



EMC TEST REPORT For VCCI

Test Report No. : KES-E1-16T0274-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

This test report is not related to KOLAS.

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Test report No.:

KES-E1-16T0274-R1

Page (2) of (35)

REPORT REVISION HISTORY

Date	Revision	Page No
Jun. 21, 2016	KES-E1-16T0274	Issued
Nov. 27, 2018	KES-E1-16T0274-R1	Adding standard updates and derived models

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TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	5
1.2	Variant Model Differences.....	5
1.3	Device Modifications	5
1.4	Equipment Under Test.....	5
1.5	Support Equipments	6
1.6	External I/O Cabling	7
1.7	EUT Operating Mode(s)	7
1.8	Configuration.....	8
1.9	Calibration Details of Equipment Used for Measurement	9
1.10	Test Facility	9
1.11	Laboratory Accreditations and Listings	9
2.0	Test Regulations.....	10
2.1	Conducted Emissions at Mains Power Ports.....	12
2.2	Conducted Emissions at Telecommunication Ports.....	13
2.3	Radiated Electric Field Emissions(Below 1 GHz)	14
2.4	Radiated Electric Field Emissions(Above 1 GHz)	15
APPENDIX A – TEST DATA.....		16
Conducted Emissions at Mains Power Ports.....		16
Conducted Emissions at Telecommunication Ports		18
Radiated Electric Field Emissions(Below 1 GHz)		20
Radiated Electric Field Emissions(Above 1 GHz)		21
Test Setup Photos and Configuration		25
Conducted Voltage Emissions		25
Conducted Telecommunication Emissions		26
Radiated Electric Field Emissions(Below 1 GHz)		27
Radiated Electric Field Emissions(Above 1 GHz)		28
EUT External Photographs.....		29
EUT Internal Photographs		30



1.0 General Product Description

Main Specifications of EUT are:

Model		XRN-1610S	
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 / 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	Embedded	Linux	
Record	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 simultaneous)	
	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)	
Backup	File backup	BU/EXE(USB), JPG(AVI/Web, CMS)	
	Function	Max. 16CH Play, Date-Time/Title display	
Sensor	IO	6/4 (NO 3EA, NO/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(DDP/W, 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) Rumanian, (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) Rumanian, (15) Serbian, (16) Croatian, (17) Hungarian, (18) Greek, (19) Norwegian, (20) Finnish, (21) Korean, (22) Chinese, (23) Japanese
OS	Supported OS: Windows 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 VWF: 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/CUI(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, SSDR, 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 ☐ 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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Test report No.:

KES-E1-16T0274-R1

Page (6) of (35)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor 1	LS23C340	ZXPCHTMF B01032M	SAMSUNG	-
Monitor adapter 1	A2514_DPN	CN07BN4400591B SK28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor 2	SMT-2232	C95V67VF900025 B	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	-	-

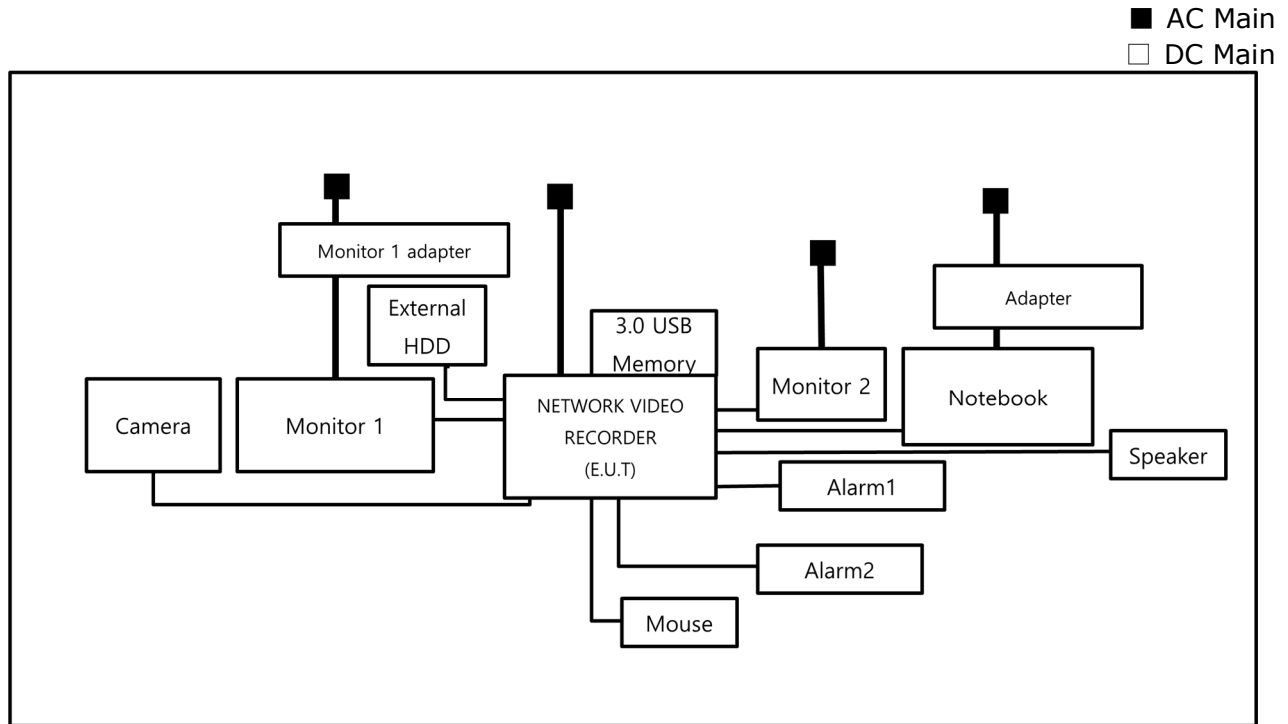
* Unshielded=U, Shielded=S

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



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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Test report No.:
KES-E1-16T0274-R1
Page (11) of (35)

☒ **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	-	AONE 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 Conducted Emissions at Telecommunication 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
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 01, 2017
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 01, 2017
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
☒	Electro wave Shieldroom	-	AONE SHIELD	-	-

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.



2.3 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 Antenna	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.



2.4 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 6 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.

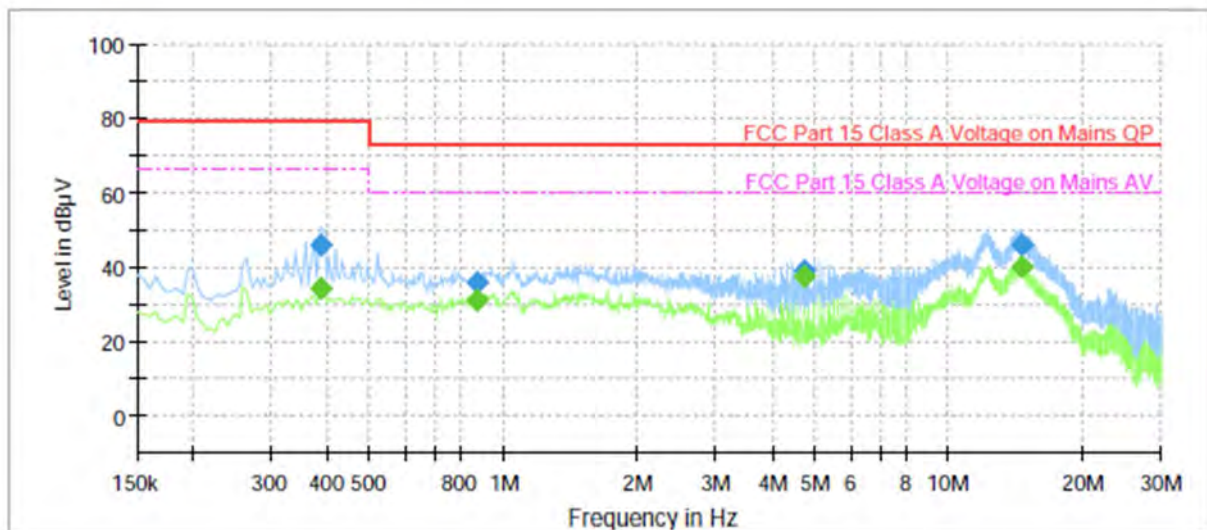
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

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



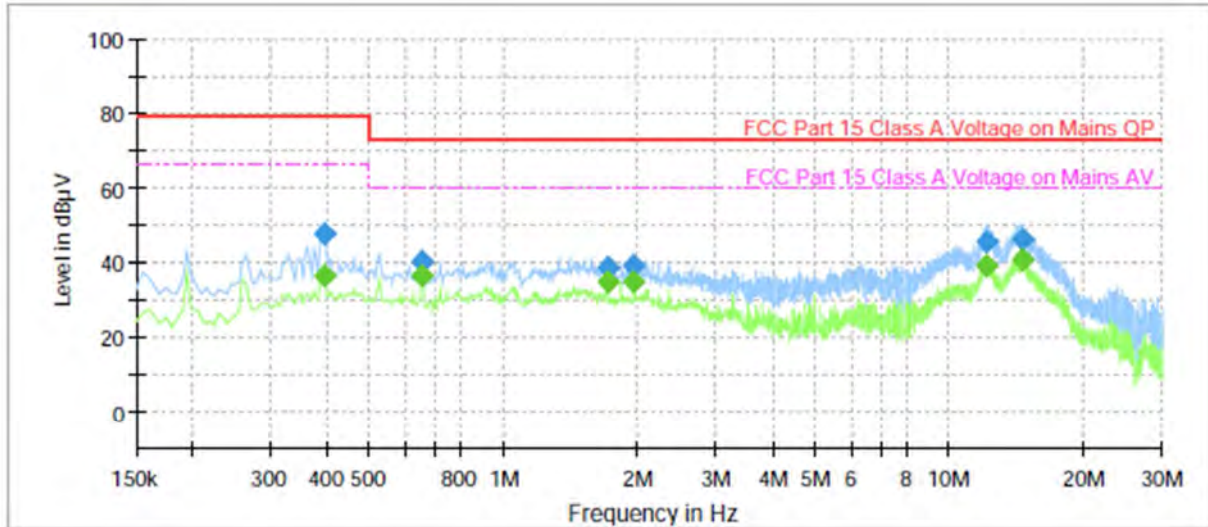
Final Result

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

Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:

Telecommunication Emission

Model No.:

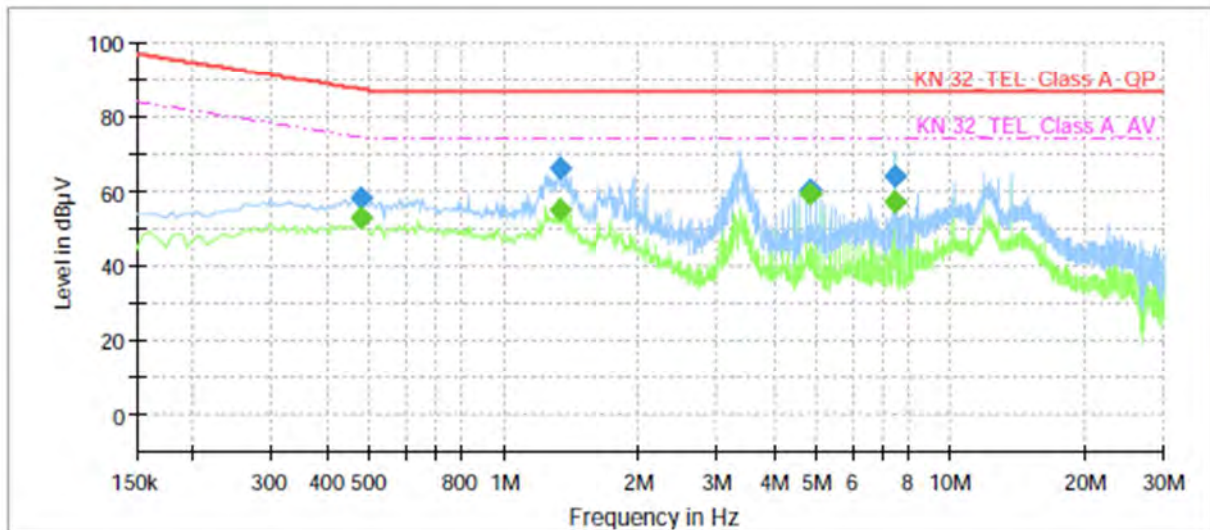
XRN-1610SN

Mode

10 Mbps

Operator Name:

KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.475000	---	53.01	74.43	21.42	1000.0	9.000	Single Line	10.0
0.475000	58.05	---	87.43	29.38	1000.0	9.000	Single Line	10.0
1.330000	---	55.25	74.00	18.75	1000.0	9.000	Single Line	9.8
1.330000	65.90	---	87.00	21.10	1000.0	9.000	Single Line	9.8
4.850000	---	59.09	74.00	14.91	1000.0	9.000	Single Line	9.9
4.850000	60.44	---	87.00	26.56	1000.0	9.000	Single Line	9.9
7.500000	---	57.37	74.00	16.63	1000.0	9.000	Single Line	10.0
7.500000	63.93	---	87.00	23.07	1000.0	9.000	Single Line	10.0

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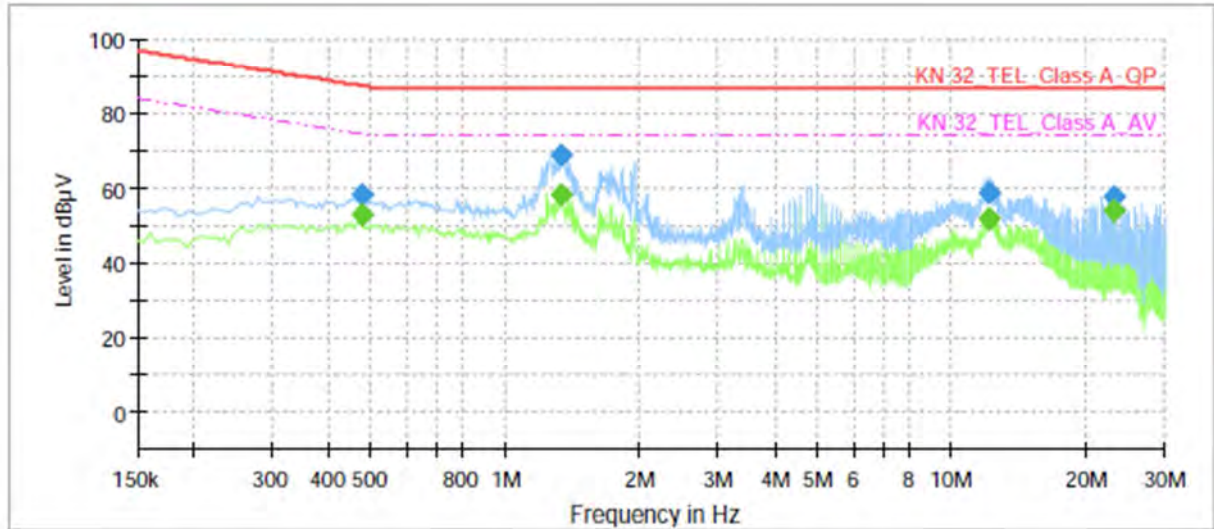
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[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	XRN-1610SN
Mode	100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.475000	---	52.96	74.43	21.47	1000.0	9.000	Single Line	9.5
0.475000	57.97	---	87.43	29.46	1000.0	9.000	Single Line	9.5
1.330000	---	58.01	74.00	15.99	1000.0	9.000	Single Line	9.3
1.330000	68.90	---	87.00	18.10	1000.0	9.000	Single Line	9.3
12.060000	---	51.94	74.00	22.06	1000.0	9.000	Single Line	9.6
12.060000	58.58	---	87.00	28.42	1000.0	9.000	Single Line	9.6
23.125000	---	54.14	74.00	19.86	1000.0	9.000	Single Line	9.5
23.125000	57.89	---	87.00	29.11	1000.0	9.000	Single Line	9.5

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www.kes.co.kr

Test report No.:

KES-E1-16T0274-R1

Page (20) of (35)

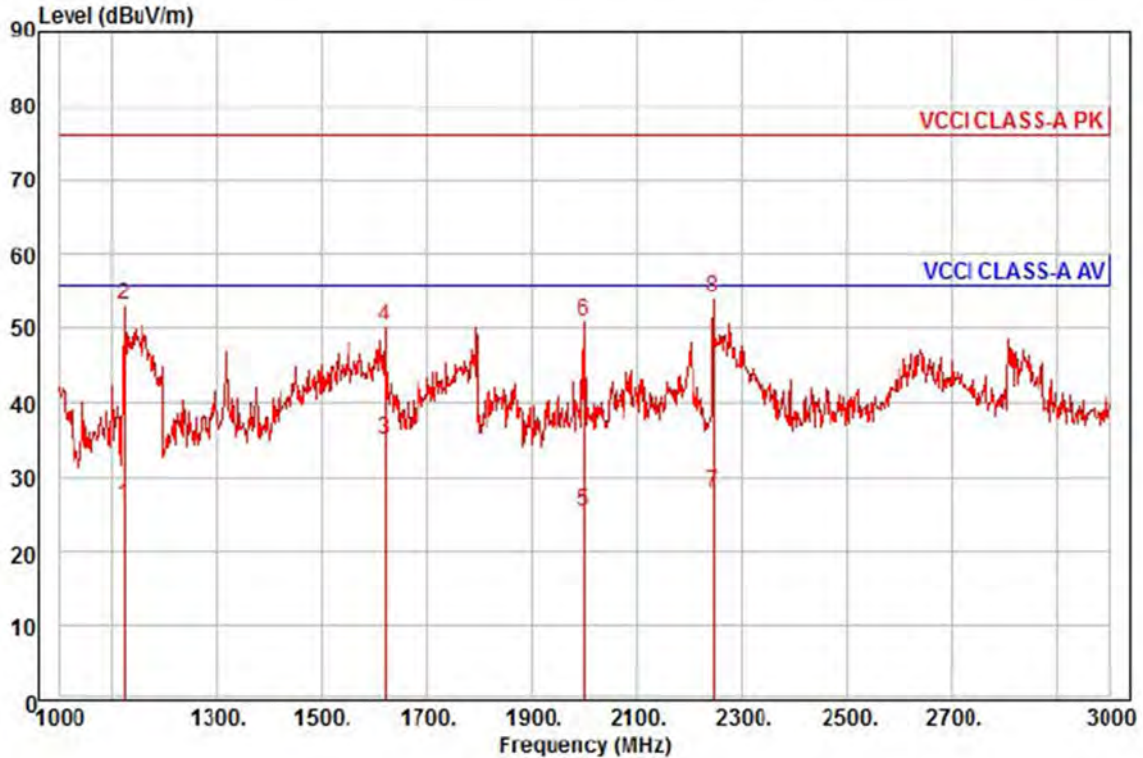
Radiated Electric Field Emissions(Below 1 GHz)

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]
149.05	18.32	V	1.00	8.18	2.46	28.96	40.00	11.04
325.90	14.93	H	4.00	13.96	3.80	32.69	47.00	14.31
375.18	11.25	V	1.00	15.03	4.06	30.34	47.00	16.66
425.66	12.06	H	4.00	16.01	4.41	32.48	47.00	14.52
500.10	10.44	V	1.00	17.30	4.95	32.69	47.00	14.31
525.58	9.14	H	4.00	17.80	5.11	32.05	47.00	14.95

* H : Horizontal, V : Vertical

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Radiated Electric Field Emissions(Above 1 GHz)



Site : chamber

Condition: VCCI CLASS-A PK 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	56.00	-29.67	horizontal	Average
2	1122.00	61.94	24.39	6.86	40.06	348	76.00	-22.87	horizontal	Peak
3 pp	1620.00	40.09	26.37	8.31	39.82	21	56.00	-21.05	horizontal	Average
4	1620.00	55.49	26.37	8.31	39.82	21	76.00	-25.65	horizontal	Peak
5	2000.00	27.95	27.88	9.35	39.63	150	56.00	-30.45	horizontal	Average
6	2000.00	53.32	27.88	9.35	39.63	150	76.00	-25.08	horizontal	Peak
7	2246.00	29.42	28.48	9.73	39.77	77	56.00	-28.14	horizontal	Average
8 pk	2246.00	55.79	28.48	9.73	39.77	77	76.00	-21.77	horizontal	Peak

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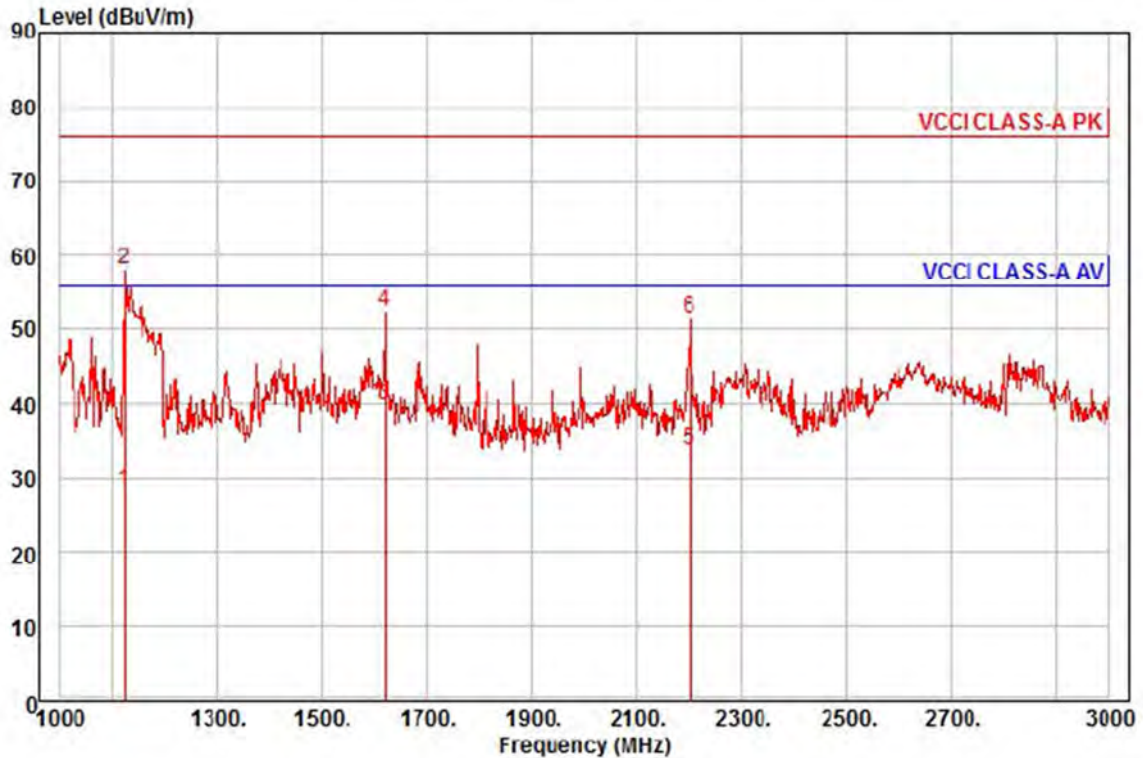
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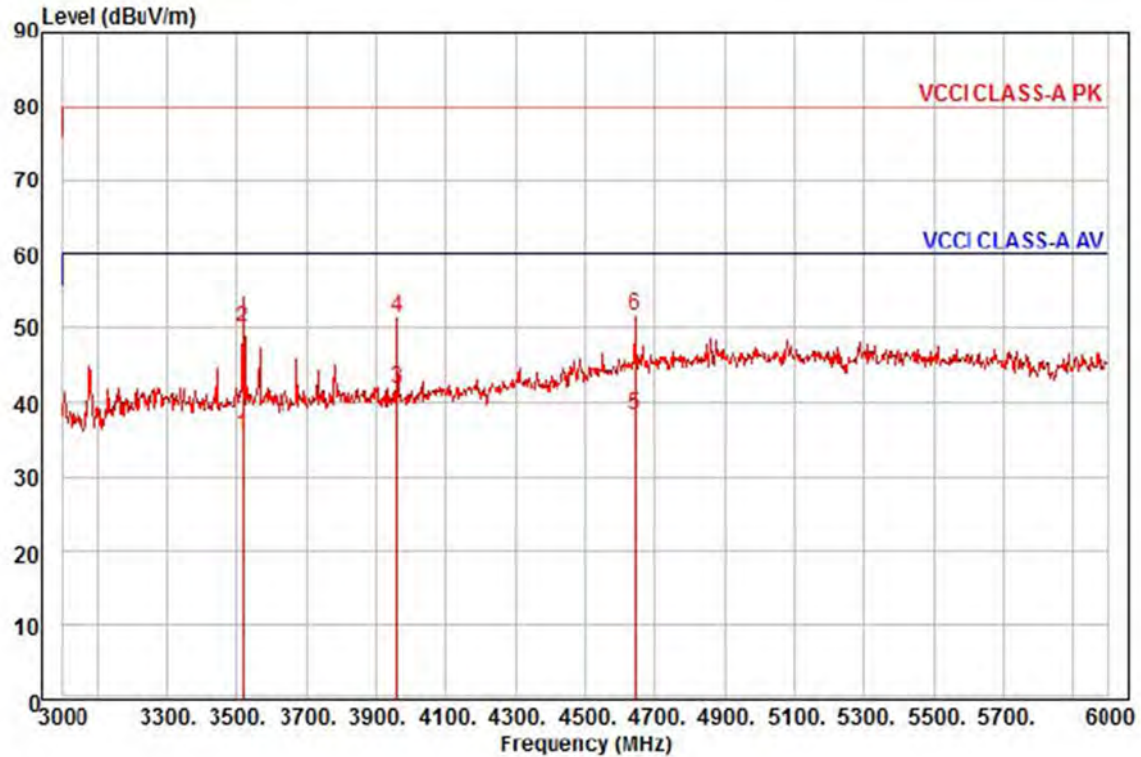
Page (22) of (35)



Site : chamber
Condition: VCCI CLASS-A PK 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	56.00	-27.80	vertical	Average
2 pk	1122.00	66.96	24.39	6.86	40.06	21	76.00	-17.85	vertical	Peak
3 pp	1620.00	44.88	26.37	8.31	39.82	55	56.00	-16.26	vertical	Average
4	1620.00	57.57	26.37	8.31	39.82	55	76.00	-23.57	vertical	Peak
5	2200.00	35.59	28.37	9.66	39.75	59	56.00	-22.13	vertical	Average
6	2200.00	53.15	28.37	9.66	39.75	59	76.00	-24.57	vertical	Peak

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Site : chamber

Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) horizontal

: 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	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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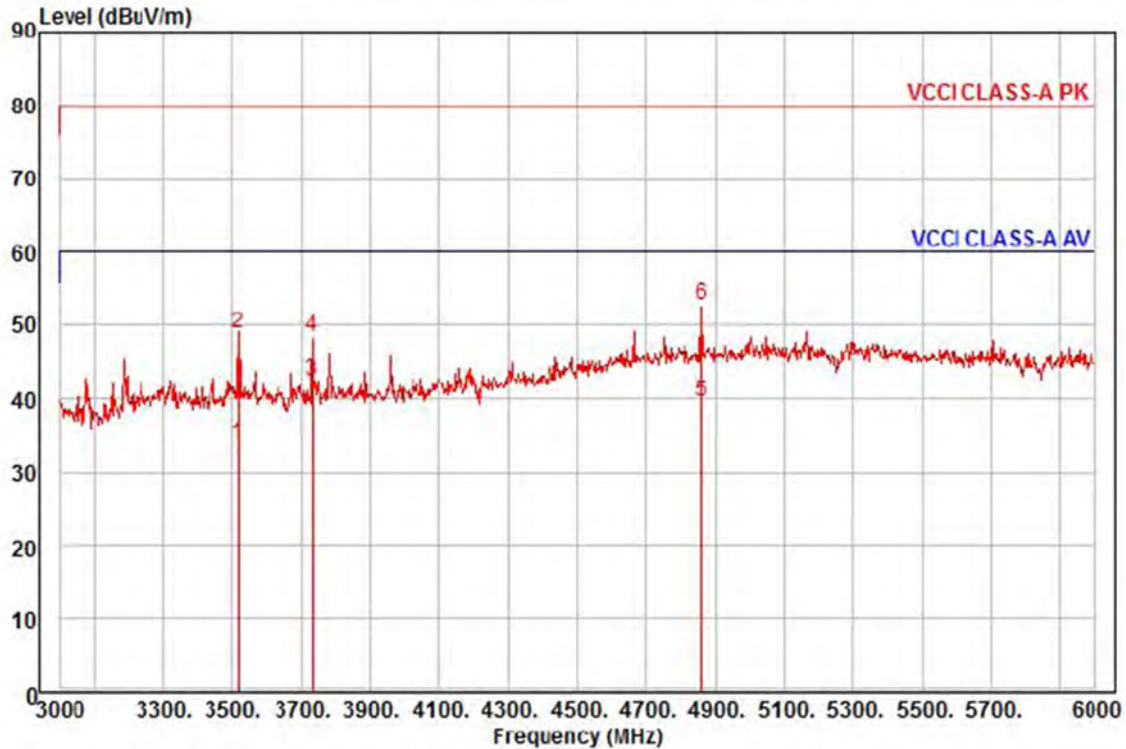
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KES-E1-16T0274-R1
Page (24) of (35)



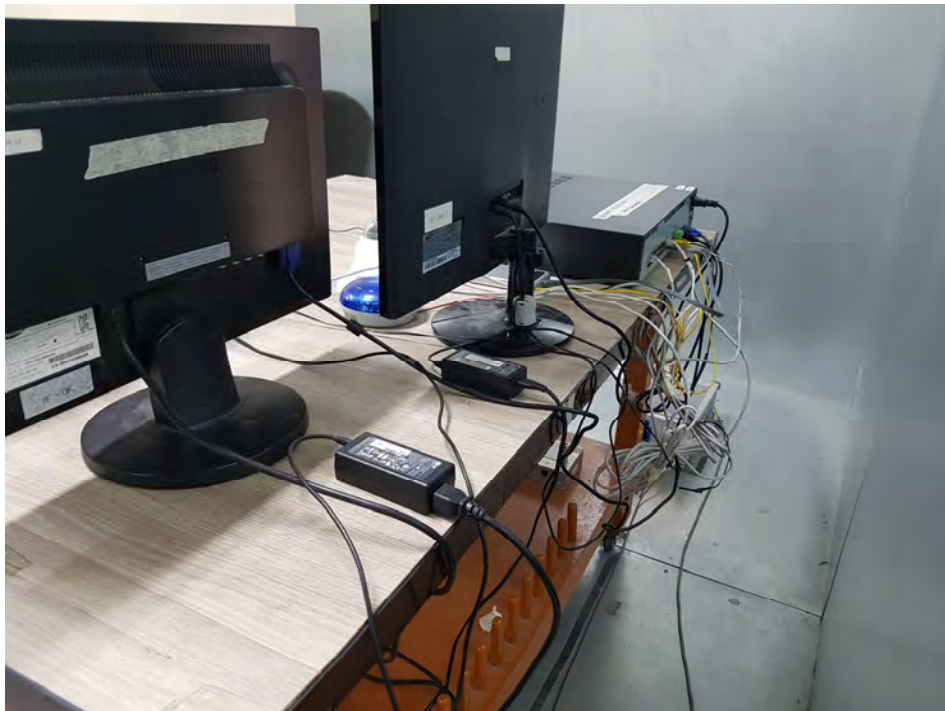
Site : chamber
Condition: VCCI CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : XRN-1610SN
Mode :
Memo :

	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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Conducted Telecommunication Emissions



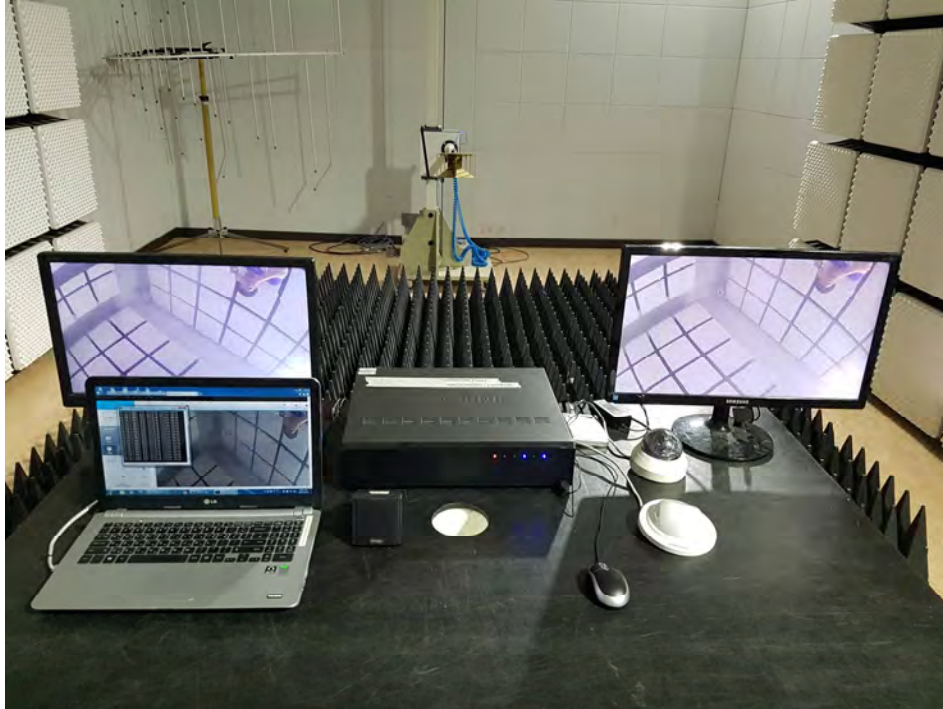
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Radiated Electric Field Emissions(Below 1 GHz)



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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)



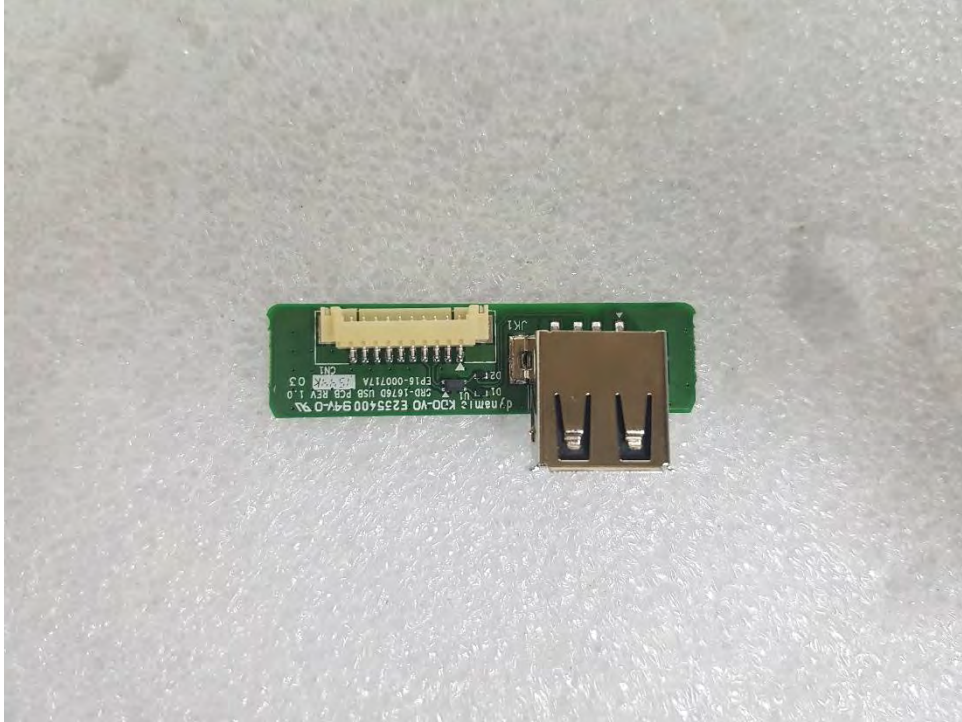
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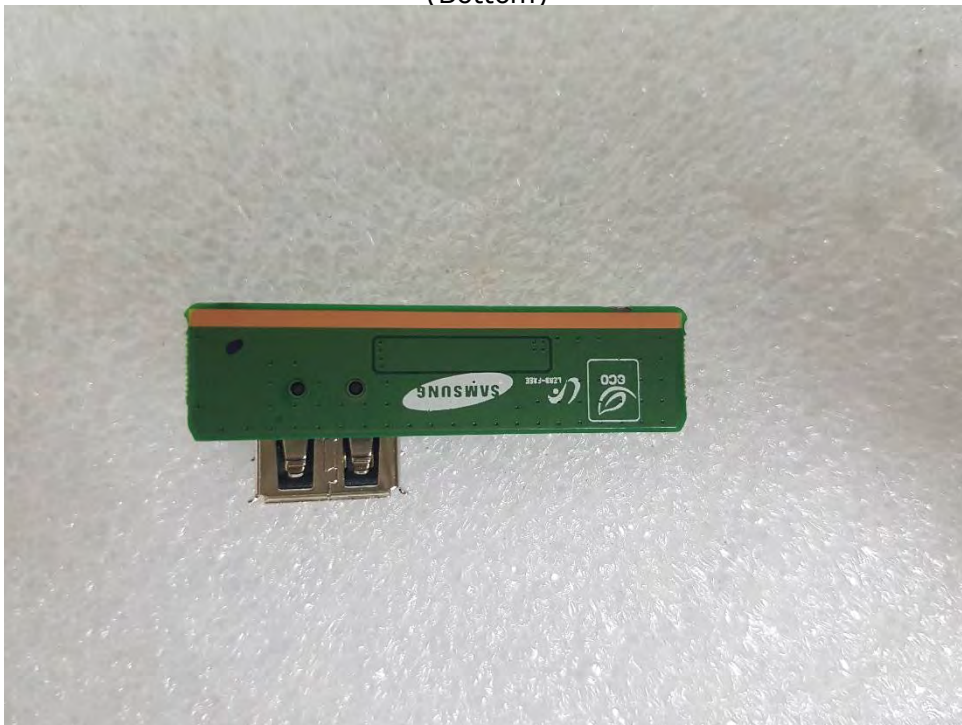
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Main Board EUT Internal View – Board 2

(Top)



(Bottom)



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Main Board EUT Internal View – Board 3

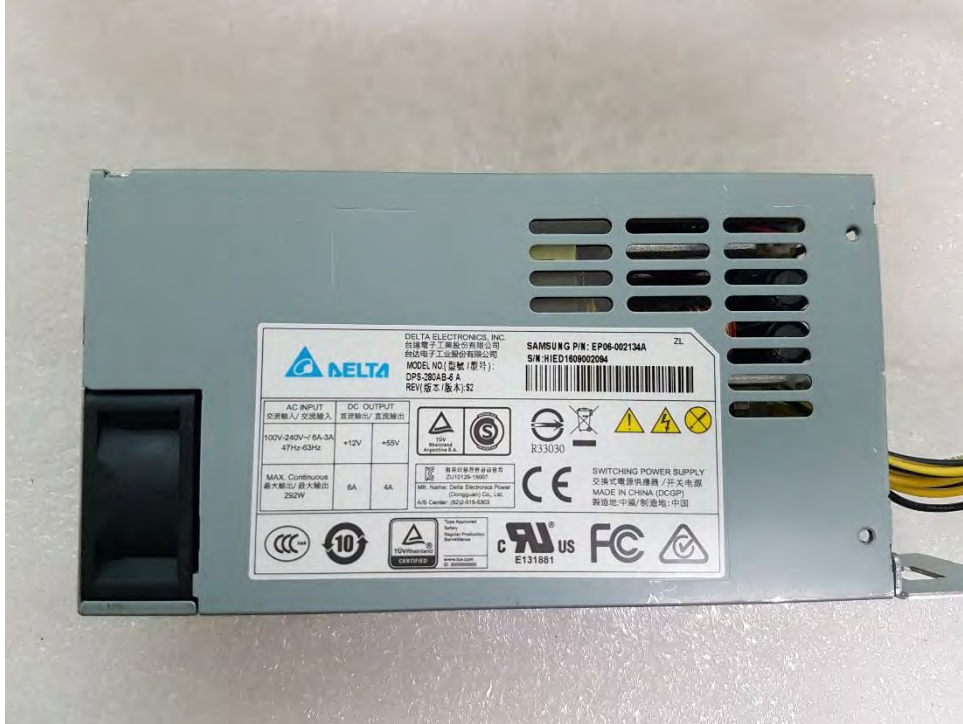
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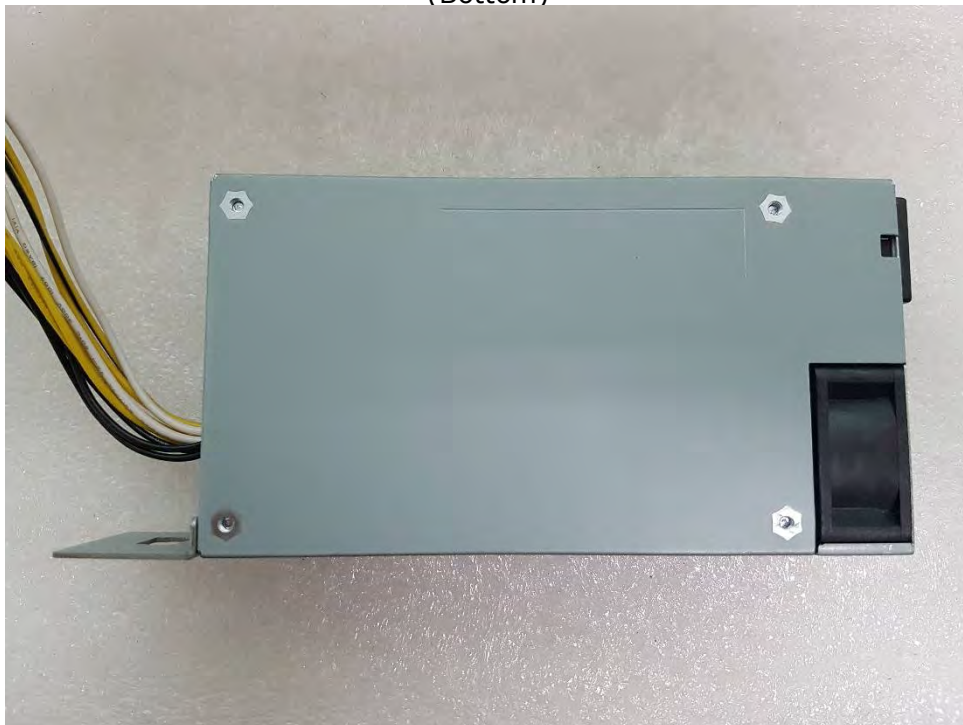
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Main Board EUT Internal View – Power

(Top)



(Bottom)



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Main Board EUT Internal View – HDD

(Top)



(Bottom)



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