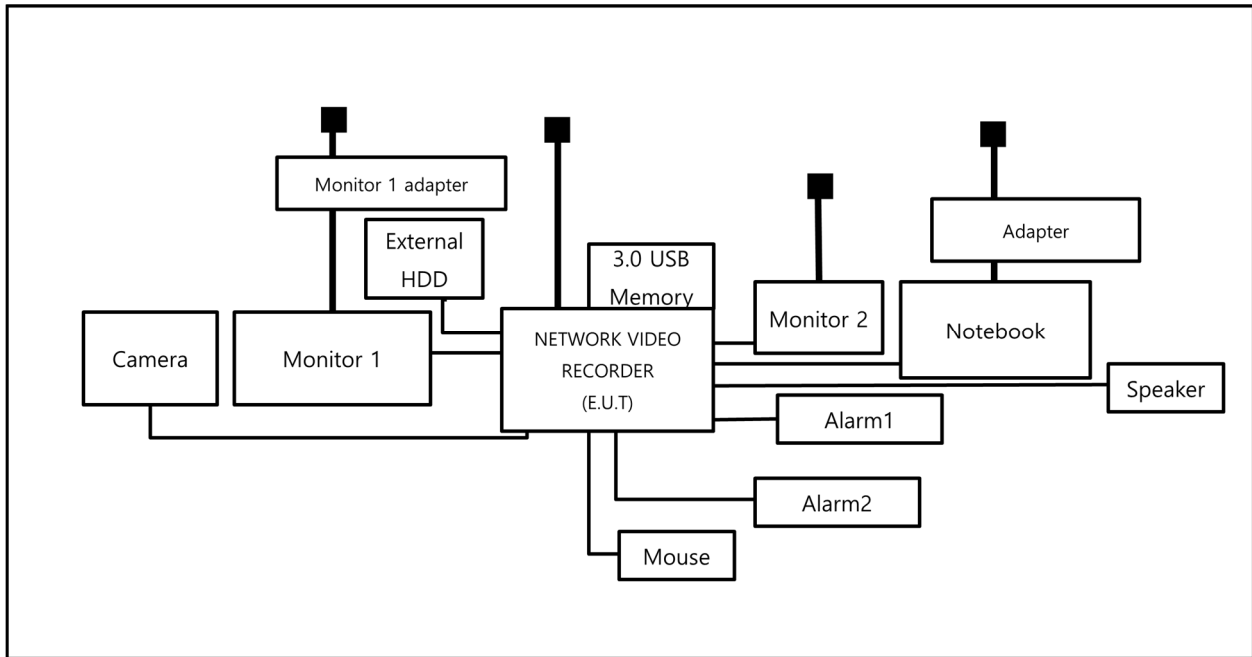
1.7 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

Test mode	Normal operating
OP	Tested by checking the movement whether it works well or not, with executing Ping test in a Notebook and outputting an image to a monitor after arrangement E.U.T with peripheral device as follows.

1.8 Configuration

■ AC Main
 □ DC Main



1.9 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.

1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2012

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Accreditation No
KOREA	RRA	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	 23298-1
JAPAN	VCCI	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	 R-4308, C-4798, T-2311, G-914
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 17 07 01633 001



2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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☐ **VCCI V-3 / 2015.04**

☐ Class A

☐ Class B

☐ **AS/NZS:2013**

☐ Class A

☐ Class B

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4-2014

☒ Class A

☐ Class B

☐ **IC Regulation ICES-003 : 2016**

☐ CAN/CSA CISPR 22-10

☐ Class A

☐ Class B

☐ ANSI C63.4-2014

☐ Class A

☐ Class B

☐ **RE- Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

☐ Equipment for fixed use

☐ Equipment for vehicular use

☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Jun. 13, 2016

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101783	05, 03, 2017
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 02, 2017
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 27,8 °C

Relative Humidity: 50,1 %

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. 13, 2016

Test Location

☒ Open Area Test Site #1 ☐ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R&S	101781	05, 03, 2017
☒	Trilog-Broadband ANT	VULB 9163	SCHWARZBECK	9163-715	04, 14, 2018
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	1070/1080	EMCO	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 28,1 °C

Relative Humidity: 68,0 %

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jun. 14, 2016

Test Location

Semi Anchoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100551	04, 18, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	Semi Anchoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions

Temperature: 29,2 °C

Relative Humidity: 51,5 %

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.

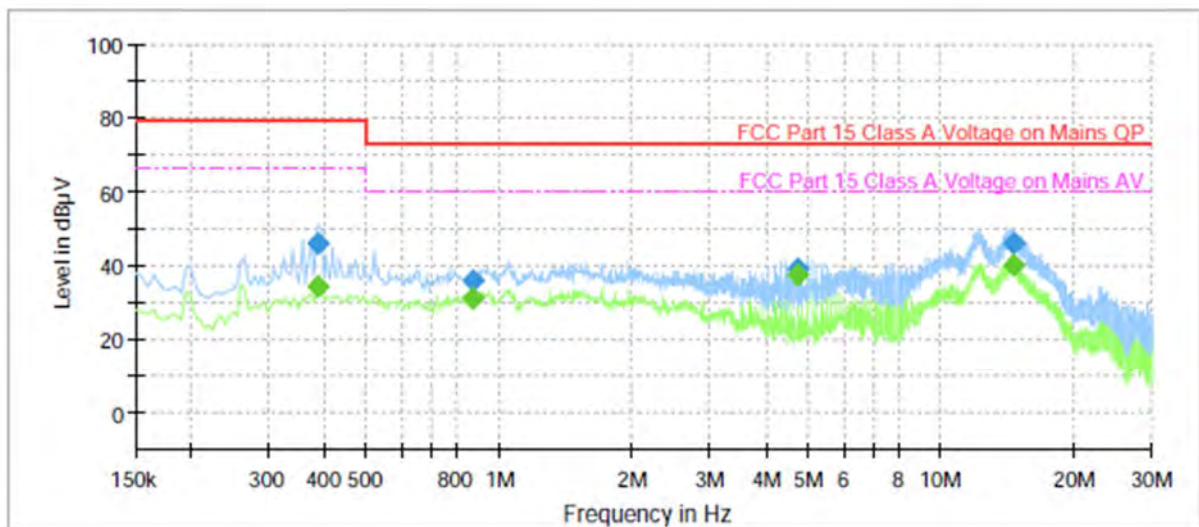
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: XRN-1610SN
Mode
Operator Name: KES



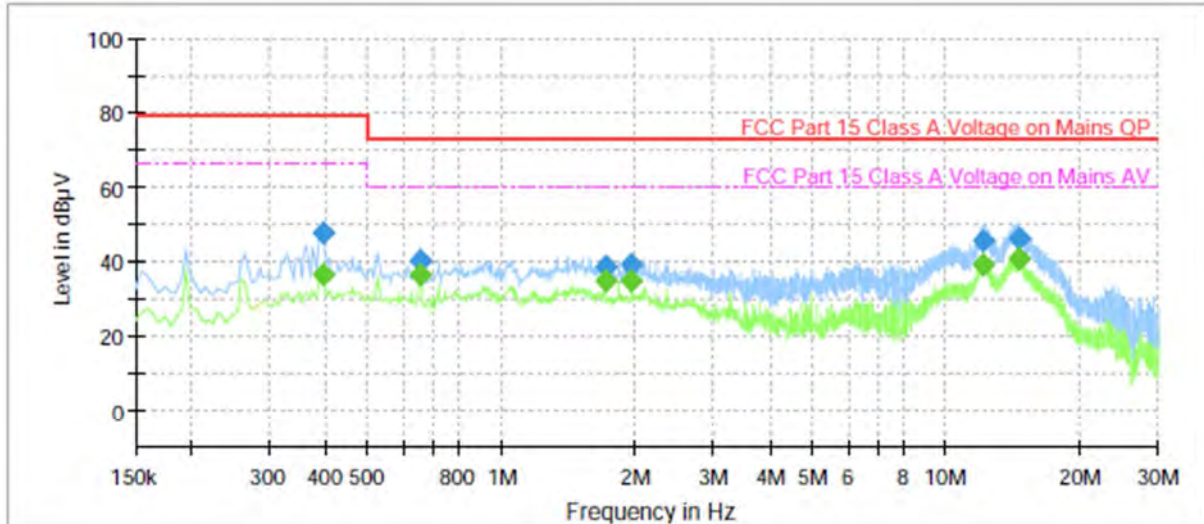
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.390000	---	34.28	66.00	31.72	1000.0	9.000	L1	9.7
0.390000	46.27	---	79.00	32.73	1000.0	9.000	L1	9.7
0.870000	---	31.24	60.00	28.76	1000.0	9.000	L1	9.7
0.870000	35.83	---	73.00	37.17	1000.0	9.000	L1	9.7
4.720000	---	37.79	60.00	22.21	1000.0	9.000	L1	9.8
4.720000	39.42	---	73.00	33.58	1000.0	9.000	L1	9.8
14.570000	---	40.39	60.00	19.61	1000.0	9.000	L1	10.0
14.570000	46.02	---	73.00	26.98	1000.0	9.000	L1	10.0

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XRN-1610SN
Mode
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.395000	---	36.73	66.00	29.27	1000.0	9.000	N	9.6
0.395000	47.75	---	79.00	31.25	1000.0	9.000	N	9.6
0.655000	---	36.80	60.00	23.20	1000.0	9.000	N	9.7
0.655000	40.42	---	73.00	32.58	1000.0	9.000	N	9.7
1.705000	---	34.75	60.00	25.25	1000.0	9.000	N	9.7
1.705000	38.87	---	73.00	34.13	1000.0	9.000	N	9.7
1.965000	---	34.69	60.00	25.31	1000.0	9.000	N	9.7
1.965000	39.14	---	73.00	33.86	1000.0	9.000	N	9.7
12.165000	---	39.41	60.00	20.59	1000.0	9.000	N	10.0
12.165000	45.69	---	73.00	27.31	1000.0	9.000	N	10.0
14.630000	---	40.54	60.00	19.46	1000.0	9.000	N	10.1
14.630000	46.02	---	73.00	26.98	1000.0	9.000	N	10.1

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Radiated Electric Field Emissions(Below 1 GHz)

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
149.18	16.31	V	1.00	8.19	2.46	26.96	43.50	16.54
250.36	15.52	H	4.00	12.56	3.33	31.41	46.40	14.99
325.52	12.44	V	1.00	13.95	3.80	30.19	46.40	16.21
350.12	16.48	H	4.00	14.49	3.89	34.86	46.40	11.54
446.83	11.90	V	1.00	16.38	4.56	32.84	46.40	13.56
475.25	12.10	H	4.00	16.87	4.77	33.74	46.40	12.66

* H : Horizontal, V : Vertical

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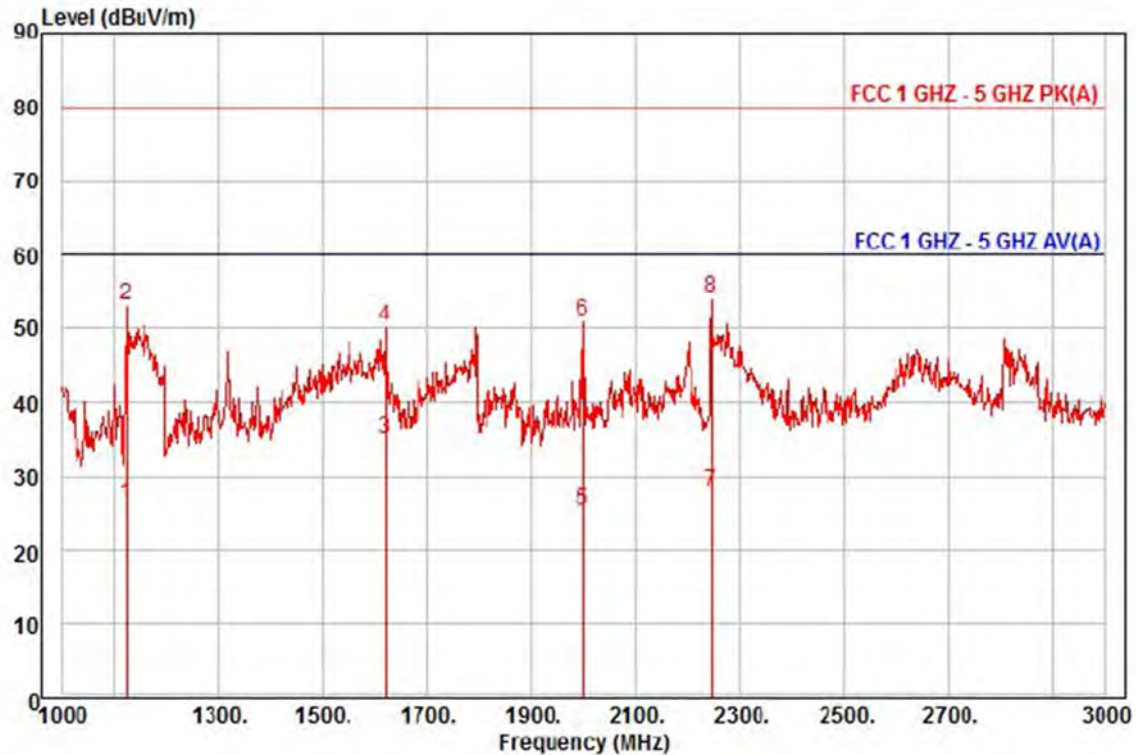
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Radiated Electric Field Emissions(Above 1 GHz)



Site : chamber

Condition: FCC 1 GHz - 5 GHz PK(A) 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto

Project :

Model : XRN-1610SN

Mode :

Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1122.00	35.14	24.39	6.86	40.06	348	60.00	-33.67	horizontal	Average
2	1122.00	61.94	24.39	6.86	40.06	348	80.00	-26.87	horizontal	Peak
3 pp	1620.00	40.09	26.37	8.31	39.82	21	60.00	-25.05	horizontal	Average
4	1620.00	55.49	26.37	8.31	39.82	21	80.00	-29.65	horizontal	Peak
5	2000.00	27.95	27.88	9.35	39.63	150	60.00	-34.45	horizontal	Average
6	2000.00	53.32	27.88	9.35	39.63	150	80.00	-29.08	horizontal	Peak
7	2246.00	29.42	28.48	9.73	39.77	77	60.00	-32.14	horizontal	Average
8 pk	2246.00	55.79	28.48	9.73	39.77	77	80.00	-25.77	horizontal	Peak

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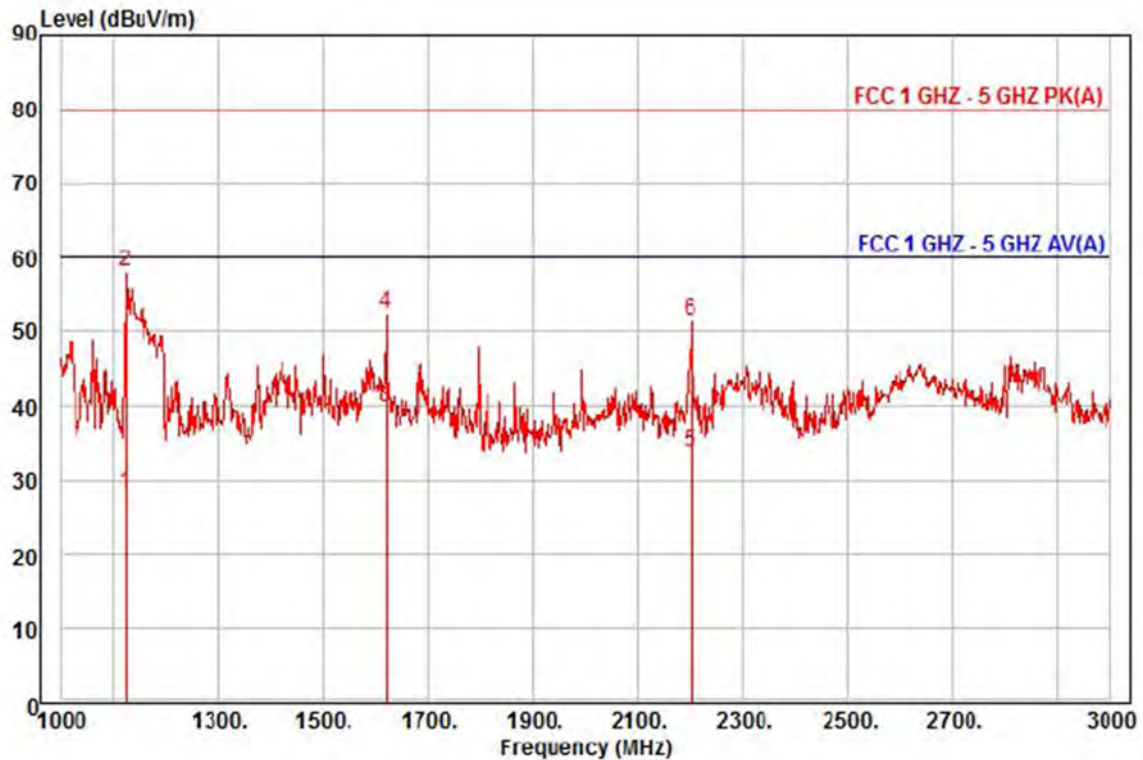
KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-16T0273-R1

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Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XRN-1610SN
Mode :
Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1122.00	37.01	24.39	6.86	40.06	21	60.00	-31.80	vertical	Average
2 pk	1122.00	66.96	24.39	6.86	40.06	21	80.00	-21.85	vertical	Peak
3 pp	1620.00	44.88	26.37	8.31	39.82	55	60.00	-20.26	vertical	Average
4	1620.00	57.57	26.37	8.31	39.82	55	80.00	-27.57	vertical	Peak
5	2200.00	35.59	28.37	9.66	39.75	59	60.00	-26.13	vertical	Average
6	2200.00	53.15	28.37	9.66	39.75	59	80.00	-28.57	vertical	Peak

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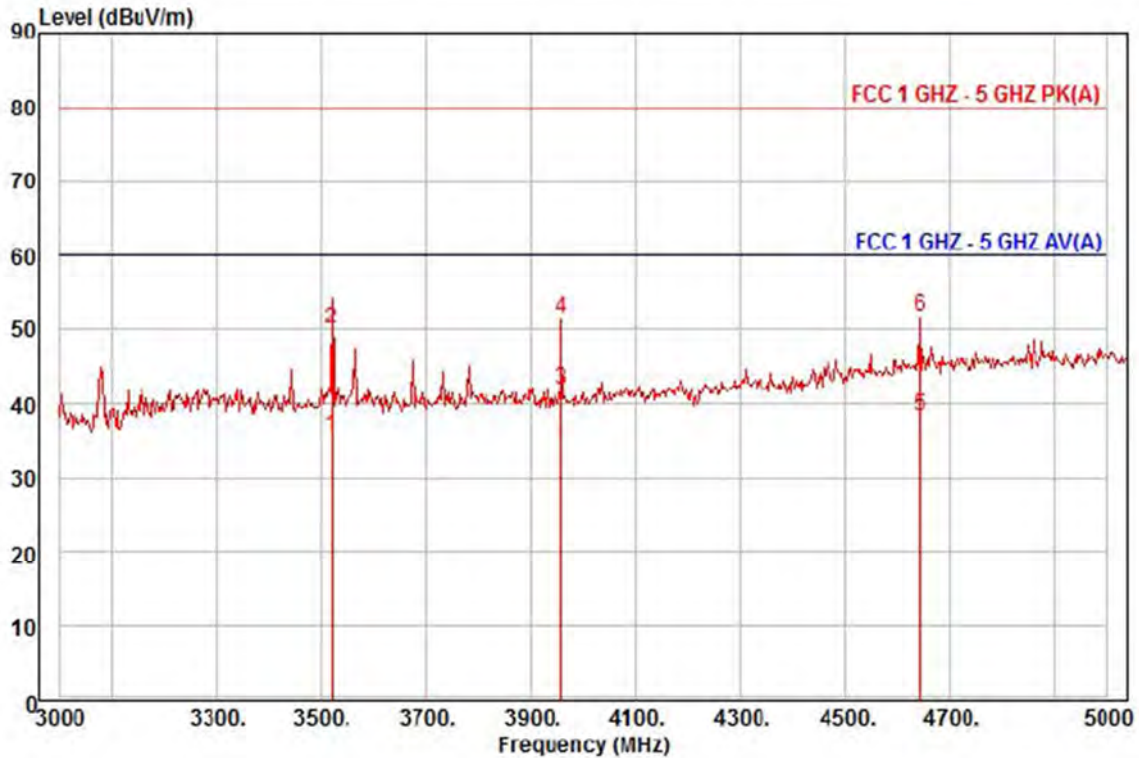
KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

Test report No.:

KES-E1-16T0273-R1

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Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XRN-1610SN
Mode :
Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3519.00	32.08	31.20	12.55	40.31	346	60.00	-24.48	horizontal	Average
2	3519.00	46.48	31.20	12.55	40.31	346	80.00	-30.08	horizontal	Peak
3 pp	3960.00	36.88	31.94	13.43	40.40	342	60.00	-18.15	horizontal	Average
4	3960.00	46.52	31.94	13.43	40.40	342	80.00	-28.51	horizontal	Peak
5	4644.00	28.22	35.69	14.69	40.41	15	60.00	-21.81	horizontal	Average
6 pk	4644.00	41.87	35.69	14.69	40.41	15	80.00	-28.16	horizontal	Peak

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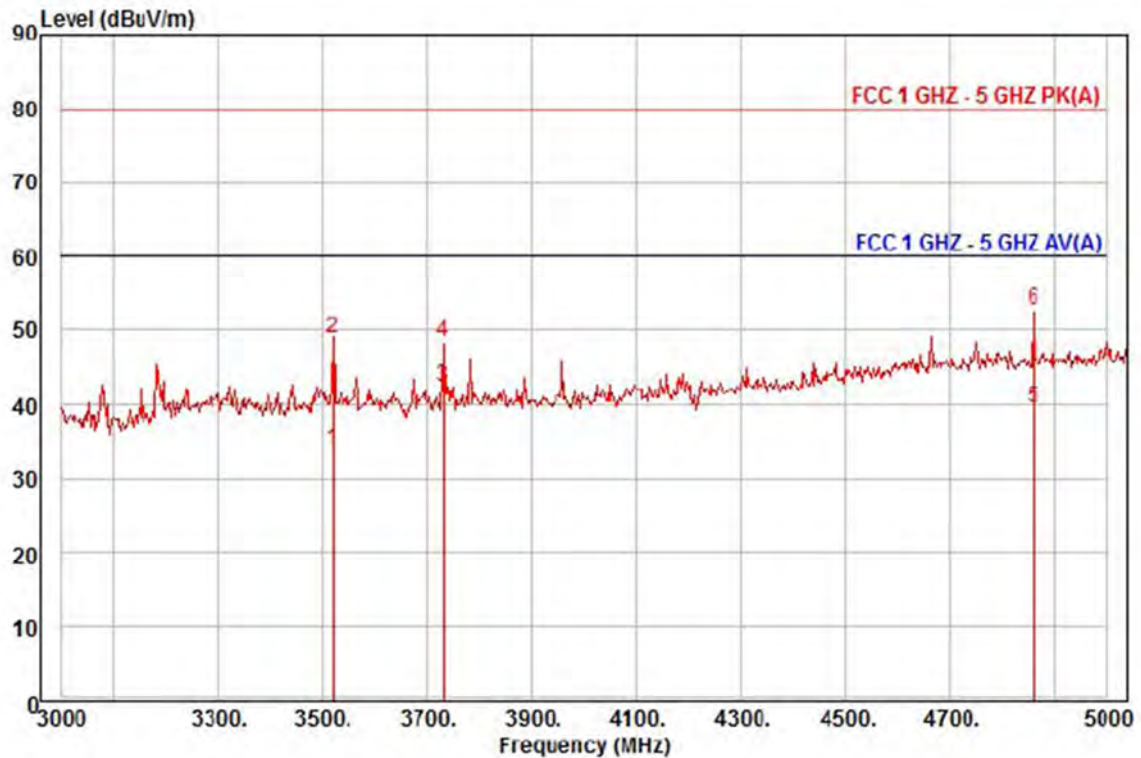
KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
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Test report No.:

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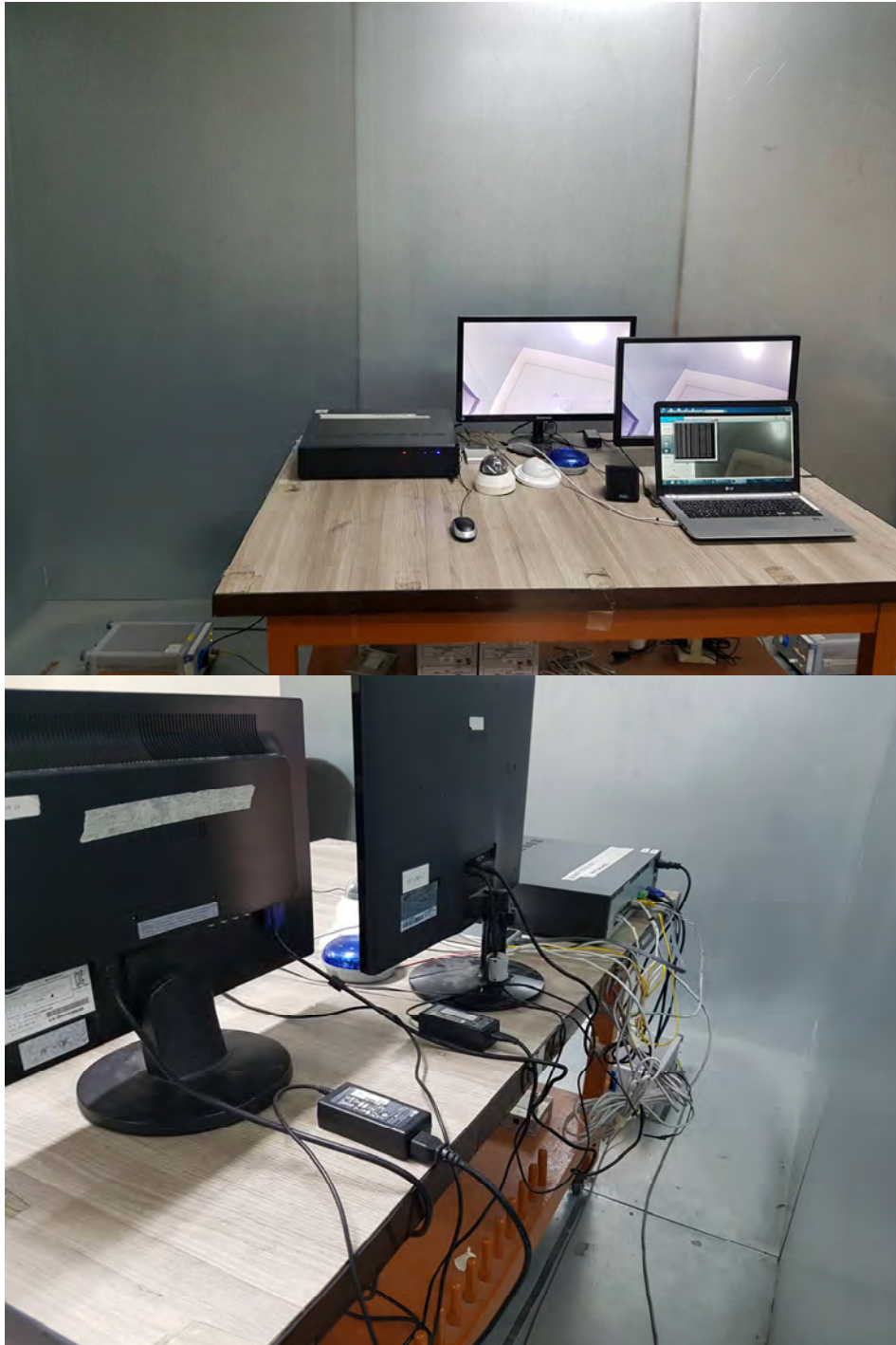
Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XRN-1610SN
Mode :
Memo :

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	3519.00	30.33	31.20	12.55	40.31	233	60.00	-26.23	vertical	Average
2	3519.00	45.32	31.20	12.55	40.31	233	80.00	-31.24	vertical	Peak
3 pp	3732.00	38.25	31.56	12.97	40.36	24	60.00	-17.58	vertical	Average
4	3732.00	44.09	31.56	12.97	40.36	24	80.00	-31.74	vertical	Peak
5	4860.00	27.82	36.92	15.08	40.41	151	60.00	-20.59	vertical	Average
6 pk	4860.00	41.07	36.92	15.08	40.41	151	80.00	-27.34	vertical	Peak

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Test Setup Photos and Configuration

Conducted Voltage Emissions



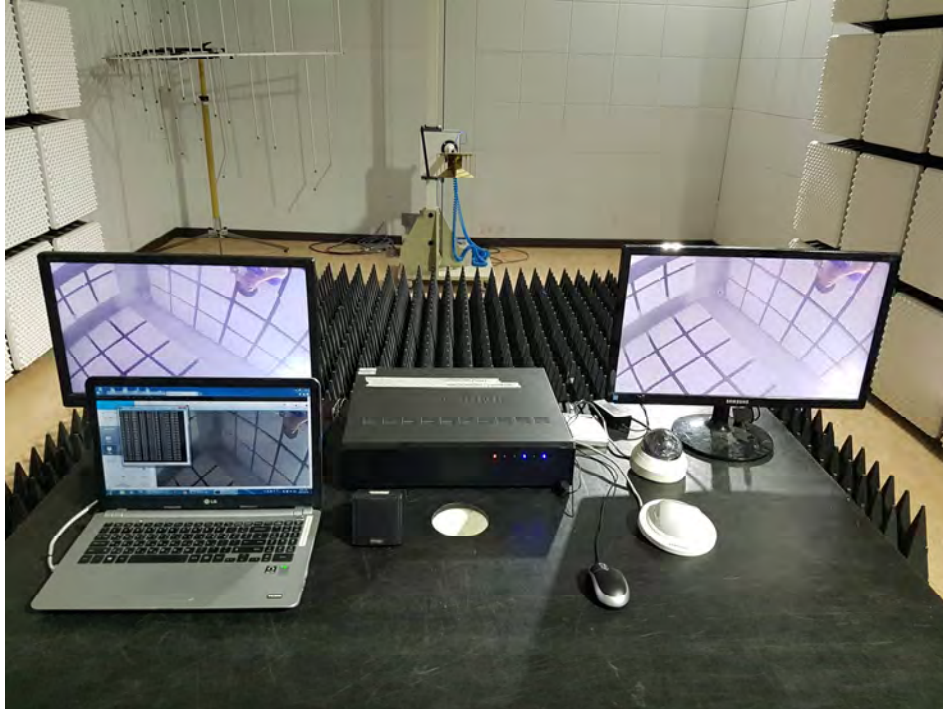
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Radiated Electric Field Emissions(Below 1 GHz)



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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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Main Board EUT Internal View – Board 1

(Top)



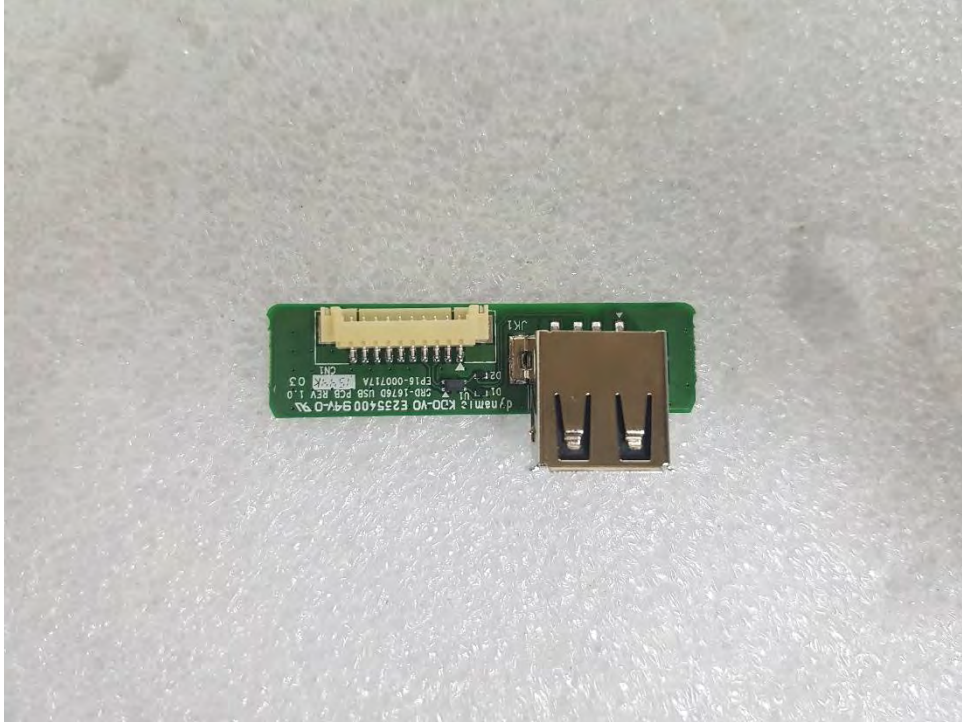
(Bottom)



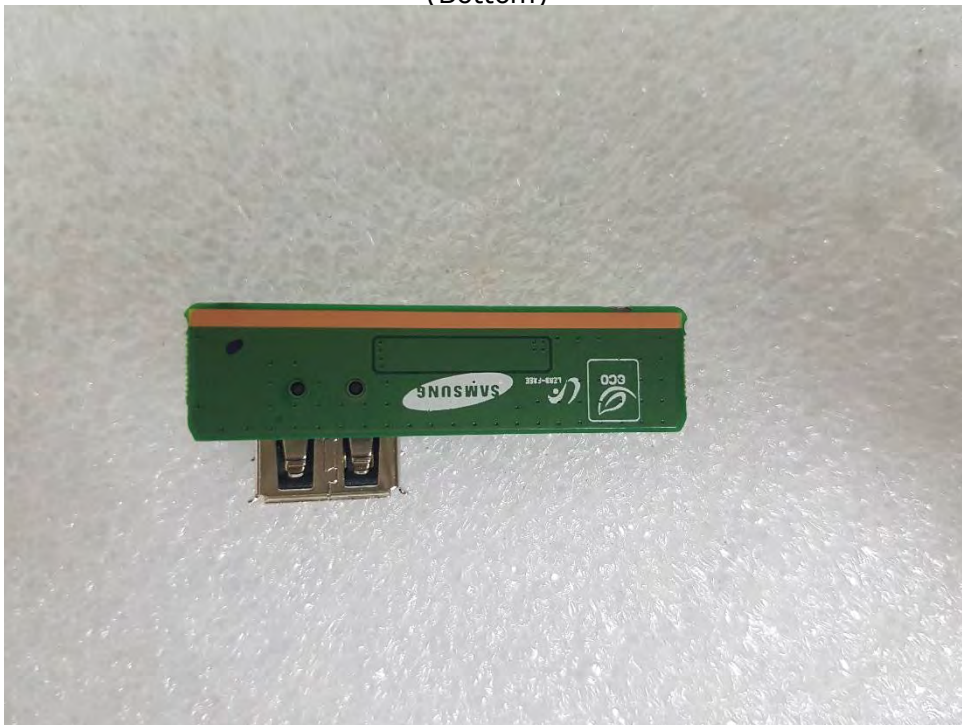
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Main Board EUT Internal View – Board 2

(Top)



(Bottom)



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Main Board EUT Internal View – Board 3

(Top)



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Main Board EUT Internal View – Power

(Top)



(Bottom)



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Main Board EUT Internal View – HDD

(Top)

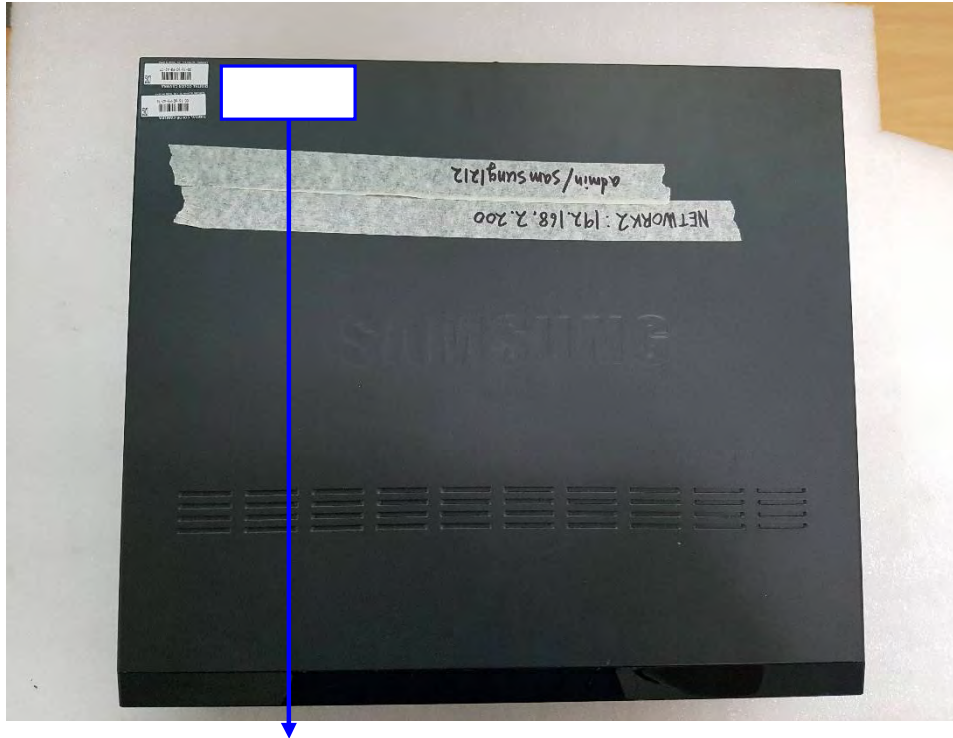


(Bottom)



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Label Photographs



This device complies with part 15 of the FCC Rules. Operation in subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.