



EMC TEST REPORT For CE

Test Report No. : KES-E1-17T0845
Date of Issue : Dec. 21, 2017
Product name : DVR
Model/Type No. : SRD-876DP
Variant Model : -
Applicant : Hanwha Techwin Co., Ltd.
Applicant Address : 1204, Changwon-daero, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, Korea
Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.
Manufacturer Address : No.11 Weiliu Rd, Micro-Electronic Industrial
Park, TEDA, Tianjin, 300385, People's Republic of China.
Date of Receipt : Dec. 12, 2017
Test date : Dec. 18, 2017 – Dec. 20, 2017
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

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Reviewed by

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This test report is not related to KOLAS.

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KES-E1-17T0845
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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 21, 2017	KES-E1-17T0845	Issued

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1.0 General Product Description

Main Specifications of E.U.T are:

Video	Inputs	8 composite video 0.5~1 Vpp, 75 ohm automatic termination
	Resolution	1280x480 NTSC, 1280x576 PAL / 720x480 NTSC, 720x576 PAL
Live	Frame rate	240fps NTSC, 200fps PAL
	Resolution	1280x480 NTSC, 1280x576 PAL, 704x480 NTSC, 704x576 PAL
	Multi Screen display	1/4/6/8/SEQUENCE/PIP
Performance		
Operating System	Embedded	Linux
Recording	Compression	H.264
	Record Rate	NTSC: Up to 240fps @ 1280x480 / PAL: Up to 200fps @ 1280x576
		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)
	Event	PAL: Manual, Schedule (Continuous/Event), Event(Pre/Post), Time lapse (1~25 fps)
	Overwrite modes	Video Loss, Motion (Level 1~10), Alarm, Tampering (Level 1~3)
	Pre-alarm	Continuous
	Post-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) * Backward Play with I-frame Only Step Forward/Backward
Network (IPv4)	Transmission speed	Option 1) 1280H/4CIF/2CIF/CIF (240fps NTSC, 200fps PAL) Option 2) 4CIF/2CIF/CIF (120/240/240fps NTSC, 100/200/200fps PAL)
	Bandwidth	Up to 32Mbps
	Bandwidth control	Selectable
	Stream	H.264(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, HTTPS
Storage	Remote users Maximum	Live(4), Search(1)
	Internal HDD	Up to 4 SATA HDDs
	External (e-SATA Interface)	Up to 2 expansion bay (* Model: SVS-5R/5F)
	DVD Writer (Back-up)	YES
	USB (Back-up)	2 USB Ports
	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	8CH
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-232C/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-F/Samsung-T/Pelco-D/Pelco-P/Panasonic/Phillips/AD/ DIAMOND/ ERNA/ KAI ATFL/ VCI PTZ Control via Coaxial Cable (Samsung CCVC, Pelco-C (Coaxitron))
General		
Electrical	Input Voltage/Current	100 to 240 VAC ±10%; 50/60 Hz, Autoranging
	Power consumption	Max. 60 W (with 1x 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)	W440 x H88 x D384.8 (17.32" x 3.46" x 15.15")
	Weight (With hard disks)	6.81 kg (15.01 lb)
	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, Taiwanese(25 Language)



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 ☒ 230Vac ☐ 100 Vac ☐ 24 Vac ☐ 12 Vdc ☐ 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
DVR	SRD-876DP	-	Hanwha Techwin (Tianjin) Co.,Ltd	E.U.T
Mouse 1	MOEIUOA	-	Dongguan Primax Electronic & Telecommunication Produits Ltd.	-
Remote Control	EP10-000329A	-	-	-
Switching Power Supply	FSP150-50FGNC	-	FSP GROUP INC.	-
CD-ROM	SH-224GB	-	Toshiba Samsung Storage Technology	-



1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Monitor 1	LS23C340	ZXPCHTMF A02346H	Samsung Electronics Co., Ltd.	-
Monitor 1 Adaptor	PN3014	-	POWERNET Technologies Corp.	-
Monitor 2	HSTND-7041-L	6CM6020YQQ	HP Inc.	-
Monitor 3	SMT-2232	C95V67VF900038B	Weihai Daewoo Electronics Co., Ltd.	-
Notebook	X56K	HN11N5151FJ0045W	Hansung computer co., ltd.	-
Notebook Adaptor	PA-1900-14	-	LITE-ON TECHNOLOGY (CHANGZHOU)CO., LTD.	-
Camera	XNP-6120P	-	Hanwha Techwin (Tianjin) Co.,Ltd	-
Camera Adaptor	ADS-30SI-12-2	-	Shenzhen Honor Electronic Co.,Ltd	-
Speaker 1	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
Speaker 2	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
MIC	CMK-303	-	CAMAC	-
Mouse 2	CC-93-9F	LU139006416	Logitech	-
Controller	SPC-2010	-	Hanwha Techwin (Tianjin) Co.,Ltd	-
Controller Adaptor	ADS-25SGP-12	-	Shenzhen Honor Electronic Co., Ltd.	-
Alarm 1	SIP-1201DD D0	-	SAMSUNG TECHWIN CO., LTD.	-
Alarm 2	-	-	-	-
External hard disk	NEXT-652DC	1207230749	YCN	-
External hard disk Adaptor	RS-03/12-S335	-	-	-
HDD	Diamond Max Plus9	Y41P45KE	Maxtor	120 GB

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1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
DVR (E.U.T)	HDMI	Monitor 1	HDMI	1.6	S
	D-SUB	Monitor 2	D-SUB	1.7	S
	BNC Out	Monitor 3	BNC In	3.0	S
	RJ-45	Notebook	RJ-45	3.0	U
	BNC In	Camera	BNC Out	3.0	S
	RCA	Speaker 1	RCA	1.6	U
	RCA	Speaker 2	RCA	1.6	U
	RCA	MIC	RCA	1.7	U
	RS-485 (2 Pin)	Controller	RS-485 (2 Pin)	3.0	U
	Alarm Out (2 Pin)	Alarm 1	Alarm In (2 Pin)	4.0	U
	Alarm In (2 Pin)	Alarm 2	Alarm Out (2 Pin)	3.5	U
	USB	Mouse 1	USB	1.4	U
	RS-232	Mouse 2	RS-232	3.5	U
	eSATA	External hard disk	eSATA	0.3	U
External hard disk	SATA	HDD	SATA	-	-

* Unshielded=U, Shielded=S

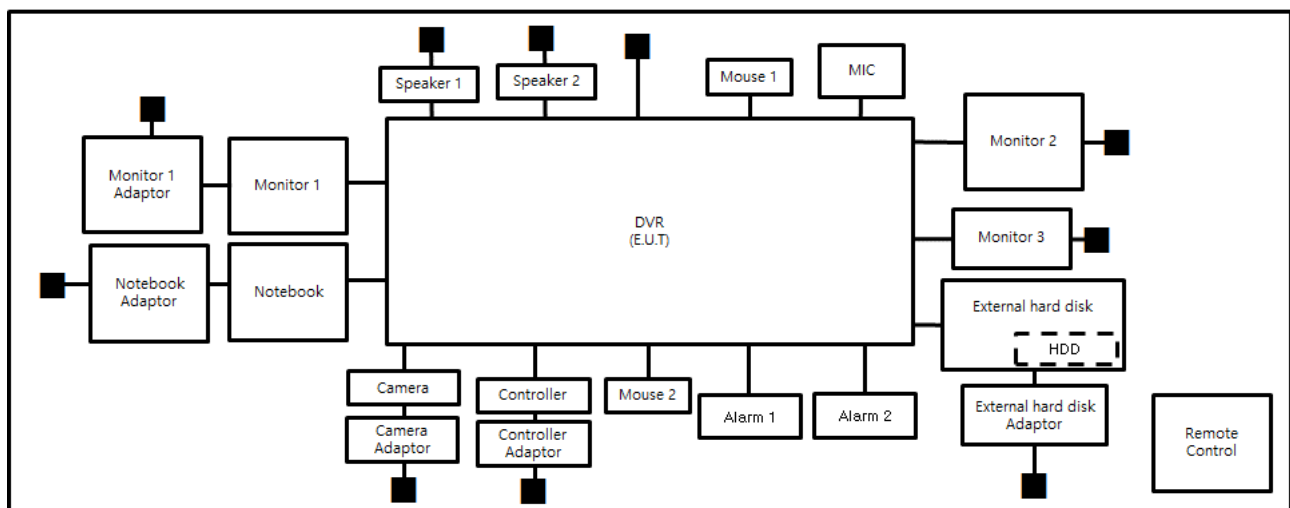
1.7 E.U.T Operating Mode(s)

operating	
230 V 50 Hz	E.U.T Monitoring, Ping Test

E.U.T Test operating S/W		
Name	Version	Manufacture Company
Webviewer	-	Hanwha Techwin Co., Ltd.

1.8 Configuration

■ AC Main
 □ DC Main



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1.9 Remarks when standards applied

- The same port is tested using only one port.

1.10 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.

1.11 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32.

1.12 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)	

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2.0 Test Regulations

The emissions tests were performed according to following regulations:

☒ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 61547:2009

☒ EN 55032:2012/AC:2013

☒ Class A

☐ Class B

☐ EN 55024:2010 +A1:2015

☒ EN 50130-4:2011

☒ EN 61000-3-2:2014

☒ EN 61000-3-3:2013

☐ EN 61326-1:2013



-
- | | | |
|---|----------------------------------|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2009 | | |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
|
☐ RE- Directive 2014/53/EU | | |
|
☐ EN 301 489-1 V1.9.2 | | |
| ☐ Equipment for fixed use | | |
| ☐ Equipment for vehicular use | | |
| ☐ Equipment for portable use | | |
|
☐ EN 301 489-3 V1.6.1 | | |
|
☐ EN 301 489-17 V2.2.1 | | |
|
☐ EN 60945:2002 | | |

2.1 Conducted Emissions at Mains Power Ports

Test Date

Dec. 18, 2017

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101781	04, 27, 2018
☒	LISN	ENV216	R & S	101787	01, 11, 2018
☒	LISN	ESH2-Z5	R & S	100450	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1002	08, 07, 2018
☐	LISN	NNBM8124	SCHWARZBECK	8124-1003	08, 07, 2018

Test Conditions

Temperature: 22,4 °C

Relative Humidity: 41,9 %

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

RemarksSee Appendix A for test data.

2.2 Conducted Emissions at Telecommunication Ports

Test Date

Dec. 18, 2017

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101781	04, 27, 2018
☒	LISN	ENV216	R & S	101787	01, 11, 2018
☒	LISN	ESH2-Z5	R & S	100450	04, 27, 2018
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018
☒	8-WIRE ISN CAT3,5	ENY81	R & S	100174	01, 11, 2018
☒	8-WIRE ISN CAT6	ENY81-CAT6	R & S	101665	01, 11, 2018
☐	ISN	ISN S8	SCHWARZBECK	ISN-S8-0019	05, 12, 2018
☐	CDN	CDNS502A	TESEQ	40431	01, 11, 2018

Test Conditions

Temperature: 22,4 °C
Relative Humidity: 41,9 %

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

Dec. 18, 2017

Test Location
☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 18, 2018
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	716	11, 28, 2018

Test Conditions

Temperature: 21,9 °C
Relative Humidity: 40,6 %

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

Dec. 19, 2017

Test Location

SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESR7	R & S	101190	08, 07, 2018
☒	PREAMPLIFIER	8449B	AGILENT	3008A01967	05, 31, 2018
☐	ATTENUATOR	8491A	HP	32173	03, 24, 2018
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 02, 2018

Test Conditions

Temperature: 22,7 °C

Relative Humidity: 43,9 %

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

Dec. 18, 2017

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 09, 2018
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 22,4 °C
Relative Humidity: 41,9 %

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

Dec. 18, 2017

Test Location

Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	dpa.control	EM TEST	5.4.11.0	-
☒	DIGITAL POWER ANALYZER	DPA 500N	EM TEST	V1024106759	08, 08, 2018
☒	POWER SOURCE	ACS 500N6	EM TEST	V1024106760	-

Test Conditions

Temperature: 22,4 °C
Relative Humidity: 41,9 %

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 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

Dec. 19, 2017

Test Location

EMS-ESD: Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	ESD SIMULATOR	ESS-2000	Noise Ken	ESS05X4620	02, 24, 2018
☒	HCP	-	Noise Ken	-	-
☒	VCP	-	Noise Ken	-	-

Test Conditions

Temperature: 23,2 °C
Relative Humidity: 44,6 %
Atmospheric Pressure: 101,0 kPa



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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

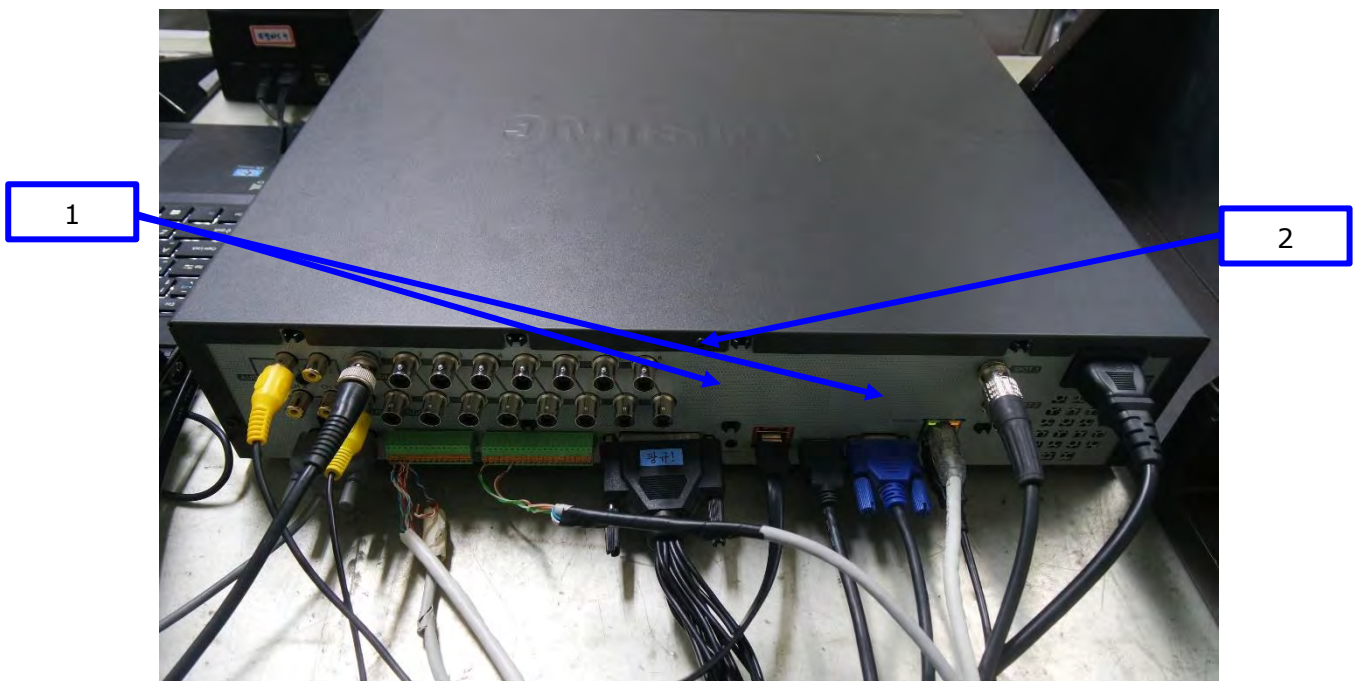
Notes: HCP: Horizontal coupling plane

VCP: Vertical coupling plane

Required Performance Criteria: ☒ Complied

Location of Discharge:

Air
Contact



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Test Data**Indirect Discharge**

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

Direct Discharge

No.	Test Point	Discharge Method	Observations	Remarks
1	Surface	Contact Discharge	Complied	-
2	Screw	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.

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3.2 Radiated Electric Field Immunity

Reference Standard

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

Test Date

Dec. 19, 2017

Test Location

EMS-RS: ☐ SEMI ANECHOIC CHAMBER #2 ☒ SEMI ANECHOIC CHAMBER #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	EMC32	R & S	10.10.02	-
☒	SIGNAL GENERATOR	SMB 100A	R & S	177586	08, 07, 2018
☒	BROADBAND AMPLIFIER	BBA100	R & S	101239	08, 07, 2018
☒	BROADBAND AMPLIFIER	100S1G6M1	AR	579931	08, 07, 2018
☒	POWER METER	NRP2	R & S	103475	08, 07, 2018
☒	AVG POWER SENSOR	NRP-Z91	R & S	102526	08, 07, 2018
☒	AVG POWER SENSOR	NRP-Z91	R & S	102527	08, 07, 2018
☒	STACKED DOUBLE LOG-PER- ANTENNA	STPL9128 E	Schwarzbeck	9128ES-121	-
☒	DIRECTIONAL COUPLER	KYDC-D1070-DX40	KY TELECOM	KY150001	08, 07, 2018
☒	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM, INC	781	05, 02, 2019

Test Conditions

Temperature: 22,7 °C
Relative Humidity: 43,9 %
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

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Test Data

Side Exposed	Observations	
	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.

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3.3 Electrical Fast Transients/Bursts

Reference Standard

EN 61000-4-4:2012

Test Date

Dec. 20, 2017

Test Location

EMS-EFT: Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	AMETEK CTS	7.1.2	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	06, 26, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	06, 26, 2018
☒	CAPACITIVE COUPLING CLAMP	HFK	EM TEST	070925	06, 26, 2018

Test Conditions

Temperature: 20,9 °C
Relative Humidity: 41,3 %
Atmospheric Pressure: 100,8 kPa

Test Specifications

Pulse Amplitude & Polarity: (AC Power Lines)	☐ ± 1.0 kV ☐ ± 4.0 kV	☒ ± 2.0 kV
Pulse Amplitude & Polarity: (Other supply / 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 (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)
RS-45	Complied	Complied
RS-485 (2 Pin)	Complied	Complied
Alarm In, Out (2 Pin)	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.

3.4 Surge Transients

Reference Standard

EN 61000-4-5:2014

Test Date

Dec. 20, 2017

Test Location

EMS-Surge: Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	AMETEK CTS	7.1.2	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	10, 16, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	06, 26, 2018
☒	CDN	CNV 508N1	EM TEST	P1551168979	04, 26, 2018
☐	CDN	CNV 508T5	EM TEST	P1549168422	04, 26, 2018

Test Conditions

Temperature: 20,9 °C
Relative Humidity: 41,3 %
Atmospheric Pressure: 100,8 kPa



Test Specifications

AC 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

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

Other supply / 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

☒ Line to Earth – Common Mode

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

Signal Lines☒ Line to Earth – Common Mode

Mode of Application	Observations	
	(+) Surge (kV)	(-) Surge (kV)
RS-45	Complied	Complied
RS-485 (2 Pin)	Complied	Complied
Alarm In, Out (2 Pin)	Complied	Complied

Note: “Blank” = Not performed

Observations:

Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria

RemarksPASS Required Performance Criteria.

3.5 Conducted Disturbance

Reference Standard

EN 61000-4-6:2014

Test Date

Dec. 20, 2017

Test Location

EMS-CS: Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	icd.control	EM TEST	5.3.7	-
☒	CONTINUOUS WAVE SIMULATOR	CWS 500N1	EM TEST	V0936105119	08, 07, 2018
☒	ATTENUATOR	ATT6	EM TEST	1208-34	08, 07, 2018
☒	CDN	CDN-M2/M3N	EM TEST	0909-06	08, 07, 2018
☒	CDN	CDN T8RJ45	EM TEST	0909-09	08, 07, 2018
☒	EM INJECTION CLAMP	EM 101	Liithi	35943	02, 03, 2018

Test Conditions

Temperature: 20,9 °C
Relative Humidity: 41,3 %
Atmospheric Pressure: 100,8 kPa



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Test Specifications

Frequency range: ☒ 150 kHz to 100 MHz ☐ 150 kHz to 80 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

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Test Data

☒ Input a.c. power ports

Coupling Location (Line Stressed)	Coupling Method	Observations
L - N - PE	CDN (☐ M2, ☒ M3)	Complied

☐ Input d.c. power ports

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

☒ Signal ports and telecommunication ports

Coupling Location (Line Stressed)	Coupling Method	Observations
RS-45	CDN T8RJ45	Complied
RS-485 (2 Pin)	Clamp	Complied
Alarm In, Out (2 Pin)	Clamp	Complied

Notes: CDN = Coupling Decoupling Network
"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.



3.6 Voltage Dips and Short Interruptions

Reference Standard

EN 61000-4-11:2004

Test Date

Dec. 20, 2017

Test Location

EMS-Voltage dip: Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMS Test S/W	iec.control	AMETEK CTS	7.1.2	-
☒	ULTRA COMPACT SIMULATOR	UCS 500 N5	EM TEST	V0936105120	06, 26, 2018
☒	MOTOR VARIAC	MV2616	EM TEST	V0936105123	06, 26, 2018

Test Conditions

Temperature: 20,9 °C
Relative Humidity: 41,3 %
Atmospheric Pressure: 100,8 kPa

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Test Specifications & Observations/Remarks

(Test Voltage : 230 V)

<u>Test Level</u>	<u>Duration [in period/ms (50 Hz)]</u>	<u>Results</u>
☒ 20 % dip	☒ 250 / 5000	<u>Complied</u>
☒ 30 % dip	☒ 25 / 500	<u>Complied</u>
☒ 60 % dip	☒ 10 / 200	<u>Complied</u>
☒ 100 % dip	☒ 250 / 5000	<u>Complied</u>

- Voltage variations

☒ Unom + 10 %	☒ 253.0 V (ac)	<u>Complied</u>
☒ Unom - 15 %	☒ 195.5 V (ac)	<u>Complied</u>

Observations:
Complied – No degradation of function

Test Results

- ☒ PASS Required Performance Criteria
☐ NOT PASS Required Performance Criteria
☐ NOT APPLICABLE

Remarks

PASS Required Performance Criteria.

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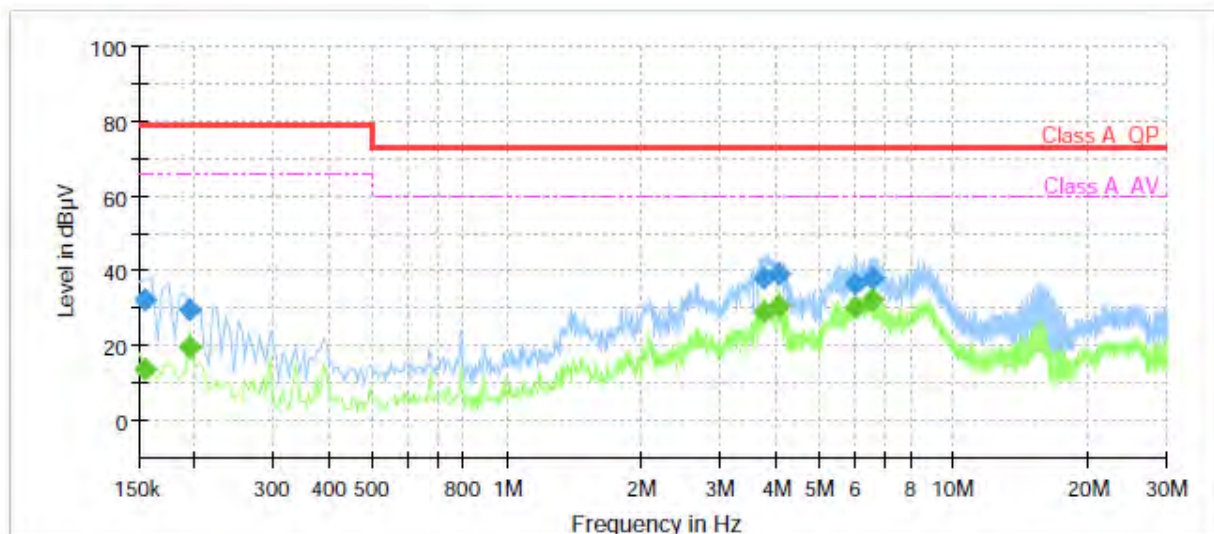
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	SRD-876DP1T
Mode	H
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	13.61	66.00	52.39	1000.0	9.000	L1	19.5
0.155000	32.32	---	79.00	46.68	1000.0	9.000	L1	19.5
0.195000	---	19.79	66.00	46.21	1000.0	9.000	L1	19.5
0.195000	29.51	---	79.00	49.49	1000.0	9.000	L1	19.5
3.750000	---	29.19	60.00	30.81	1000.0	9.000	L1	20.0
3.750000	38.23	---	73.00	34.77	1000.0	9.000	L1	20.0
4.075000	---	30.57	60.00	29.43	1000.0	9.000	L1	19.9
4.075000	38.97	---	73.00	34.03	1000.0	9.000	L1	19.9
5.995000	---	30.45	60.00	29.55	1000.0	9.000	L1	19.7
5.995000	36.64	---	73.00	36.36	1000.0	9.000	L1	19.7
6.585000	---	32.29	60.00	27.71	1000.0	9.000	L1	19.7
6.585000	38.35	---	73.00	34.65	1000.0	9.000	L1	19.7

◆ Calculation

QuasiPeak[dBµV] / CAverage [dBµV] = Reading Value[dBµV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

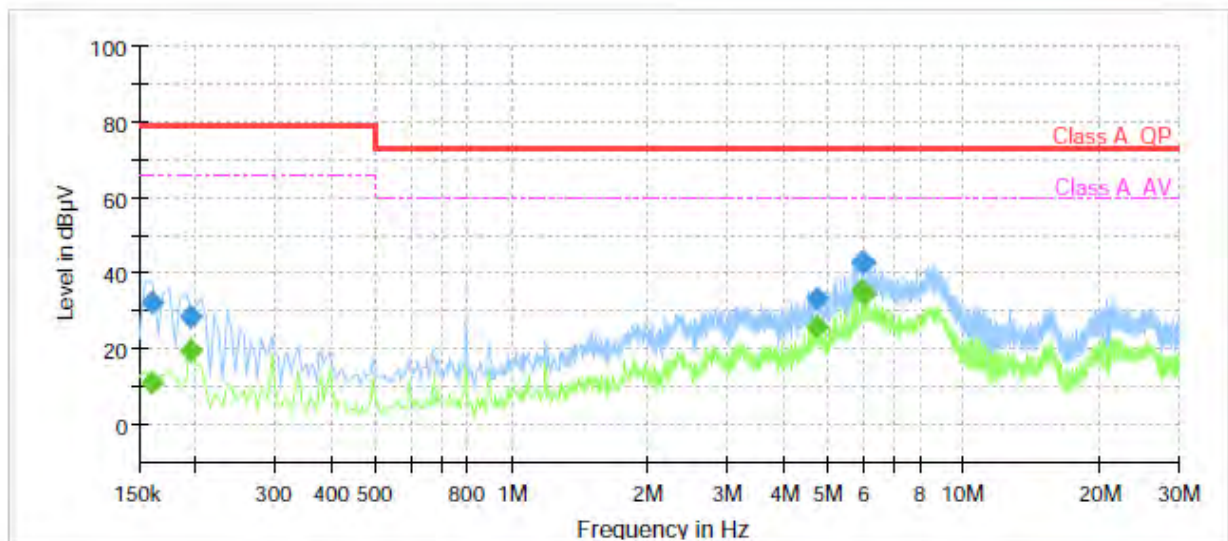
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	SRD-876DP1T
Mode	N
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.160000	---	11.06	66.00	54.94	1000.0	9.000	N	19.5
0.160000	32.06	---	79.00	46.94	1000.0	9.000	N	19.5
0.195000	---	19.74	66.00	46.26	1000.0	9.000	N	19.5
0.195000	28.71	---	79.00	50.29	1000.0	9.000	N	19.5
4.745000	---	26.12	60.00	33.88	1000.0	9.000	N	19.8
4.745000	33.60	---	73.00	39.40	1000.0	9.000	N	19.8
5.930000	---	35.32	60.00	24.68	1000.0	9.000	N	19.7
5.930000	42.91	---	73.00	30.09	1000.0	9.000	N	19.7
6.030000	---	34.68	60.00	25.32	1000.0	9.000	N	19.7
6.030000	42.66	---	73.00	30.34	1000.0	9.000	N	19.7

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

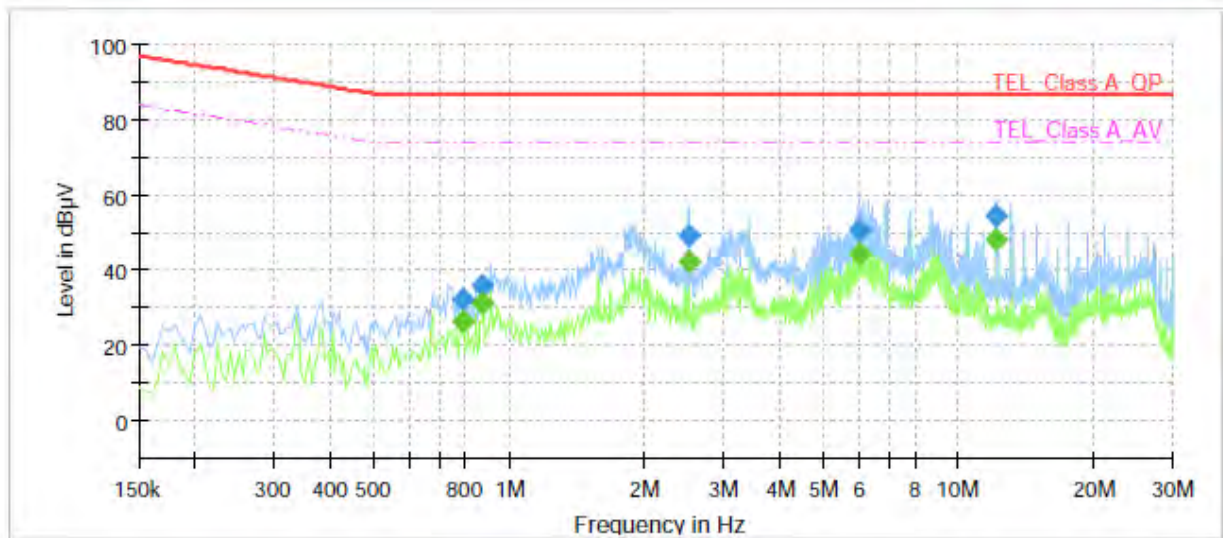
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Conducted Emissions at Telecommunication Ports

[10 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SRD-876DP1T
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)
0.790000	---	26.42	74.00	47.58	1000.0	9.000	Single Line	19.8
0.790000	32.22	---	87.00	54.78	1000.0	9.000	Single Line	19.8
0.875000	---	31.11	74.00	42.89	1000.0	9.000	Single Line	19.9
0.875000	36.08	---	87.00	50.92	1000.0	9.000	Single Line	19.9
2.500000	---	42.49	74.00	31.51	1000.0	9.000	Single Line	19.9
2.500000	49.39	---	87.00	37.61	1000.0	9.000	Single Line	19.9
6.030000	---	44.72	74.00	29.28	1000.0	9.000	Single Line	19.4
6.030000	50.64	---	87.00	36.36	1000.0	9.000	Single Line	19.4
12.175000	---	47.94	74.00	26.06	1000.0	9.000	Single Line	19.9
12.175000	54.39	---	87.00	32.61	1000.0	9.000	Single Line	19.9

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

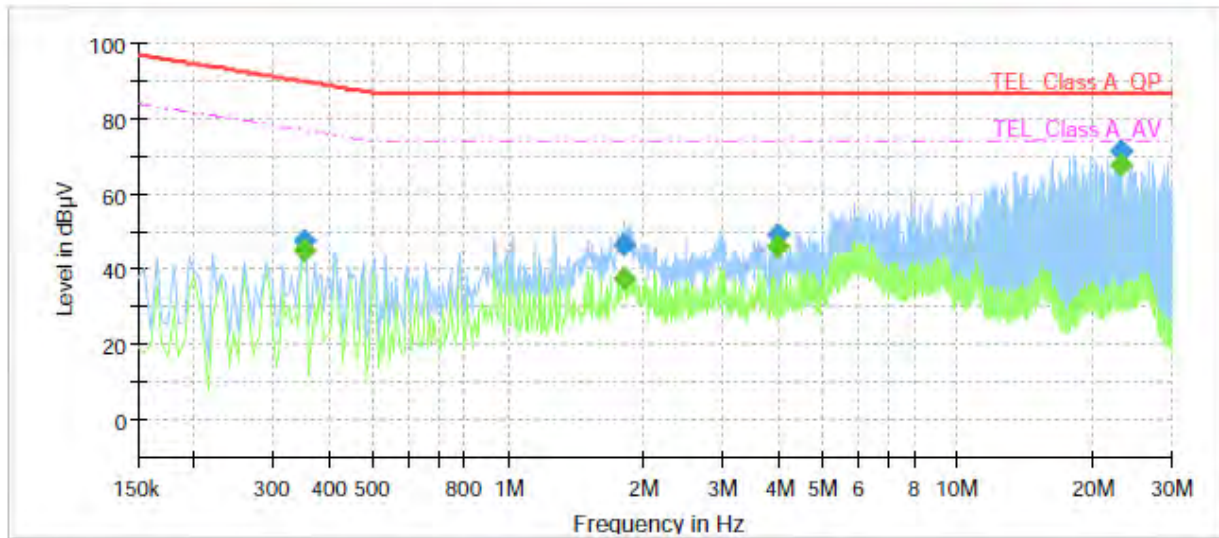
Reading Value : Not shown in the table.

Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

[100 Mbps]

Common Information

Test Description:	Telecommunication Emission
Model No.:	SRD-876DP1T
Mode	100 Mbps
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.350000	---	44.80	76.96	32.16	1000.0	9.000	Single Line	19.9
0.350000	47.50	---	89.96	42.46	1000.0	9.000	Single Line	19.9
1.810000	---	37.82	74.00	36.18	1000.0	9.000	Single Line	20.3
1.810000	46.33	---	87.00	40.67	1000.0	9.000	Single Line	20.3
3.955000	---	45.89	74.00	28.11	1000.0	9.000	Single Line	20.0
3.955000	49.02	---	87.00	37.98	1000.0	9.000	Single Line	20.0
23.130000	---	67.75	74.00	6.25	1000.0	9.000	Single Line	20.6
23.130000	71.46	---	87.00	15.54	1000.0	9.000	Single Line	20.6

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

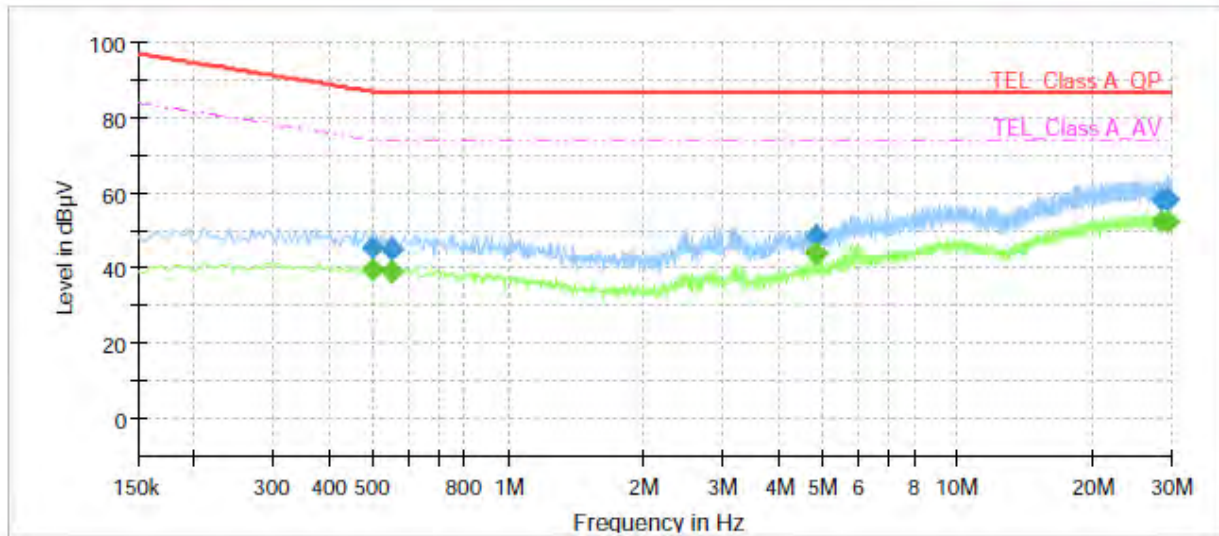
Reading Value : Not shown in the table.

Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

[1 000 Mbps]

Common Information

Test Description: Telecommunication Emission
Model No.: SRD-876DP1T
Mode: 1 000 Mbps
Operator Name: KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.500000	---	39.62	74.00	34.38	1000.0	9.000	Single Line	19.9
0.500000	45.44	---	87.00	41.56	1000.0	9.000	Single Line	19.9
0.550000	---	39.41	74.00	34.59	1000.0	9.000	Single Line	19.9
0.550000	45.18	---	87.00	41.82	1000.0	9.000	Single Line	19.9
4.845000	---	43.83	74.00	30.17	1000.0	9.000	Single Line	19.7
4.845000	48.80	---	87.00	38.20	1000.0	9.000	Single Line	19.7
28.400000	---	52.61	74.00	21.39	1000.0	9.000	Single Line	20.4
28.400000	58.32	---	87.00	28.68	1000.0	9.000	Single Line	20.4
29.455000	---	52.44	74.00	21.56	1000.0	9.000	Single Line	20.5
29.455000	58.24	---	87.00	28.76	1000.0	9.000	Single Line	20.5

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

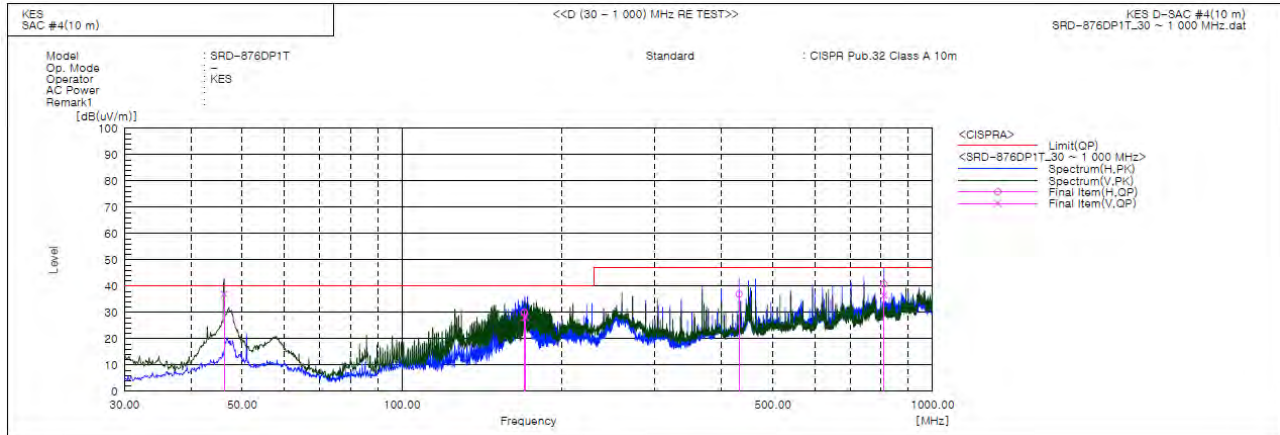
QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (ISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))



Radiated Electric Field Emissions(Below 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	46.248	V	65.0	-28.0	37.0	40.0	3.0	400.0	160.0	
2	169.983	H	60.5	-30.5	30.0	40.0	10.0	390.0	298.0	
3	170.612	V	58.6	-30.4	28.2	40.0	11.8	122.0	184.0	
4	431.944	H	56.5	-19.5	37.0	47.0	10.0	192.0	182.0	
5	810.001	H	52.9	-12.1	40.8	47.0	6.2	100.0	312.0	
6	810.637	V	48.6	-12.1	36.5	47.0	10.5	100.0	56.0	

◆ Calculation – SAC #4(10 m)

Result(QP) [dB(μV/m)] = (Reading(QP)[dB(μV)] + c.f[dB(1/m)])

Margin(QP)[dB] = Limit[dB(μV/m)] - Result(QP) [dB(μV/m)]

Reading(QP) : Reading value, Result(QP) : Reading value + Factor value

Limit(QP) : Limit value, c.f : (ANT Factor + Cable Loss - Preamp Factor), Margin: Margin value

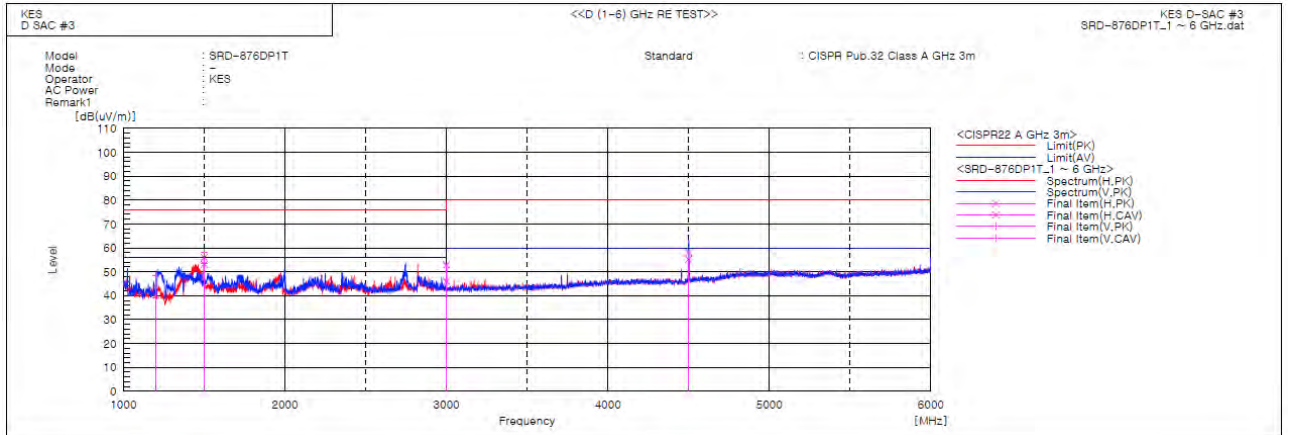


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KES-E1-17T0845
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Radiated Electric Field Emissions(Above 1 GHz)



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1199.982	V	57.0	47.5	-8.5	48.5	39.0	76.0	56.0	27.5	17.0	100.0	30.3	
2	1499.920	V	64.3	59.6	-6.1	58.2	53.5	76.0	56.0	17.8	2.5	100.0	11.9	
3	1500.260	H	62.2	59.3	-6.1	56.1	53.2	76.0	56.0	19.9	2.8	100.0	134.2	
4	2999.940	H	50.5	43.7	2.4	52.9	46.1	76.0	56.0	23.1	9.9	100.0	56.6	
5	4500.190	H	50.8	47.9	7.3	58.1	55.2	80.0	60.0	21.9	4.8	100.0	107.2	

◆ Calculation

Over Limit [dB] = (Read Level[dB μ V] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dB μ V]

Over Limit : Marjin, Read Level : Reading value, Ant Factor : ANT Factor,

Cable Loss : Cable loss, Preamp Factor : Preamp Factor

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**Harmonic Current Emissions and Voltage Fluctuations and Flicker****Average harmonic current results**

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	99.764E-3			
2	39.216E-3	3.631	1.08	PASS
3	46.212E-3	2.009	2.30	PASS
4	23.450E-3	5.453	430.00E-3	PASS
5	15.186E-3	1.332	1.14	PASS
6	10.615E-3	3.538	300.00E-3	PASS
7	7.708E-3	1.001	770.00E-3	PASS
8	8.176E-3	3.555	230.00E-3	PASS
9	5.335E-3	1.334	400.00E-3	PASS
10	5.186E-3	2.818	184.00E-3	PASS
11	4.919E-3			PASS
12	4.490E-3			PASS
13	4.105E-3			PASS
14	3.709E-3			PASS
15	3.499E-3			PASS
16	3.579E-3			PASS
17	3.029E-3			PASS
18	2.912E-3			PASS
19	2.721E-3			PASS
20	2.559E-3			PASS
21	2.457E-3			PASS
22	2.381E-3			PASS
23	2.268E-3			PASS
24	2.226E-3			PASS
25	2.184E-3			PASS
26	2.091E-3			PASS
27	2.094E-3			PASS
28	1.984E-3			PASS
29	1.977E-3			PASS
30	1.906E-3			PASS
31	1.859E-3			PASS
32	1.783E-3			PASS
33	1.736E-3			PASS
34	1.734E-3			PASS
35	1.692E-3			PASS
36	1.672E-3			PASS
37	1.677E-3			PASS
38	1.647E-3			PASS
39	1.623E-3			PASS
40	1.601E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.



Test Data - Harmonics (continued)

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	101.746E-3			
2	45.635E-3	2.817	1.62	PASS
3	48.880E-3	1.417	3.45	PASS
4	25.726E-3	3.989	645.00E-3	PASS
5	16.878E-3	0.987	1.71	PASS
6	12.894E-3	2.865	450.00E-3	PASS
7	8.574E-3	0.742	1.15	PASS
8	8.986E-3	2.605	345.00E-3	PASS
9	6.271E-3	1.045	600.00E-3	PASS
10	5.739E-3	2.079	276.00E-3	PASS
11	5.430E-3	1.097	495.00E-3	PASS
12	4.857E-3			PASS
13	4.678E-3			PASS
14	4.134E-3			PASS
15	3.799E-3			PASS
16	3.866E-3			PASS
17	3.369E-3			PASS
18	3.271E-3			PASS
19	3.001E-3			PASS
20	2.743E-3			PASS
21	2.692E-3			PASS
22	2.611E-3			PASS
23	2.492E-3			PASS
24	2.414E-3			PASS
25	2.403E-3			PASS
26	2.280E-3			PASS
27	2.339E-3			PASS
28	2.246E-3			PASS
29	2.149E-3			PASS
30	2.121E-3			PASS
31	2.070E-3			PASS
32	1.948E-3			PASS
33	1.961E-3			PASS
34	1.897E-3			PASS
35	1.900E-3			PASS
36	1.803E-3			PASS
37	1.831E-3			PASS
38	1.846E-3			PASS
39	1.762E-3			PASS
40	1.757E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

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Test report No.:
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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 [%]	0.189	4.00	PASS
Tmax [s]	0.000	0.50	PASS

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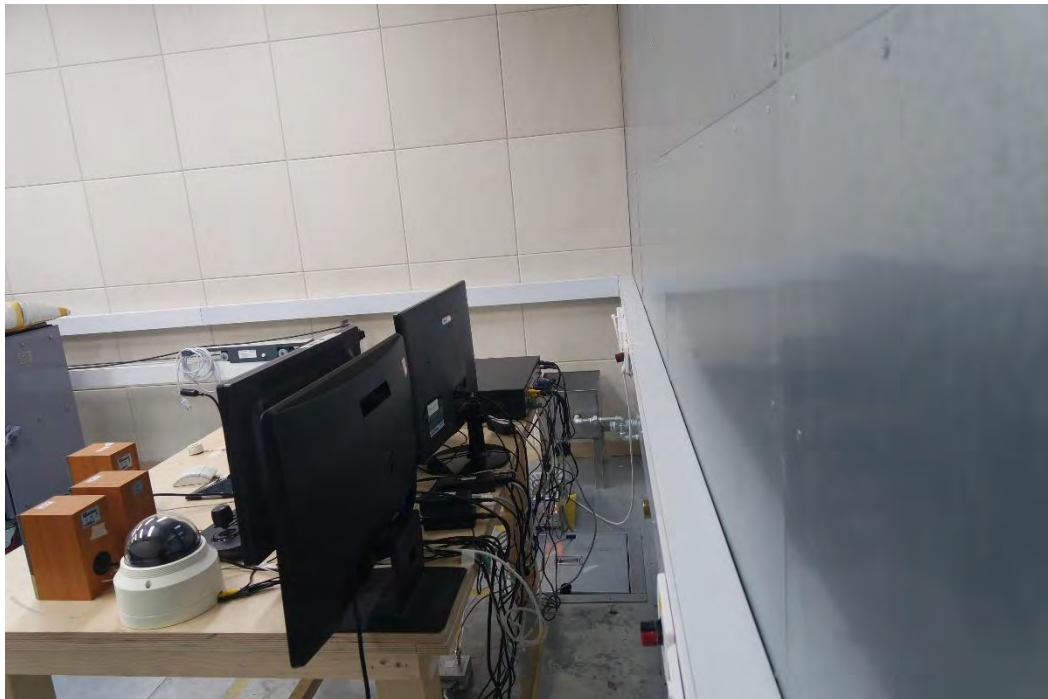
Test Setup Photos and Configuration

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)



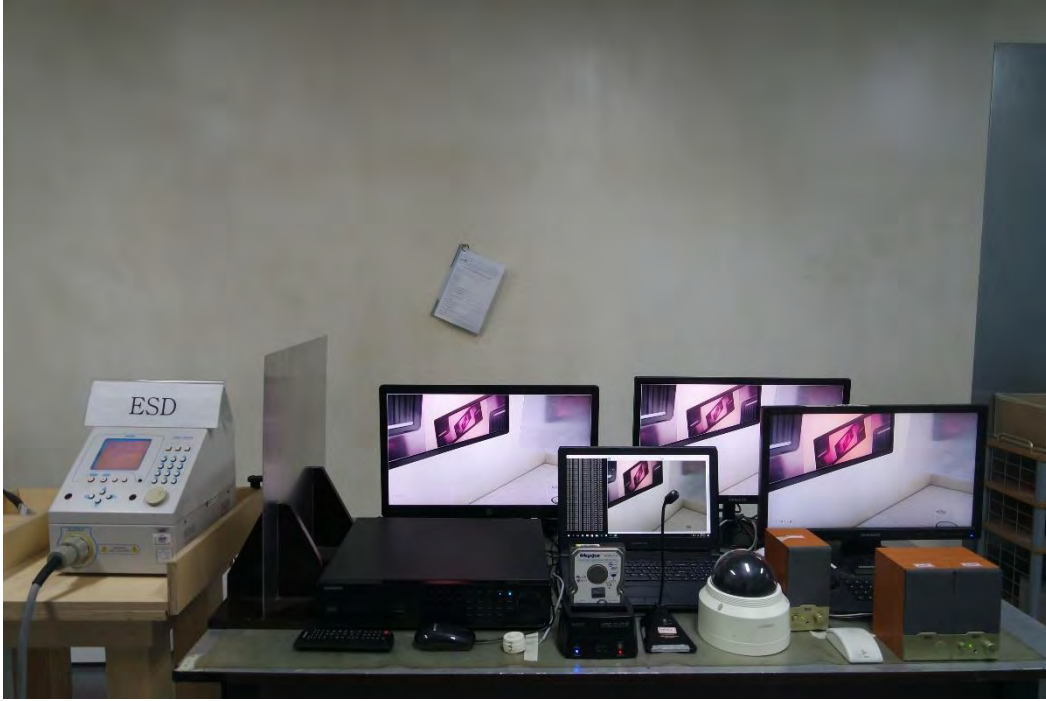
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Harmonic Current Emissions and Voltage Fluctuations and Flicker



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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)



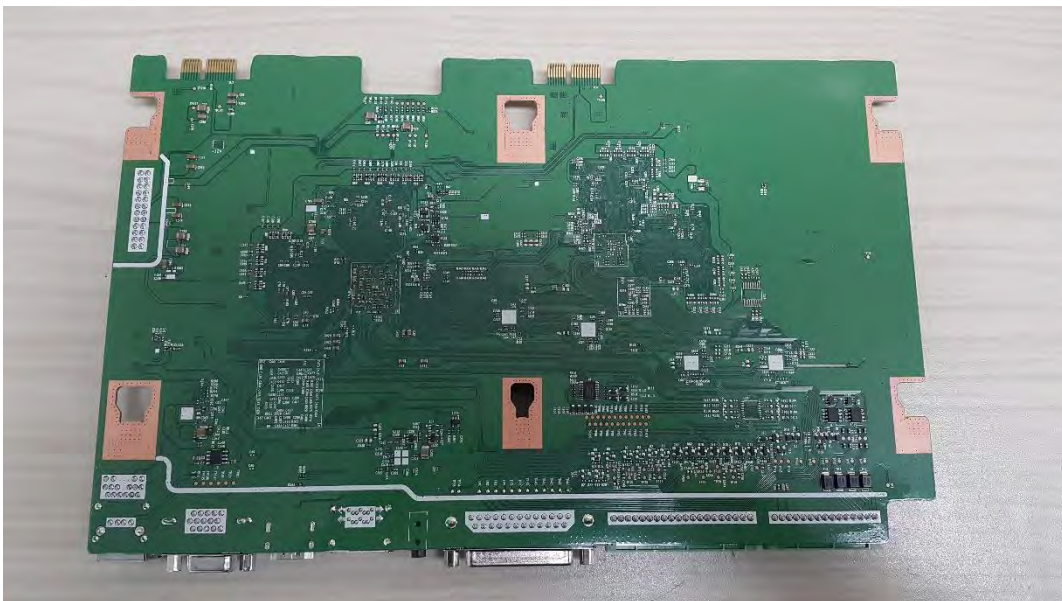
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EUT Internal View – Main Board

(Top)



(Bottom)



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EUT Internal View – USB Board

(Top)



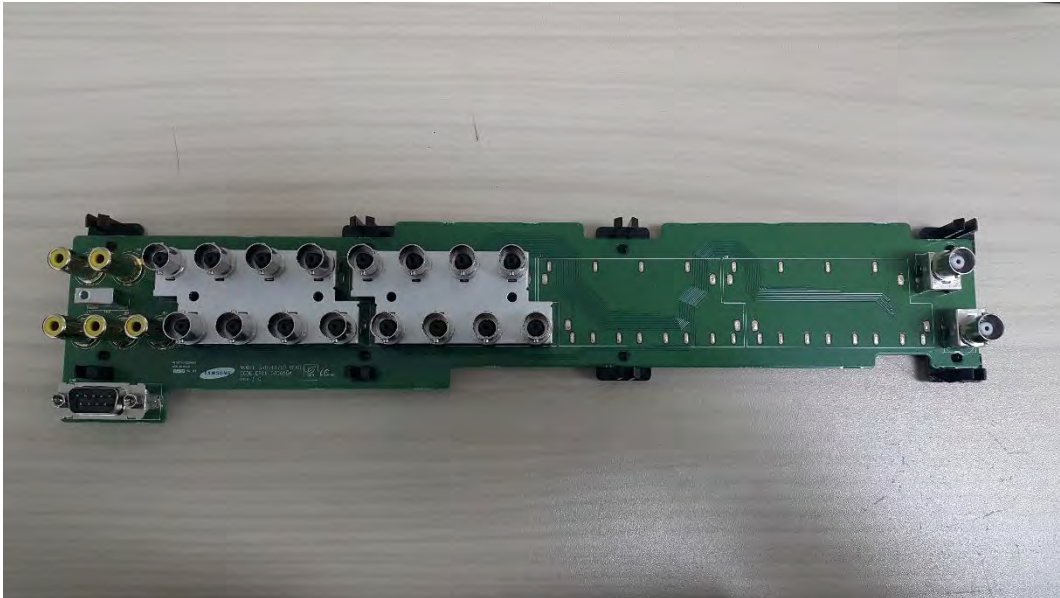
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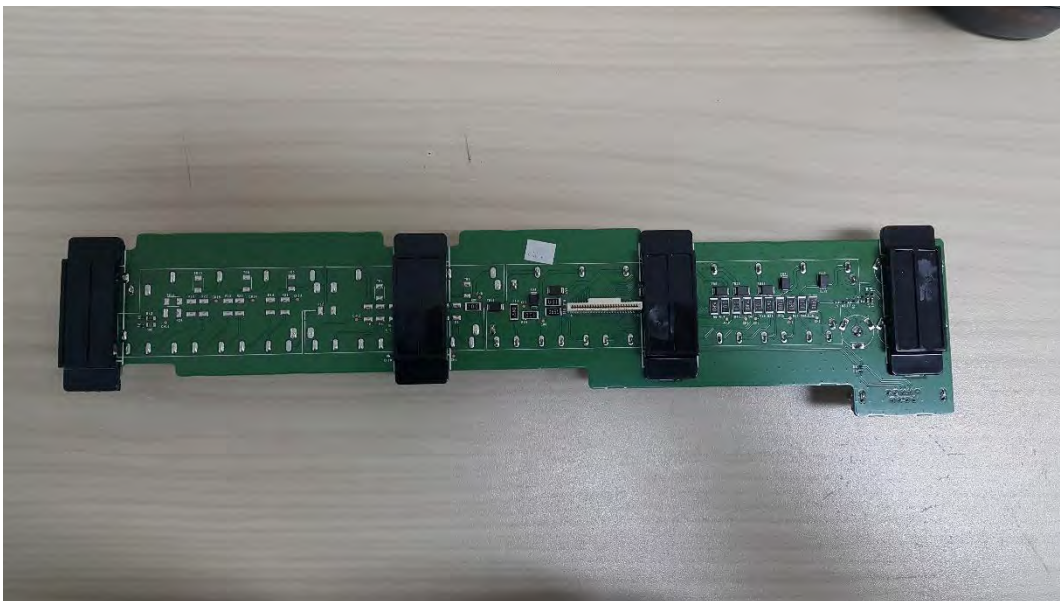
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EUT Internal View – Rear Board

(Top)



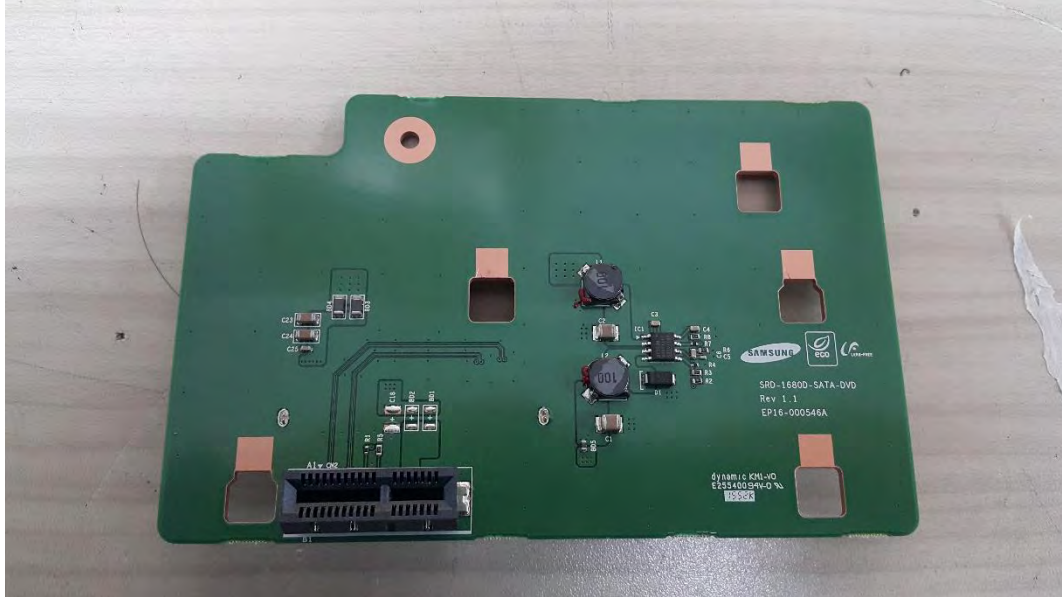
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EUT Internal View – SATA-DVD Board

(Top)



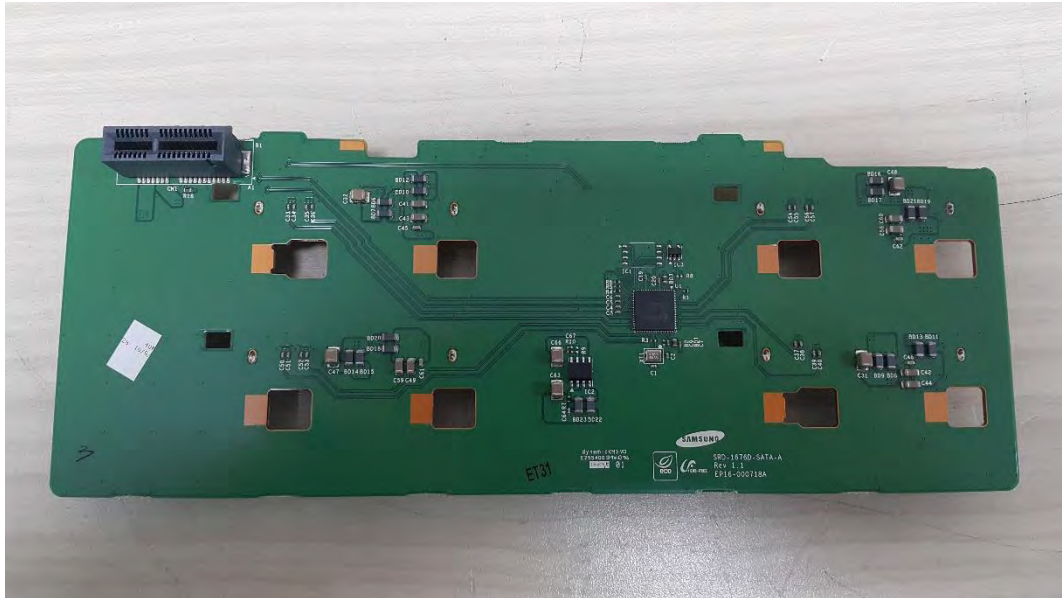
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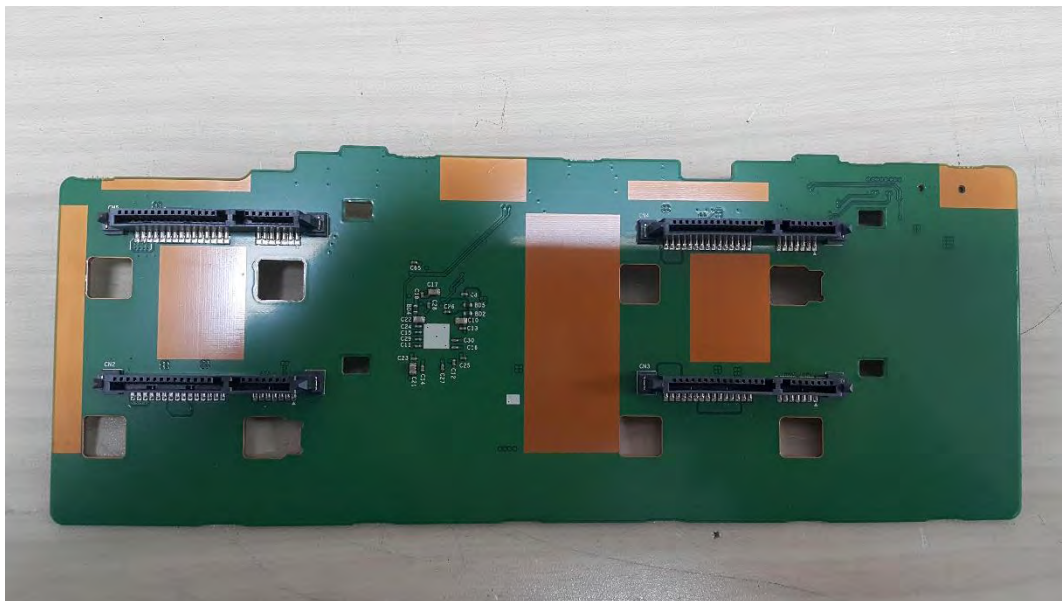
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EUT Internal View – SATA-A Board

(Top)



(Bottom)



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EUT Internal View – Switching Power Supply

(Top)



(Bottom)



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EUT Internal View – Remote Control

(Top)



(Bottom)



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EUT Internal View – Mouse

(Top)



(Bottom)



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EUT Internal View – CD-ROM

(Top)



(Bottom)



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EUT Internal View – Front Board

(Internal View)



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Label and Location



DVR

Model No : SRD-876DP

Manufacturer : Hanwha Techwin (Tianjin) Co.,Ltd.

Made in China

