

VERIFICATION OF FCC PART 15 COMPLIANCE

*KES hereby verify that the subject product complies with all the
electromagnetic emission specified in the FCC Rule Part 15*

Product Description:	NETWORK VIDEO RECORDER
Model/Brand Name:	XRN-2011N
Variant Model:	-
FCC Rule Part(s):	FCC 47CFR Part 15 Subpart B Class A Part 15.107(b) & Part 15.109(b)
FCC Procedure:	Verification
Applicant Name:	Hanwha Techwin Co., Ltd.
Applicant Address:	1204, Changwon-daero, Seongsan-gu, Changwon-si, Gyeongsangnam-do
Manufacturer Name:	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.
Manufacturer Address:	No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin, 300385, People's Republic of China
Test Report Reference No.:	KES-E1-16T0162

NETWORK VIDEO RECORDER, Model XRN-2011N has been tested in accordance with the measurement procedures specified in FCC 47CFR Part 15 Subpart B class A and has been shown to be complied with the electromagnetic emission limits specified in FCC Rule Part 15 Subpart B class A. A testing of the sample product has been valid for the sample tested based on the reference test report, KES-E1-16T0162

Date of Issue: 04. 14. 2016

Dong Hun, Jang
Technical Manager
Signature:



KES.Co., Ltd.

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EMC TEST REPORT For FCC

Test Report No. : KES-E1-16T0162

Date of Issue : Apr. 14, 2016

Product name : NETWORK VIDEO RECORDER

Model/Type No. : XRN-2011N

Variant Model : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, Korea

Manufacturer : Tianjin Samsung Techwin Opto-Electronic Co., Ltd.

Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA,
Tianjin, 300385, People's Republic of China

Equipment authorization : ☐ Declaration of Conformity
☒ Verification
☐ Certification

Date of Receipt : Mar. 25, 2016

Test date : Apr. 11, 2016

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

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Test report No.:
KES-E1-16T0162
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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Apr. 14, 2016	KES-E1-16T0162	Issued

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1.0 General Product Description

Main Specifications of EUT are:

단계		DVR
Model		XRN-2011
Display		
Network Camera	Inputs	Max. 32CH
	Resolution	CIF ~ 12MP
	Protocols	Samsung, ONVIF
Live	Local Display	1x HDMI / 1x VGA
	Multi-Channel Display	[Local Monitor] 1 / 2V / 3V / 4 / 6 / 8 / 9 / 13 / 16 / 25 / 36 / Sequence [Web] 1 / 2V / 3V / 4 / 6 / 9 / 16 / 25 / 36 / Sequenc
	Performance	[Local Monitor] - 12M (30fps) - 8.3M (120fps) - 720P (960fps) - D1 (1920fps) [Web] TBD
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG
	Recording Bandwidth	Max. 256Mbps (2MP 32camera real-time recording) Max. 100Mbps (RAID-5 Mode)
	Resolution	CIF ~ 12MP
	Type	Manual, Schedule (Continuous/Event), Event (Pre/Post)
	Event Trigger	Alarm Input, Video Loss, Camera Event (Sensor, MD, Video Analytics)
	Event Action	e-Mail, PTZ Preset, Alarm Out, Buzzer, Monitor Out
Search & Play	Playback Bandwidth	32Mbps (16CH simultaneously)
	Performance	Max. 4 Users (Local 1, Remote 3)
	Mode	Date & Time (Calendar)/Event Log list / Text Search
	Simultaneous playback	Max. 16CH (Local Monitor, CMS)
	Resolution	CIF ~ 12MP
	Fisheye Dewarping	Remote Viewer (CMS, WEB)
Storage	Playback Control	Fast/Slow Forward / Backward, Move one step Up / Down
	Built-In	0TB ~ 8TB
	Internal HDD	8 (Cold Swap) - Max 48TB (Non-RAID), Max 36TB (RAID-5)
	External	iSCSI storage (Max. 384TB) ① Promise VessRaid R2600
	RAID	RAID-5 (Array Size : 4-HDD x 2 Array)
Backup	File backup (Via Web)	BU/Exe (GUI), JPG/AVI (Network)
	Function	Multi channel (Upto 16CH) Play, Date-Time/Title display
Sensor	I/O	8/4 (NO/NC Selectable)
Audio	Input	32 CH (network)
	Compression	G.711, G.726, AAC (16/48KHz)
	Audio Communication	2-Way
Network		
Interface	RJ-45, Gigabit Ethernet x2	
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	Samsung iPolis DDNS	
Transmission Bandwidth	- 512Mbps (iSCSI Off), 256Mbps (iSCSI On)	
Max Remote Users	Search (3), Live Unicast (10), Multicast (20)	
IP Version	IPv4/v6	
Security	User access Log, IP Filtering, 802.1x, Encryption	
Language (24)	English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai	

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OS		Supported OS : Vista, 7, 8, 10, Mac OS X(10.7 or above)
Web Browser		MS IE, Google Chrome, Mac Safari, Firefox
Viewer Software	Type	SSM, Webviewer, Smart Viewer, iPolis Mobile
	CMS Support	Support SDK/CGI
Smart phone	Support Model	I-Phone, Android
	Protocol Support	RTP, RTSP, HTTP, CGI
	Control	Live(16ch) : Multi-Profile Support Playback(1ch)
	Max. Remote Users	Search (3), Live Unicast (10), Multicast (20)
Functions		
Camera Setup	Register	Auto, Manual
	Setup Items	IP address, Add profile edit, Bitrate, Compression, GOP, Quality, Camera MD setup Camera video setup (Simple focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSDR, DiS), Fisheye Dewarping, Hallway View Setup, Camera Web
	PoE Power Control	N/A
PTZ	Control	Via GUI, Webviewer, SPC-2000
	Preset	255 Presets
Redundancy	Failover	N+1
	ARB	Yes
System Control		Mouse, Web, SPC-2000 (Controller)
Indicator/Interface		
Front	Indicator	LED(Status indicator) : - SRN-2000 (67%) ① HDD Action(1), ② Alarm(1), ③ Power(1), ④ Record(1), ⑤ Backup(1), ⑥ Network(1)
	Switch	N/A
Connectors	VGA	1 EA (Support Live screen upto 16 div. mode)
	HDMI	1 EA (Both Support Live / PB / Setup) - Support upto 4K (3840 x 2160)
	Audio	Out(1EA, RCA, Line)
	Ethernet	RJ-45 2ea (LAN/WAN, 1Gbps)
	Alarm	(1) In(8EA, Terminal Block) (2) Alarm Reset(1EA) (3) Out(4EA, Terminal Block) - Relay Out1(NO/NC/COM) - Relay Out2~4(NO/COM)
	USB	2EA(Front 1, Rear 1(USB3.0))
	Storage	1 e-SATA
	Serial	RS-232C
	Reset	Switch(1EA)
	Power Cord	1EA AC Inlet
System		
Log	Log List	Max. 20000 (System Log, Event Log each)
Environmental		
Operating Temperature / Humidity		+0°C to +40°C(+32°F to +104°F)
Humidity		20% ~ 85% RH
Electrical		
Power		100 to 240 VAC ±10%; 50/60 Hz, 4~1.5A
Power Consumption		Normal 90W, MAX200W
PoE Budget		N/A
Mechanical		
Color / Material		Black / Metal
Dimension (WxHxD)		440*88*384.8
Weight		5.88kg
Standards		
Approvals	Safety	UL, KC
	EMC	CE, FCC, CCC, Gost-R, KC

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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 ☐ 24 Vac ☐ 12 Vdc

Frequency ☐ 50 Hz ☒ 60 Hz ☐ 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
NETWORK VIDEO RECORDER	XRN-2011N	-	Tianjin Samsung Techwin Opto-Electronic Co., Ltd.	E.U.T
HDD	ST1000VM002	-	Seagate	1 TB
Switching Power Supply	FSP250-50GUB	-	FSP GROUP INC.	-



1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	NT63025J	JK9091EF400142M	Samsung Electronics Co., Ltd	-
Notebook Adapter	A13-040N2A	CN60BA4400313AD0N 843KO2OO	Chicony Power Technology (suzhou)Co., Ltd.	-
Mouse 1	SMB-400	0DJM010118	SEJIN ELECTRON INC.	-
Monitor 1	SMT-2232	C95V67VF900038B	Weihai Daewoo Electronics Co., Ltd.	-
Monitor 2	LS23C340	ZXPCHTMF A02346H	삼성전자(주)	-
Monitor Adapter	A2514_DPN	CN07BN4400591BSK2 8F5NK904	11ssan Elecom(shen yang) Co., Ltd	-
NETWORK CAMERA	SND-E5031RN	ZBUM67ZG101007H	Hanwha Techwin Co., Ltd.	-
Adapter 1	PA-1041-0	-	DONGGUANG LITE POWER 2ND PLANT	-
Speaker	MS-760	-	MASS	-
Mouse	YTOP-589	-	Hanwha Techwin Co., Ltd.	-
External Hard drive	NEXT-652DC	1207230749	YCN	-
Adapter 2	GT-41062-1805-T3	-	GlobTek, Inc.	-
HDD	Diamond Max Plus9	Y41P45KE	Maxtor	-
USB 3.0 Memoery	-	-	-	-

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)	HDMI	Monitor 1	HDMI	1.5	S
	D-SUB	Monitor 2	D-SUB	1.4	S
	RJ-45(LAN) (Notebook)	Notebook	RJ-45(LAN)	3.0	U
	RJ-45(LAN) (NETWORK CAMERA)	NETWORK CAMERA	RJ-45(LAN)	3.0	U
	RS-232	Mouse 1	RS-232	2.2	U
	USB 3.0	USB 3.0 Memoery	USB 3.0	-	-
	USB	Mouse 2	USB	1.3	U
	ALARM	Impedance Terminating	-	-	-
	eSATA	External Hard drive	eSATA	1.1	U

* Unshielded=U, Shielded=S

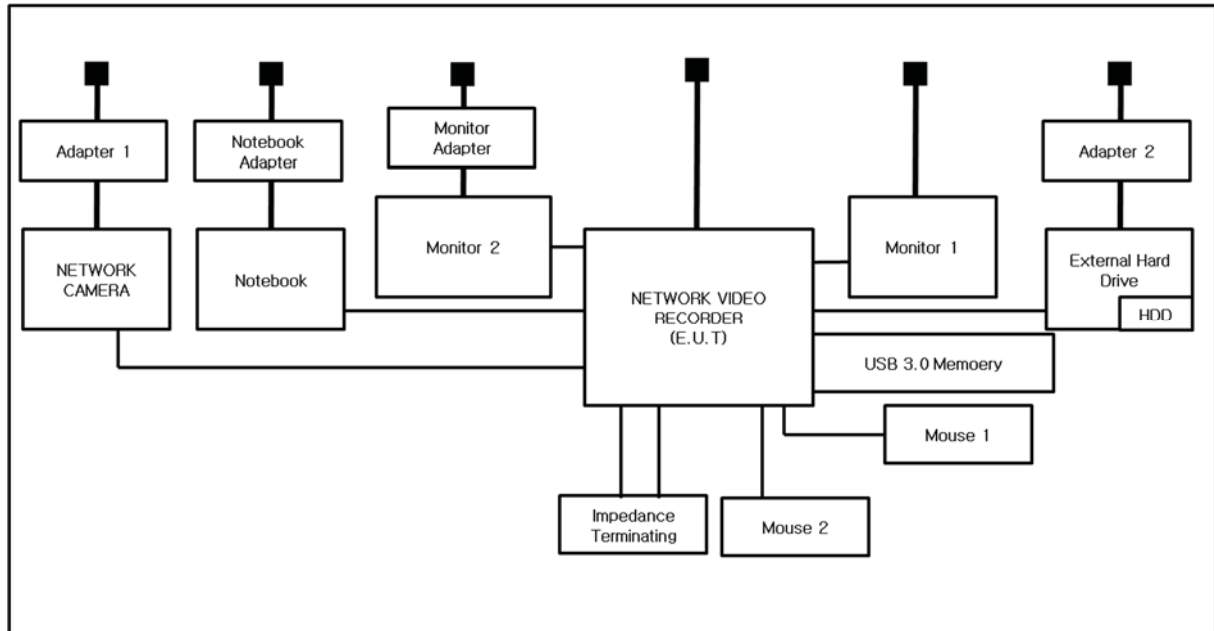
1.7 EUT Operating Mode(s)

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

Test mode	Normal operating
OP	MONITORING Network ping test

1.8 Configuration

■ AC Main
□ DC Main



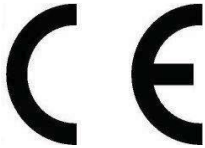
1.9 Calibration Details of Equipment Used for Measurement

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 473-29 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
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
KOREA	MSIP	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
Canada	IC	3 & 10 meter Open Area Test Sites and one conducted site	 4769B-1
Europe	CE	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	KOLAS	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2004/108/EC**

☐ 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 55022:2010

☐ 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 / 2013.04

☐ Class A

☐ Class B

☐ AS/NZS CISPR22:2009 +A1:2010

☐ Class A

☐ Class B

☒ 47 CFR Part 15, Subpart B / ANSI C63.4-2009 ☒ Class A

☐ Class B

☐ IC Regulation ICES-003 : 2012
/ ANSI C63.4-2014

☐ Class A

☐ Class B

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B



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☐ **R&TTE- Directive 1999/5/EC**

☐ 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

Apr. 11, 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, 06, 2016
☒	LISN	ENV216	R&S	101137	02, 04, 2017
☒	LISN	ENV216	R&S	101786	05, 06, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 21.2 °C

Relative Humidity: 33.5 %

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

Apr. 11, 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, 06, 2016
☒	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9168-713	05, 15, 2017
☒	Open Area Test Site	-	KES	-	-
☒	Antenna Mast	-	DAEIL EMC	-	-
☒	Turn Table	-	DAEIL EMC	-	-

Test Conditions

Temperature: 19.1 °C

Relative Humidity: 35.0 %

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

Apr. 11, 2016

Test Location

Semi Anechoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESU26	R&S	100552	05, 06, 2016
☒	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 Anechoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions

Temperature: 21.2 °C
Relative Humidity: 33.5 %

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.

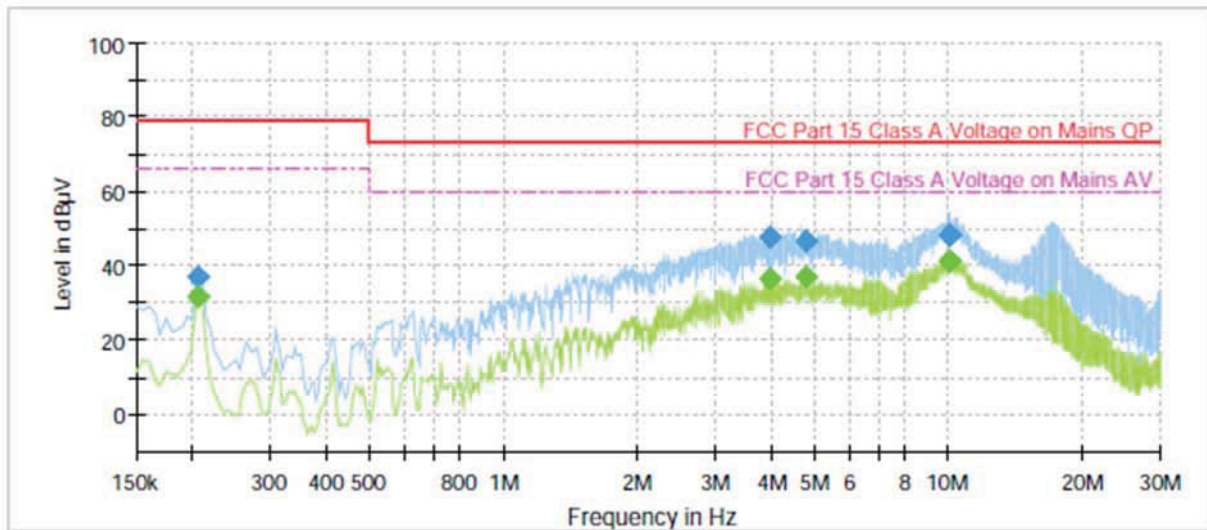
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: XRN-2011N
Mode
Operator Name: KES



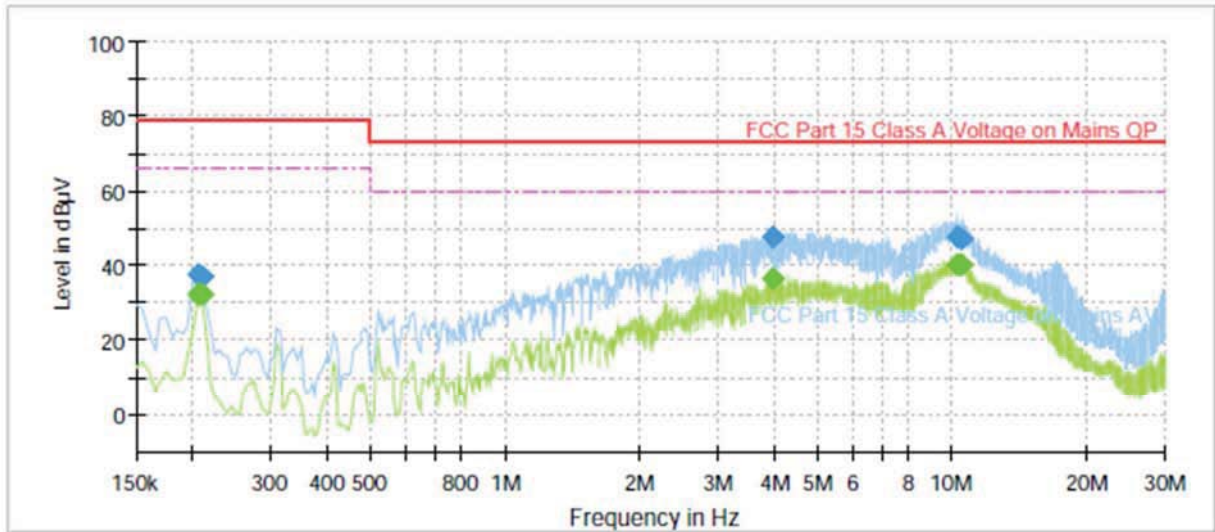
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	31.92	66.00	34.08	1000.0	9.000	L1	9.7
0.205000	37.32	---	79.00	41.68	1000.0	9.000	L1	9.7
3.955000	---	36.40	60.00	23.60	1000.0	9.000	L1	9.8
3.955000	47.63	---	73.00	25.37	1000.0	9.000	L1	9.8
4.775000	---	36.97	60.00	23.03	1000.0	9.000	L1	9.8
4.775000	46.60	---	73.00	26.40	1000.0	9.000	L1	9.8
10.020000	---	41.11	60.00	18.89	1000.0	9.000	L1	10.0
10.020000	47.97	---	73.00	25.03	1000.0	9.000	L1	10.0
10.090000	---	41.06	60.00	18.94	1000.0	9.000	L1	10.0
10.090000	48.22	---	73.00	24.78	1000.0	9.000	L1	10.0

[NEUTRAL]

Common Information

Test Description: Conducted Emission
Model No.: XRN-2011N
Mode
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.205000	---	32.11	66.00	33.89	1000.0	9.000	N	9.6
0.205000	37.57	---	79.00	41.43	1000.0	9.000	N	9.6
0.210000	---	32.25	66.00	33.75	1000.0	9.000	N	9.6
0.210000	36.87	---	79.00	42.13	1000.0	9.000	N	9.6
3.955000	---	36.39	60.00	23.61	1000.0	9.000	N	9.8
3.955000	47.59	---	73.00	25.41	1000.0	9.000	N	9.8
10.340000	---	40.11	60.00	19.89	1000.0	9.000	N	10.0
10.340000	47.82	---	73.00	25.18	1000.0	9.000	N	10.0
10.540000	---	40.14	60.00	19.86	1000.0	9.000	N	10.0
10.540000	47.02	---	73.00	25.98	1000.0	9.000	N	10.0

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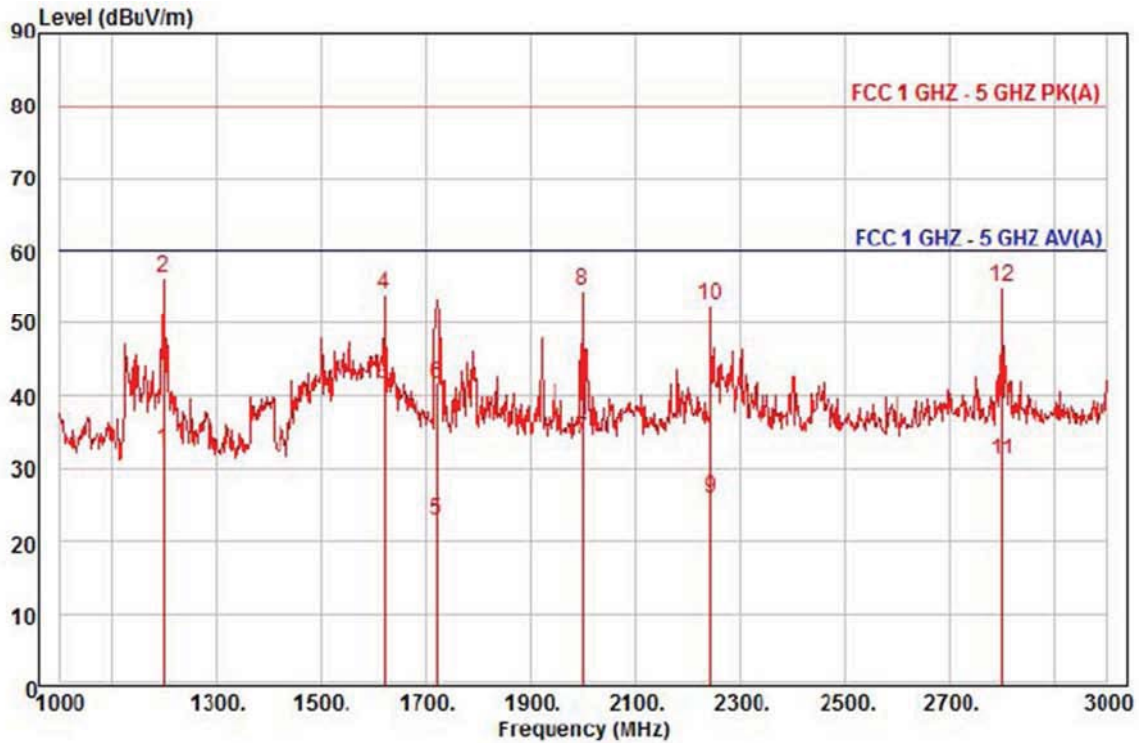


Radiated Electric Field Emissions(Below 1 GHz)

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]
48.33	18.16	V	1.00	13.87	1.43	33.46	39.00	6.54
77.26	17.52	V	1.00	7.78	1.88	27.18	39.00	12.82
142.30	15.61	V	1.00	7.92	2.73	26.26	43.50	13.74
253.00	16.03	H	4.00	12.47	3.82	32.32	46.40	14.68
598.24	8.64	H	3.00	19.26	6.31	34.21	46.40	12.79
648.73	8.07	V	2.10	19.49	6.77	34.33	46.40	12.67

* H : Horizontal, V : Vertical

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 : NETWORK VIDEO RECORDER
Model : XRN-2011N
Mode :
Memo : 1 ~ 3 GHz

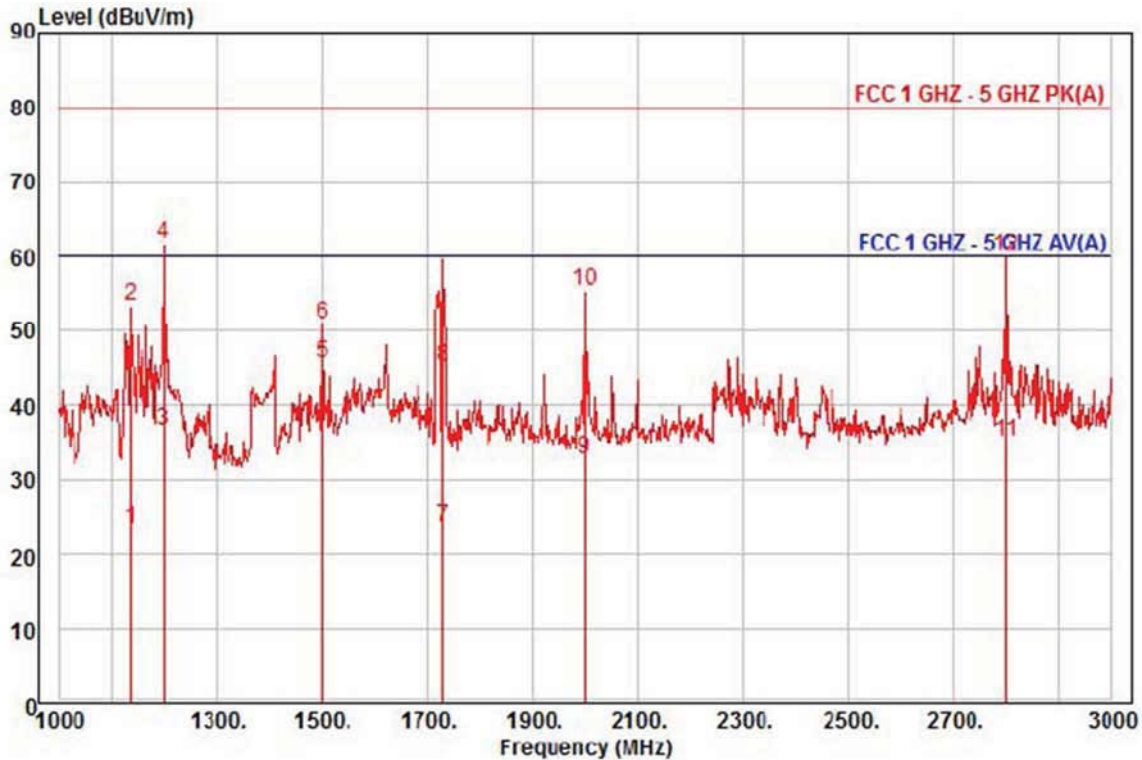
	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	TPos	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	deg	dBuV/m	dB		
1	1200.00	40.81	24.70	7.09	40.02	111	60.00	-27.42	horizontal	Average
2 pk	1200.00	64.57	24.70	7.09	40.02	111	80.00	-23.66	horizontal	Peak
3 pp	1620.00	46.82	26.37	8.31	39.82	353	60.00	-18.32	horizontal	Average
4	1620.00	59.22	26.37	8.31	39.82	353	80.00	-25.92	horizontal	Peak
5	1720.00	27.41	26.77	8.58	39.77	267	60.00	-37.01	horizontal	Average
6	1720.00	46.10	26.77	8.58	39.77	267	80.00	-38.32	horizontal	Peak
7	2000.00	36.39	27.88	9.35	39.63	261	60.00	-26.01	horizontal	Average
8	2000.00	56.97	27.88	9.35	39.63	261	80.00	-25.43	horizontal	Peak
9	2244.00	27.63	28.48	9.72	39.77	42	60.00	-33.94	horizontal	Average
10	2244.00	54.35	28.48	9.72	39.77	42	80.00	-27.22	horizontal	Peak
11	2800.00	30.70	29.84	10.75	40.09	293	60.00	-28.80	horizontal	Average
12	2800.00	54.76	29.84	10.75	40.09	293	80.00	-24.74	horizontal	Peak



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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 : NETWORK VIDEO RECORDER
Model : XRN-2011N
Mode :
Memo : 1 ~ 3 GHz

	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	1134.00	32.14	24.44	6.90	40.05	30	60.00	-36.57	vertical	Average
2	1134.00	62.08	24.44	6.90	40.05	30	80.00	-26.63	vertical	Peak
3	1200.00	44.81	24.70	7.09	40.02	130	60.00	-23.42	vertical	Average
4 pk	1200.00	69.97	24.70	7.09	40.02	130	80.00	-18.26	vertical	Peak
5 pp	1500.00	51.68	25.90	7.96	39.88	196	60.00	-14.34	vertical	Average
6	1500.00	57.03	25.90	7.96	39.88	196	80.00	-28.99	vertical	Peak
7	1730.00	28.19	26.81	8.61	39.76	298	60.00	-36.15	vertical	Average
8	1730.00	49.42	26.81	8.61	39.76	298	80.00	-34.92	vertical	Peak
9	2000.00	35.32	27.88	9.35	39.63	230	60.00	-27.08	vertical	Average
10	2000.00	57.86	27.88	9.35	39.63	230	80.00	-24.54	vertical	Peak
11	2800.00	34.59	29.84	10.75	40.09	289	60.00	-24.91	vertical	Average
12	2800.00	59.55	29.84	10.75	40.09	289	80.00	-19.95	vertical	Peak

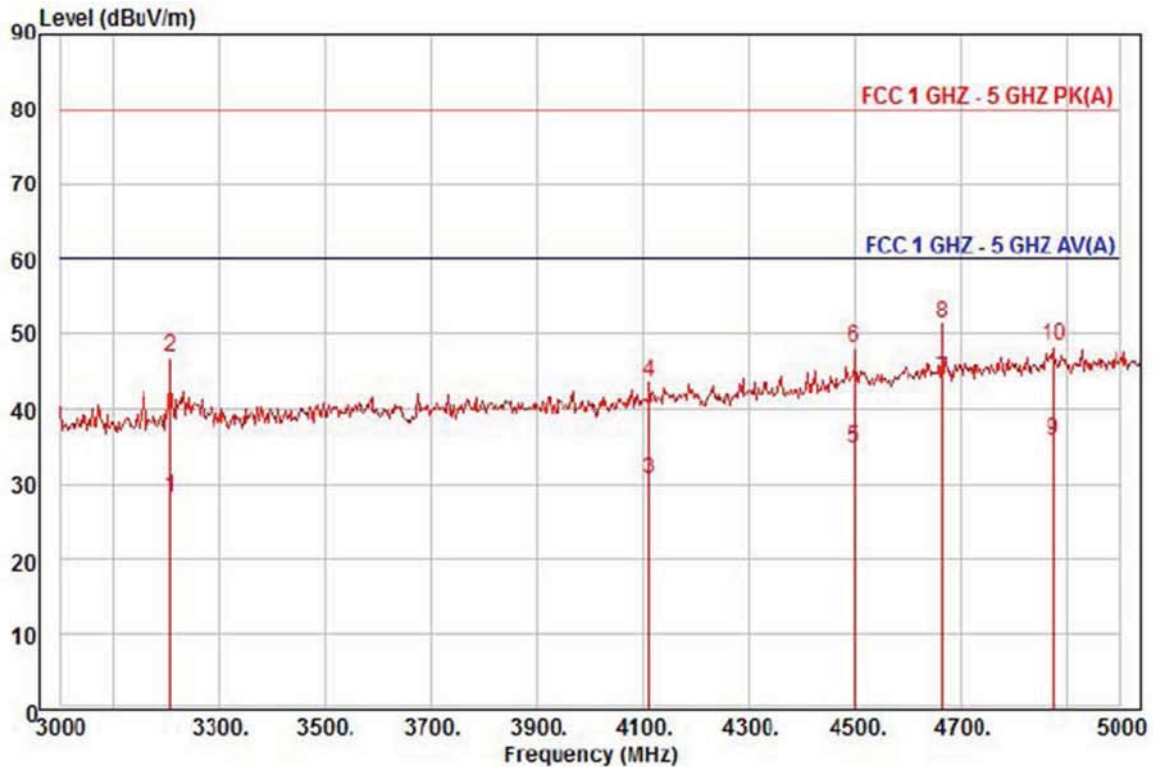
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Test report No.:
KES-EI-16T0162
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Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK VIDEO RECORDER
Model : XRN-2011N
Mode :
Memo : 3 ~ 6 GHz

	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	3207.00	25.92	30.68	11.75	40.25	75	60.00	-31.90	horizontal	Average
2	3207.00	44.78	30.68	11.75	40.25	75	80.00	-33.04	horizontal	Peak
3	4113.00	24.69	32.66	13.72	40.41	330	60.00	-29.34	horizontal	Average
4	4113.00	37.80	32.66	13.72	40.41	330	80.00	-36.23	horizontal	Peak
5	4500.00	25.86	34.86	14.43	40.41	135	60.00	-25.26	horizontal	Average
6	4500.00	39.19	34.86	14.43	40.41	135	80.00	-31.93	horizontal	Peak
7 pp	4665.00	33.75	35.81	14.73	40.41	15	60.00	-16.12	horizontal	Average
8 pk	4665.00	41.35	35.81	14.73	40.41	15	80.00	-28.52	horizontal	Peak
9	4875.00	24.18	37.01	15.10	40.41	211	60.00	-24.12	horizontal	Average
10	4875.00	36.64	37.01	15.10	40.41	211	80.00	-31.66	horizontal	Peak

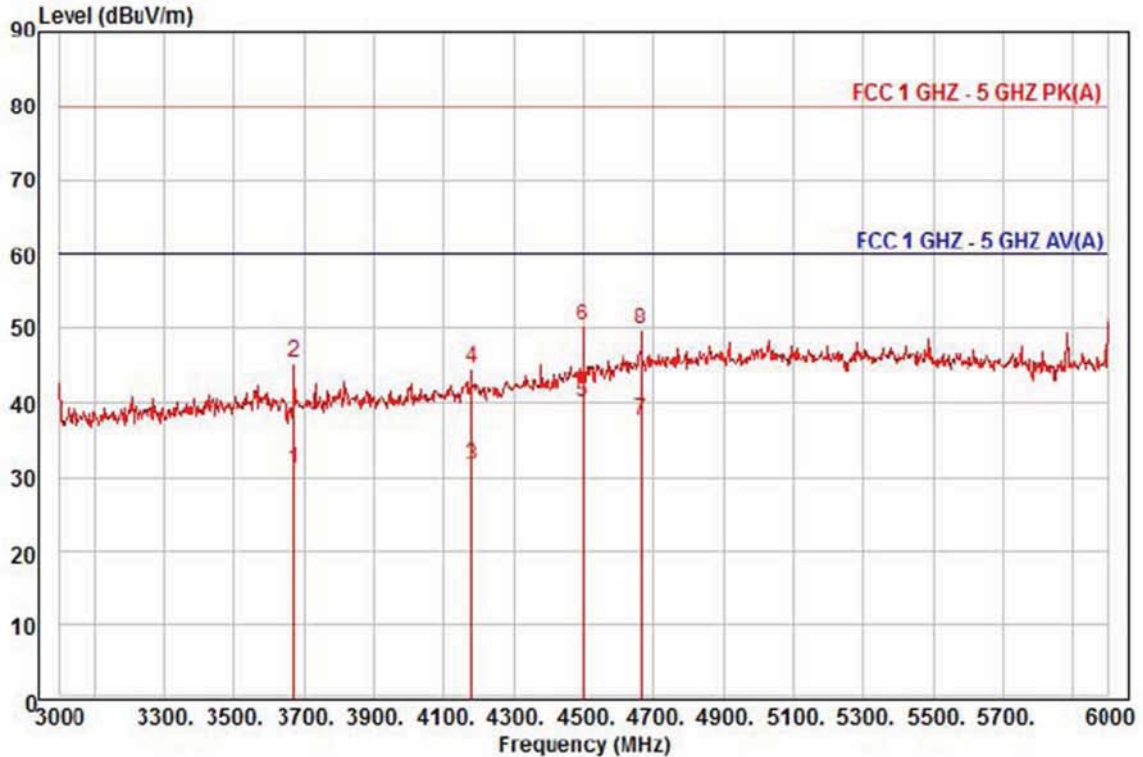
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Test report No.:
KES-E1-16T0162
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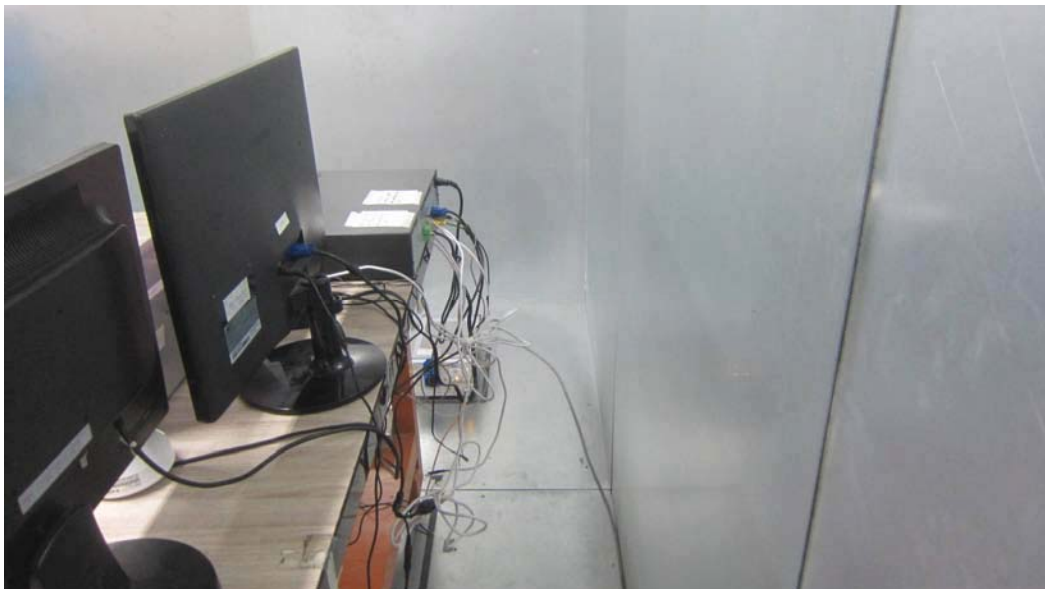
Site : chamber
Condition: FCC 1 GHZ - 5 GHZ PK(A) 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project : NETWORK VIDEO RECORDER
Model : XRN-2011N
Mode :
Memo : 3 ~ 6 GHz

	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	3672.00	27.18	31.46	12.85	40.34	50	60.00	-28.85	vertical	Average
2	3672.00	41.31	31.46	12.85	40.34	50	80.00	-34.72	vertical	Peak
3	4179.00	25.14	33.03	13.84	40.41	55	60.00	-28.40	vertical	Average
4	4179.00	38.26	33.03	13.84	40.41	55	80.00	-35.28	vertical	Peak
5 pp	4500.00	30.98	34.86	14.43	40.41	179	60.00	-20.14	vertical	Average
6 pk	4500.00	41.32	34.86	14.43	40.41	179	80.00	-29.80	vertical	Peak
7	4665.00	27.42	35.81	14.73	40.41	316	60.00	-22.45	vertical	Average
8	4665.00	39.65	35.81	14.73	40.41	316	80.00	-30.22	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)



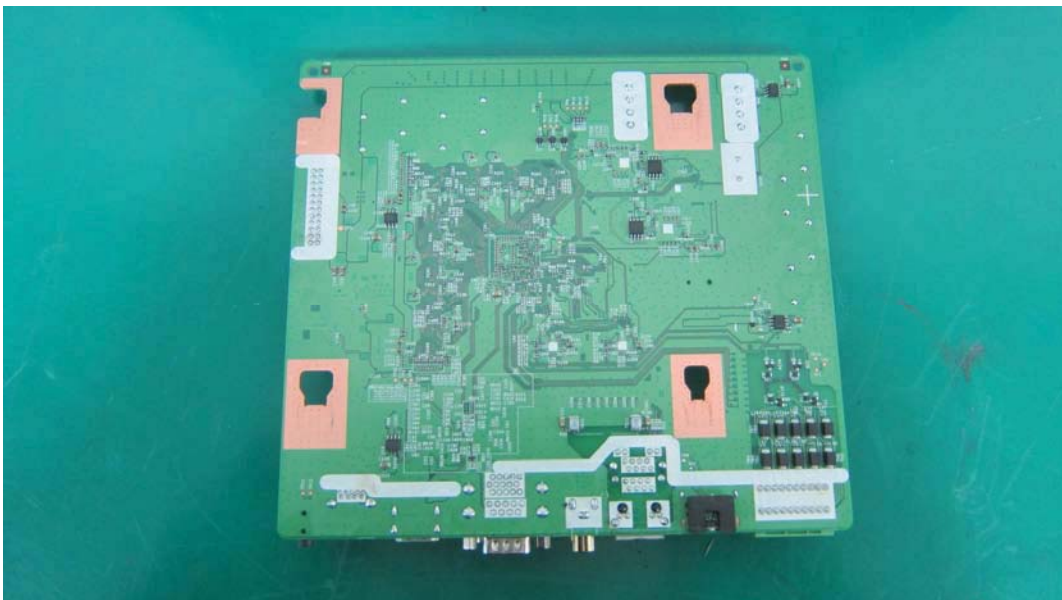
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Main Board EUT Internal View – Main Board

(Top)



(Bottom)



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Main Board EUT Internal View – Sub Board

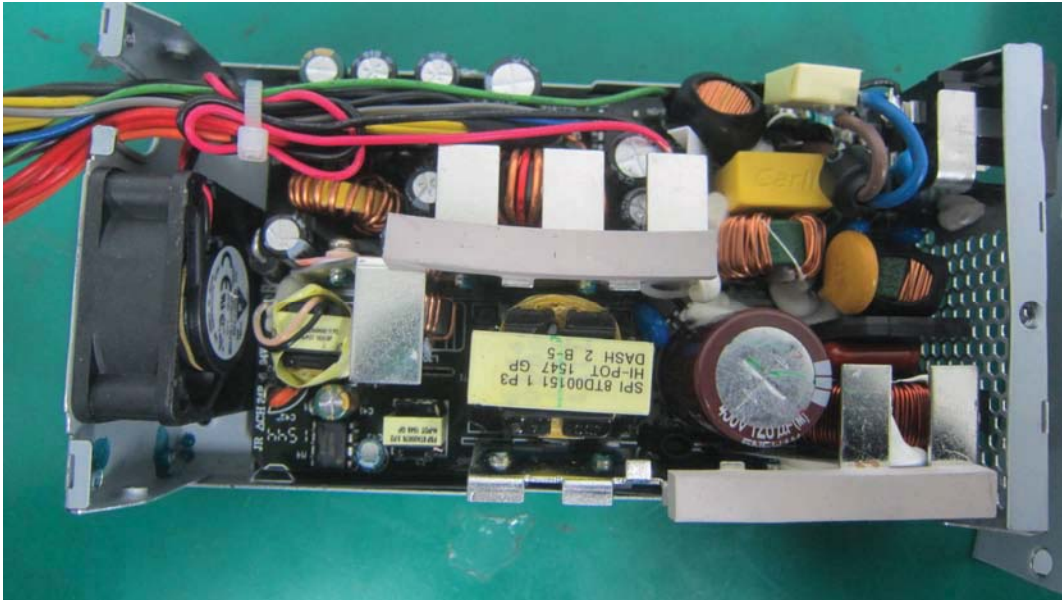
(Top)



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Main Board EUT Internal View – Power Main Board

(Top)



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Main Board EUT Internal View – HDD

(Top)



(Bottom)



Main Board EUT Internal View – POWER

(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.