

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:

DVR

Model/Brand Name:

SRD-893N

Variant Model:

SDR-C74300N

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 Company Limited

Applicant Address:

1204, Changwon-daero, Seongsan-gu, Chang
won-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-E1-16T0069

DVR, Model SRD-893N 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-E1-16T0069

Date of Issue: 02. 24. 2016

Dong Hun, Jang

Technical Manager

Signature:



KES.Co., Ltd.

C-3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-716, Korea
Tel: +82-31-425-6200 // Fax: +82-31-424-0450



EMC TEST REPORT For FCC

Test Report No. : KES-E1-16T0069

Date of Issue : Feb. 02, 2016

Product name : DVR

Model/Type No. : SRD-893N

Variant Model : SDR-C74300N

Applicant : Hanwha Techwin Company Limited

Applicant Address : 204, 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 : Feb. 24, 2016

Test date : Feb. 18, 2016 – Feb. 23, 2016

Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

**KES Co., Ltd.**

C-3701, Simin-daero 365-40,
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-E1-16T0069
Page (2) of (31)

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 24, 2016	KES-E1-160069	Issued

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd. This document may be altered or revised by KES Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KES Co., Ltd. will constitute fraud and shall nullify the document.

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



TABLE OF CONTENTS

1.0	General Product Description.....	4
1.1	Test Voltage & Frequency	6
1.2	Variant Model Differences.....	6
1.3	Device Modifications	6
1.4	Equipment Under Test.....	6
1.5	Support Equipments	7
1.6	External I/O Cabling	8
1.7	EUT Operating Mode(s)	9
1.8	Configuration.....	9
1.9	Calibration Details of Equipment Used for Measurement	10
1.10	Test Facility	10
1.11	Laboratory Accreditations and Listings	10
2.0	Test Regulations.....	11
2.1	Conducted Emissionsat Mains Power Ports.....	13
2.2	Radiated Electric Field Emissions(Below 1 GHz)	14
2.3	Radiated Electric Field Emissions(Above 1 GHz)	15
APPENDIX A – TEST DATA.....		16
Conducted Emissions at Mains Power Ports.....		16
Radiated Electric Field Emissions(Below 1 GHz)		18
Radiated Electric Field Emissions(Above 1 GHz).....		19
Test Setup Photos and Configuration		23
EUT External Photographs.....		26
EUT Internal Photographs		27
Main Board EUT Internal View – Sub Board 1.....		28
Main Board EUT Internal View – Main Board		29
Main Board EUT Internal View – HDD		30
Label Photographs.....		31

1.0 General Product Description

Main Specifications of EUT are:

Display		Full HD 8CH DVR(PV CHECK) SDR-C74300
Video	Inputs	8CH BNC
	Resolution	1920 x 1080 (Full HD) / 1280 x 720 (HD) / 928x480 (wD1)
Live	Frame rate	240fps@ 1920 x 1080 / 240fps@1280 x 720 / 240fps@ 928 x 480
	Resolution	1920 x 1080 (Full HD) / 1280 x 720 (HD) / 928x480 (wD1)
	Multi Screen display	1 / 4 / 7/9/13/ Sequence / PIP
Performance		
Operating	Embedded	Linux
	Compression	H.264
Recording	Record Rate	max 240fps@1080p
	Mode	Manual, Schedule (Continuous/Event), Event(Pre/Post), Time lapse (1~30 fps)
	Event	Video Loss, Motion(Sensitivity Level 1~10), Tampering
	Overwrite modes	Continuous
	Pre-alarm	Off/5sec
	Post-Alarm	Up to 6 hour (5,10,20,30 sec,1,3,5,10,20 min,1,2,3,4,5,6hour)
Search & Playback	Search mode	Date/time, Event, Back up, Motion (*All search included prview function)
	Playback function	Fast forward / backward (2x, 4x, 8x, 16x, 32x, 64x) *Backward play with I-frame only Slow forward / backward (1/2x, 1/4x, 1/8x) Step forward / backward *Backward play with I-frame only
Network (IPv4)	Transmission speed	4CIF 120fps / 2CIF 240fps / CIF 240fps
	Bandwidth	Up to 32Mbps
	Bandwidth control	Selectable
	Live stream	H.264(4CIF/2CIF/CIF Selectable)
	Remote users Maximum	Search 3 / Live unicast 10 / Live multicast 20
	Protocol support	TCP/IP, UDP/IP, DHCP, PPPoE, SMTP, NTP, HTTP, DDNS, RTP, TSP, UPnP
Smart phone	Monitoring	Smart viewer,Webviewer, Mobile Viewer
	Web / App viewer	Supported OS - PC : Windows XP / VISTA / 7 / 8, MAC OS X 10.7 / 10.9 - Mobile : Android OS v.2.3.5, v4.0.3, v4.1.2, 4.2, v4.3 iOS OS v5.1.1, v6.0, v6.0.2, v6.1, v7.0
		Supported Browser - Microsoft Internet Explorer (Ver. 11,10,9,8,7), Mozilla Firefox (Ver.19,18,17,16,15,14,13,12,11,10,9), Google Chrome (Ver.25,24,23,22,21,20,19,18,17,16,15), Apple Safari (v5.1, v6.1, v7.0)(Mac OS X only - 10.9, 10.8, 10.7)
	Protocol support	RTP,RTSP,HTTP,CGI
	Transmission speed	CIF Max. 16fps (Single channel) / CIF Max. 4fps (Quad channel)
	Remote users Maximum	Live(2)
Storage	Internal HDD	1 SATA HDD (2TB)
	USB (Back-up)	2 USB Ports
	File Format (Back-up)	BU(Playback from DVR), SEC (Includes Player), AVI
Security	Password Protection	1 Admin, 10 Group , 10 User per 1 Group
	Data Authentication	Watermark

**KES Co., Ltd.**

C-3701, Simin-daero 365-40,
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-EI-16T0069
Page (5) of (31)

Interface		
Monitors	VGA	1 VGA (1280x720, 1280x1024, 1920x1080) 60Hz
	HDMI	1 HDMI (1280x720, 1280x1024, 1920x1080) 60Hz
	Simulatneous Output	VGA and HDMI
Audio	Inputs/Output	1CH line in/ 1CH line out
	Compression	G.711
	Sampling Rate	8KHz
Alram	Remote notification	Notification via e-mail
Connections	Ethernet	1 RJ45 10/100 Base-T
	Serial interface	RS-485
	USB	USB 2.0, 2 ports (Front/Rear)
	Application Supoort	Mouse, WiFi,remote controller
	Protocol support	Samsung-T/E, Pelco-D/P, Panasonic, Phillips, AD, Vicon, GE
	Coax Protocol	Pelco-C
General		
Electrical	Input Voltage/Current	12V DC Adaptor, 100~250V AC, 50/60Hz
	Power consumption	23W
Environmental	Operating Temperature/ Humidity	0°C ~ 40°C (32°F ~ 104°F) / 20% ~ 85%RH
Mechanical	Dimension (WxHxD/Ø xH)	300X208.7X48

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



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

Model name	Differences
SDR-C74300N	Model Management of seller

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
DVR	SRD-893N	-	Hanwha Techwin Co., Ltd.	E.U.T
Switching Power Adapter	FSP040-RHAN2	-	FSP GROUP INC.	-
DIGITAL COLOR CAMERA	SDC-9441BCN	ZC4V6V2GB00E03X	Hanwha Techwin Co., Ltd.	-
		ZC4V6V2GB00E00T		-
		ZC4V6V2GB00E0KT		-
		ZC4V6V2GB00E0JE		-
		ZBPZ6V2G60001BX		-
		ZC4V6V2GB00E0HB		-
		ZC4V6V2GB00E04V		-
		ZBPZ6V2G60001AE		-
HDD	WD20PURX-64P6ZYO	WCC4M0DK1TVR	WD	2 TB

**KES Co., Ltd.**

C-3701, Simin-daero 365-40,
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-EI-16T0069
Page (7) of (31)

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor 1	M1950DM	108KCLH4W536	LG Electronics	-
Monitor Adapter 1	PA-1650-68	OCOGN612314034864	LITE-ON TECHNOLOGY CORPORATION	-
Monitor 2	M1950DM	206KCLH81256	LG Electronics	-
Monitor Adapter 2	PA-1650-64	OE9FA612314103637	LITE-ON TECHNOLOGY CORPORATION	-
Notebook	NT63025J	JK9091EF400142M	Samsung Electronics	-
Notebook Adapter	A13-040N2A	CN60BA4400313AD0N 843KO200	Chicony Power Technology (suzhou)Co., Ltd.	-
PTZ CONTROLLER	SPC-1010	-	Hanwha Techwin Co., Ltd.	-
ADAPTER	JPW115KA1200M03	-	-	-
MIC	CMK-303	-	CAMAC	
Spearker	-	-	-	-
Mouse	-	-	Samsung Electronics	-

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
DVR (E.U.T)	RJ-45	NOTEBOOK	RJ-45	4.0	U
	RS-485	PTZ CONTROLLER	RS-485	3.0	U
	D-SUB	Montior 1	D-SUB	1.5	S
	HDMI	Montior 2	HDMI	1.7	S
	Audio In	Speaker	Audio Out	1.2	U
	Audio Out	MIC	Audio In	1.2	U
	USB	Mouse	USB	1.3	U
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S
	BNC	DIGITAL COLOR CAMERA	BNC	10.0	S

* Unshielded=U, Shielded=S

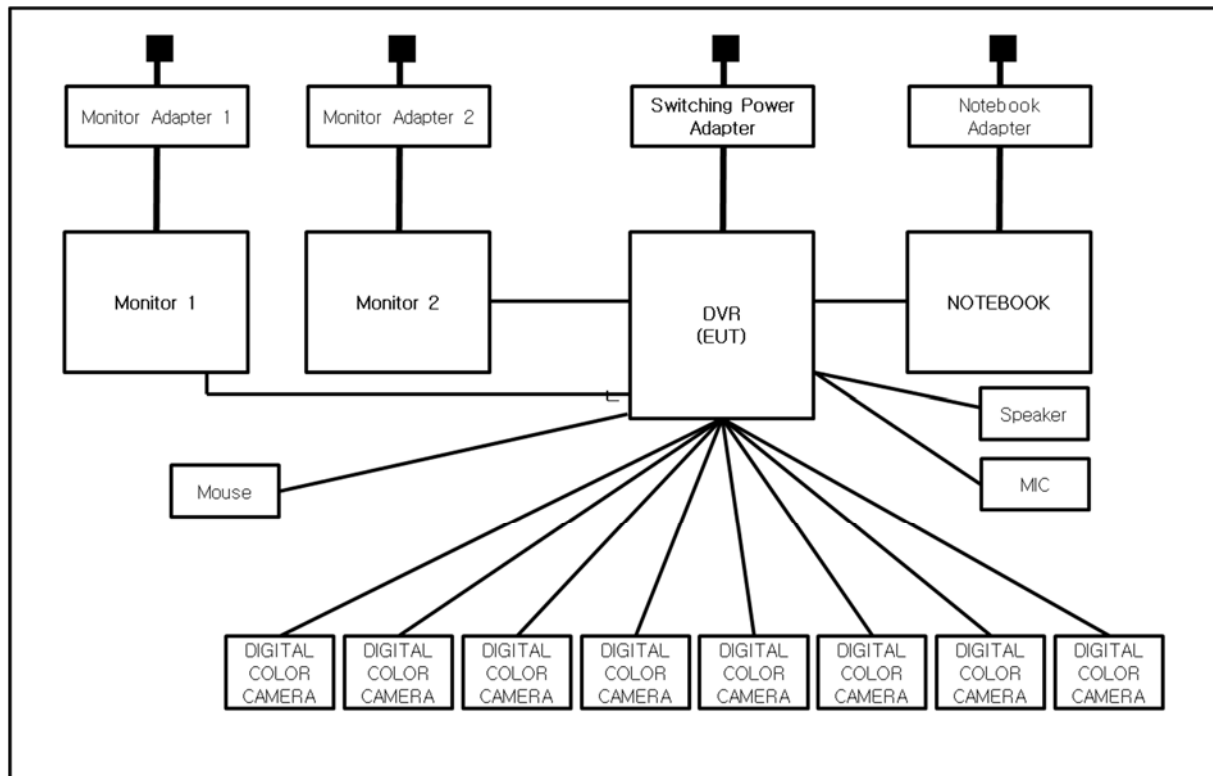
1.7 EUT Operating Mode(s)

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

Test mode	Normal operating
Normal	MONITORING , PING TEST

1.8 Configuration

■ AC Main(120 v / 60 Hz)
□ 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



KES Co., Ltd.

C-3701, Simin-daero 365-40,
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-E1-16T0069
Page (12) of (31)

☐ **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

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



2.1 Conducted Emissions at Mains Power Ports

Test Date

Feb. 23, 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
☐	LISN	ESH2-Z5	R & S	100450	05, 06, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions

Temperature: 21.8 °C
Relative Humidity: 37,6 %

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

Feb. 21, 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: 7.3 °C
Relative Humidity: 58.0 %

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

Feb. 18, 2016

Test Location

Semi Anchoic 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 Anchoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions

Temperature: 25.7 °C
Relative Humidity: 38.2 %

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.

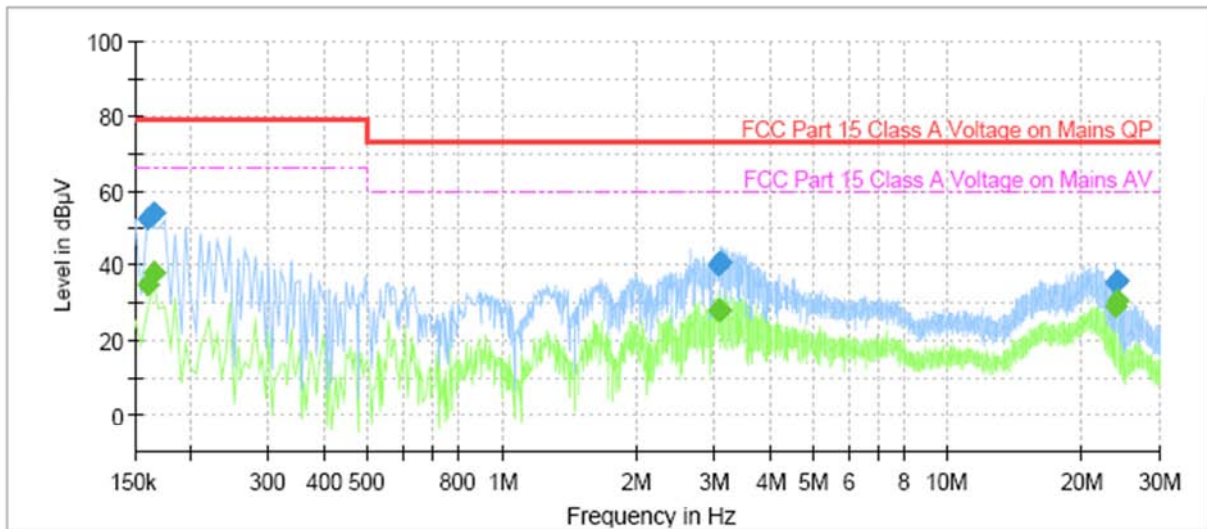
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description: Conducted Emission
Model No.: SRD-893N
Mode
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	34.73	66.00	31.27	1000.0	9.000	L1	9.7
0.160000	52.15	---	79.00	26.85	1000.0	9.000	L1	9.7
0.165000	---	37.88	66.00	28.12	1000.0	9.000	L1	9.7
0.165000	53.73	---	79.00	25.27	1000.0	9.000	L1	9.7
3.055000	---	27.99	60.00	32.01	1000.0	9.000	L1	9.8
3.055000	40.22	---	73.00	32.78	1000.0	9.000	L1	9.8
3.085000	---	28.01	60.00	31.99	1000.0	9.000	L1	9.8
3.085000	40.70	---	73.00	32.30	1000.0	9.000	L1	9.8
23.880000	---	29.12	60.00	30.88	1000.0	9.000	L1	10.2
23.880000	35.34	---	73.00	37.66	1000.0	9.000	L1	10.2
24.050000	---	30.86	60.00	29.14	1000.0	9.000	L1	10.2
24.050000	36.18	---	73.00	36.82	1000.0	9.000	L1	10.2



KES Co., Ltd.

C-3701, Simin-daero 365-40,
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-E1-16T0069

Page (17) of (31)

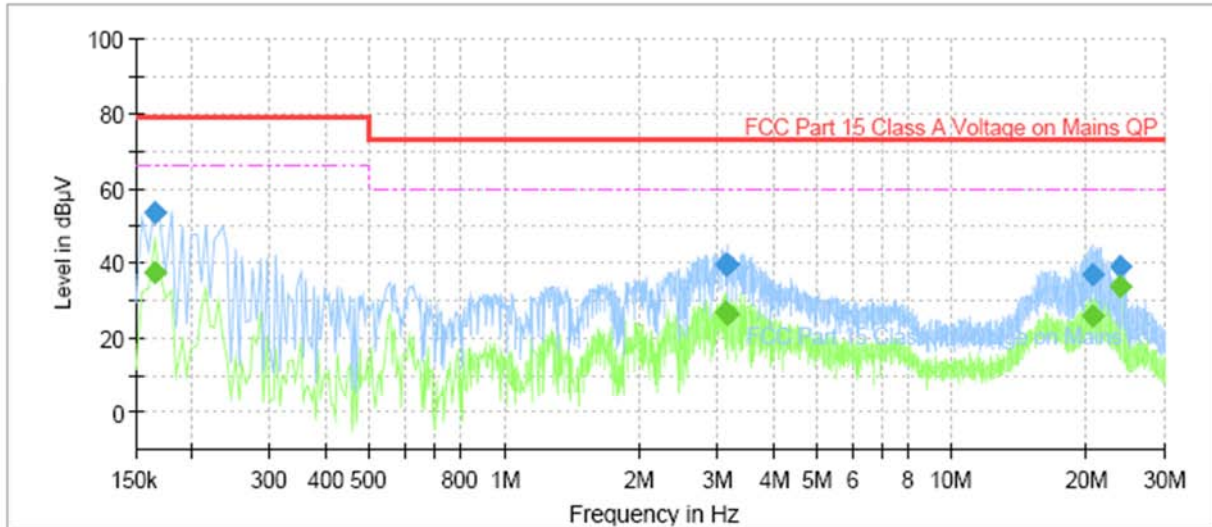
[NEUTRAL]

Common Information

Test Description:
Model No.:
Mode
Operator Name:

Conducted Emission
SRD-893N

KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165000	---	37.86	66.00	28.14	1000.0	9.000	N	9.6
0.165000	53.20	---	79.00	25.80	1000.0	9.000	N	9.6
3.140000	---	27.10	60.00	32.90	1000.0	9.000	N	9.7
3.140000	39.70	---	73.00	33.30	1000.0	9.000	N	9.7
3.155000	---	26.30	60.00	33.70	1000.0	9.000	N	9.7
3.155000	39.57	---	73.00	33.43	1000.0	9.000	N	9.7
20.755000	---	26.18	60.00	33.82	1000.0	9.000	N	10.1
20.755000	36.85	---	73.00	36.15	1000.0	9.000	N	10.1
23.980000	---	33.71	60.00	26.29	1000.0	9.000	N	10.2
23.980000	39.23	---	73.00	33.77	1000.0	9.000	N	10.2

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

**KES Co., Ltd.**

C-3701, Simin-daero 365-40,
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-E1-16T0069
Page (18) of (31)

Radiated Electric Field Emissions(Below 1 GHz)

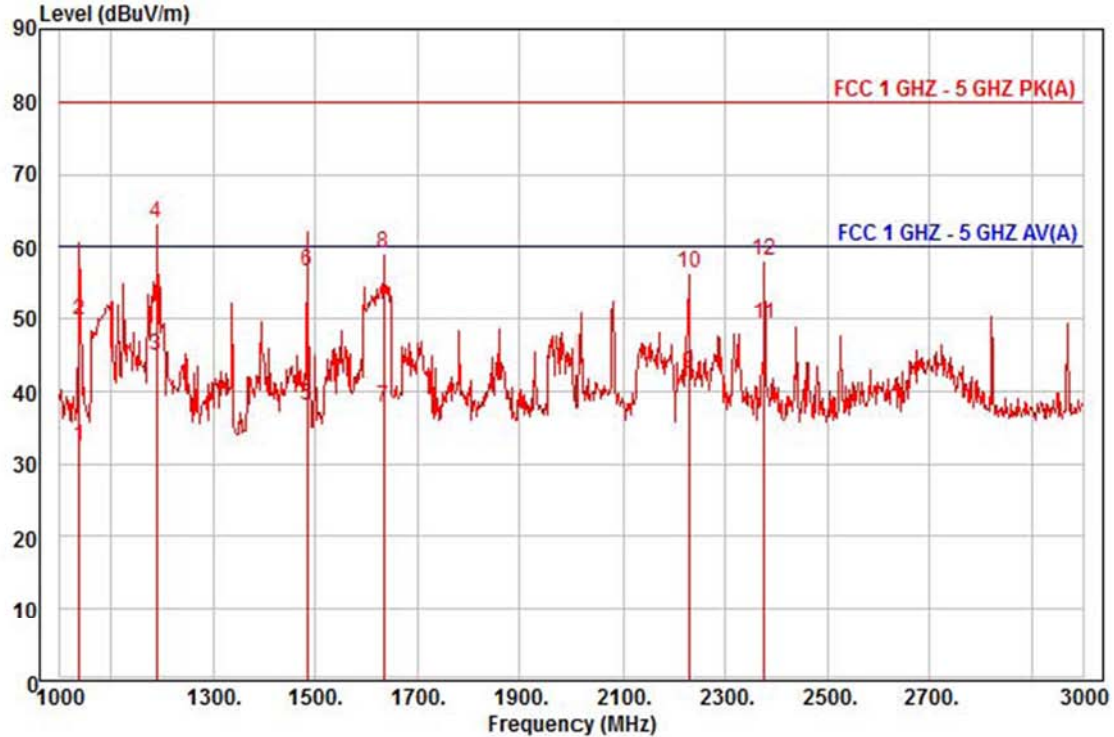
Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
135.42	24.26	H	4.00	8.26	2.66	35.18	43.50	8.32
259.76	17.85	V	1.20	12.60	3.88	34.33	46.40	12.07
297.39	18.53	V	1.00	13.33	4.19	36.05	46.40	10.35
446.08	20.89	H	4.00	16.35	5.37	42.61	46.40	3.79
513.00	19.17	H	3.90	17.39	5.82	42.38	46.40	4.02
519.76	19.60	H	3.00	17.53	5.86	42.99	46.40	3.41
594.34	17.92	H	2.85	19.18	6.29	43.39	46.40	3.01
742.88	14.42	H	2.50	20.17	7.43	42.02	46.40	4.38

* H : Horizontal, V : Vertical

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



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 : SRD-893N
Mode : 120 v / 60 Hz
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	1038.00	41.84	24.06	6.62	40.10	351	60.00	-27.58	horizontal	Average
2	1038.00	59.13	24.06	6.62	40.10	351	80.00	-30.29	horizontal	Peak
3	1188.00	53.24	24.66	7.06	40.03	45	60.00	-15.07	horizontal	Average
4 pk	1188.00	71.67	24.66	7.06	40.03	45	80.00	-16.64	horizontal	Peak
5	1484.00	44.22	25.83	7.91	39.88	187	60.00	-21.92	horizontal	Average
6	1484.00	62.74	25.83	7.91	39.88	187	80.00	-23.40	horizontal	Peak
7	1634.00	42.85	26.43	8.34	39.81	31	60.00	-22.19	horizontal	Average
8	1634.00	64.25	26.43	8.34	39.81	31	80.00	-20.79	horizontal	Peak
9	2228.00	43.94	28.44	9.70	39.76	331	60.00	-17.68	horizontal	Average
10	2228.00	57.98	28.44	9.70	39.76	331	80.00	-23.64	horizontal	Peak
11 pp	2376.00	50.32	28.80	9.93	39.85	39	60.00	-10.80	horizontal	Average
12	2376.00	59.31	28.80	9.93	39.85	39	80.00	-21.81	horizontal	Peak

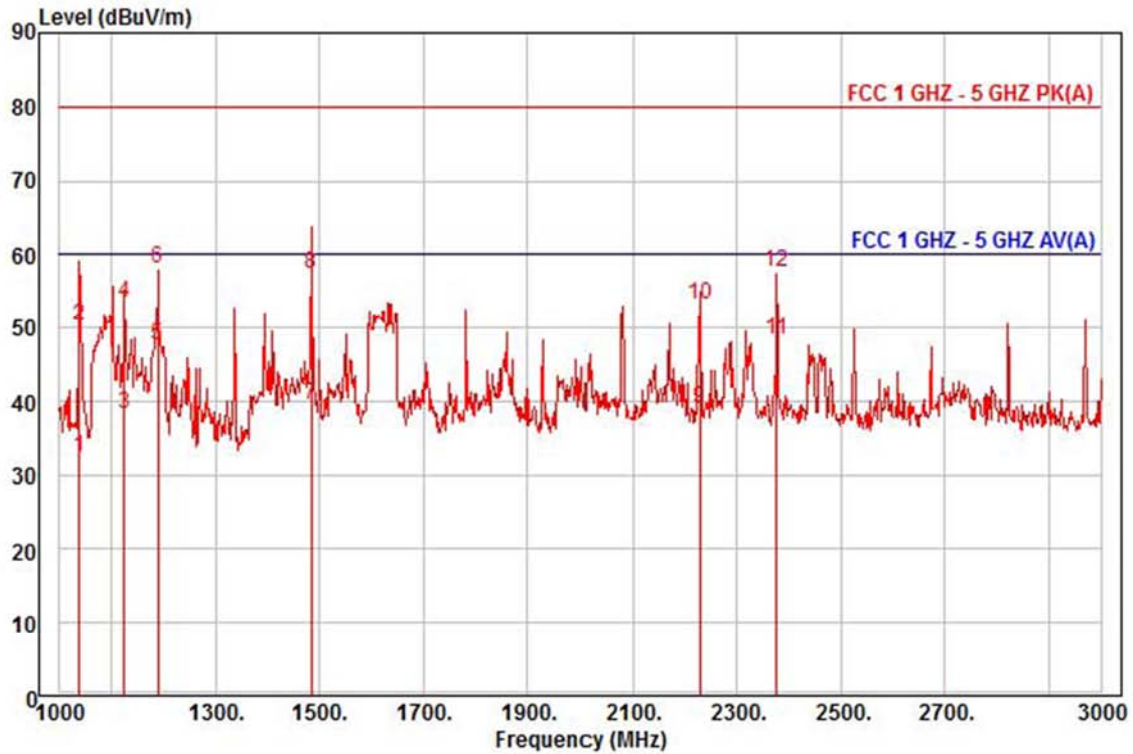
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

C-3701, Simin-daero 365-40,
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-E1-16T0069
Page (20) of (31)



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 : SRD-893N
Mode : 120 v / 60 Hz
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	1038.00	41.88	24.06	6.62	40.10	60	60.00	-27.54	vertical	Average
2	1038.00	59.81	24.06	6.62	40.10	60	80.00	-29.61	vertical	Peak
3	1124.00	47.14	24.40	6.87	40.06	52	60.00	-21.65	vertical	Average
4	1124.00	62.23	24.40	6.87	40.06	52	80.00	-26.56	vertical	Peak
5	1188.00	55.97	24.66	7.06	40.03	60	60.00	-12.34	vertical	Average
6 pk	1188.00	66.46	24.66	7.06	40.03	60	80.00	-21.85	vertical	Peak
7	1484.00	45.51	25.83	7.91	39.88	20	60.00	-20.63	vertical	Average
8	1484.00	63.48	25.83	7.91	39.88	20	80.00	-22.66	vertical	Peak
9	2228.00	40.58	28.44	9.70	39.76	337	60.00	-21.04	vertical	Average
10	2228.00	54.85	28.44	9.70	39.76	337	80.00	-26.77	vertical	Peak
11 pp	2376.00	49.40	28.80	9.93	39.85	359	60.00	-11.72	vertical	Average
12	2376.00	58.84	28.80	9.93	39.85	359	80.00	-22.28	vertical	Peak

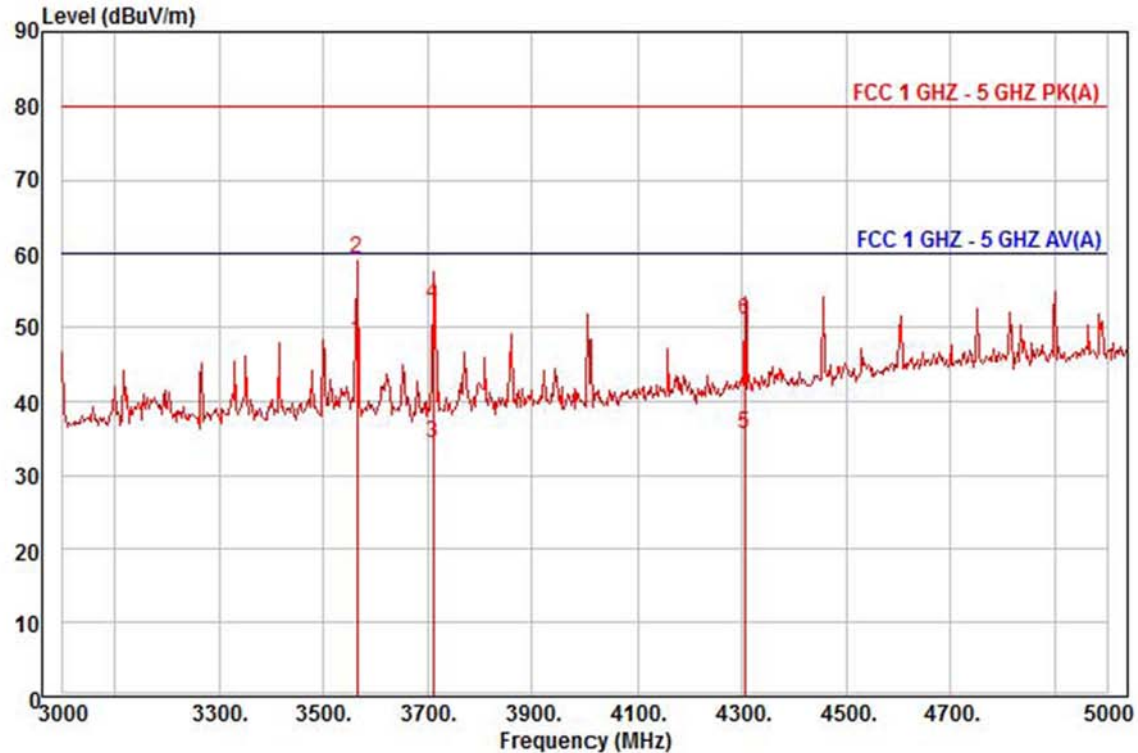
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

C-3701, Simin-daero 365-40,
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-E1-16T0069
Page (21) of (31)



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 : SRD-893N
Mode : 120 v / 60 Hz
Memo : 3 ~ 6 GHz

		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 pp	3564.00	44.48	31.28	12.64	40.32	33	60.00	-11.92	horizontal	Average
2 pk	3564.00	55.75	31.28	12.64	40.32	33	80.00	-20.65	horizontal	Peak
3	3711.00	30.31	31.52	12.93	40.35	13	60.00	-25.59	horizontal	Average
4	3711.00	49.07	31.52	12.93	40.35	13	80.00	-26.83	horizontal	Peak
5	4305.00	28.03	33.75	14.07	40.41	360	60.00	-24.56	horizontal	Average
6	4305.00	43.68	33.75	14.07	40.41	360	80.00	-28.91	horizontal	Peak
7	5199.00	25.68	37.32	15.56	40.38	4	60.00	-21.82	horizontal	Average
8	5199.00	41.39	37.32	15.56	40.38	4	80.00	-26.11	horizontal	Peak
9	5346.00	33.59	37.02	15.74	40.36	21	60.00	-14.01	horizontal	Average
10	5346.00	46.37	37.02	15.74	40.36	21	80.00	-21.23	horizontal	Peak

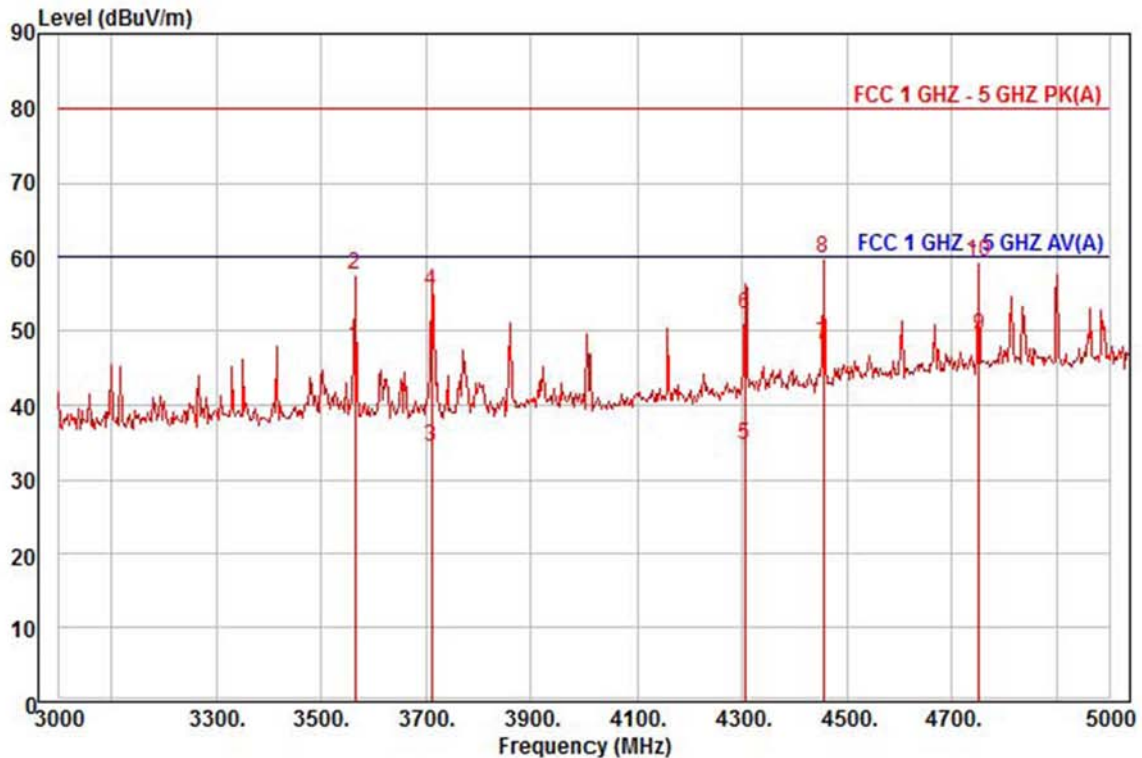
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.



KES Co., Ltd.

C-3701, Simin-daero 365-40,
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-E1-16T0069
Page (22) of (31)



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 : SRD-893N
Mode : 120 v / 60 Hz
Memo : 3 ~ 6 GHz

		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	3564.00	44.11	31.28	12.64	40.32	338	60.00	-12.29	vertical	Average
2	3564.00	54.03	31.28	12.64	40.32	338	80.00	-22.37	vertical	Peak
3	3711.00	30.34	31.52	12.93	40.35	51	60.00	-25.56	vertical	Average
4	3711.00	51.30	31.52	12.93	40.35	51	80.00	-24.60	vertical	Peak
5	4305.00	27.22	33.75	14.07	40.41	186	60.00	-25.37	vertical	Average
6	4305.00	44.88	33.75	14.07	40.41	186	80.00	-27.71	vertical	Peak
7	4455.00	39.45	34.61	14.35	40.41	338	60.00	-12.00	vertical	Average
8 pk	4455.00	51.38	34.61	14.35	40.41	338	80.00	-20.07	vertical	Peak
9 pp	4752.00	38.52	36.30	14.88	40.41	359	60.00	-10.71	vertical	Average
10	4752.00	48.51	36.30	14.88	40.41	359	80.00	-20.72	vertical	Peak

This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Test Setup Photos and Configuration

Conducted Voltage Emissions



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Radiated Electric Field Emissions(Below 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Radiated Electric Field Emissions(Above 1 GHz)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

EUT External Photographs

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

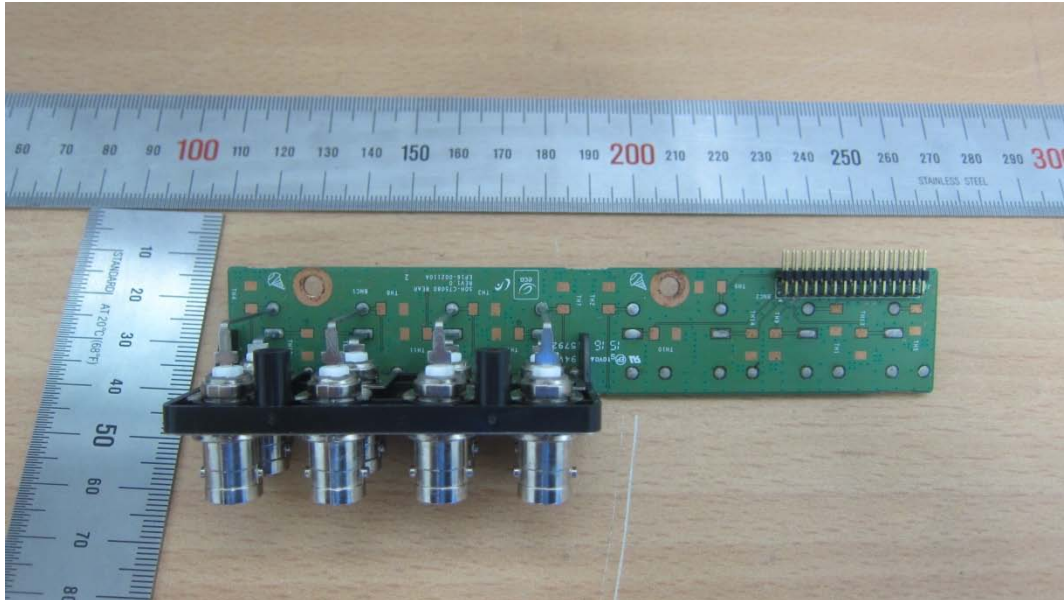
EUT Internal Photographs

(Internal View)

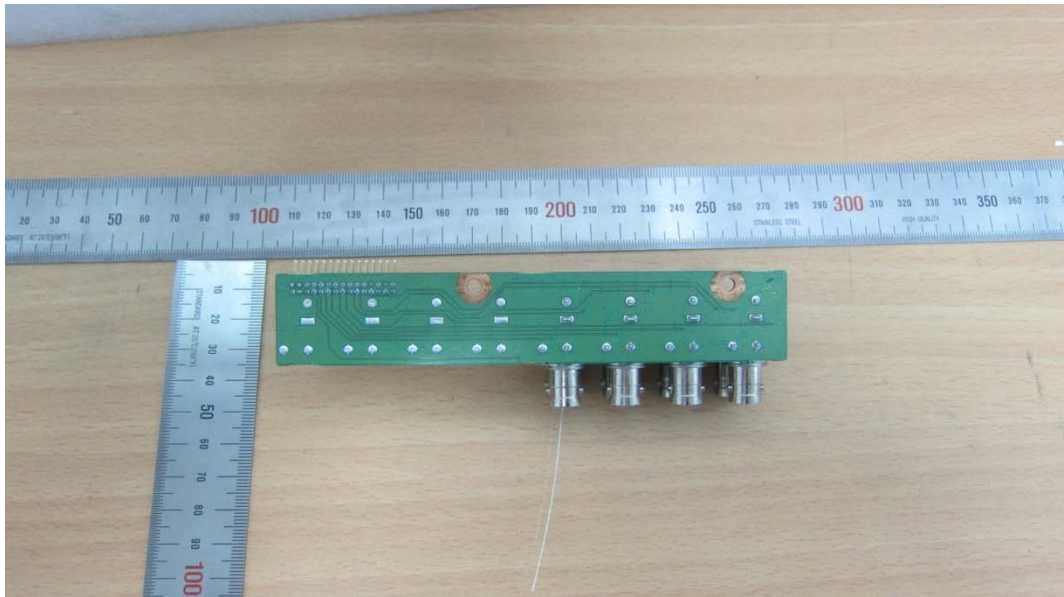


Main Board EUT Internal View – Sub Board 1

(Top)



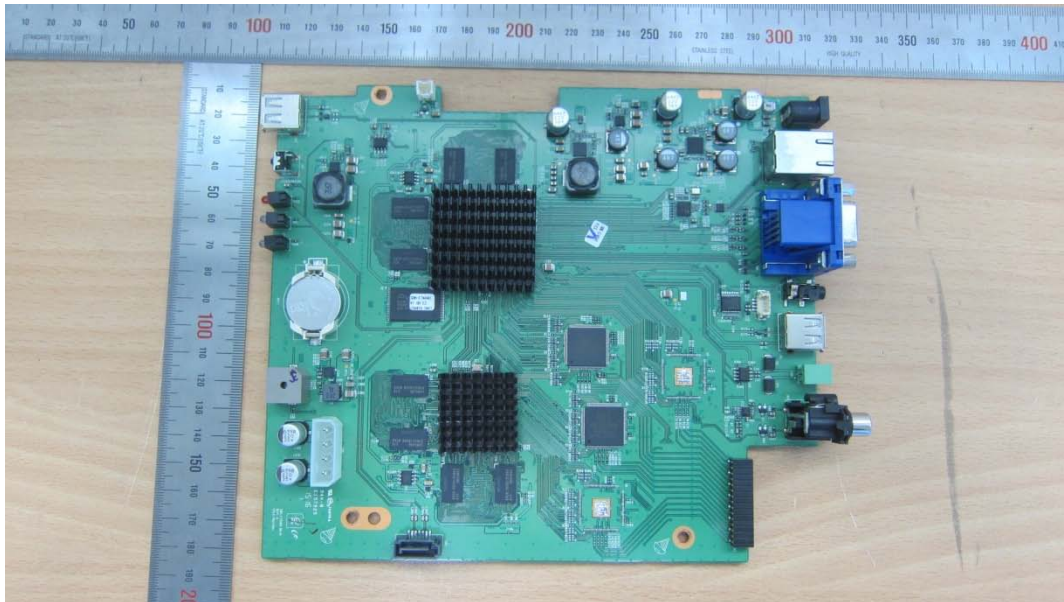
(Bottom)



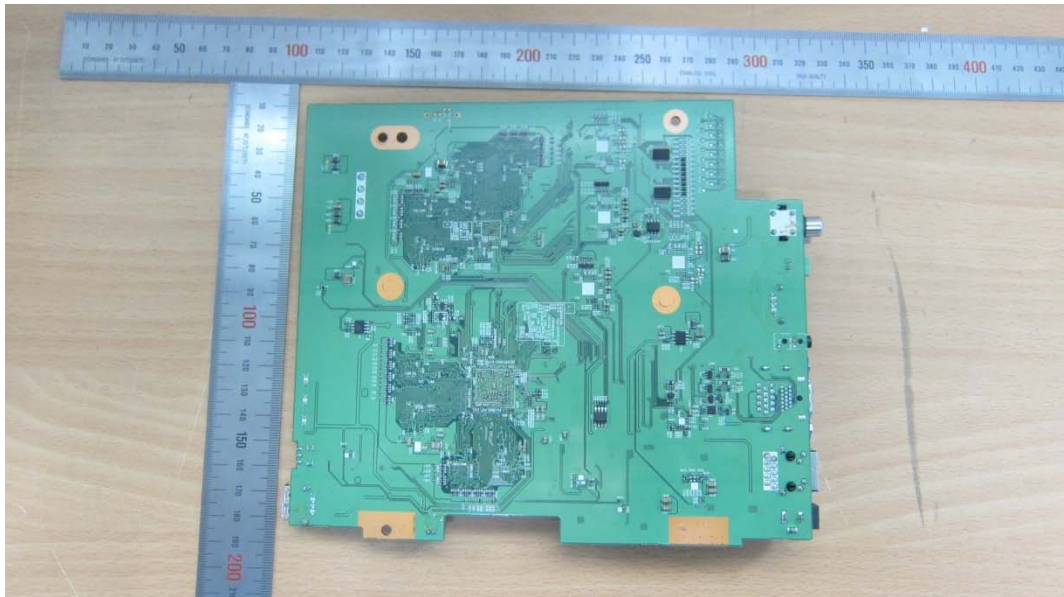
This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Main Board EUT Internal View – Main Board

(Top)



(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Main Board EUT Internal View – HDD

(Top)

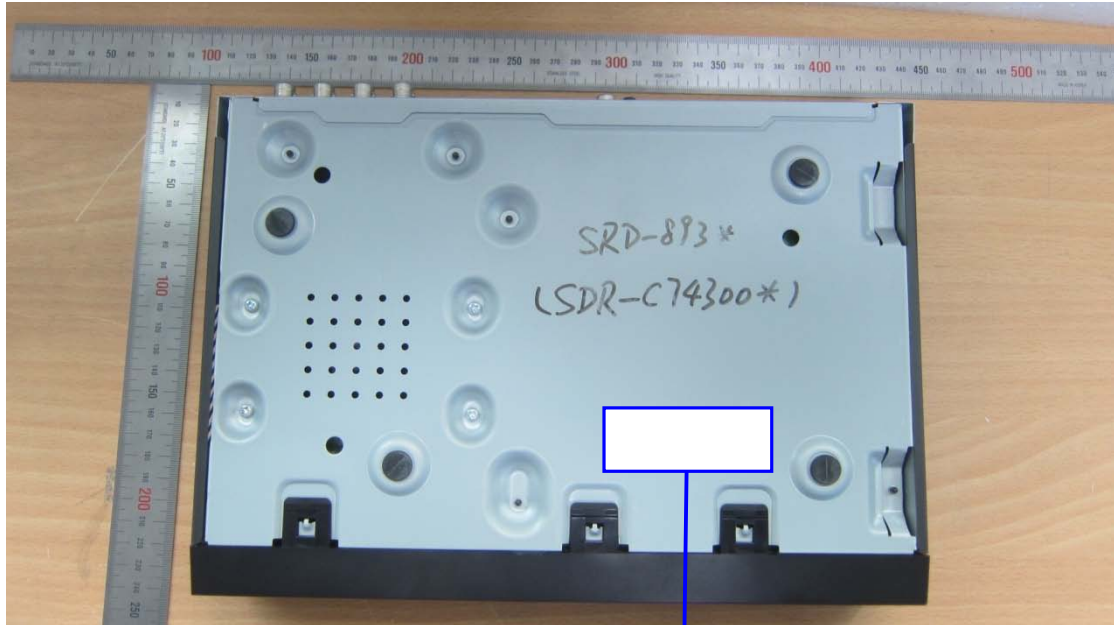


(Bottom)



This report shall not be reproduced except in full, without the written approval of KES Co., Ltd.
The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

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.