



EMC TEST REPORT For IC

Test Report No. : KES-E1-16T0275-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

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EMC Test Engineer

Reviewed by

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EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jun. 23, 2016	KES-E1-16T0275	Issued
Nov. 27, 2018	KES-E1-16T0275-R1	Adding standard updates and derived models

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1.0 General Product Description

Main Specifications of EUT are:

Model		XRN-1611S	
Display			
Network Camera	Inputs	Max. 16CH	
	Resolution	CIF ~ 12MP	
	Fish-Eye Devarping	N/A (processed on Web / CMS)	
	Protocols	Samsung, ONVIF	
Live	Local Display	1x HDMI / 1x VGA Dual Monitor	
	Multi-Channel Display	[Local Monitor] 1 / 4 / 6 / 8 / 9 / 13 / 16 / Auto Sequence [Web] 1 / 4 / 9 / 16 / Auto Sequence	
	Performance	[Local Monitor] 12MP (30fps) 8MP (120fps) 5MP (180fps), 3MP (240fps), 2MP (480fps), 720p (480fps), D1 (480fps) [Web] 5MP (30fps), 3MP (60fps), 2MP (120fps), 720p (240fps), D1 (480fps)	
		Performance	
Operating System			
Record	Embedded	Linux	
	Compression	H.265, H.264, MJPEG	
	Recording Bandwidth	128Mbps	
	Resolution	CIF ~ 12MP	
	Type	Manual, Schedule(Continuous Event), Event (Pre Post)	
	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	
		Event Action	
		e-Mail, PTZ Preset, Alarm Out, Buzzer, Monitor Out	
Search & Play			
Playback Bandwidth	32Mbps (16ch simultaneously)		
	Performance		
	Max. 3 Users (Remote 3)		
	Mode		
	Date & Time(Calendar) Event Log list Text Search(POS, ANPR)		
	Simultaneous playback		
	Up to 16CH (Local, Network)		
	Resolution		
CIF ~ 12MP			
Fish-Eye Devarping			
N/A (processed on Web / CMS)			
Playback Control			
Fast Slow Forward Backward, Move one step up/down			
Storage			
Default Built-in	0TB ~ 8TB (TBD, dependent on region)		
	Internal		
	4 SATA		
	Hot Swap		
	N/A		
	External(DAS)		
	1 e-SATA		
External(NAS, iSCSI)			
iSCSI			
Max Capacity			
Internal (32TB=4x8TB)			
RAID			
N/A			
Backup			
File backup	BU/EXB(USB), JPG/AVI(Web, CMS)		
	Function		
Max. 16CH Play, Date-Time/Title display			
Sensor			
I/O			
B4 (IN0 3EA, IN/NC 1EA)			
Audio			
Input	16CH (network)		
	Compression		
	G.711, G.726, AAC(16/48KHz)		
Audio Communication			
2-Way (pass-through between camera and SSM)			

Network			
Protocol		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)	
DDNS		Pols DDNS	
Transmission Bandwidth		Max. 256Mbps (iSCSI off) (128Mbps, iSCSI on)	
Max Remote Users		Search(3) / Live unicast(10) / Live multicast(20)	
IP Version		IPv4/v6	
Security		User access Log	
		IP Filtering 802.1x Encryption(ID/PW, Recording, Transmission, Backup)	
Language	GUI	(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	
	Web	(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	
OS		Supported OS : Window XP(service pack 2 or above), Vista, 7, 8, 10, Mac OS X(10.7 or above)	
Web Browser		Non-plugin Webviewer Supported Browser: Google Chrome 47, MS Edge 20 WMF : 1CH LIVE(800X600), SETUP	
		Plug-in Webviewer Supported Browser: MS Explore 11, Mozilla Firefox 43, Apple Safari 9 * Mac OS X only	
Viewer Software	Type	SSM, Webviewer, Smart Viewer, iPols Mobile	
	CMS Support	Support SDK/CGI(SUNAPI)	
Smart phone	Support Model	I-Phone, Android	
	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)	
	Control	Live(16ch) : Multi-Profile Support Playback(1ch, Max 2MP)	
	Max. Remote Users	Search (3), Live Unicast (10), Multicast (20)	
Functions			
Camera Setup	Register	1) PnP mode 2) Manual mode	
	Setup items	(1) IP Address, Add Profile Edit, Bitrate, Compression, GOP, Quality (2) Camera Event Setup - 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 Control	PoE	1) Monitor PoE Power consumption 2) On/Off Control for each PoE camera 3) Remote Reset for each PoE camera	
	Time Sync	NTP Time Protocol for PoE Camera (Time sync based on NTP time)	
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 ☒ 120 Vac ☐ 277 Vac ☐ 24 Vac ☐ 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	CN07BN4400591BS K28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor 2	SMT-2232	C95V67VF900025B	Weihai 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

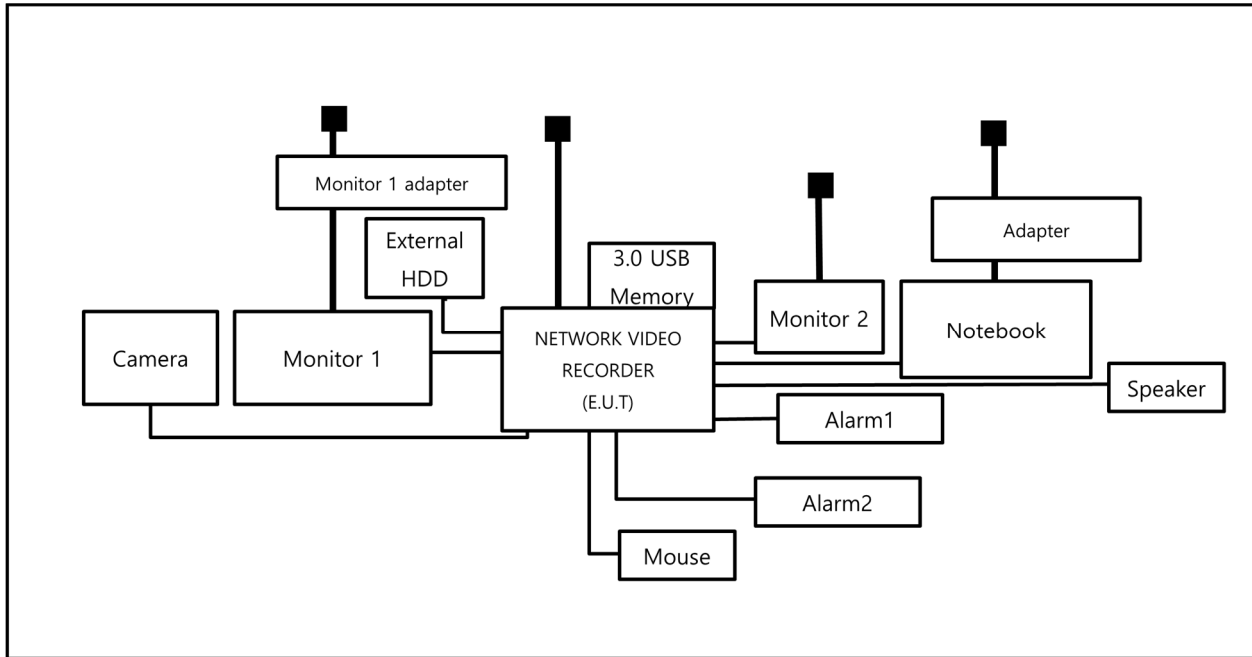
1.7 EUT Operating Mode(s)

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	Logo
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



☐ **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



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 Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☒	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☒	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
☒	Semi Anechoic 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.

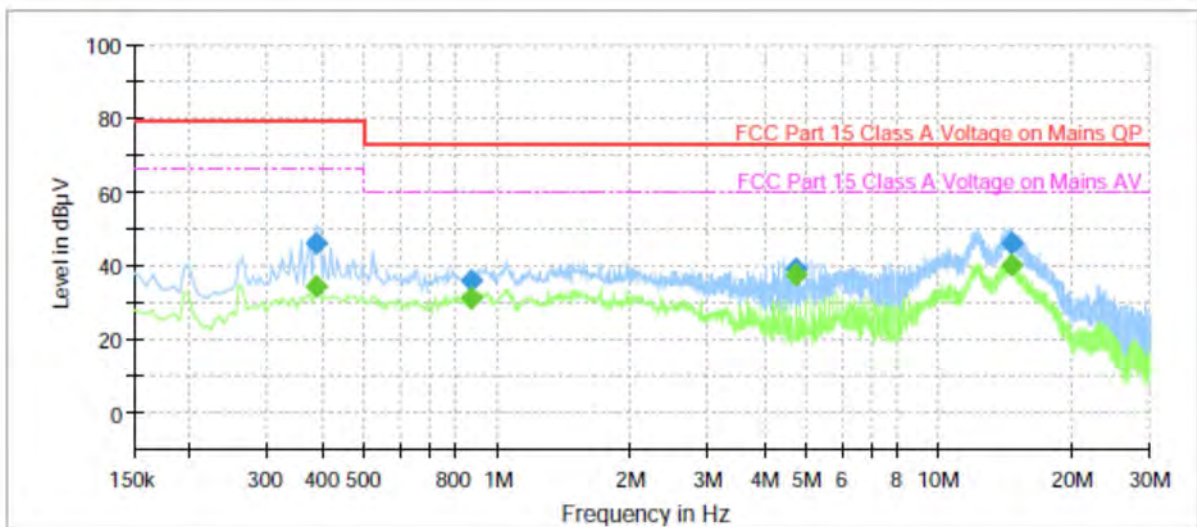
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

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



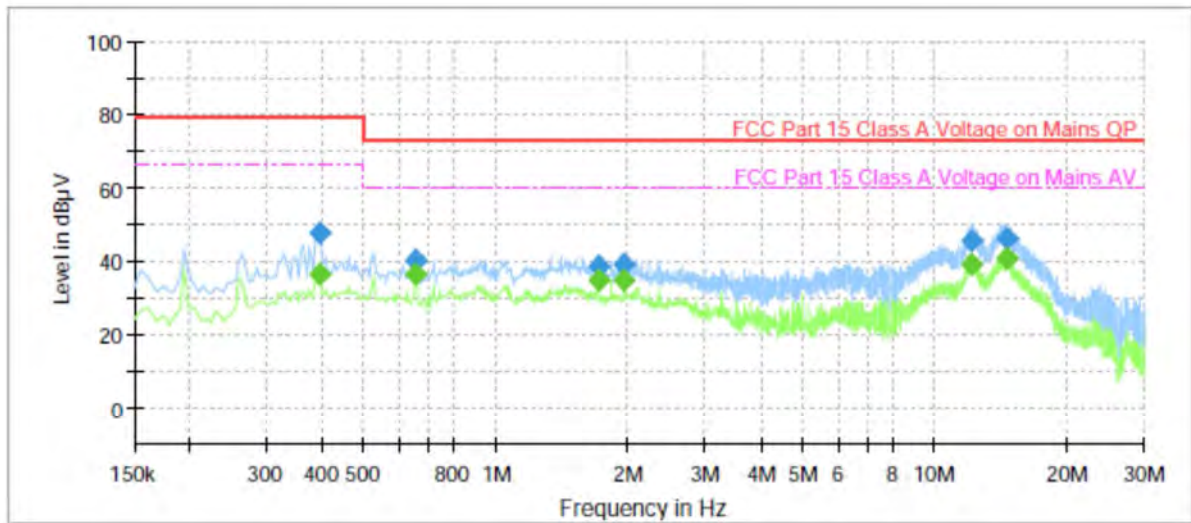
Final Result

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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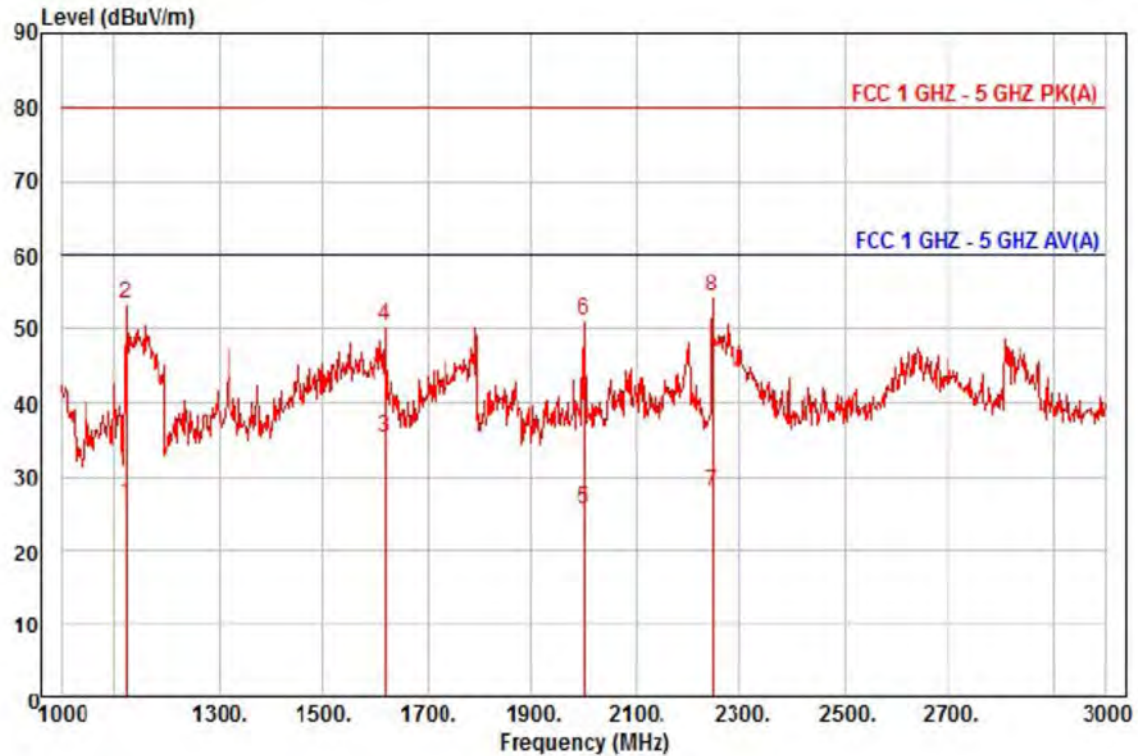
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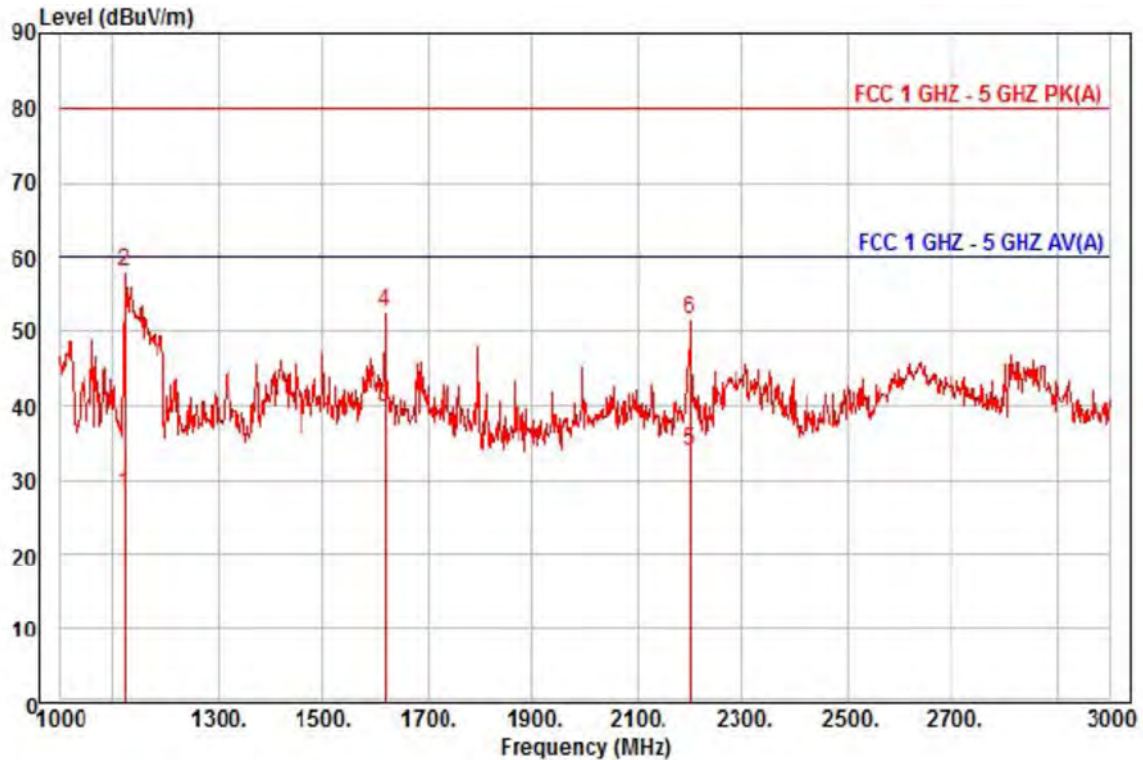
Radiated Electric Field Emissions(Above 1 GHz)



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	Preamplifier 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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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	Preamplifier	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



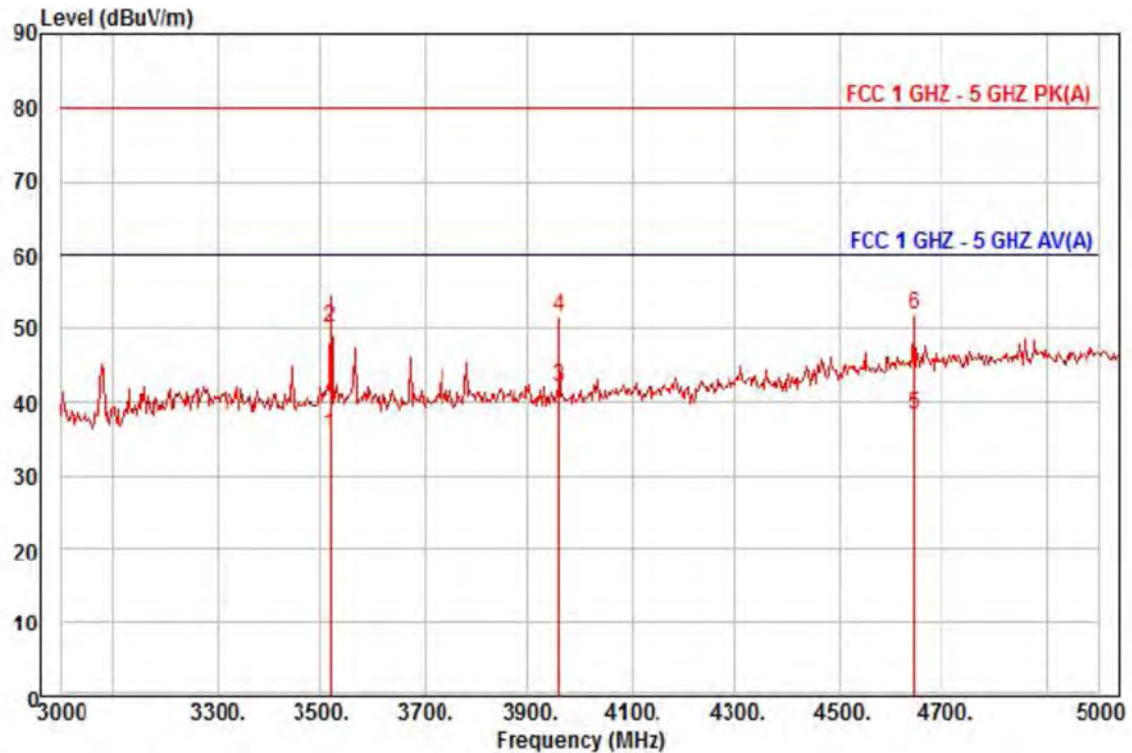
KES Co., Ltd.

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-E1-16T0275-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	Preamp 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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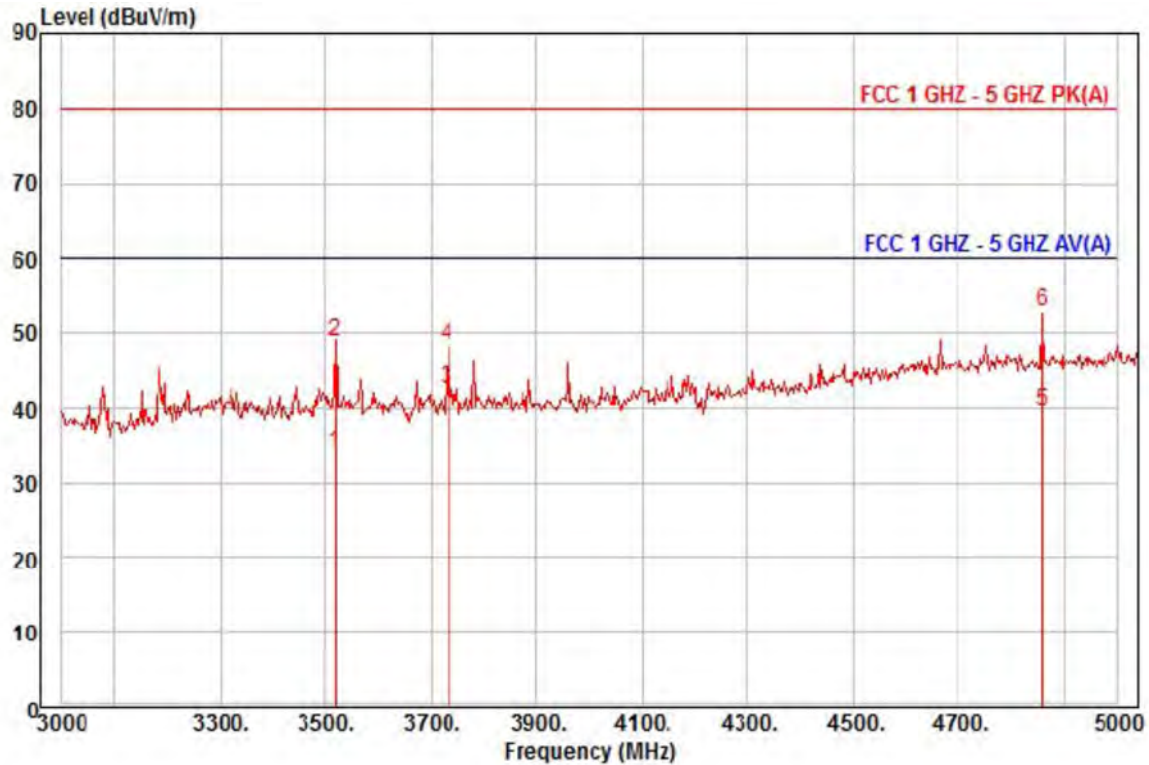
KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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Test report No.:

KES-E1-16T0275-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 :

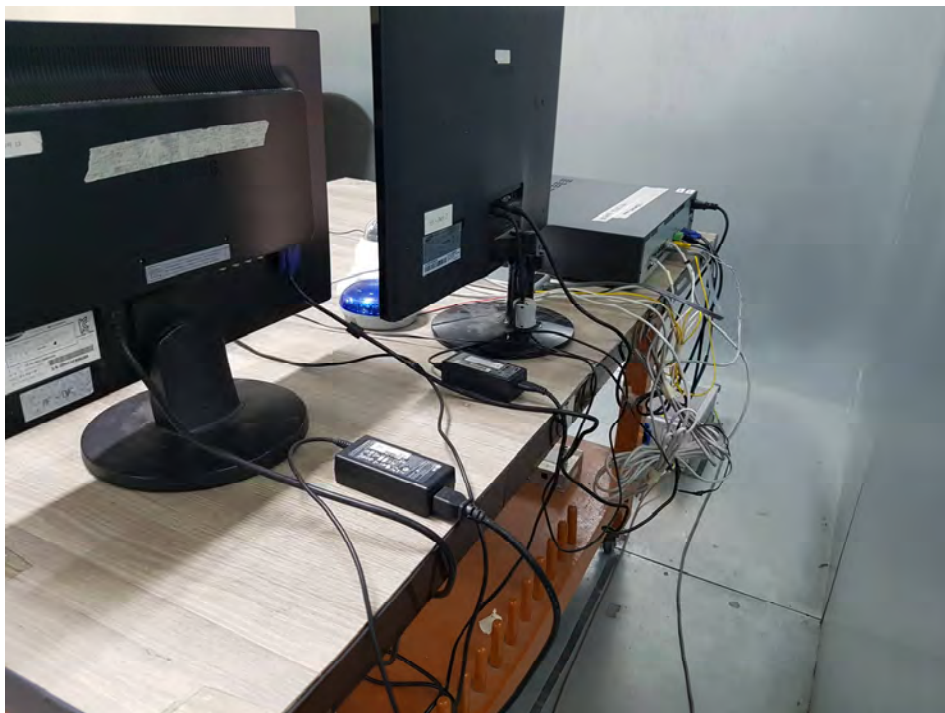
Memo :

	Read	Ant	Cable	Preamp	TPos	Limit	Over		
Freq	Level	Factor	Loss	Factor		Line	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



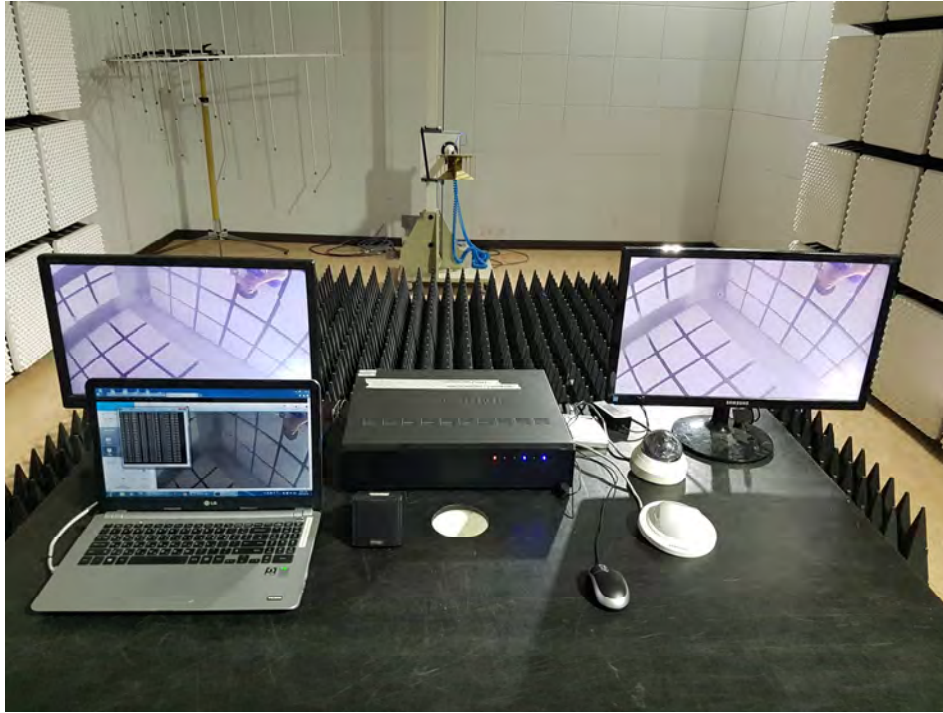
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Radiated Electric Field Emissions(Below 1 GHz)



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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)



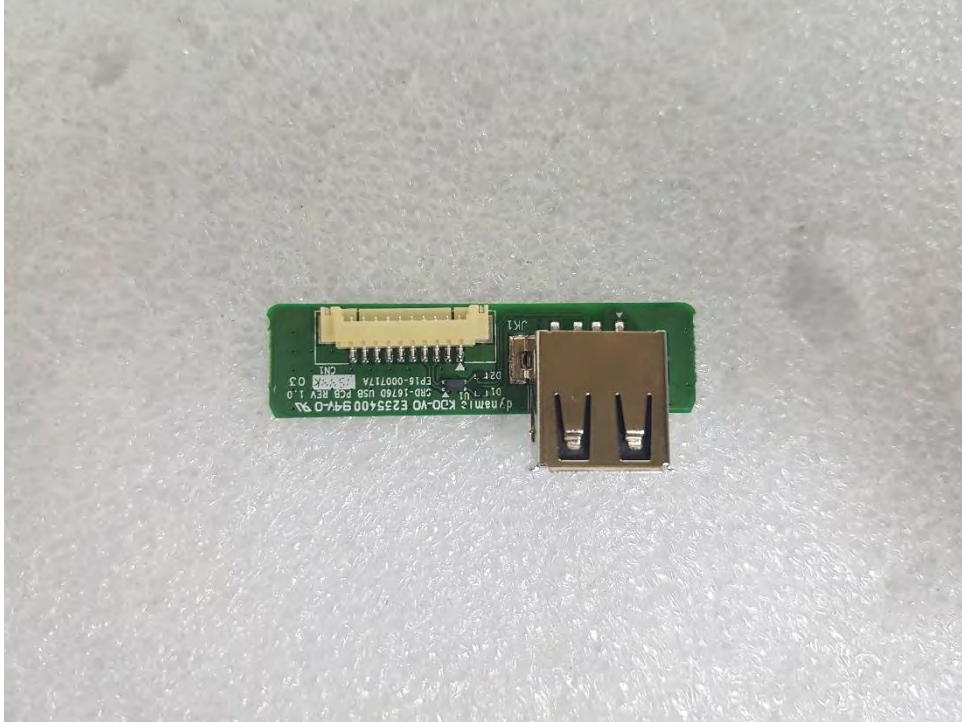
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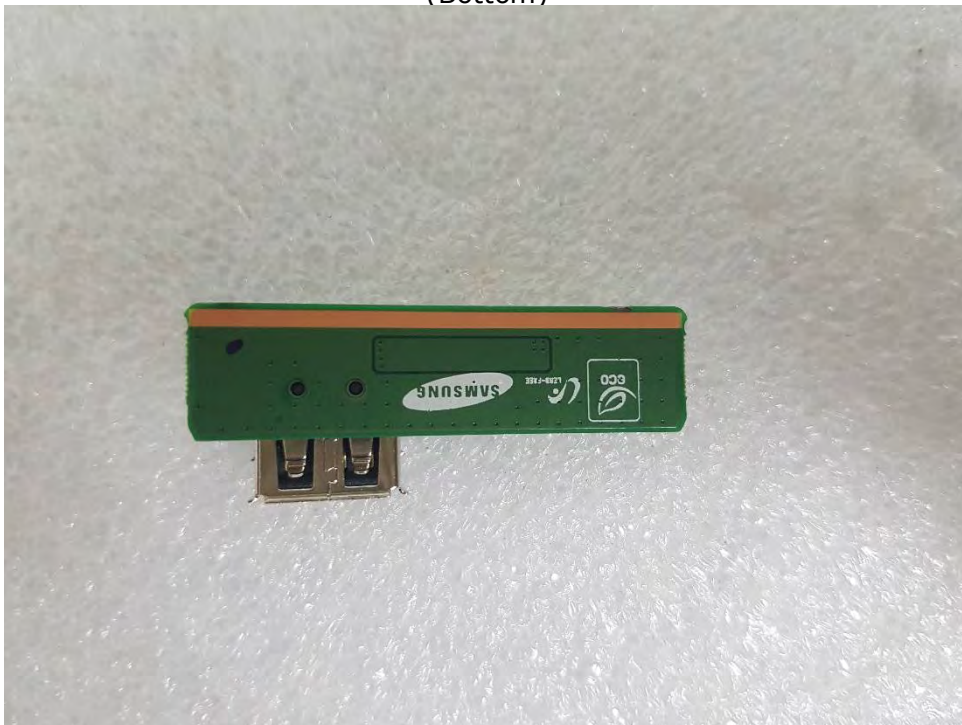
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Main Board EUT Internal View – Board 2

(Top)



(Bottom)



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Main Board EUT Internal View – Board 3

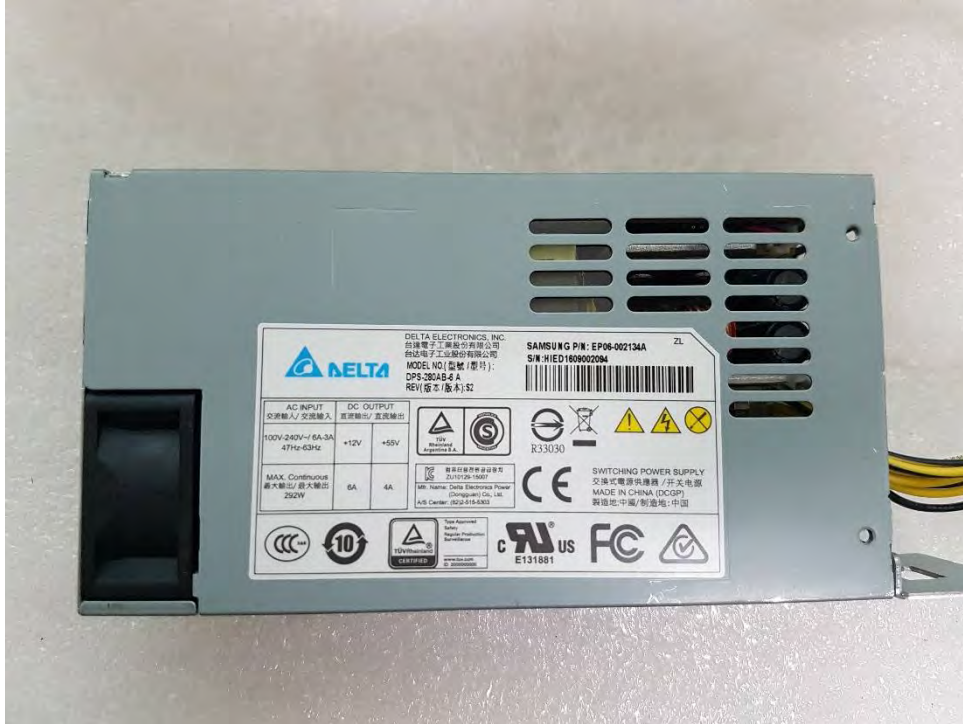
(Top)



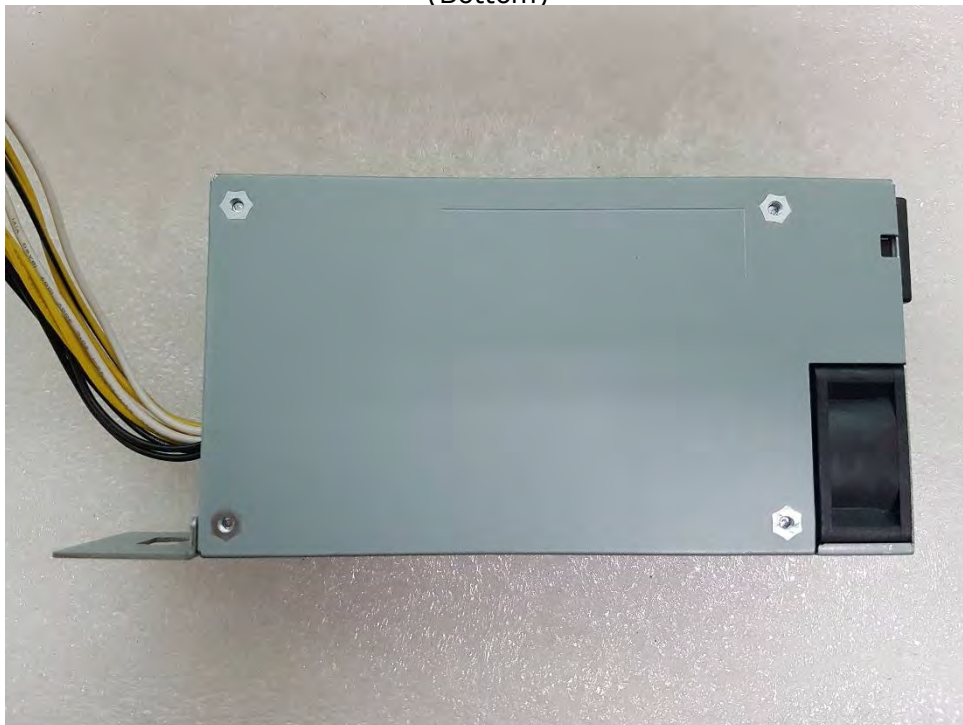
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Main Board EUT Internal View – Power

(Top)



(Bottom)



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Main Board EUT Internal View – HDD

(Top)

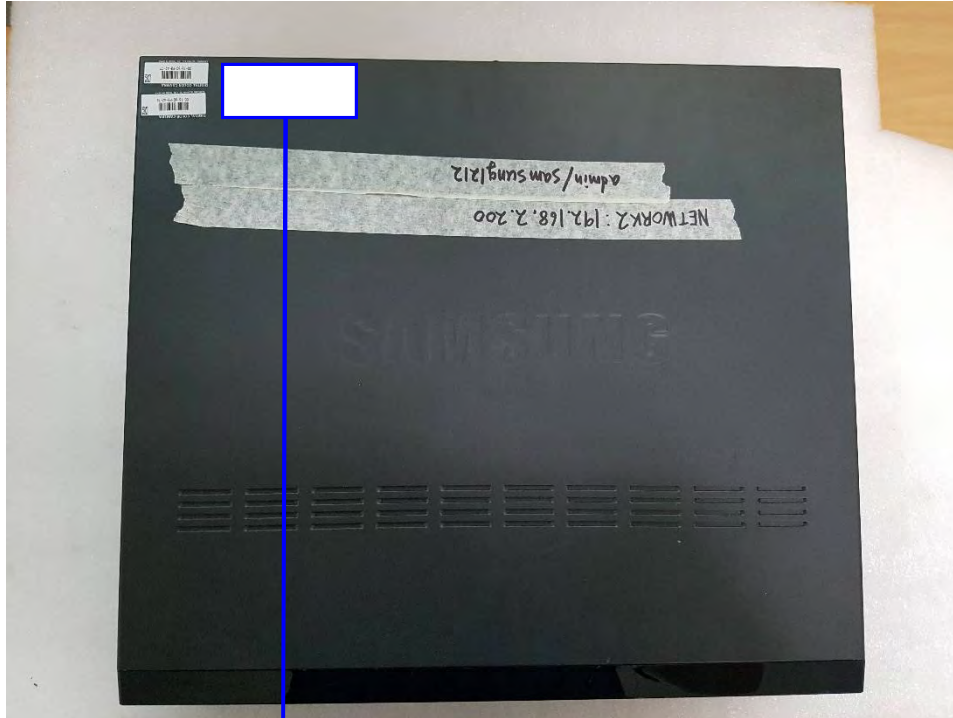


(Bottom)



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Label Photographs



[LABEL VIEW]

This Class A digital apparatus complies with Canadian ICES-003