

# SAMSUNG

## Declaration of Conformity



**Type of equipment:** Digital Video Recorder  
**Brand Name /Trade Mark:** SAMSUNG  
**Type designation /model:** SRD-894P  
**Variant Model:** -  
**Applicant:** Hanwha Techwin Co., Ltd.

**In accordance with the following Directives:**

2004/108/EC The Electromagnetic Compatibility Directive  
Including amendments by the CE Marking Directive 93/68/EEC

2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment (recast)

**The following harmonized European standards or technical specifications have been applied:**

EN 55022:2010	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
EN 50130-4:2011+A1:2014	Product family standard: Immunity requirements for components of fire, intruder and social alarm systems
EN 61000-3-2:2014	Limits for harmonic current emissions (equipment input current $\leq$ 16 A per phase)
EN 61000-3-3:2013	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq$ 16 A per phase and not subject to conditional connection
EN 61000-4-2:2009	Electrostatic discharge immunity test
EN 61000-4-3:2006+A2:2010	Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4:2012	Electrical fast transient/burst immunity test
EN 61000-4-5:2014	Surge immunity test
EN 61000-4-6:2009	Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-11:2004	Voltage Dips and Voltage Interruptions Immunity test

**The CE Marking on the products and/or their packaging signifies that Hanwha Techwin Company Limited holds the reference technical file available to the European Union authorities.**

**Place and date of issue:** 1204, Changwon-daero, Seongsan-gu, Changwon-si, Gyeongsangnam-do, Korea / Mar. 31, 2016

**Authorized Signatory:** Name : Jei Soon, Kang  
Title : Principal Research Engineer

Signatur :



# EMC TEST REPORT For CE

Test Report No. : KES-E1-16T0135  
Date of Issue : Mar. 31, 2016  
Product name : Digital Video Recorder  
7  
Model/Type No. : SRD-894P  
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  
Date of Receipt : Mar. 14, 2016  
Test date : Mar. 18, 2016 – Mar. 22, 2016  
Test Results :  **In Compliance**  **Not in Compliance**

Tested by

Yung Suk, Song  
EMC Test Engineer

Reviewed by

Dong-Hun, Jang  
EMC Technical Manager



## REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Mar. 31, 2016	KES-E1-16T0135	Issued

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## 1.0 General Product Description

### Main Specifications of E.U.T are:

SRD-894

Performance		
Video	Inputs	8channel BNC 1080P/720P AHD Camera NTSC/PAL
	Resolution	1920 x 1080, 1280 x 720, 960 x 480, 704 x 480 / 960 x 576, 704 x 576
Live	Frame rate	240fps , 200fps
	Resolution	1920 x 1080, 1280 x 720, 960 x 480, 704 x 480 / 960 x 576, 704 x 576
	Multi Screen display	1/4/7/9/13/PIP/Sequence
Operating System		
	Embedded	Linux
	Compression	H.264
Recording	Record Rate	Up to 240fps@1920 x 1080 / Up to 200fps@1920 x 1080 Up to 240fps@1280 x 720 / Up to 200fps@1280 x 720 NTSC: Up to 240fps @ 960x480 / PAL: Up to 200fps @ 960x576 NTSC: Up to 240fps @ 704x480 / PAL: Up to 200fps @ 704x576 NTSC: Up to 240fps @ 704x240 / PAL: Up to 200fps @ 704x288 NTSC: Up to 240fps @ 352x240 / PAL: Up to 200fps @ 352x288
	Mode	NTSC: Manual, Schedule (Continuous/Event), Event(Pre/Post), Time lapse (1~30 fps) PAL: Manual, Schedule (Continuous/Event), Event(Pre/Post), Time lapse (1~25 fps)
	Event	Video Loss, Motion(Level 1~10), Alarm, Tampering(Level 1~3)
	Overwrite modes	Continuous
	Pre-alarm	Up to 30 sec (5,10,20,30 Sec)
	Post-Alarm	Up to 6 hour (5,10,20,30 sec,1,3,5,10,20 min,1,2,3,4,5,6 hour)
Search & Playback	Search mode	Date/time, Event, Back up, Pos, Motion (* All Search Included Preview Function)
	Playback function	Fast Forward/Backward (x2,x4,x8,x16,x32,x64) * Backward Play with I-frame Only, Slow Forward/Backward (x1/2,x1/4,x1/8) Step Forward/Backward (x2, x4,x8,x16,x32,x64) * Backward Play with I-frame Only
Network (IPv4)	Transmission speed	Option 1) 1M ~ 2M (240fps, 200fps), 4CIF (NTSC : 240fps, 200fps) Option 2) 4CIF / 2CIF / CIF (NTSC : 120 / 240 fps, PAL : 100 / 200fps)
	Bandwidth	Up to 64Mbps
	Bandwidth control	Selectable
	Stream	H.264(1080P/720p/4CIF/2CIF/CIF Selectable)
	Remote users Maximum	Search(3)/Live Unicast(10)/Live Multicast(20)
	Protocol support	TCP/IP,DHCP,PPPoE,SMTP,NTP,HTTP,DDNS,RTP,RTSP,SNMP
	Monitoring	Smart viewer,Web viewer, SSM(CMS)
Smart phone	Platform	Android , iOS
	Protocol support	RTP,RTSP,HTTP,CGI
	Remote users Maximum	Live 4, Play back 1CH
Storage	Internal HDD	Up to 4 SATA HDDs (MAX:6Tx4=24T)
	External (e-SATA Interface)	Up to 2 expansion bay (*Model: SVS-5R/5E)
	DVD Writer (Back-up)	N/A
	USB (Mouse/Back-up)	USB 2.0, 2 ports (Front 1, Back1)
	File Format (Back-up)	BU(DVR Player), EXE(Include Player), AVI
Security	Password Protection	1 Admin, 10 Group , 10 User per 1 Group
	Data Authentication	Watermark
Interface		
Monitors	VGA	1 VGA (1280x720, 1280x1024, 1920x1080)
	HDMI	1 HDMI (1280x720, 1280x1024, 1920x1080)
	Main Composite	N/A
	Spot(Composite)	Digital Spot (2CH) * Included OSD On Screen, Multi mode Support(1CH)
	Loop Outputs	N/A
Audio	Inputs/Output	8CH line in (Built in 4CH, Option : Audio Extension Cable)/ 1CH line out
	Compression	G.711
	Sampling rate	8KHz
Alarm	Inputs/Outputs	Terminal 8 Inputs (NO/NC) / Terminal 4 relay Outputs (NO/NC), Rating : 30V DC/2A, 250V AC/0.25A
	Remote notification	Notification via e-mail
Connections	Ethernet	1 RJ45 10/100/1000 Base-T
	Serial interface	RS-232/RS-485(Full Duplex) for PTZ, Samsung System Keyboard
	USB	USB 2.0, 2 ports
	e-SATA	2 External SATA ports
	Application Support	Mouse, Remote Controller
	Protocol support	Samsung-E/Samsung-T/Pelco-D/Pelco-p/Panasonic/ Phillips/ AD/ DIAMOND/ ERNA/ KALATEL/ VCL TPA/ICON/ ELMO/GE PTZ Control via Coaxial Cable (ACP, Pelco-C (Coaxitron))

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<b>General</b>		
<b>Electrical</b>	Input Voltage/Current	100 to 240 VAC ±10%; 50/60 Hz, Autoranging
	Power consumption	SMPS SPEC : MAX. 150W SET : MAX. 29W (1x1T HDD)
<b>Environmental</b>	Operating Temperature/Humidity	+0°C to +40°C (+32°F to +104°F) / 20% to 85% RH
<b>Mechanical</b>	Dimension (W x H x D)	W440 x H88 x D384.8(17.32" x 3.46" x 15.14")
	Weight (With hard disks)	6.936 kg (15.2592 lb)
	Rack mount kit	2 EA
<b>Lauguage</b>		English, French, German, Spanish, Italian, Russian, Polish, Czech, Turkish, Netherlands Portuguese, Swedish, Danish, Rumania, Serbia, Croatia, Hungary, Greek, Finnish, Norwegian, Korean, Japanese, Chinese(Traditional), Thai, Chinese (Simplified) (25 Language)

기타	HDD 확장 구조	
양방향 통신	AHD의 양방향 통신 기능을 이용 활용할 수 있는 항목 요청(카메라의 기능 제어 및 이벤트 수신등)	
양방향 통신	카메라 FW Upgarde 기능 여부	

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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       220 Vac    230 Vac    240 Vac    24 Vac    PoE  
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
Digital Video Recorder	SRD-894	-	Tianjin Samsung Techwin Opto-Electronic Co.,Ltd.	E.U.T
HDD	WD10PURX	WCC4J7EHRFEE	WD	-
Switching Power Supply	FSP150-50FGNC	-	FSP GROUP INC.	-
Mouse 2	MOEIUOA,AA-SM2PCPB	20-1E106S502	Dongguan Primax Electronic & Telecommunication Products Ltd.	-
Remote control	-	-	-	-



## 1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor 1	LS23C340	ZXPCHTMF B01032M	SAMSUNG	-
Monitor 1 Adaptor	A2514_DPN	CN07BN4400591BSK28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor 2	LS23C340	ZXPCHTMF B01032M	SAMSUNG	-
Monitor 2 Adaptor	A2514_DPN	CN07BN4400591BSK28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor 3	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-
Notebook	NT-R410Y	Z9YJ93CS300631H	SAMSUNG	-
Notebook Adaptor	AD-6019	-	LI SHIN INTERNATIONAL ENTERPRISE CORP.	-
Camera	5131/HBB89F	1503050001	-	-
Camera Adaptor	W&T-AD60120B500	-	JET	-
Mouse 1	CC-93-9F	LU139006416	Logitech	-
Mike 1	-	-	-	-
Mike 2	-	-	-	-
Speaker	-	-	MASS	-
Alarm 1	-	-	-	-
Alarm 2	-	-	-	-
External HDD	MDT-US2528	-	-	-

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## 1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Digital 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
	BNC	Monitor 3	BNC	4.0	S
	Audio In	Mike 1	Audio Out	1.2	U
	Audio In	Mike 2	Audio Out	1.2	U
	Audio Out	Speaker	Audio In	1.2	U
	USB	Mouse 1	USB	1.3	U
	RS-232	Mouse 2	RS-232	2.0	U
	BNC	Camera	BNC	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

\* Unshielded=U, Shielded=S

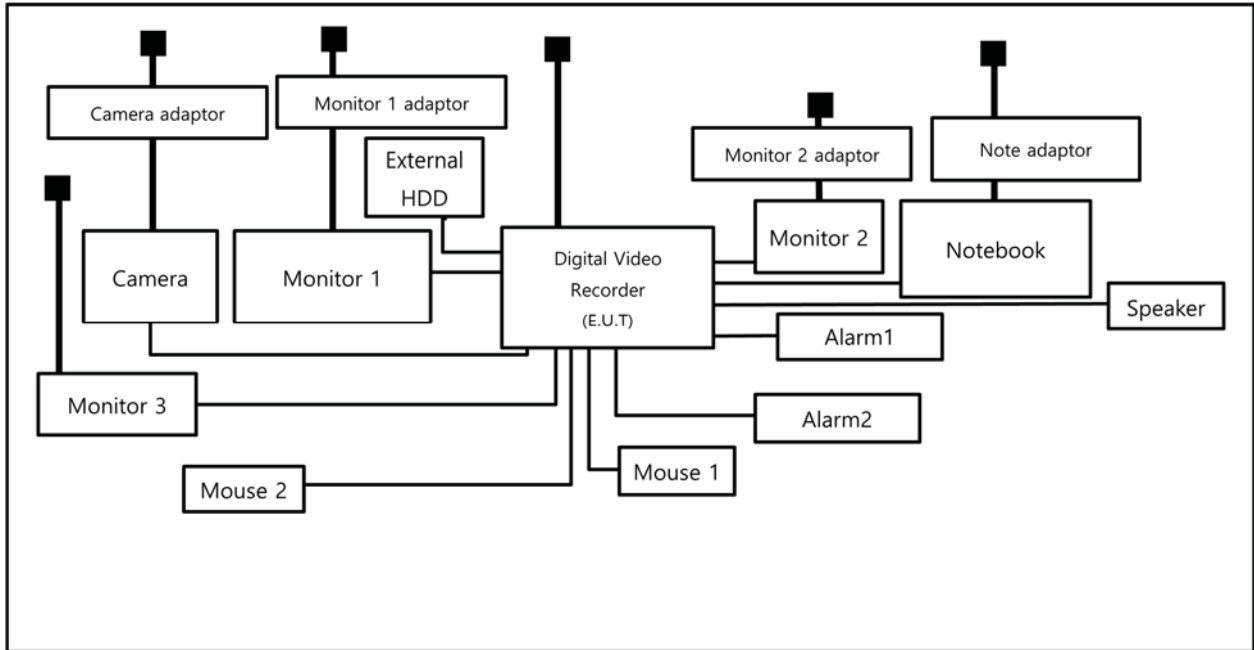
## 1.7 E.U.T Operating Mode(s)

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

Test mode	Normal operating
	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



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## 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**

Mar. 18, 2016

**Test Location**

Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R&S	101783	05, 06, 2016
<input checked="" type="checkbox"/>	LISN	ENV216	R&S	101137	02, 04, 2017
<input checked="" type="checkbox"/>	LISN	ENV216	R&S	101786	05, 06, 2016
<input checked="" type="checkbox"/>	Electro wave Shieldroom	-	SEMITEC	-	-

**Test Conditions**

Temperature: 23.1 °C

Relative Humidity: 40.9 %

**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

Mar. 18, 2016

### Test Location

Electro wave Shieldroom

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R&S	101783	05, 06, 2016
<input checked="" type="checkbox"/>	LISN	ENV216	R&S	101137	02, 04, 2017
<input checked="" type="checkbox"/>	LISN	ENV216	R&S	101786	05, 06, 2016
<input checked="" type="checkbox"/>	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 02, 2016
<input type="checkbox"/>	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 02, 2016
<input checked="" type="checkbox"/>	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
<input checked="" type="checkbox"/>	Electro wave Shieldroom	-	SEMITEC	-	-

### Test Conditions

Temperature: 23.1 °C

Relative Humidity: 40.9 %

### 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

Mar. 18, 2016

### Test Location

Open Area Test Site #1       Open Area Test Site #2

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test Receiver	ESR3	R&S	101781	05, 06, 2016
<input checked="" type="checkbox"/>	Trilog-Broadband Antenna	VULB 9163	SCHWARZBECK	9168-713	05, 15, 2017
<input checked="" type="checkbox"/>	Open Area Test Site	-	KES	-	-
<input checked="" type="checkbox"/>	Antenna Mast	-	DAEIL EMC	-	-
<input checked="" type="checkbox"/>	Turn Table	-	DAEIL EMC	-	-

### Test Conditions

Temperature: 16.3 °C  
 Relative Humidity: 36.0 %

### 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

Mar. 19, 2016

### Test Location

Semi Anchoic Chamber #2

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	EMI Test Receiver	ESU26	R&S	100552	05, 06, 2016
<input checked="" type="checkbox"/>	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 23, 2016
<input checked="" type="checkbox"/>	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
<input checked="" type="checkbox"/>	Semi Anchoic Chamber #2	-	SEMITEC	-	-
<input checked="" type="checkbox"/>	Antenna Mast	-	AUDIX	-	-
<input checked="" type="checkbox"/>	Turn Table	-	AUDIX	-	-

### Test Conditions

Temperature: 23.8 °C  
Relative Humidity: 40.5 %

### 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.

## 2.5 Harmonic Current Emissions

**Test Date**

Mar. 21, 2016

**Test Location**

Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	AC Source	ACS 500 N	EM TEST	V1024106760	08, 13, 2016
<input checked="" type="checkbox"/>	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 13, 2016

**Test Conditions**Temperature: 24.5 °C  
Relative Humidity: 39.2 %**Classification of Equipment for Harmonic Current Emissions**

- Class A
- Class B
- Class C(Below 25 W)
- Class C(Above 25 W)
- Class D

**Test Results**

The requirements are:

- PASS
- NOT PASS
- NOT APPLICABLE

**Remarks**See Appendix A for test data.



## 2.6 Voltage Fluctuations and Flicker

### Test Date

Mar. 17, 2016

### Test Location

Electro wave Shieldroom

### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	AC Source	ACS 500 N	EM test	V1024106760	08, 13, 2016
<input checked="" type="checkbox"/>	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 13, 2016

### Test Conditions

Temperature: 24.2 °C  
Relative Humidity: 39.2 %

### Test Results

The requirements are:

- PASS
- NOT PASS
- NOT APPLICABLE

### Remarks

See Appendix A for test data.

### 3.0 Criteria for compliance

Criteria for compliance was based on the following guidelines:  
EN 50130-4:2011 +A1:2014 Alarm systems-Part 4: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

The variety and the diversity of the apparatus within the scope of this document makes it difficult to define precise criteria for the evaluation of the immunity test results.

If as a result of the application of the tests defined in this standard, the apparatus becomes dangerous or unsafe then the apparatus shall be deemed to have failed the test.

A functional description and a definition of performance by the manufacture and noted in the test report, based on the following criteria:

#### Electrostatic discharge

There shall be no damage, malfunction or change of status due to the conditioning.  
Flickering of an indicator during the application of discharge is permissible, providing that is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

#### Radiated electromagnetic fields

There shall be no damage, malfunction or change of status due to the conditioning.  
Flickering of an indicator during the application of discharge is permissible, providing which could be interpreted by associated equipment as a change, and no such  
Flickering of indicators occurs at a field strength of 3 V/m.  
For components of CCTV systems, where the picture is allowed at 10 V/m, providing.  
(a) there is no permanent damage or change to EUT  
(e.g. no corruption of memory or changes to programmable setting etc.)  
(b) at 3 V/m, any deterioration of the picture is so minor that the system could still be used; and  
(c) there is no observable deterioration of the picture at 1 V/m.

---

**Fast transient burst / slow high energy voltage surge**

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

**Conducted RF immunity**

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the application of discharge is permissible, providing

That there is no residual is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change,  
and no such flickering of indicators oeuvres at  $U = 130 \text{ dB}\mu\text{V}$ .

For component of CCTV systems, where the status is monitored by observing the TV picture,  
then deterioration of the picture is allowed at  $U = 140 \text{ dB}\mu\text{V}$ , providing:

(a) there is no permanent damage or change to the EUT

(e.g. no corruption of memory or changes to programmable settings etc.)

(b) at  $U = 130 \text{ dB}\mu\text{V}$ , any deterioration of the picture is so minor that the system could still be used; and

(c) there in no observable deterioration of the picture at  $U = 120 \text{ dB}\mu\text{V}$ .

**Voltage dip/interruption / Voltage variation**

There shall be no damage, malfunction or change of status due to the conditioning.

Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment

as a change. The EUT shall meet the acceptance criteria for the functional test, after the conditioning.

### 3.1 Electrostatic Discharge

**Reference Standard**

EN 61000-4-2:2009

**Test Date**

Mar. 22, 2016

**Test Location**

EMS-ESD: Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
<input checked="" type="checkbox"/>	HCP	-	Noise Ken	-	-
<input checked="" type="checkbox"/>	VCP	-	Noise Ken	-	-

**Test Conditions**

Temperature: 24.3 °C  
Relative Humidity: 41.1 %  
Atmospheric Pressure: 100,1 kPa

**Test Specifications**

Discharge Factor: ≥ 1 s

Discharge Impedance: 330 ohm / 150 pF

Kind of Discharge: Air, Contact (direct and indirect)

Polarity: Positive and Negative

Number of Discharge: 10 at all locations for Air discharge  
10 at all locations for Contact discharge

Discharge Voltage:

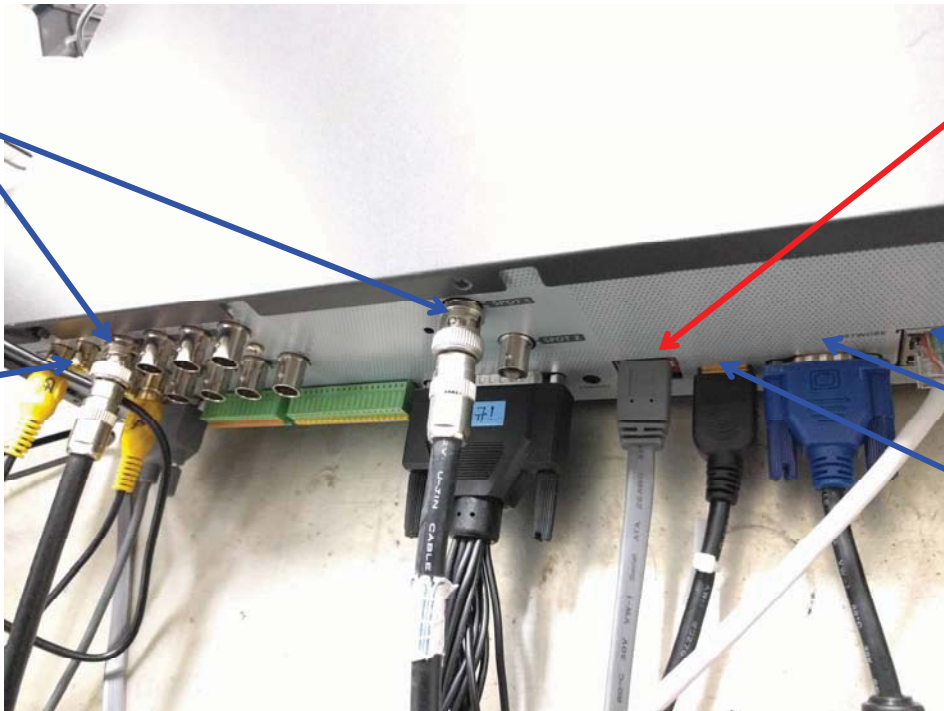
Contact	Air	HCP	VCP
<input type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 2 kV	<input type="checkbox"/> 2 kV	<input type="checkbox"/> 2 kV
<input type="checkbox"/> 4 kV	<input checked="" type="checkbox"/> 4 kV	<input type="checkbox"/> 4 kV	<input type="checkbox"/> 4 kV
<input checked="" type="checkbox"/> 6 kV	<input type="checkbox"/> 6 kV	<input checked="" type="checkbox"/> 6 kV	<input checked="" type="checkbox"/> 6 kV
<input type="checkbox"/> 8 kV	<input checked="" type="checkbox"/> 8 kV	<input type="checkbox"/> 8 kV	<input type="checkbox"/> 8 kV
<input type="checkbox"/> 15 kV	<input type="checkbox"/> 15 kV	<input type="checkbox"/> 15 kV	<input type="checkbox"/> 15 kV

Notes: HCP: Horizontal coupling plane  
VCP: Vertical coupling plane

Required Performance Criteria:  Complied

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**Location of Discharge:**



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## Test Data

### Indirect Discharge

No.	Test Point	Discharge Method	Performance	Remarks
			Observation	
1	HCP Contact	Contact Discharge	Complied	-
2	VCP Contact	Contact Discharge	Complied	-

### Direct Discharge

No.	Test Point	Discharge Method	Performance	Remarks
			Observation	
1	Enclosure	Air Discharge	Complied	-
2	USB	Air Discharge	Complied	-
3	e-SATA	Air Discharge	Complied	-
4	BNC	Contact Discharge	Complied	-
5	HDMI	Contact Discharge	Complied	-
6	D-SUB	Contact Discharge	Complied	-
7	RJ-45	Contact Discharge	Complied	-
8	Audio OUT	Contact Discharge	Complied	-
9	RS-232	Contact Discharge	Complied	-

Note: "Blank" = Not performed

Observations:

Complied – No degradation of function

### Test Results

- PASS Required Performance Criteria
- NOT PASS Required Performance Criteria

### Remarks

PASS Required Performance Criteria.





### 3.2 Radiated Electric Field Immunity

#### Reference Standard

EN 61000-4-3:2006 +A2:2010

#### Test Date

Mar. 19, 2016

#### Test Location

EMS-RS:  Semi Anchoic Chamber #1       Semi Anchoic Chamber #2

#### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	SIGNAL GENERATOR	SMB 100A	R&S	108252	08, 13, 2016
<input checked="" type="checkbox"/>	BROADBAND AMPLIFIER	BBA100	R&S	101239	08, 13, 2016
<input checked="" type="checkbox"/>	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 13, 2016
<input checked="" type="checkbox"/>	POWER METER	NRP2	R&S	103475	08, 13, 2016
<input checked="" type="checkbox"/>	AVG POWER SENSOR	NRP-Z91	R&S	102526	08, 13, 2016
<input checked="" type="checkbox"/>	AVG POWER SENSOR	NRP-Z91	R&S	102527	08, 13, 2016
<input checked="" type="checkbox"/>	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
<input checked="" type="checkbox"/>	Semi Anchoic Chamber #2		SEMITEC	-	-



**Test Conditions**

Temperature: 23,8 °C  
Relative Humidity: 40,5 %  
Atmospheric Pressure: 100,5 kPa

**Test Specifications**

Antenna Polarization: Horizontal & vertical unless indicated otherwise

Antenna Distance:  3 m

Field Strength:  1 V/m  3 V/m  
 10 V/m

Frequency Range:  80 MHz to 1 GHz  1,4 GHz to 2,7 GHz  
 80 MHz to 2,7 GHz

Modulation:  AM, 80 %, 1 kHz sine wave  
 PM, 1 Hz (0,5 s ON : 0,5 s OFF)

Frequency step:  1 % step

Dwell Time:  1 s  3 s

# of Sides Radiated:  4

Required Performance Criteria:  Complied

**Test Data**

Side Exposed	Observation	
	Horizontal	Vertical
Front	Complied	Complied
Right	Complied	Complied
Back	Complied	Complied
Left	Complied	Complied

Note: "Blank" = Not performed

Observations:  
Complied – No degradation of function

**Test Results**

PASS Required Performance Criteria  
 NOT PASS Required Performance Criteria

**Remarks**

PASS Required Performance Criteria.



### 3.3 Electrical Fast Transients/Bursts

#### Reference Standard

EN 61000-4-4:2012

#### Test Date

Mar. 21, 2016

#### Test Location

EMS-EFT: Electro wave Shieldroom

#### Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
<input checked="" type="checkbox"/>	Capacitive Coupling Clamp	HFK	EM TEST	070925	07, 14, 2016
<input checked="" type="checkbox"/>	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016

#### Test Conditions

Temperature: 24.5 °C  
Relative Humidity: 39.2 %  
Atmospheric Pressure: 100.8 kPa

#### Test Specifications

Pulse Amplitude & Polarity: (Power Lines)	<input checked="" type="checkbox"/> ± 1.0 kV <input type="checkbox"/> ± 4.0 kV	<input type="checkbox"/> ± 2.0 kV
Pulse Amplitude & Polarity: (Signal Lines)	<input type="checkbox"/> ± 0.5 kV <input type="checkbox"/> ± 2.0 kV	<input checked="" type="checkbox"/> ± 1.0 kV
Burst Period:	<input checked="" type="checkbox"/> 300 ms	<input type="checkbox"/> 2 s
Repetition Rate:	<input type="checkbox"/> 5 kHz	<input checked="" type="checkbox"/> 100 kHz
Duration of Test Voltage:	<input checked="" type="checkbox"/> ≥ 1 min	
Required Performance Criteria:	<input checked="" type="checkbox"/> Complied	

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**Test Data**

Input a.c. power ports – Coupling/Decoupling Network used

Mode of Application	OBSERVATIONS	
	(+) Burst (kV)	(-) Burst (kV)
L – N – PE	Complied	Complied

Input d.c. power ports – Coupling/Decoupling Network used

Mode of Application	OBSERVATIONS	
	(+) Burst (kV)	(-) Burst (kV)
-	-	-

Signal ports and telecommunication ports – Coupling Clamp used

Mode of Application	OBSERVATIONS	
	(+) Burst (kV)	(-) Burst (kV)
RJ-45	Complied	Complied
BNC	Complied	Complied
Alarm IN, OUT	Complied	Complied

Note: “Blank” = Not performed

Observations:

- A – No degradation of function
- B – Distortion/Error of function (self-recoverable)
- C – Loss of function

**Test Results**

- PASS Required Performance Criteria
- NOT PASS Required Performance Criteria

**Remarks**

PASS Required Performance Criteria.

### 3.4 Surge Transients

**Reference Standard**

EN 61000-4-5:2014

**Test Date**

Mar. 21, 2016

**Test Location**

EMS-Surge: Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
<input checked="" type="checkbox"/>	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
<input type="checkbox"/>	CDN	CNV 508T5	EM TEST	P1530162238	01, 25, 2017

**Test Conditions**

Temperature: 24.5 °C  
Relative Humidity: 39.2 %  
Atmospheric Pressure: 100,8 kPa

**Test Specifications**

**Power Lines**

Source Impedance: 12 ohm for common mode and 2 ohm for differential mode

Surge Amplitude :

Common Mode  
 (0,5 / 1,0 / 2,0) kV  
Differential Mode  
 (0,5 / 1,0) kV  
Differential Mode  
 (0,5 / 1,0) kV

Number of Surges:

5 surges per angle

Angle:

0°, 90°, 180°, 270° (input a.c. power port)

Polarity:

Positive & Negative

Repetition Rate:

1 surge per min     1 surge per 30 sec.

Required Performance Criteria:  Complied

**Signal Lines**

Source Impedance: 42 ohm for common mode  
 Surge Amplitude: Common Mode  
 (0,5 / 1,0) kV  
 Number of Surges:  5 Surges  
 Polarity:  Positive & Negative  
 Repetition Rate:  1 surge per min  1 surge per 30 sec.  
 Required Performance Criteria:  Complied

**Test Data**

Line to Line – Differential Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
L – N	Complied	Complied
L – PE	Complied	Complied
N - PE	Complied	Complied

Line to Earth – Common Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
-	-	-

**Signal Lines**

Line to Earth – Common Mode

Mode of Application	OBSERVATIONS	
	(+) Surge (kV)	(-) Surge (kV)
RJ - 45	Complied	Complied
BNC	Complied	Complied

Note: "Blank" = Not performed

Observations:

- A – No degradation of function
- B – Distortion/Error of function (self-recoverable)
- C – Loss of function

**Test Results**

PASS Required Performance Criteria  
 NOT PASS Required Performance Criteria

**Remarks**

PASS Required Performance Criteria.

### 3.5 Conducted Disturbance

**Reference Standard**

EN 61000-4-6:2009

**Test Date**

Mar. 21, 2016

**Test Location**

EMS-CS: Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	09, 25, 2016
<input checked="" type="checkbox"/>	6dB Attenuator	ATT6	EM TEST	1208-34	08, 13, 2016
<input checked="" type="checkbox"/>	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 13, 2016
<input type="checkbox"/>	CDN	CDN-T2-RJ11	EM TEST	0909-07	08, 13, 2016
<input type="checkbox"/>	CDN	CDN-T4	EM TEST	0909-08	08, 13, 2016
<input type="checkbox"/>	CDN	CDN-T8RJ45	EM TEST	0909-09	08, 13, 2016
<input type="checkbox"/>	CDN	CDN-AF2	EM TEST	0909-10	08, 13, 2016
<input type="checkbox"/>	CDN	CDN-AF4	EM TEST	0909-11	08, 13, 2016
<input checked="" type="checkbox"/>	EM Injection Clamp	EM 101	Liithi	35943	02, 04, 2017

**Test Conditions**

Temperature: 24.3 °C  
Relative Humidity: 41.1 %  
Atmospheric Pressure: 100.1 kPa

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**Test Specifications**

- Frequency range:  150 kHz to 100 MHz  10 kHz to 30 MHz  
 150 kHz to 230 MHz  10 kHz to 100 MHz
- Voltage Level:  1 Vrms  3 Vrms  
 10 Vrms
- Modulation:  AM, 80 %, 1 kHz sine wave  
 PM, 1 Hz (0,5 s ON : 0,5 s OFF)
- Frequency step:  1 % step
- Dwell Time:  1 s  3 s
- Required Performance Criteria:  Complied

**Test Data**

Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observation
L – N – PE	CDN ( <input type="checkbox"/> M2, <input checked="" type="checkbox"/> M3)	Complied

Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observation
-	CDN ( <input type="checkbox"/> M2, <input type="checkbox"/> M3)	-

Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observation
RJ-45	EM Injection Clamp	Complied
BNC	EM Injection Clamp	Complied
Alarm IN, OUT	EM Injection Clamp	Complied

Notes: CDN = Coupling Decoupling Network  
EMC = Electro Magnetic Clamp  
"blank" = Not performed

Observations:

- A – No degradation of function
- B – Distortion/Error of function (self-recoverable)
- C – Loss of function

**Test Results**

- PASS Required Performance Criteria  
 NOT PASS Required Performance Criteria

**Remarks**

PASS Required Performance Criteria.

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### 3.6 Voltage Dips and Short Interruptions

**Reference Standard**

EN 61000-4-6:2009

**Test Date**

Mar. 21, 2016

**Test Location**

EMS-Voltage dip: Electro wave Shieldroom

**Test Equipment**

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
<input checked="" type="checkbox"/>	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
<input checked="" type="checkbox"/>	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016

**Test Conditions**

Temperature: 24.5 °C  
Relative Humidity: 39.2 %  
Atmospheric Pressure: 100.8 kPa



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### Test Specifications & Observations/Remarks

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
<input checked="" type="checkbox"/> 20 % dip	<input checked="" type="checkbox"/> 250 /10	<u>Complied</u>
<input checked="" type="checkbox"/> 30 % dip	<input checked="" type="checkbox"/> 25 /10	<u>Complied</u>
<input checked="" type="checkbox"/> 60 % dip	<input checked="" type="checkbox"/> 10 /10	<u>Complied</u>
<input checked="" type="checkbox"/> 100 % dip	<input checked="" type="checkbox"/> 250 /10	<u>Complied</u>

- Voltage variations

<input checked="" type="checkbox"/> Unom + 10 %	<input checked="" type="checkbox"/> 253 V (ac)	<u>Complied</u>
<input checked="" type="checkbox"/> Unom - 15 %	<input checked="" type="checkbox"/> 195.5 V (ac)	<u>Complied</u>

Observations:

- A – No response observed from E.U.T
- B – Unit shuts down then automatically restarts when full voltage is restored.
- C – Unit shuts down then manually restarts when full voltage is restored or Loss of function.

**Test Results**

- PASS Required Performance Criteria
- NOT PASS Required Performance Criteria
- NOT APPLICABLE

**Remarks**

PASS Required Performance Criteria.

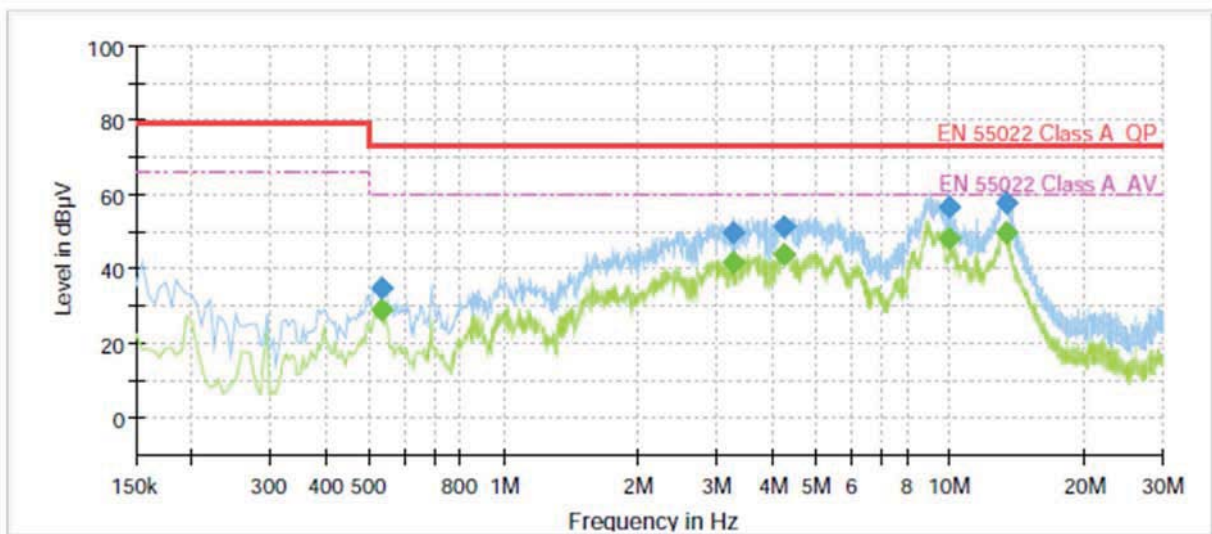
## APPENDIX A – TEST DATA

### Conducted Emissions at Mains Power Ports

[HOT]

#### Common Information

Test Description:	Conducted Emission
Model No.:	SRD-894P
Mode	
Operator Name:	KES



#### Final Result

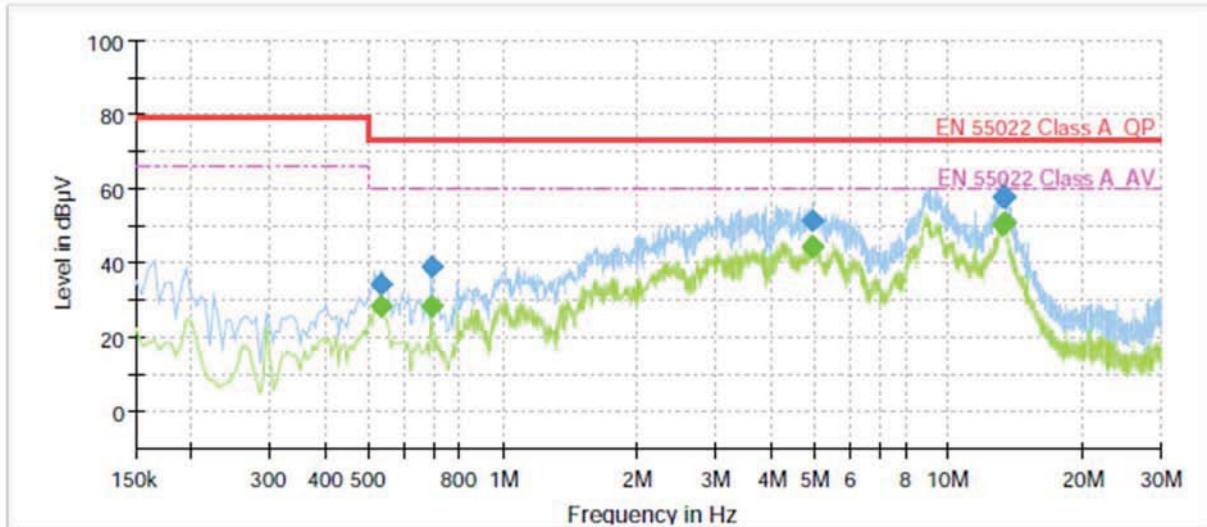
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.530000	---	29.02	60.00	30.98	1000.0	9.000	L1	9.7
0.530000	34.89	---	73.00	38.11	1000.0	9.000	L1	9.7
3.255000	---	41.92	60.00	18.08	1000.0	9.000	L1	9.8
3.255000	49.64	---	73.00	23.36	1000.0	9.000	L1	9.8
4.225000	---	44.15	60.00	15.85	1000.0	9.000	L1	9.8
4.225000	51.25	---	73.00	21.75	1000.0	9.000	L1	9.8
10.000000	---	48.34	60.00	11.66	1000.0	9.000	L1	10.0
10.000000	56.89	---	73.00	16.11	1000.0	9.000	L1	10.0
13.300000	---	49.96	60.00	10.04	1000.0	9.000	L1	10.0
13.300000	57.69	---	73.00	15.31	1000.0	9.000	L1	10.0

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[NEUTRAL]

## Common Information

Test Description:	Conducted Emission
Model No.:	SRD-894P
Mode	
Operator Name:	KES



## Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.535000	---	28.54	60.00	31.46	1000.0	9.000	N	9.7
0.535000	34.67	---	73.00	38.33	1000.0	9.000	N	9.7
0.690000	---	28.53	60.00	31.47	1000.0	9.000	N	9.7
0.690000	39.41	---	73.00	33.59	1000.0	9.000	N	9.7
4.940000	---	44.70	60.00	15.30	1000.0	9.000	N	9.8
4.940000	51.25	---	73.00	21.75	1000.0	9.000	N	9.8
13.190000	---	50.17	60.00	9.83	1000.0	9.000	N	10.1
13.190000	57.61	---	73.00	15.39	1000.0	9.000	N	10.1
13.320000	---	50.68	60.00	9.32	1000.0	9.000	N	10.1
13.320000	57.72	---	73.00	15.28	1000.0	9.000	N	10.1

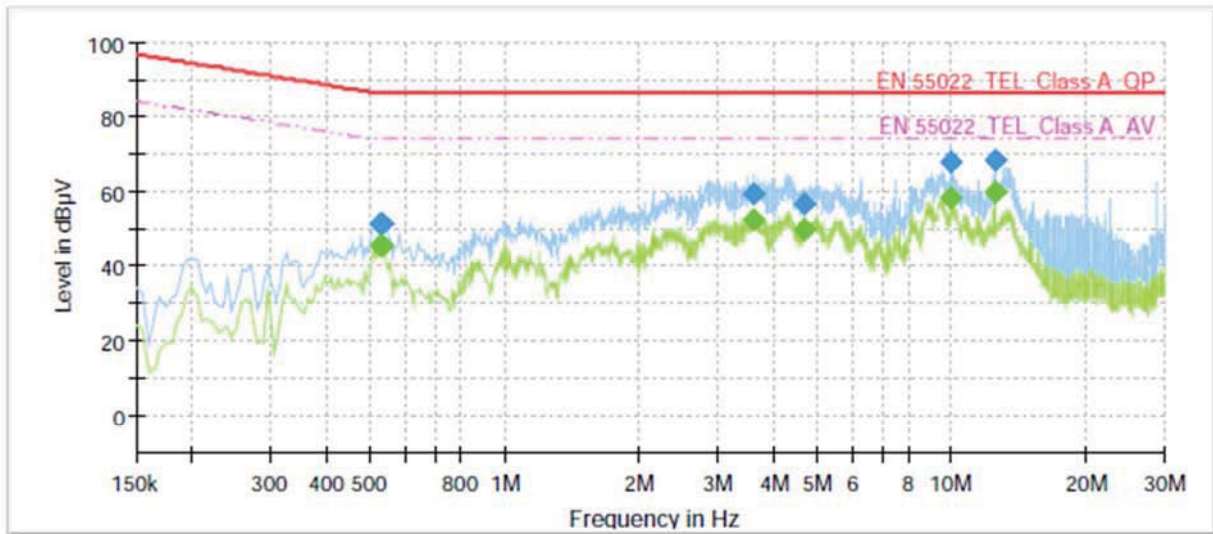
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## Conducted Emissions at Telecommunication Ports

[10 Mbps]

### Common Information

Test Description:	Telecommunication Emission
Model No.:	SRD-894P
Mode	10 Mbps
Operator Name:	KES



### Final Result

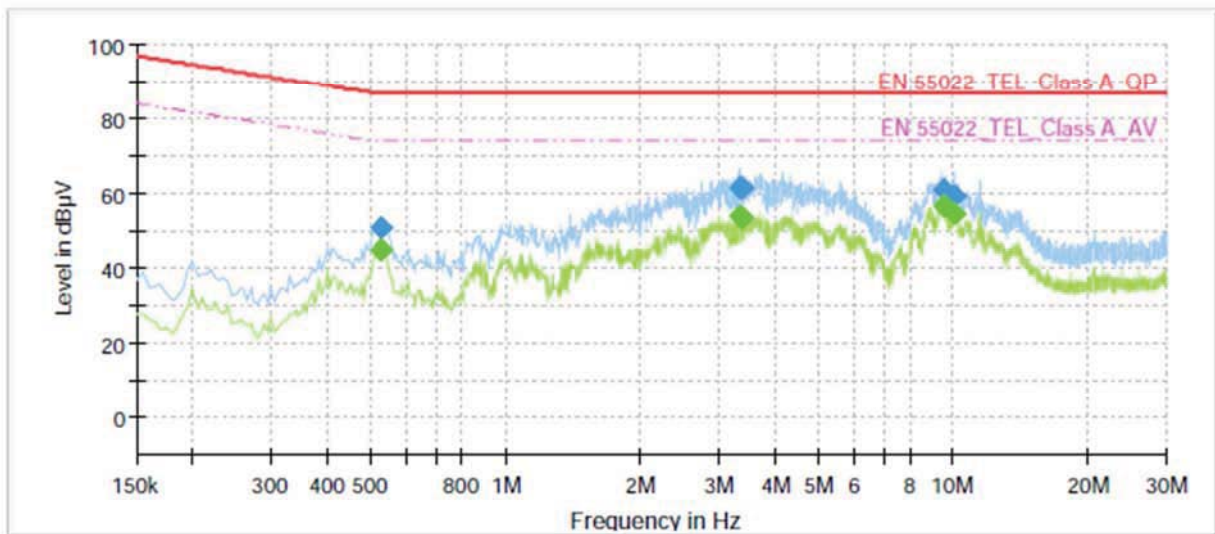
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.525000	---	45.30	74.00	28.70	1000.0	9.000	Single Line	10.1
0.525000	51.39	---	87.00	35.61	1000.0	9.000	Single Line	10.1
0.535000	---	45.42	74.00	28.58	1000.0	9.000	Single Line	10.1
0.535000	51.59	---	87.00	35.41	1000.0	9.000	Single Line	10.1
3.610000	---	52.36	74.00	21.64	1000.0	9.000	Single Line	9.9
3.610000	59.51	---	87.00	27.49	1000.0	9.000	Single Line	9.9
4.675000	---	49.64	74.00	24.36	1000.0	9.000	Single Line	9.9
4.675000	56.57	---	87.00	30.43	1000.0	9.000	Single Line	9.9
10.005000	---	58.40	74.00	15.60	1000.0	9.000	Single Line	10.0
10.005000	67.49	---	87.00	19.51	1000.0	9.000	Single Line	10.0
12.500000	---	59.60	74.00	14.40	1000.0	9.000	Single Line	10.1
12.500000	68.24	---	87.00	18.76	1000.0	9.000	Single Line	10.1

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[1 00 Mbps]

## Common Information

Test Description:	Telecommunication Emission
Model No.:	SRD-894P
Mode	1000 Mbps
Operator Name:	KES



## Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.525000	---	44.98	74.00	29.02	1000.0	9.000	Single Line	9.4
0.525000	50.94	---	87.00	36.06	1000.0	9.000	Single Line	9.4
3.320000	---	53.81	74.00	20.19	1000.0	9.000	Single Line	9.2
3.320000	61.54	---	87.00	25.46	1000.0	9.000	Single Line	9.2
3.385000	---	53.54	74.00	20.46	1000.0	9.000	Single Line	9.2
3.385000	61.25	---	87.00	25.75	1000.0	9.000	Single Line	9.2
9.520000	---	56.64	74.00	17.36	1000.0	9.000	Single Line	9.4
9.520000	61.11	---	87.00	25.89	1000.0	9.000	Single Line	9.4
10.075000	---	54.61	74.00	19.39	1000.0	9.000	Single Line	9.4
10.075000	59.24	---	87.00	27.76	1000.0	9.000	Single Line	9.4

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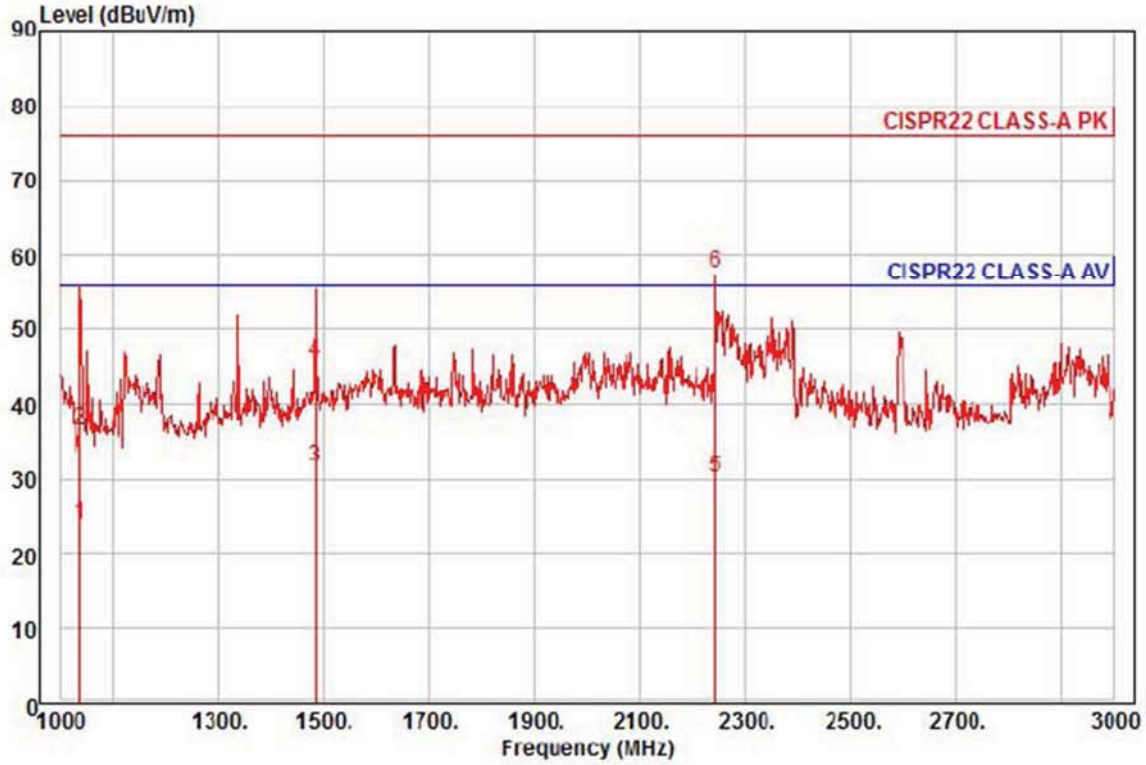
### Radiated Electric Field Emissions(Below 1 GHz)

Frequency [MHz]	Amplitude [dB $\mu$ V]	ANT Polar. (H/V)	ANT. Height [m]	Correction Factor		Corrected Amplitude [dB $\mu$ V/m]	Applicable Limit [dB $\mu$ V/m]	Margin [dB]
				ANT. [dB/m]	Cable [dB]			
149.12	21.95	V	1.00	8.17	2.77	32.89	40.00	7.11
223.21	20.78	H	4.00	11.82	3.52	36.12	40.00	3.88
250.44	19.32	V	1.00	12.42	3.80	35.54	47.00	11.46
297.30	19.86	H	4.00	13.33	4.19	37.38	47.00	9.62
371.06	23.10	H	3.82	15.03	4.82	42.95	47.00	4.05
446.09	17.47	V	1.00	16.35	5.37	39.19	47.00	7.81

\* H : Horizontal, V : Vertical

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### Radiated Electric Field Emissions(Above 1 GHz)

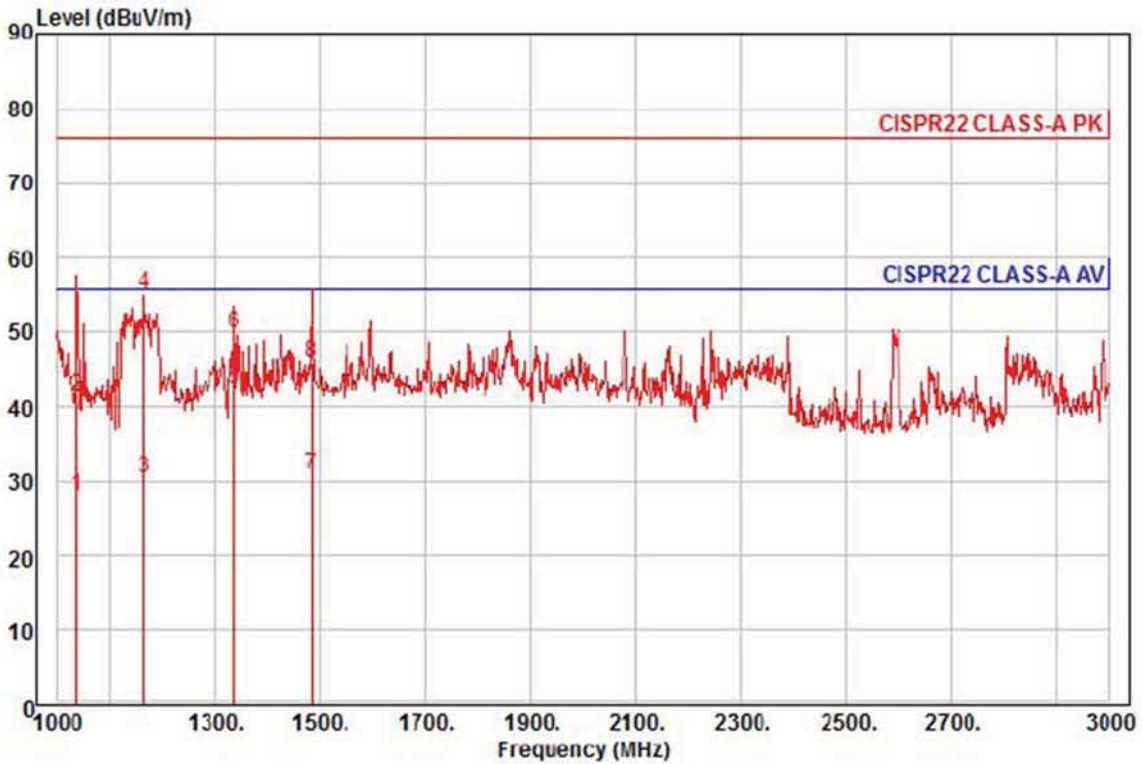


Site : chamber  
 Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
 Project :  
 Model : SRD-894P  
 Mode :  
 Memo :

	Read Freq	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	33.36	24.06	6.62	40.10	336	56.00	-32.06	horizontal	Average
2	1038.00	45.94	24.06	6.62	40.10	336	76.00	-39.48	horizontal	Peak
3 av	1484.00	37.89	25.83	7.91	39.88	353	56.00	-24.25	horizontal	Average
4	1484.00	51.65	25.83	7.91	39.88	353	76.00	-30.49	horizontal	Peak
5	2244.00	31.70	28.48	9.72	39.77	55	56.00	-25.87	horizontal	Average
6 pp	2244.00	59.30	28.48	9.72	39.77	55	76.00	-18.27	horizontal	Peak

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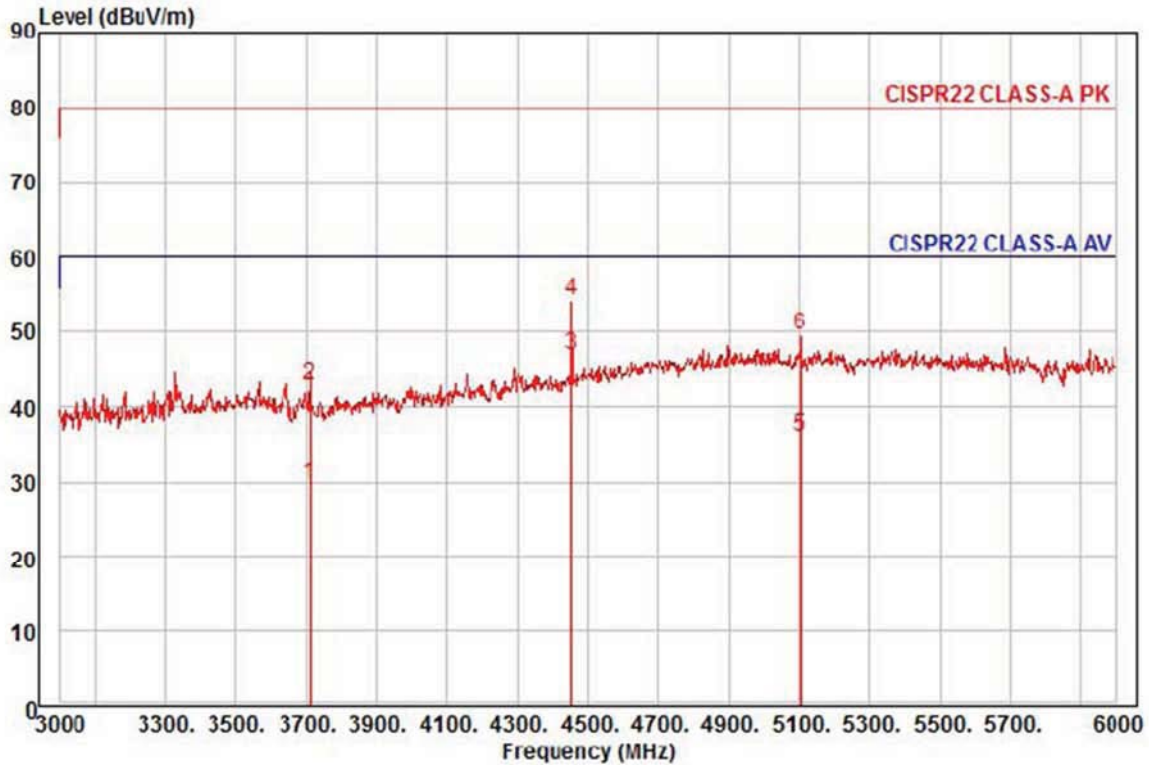




Site : chamber  
 Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
 Project :  
 Model : SRD-894P  
 Mode :  
 Memo :

	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	1038.00	37.37	24.06	6.62	40.10	202	56.00	-28.05	vertical	Average
2	1038.00	50.91	24.06	6.62	40.10	202	76.00	-34.51	vertical	Peak
3	1166.00	38.94	24.57	6.99	40.04	45	56.00	-25.54	vertical	Average
4 pk	1166.00	63.67	24.57	6.99	40.04	45	76.00	-20.81	vertical	Peak
5 pp	1336.00	49.70	25.24	7.48	39.96	347	56.00	-13.54	vertical	Average
6	1336.00	56.95	25.24	7.48	39.96	347	76.00	-26.29	vertical	Peak
7	1484.00	36.92	25.83	7.91	39.88	31	56.00	-25.22	vertical	Average
8	1484.00	51.88	25.83	7.91	39.88	31	76.00	-30.26	vertical	Peak

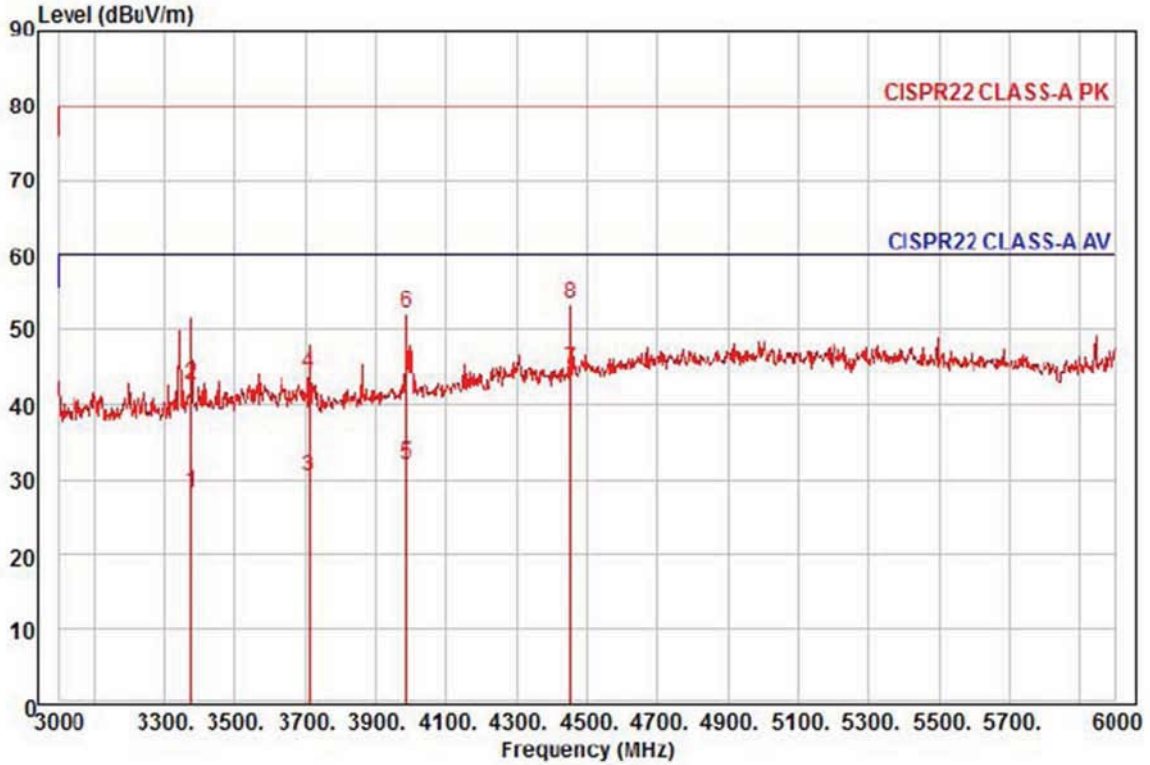
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Site : chamber  
 Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal  
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
 Project :  
 Model : SRD-894P  
 Mode :  
 Memo :

	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	3711.00	25.51	31.52	12.93	40.35	313	60.00	-30.39	horizontal	Average
2	3711.00	38.92	31.52	12.93	40.35	313	80.00	-36.98	horizontal	Peak
3 pp	4455.00	38.23	34.61	14.35	40.41	6	60.00	-13.22	horizontal	Average
4 pk	4455.00	45.60	34.61	14.35	40.41	6	80.00	-25.85	horizontal	Peak
5	5103.00	23.55	37.51	15.45	40.40	284	60.00	-23.89	horizontal	Average
6	5103.00	37.07	37.51	15.45	40.40	284	80.00	-30.37	horizontal	Peak

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Site : chamber  
 Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical  
 : RBW:1000.000kHz VBW:1000.000kHz SWT:Auto  
 Project :  
 Model : SRD-894P  
 Mode :  
 Memo :

	Read Freq	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	3375.00	25.24	30.96	12.19	40.28	112	60.00	-31.89	vertical	Average
2	3375.00	39.85	30.96	12.19	40.28	112	80.00	-37.28	vertical	Peak
3	3711.00	26.29	31.52	12.93	40.35	347	60.00	-29.61	vertical	Average
4	3711.00	40.02	31.52	12.93	40.35	347	80.00	-35.88	vertical	Peak
5	3984.00	27.01	31.98	13.48	40.41	109	60.00	-27.94	vertical	Average
6	3984.00	47.30	31.98	13.48	40.41	109	80.00	-27.65	vertical	Peak
7 pp	4455.00	36.06	34.61	14.35	40.41	210	60.00	-15.39	vertical	Average
8 pk	4455.00	44.83	34.61	14.35	40.41	210	80.00	-26.62	vertical	Peak

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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

### Average harmonic current results

Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	147.377E-3			
2	71.269E-3	7.332	972.00E-3	PASS
3	46.981E-3	2.270	2.07	PASS
4	2.560E-3			PASS
5	11.643E-3	1.135	1.03	PASS
6	13.176E-3	4.880	270.00E-3	PASS
7	8.605E-3	1.242	693.00E-3	PASS
8	2.136E-3			PASS
9	3.860E-3			PASS
10	3.745E-3			PASS
11	2.966E-3			PASS
12	1.470E-3			PASS
13	2.943E-3			PASS
14	1.641E-3			PASS
15	1.379E-3			PASS
16	1.809E-3			PASS
17	1.078E-3			PASS
18	1.092E-3			PASS
19	810.907E-6			PASS
20	1.046E-3			PASS
21	1.378E-3			PASS
22	678.118E-6			PASS
23	1.096E-3			PASS
24	1.023E-3			PASS
25	652.913E-6			PASS
26	866.578E-6			PASS
27	730.796E-6			PASS
28	785.258E-6			PASS
29	733.027E-6			PASS
30	586.666E-6			PASS
31	641.165E-6			PASS
32	640.121E-6			PASS
33	482.674E-6			PASS
34	655.880E-6			PASS
35	356.656E-6			PASS
36	681.412E-6			PASS
37	509.094E-6			PASS
38	568.167E-6			PASS
39	598.162E-6			PASS
40	452.314E-6			PASS

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Test Data - Harmonics (continued)

<b>Maximum harmonic current results</b>				
Hn	I <sub>eff</sub> [A]	% of Limit	Limit [A]	Result
1	148.032E-3			
2	73.267E-3	3.392	2.16	PASS
3	47.618E-3	1.035	4.60	PASS
4	3.468E-3			PASS
5	13.628E-3	0.598	2.28	PASS
6	15.712E-3	2.619	600.00E-3	PASS
7	9.513E-3	0.618	1.54	PASS
8	2.893E-3			PASS
9	4.387E-3			PASS
10	5.266E-3	1.431	368.00E-3	PASS
11	3.838E-3			PASS
12	2.112E-3			PASS
13	3.645E-3			PASS
14	2.333E-3			PASS
15	1.673E-3			PASS
16	2.609E-3			PASS
17	1.912E-3			PASS
18	1.685E-3			PASS
19	1.265E-3			PASS
20	1.504E-3			PASS
21	1.669E-3			PASS
22	960.687E-6			PASS
23	1.440E-3			PASS
24	1.367E-3			PASS
25	934.313E-6			PASS
26	1.131E-3			PASS
27	1.048E-3			PASS
28	1.126E-3			PASS
29	1.048E-3			PASS
30	848.505E-6			PASS
31	953.938E-6			PASS
32	839.973E-6			PASS
33	721.814E-6			PASS
34	890.339E-6			PASS
35	578.049E-6			PASS
36	962.298E-6			PASS
37	739.265E-6			PASS
38	891.051E-6			PASS
39	854.875E-6			PASS
40	688.490E-6			PASS

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**KES Co., Ltd.**

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www.kes.co.kr

Test report No.:  
KES-E1-16T0135  
Page (45) of (64)

Test Data - Voltage Fluctuations

## Maximum Flicker results

	<b>EUT values</b>	<b>Limit</b>	<b>Result</b>
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.111	4.00	PASS
Tmax [s]	0.000	0.50	PASS

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## Test Setup Photos and Configuration

### Conducted Voltage Emissions



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## Conducted Telecommunication Emissions



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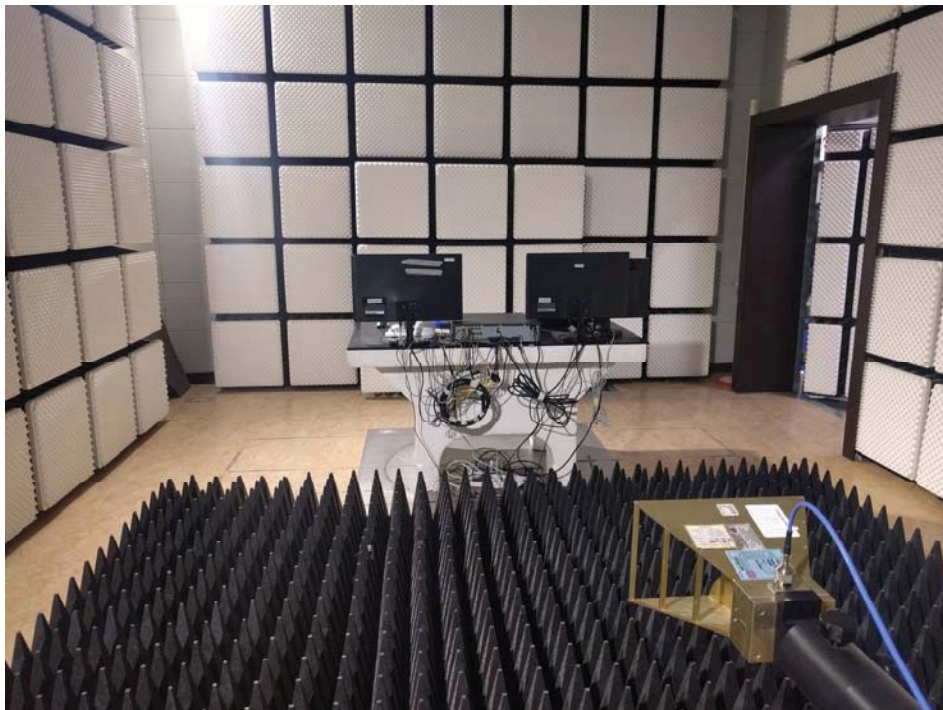


## Radiated Electric Field Emissions(Below 1 GHz)



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## Radiated Electric Field Emissions(Above 1 GHz)



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## Harmonic Current Emissions and Voltage Fluctuations and Flicker

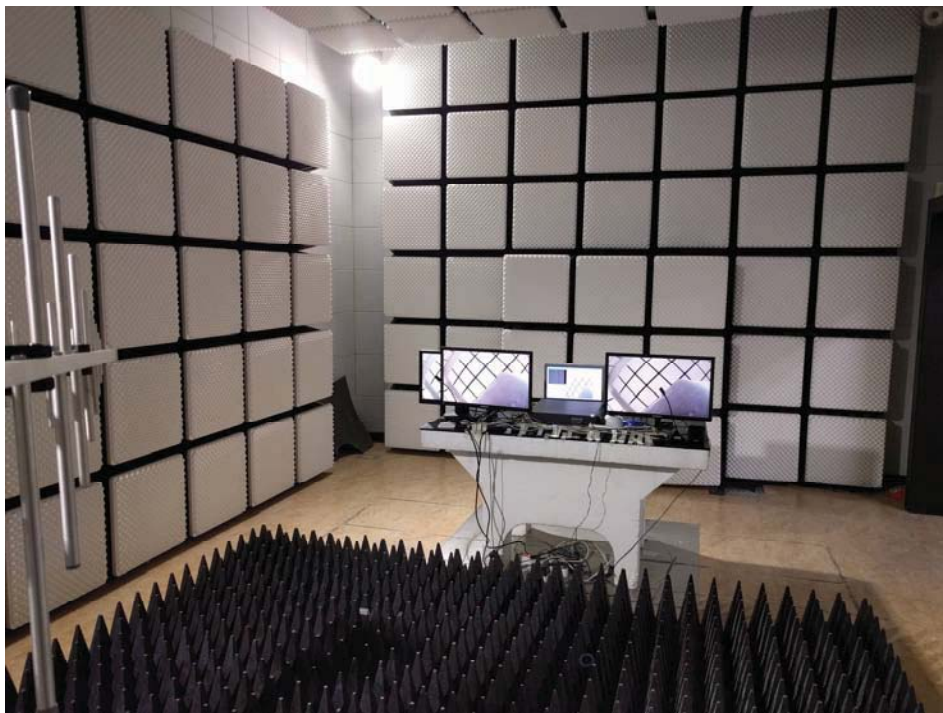


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## Electrostatic Discharge



## Radiated Electric Field Immunity



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## Electrical Fast Transients/Bursts



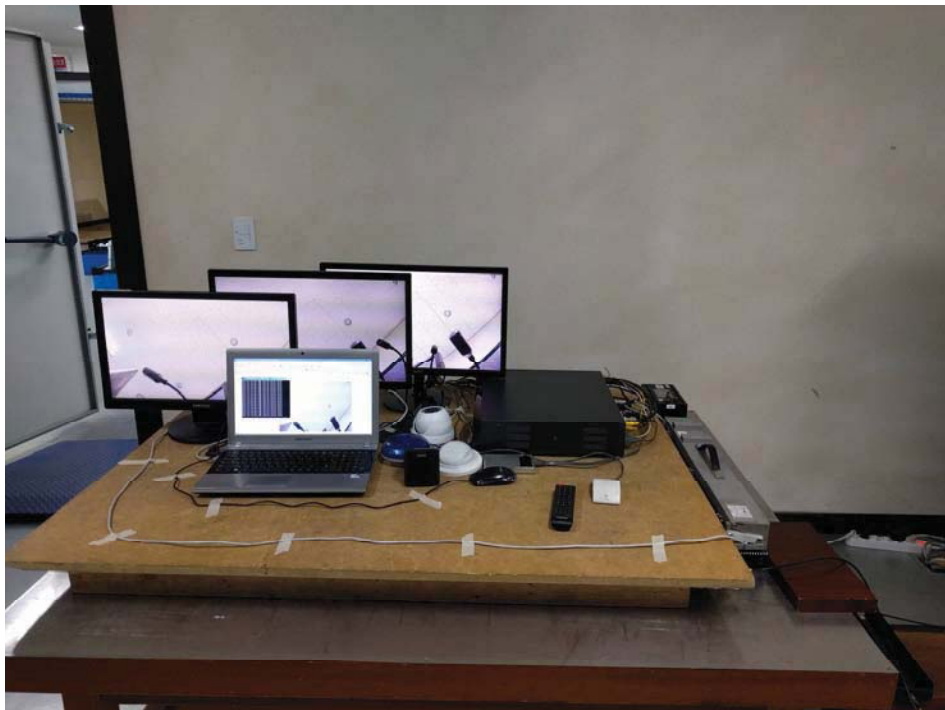
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## Surge Transients



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## Conducted Disturbance



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## Voltage Dips and Short Interruptions



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## EUT External Photographs

(Top)



(Bottom)



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## EUT Internal Photographs

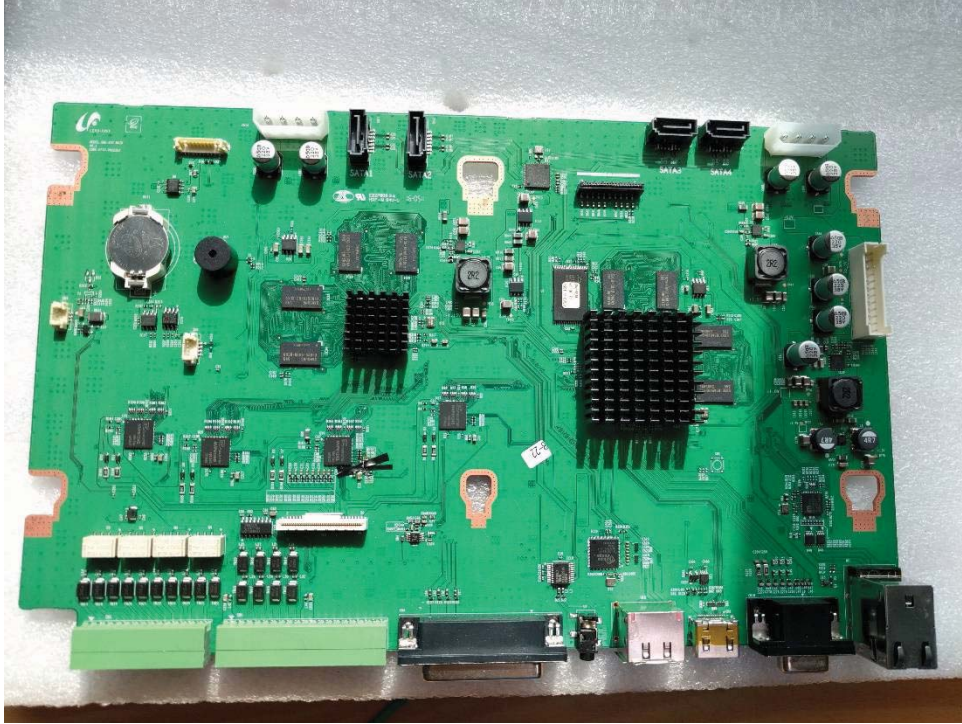
(Internal View)



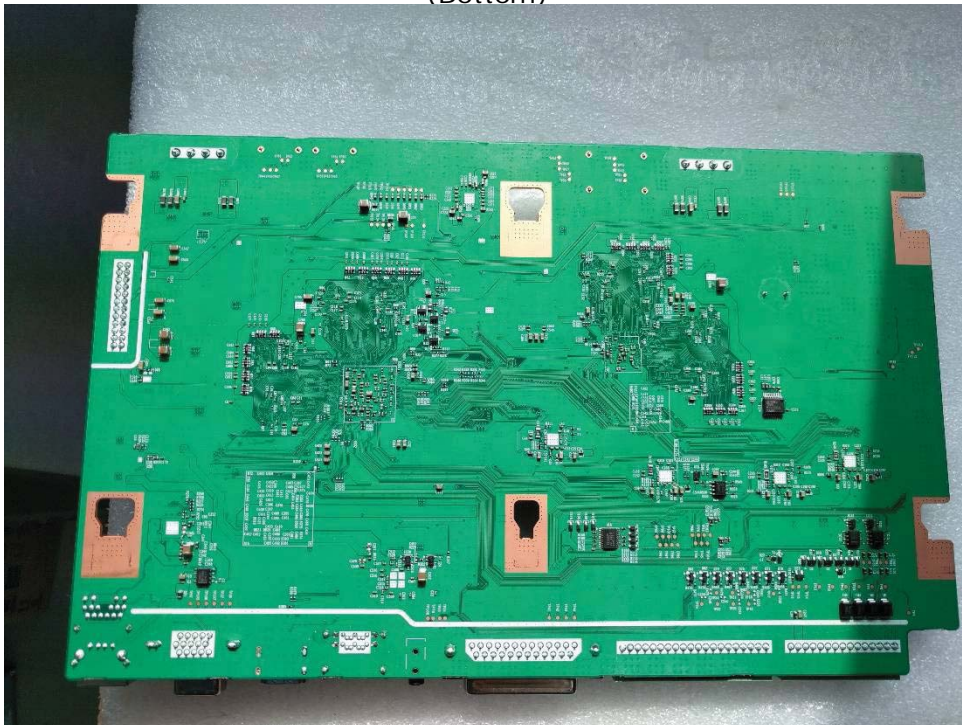
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## Main Board EUT Internal View – Board 1

(Top)



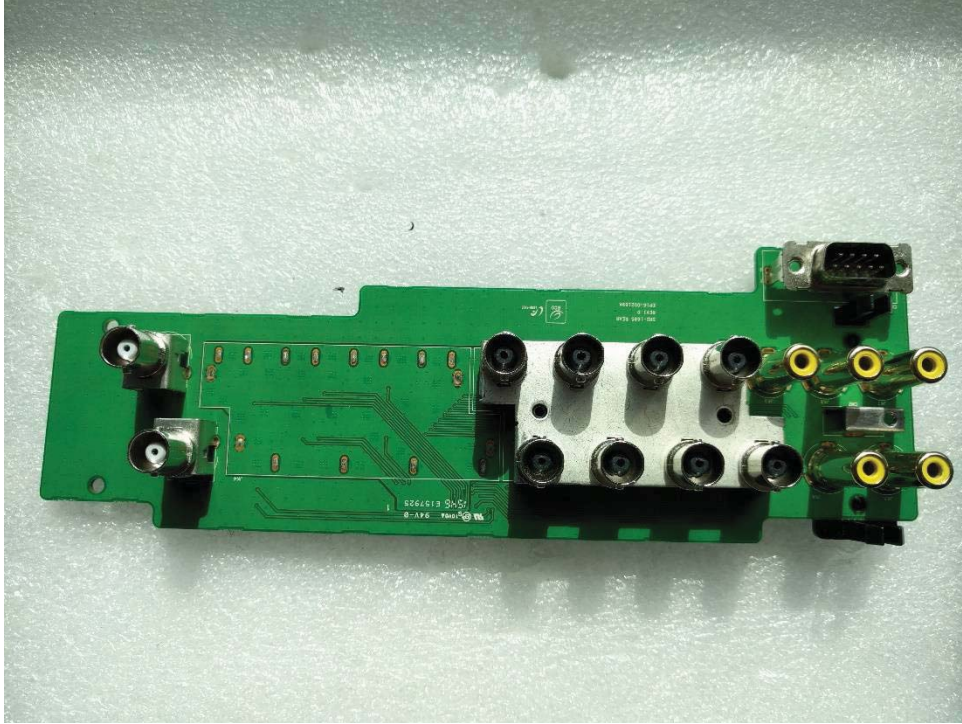
(Bottom)



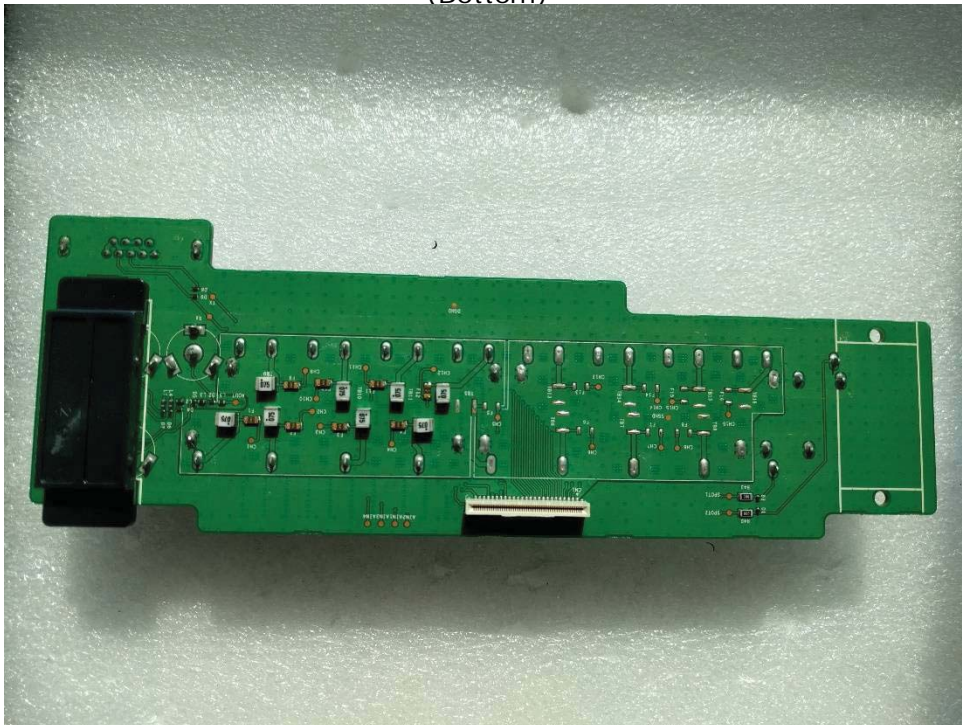
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## Main Board EUT Internal View – Board 2

(Top)



(Bottom)



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## Main Board EUT Internal View – Board 3

(Top)



(Bottom)

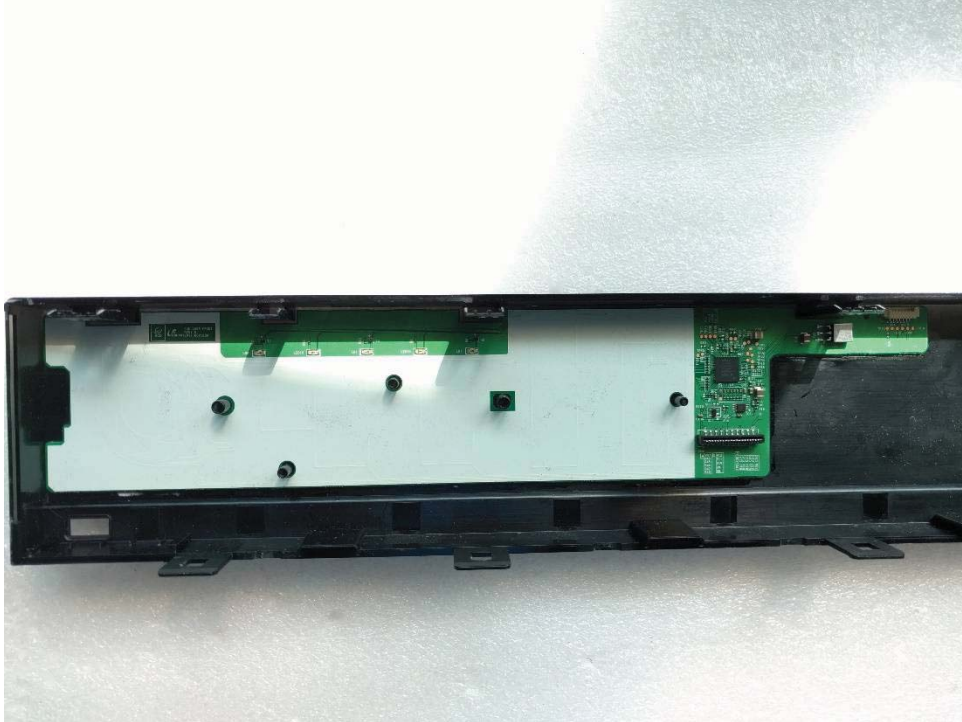


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## Main Board EUT Internal View – Board 4

(Top)



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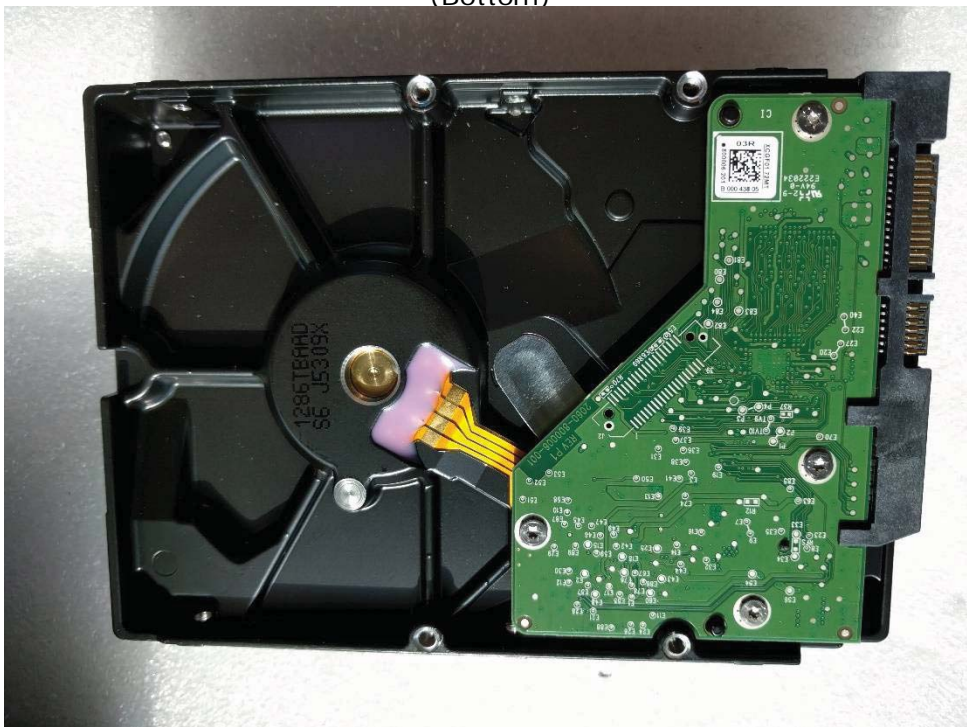
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## Main Board EUT Internal View – HDD

(Top)



(Bottom)



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## Main Board EUT Internal View – POWER

(Top)



(Bottom)



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## Label and Location



### **Digital Video Recorder**

Model No : SRD-894P

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

Made in of China