Declaration of Conformity

SAMSUNG

CE

Type of equipment:	**Digital Video Recorder**
Brand Name /Trade Mark:	**SAMSUNG**
Type designation /model:	**SRD-494P**
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 <= 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 <= 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. 28, 2016

Authorized Signatory: Name : Jei Soon, Kang

Title : Principal Research Engineer

Signatur :

EMC TEST REPORT For CE

Test Report No.	:	KES-E1-16T0121
Date of Issue	:	Mar. 28, 2016
Product name	:	Digital Video Recorder
Model/Type No.	:	SRD-494P
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. 17, 2016 – Mar. 21, 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. 28, 2016	KES-E1-16T0121	Issued

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1.0 General Product Description

Main Specifications of E.U.T are:

Video	Inputs	4channel 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	120fps , 100fps
	Resolution	1920 x 1080, 1280 x 720, 960 x 480, 704 x 480 / 960 x 576, 704 x 576
	Multi Screen display	1/4/PIP
Performance		
Operating System	Embedded	Linux
Recording	Compression	H.264
	Record Rate	Up to 120fps@1920 x 1080 / Up to 100fps@1920 x 1080
		Up to 120fps@1280 x 720 / Up to 100fps@1280 x 720
		NTSC: Up to 120fps @ 960x480 / PAL: Up to 100fps @ 960x576
		NTSC: Up to 120fps @ 704x480 / PAL: Up to 100fps @ 704x576
		NTSC: Up to 120fps @ 704x240 / PAL: Up to 100fps @ 704x288
		NTSC: Up to 120fps @ 352x240 / PAL: Up to 100fps @ 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 (120fps, 100fps), 4CIF (NTSC : 120fps, 100fps) Option 2) 4CIF / 2CIF / CIF (NTSC : 120fps, PAL : 100fps)
	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 2 SATA HDDs (MAX:6Tx2=12T)
	External (e-SATA Interface)	N/A
	DVD Writer (Back-up)	N/A
	USB (Mouse/Back-up)	USB 2.0, 2 ports (Front)
	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	4CH line in / 1CH line out
	Compression	G.711
	Sampling rate	8KHz
Alarm	Inputs/Outputs	Terminal 4 Inputs (NO/NC) / Terminal 2 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	N/A
	Application Supoort	Mouse, Remote Controller
	Protocol support	Samsung-E/Samsung-T/Pelco-D/Pelco-p/Panasonic/ Phillips/ AD/ DIAMOND/ ERNA/ KALATEL/ VCL TP/VICON/ ELMO/GE
		PTZ Control via Coaxial Cable (ACP, Pelco-C (Coaxitron))
General		
Electrical	Input Voltage/Current	DC12V Adaptor,4A,100~250VAC, 50~60Hz, 48watt
	Power consumption	SET : MAX. 13W (1x1T HDD)
Environmental	Operating Temperature/Humidity	+0°C to +40°C (+32°F to +104°F) / 20% to 85% RH
Mechanical	Dimension (W x H x D)	W 370.0x H 44.0 x D 320(14.57" x 1.73" x 12.6")
	Weight (With hard disks)	4.483Kg(9.8626lb)
	Rack mount kit	2 EA
Lauguage		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)
H/W Factory Reset		Main B'D H/W Reset Key

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-494P	-	Tianjin Samsung Techwin Opto-Electronic Co.,Ltd.	E.U.T
HDD	WD10PRUX	WCC4J7ZD0E0J	WD	
Adapter	KPL-048F-VI	-	Channel Well Technology(guanzhou) Co., Ltd.	
Mouse	MOEIUOA,AA-SM2PCPB	1423004527	-	

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor	LS23C340	ZXPCHTMF B01032M	SAMSUNG	-
Adapter	A2514_DPN	CN07BN4400591BSK28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor	LS23C340	ZXPCHTMF B01032M	SAMSUNG	-
Adapter	A2514_DPN	CN07BN4400591BSK28F6NF841	11ssan Elecom(shen yang) Co., Ltd	-
Monitor	SMT-2232	C95V67VF900025B	Weihai Daewoo Electronics Co., Ltd.	-
Notebook	NT-R410Y	Z9YJ93CS300631H	SAMSUNG	-
Adapter	AD-6019	-	LI SHIN INTERNATIONAL ENTERPRISE CORP.	-
Camera	5131/HBB89F	1503050001	-	-
Adapter	W&T-AD60120B500	-	JET	-
Mouse	CC-93-9F	LU139006416	Logitech	-
MIC	CMK-303	-	CAMAC	-
Spearker	-	-	MASS	-
Alarm	-	-	-	-

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	4.0	U
	D-SUB	Monitor	D-SUB	1.5	S
	HDMI	Monitor	HDMI	1.7	S
	BNC	Monitor	BNC	10.0	S
	Audio In	Spearker	Audio Out	1.2	U
	Audio Out	MIC	Audio In	1.2	U
	USB	Mouse	USB	1.3	U
	RS-232	Mouse	RS-232	2.0	U
	BNC	Camera	BNC	10.0	S
	2Pin	Alarm	2Pin	1.0	U

* Unshielded=U, Shielded=S

1.7 E.U.T Operating Mode(s)

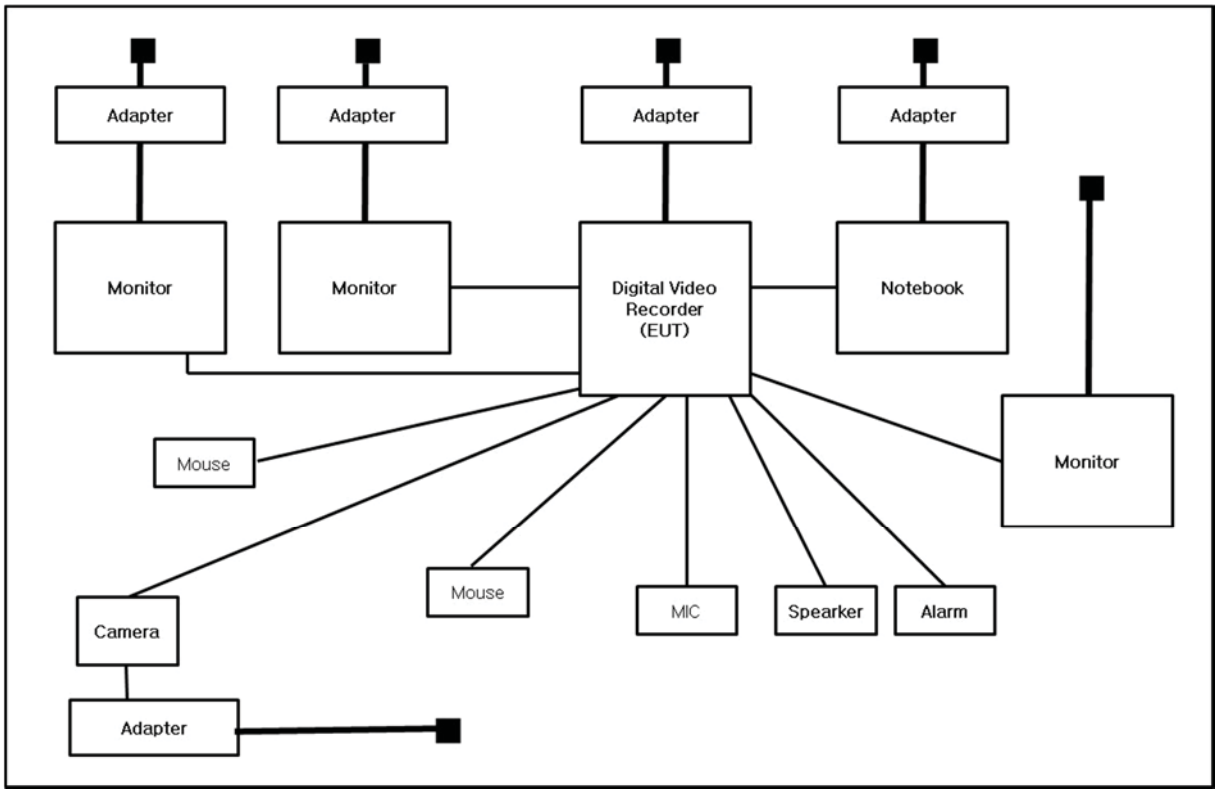
Equipment under test was operated during the measurement under the following conditions:

Test mode	Normal operating
Normal	MONITORING , PING TEST

- Input power condition during the measurements was PoE

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, Yeoju-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

☐ **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

2.1 Conducted Emissions at Mains Power Ports

Test Date
Mar. 17, 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: 24.2 ℃
Relative Humidity: 42.5 %

.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

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. 17, 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
☒	8-Wire ISN CAT3	CAT3 8158	Schwarzbeck Mess	8158-0019	04, 02, 2016
☒	8-Wire ISN CAT5	CAT5 8158	Schwarzbeck Mess	8158-0030	04, 02, 2016
☐	8-Wire ISN CAT6	NTFM 8158	Schwarzbeck Mess	8158-0029	08, 14, 2016
☒	Electro wave Shieldroom	-	SEMITEC	-	-

Test Conditions
Temperature: 24.2 ℃
Relative Humidity: 42.5 %

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

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 ㎓)

Test Date
Mar. 17, 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: 15.8 ℃
Relative Humidity: 38.0 %

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

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 ㎓)

Test Date
Mar. 17, 2016

Test Location
Semi Anachoic 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 Anachoic Chamber #2	-	SEMITEC	-	-
☒	Antenna Mast	-	AUDIX	-	-
☒	Turn Table	-	AUDIX	-	-

Test Conditions
Temperature: 24.2 ℃
Relative Humidity: 42.5 %

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Settings
IF Band Width: 1 ㎒

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. 17, 2016

Test Location
Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	AC Source	ACS 500 N	EM TEST	V1024106760	08, 13, 2016
☒	Digital Power Analyzer	DPA 500 N	EM TEST	V1024106759	08, 13, 2016

Test Conditions
Temperature: 24.2 ℃
Relative Humidity: 42.5 %

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
☒	AC Source	ACS 500 N	EM test	V1024106760	08, 13, 2016
☒	Digital Power Analyzer	DPA 500 N	EM test	V1024106759	08, 13, 2016

Test Conditions
Temperature: 24.2 ℃
Relative Humidity: 42.5 %

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 $dB\mu V$.

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 $dB\mu V$, 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 $dB\mu V$, 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 $dB\mu V$.

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. 18, 2016

Test Location
EMS-ESD: Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2017
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions
Temperature: 23.1 ℃
Relative Humidity: 40.9 %
Atmospheric Pressure: 100,7 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:

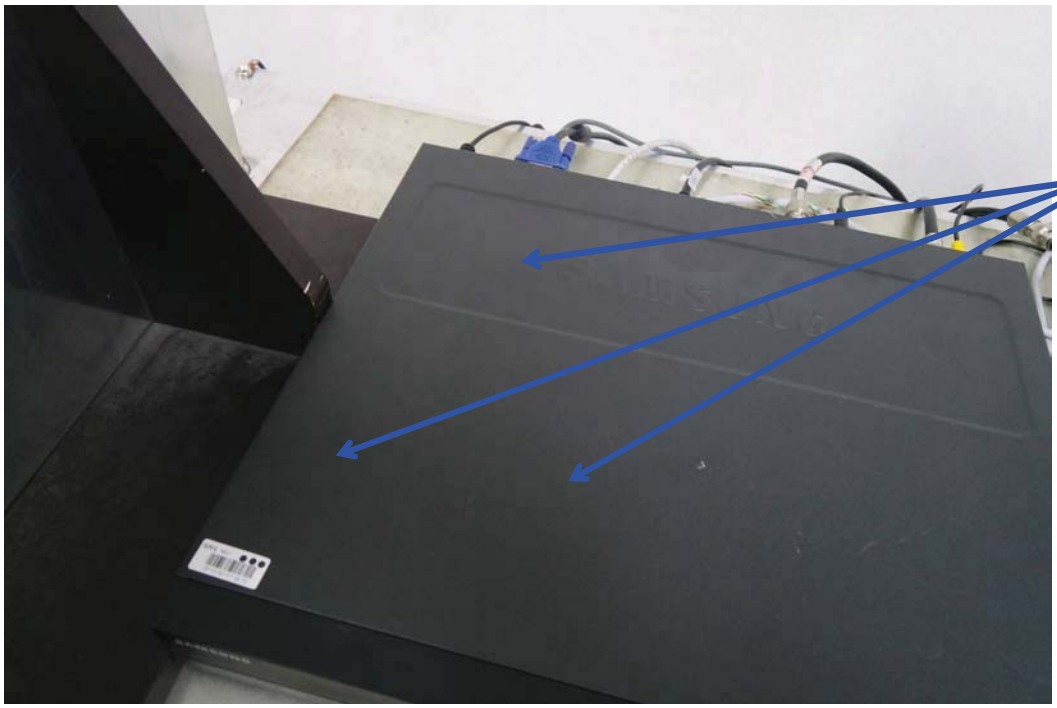
Contact	Air	HCP	VCP
☐ 2 kV	☒ 2 kV	☐ 2 kV	☐ 2 kV
☐ 4 kV	☒ 4 kV	☐ 4 kV	☐ 4 kV
☒ 6 kV	☐ 6 kV	☒ 6 kV	☒ 6 kV
☐ 8 kV	☒ 8 kV	☐ 8 kV	☐ 8 kV
☐ 15 kV	☐ 15 kV	☐ 15 kV	☐ 15 kV

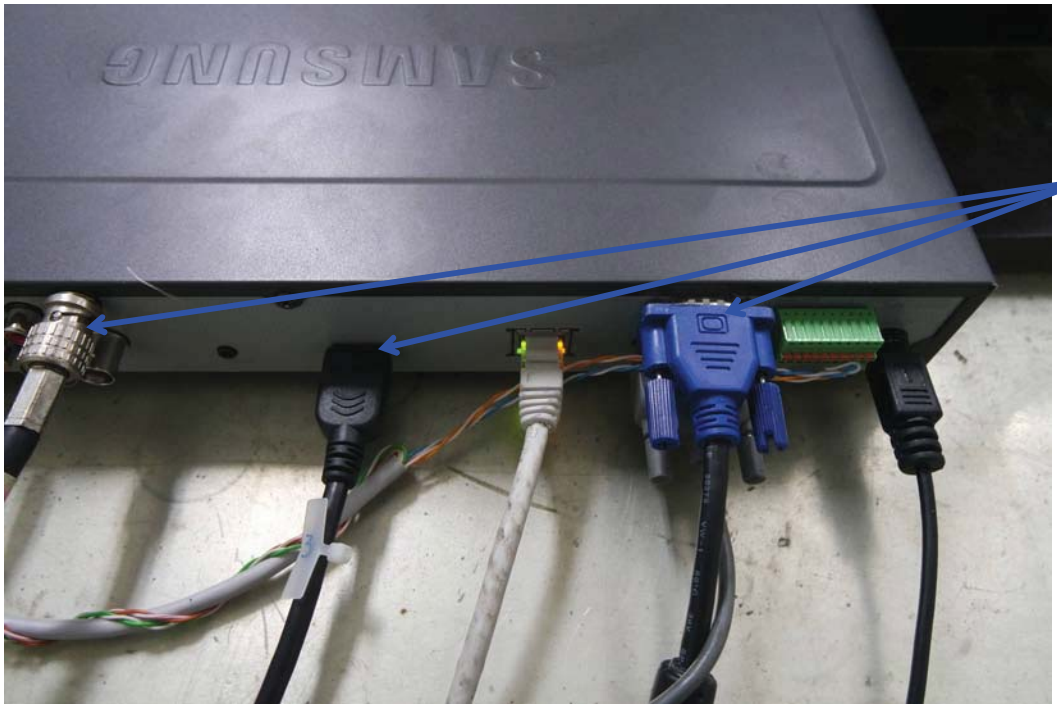
Notes: HCP: Horizontal coupling plane
VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

Air
Contact





Test Data

Indirect Discharge

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

Direct Discharge

No.	Test Point	Discharge Method	Performance Observation	Remarks
1	Enclosure	Contact Discharge	Complied	-
2	Ports	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. 18, 2016

Test Location
EMS-RS: ☐ Semi Anachoic Chamber #1 ☒ Semi Anachoic Chamber #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	SiGNAL GENERATOR	SMB 100A	R&S	108252	08, 13, 2016
☒	BROADBAND AMPLIFIER	BBA100	R&S	101239	08, 13, 2016
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 13, 2016
☒	POWER METER	NRP2	R&S	103475	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102526	08, 13, 2016
☒	AVG POWER SENSOR	NRP-Z91	R&S	102527	08, 13, 2016
☒	Stacked Log.-Per.Antenna	STLP 9128 D	Schwarzbeck	9128D038	-
☒	Semi Anachoic Chamber #2		SEMITEC	-	-

Test Conditions

Temperature: 24,9 ℃
Relative Humidity: 43,7 %
Atmospheric Pressure: 100,2 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
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	Capacitive Coupling Clamp	HFK	EM TEST	070925	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016

Test Conditions
Temperature: 24.5 ℃
Relative Humidity: 39.2 %
Atmospheric Pressure: 100.8 kPa

Test Specifications

Pulse Amplitude & Polarity: (Power Lines)	☒ ± 1.0 kV ☐ ± 4.0 kV	☐ ± 2.0 kV
Pulse Amplitude & Polarity: (Signal Lines)	☐ ± 0.5 kV ☐ ± 2.0 kV	☒ ± 1.0 kV
Burst Period:	☒ 300 ms	☐ 2 s
Repetition Rate:	☐ 5 kHz	☒ 100 kHz
Duration of Test Voltage:	☒ ≥ 1 min	
Required Performance Criteria:	☒ Complied	

Test Data

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

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

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

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

☒ Signal ports and telecommunication ports – Coupling Clamp used

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

3.4 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
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016
☐	CDN	CNV 508T5	EM TEST	P1530162238	01, 25, 2017

Test Conditions
Temperature: 24.5 ℃
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
☒	Continuous Wave Generator	CWS 500N1	EM TEST	V0936105119	09, 25, 2016
☒	6dB Attenuator	ATT6	EM TEST	1208-34	08, 13, 2016
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 13, 2016
☐	CDN	CDN-T2-RJ11	EM TEST	0909-07	08, 13, 2016
☐	CDN	CDN-T4	EM TEST	0909-08	08, 13, 2016
☐	CDN	CDN-T8RJ45	EM TEST	0909-09	08, 13, 2016
☐	CDN	CDN-AF2	EM TEST	0909-10	08, 13, 2016
☐	CDN	CDN-AF4	EM TEST	0909-11	08, 13, 2016
☒	EM Injection Clamp	EM 101	Liithi	35943	02, 04, 2017

Test Conditions
Temperature: 24.5 ℃
Relative Humidity: 39.2 %
Atmospheric Pressure: 100.8 kPa

Test Specifications

Frequency range: ☒ 150 ㎑ to 100 ㎒ ☐ 10 ㎑ to 30 ㎒
☐ 150 ㎑ to 230 ㎒ ☐ 10 ㎑ to 100 ㎒

Voltage Level: ☐ 1 Vrms ☐ 3 Vrms
☒ 10 Vrms

Modulation: ☒ AM, 80 %, 1 ㎑ sine wave
☒ PM, 1 ㎐ (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 (☐M2, ☒M3)	Complied

☐ Input d.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observation
-	CDN (☐M2, ☐M3)	-

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observation
RJ-45	EM Injection Clamp	Complied
BNC	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.

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
☒	Ultra Compact Simulator	UCS 500 N5	EM TEST	V0936105120	07, 14, 2016
☒	MotorVariac	MV2616	EM TEST	V0936105123	07, 14, 2016

Test Conditions
Temperature: 24.5 ℃
Relative Humidity: 39.2 %
Atmospheric Pressure: 100.8 kPa

Test Specifications & Observations/Remarks

Test Level	Duration [in period/ms (50 Hz)]	Results
☒ 20 % dip	☒ 250 /10	Complied
☒ 30 % dip	☒ 25 /10	Complied
☒ 60 % dip	☒ 10 /10	Complied
☒ 100 % dip	☒ 250 /10	Complied

- Voltage cariations

☒ Unom + 10 %	☒ 253 V (ac)	Complied
☒ Unom - 15 %	☒ 195.5 V (ac)	Complied

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.

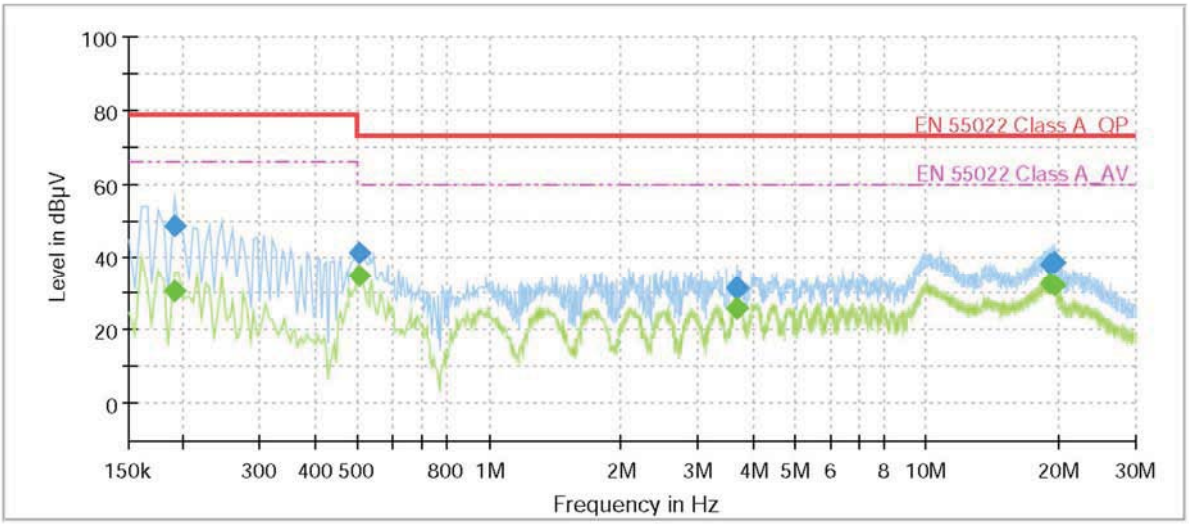
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	SRD-494P
Mode	CE
Operator Name:	KES



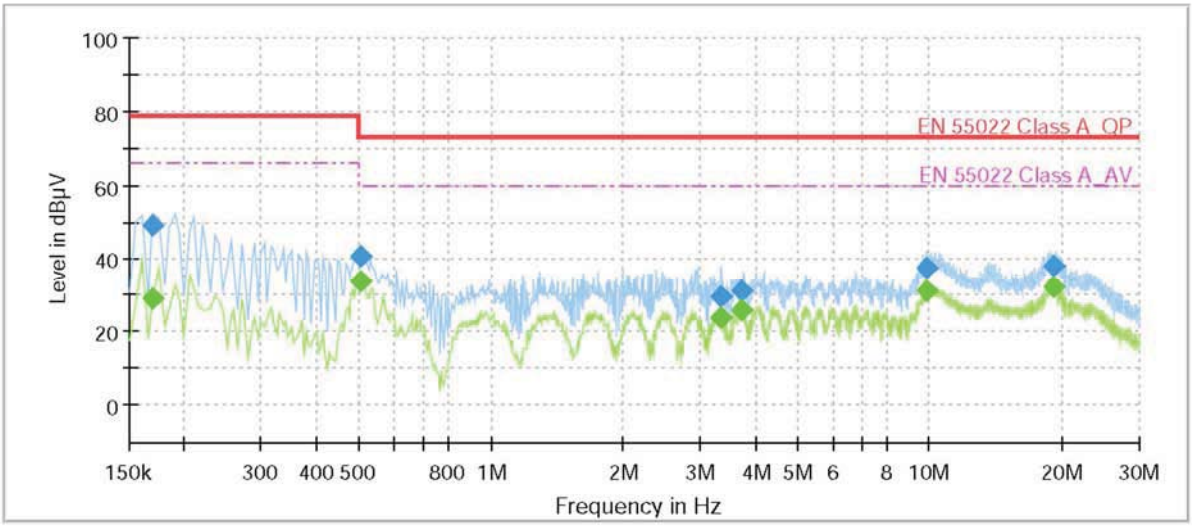
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	---	30.94	66.00	35.06	1000.0	9.000	L1	9.7
0.190000	48.59	---	79.00	30.41	1000.0	9.000	L1	9.7
0.505000	---	35.11	60.00	24.89	1000.0	9.000	L1	9.7
0.505000	41.19	---	73.00	31.81	1000.0	9.000	L1	9.7
3.670000	---	25.93	60.00	34.07	1000.0	9.000	L1	9.8
3.670000	31.37	---	73.00	41.63	1000.0	9.000	L1	9.8
3.690000	---	26.17	60.00	33.83	1000.0	9.000	L1	9.8
3.690000	31.54	---	73.00	41.46	1000.0	9.000	L1	9.8
19.070000	---	32.75	60.00	27.25	1000.0	9.000	L1	10.2
19.070000	38.37	---	73.00	34.63	1000.0	9.000	L1	10.2
19.540000	---	32.54	60.00	27.46	1000.0	9.000	L1	10.2
19.540000	38.55	---	73.00	34.45	1000.0	9.000	L1	10.2

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	SRD-494P
Mode	CE
Operator Name:	KES



Final_Result

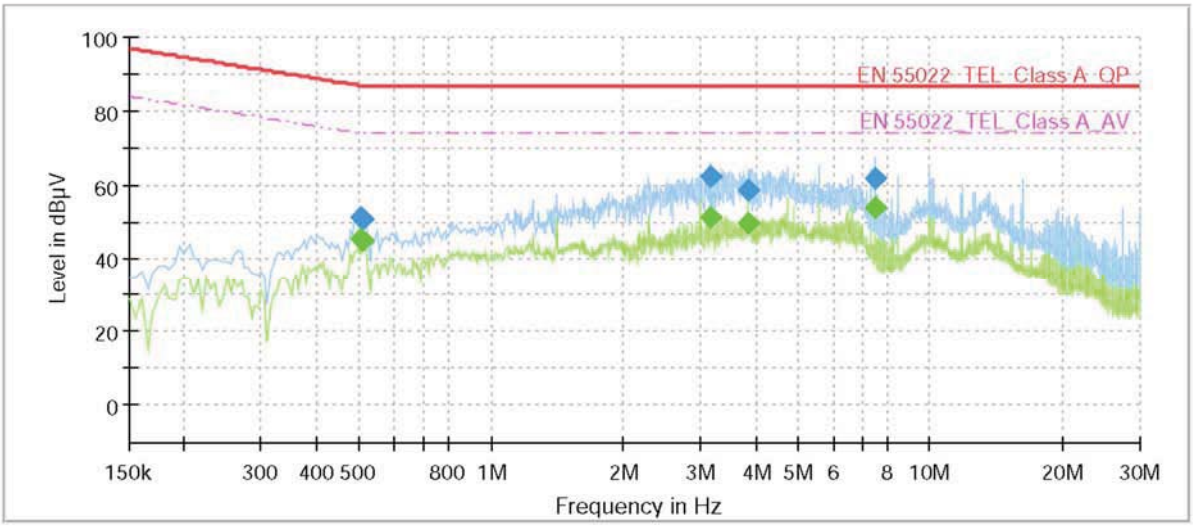
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.170000	---	29.25	66.00	36.75	1000.0	9.000	N	9.6
0.170000	49.05	---	79.00	29.95	1000.0	9.000	N	9.6
0.505000	---	33.69	60.00	26.31	1000.0	9.000	N	9.7
0.505000	40.62	---	73.00	32.38	1000.0	9.000	N	9.7
3.355000	---	24.09	60.00	35.91	1000.0	9.000	N	9.7
3.355000	29.84	---	73.00	43.16	1000.0	9.000	N	9.7
3.710000	---	25.88	60.00	34.12	1000.0	9.000	N	9.8
3.710000	31.22	---	73.00	41.78	1000.0	9.000	N	9.8
9.880000	---	31.36	60.00	28.64	1000.0	9.000	N	9.9
9.880000	37.50	---	73.00	35.50	1000.0	9.000	N	9.9
19.090000	---	32.10	60.00	27.90	1000.0	9.000	N	10.1
19.090000	38.16	---	73.00	34.84	1000.0	9.000	N	10.1

Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SRD-494P
Mode	CE-10M
Operator Name:	KES



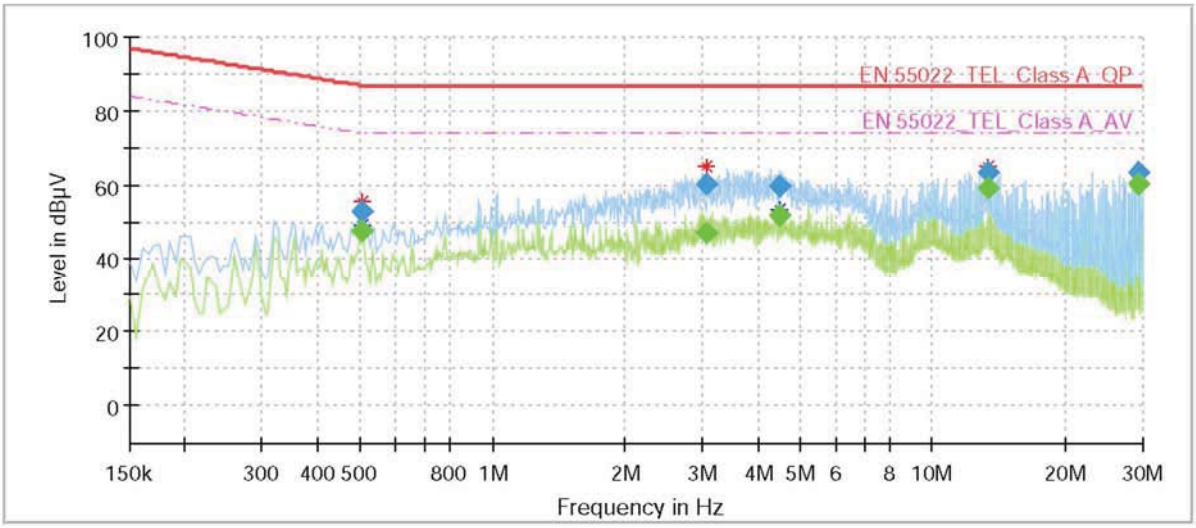
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.505000	---	45.28	74.00	28.72	1000.0	9.000	Single Line	10.1
0.505000	51.47	---	87.00	35.53	1000.0	9.000	Single Line	10.1
0.510000	---	45.00	74.00	29.00	1000.0	9.000	Single Line	10.1
0.510000	50.81	---	87.00	36.19	1000.0	9.000	Single Line	10.1
3.150000	---	51.37	74.00	22.63	1000.0	9.000	Single Line	9.9
3.150000	62.19	---	87.00	24.81	1000.0	9.000	Single Line	9.9
3.860000	---	49.65	74.00	24.35	1000.0	9.000	Single Line	9.9
3.860000	58.80	---	87.00	28.20	1000.0	9.000	Single Line	9.9
7.505000	---	54.14	74.00	19.86	1000.0	9.000	Single Line	10.0
7.505000	61.95	---	87.00	25.05	1000.0	9.000	Single Line	10.0

[1 00 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SRD-494P
Mode	CE-100M
Operator Name:	KES



Final_Result

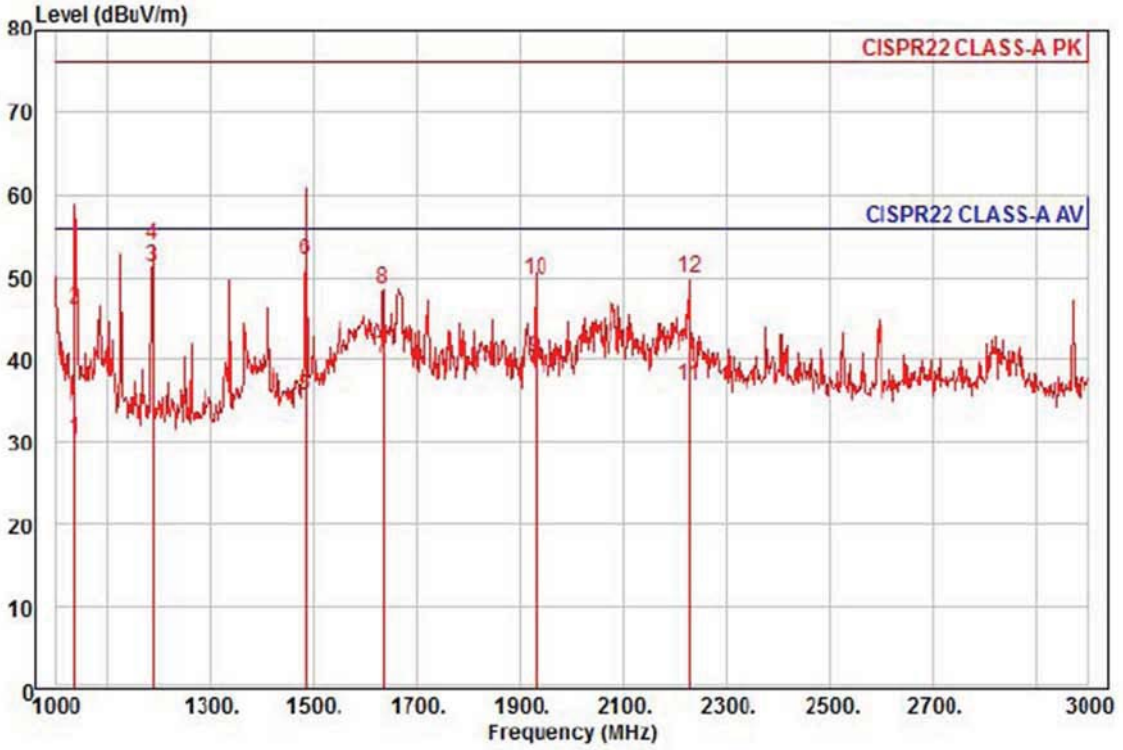
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.505000	---	47.38	74.00	26.62	1000.0	9.000	Single Line	9.6
0.505000	53.13	---	87.00	33.87	1000.0	9.000	Single Line	9.6
3.055000	---	47.26	74.00	26.74	1000.0	9.000	Single Line	9.4
3.055000	60.60	---	87.00	26.40	1000.0	9.000	Single Line	9.4
4.475000	---	51.85	74.00	22.15	1000.0	9.000	Single Line	9.4
4.475000	60.02	---	87.00	26.98	1000.0	9.000	Single Line	9.4
13.420000	---	59.17	74.00	14.83	1000.0	9.000	Single Line	9.6
13.420000	63.25	---	87.00	23.75	1000.0	9.000	Single Line	9.6
29.235000	---	60.42	74.00	13.58	1000.0	9.000	Single Line	9.7
29.235000	63.72	---	87.00	23.28	1000.0	9.000	Single Line	9.7

Radiated Electric Field Emissions(Below 1 ㎓)

Frequency	Amplitude	ANT Polar. (H/V)	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin [dB]
[㎒]	[dB㎶]		[m]	ANT. [dB/m]	Cable [dB]	[dB㎶/m]	[dB㎶/m]	
147.69	17.95	H	1.30	8.12	2.76	28.83	40.00	11.17
150.36	13.25	V	1.25	8.21	2.77	24.23	40.00	15.77
186.96	16.31	V	1.95	10.07	3.13	29.51	40.00	10.49
276.36	12.69	H	1.69	12.92	4.02	29.63	47.00	17.37
291.37	10.25	V	2.36	13.21	4.14	27.60	47.00	19.40
298.36	11.95	H	1.08	13.35	4.20	29.50	47.00	17.50
350.38	11.90	V	2.07	14.55	4.66	31.11	47.00	15.89
423.26	10.90	H	1.30	16.03	5.21	32.14	47.00	14.86

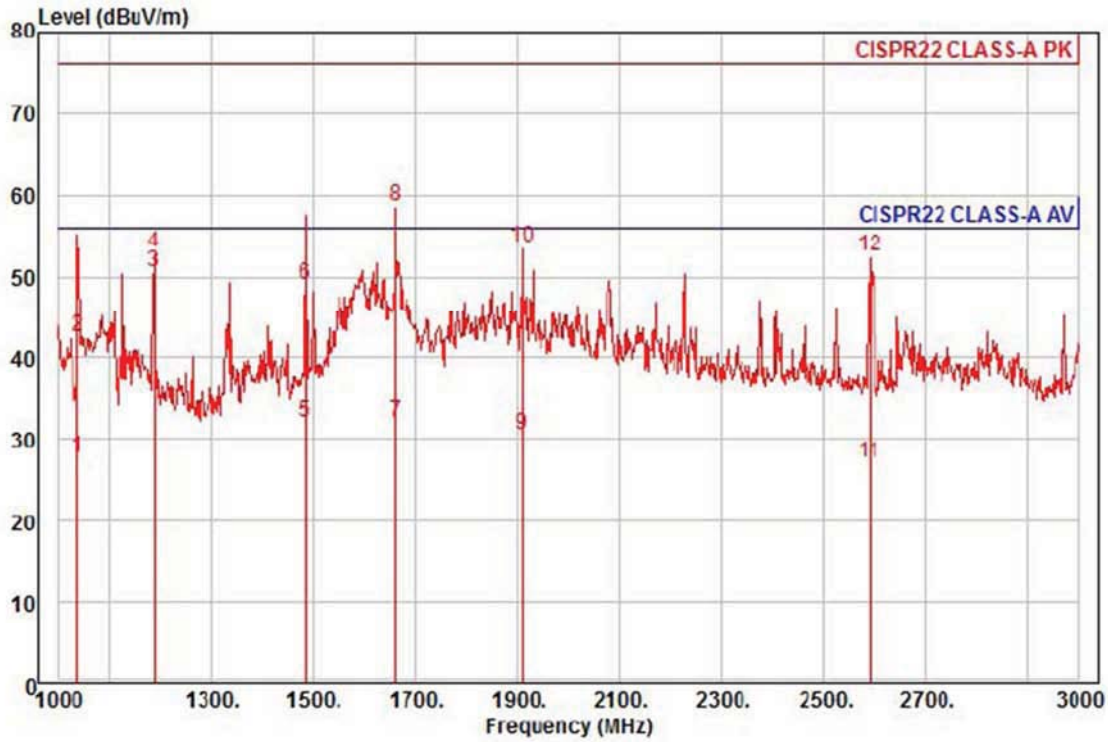
* H : Horizontal, V : Vertical

Radiated Electric Field Emissions(Above 1 ㎓)



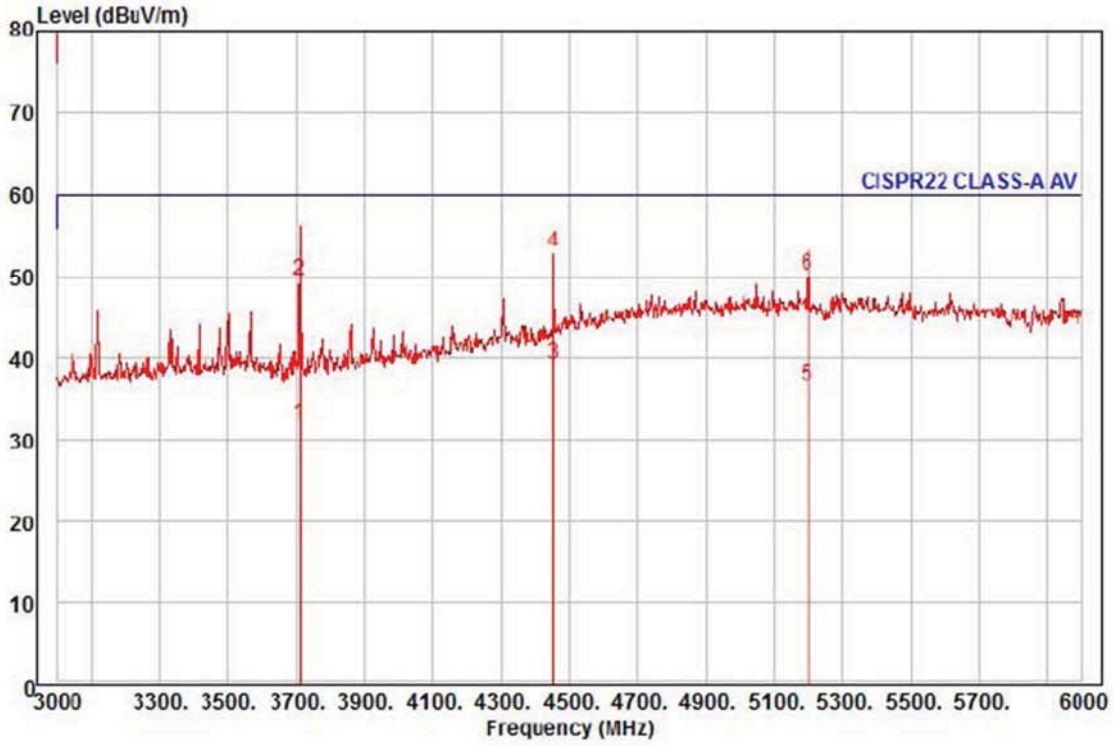
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SRD-494P
Mode : CE
Memo : 1 - 3 GHz

	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	39.62	24.06	6.62	40.10	40	56.00	-25.80	horizontal	Average
2	1038.00	55.71	24.06	6.62	40.10	40	76.00	-29.71	horizontal	Peak
3 pp	1188.00	59.48	24.66	7.06	40.03	63	56.00	-4.83	horizontal	Average
4 pk	1188.00	62.45	24.66	7.06	40.03	63	76.00	-21.86	horizontal	Peak
5	1484.00	41.64	25.83	7.91	39.88	28	56.00	-20.50	horizontal	Average
6	1484.00	58.31	25.83	7.91	39.88	28	76.00	-23.83	horizontal	Peak
7	1634.00	45.24	26.43	8.34	39.81	55	56.00	-15.80	horizontal	Average
8	1634.00	53.70	26.43	8.34	39.81	55	76.00	-27.34	horizontal	Peak
9	1930.00	43.04	27.60	9.16	39.66	57	56.00	-15.86	horizontal	Average
10	1930.00	52.56	27.60	9.16	39.66	57	76.00	-26.34	horizontal	Peak
11	2228.00	38.37	28.44	9.70	39.76	48	56.00	-19.25	horizontal	Average
12	2228.00	51.53	28.44	9.70	39.76	48	76.00	-26.09	horizontal	Peak



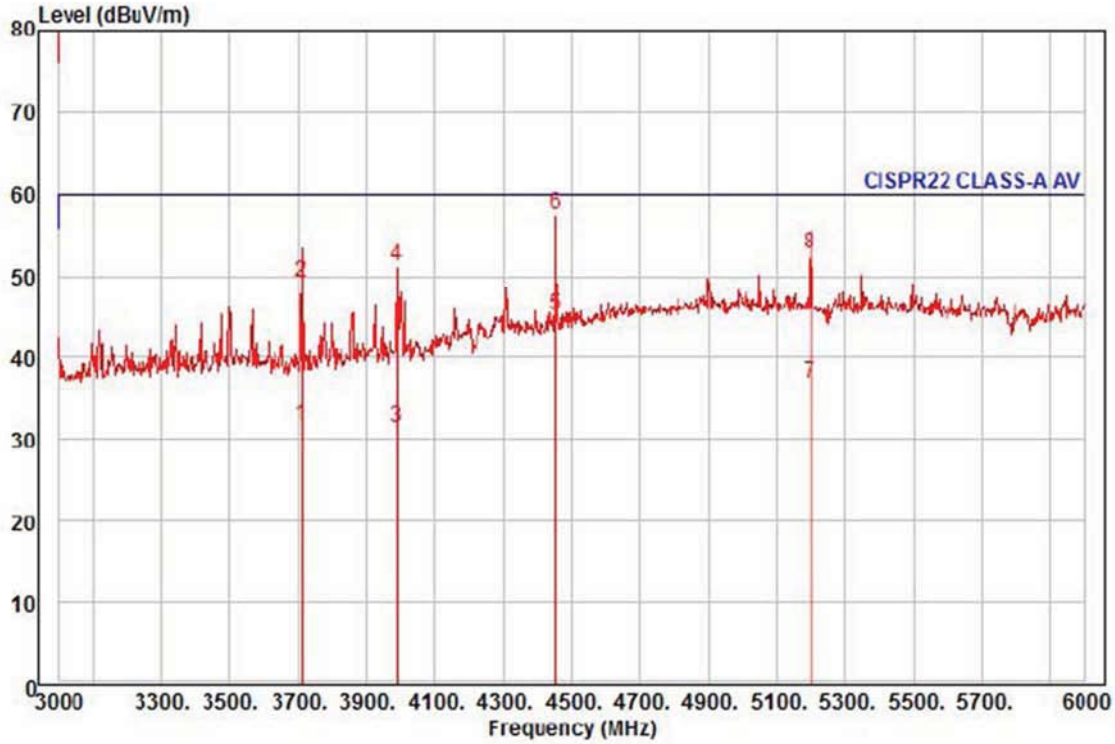
Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SRD-494P
Mode : CE
Memo : 1 - 3 GHz

	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	37.09	24.06	6.62	40.10	329	56.00	-28.33	vertical	Average
2	1038.00	52.03	24.06	6.62	40.10	329	76.00	-33.39	vertical	Peak
3 pp	1188.00	58.83	24.66	7.06	40.03	171	56.00	-5.48	vertical	Average
4	1188.00	61.24	24.66	7.06	40.03	171	76.00	-23.07	vertical	Peak
5	1484.00	38.22	25.83	7.91	39.88	354	56.00	-23.92	vertical	Average
6	1484.00	55.23	25.83	7.91	39.88	354	76.00	-26.91	vertical	Peak
7	1660.00	36.88	26.53	8.41	39.80	205	56.00	-23.98	vertical	Average
8 pk	1660.00	63.46	26.53	8.41	39.80	205	76.00	-17.40	vertical	Peak
9	1908.00	33.67	27.51	9.10	39.68	132	56.00	-25.40	vertical	Average
10	1908.00	56.59	27.51	9.10	39.68	132	76.00	-22.48	vertical	Peak
11	2590.00	27.47	29.33	10.25	39.97	159	56.00	-28.92	vertical	Average
12	2590.00	52.93	29.33	10.25	39.97	159	76.00	-23.46	vertical	Peak



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) horizontal
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SRD-494P
Mode : CE
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	3711.00	27.78	31.52	12.93	40.35	66	60.00	-28.12	horizontal	Average
2	3711.00	45.48	31.52	12.93	40.35	66	80.00	-30.42	horizontal	Peak
3 pp	4455.00	30.65	34.61	14.35	40.41	355	60.00	-20.80	horizontal	Average
4 pk	4455.00	44.50	34.61	14.35	40.41	355	80.00	-26.95	horizontal	Peak
5	5199.00	24.11	37.32	15.56	40.38	75	60.00	-23.39	horizontal	Average
6	5199.00	37.65	37.32	15.56	40.38	75	80.00	-29.85	horizontal	Peak



Site : chamber
Condition: CISPR22 CLASS-A PK 3m HORN781(2015.05.07) vertical
: RBW:1000.000kHz VBW:1000.000kHz SWT:Auto
Project :
Model : SRD-494P
Mode : CE
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	3711.00	27.45	31.52	12.93	40.35	23	60.00	-28.45	vertical	Average
2	3711.00	45.08	31.52	12.93	40.35	23	80.00	-30.82	vertical	Peak
3	3987.00	26.40	31.99	13.48	40.41	127	60.00	-28.54	vertical	Average
4	3987.00	46.12	31.99	13.48	40.41	127	80.00	-28.82	vertical	Peak
5 pp	4455.00	36.63	34.61	14.35	40.41	350	60.00	-14.82	vertical	Average
6 pk	4455.00	49.07	34.61	14.35	40.41	350	80.00	-22.38	vertical	Peak
7	5199.00	24.44	37.32	15.56	40.38	10	60.00	-23.06	vertical	Average
8	5199.00	40.15	37.32	15.56	40.38	10	80.00	-27.35	vertical	Peak

Harmonic Current Emissions and Voltage Fluctuations and Flicker

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	52.462E-3			
2	3.132E-3			PASS
3	45.564E-3	2.201	2.07	PASS
4	2.798E-3			PASS
5	44.706E-3	4.357	1.03	PASS
6	3.345E-3			PASS
7	43.805E-3	6.321	693.00E-3	PASS
8	2.869E-3			PASS
9	43.087E-3	11.969	360.00E-3	PASS
10	2.617E-3			PASS
11	41.812E-3	14.078	297.00E-3	PASS
12	2.727E-3			PASS
13	40.079E-3	21.206	189.00E-3	PASS
14	2.770E-3			PASS
15	38.074E-3	28.203	135.00E-3	PASS
16	2.602E-3			PASS
17	36.193E-3	30.385	119.11E-3	PASS
18	2.556E-3			PASS
19	34.216E-3	32.105	106.58E-3	PASS
20	2.346E-3			PASS
21	31.904E-3	33.086	96.43E-3	PASS
22	2.279E-3			PASS
23	29.793E-3	33.838	88.05E-3	PASS
24	2.153E-3			PASS
25	27.402E-3	33.830	81.00E-3	PASS
26	1.968E-3			PASS
27	24.983E-3	33.313	75.00E-3	PASS
28	1.881E-3			PASS
29	22.672E-3	32.467	69.83E-3	PASS
30	1.619E-3			PASS
31	20.180E-3	30.893	65.32E-3	PASS
32	1.458E-3			PASS
33	17.886E-3	29.148	61.36E-3	PASS
34	1.358E-3			PASS
35	15.636E-3	27.024	57.86E-3	PASS
36	1.104E-3			PASS
37	13.294E-3	24.291	54.73E-3	PASS
38	1.013E-3			PASS
39	11.324E-3	21.810	51.92E-3	PASS
40	827.223E-6			PASS

Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	53.946E-3			
2	3.319E-3			PASS
3	46.705E-3	1.015	4.60	PASS
4	3.043E-3			PASS
5	46.096E-3	2.022	2.28	PASS
6	3.883E-3			PASS
7	45.202E-3	2.935	1.54	PASS
8	2.956E-3			PASS
9	44.017E-3	5.502	800.00E-3	PASS
10	3.163E-3			PASS
11	42.667E-3	6.465	660.00E-3	PASS
12	2.853E-3			PASS
13	41.013E-3	9.765	420.00E-3	PASS
14	2.903E-3			PASS
15	39.129E-3	13.043	300.00E-3	PASS
16	2.760E-3			PASS
17	37.269E-3	14.080	264.70E-3	PASS
18	2.691E-3			PASS
19	35.099E-3	14.820	236.84E-3	PASS
20	2.471E-3			PASS
21	32.575E-3	15.202	214.28E-3	PASS
22	2.362E-3			PASS
23	30.479E-3	15.578	195.66E-3	PASS
24	2.225E-3			PASS
25	27.942E-3	15.523	180.00E-3	PASS
26	2.037E-3			PASS
27	25.404E-3	15.243	166.66E-3	PASS
28	2.004E-3			PASS
29	22.982E-3	14.810	155.18E-3	PASS
30	1.716E-3			PASS
31	20.412E-3	14.062	145.16E-3	PASS
32	1.529E-3			PASS
33	18.109E-3	13.280	136.36E-3	PASS
34	1.428E-3			PASS
35	15.697E-3	12.208	128.58E-3	PASS
36	1.248E-3			PASS
37	13.374E-3	10.997	121.62E-3	PASS
38	1.118E-3			PASS
39	11.366E-3	9.851	115.38E-3	PASS
40	982.659E-6			PASS

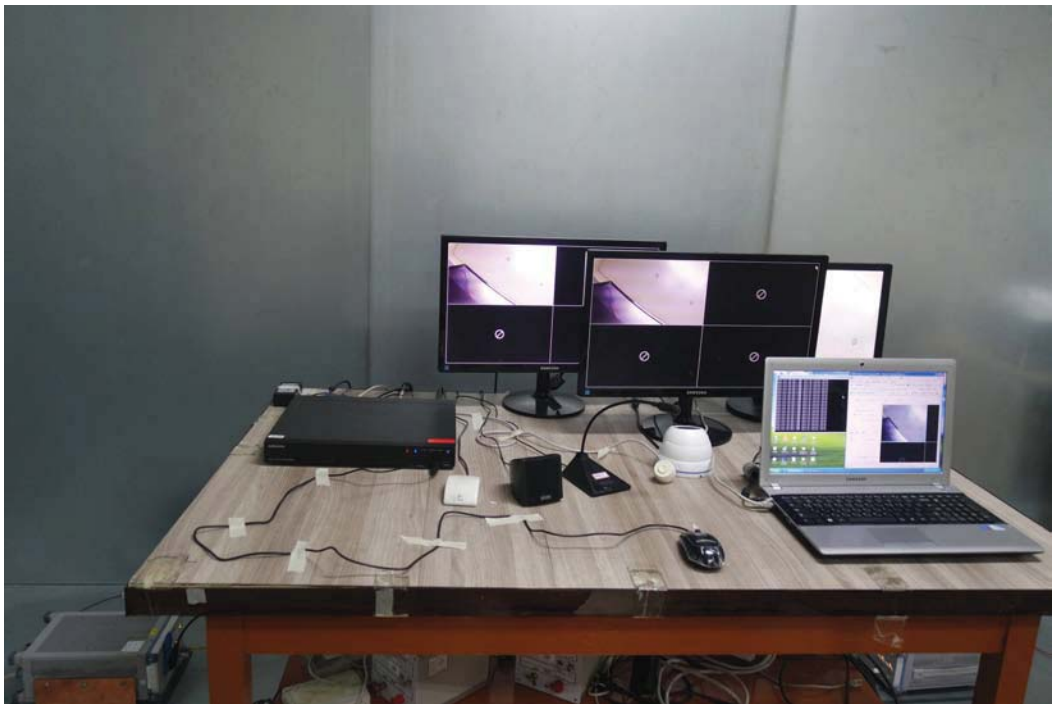
Test Data - Voltage Fluctuations

Maximum Flicker results

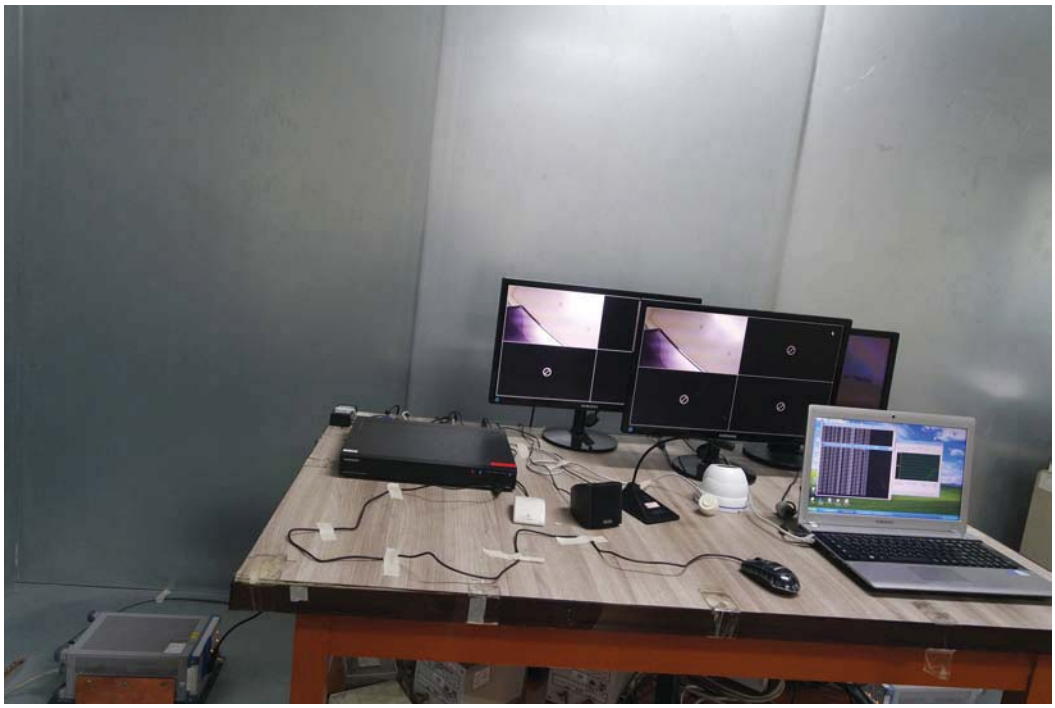
	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.165	4.00	PASS
Tmax [s]	0.000	0.50	PASS

Test Setup Photos and Configuration

Conducted Voltage Emissions

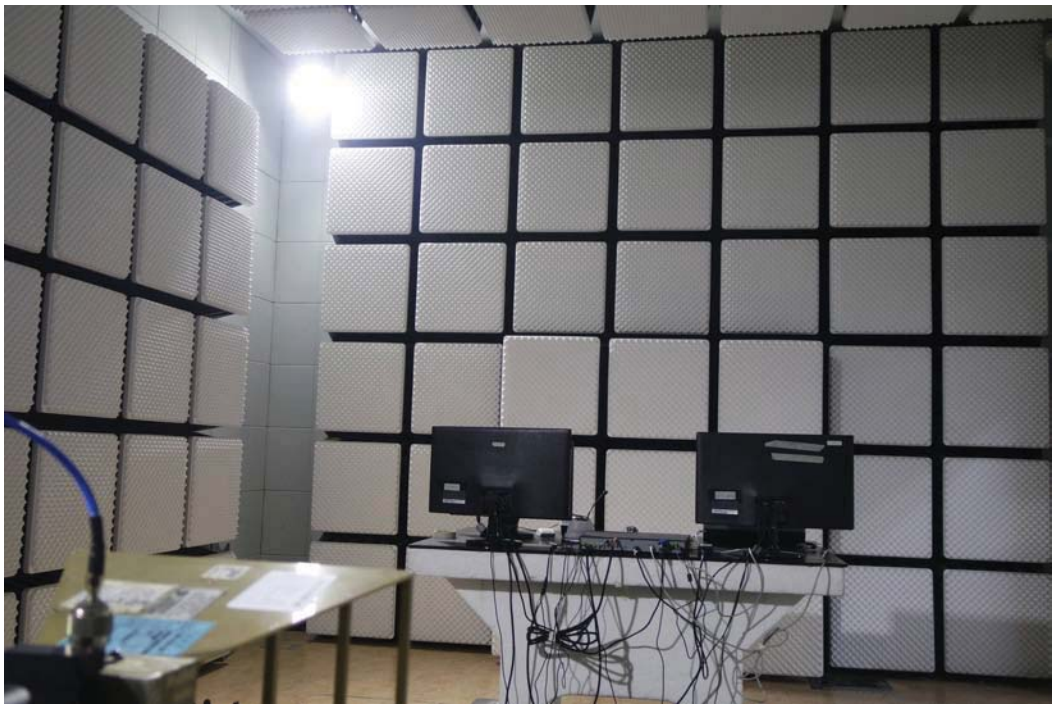


Conducted Emissions at Telecommunication Ports



Radiated Electric Field Emissions(Below 1 ㎓)

Radiated Electric Field Emissions(Above 1 ㎓)



Harmonic Current Emissions and Voltage Fluctuations and Flicker

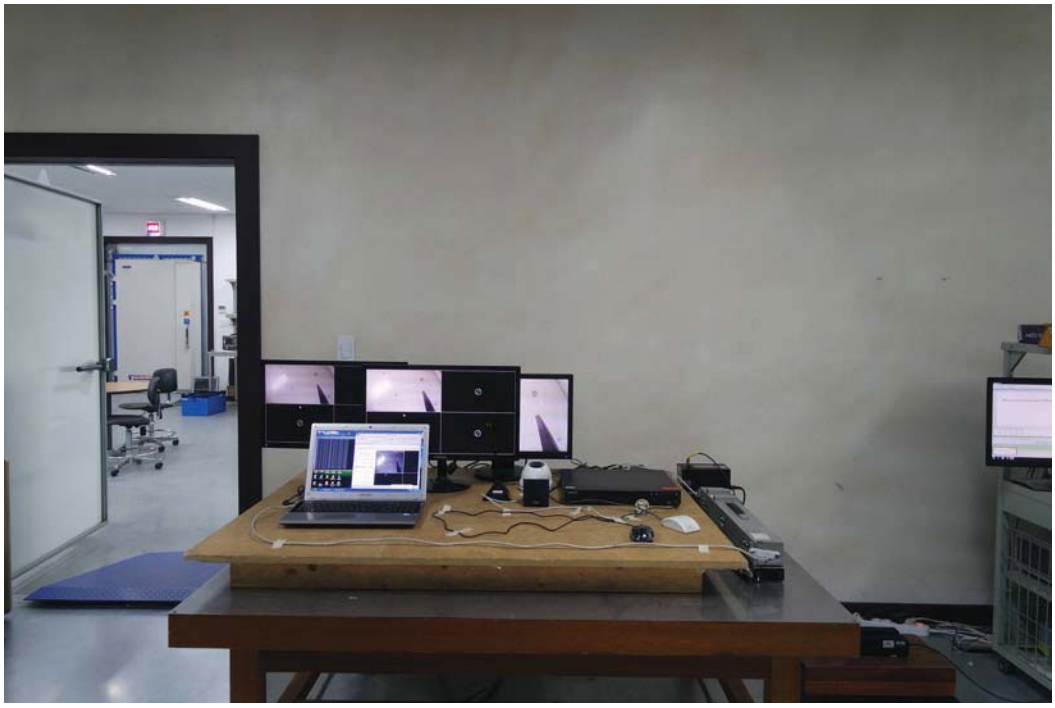
Electrostatic Discharge

Radiated Electric Field Immunity

Electrical Fast Transients / Bursts

Surge Transients

Conducted Disturbance



Voltage Dips and Short Interruptions

E.U.T External Photographs

(Top)

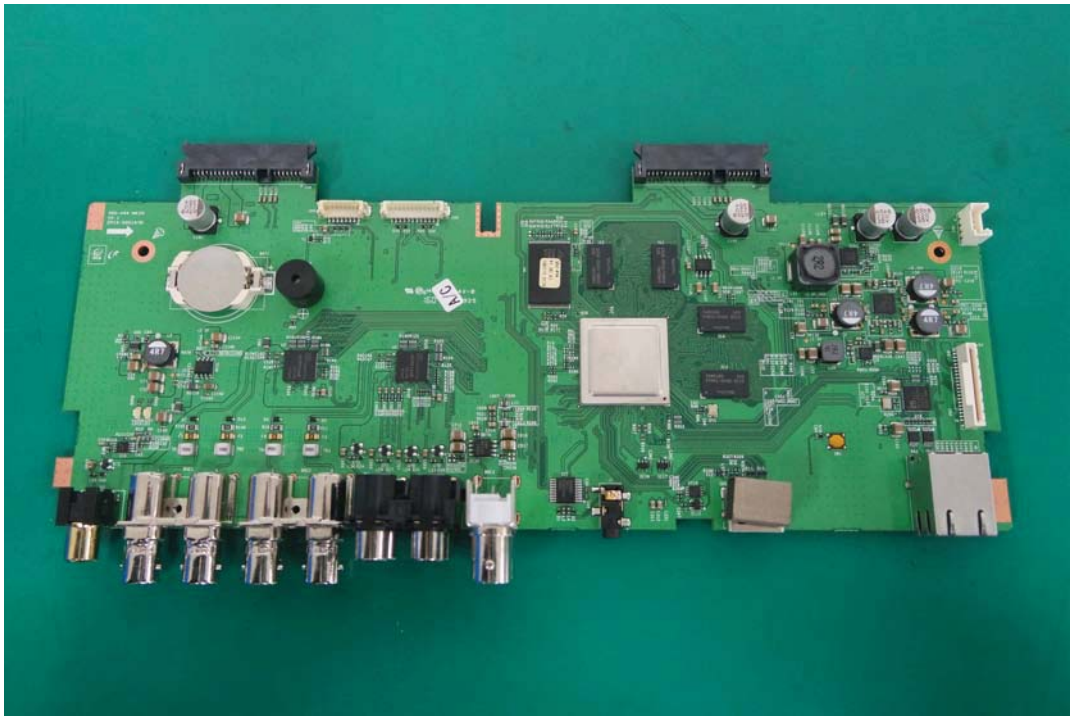
(Bottom)

E.U.T Internal Photographs

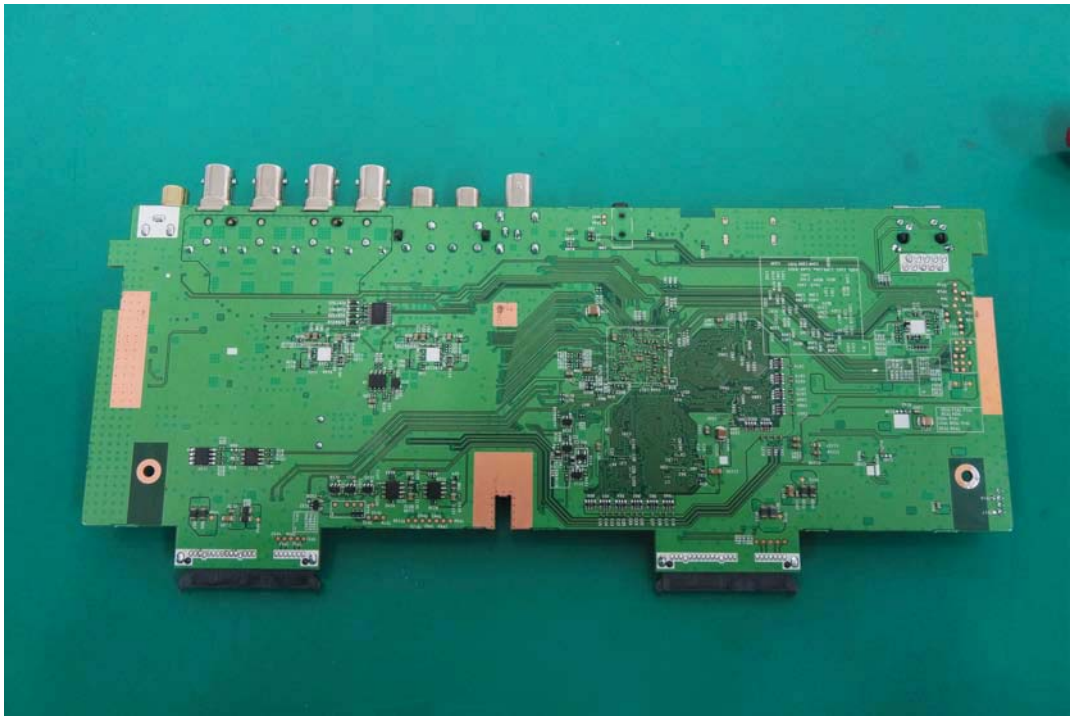
(Internal View)

Main Board EUT Internal View – Main Board

(Top)

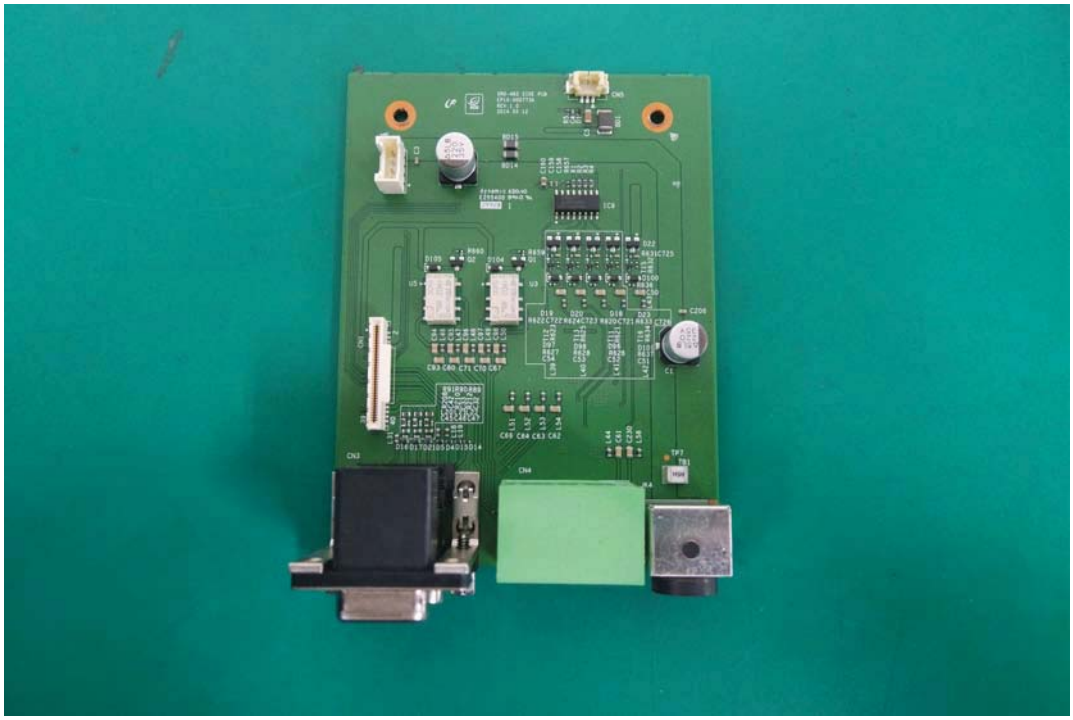


(Bottom)

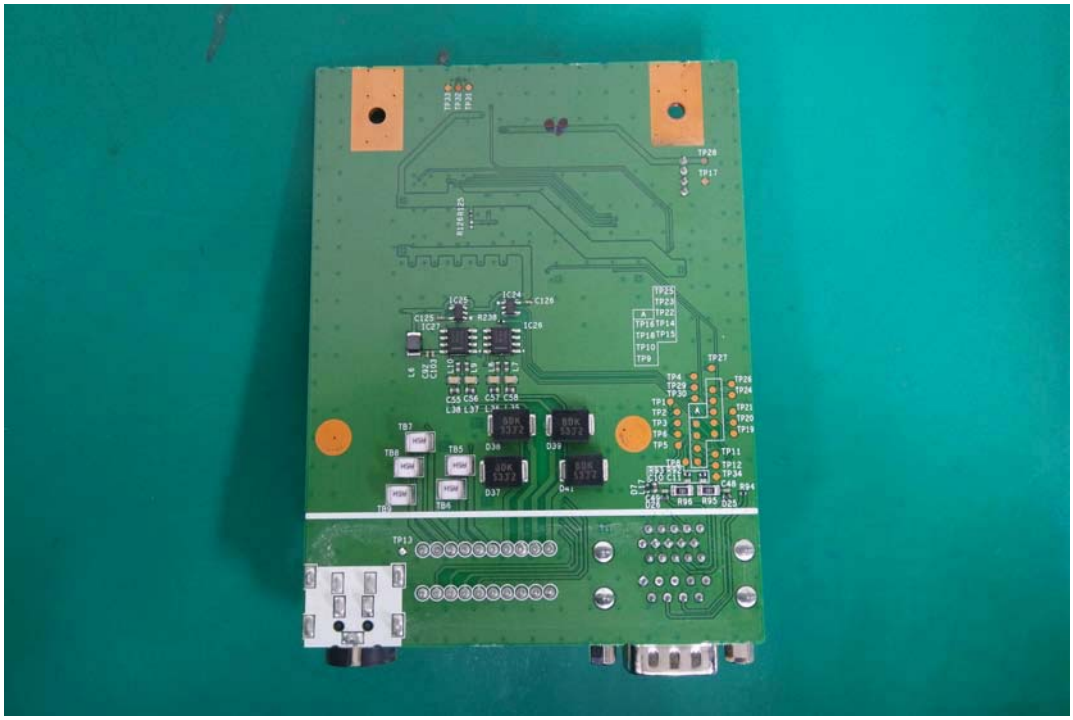


Main Board EUT Internal View – Sub Board

(Top)

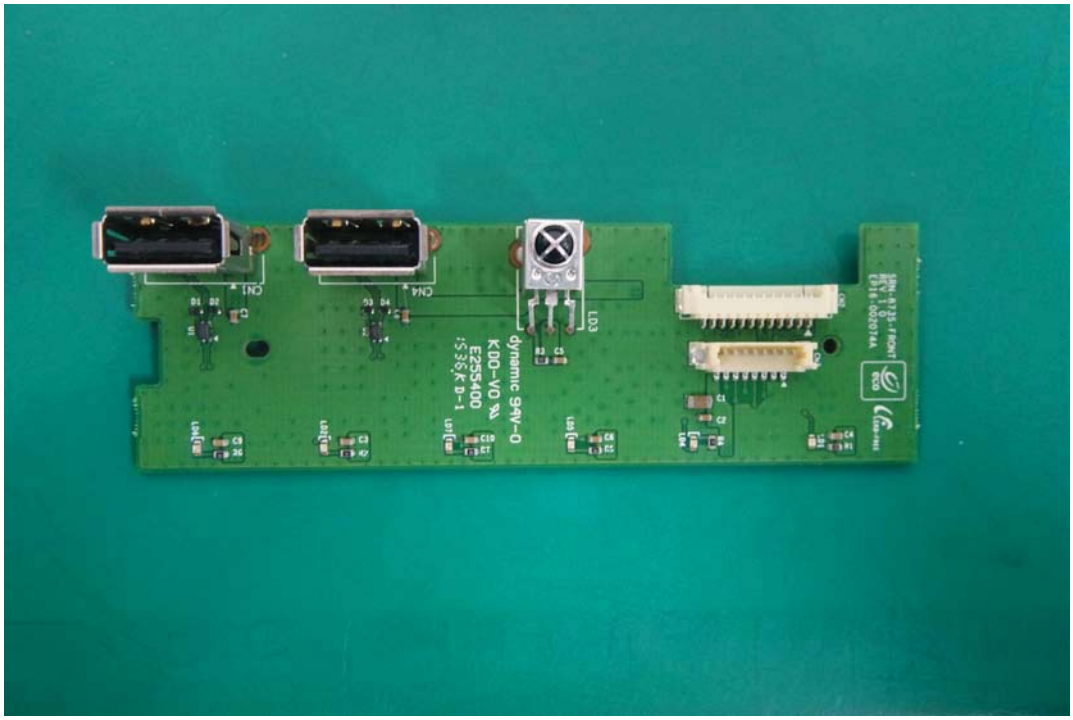


(Bottom)

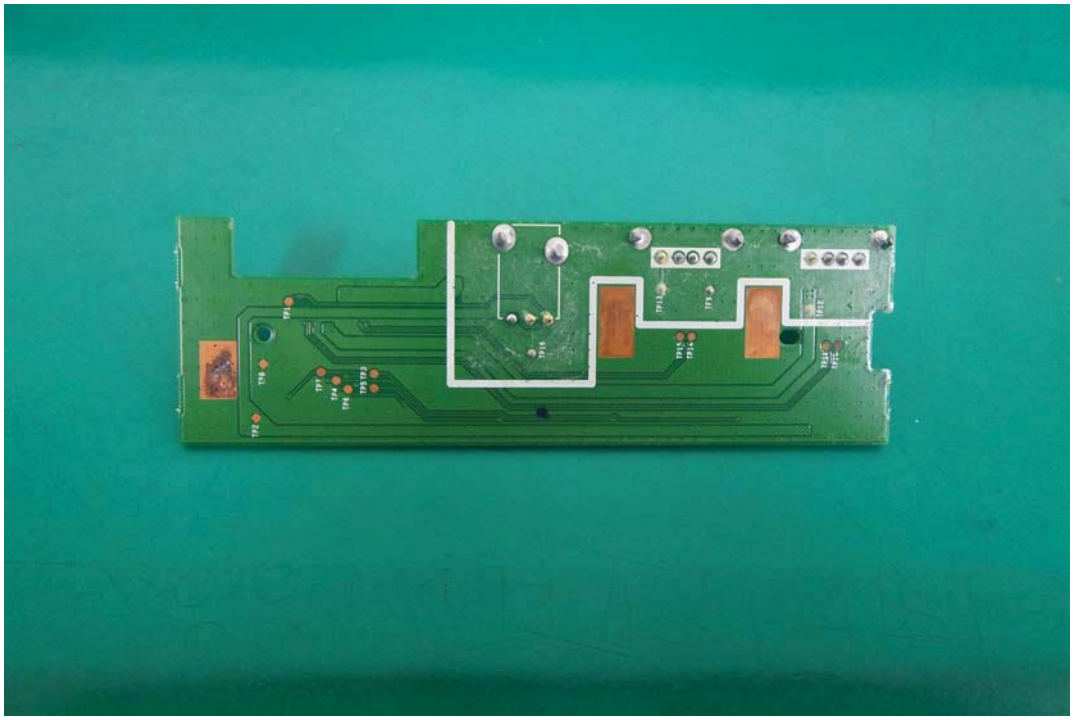


Main Board EUT Internal View – USB Board

(Top)



(Bottom)



Main Board EUT Internal View – HDD

(Top)

(Bottom)

Label and Location

NVR

Model No : SDR-494P

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

Made in of China