



EMC TEST REPORT

Test Report No. : KES-E1-18T0653

Date of Issue : Nov. 22, 2018

Product name : DECORDER

Model/Type No. : SPD-151

Variant Mode : -

Applicant : Hanwha Techwin Co., Ltd.

Applicant Address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488, KOREA

Manufacturer : 1. Hanwha Techwin (Tianjin) Co.,Ltd.
2. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
3. D-TECH CO.,LTD.

Manufacturer Address : 1. No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin,
300385, People's Republic of China
2. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
3. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do,
Korea (Suwon Industrial Complex)

Equipment authorization : **Supply's Declaration of Conformity**

Date of Receipt : Nov. 12, 2018

Test date : Nov. 17, 2018

Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dong Hyun, Won
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Nov. 22, 2018	KES-E1-18T0653	Issued

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1.0 General Product Description

Main Specifications of EUT are:

항목			세부 설명
H/W	CPU		임베디드 CPU
	운영 체제		임베디드 리눅스
	출력	HDMI	1개 (최대 4K)
		VGA	1개 (최대 1080p)
		CVBS	1개
		비디오 출력 포맷	3840x2160@60HZ/30HZ(HDMI), 2560x1440@60HZ/30HZ(HDMI), 1920x1080@60HZ, 1280x1024@60H, 1280x720@60Hz
	외장장치	이더넷	1개 (10/100/1000BASE-T)
		USB	USB 2.0 2개 (Reserved)
		오디오 출력	1개
		LED	전원, 네트워크
	환경 사양	동작 온도	0°C ~ +40°C (+32°F ~ +104°F)
		동작 습도	20% ~ 85% RH
	전기적 사양	전원	12V DC, PoE (IEEE802.3af)
		소비 전력	최대 8.4W (12V DC), 최대 8.4W (PoE)
	외관	색상 / 재질	진회색 / 메탈
		외형 치수 (WxHxD)	178.0 x 34.0 x 187.8mm (7.01" x 1.34" x 7.39")
		무게	Approx. 0.68Kg (1.50 lb)

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항목			세부 설명
S/W	비디오	코덱	H.265/H.264/MJPEG
		디스플레이 성능	16x2M(1080P)@30fp, 8MP@30fps
		카메라 해상도	최대 12MP
		대역폭	200Mbps
		분할화면	(HDMI) 1/2x2/3x3/4x4/5x5/6x6(32Ch Only) (VGA) 1/2x2/3x3/4x4 (CVBS) 1
		레이아웃	최대 20개/모니터, 시퀀스 지원
	병합	모니터 병합	1x2, 2x1
		타일 병합	지원
	오디오	코덱	G.711/G.726/AAC
	관리 소프트웨어		Web-Viewer, SSM (Over 2.10.3)
	OS		Windows : 7, 8.1, 10 Mac OS X : 10.10, 10.11, 10.12, 10.13
	웹 브라우저		Google Chrome 63, Apple Safari 11 (Mac OS X only), MS Edge 41, MS Explorer 11
	시간 설정		NTP/수동
	내보내기 / 가져오기		Configuration Export/Import
	로그		최대 20000 (System log, Event log each)
	프로토콜		Over SUNAPI 2.3, S/NP support

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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 ☐ 230 Vac ☐ 120 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
DECORDER	SPD-151	-	Hanwha Techwin (Tianjin) Co.,Ltd.	EUT

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1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Network Camera	QND-6070RCH	-	Hanwha Techwin (Tianjin) Co.,Ltd.	-
PoE Adaptor	PD-3001GC/AC	RD9356082016964200	Power Dsine	-
Notebook	LG15N54	410NZET022292	LG Electronics	-
Notebook Adaptor	PA-1900-08	9702591703	Dongguang Lite Power 2nd Plant	-
Monitor 1	A2514_DPN	CN07BN4400591BSK28F5NK904	11ssan Elecom(shen yang) Co., Ltd	-
Monitor 1 Adaptor	A4514_DSM	CN078N4400721ASE38GCOYOXSR · S	SAMSUNG ELECTRONIC JAPAN Co., Ltd.	-
Monitor 2	LT23C350	009MHYCH106388P	SAMSUNG Electronics	-
Monitor 2 Adaptor	A4514_DDY	CN07BN44-00593BD07G690189	SAMSUNG ELECTRONIC JAPAN Co., Ltd.	-
Monitor 3	SMT-2233	ZC6U67VH500194D	Weihai Daewoo Electronics Co., Ltd.	-
Speaker	BR1000A Cuve Black 2	-	DONGGUAN EDIFIER TECHNOLOGY Co., Ltd	-
USB 2.0 Memory	-	-	-	4 GB

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1.6 External I/O Cabling

■ DC 12 V MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
DECORDER (EUT)	RJ-45	PoE Adaptor	RJ-45	4.0	U
	D - SUB	Monitor 1	D - SUB	1.7	S
	HDMI	Monitor 2	HDMI	1.8	S
	BNC	Monitor 3	BNC	4.0	S
	3.5 mm	Speaker	3.5 mm	1.4	U
	USB	USB 2.0 Memory	USB	-	-
PoE Adaptor	RJ-45	Notebook	RJ-45	3.0	U
	RJ-45	Network Camera	RJ-45	3.0	U

* Unshielded=U, Shielded=S

■ PoE MODE

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
DECORDER (EUT)	RJ-45	PoE Adaptor	RJ-45	4.0	U
	D - SUB	Monitor 1	D - SUB	1.7	S
	HDMI	Monitor 2	HDMI	1.8	S
	BNC	Monitor 3	BNC	4.0	S
	3.5 mm	Speaker	3.5 mm	1.4	U
	USB	USB 2.0 Memory	USB	-	-
PoE Adaptor	RJ-45	Notebook	RJ-45	3.0	U
	RJ-45	Network Camera	RJ-45	3.0	U

* Unshielded=U, Shielded=S



1.7 EUT Operating Mode(s)

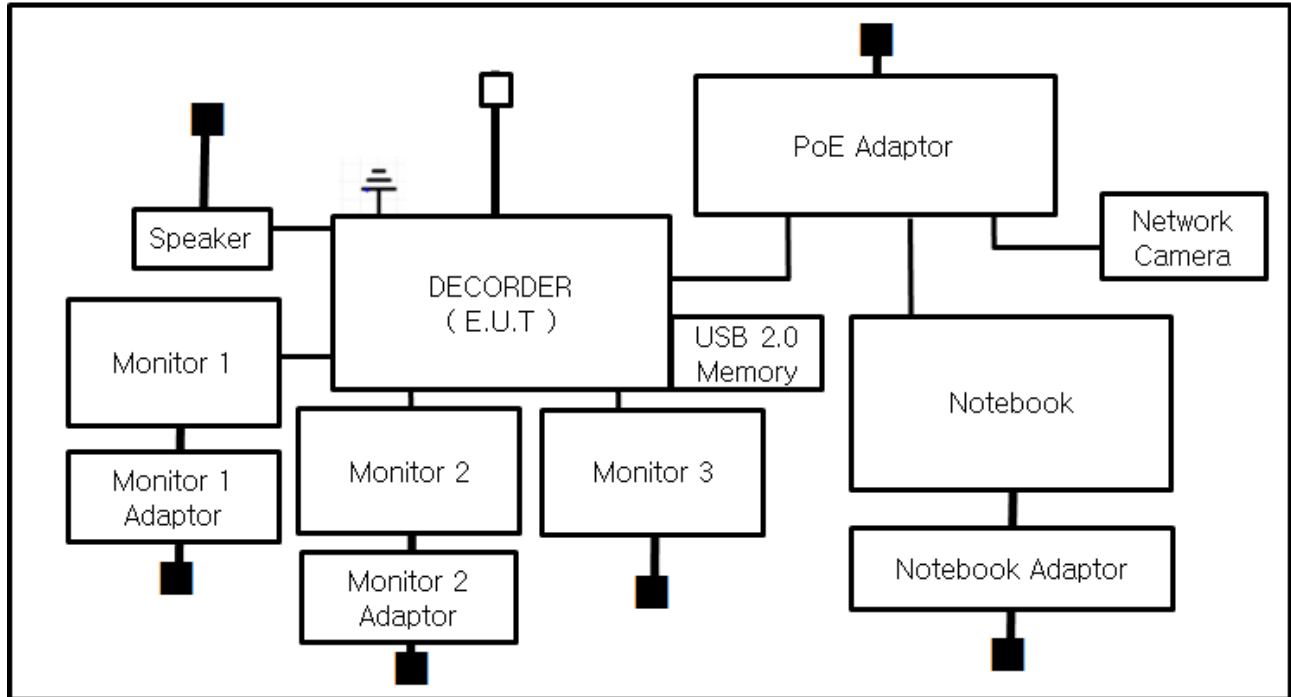
Test mode	operating
DC 12 V	EUT Monitoring, Ping Test
PoE	EUT Monitoring, Ping Test

EUT Test operating S/W		
Name	Version	Manufacture Company
WebViewer	-	Hanwha Techwin Co., Ltd.

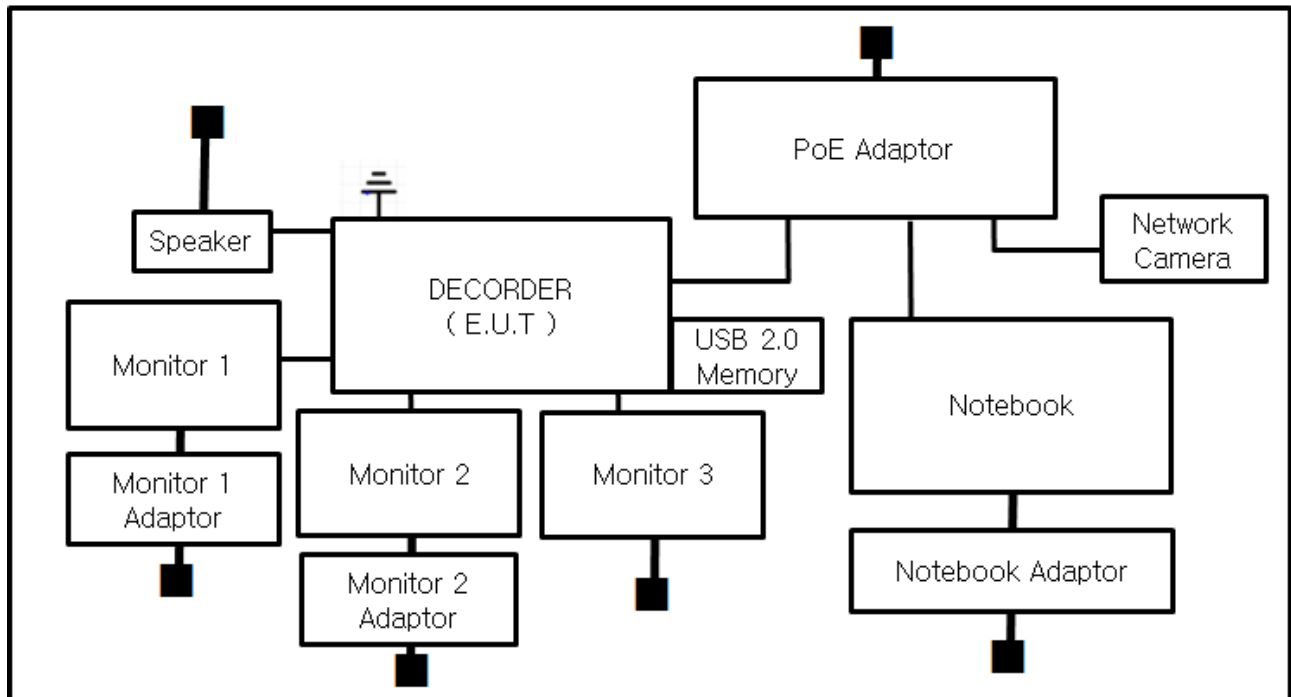
1.8 Configuration

■ AC Main
 □ DC Main

■ DC 12 V MODE



■ PoE MODE



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1.9 Remarks when standards applied

N/A

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 C63.4:2014 and CISPR 16-1-4:2012

1.12 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	 23298-1
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
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 17 07 01633 001

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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 55032:2015

☐ 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 / 2015.04**

☐ Class A

☐ Class B

☐ **AS/NZS:2013**

☐ Class A

☐ Class B

☒ **47 CFR Part 15, Subpart B**

☐ CISPR 22:2009 +A1:2010

☐ Class A

☐ Class B

☒ ANSI C63.4-2014

☒ Class A

☐ Class B

☒ **IC Regulation ICES-003 : 2016**

☐ CAN/CSA CISPR 22-10

☐ Class A

☐ Class B

☒ ANSI C63.4-2014

☒ Class A

☐ Class B

☐ **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

N/A

Test Location

Electro wave Shieldroom

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, 25, 2019
☐	LISN	ENV216	R & S	101787	01, 05, 2019
☐	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☐	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 27, 2018

Test Conditions

Temperature:

°C

Relative Humidity:

% R.H.

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

RemarksN/A: It is not tested apply because it is powered by DC and PoE.

2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Nov. 17, 2018

Test Location☐ OPEN AREA TEST SITE #2 ☒ SEMI ANECHOIC CHAMBER #4(10 m)**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, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 27, 2018
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	714	11, 28, 2018

Test ConditionsTemperature: 22,6 °C
Relative Humidity: 53,4 % R.H.**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

RemarksSee Appendix A for test data.

2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Nov. 17, 2018

Test Location

SEMI ANECHOIC CHAMBER #4(10 m)

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, 11, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 11, 2019
☐	ATTENUATOR	8491A	HP	35496	03, 21, 2019
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	09, 04, 2019

Test ConditionsTemperature: 22,6 °C
Relative Humidity: 53,4 % R.H.**Frequency Range of Measurement**

1 GHz to 5 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

RemarksSee Appendix A for test data.



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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

N/A

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NEUTRAL LINE

N/A

◆ 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))

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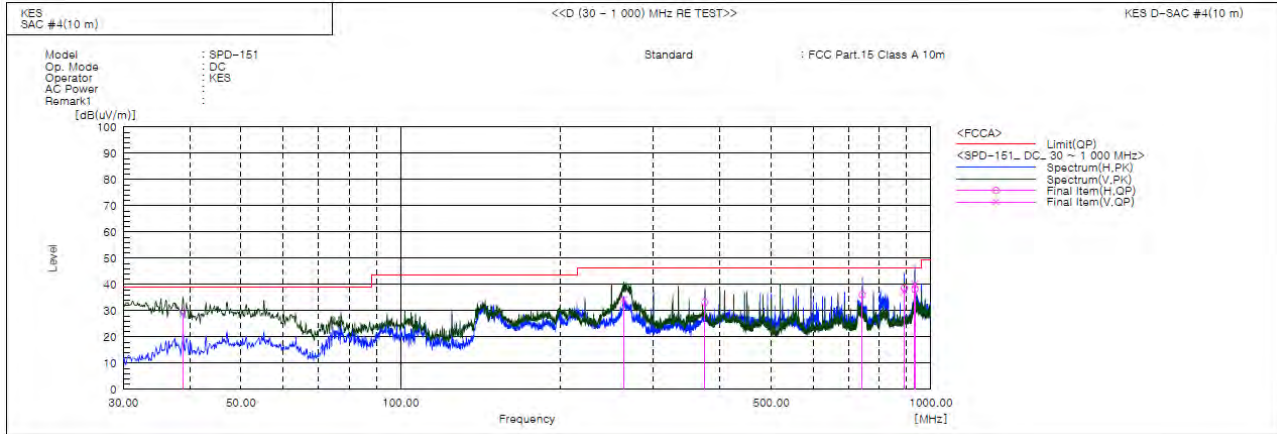
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Radiated Electric Field Emissions(Below 1 GHz)

■ DC 12 V MODE



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	38.851	V	59.3	-30.5	28.8	39.0	10.2	110.0	258.0	
2	263.528	V	60.1	-25.9	34.2	46.5	12.3	131.0	8.0	
3	374.956	H	55.6	-22.3	33.3	46.5	13.2	318.0	195.0	
4	742.586	H	50.6	-14.5	36.1	46.5	10.4	364.0	290.0	
5	890.568	V	48.9	-11.6	37.3	46.5	9.2	165.0	339.0	
6	891.118	H	50.2	-11.6	38.6	46.5	7.9	368.0	287.0	
7	932.658	V	51.3	-11.2	40.1	46.5	6.4	150.0	331.0	
8	933.325	H	49.3	-11.2	38.1	46.5	8.4	347.0	159.0	

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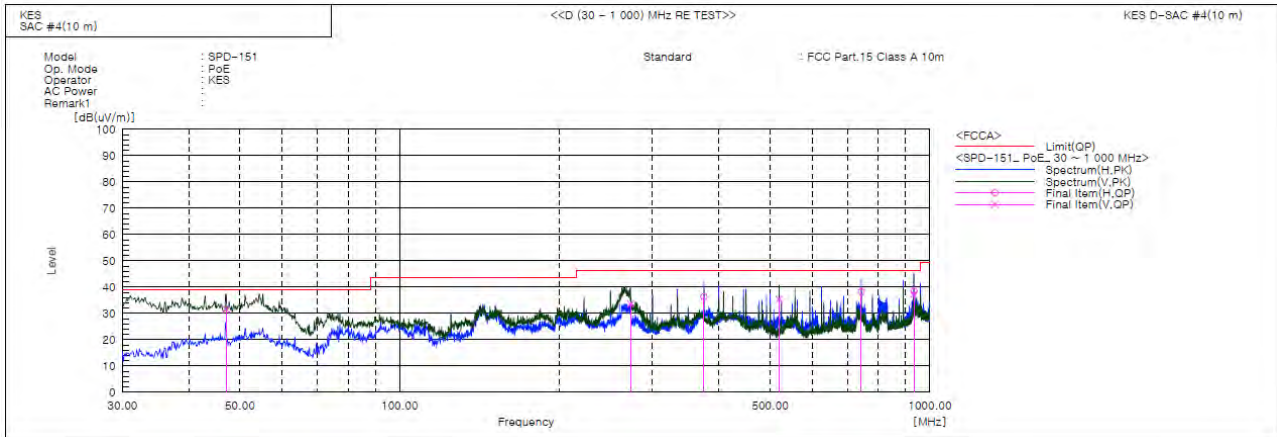


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■ PoE MODE



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	47.096	V	60.1	-28.5	31.6	39.0	7.4	128.0	286.0	
2	272.621	V	59.2	-25.6	33.6	46.5	12.9	132.0	341.0	
3	374.956	H	58.7	-22.3	36.4	46.5	10.1	342.0	207.0	
4	519.729	V	53.6	-18.2	35.4	46.5	11.1	211.0	169.0	
5	742.586	H	52.7	-14.5	38.2	46.5	8.3	345.0	223.0	
6	933.070	V	48.5	-11.2	37.3	46.5	9.2	154.0	170.0	
7	933.318	H	49.6	-11.2	38.4	46.5	8.1	356.0	330.0	

◆ 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



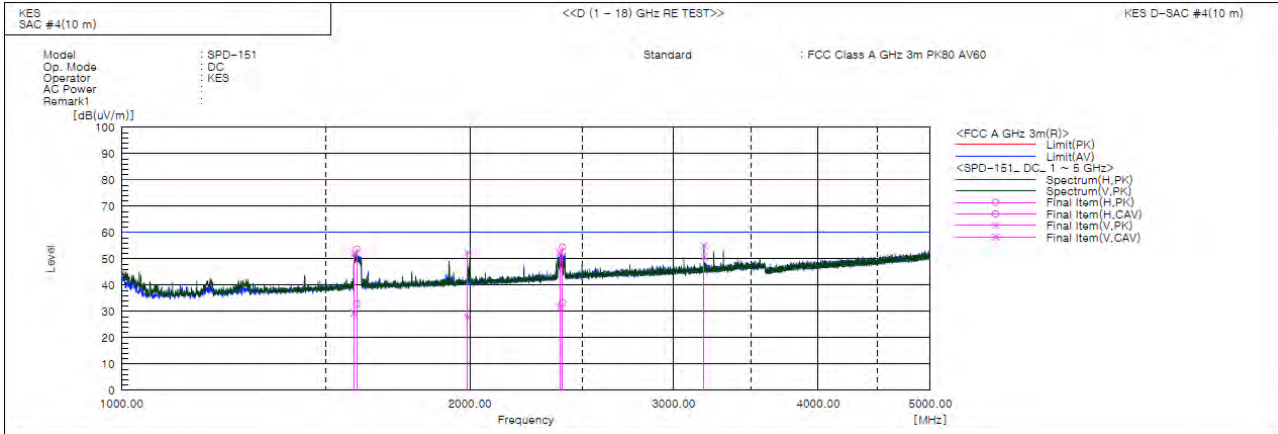
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Radiated Electric Field Emissions(Above 1 GHz)

■ DC 12 V MODE



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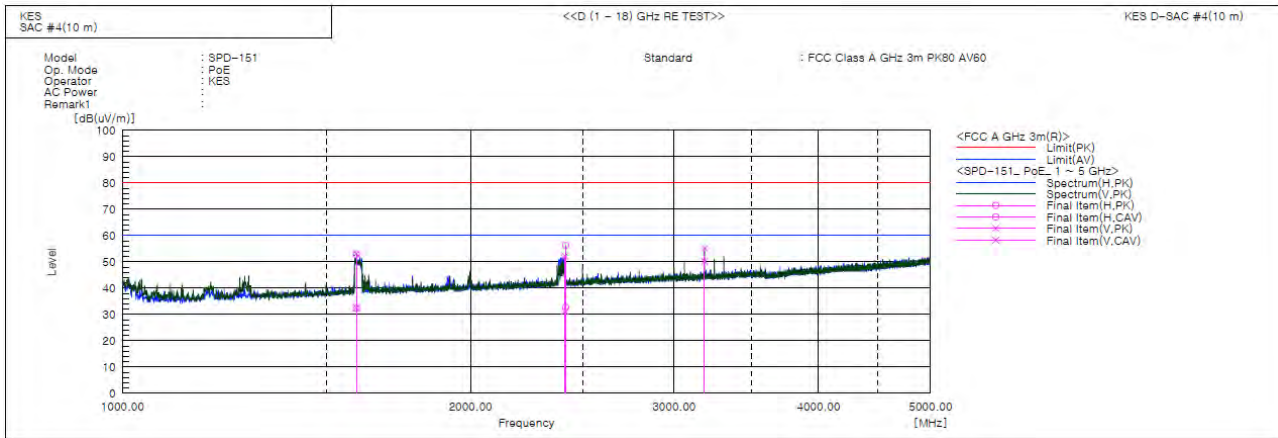


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Test report No.:
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■ PoE MODE



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	1593.270	V	55.8	35.2	-2.7	53.1	32.5	80.0	60.0	26.9	27.5	109.0	312.0	
2	1593.635	H	55.7	35.0	-2.7	53.0	32.3	80.0	60.0	27.0	27.7	118.0	316.0	
3	2414.875	V	50.9	29.9	1.3	52.2	31.2	80.0	60.0	27.8	28.8	132.0	296.0	
4	2417.365	H	54.8	31.2	1.4	56.2	32.6	80.0	60.0	23.8	27.4	145.0	136.0	
5	3187.615	V	51.0	46.1	4.1	55.1	50.2	80.0	60.0	24.9	9.8	100.0	178.0	

◆ Calculation

Result(PK/CAV) [dB(uV/m)] = (Reading(PK/CAV)[dB(uV)] + c.f[dB(1/m)])

Margin(PK/CAV)[dB] = Limit[dB(uV/m)] - Result(PK/CAV) [dB(uV/m)]

Reading(PK/CAV) : Reading value, Result(PK/CAV) : Reading value + Factor value

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

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Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

N/A

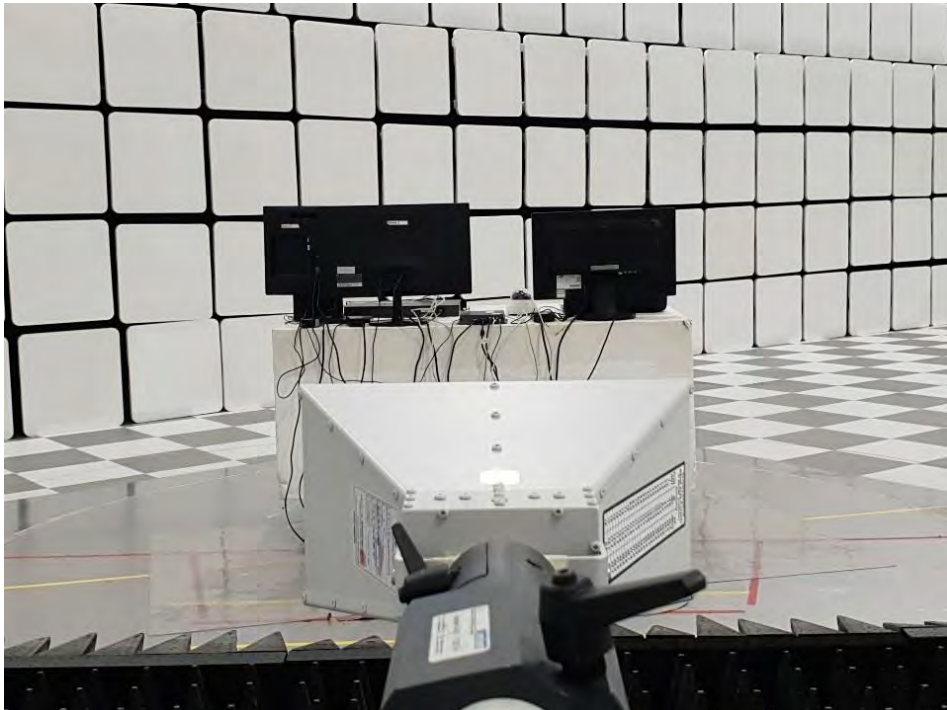
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Radiated Electric Field Emissions(Below 1 GHz)



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Radiated Electric Field Emissions(Above 1 GHz)



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EUT External Photographs

(Top)



(Bottom)



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EUT Internal Photographs

(Internal View)

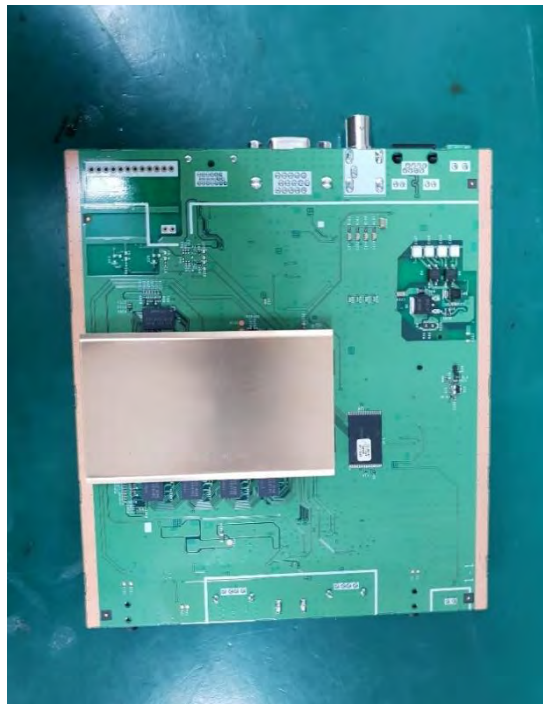


EUT Internal View – Main Board

(Top)



(Bottom)



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Label Photographs



CAN ICES-3(A) / NMB-3(A)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.