



**KES Co., Ltd.**

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Report No.:  
KES-EM-20T0579  
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# 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*

*Reviewed by*

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Min Seong, Kim  
EMC Test Engineer

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Dong-Hun, Jang  
EMC Technical Manager

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

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**REPORT REVISION HISTORY**

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

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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 μm
Scintillator	Gadox (Gadolinium Oxysulfide)
Image Matrix Size	2304 × 3072 pixels
Effective Imaging Area (H x 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
<b>Environmental Requirements</b>	
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

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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  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	-	-	-	-

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## 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



## 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

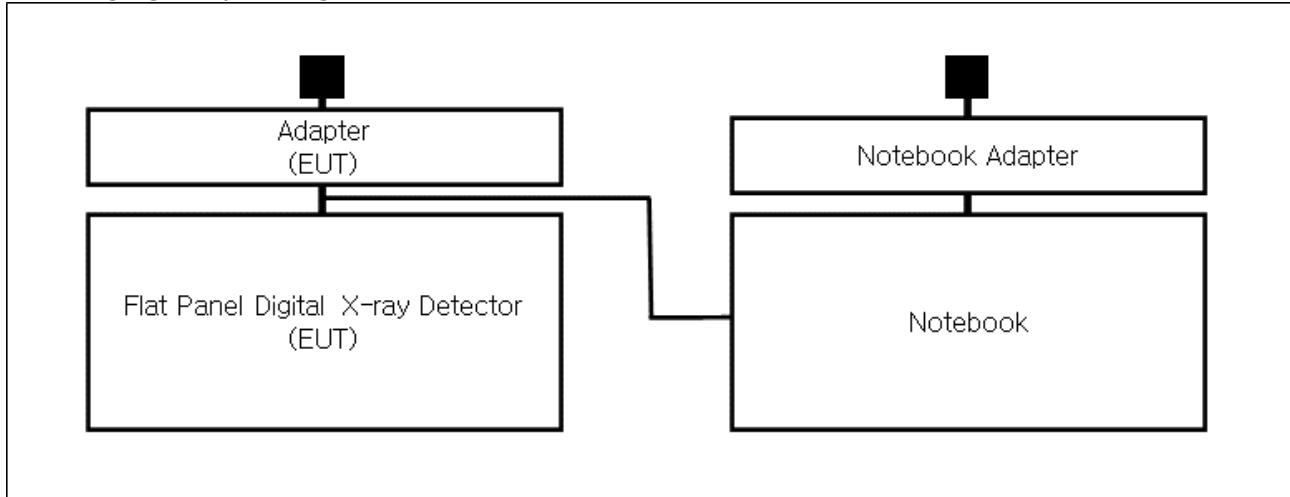
EUT Test operating S/W		
Name	Version	Manufacture Company
ECali1	-	DRTECH Corporation
EVS2430N	-	DRTECH Corporation

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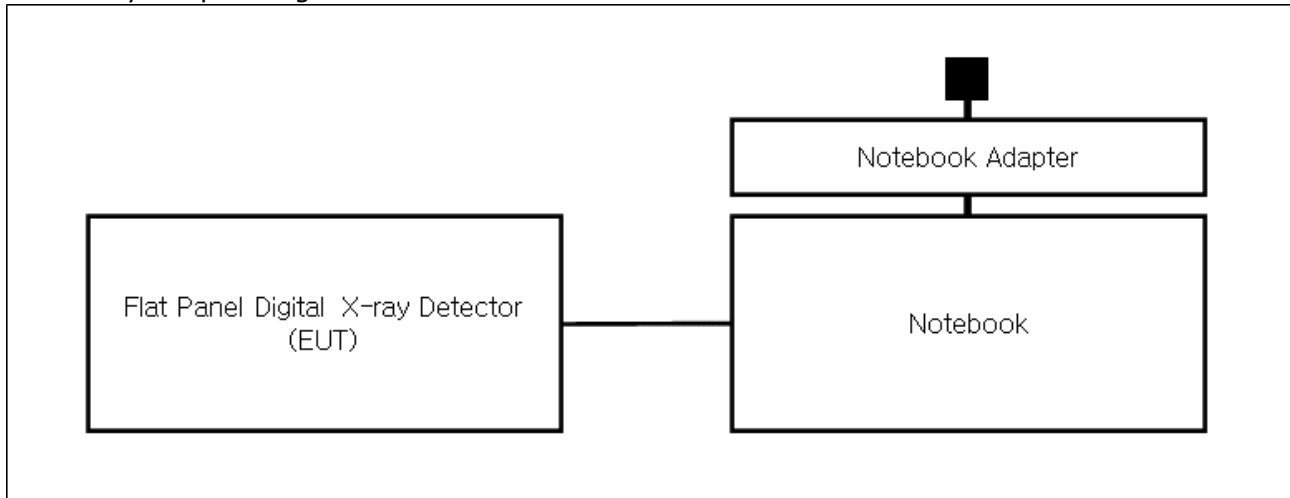
## 1.8 Configuration

■ AC Main  
 □ DC Main

### ■ Charging & Operating Mode



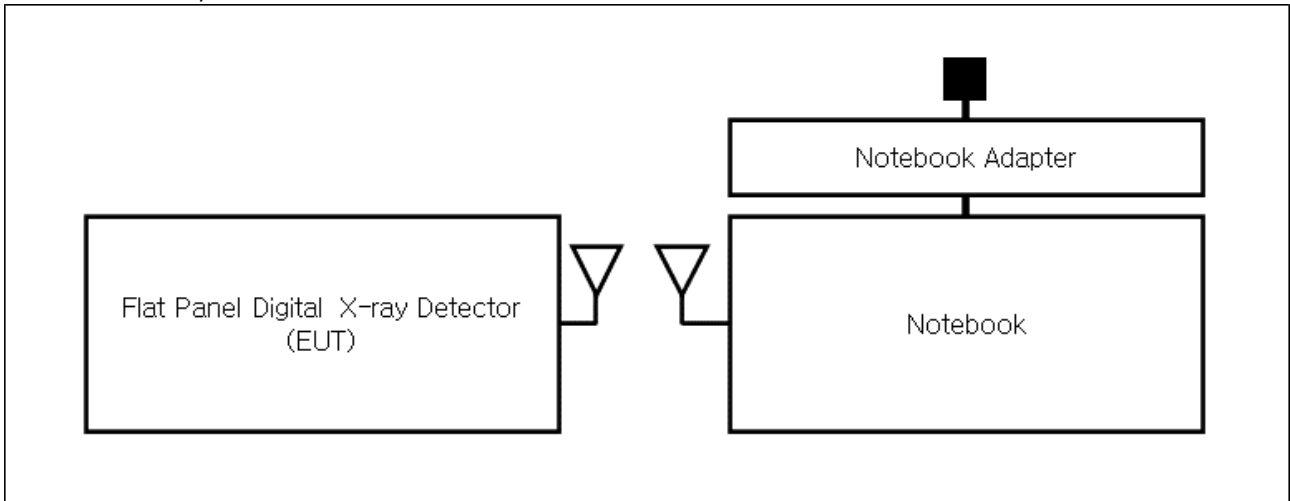
### ■ Battery & Operating Mode



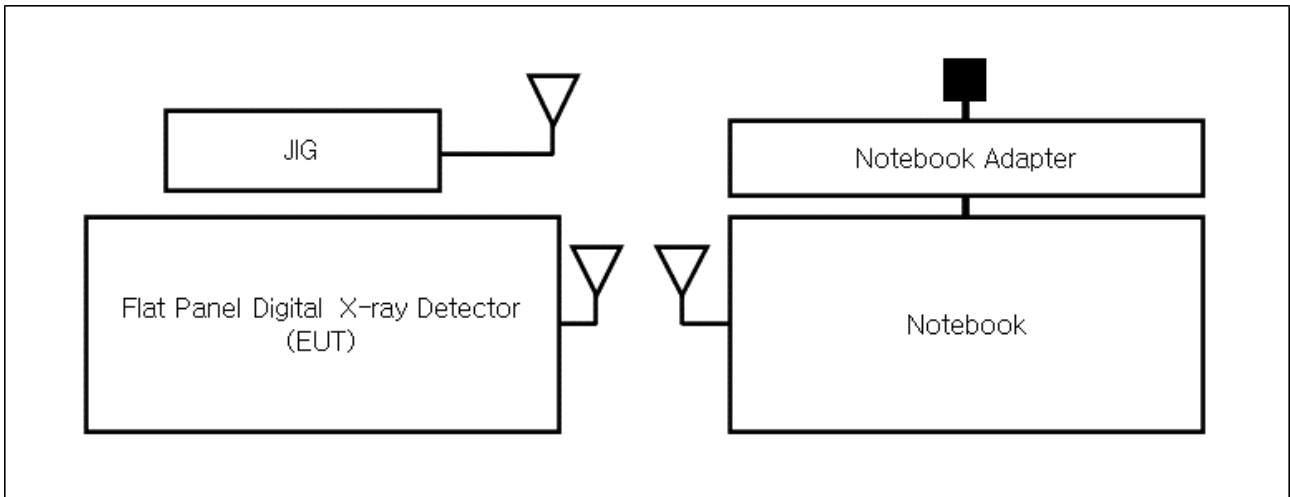
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■ WIFI 2.4 GHz, WIFI 5 GHz Mode



■ 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 1GHz 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	<b>RRA</b>	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	<b>KOLAS</b>	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	<b>FCC</b>	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	<b>ISED</b>	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	 23298-1
JAPAN	<b>VCCI</b>	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	<b>TÜV SÜD</b>	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

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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

Group 2

Class A

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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- |  |   |                                  |
|--|---|----------------------------------|
| <input type="checkbox"/> <b>VCCI-CISPR 32:2016</b>                   | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>AS/NZS CISPR32:2015</b>                  | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> <b>47 CFR Part 15, Subpart B</b> |   |                                  |
| <input type="checkbox"/> CISPR 22:2009 +A1:2010                      | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> ANSI C63.4-2014                  | <input checked="" type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>IC Regulation ICES-003 : 2016</b>        |   |                                  |
| <input type="checkbox"/> CAN/CSA CISPR 22-10                         | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> ANSI C63.4-2014                             | <input type="checkbox"/> Class A            | <input type="checkbox"/> Class B |
| <input type="checkbox"/> <b>RE- Directive 2014/53/EU</b>             |   |                                  |
| <input type="checkbox"/> EN 301 489-1 V1.9.2                         |   |                                  |
| <input type="checkbox"/> Equipment for fixed use                     |   |                                  |
| <input type="checkbox"/> Equipment for vehicular use                 |   |                                  |
| <input type="checkbox"/> Equipment for portable use                  |   |                                  |
| <input type="checkbox"/> EN 301 489-3 V1.6.1                         |   |                                  |
| <input type="checkbox"/> EN 301 489-17 V2.2.1                        |   |                                  |
| <input type="checkbox"/> 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
<input checked="" type="checkbox"/>	EMI Test S/W	EMC32	R & S	9.12.00	-	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESR3	R & S	101783	01, 20, 2021	1 Year
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	01, 02, 2021	1 Year
<input checked="" type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	01, 02, 2021	1 Year
<input checked="" type="checkbox"/>	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

### Remarks

See Appendix A for test data.



## 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
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	R & S	100551	04, 01, 2021	1 Year
<input checked="" type="checkbox"/>	AMPLIFIER	SCU 01	R & S	100603	11, 25, 2020	1 Year
<input checked="" type="checkbox"/>	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020	2 Year
<input checked="" type="checkbox"/>	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

### Remarks

See Appendix A for test data.

## 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
<input checked="" type="checkbox"/>	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.120	-	-
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	ESU26	Rohde & Schwarz	100552	04, 01, 2021	1 Year
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 13, 2020	1 Year
<input checked="" type="checkbox"/>	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

### Remarks

See Appendix A for test data.



## APPENDIX A – TEST DATA

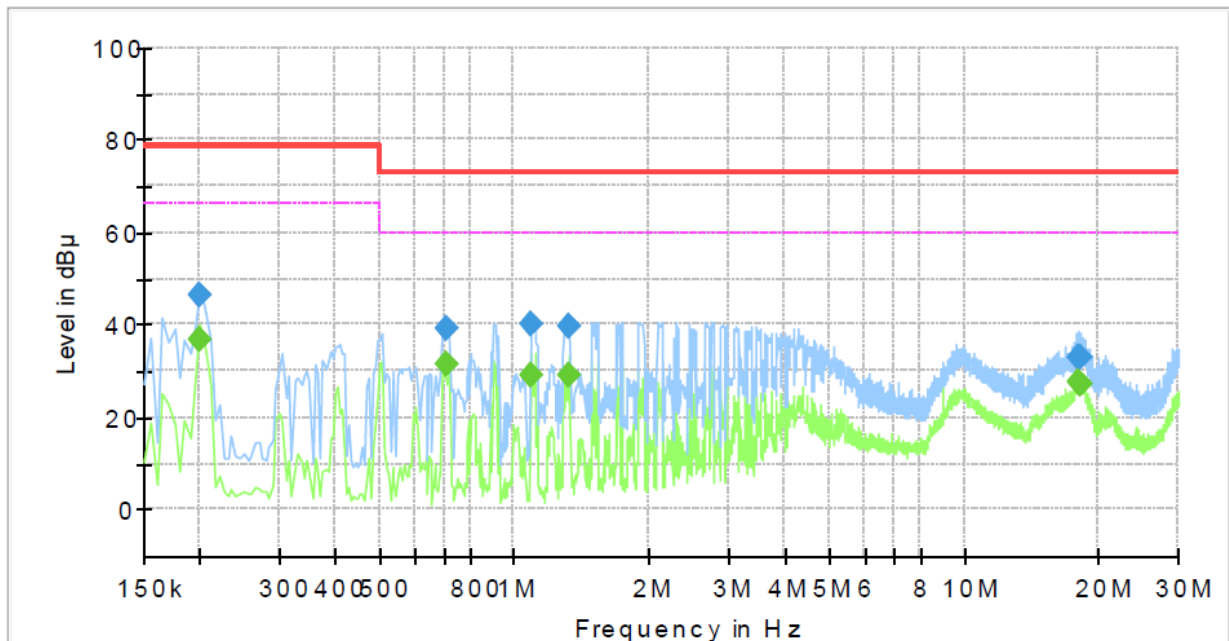
### Conducted Emissions at Mains Power Ports

■ 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

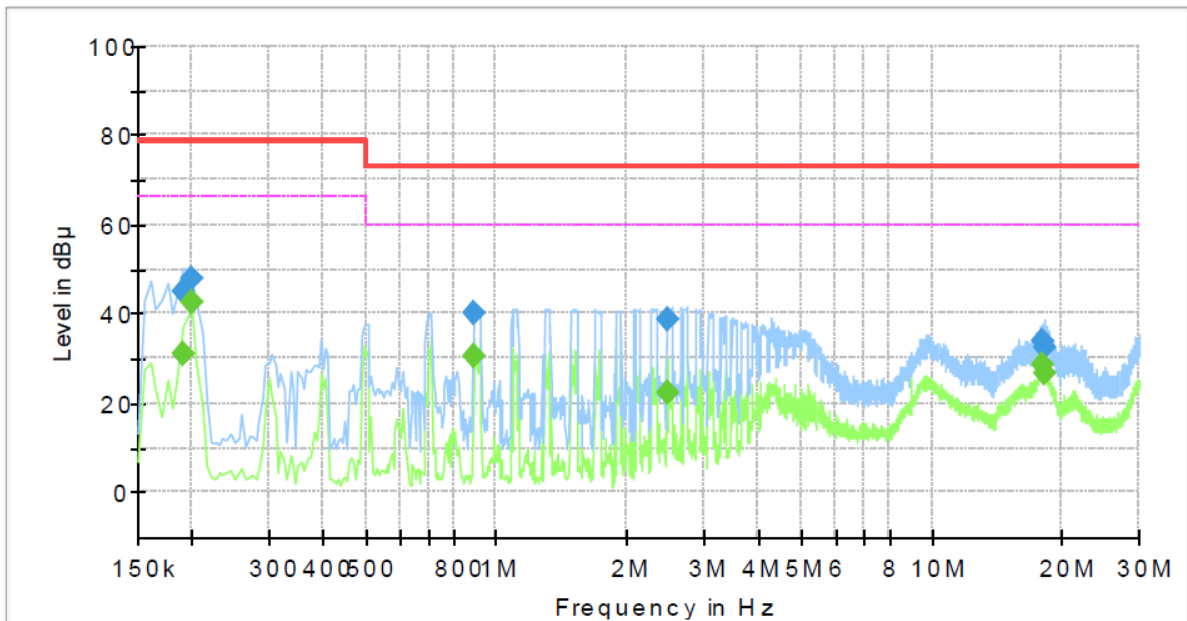
Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.200000	---	36.74	66.00	29.26	1000.0	9.000	L1	19.5
0.200000	46.51	---	79.00	32.49	1000.0	9.000	L1	19.5
0.710000	---	31.64	60.00	28.36	1000.0	9.000	L1	19.6
0.710000	39.14	---	73.00	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:	Conducted Emission
Model No.:	EXT 1824G
Phase:	N
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)
0.190000	---	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

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))

### 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 %,  $k=2$ )

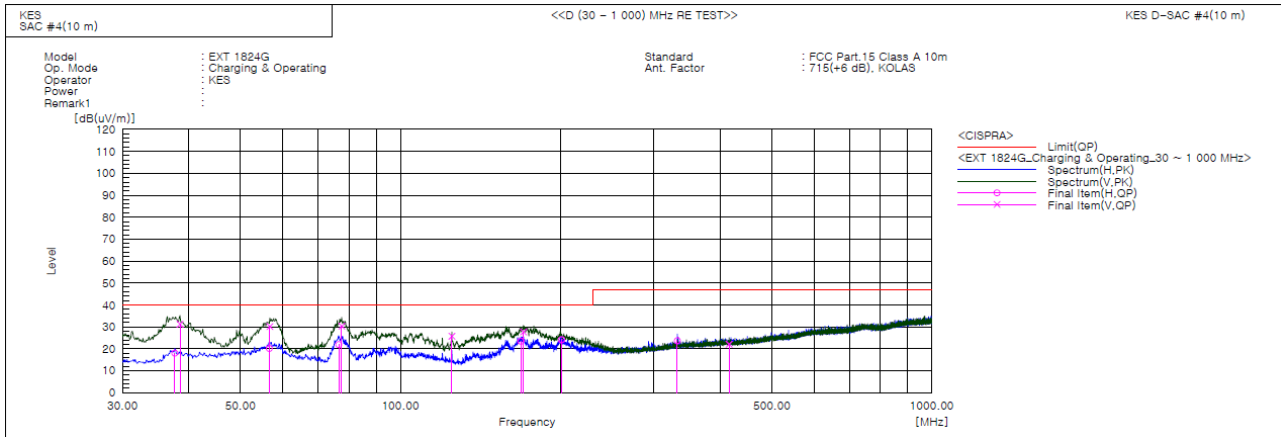
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## Radiated Electric Field Emissions(Below 1 GHz)

### ■ Charging & Operating Mode



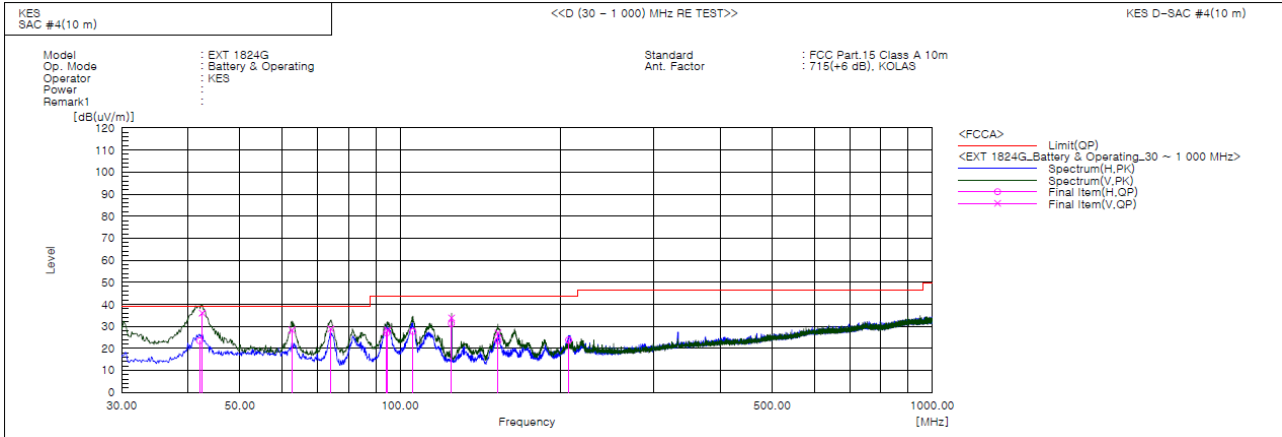
### Final Result

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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**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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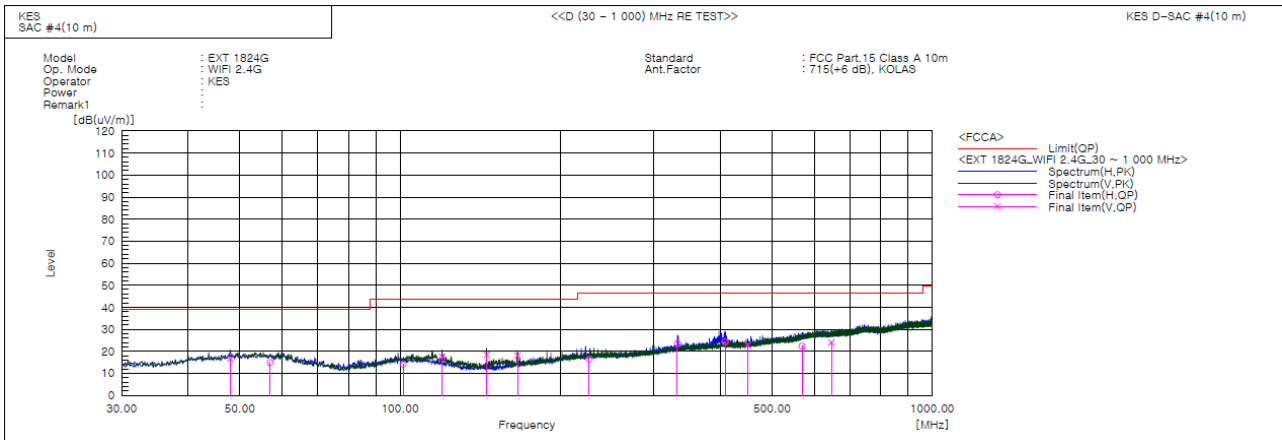


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■ WIFI 2.4 GHz Mode



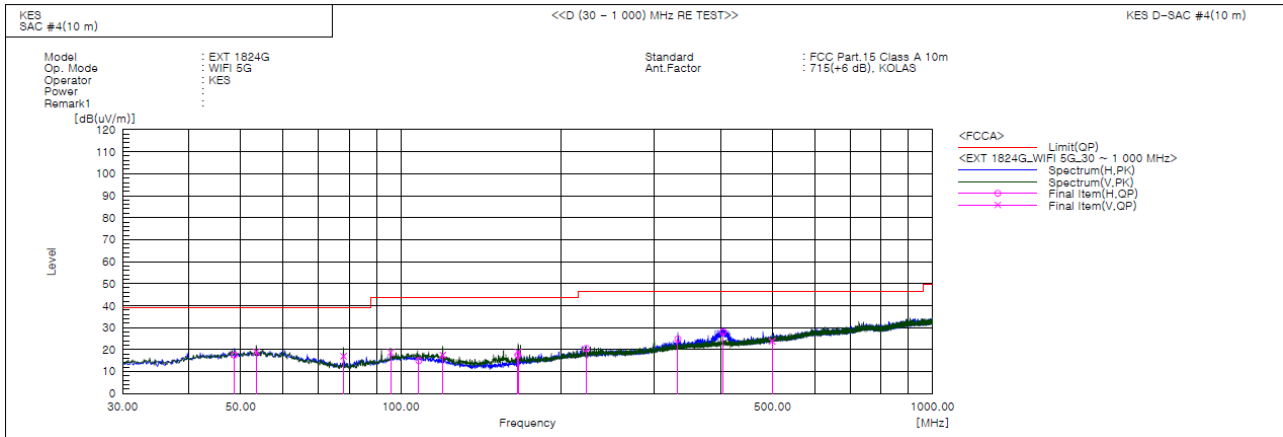
Final Result

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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**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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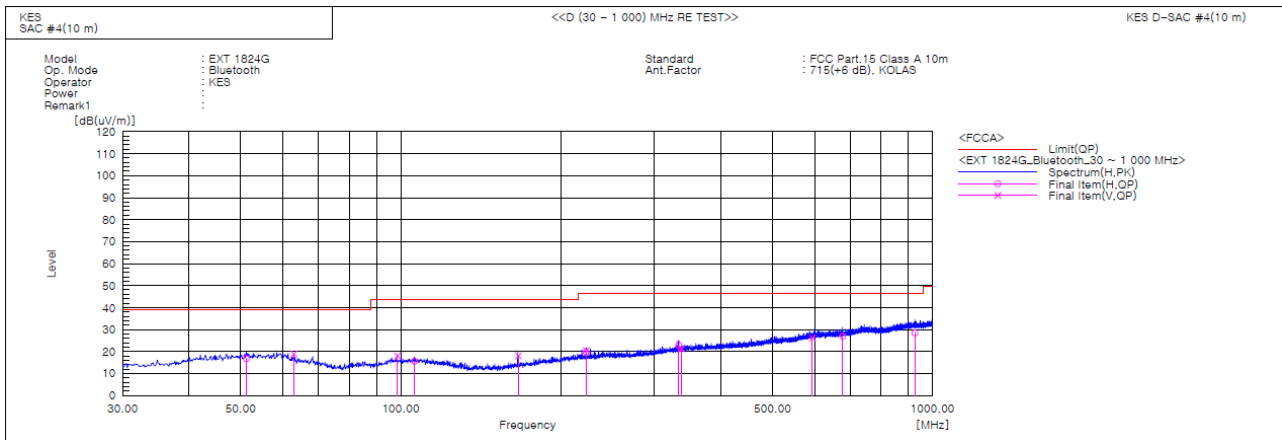


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**Bluetooth Mode**



**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(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

**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)

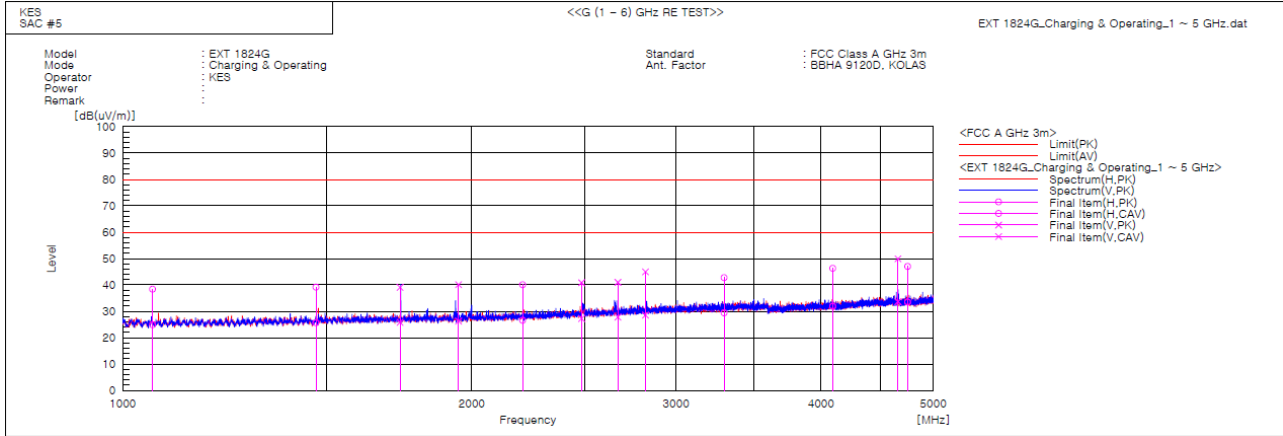
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## Radiated Electric Field Emissions(Above 1 GHz)

### ■ 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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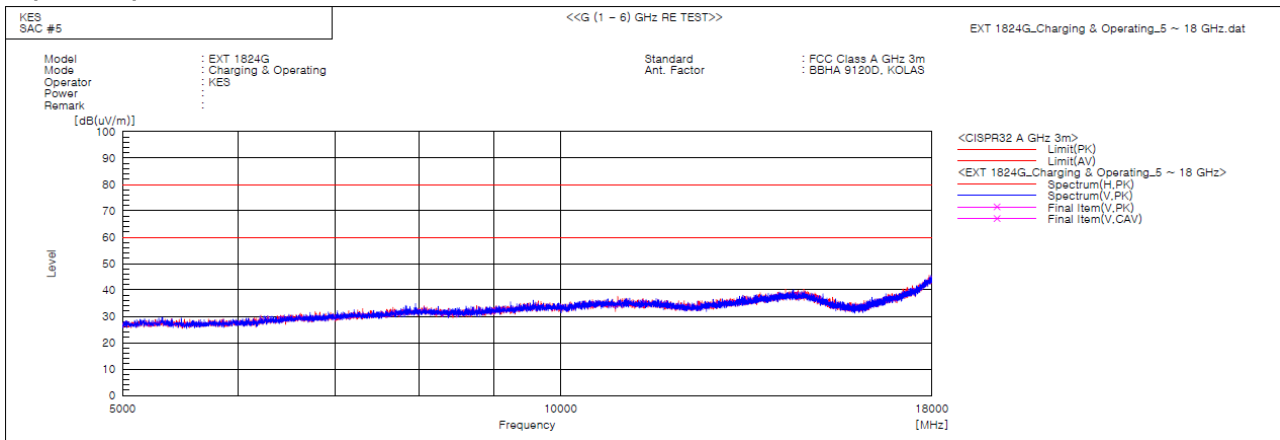


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– (5 ~ 18) GHz



\* No spurious emission were detected Above 5 GHz

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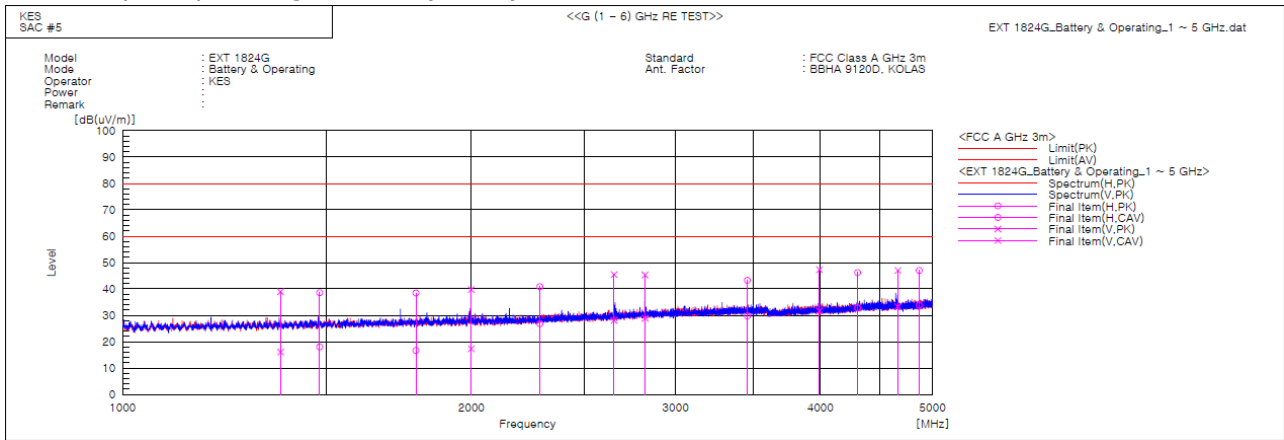


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**■ Battery & Operating Mode – (1 ~ 5) GHz**



**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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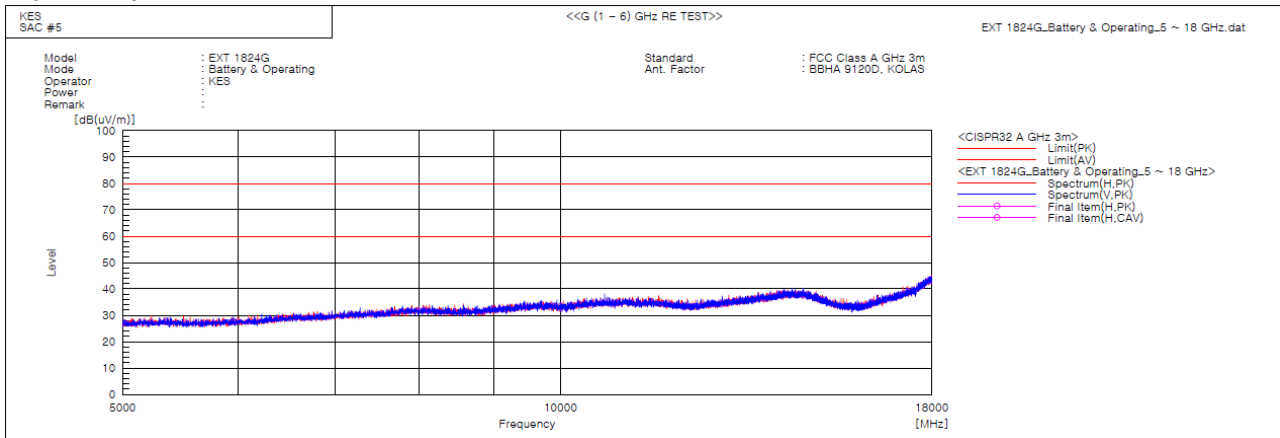


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– (5 ~ 18) GHz



\* No spurious emission were detected Above 5 GHz

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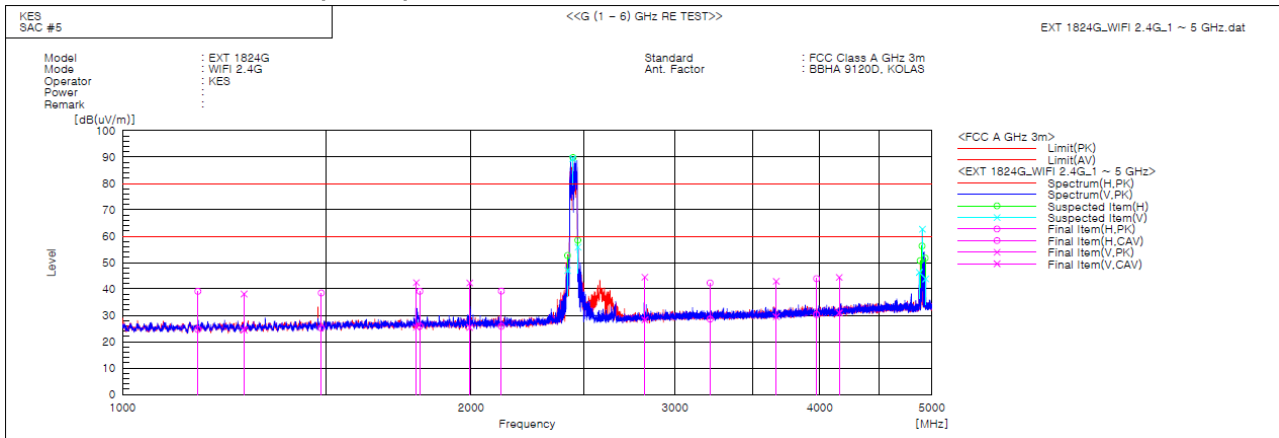


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## WIFI 2.4 GHz Mode - (1 ~ 5) GHz



### 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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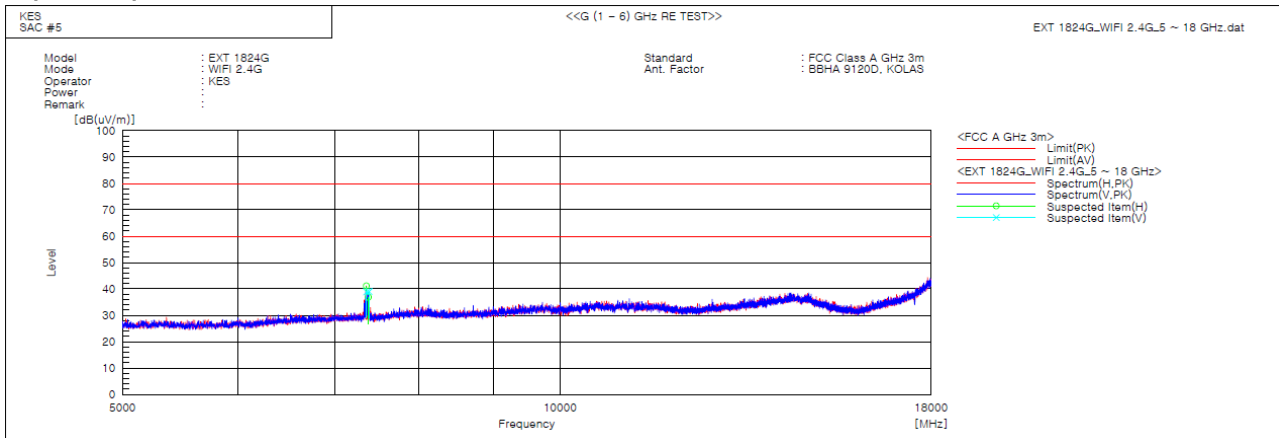


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- (5 ~ 18) GHz



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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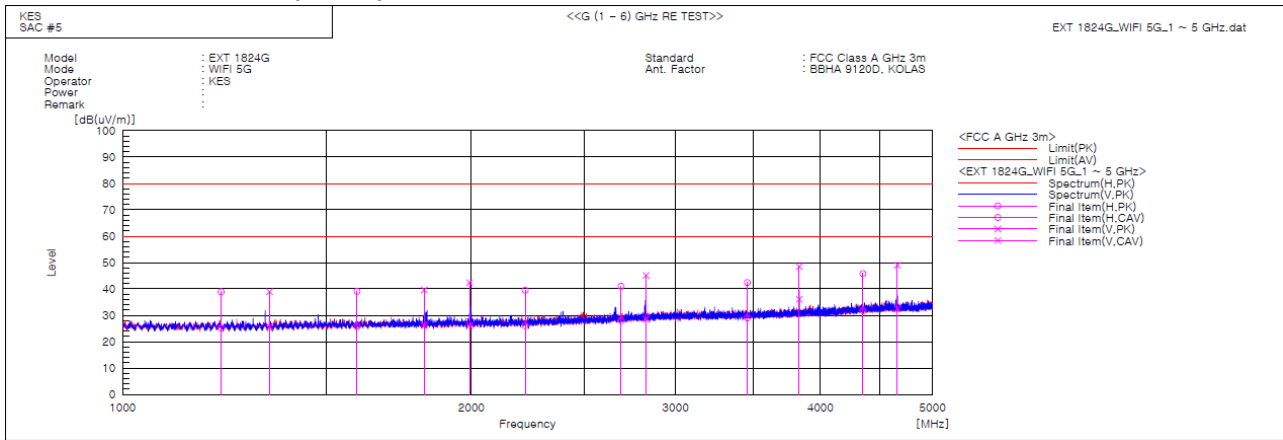


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## WIFI 5 GHz Mode - (1 ~ 5) GHz



### 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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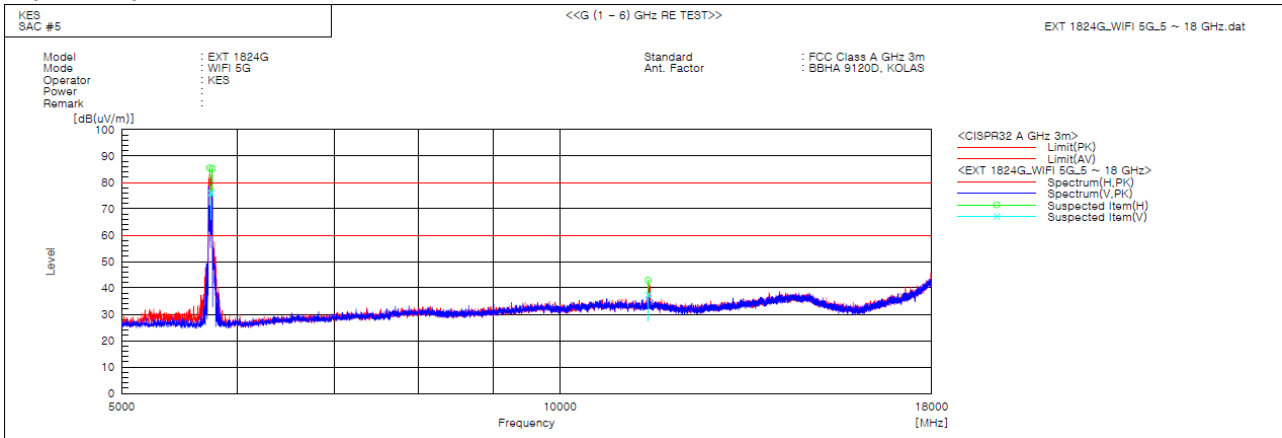


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- (5 ~ 18) GHz



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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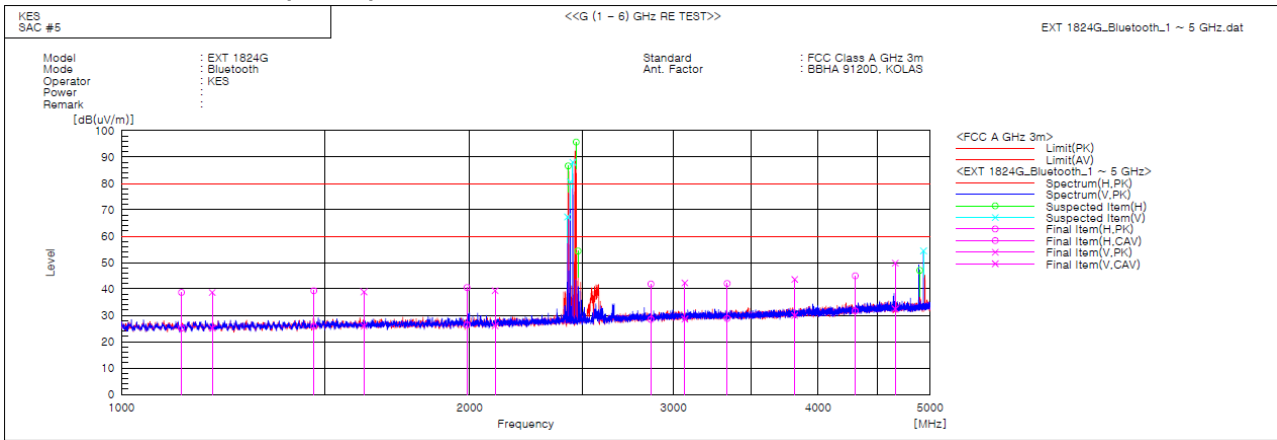


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■ Bluetooth Mode - (1 ~ 5) GHz



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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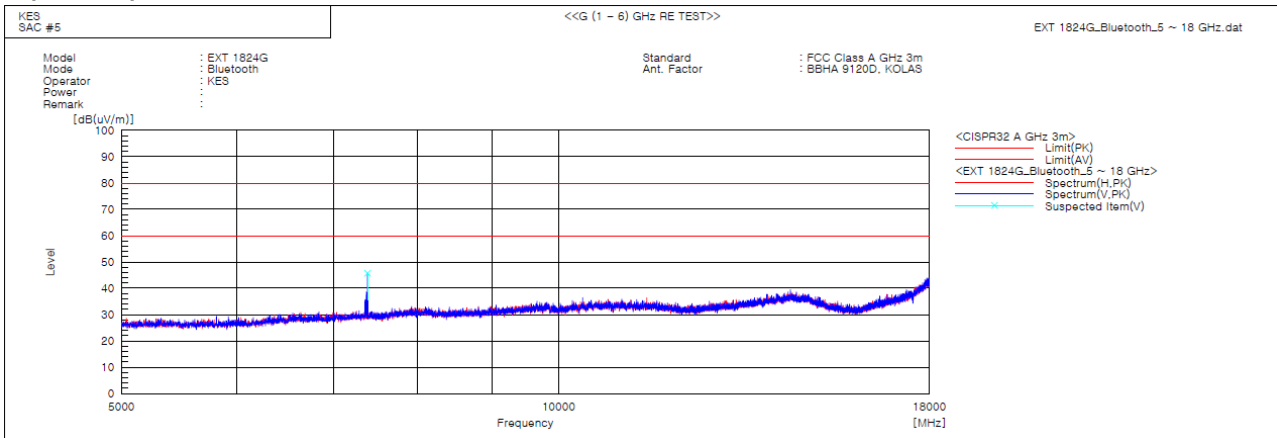


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– (5 ~ 18) GHz



**Spectrum Selection**

No.	Frequency [MHz]	(P)	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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