



EMC TEST REPORT

Test Report No. : KES-EM-20T0579
Date of Issue : Sep. 07, 2020
Product name : Flat Panel Digital X-ray Detector
Model/Type No. : EXT 1824G
Variant Mode : Scansilc 1824 EOD
Applicant : DRTECH Corporation
Applicant Address : Suite No.1, 1Floor / Suite No.2 3Floor, 29,
Dunchon-daero 541 beon-gil, Jungwon-gu, Seongnam-si,
Gyeonggi-do, 13216, Korea
Manufacturer : DRTECH Corporation
Manufacturer Address : Suite No.1, 1Floor / Suite No.2 3Floor, 29,
Dunchon-daero 541 beon-gil, Jungwon-gu, Seongnam-si,
Gyeonggi-do, 13216, Korea
FCC ID : RNHEXT1824G
Date of Receipt : Jul. 13, 2020
Test date : Jul. 13, 2020 ~ Jul. 16, 2020
Test Results : ☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Min Seong, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

**KES Co., Ltd.**

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Sep. 07, 2020	KES-EM-20T0579	Issued

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3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
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1.0 General Product Description

Main Specifications of EUT are:

Item	Description
Model	SCANSILC 1824 EOD
Purpose	EOD, Industrial NDT
Pixel Pitch	76 μ m
Scintillator	Gadox (Gadolinium Oxysulfide)
Image Matrix Size	2304 $\times$ 3072 pixels
Effective Imaging Area (H $\times$ V)	233.472 x 175.104 mm
Image Acquisition and Transfer Time	< 4sec (with HR Mode) , < 3 sec (with HT Mode)
Rated Power Supply Wireless Wired	Powered by the battery pack (DRTECH Corporation(Powerlinx) / EVS-MBP-Y / 7.4V, 4000mAh) Powered by Power adaptor using tether interface (XP Power / AHM85PS12 / DC12V 7.08A)
Power Consumption	Max. 24 W
Network Interface	Gigabit wired / WIFI(2.4G, 5G)
Dimensions (mm) ± 0.5 mm]	265(W) x 215(H) x 21.8(D)
Weight	1.7 kg
IP grade	IP67
Environmental Requirements	
Operational	Temperature: 0°C to 45°C (-20 to 45 °C @ Operating with External Battery) Humidity: 30 to 85% RH (Without Condensing) Atmospheric pressure: 700 to 1060 hPa
Storage and Transportation(unpacked)	Temperature: 0°C to 45°C (12h Storage -40 to 70 °C) Humidity: 5 to 95% (Without Condensing) Atmospheric pressure: 500 to 1060 hPa



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 ☒ Battery

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Marketing Purpose

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Flat Panel Digital X-ray Detector	EXT 1824G	-	DRTECH Corporation	EUT
Adapter	AHM85PS12	V20150248	XP Power	-

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Notebook	15U480	-	Tech-Front (Chongqing) Computer Co., Ltd.	-
Notebook Adapter	A13-040N3A	-	CHICONY POWER TECHNOLOGY (SUZHOU) CO., LTD.	-
JIG	-	-	-	-



1.6 External I/O Cabling

■ Charging & Operating Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Flat Panel Digital X-ray Detector (EUT)	DC Jack	Adapter (EUT)	DC Jack	5.0	S
	USB	Notebook	RJ-45	5.0	S

* Unshielded=U, Shielded=S

■ Battery & Operating Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Flat Panel Digital X-ray Detector (EUT)	DC Jack	Notebook	RJ-45	5.0	S

* Unshielded=U, Shielded=S

■ WIFI 2.4 GHz, WIFI 5 GHz Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Flat Panel Digital X-ray Detector (EUT)	Wireless	Notebook	Wireless	-	-

* Unshielded=U, Shielded=S

■ Bluetooth Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Flat Panel Digital X-ray Detector (EUT)	Wireless	Notebook	Wireless	-	-
	Wireless	JIG	Wireless	-	-

* Unshielded=U, Shielded=S

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1.7 EUT Operating Mode(s)

Test mode	operating
Charging & Operating	After connecting the EUT and the Notebook by wire, charge the EUT with the adapter, and check the operation of the eut using the Noetbook's program.
Battery & Operating	After connecting the EUT and the Notebook by wire, use the Noetbook's program to check the operation of the EUT.
WIFI 2.4 GHz, WIFI 5 GHz	After connecting the EUT and the Notebook by wireless, use the Noetbook's program to check the operation of the EUT.
Bluetooth	After connecting the EUT and the Notebook by wireless, use the Noetbook's program(EVS2430N) to check the operation of the JIG

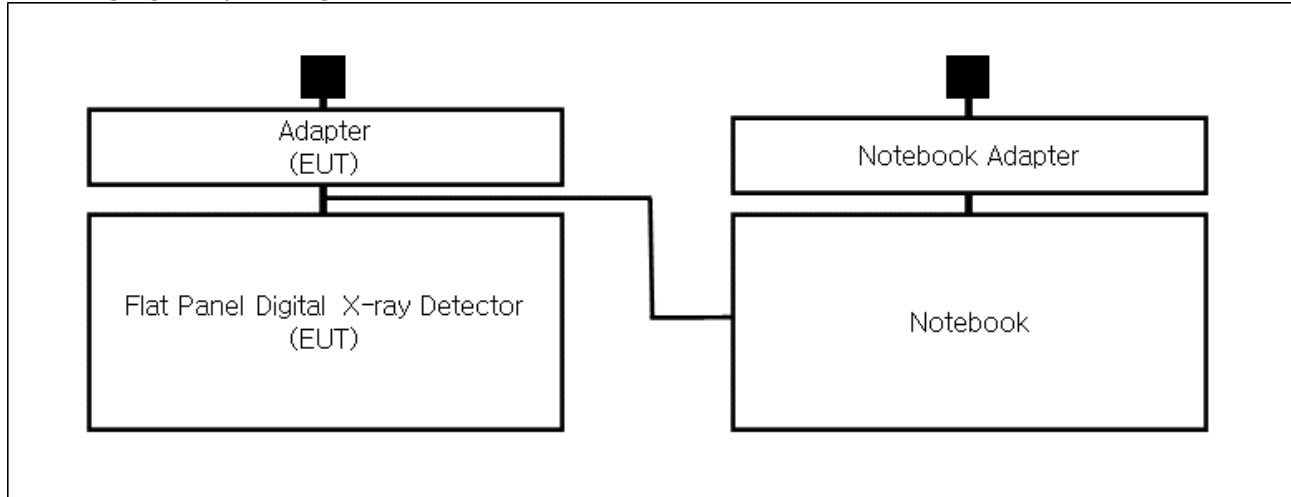
EUT Test operating S/W		
Name	Version	Manufacture Company
ECali1	-	DRTECH Corporation
EVS2430N	-	DRTECH Corporation

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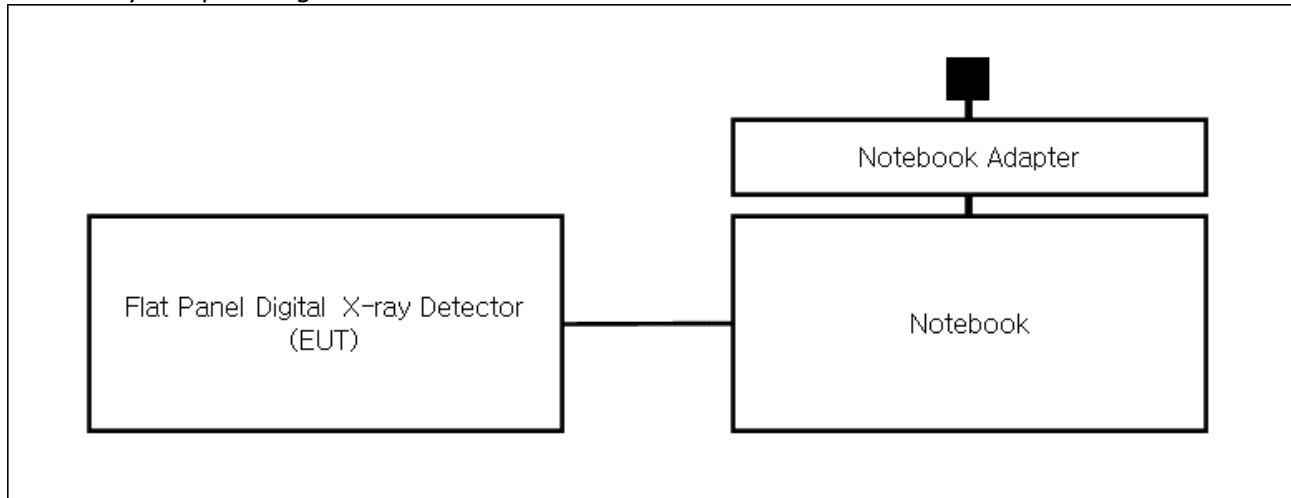
1.8 Configuration

■ AC Main
 □ DC Main

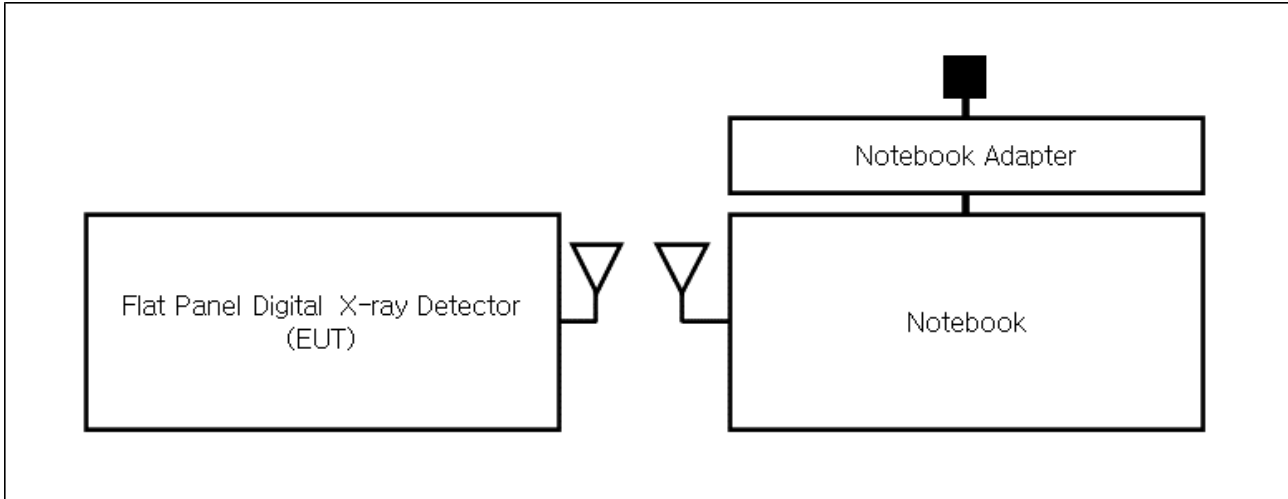
■ Charging & Operating Mode



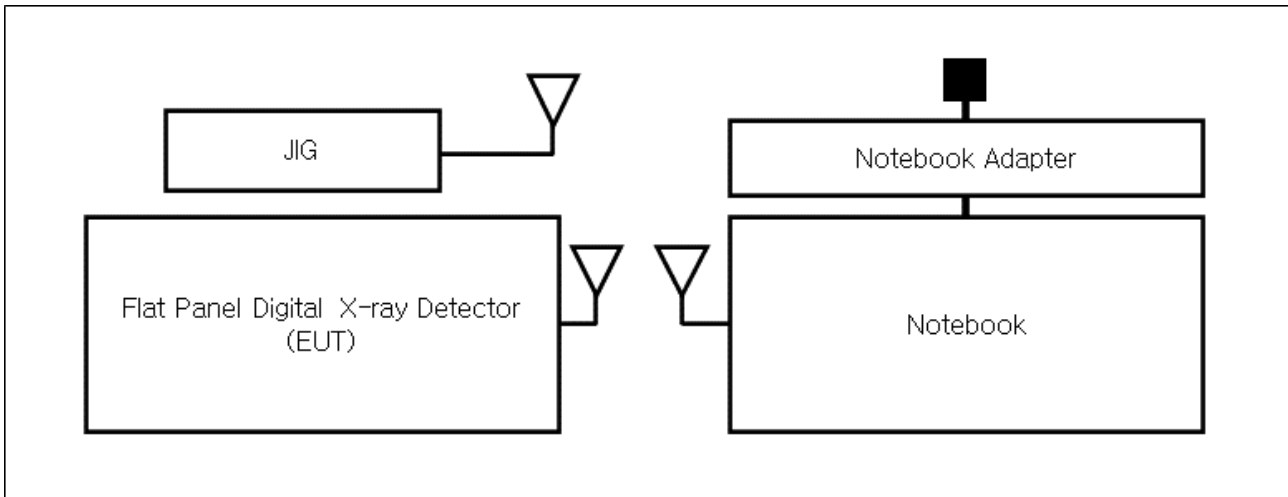
■ Battery & Operating Mode



■ WIFI 2.4 GHz, WIFI 5 GHz Mode



■ Bluetooth Mode



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 Measurement Procedure

- Conducted Emissions

The conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emission exceed the average limit with the instrument set to the quasi-peak mode, the measurements are made in the average mode. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded. Quasi-peak readings are distinguished with a "QP".

- Radiated Electric Field Emissions

The test was done at a SEMI ANECHOIC CHAMBER with quasi-peak detector. The final test data was measured using a Quasi-Peak detector below 1 GHz at 10 m or 3 m distance and a Peak and Average detector above 1 GHz at 3 m distance. Test was proceeded worst case test mode and cable configuration. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

Measurement procedures was In accordance with ANSI C63.4-2014 7.3.3, 7.3.4, 8.3.1.1, 8.3.1.2, 8.3.2.1, 8.3.2.2

1.13 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-20056, C-20036 T-20040, G-20057
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 001633 0004



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+A1:2019

☐ EN 61326-1:2013

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- | | | |
|--|---|----------------------------------|
| ☐ VCCI-CISPR 32:2016 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR32:2015 | ☐ 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 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Jul. 13, 2020

Test Location

Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due	calibration interval
☒	EMI Test S/W	EMC32	R & S	9.12.00	-	-
☒	EMI TEST RECEIVER	ESR3	R & S	101783	01, 20, 2021	1 Year
☒	LISN	ENV216	R & S	101787	01, 02, 2021	1 Year
☒	LISN	ESH2-Z5	R & S	100450	01, 02, 2021	1 Year
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	01, 02, 2021	1 Year

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 56,9 % 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

RemarksSee Appendix A for test data.

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2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jul. 13, 2020

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

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due	calibration interval
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2021	1 Year
☒	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2020	1 Year
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020	2 Year
☒	ATTENUATOR	8491A	HP	32173	03, 10, 2021	1 Year

Test Conditions

Temperature: 24,1 °C
Relative Humidity: 56,9 % 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.

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2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Jul. 16, 2020

Test Location

SEMI ANECHOIC CHAMBER #5

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due	calibration interval
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.120	-	-
☒	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	04, 01, 2021	1 Year
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 13, 2020	1 Year
☒	PREAMPLIFIER	8449B	AGILENT	8008A01640	04, 01, 2021	1 Year

Test Conditions

Temperature: 24,4 °C

Relative Humidity: 48,0 % R.H.

Frequency Range of Measurement

1 GHz to 18 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

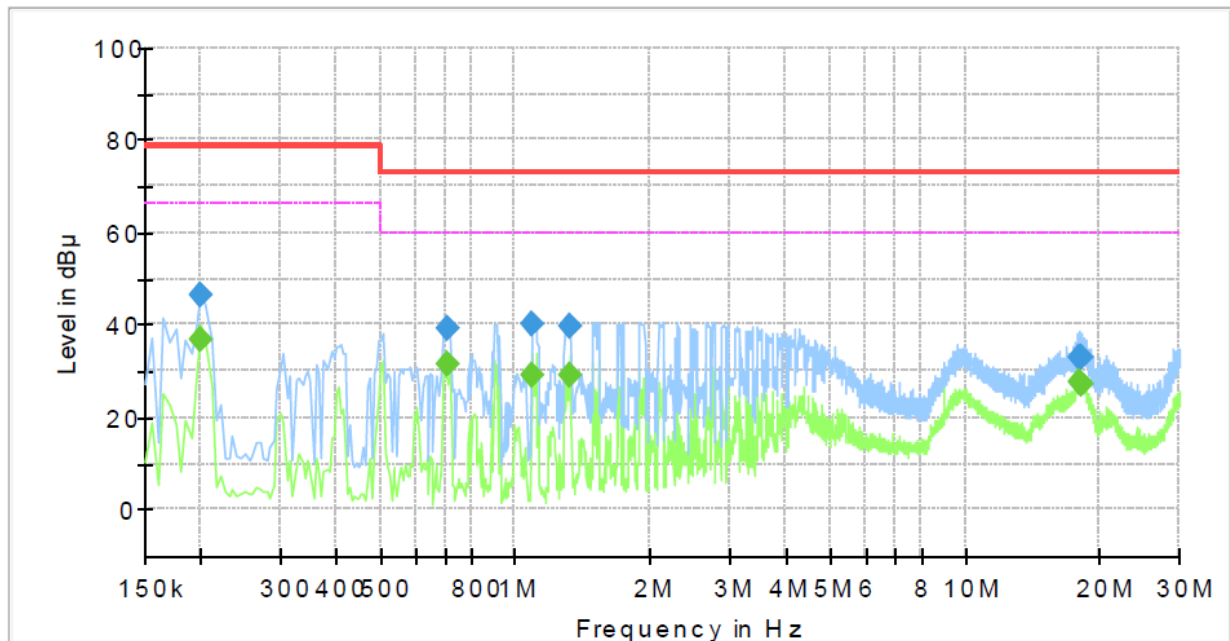
Conducted Emissions at Mains Power Ports

■ Charging & Operating Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	EXT 1824G
Phase:	H
Mode:	Charging & Operating
Operator Name:	KES



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.200000	---	36.74	66.00	29.26	1000.0	9.000	L1	19.5
0.200000	46.51	---	79.00	32.49	1000.0	9.000	L1	19.5
0.710000	---	31.64	60.00	28.36	1000.0	9.000	L1	19.6
0.710000	39.14	---	73.00	33.86	1000.0	9.000	L1	19.6
1.090000	---	28.94	60.00	31.06	1000.0	9.000	L1	19.7
1.090000	40.01	---	73.00	32.99	1000.0	9.000	L1	19.7
1.320000	---	29.29	60.00	30.71	1000.0	9.000	L1	19.7
1.320000	39.92	---	73.00	33.08	1000.0	9.000	L1	19.7
18.025000	---	27.40	60.00	32.60	1000.0	9.000	L1	20.2
18.025000	32.99	---	73.00	40.01	1000.0	9.000	L1	20.2
18.175000	---	27.27	60.00	32.73	1000.0	9.000	L1	20.2
18.175000	32.90	---	73.00	40.10	1000.0	9.000	L1	20.2

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NEUTRAL LINE

Common Information

Test Description:

Model No.:

Phase:

Mode:

Operator Name:

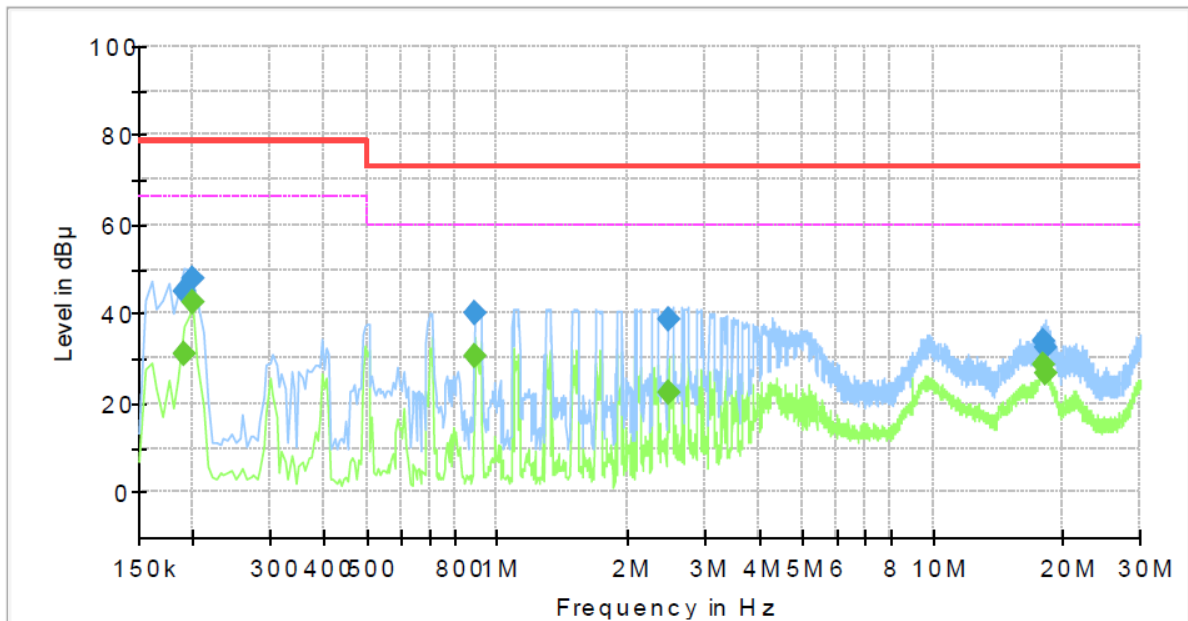
Conducted Emission

EXT 1824G

N

Charging & Operating

KES



Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.190000	---	30.91	66.00	35.09	1000.0	9.000	N	19.5
0.190000	44.84	---	79.00	34.16	1000.0	9.000	N	19.5
0.200000	---	42.58	66.00	23.42	1000.0	9.000	N	19.5
0.200000	47.94	---	79.00	31.06	1000.0	9.000	N	19.5
0.890000	---	30.32	60.00	29.68	1000.0	9.000	N	19.6
0.890000	40.09	---	73.00	32.91	1000.0	9.000	N	19.6
2.465000	---	22.33	60.00	37.67	1000.0	9.000	N	19.7
2.465000	38.89	---	73.00	34.11	1000.0	9.000	N	19.7
17.900000	---	28.55	60.00	31.45	1000.0	9.000	N	20.2
17.900000	33.87	---	73.00	39.13	1000.0	9.000	N	20.2
18.195000	---	26.84	60.00	33.16	1000.0	9.000	N	20.2
18.195000	32.42	---	73.00	40.58	1000.0	9.000	N	20.2

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◆ Calculation

$\text{QuasiPeak}[\text{dBuV}] / \text{CAverage} [\text{dBuV}] = \text{Reading Value}[\text{dBuV}] + \text{Corr.} [\text{dB}]$

QuasiPeak / Caverage : The Final Value

Reading Value : Not shown in the table.

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

Uncertainty of measurement

HOT Line : Uncertainty of measurement 2.46 dB

(Confidence level: Approx. 95 %, $k=2$)

Neutral Line : Uncertainty of measurement 2.46 dB

(Confidence level: Approx. 95 %, $k=2$)

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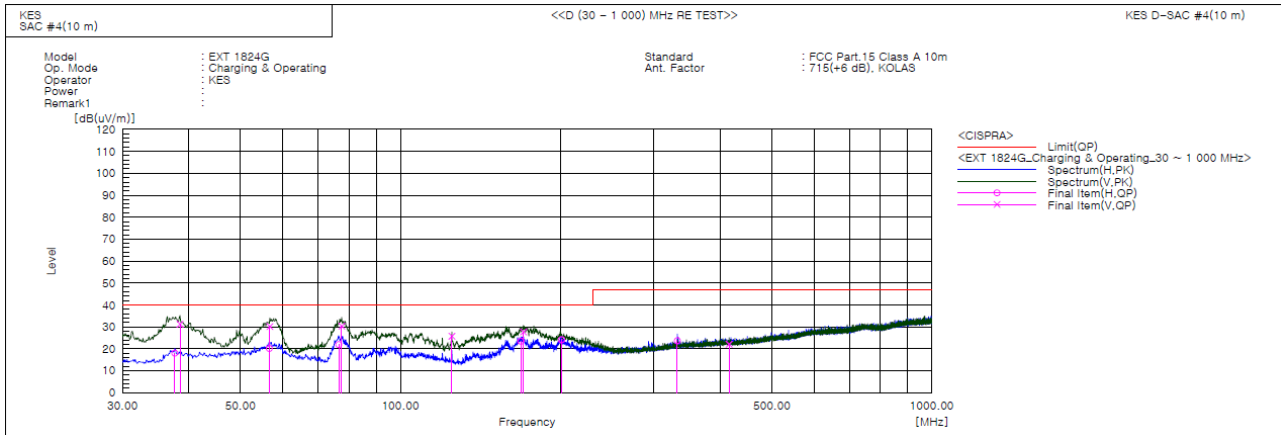
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Radiated Electric Field Emissions(Below 1 GHz)

■ Charging & Operating 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	37.639	H	42.2	-24.2	18.0	40.0	22.0	400.0	48.0	
2	38.488	V	54.9	-23.7	31.2	39.0	7.8	108.0	267.0	
3	56.675	H	42.2	-22.1	20.1	40.0	19.9	400.0	356.0	
4	56.796	V	52.2	-22.1	30.1	39.0	8.9	100.0	249.0	
5	76.560	H	49.2	-27.3	21.9	40.0	18.1	305.0	25.0	
6	77.530	V	57.8	-27.5	30.3	39.0	8.7	132.0	84.0	
7	124.939	V	50.7	-25.0	25.7	40.0	14.3	127.0	359.0	
8	168.589	H	48.0	-24.6	23.4	40.0	16.6	314.0	162.0	
9	170.408	V	52.2	-24.5	27.7	40.0	12.3	100.0	251.0	
10	201.084	H	46.0	-21.9	24.1	43.5	19.4	400.0	227.0	
11	331.913	H	40.7	-17.0	23.7	47.0	23.3	400.0	354.0	
12	415.454	V	37.3	-15.2	22.1	47.0	24.9	145.0	141.0	

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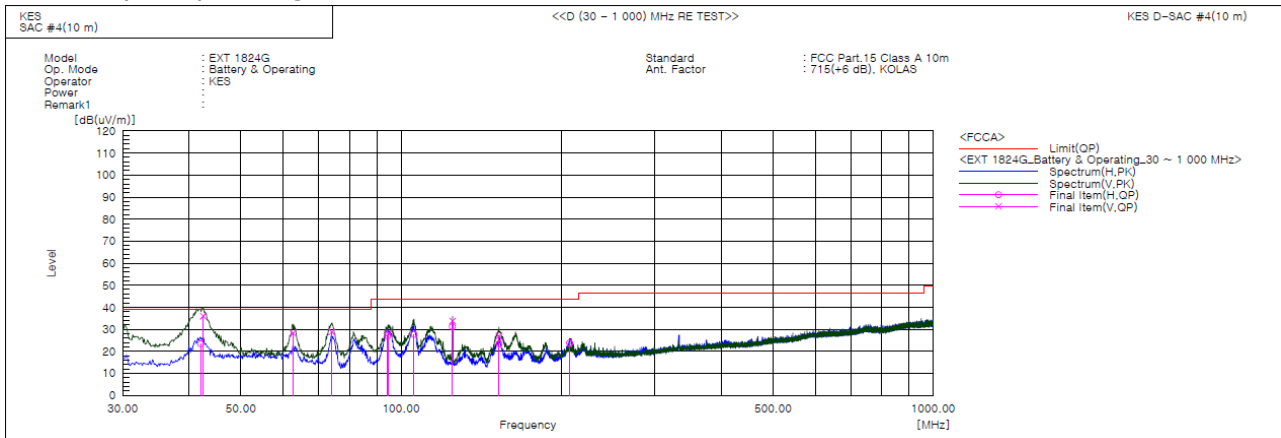


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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
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Battery & Operating Mode



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	42.004	H	45.8	-22.4	23.4	39.0	15.6	400.0	356.0	
2	42.489	V	58.3	-22.3	36.0	39.0	3.0	121.0	266.0	
3	62.616	V	51.4	-23.1	28.3	39.0	10.7	131.0	301.0	
4	74.135	V	55.4	-26.6	28.8	39.0	10.2	105.0	259.0	
5	94.384	H	50.7	-23.7	27.0	43.5	16.5	400.0	357.0	
6	94.748	V	51.8	-23.6	28.2	43.5	15.3	132.0	298.0	
7	105.781	H	50.3	-22.6	27.7	43.5	15.8	400.0	49.0	
8	124.904	H	56.1	-24.9	31.2	43.5	12.3	323.0	29.0	
9	124.939	V	58.9	-25.0	33.9	43.5	9.6	111.0	163.0	
10	152.705	V	53.0	-26.0	27.0	43.5	16.5	100.0	13.0	
11	152.826	H	49.4	-26.0	23.4	43.5	20.1	296.0	29.0	
12	207.268	H	45.2	-21.4	23.8	43.5	19.7	344.0	356.0	

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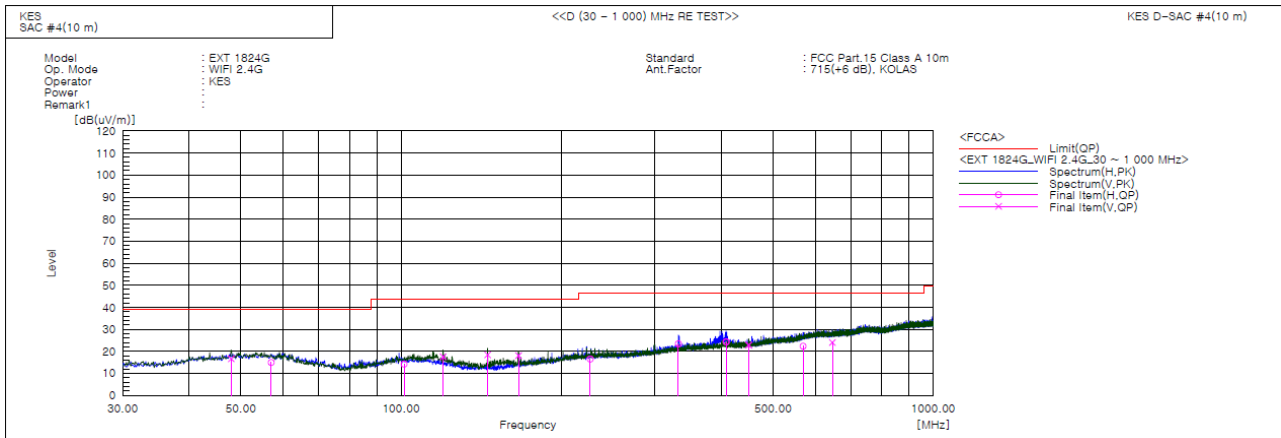


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WIFI 2.4 GHz Mode



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	47.945	V	38.2	-21.6	16.6	39.0	22.4	150.0	188.0	
2	57.039	H	37.0	-22.1	14.9	39.0	24.1	212.0	239.0	
3	101.295	H	36.8	-22.6	14.2	43.5	29.3	121.0	69.0	
4	119.968	V	41.8	-24.2	17.6	43.5	25.9	100.0	68.0	
5	145.430	V	44.6	-26.2	18.4	43.5	25.1	211.0	141.0	
6	166.164	V	42.8	-24.7	18.1	43.5	25.4	143.0	299.0	
7	226.668	H	37.0	-20.5	16.5	46.5	30.0	311.0	270.0	
8	331.913	H	40.4	-17.0	23.4	46.5	23.1	400.0	11.0	
9	408.058	H	39.5	-15.2	24.3	46.5	22.2	292.0	295.0	
10	450.010	V	37.4	-14.6	22.8	46.5	23.7	110.0	280.0	
11	569.078	H	33.3	-11.0	22.3	46.5	24.2	278.0	250.0	
12	645.829	V	33.3	-9.3	24.0	46.5	22.5	105.0	322.0	

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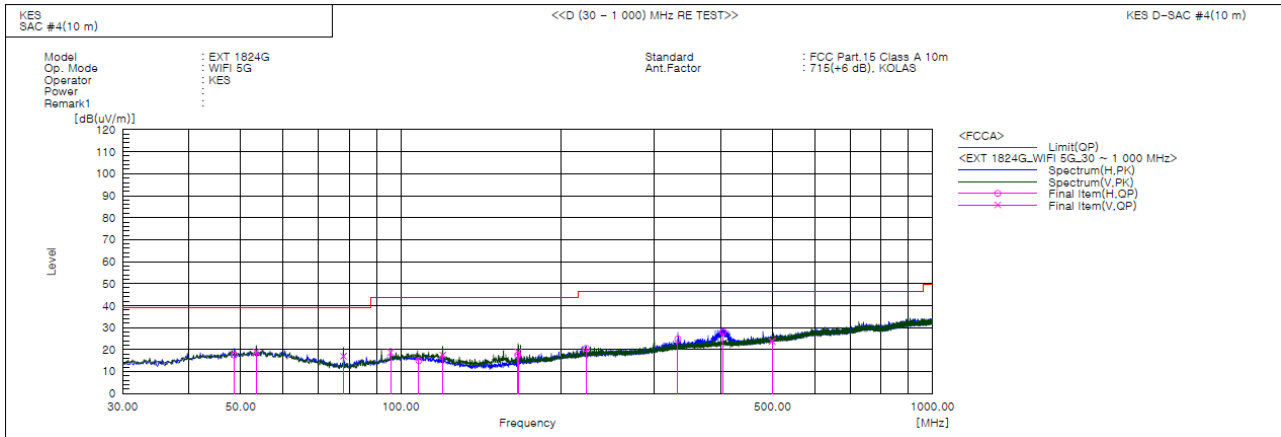


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WIFI 5 GHz Mode



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	48.673	H	39.0	-21.5	17.5	39.0	21.5	284.0	302.0	
2	53.523	V	40.6	-21.7	18.9	39.0	20.1	108.0	162.0	
3	78.015	V	44.6	-27.6	17.0	39.0	22.0	100.0	120.0	
4	95.718	V	42.0	-23.3	18.7	43.5	24.8	155.0	147.0	
5	108.206	H	37.6	-22.7	14.9	43.5	28.6	332.0	282.0	
6	119.968	V	41.7	-24.2	17.5	43.5	26.0	100.0	82.0	
7	165.921	H	42.3	-24.8	17.5	43.5	26.0	314.0	222.0	
8	166.164	V	43.5	-24.7	18.8	43.5	24.7	100.0	188.0	
9	223.151	H	41.1	-20.6	20.5	46.5	26.0	400.0	298.0	
10	331.913	H	41.8	-17.0	24.8	46.5	21.7	293.0	8.0	
11	403.814	H	43.3	-15.3	28.0	46.5	18.5	275.0	166.0	
12	499.238	V	36.7	-12.9	23.8	46.5	22.7	121.0	340.0	

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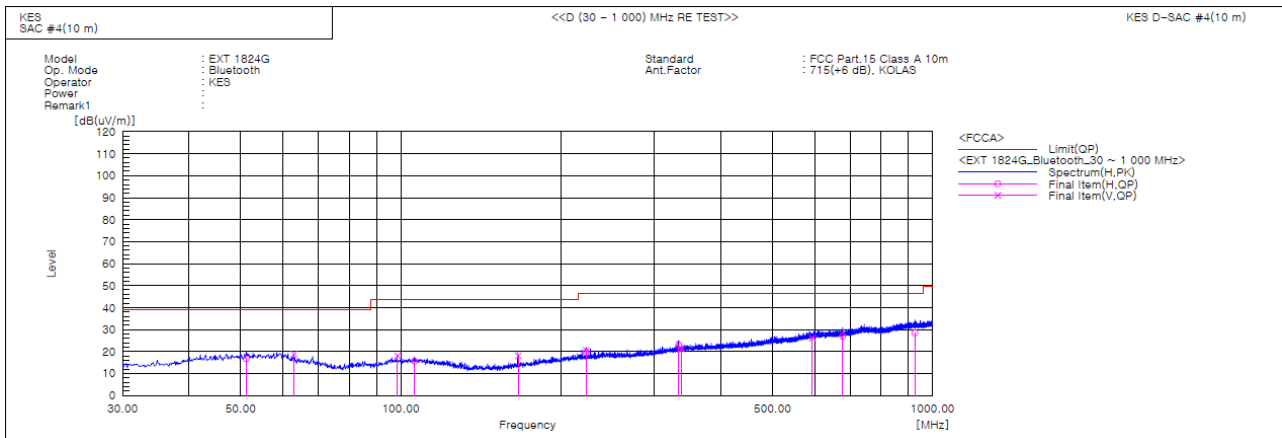
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Bluetooth Mode



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	51.219	H	38.2	-21.5	16.7	39.0	22.3	248.0	41.0	
2	62.980	V	42.1	-23.2	18.9	39.0	20.1	100.0	95.0	
3	98.628	V	40.8	-22.7	18.1	43.5	25.4	181.0	138.0	
4	106.145	H	38.2	-22.6	15.6	43.5	27.9	296.0	271.0	
5	166.406	V	42.8	-24.7	18.1	43.5	25.4	108.0	298.0	
6	223.151	H	40.3	-20.6	19.7	46.5	26.8	400.0	277.0	
7	223.174	V	41.1	-20.6	20.5	46.5	26.0	101.0	18.0	
8	333.246	H	39.9	-16.9	23.0	46.5	23.5	314.0	10.0	
9	337.248	V	37.9	-16.8	21.1	46.5	25.4	100.0	175.0	
10	593.934	V	36.1	-10.0	26.1	46.5	20.4	111.0	225.0	
11	677.475	H	35.9	-9.0	26.9	46.5	19.6	400.0	285.0	
12	926.523	H	33.9	-5.5	28.4	46.5	18.1	372.0	25.0	

◆ Calculation – SAC #4(10 m)

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

Margin(QP)[dB] = Limit[dB(μ V/m)] – Result(QP) [dB(μ V/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

Uncertainty of measurement

Horizontal : Uncertainty of measurement 4.40 dB

(Confidence level: Approx. 95 %, $k=2$)

Vertical : Uncertainty of measurement 4.36 dB

(Confidence level: Approx. 95 %, $k=2$)

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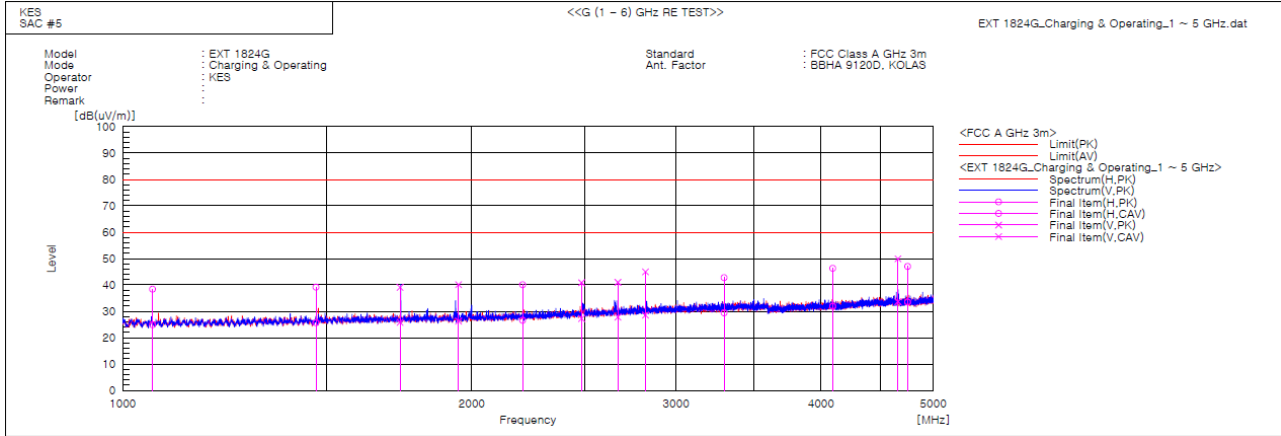
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Radiated Electric Field Emissions(Above 1 GHz)

■ Charging & Operating Mode – (1 ~ 5) 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	1060.912	H	48.0	34.5	-9.6	38.4	24.9	80.0	60.0	41.6	35.1	241.0	192.9	
2	1467.688	H	47.0	33.5	-7.8	39.2	25.7	80.0	60.0	40.8	34.3	222.0	114.7	
3	1734.006	V	45.9	32.6	-6.8	39.1	25.8	80.0	60.0	40.9	34.2	112.0	167.4	
4	1947.806	V	46.4	32.5	-6.2	40.2	26.3	80.0	60.0	39.8	33.7	100.0	2.1	
5	2211.981	H	45.5	32.0	-5.4	40.1	26.6	80.0	60.0	39.9	33.4	331.0	24.1	
6	2486.944	V	45.3	31.7	-4.4	40.9	27.3	80.0	60.0	39.1	32.7	151.0	98.2	
7	2673.044	V	44.7	31.5	-3.7	41.0	27.8	80.0	60.0	39.0	32.2	105.0	139.5	
8	2822.837	V	48.0	31.6	-3.0	45.0	28.6	80.0	60.0	35.0	31.4	173.0	169.2	
9	3300.225	H	44.7	31.3	-1.9	42.8	29.4	80.0	60.0	37.2	30.6	400.0	237.4	
10	4093.781	H	45.8	31.4	0.5	46.3	31.9	80.0	60.0	33.7	28.1	344.0	21.1	
11	4660.025	V	47.9	31.7	2.0	49.9	33.7	80.0	60.0	30.1	26.3	131.0	143.1	
12	4751.212	H	44.8	31.3	2.2	47.0	33.5	80.0	60.0	33.0	26.5	296.0	185.6	

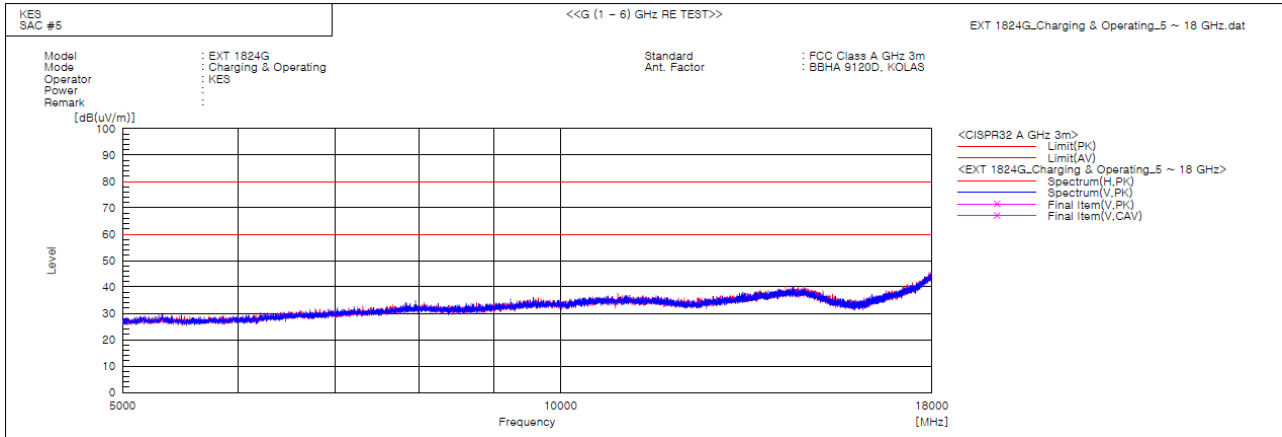


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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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– (5 ~ 18) GHz



* No spurious emission were detected Above 5 GHz

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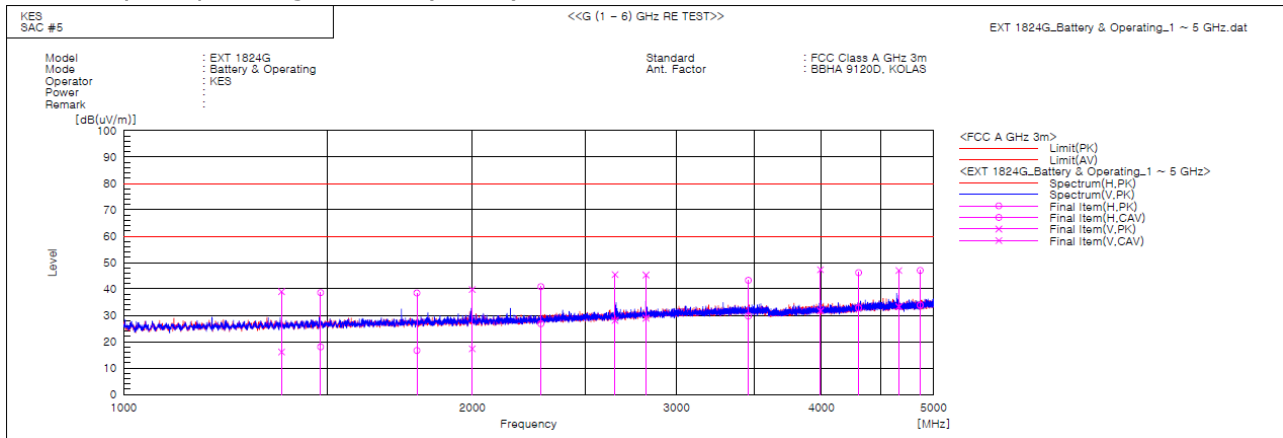


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Battery & Operating Mode - (1 ~ 5) GHz



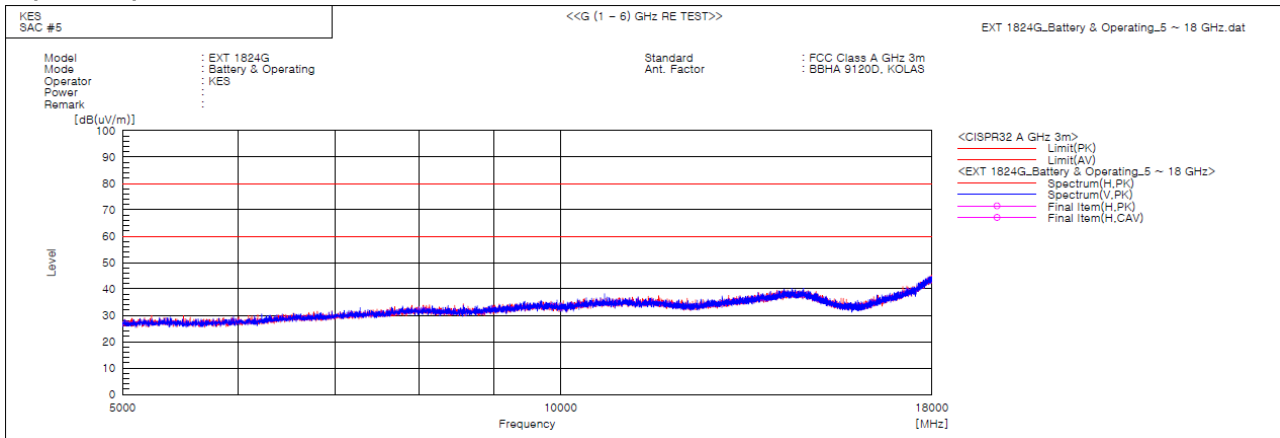
Final Result

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	1368.585	V	47.2	24.3	-8.2	39.0	16.1	80.0	60.0	41.0	43.9	141.0	351.8	
2	1479.110	H	46.3	25.7	-7.7	38.6	18.0	80.0	60.0	41.4	42.0	312.0	115.7	
3	1790.755	H	45.2	23.4	-6.7	38.5	16.7	80.0	60.0	41.5	43.3	301.0	318.6	
4	1999.205	V	45.8	23.3	-6.0	39.8	17.3	80.0	60.0	40.2	42.7	172.0	150.5	
5	2291.545	H	46.0	31.9	-5.1	40.9	26.8	80.0	60.0	39.1	33.2	262.0	197.6	
6	2655.275	V	49.2	31.8	-3.7	45.5	28.1	80.0	60.0	34.5	31.9	195.0	169.3	
7	2822.508	V	48.3	31.9	-3.0	45.3	28.9	80.0	60.0	34.7	31.1	141.0	169.3	
8	3460.085	H	45.0	31.4	-1.7	43.3	29.7	80.0	60.0	36.7	30.3	300.0	286.8	
9	3992.530	V	47.1	31.5	0.2	47.3	31.7	80.0	60.0	32.7	28.3	111.0	159.9	
10	4307.500	H	45.1	31.7	1.1	46.2	32.8	80.0	60.0	33.8	27.2	215.0	216.3	
11	4664.955	V	45.0	31.3	2.0	47.0	33.3	80.0	60.0	33.0	26.7	199.0	139.2	
12	4869.405	H	44.5	31.4	2.5	47.0	33.9	80.0	60.0	33.0	26.1	281.0	99.9	

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– (5 ~ 18) GHz



* No spurious emission were detected Above 5 GHz



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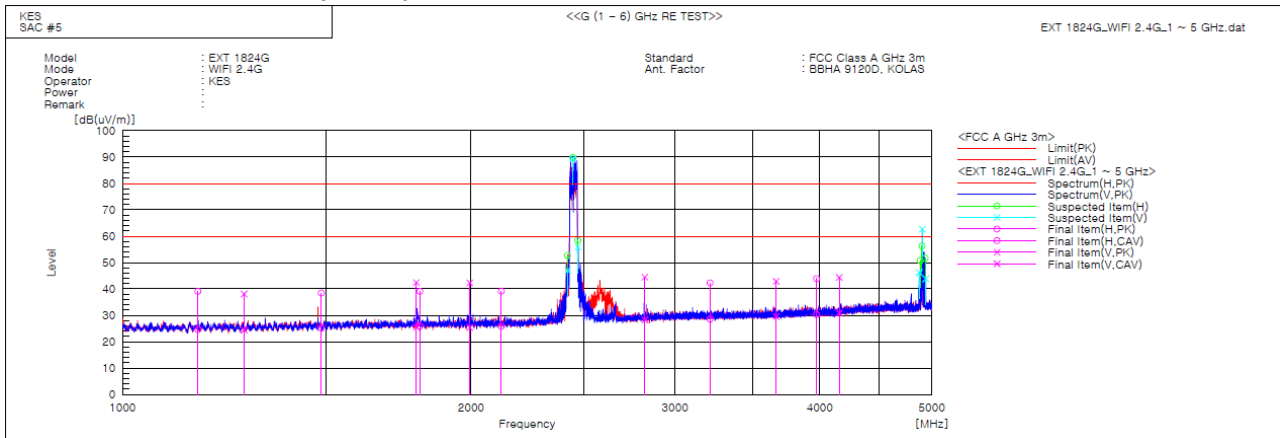
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WIFI 2.4 GHz Mode - (1 ~ 5) GHz



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	1161.450	H	48.2	33.7	-9.1	39.1	24.6	80.0	60.0	40.9	35.4	317.0	329.1	
2	1273.410	V	46.7	33.1	-8.6	38.1	24.5	80.0	60.0	41.9	35.5	100.0	137.6	
3	1484.500	H	46.2	32.9	-7.7	38.5	25.2	80.0	60.0	41.5	34.8	400.0	123.4	
4	1793.520	V	49.1	32.2	-6.7	42.4	25.5	80.0	60.0	37.6	34.5	171.0	143.2	
5	1806.100	H	45.7	32.5	-6.6	39.1	25.9	80.0	60.0	40.9	34.1	312.0	331.6	
6	1994.860	V	48.3	31.4	-6.0	42.3	25.4	80.0	60.0	37.7	34.6	100.0	146.9	
7	2124.255	H	44.9	31.5	-5.7	39.2	25.8	80.0	60.0	40.8	34.2	268.0	239.9	
8	2825.175	V	47.5	31.3	-3.0	44.5	28.3	80.0	60.0	35.5	31.7	112.0	176.6	
9	3216.845	H	44.4	30.7	-2.1	42.3	28.6	80.0	60.0	37.7	31.4	295.0	236.9	
10	3668.925	V	44.1	30.7	-1.2	42.9	29.5	80.0	60.0	37.1	30.5	172.0	81.1	
11	3975.785	H	43.7	30.1	0.2	43.9	30.3	80.0	60.0	36.1	29.7	400.0	58.4	
12	4157.885	V	43.8	30.3	0.6	44.4	30.9	80.0	60.0	35.6	29.1	101.0	87.4	
13	2423.000	H	-----	-----	-4.7	-----	-----	80.0	60.0	-----	-----	99.8	227.6	
14	2423.000	V	-----	-----	-4.7	-----	-----	80.0	60.0	-----	-----	99.8	277.3	
15	2448.000	V	-----	-----	-4.6	-----	-----	80.0	60.0	-----	-----	99.8	18.8	
16	2449.500	H	-----	-----	-4.6	-----	-----	80.0	60.0	-----	-----	99.8	348.8	
17	2472.500	H	-----	-----	-4.5	-----	-----	80.0	60.0	-----	-----	99.8	227.6	
18	2474.000	V	-----	-----	-4.5	-----	-----	80.0	60.0	-----	-----	99.8	277.3	
19	4876.000	V	-----	-----	2.5	-----	-----	80.0	60.0	-----	-----	99.8	296.0	
20	4884.500	H	-----	-----	2.6	-----	-----	80.0	60.0	-----	-----	99.8	119.5	
21	4903.000	H	-----	-----	2.7	-----	-----	80.0	60.0	-----	-----	99.8	345.3	
22	4907.000	V	-----	-----	2.7	-----	-----	80.0	60.0	-----	-----	99.8	284.6	
23	4934.500	H	-----	-----	2.9	-----	-----	80.0	60.0	-----	-----	99.8	227.6	
24	4939.500	V	-----	-----	2.9	-----	-----	80.0	60.0	-----	-----	99.8	273.5	

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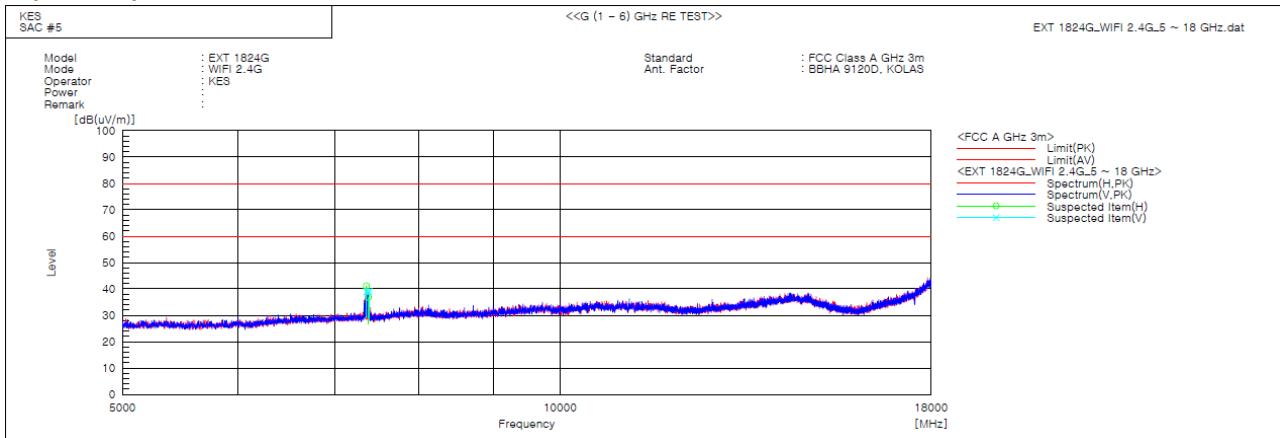


KES Co., Ltd.

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– (5 ~ 18) GHz



Spectrum Selection

No.	Frequency [MHz]	(P)	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	7357.875	H	41.2	0.0	41.2	80.0	38.8	99.8	310.8	
2	7361.125	V	38.9	0.0	38.9	80.0	41.1	99.8	183.3	
3	7382.250	H	36.8	0.1	36.9	80.0	43.1	99.8	310.8	
4	7388.750	V	38.9	0.1	39.0	80.0	41.0	99.8	183.3	

* WIFI 2.4 GHz Mode Exclusion Band

- Fundamental Frequency: 2.4 GHz
- Harmonic Frequency: 4.8 GHz, 4.9 GHz, 7.3 GHz

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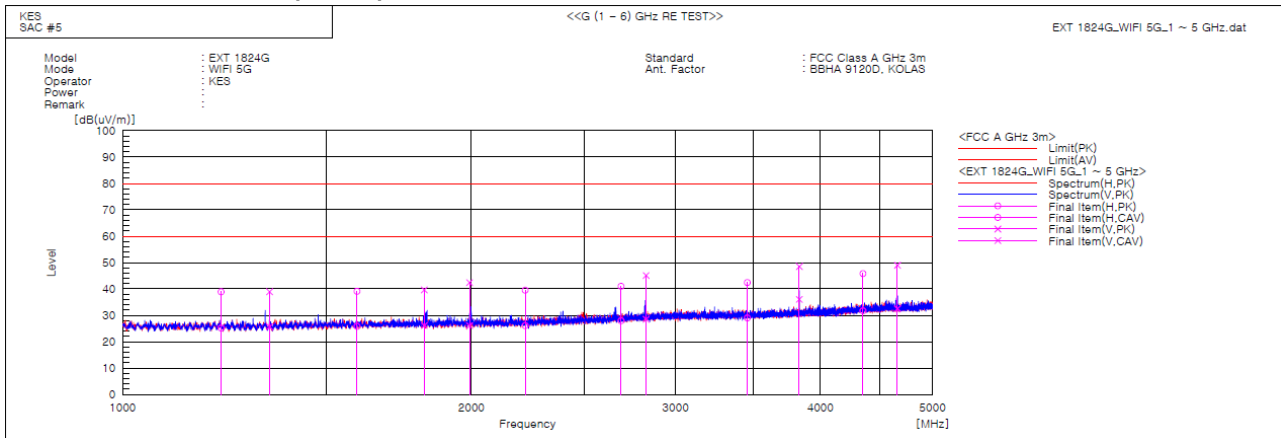


KES Co., Ltd.

3701, 40, Simin-daero 365beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

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WIFI 5 GHz Mode - (1 ~ 5) 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	1216.090	H	47.8	34.1	-8.9	38.9	25.2	80.0	60.0	41.1	34.8	375.0	299.9	
2	1339.200	V	47.3	34.0	-8.3	39.0	25.7	80.0	60.0	41.0	34.3	100.0	114.7	
3	1593.265	H	46.4	33.1	-7.3	39.1	25.8	80.0	60.0	40.9	34.2	361.0	124.7	
4	1820.945	V	46.3	32.8	-6.6	39.7	26.2	80.0	60.0	40.3	33.8	107.0	168.0	
5	1992.565	V	48.5	32.2	-6.1	42.4	26.1	80.0	60.0	37.6	33.9	121.0	146.0	
6	2225.340	H	44.9	31.5	-5.4	39.5	26.1	80.0	60.0	40.5	33.9	317.0	50.5	
7	2692.290	H	44.6	31.5	-3.6	41.0	27.9	80.0	60.0	39.0	32.1	400.0	20.0	
8	2829.710	V	48.1	31.5	-3.0	45.1	28.5	80.0	60.0	34.9	31.5	105.0	180.0	
9	3460.150	H	44.1	30.7	-1.7	42.4	29.0	80.0	60.0	37.6	31.0	328.0	124.7	
10	3836.650	V	48.9	36.5	-0.4	48.5	36.1	80.0	60.0	31.5	23.9	120.0	48.2	
11	4353.070	H	44.5	30.4	1.3	45.8	31.7	80.0	60.0	34.2	28.3	362.0	353.1	
12	4662.890	V	47.0	30.5	2.0	49.0	32.5	80.0	60.0	31.0	27.5	101.0	152.1	

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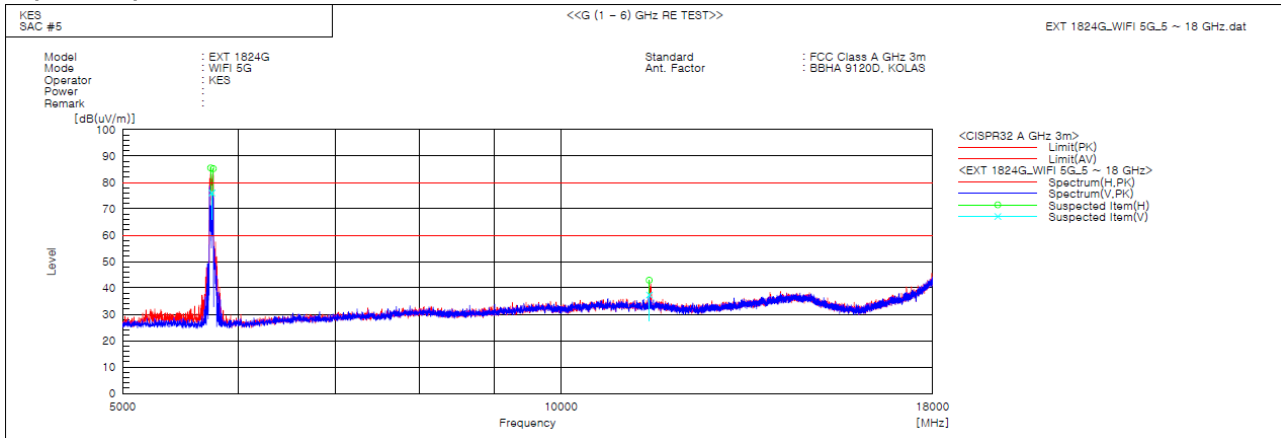


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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450
www.kes.co.kr

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– (5 ~ 18) GHz



Spectrum Selection

No.	Frequency [MHz]	(P)	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	5747.500	H	89.3	-3.8	85.5	80.0	-5.5	99.8	293.6	
2	5758.875	V	79.8	-3.8	76.0	80.0	4.0	99.8	215.7	
3	5770.250	H	89.0	-3.8	85.2	80.0	-5.2	99.8	293.6	
4	11498.370	H	37.9	5.0	42.9	80.0	37.1	99.8	33.2	
5	11503.250	V	32.3	5.0	37.3	80.0	42.7	99.8	90.8	

* WIFI 5 GHz Mode Exclusion Band

- Fundamental Frequency: 5.7 GHz
- Harmonic Frequency: 11.4 GHz, 11.5 GHz

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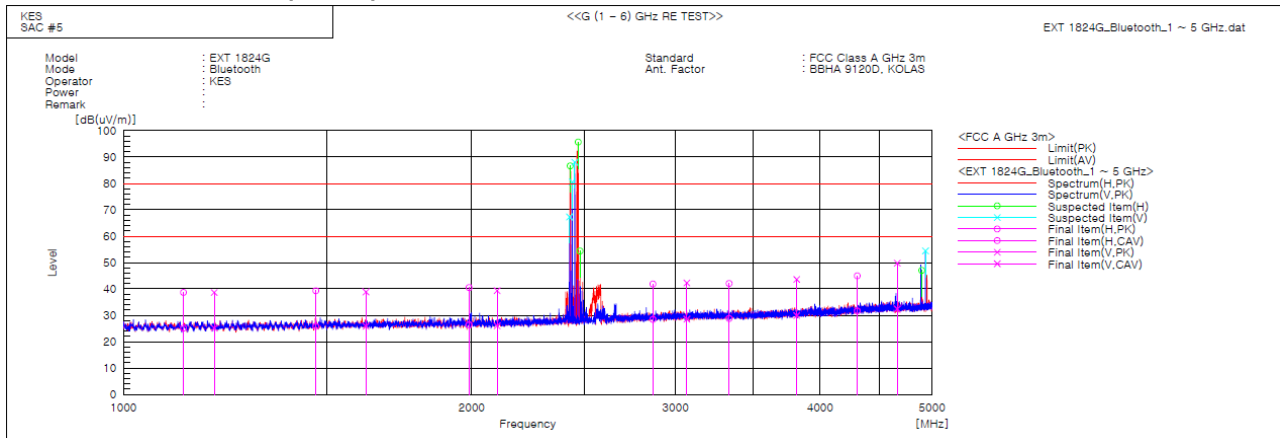


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Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea
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Bluetooth Mode - (1 ~ 5) GHz



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	1126.915	H	48.0	34.5	-9.3	38.7	25.2	80.0	60.0	41.3	34.8	335.0	121.8	
2	1197.825	V	47.7	34.2	-9.0	38.7	25.2	80.0	60.0	41.3	34.8	100.0	202.5	
3	1466.405	H	47.1	33.6	-7.8	39.3	25.8	80.0	60.0	40.7	34.2	372.0	156.3	
4	1620.280	V	46.1	33.1	-7.2	38.9	25.9	80.0	60.0	41.1	34.1	142.0	72.1	
5	1989.010	H	46.6	32.5	-6.1	40.5	26.4	80.0	60.0	39.5	33.6	354.0	31.4	
6	2103.740	V	45.1	31.7	-5.7	39.4	26.0	80.0	60.0	40.6	34.0	153.0	38.9	
7	2868.510	H	44.7	31.2	-2.8	41.9	28.4	80.0	60.0	38.1	31.6	363.0	296.1	
8	3067.985	V	44.6	30.9	-2.3	42.3	28.6	80.0	60.0	37.7	31.4	117.0	296.6	
9	3338.670	H	44.0	30.7	-1.9	42.1	28.8	80.0	60.0	37.9	31.2	312.0	173.7	
10	3818.525	V	44.0	30.3	-0.4	43.6	29.9	80.0	60.0	36.4	30.1	100.0	98.1	
11	4306.695	H	43.9	30.5	1.1	45.0	31.6	80.0	60.0	35.0	28.4	275.0	288.6	
12	4664.010	V	47.8	30.4	2.0	49.8	32.4	80.0	60.0	30.2	27.6	100.0	137.2	
13	2429.500	V	-----	-----	-4.6	-----	-----	80.0	60.0	-----	-----	99.8	161.4	
14	2432.500	H	-----	-----	-4.6	-----	-----	80.0	60.0	-----	-----	99.8	234.4	
15	2442.500	V	-----	-----	-4.6	-----	-----	80.0	60.0	-----	-----	99.8	340.6	
16	2454.500	V	-----	-----	-4.5	-----	-----	80.0	60.0	-----	-----	99.8	101.8	
17	2471.500	H	-----	-----	-4.5	-----	-----	80.0	60.0	-----	-----	99.8	193.7	
18	2481.500	H	-----	-----	-4.5	-----	-----	80.0	60.0	-----	-----	99.8	167.5	
19	4898.000	H	-----	-----	2.7	-----	-----	80.0	60.0	-----	-----	99.8	203.7	
20	4934.500	V	-----	-----	2.9	-----	-----	80.0	60.0	-----	-----	99.8	65.8	

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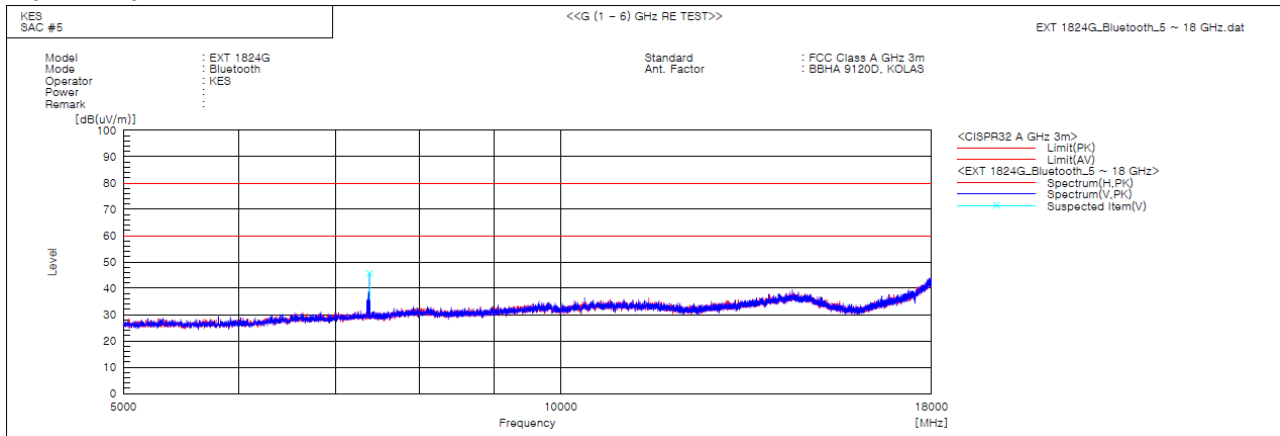


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– (5 ~ 18) GHz



Spectrum Selection

No.	Frequency [MHz]	(P) V	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	7387.125	V	45.7	0.1	45.8	80.0	34.2	99.8	63.3	

* Bluetooth Mode Exclusion Band

- Fundamental Frequency: 2.4 GHz
- Harmonic Frequency: 4.8 GHz, 4.9 GHz, 7.3 GHz

◆ Calculation

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

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

Uncertainty of measurement

Uncertainty of measurement 5.94 dB
(Confidence level: Approx. 95 %, $k=2$)

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