



KES Co., Ltd.

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Report No.:
KES-EM-22T0180
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EMC TEST REPORT

Test Report No. : KES-EM-22T0180
Date of Issue : Feb. 08, 2022
Product name : Wireless low Frequency Massage Earphone
Model/Type No. : MTH-I-1
Variant Mode : -
Applicant : TODOC Co.,Ltd
Applicant Address : 1407, Hanwha Bizmetro 1, 242, Digital-ro, Guro-gu, Seoul, Republic of Korea
Manufacturer : TODOC Co.,Ltd
Manufacturer Address : 1407, Hanwha Bizmetro 1, 242, Digital-ro, Guro-gu, Seoul, Republic of Korea
FCC ID : 2A35ZMTH-I-1
Date of Receipt : Dec. 16, 2021
Test date : Jan. 18, 2022 ~ Jan. 19, 2022
Test Results : **In Compliance** **Not in Compliance**

Tested by

Reviewed by

Dohyun, Ko
EMC Test Engineer

Dong Hun, Jang
EMC Technical Manager

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 08, 2022	KES-EM-22T0180	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Item	Details
Wireless Operating Frequency	Bluetooth : 2.4 GHz Band
internal clock frequency	26 MHz
Rated voltage	Operation : DC 3.7 V, 71 mAh (Battery Power) Charge : DC 5 V (Cradle Power)
Demensions	(20.84 x 45.58 x 30.81) mm
Port	Charge Port

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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.

- Charge Mode: DC 5 V (Cradle Power)
- Bluetooth Mode: DC 3.7 V (Battery Power)

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
Wireless low Frequency Massage Earphone (L)	MTH-I-1	-	TODOC Co.,Ltd	EUT
Wireless low Frequency Massage Earphone (R)	MTH-I-1	-	TODOC Co.,Ltd	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Wireless low Frequency Massage Earphone (Cradle)	MTH-C-1	-	TODOC Co.,Ltd	-
Smartphone	SM-G9nnN	-	Samsung Electronics Co., Ltd.	-
Tablet	SM-T713	-	Samsung Electronics Co., Ltd.	-
Adapter	MCS-H06KD	DC792065781	Dongdo Electronics(Yantai)Co.,Ltd	-
USB Digital Tester	J7-c	-	-	-
Digital Oscilloscope	TBS2000BSERIES	-	TeKtronix	-

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1.6 External I/O Cabling

■ Charge Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Wireless low Frequency Massage Earphone (L) (EUT)	Charge Port	Wireless low Frequency Massage Earphone (Cradle)	Charge Port	-	-
Wireless low Frequency Massage Earphone (R) (EUT)	Charge Port	Wireless low Frequency Massage Earphone (Cradle)	Charge Port	-	-
Wireless low Frequency Massage Earphone (Cradle)	USB TYPE-C	USB Digital Tester	USB	1.2	U
USB Digital Tester	USB	Adapter	USB	-	-

* Unshielded = U, Shielded = S

■ Bluetooth Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Wireless low Frequency Massage Earphone (L) (EUT)	Wireless	Smartphone	Wireless	-	-
Wireless low Frequency Massage Earphone (R) (EUT)	Wireless	Tablet	Wireless	-	-

* Unshielded = U, Shielded = S



■ Low Frequency Massage Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Wireless low Frequency Massage Earphone (L) (EUT)	Wireless	Smartphone	Wireless	-	-
	2 Pin	Digital Oscilloscope	2 Pin	1.8	U
Wireless low Frequency Massage Earphone (R) (EUT)	Wireless	Tablet	Wireless	-	-
	2 Pin	Digital Oscilloscope	2 Pin	1.6	U

* Unshielded = U, Shielded = S

1.7 EUT Operating Mode(s)

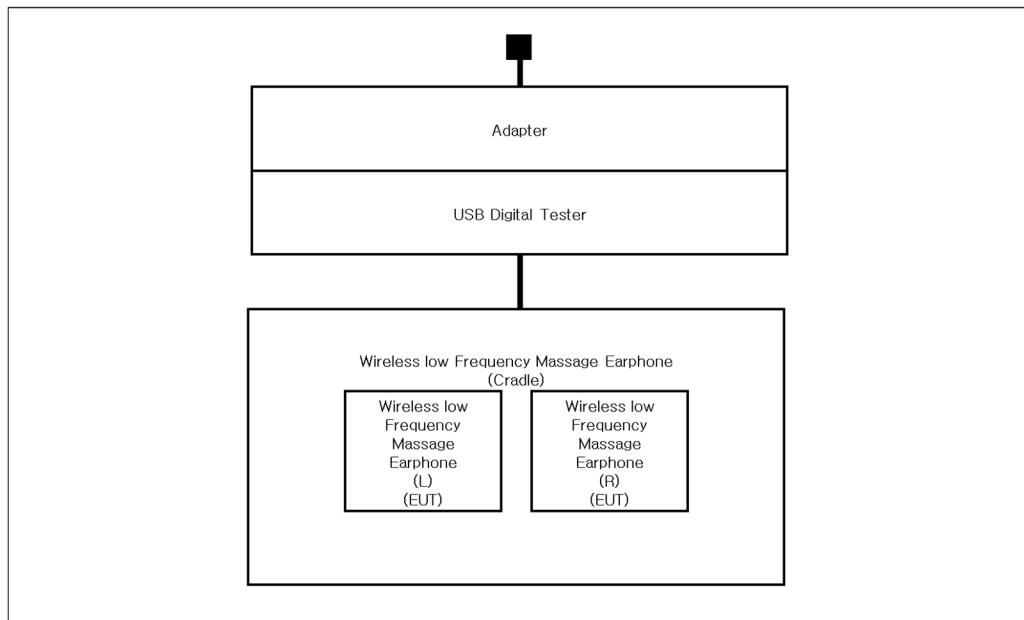
Test mode	operating
Charge	Confirmed the Charge the EUT through LCD of USB Digital Tester.
Bluetooth	1. Play 1 kHz tones on smartphones and tablets. 2. Confirmed the communication between the EUT and the smartphone,Tablet through play 1 KHz sound of EUT's speaker.
Low Frequency Massage	Confirmed the Low Frequency Massage of EUT through Graph of the Digital Oscilloscope.

EUT Test operating S/W		
Name	Version	Manufacture Company
nRF Connect	4.2.4.3	NORDIC

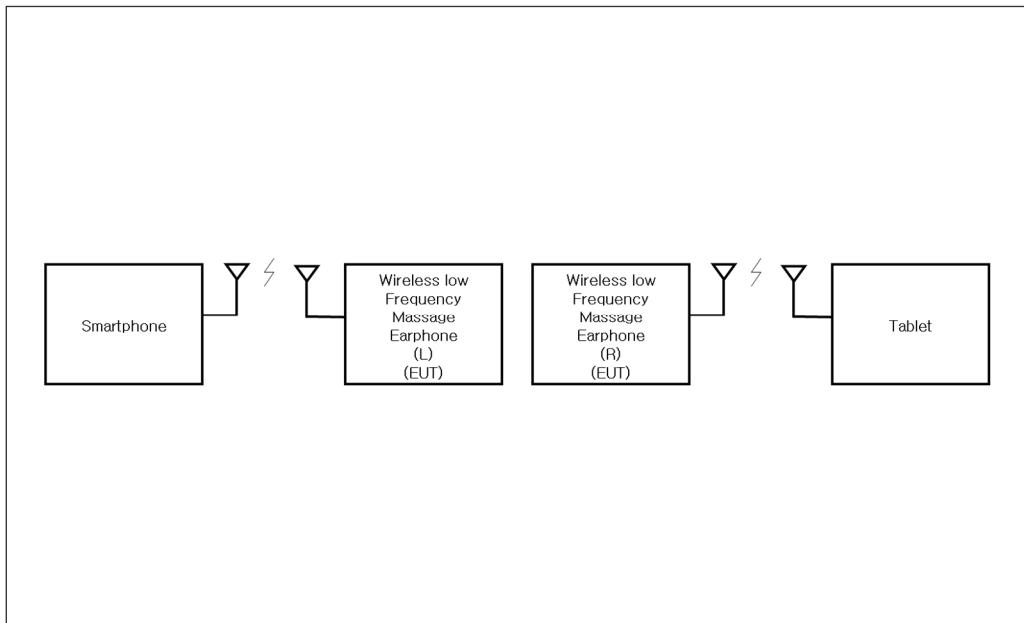
1.8 Configuration

- AC Main
- DC Main

■ Charge Mode

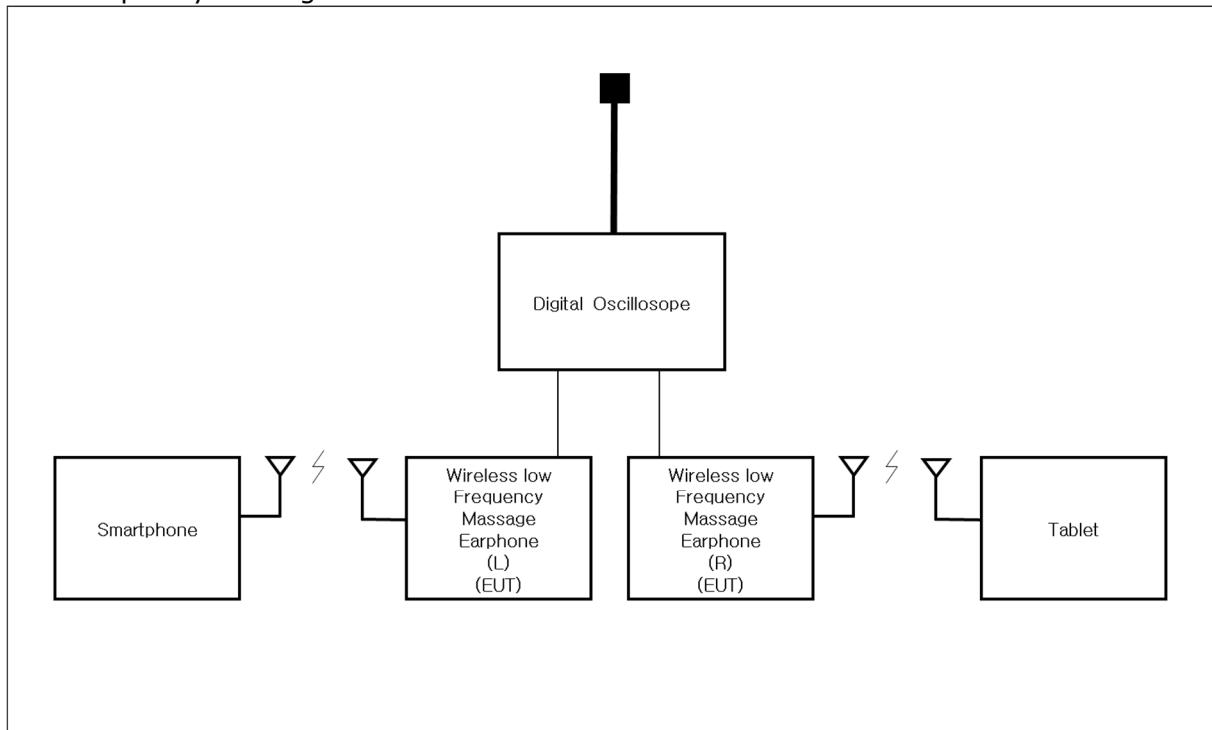


■ Bluetooth Mode



EUT – Smartphone : 2.4 GHz Band (Bluetooth)
 EUT – Tablet : 2.4 GHz Band (Bluetooth)

■ Low Frequency Massage 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, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4:2014 and CISPR 16-1-4:2019

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



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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

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2.0 Test Regulations

The emissions tests were performed according to following regulations:

47 CFR Part 15, Subpart B

CISPR 22:2009 +A1:2010

Class A

Class B

ANSI C63.4-2014

Class A

Class B

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2.1 Conducted Emissions at Mains Power Ports

Test Date

Jan. 19, 2022

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	12, 28, 2022	1 Year
<input checked="" type="checkbox"/>	LISN	ENV216	R & S	101787	12, 27, 2022	1 Year
<input type="checkbox"/>	LISN	ESH2-Z5	R & S	100450	12, 27, 2022	1 Year
<input checked="" type="checkbox"/>	PULSE LIMITER	ESH3-Z2	R & S	101915	12, 27, 2022	1 Year

Test Conditions

Temperature: $(22,4 \pm 0,1) ^\circ\text{C}$

Relative Humidity: $(42,5 \pm 0,1) \% \text{ R.H.}$

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.

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2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Jan. 18, 2022

Test Location

OPEN AREA TEST SITE #2 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, 2022	1 Year
<input checked="" type="checkbox"/>	BILOG ANTENNA	VULB 9168	SCHWARZBECK	9168-461	12, 22, 2022	1 Year
<input checked="" type="checkbox"/>	AMPLIFIER	310N	SONOMA INSTRUMENT	401123	06, 07, 2022	2 Year
<input checked="" type="checkbox"/>	ATTENUATOR	6806.17.A	HUBER+SUHNER	-	11, 02, 2022	1 Year

Test Conditions

Temperature: (22,6 \pm 0,2) °C

Relative Humidity: (43,0 \pm 0,1) % 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

Jan. 18, 2022

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, 2022	1 Year
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 16, 2022	1 Year
<input checked="" type="checkbox"/>	PREAMPLIFIER	8449B	HP	3008A00538	06, 21, 2022	1 Year

Test Conditions

Temperature: $(22,6 \pm 0,2) ^\circ\text{C}$

Relative Humidity: $(43,0 \pm 0,1) \% \text{ R.H.}$

Frequency Range of Measurement

1 GHz to 12,5 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

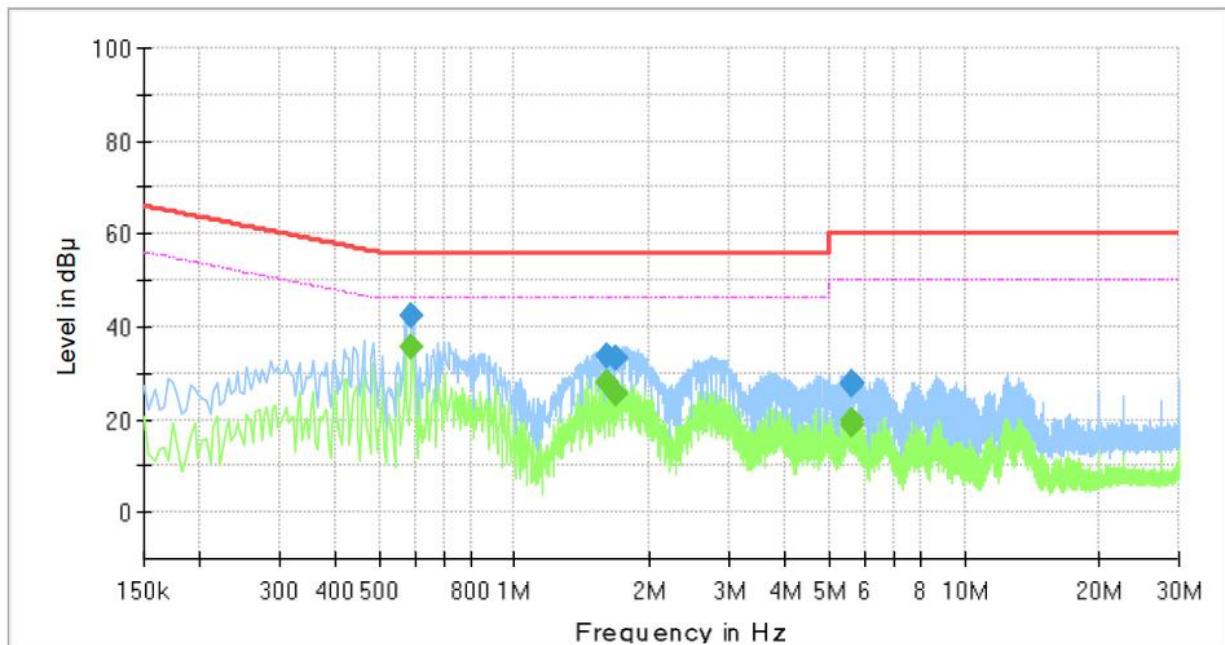
Conducted Emissions at Mains Power Ports

■ Charge Mode

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	MTH-I-1
Phase:	
Mode:	Charge
Operator Name:	KES



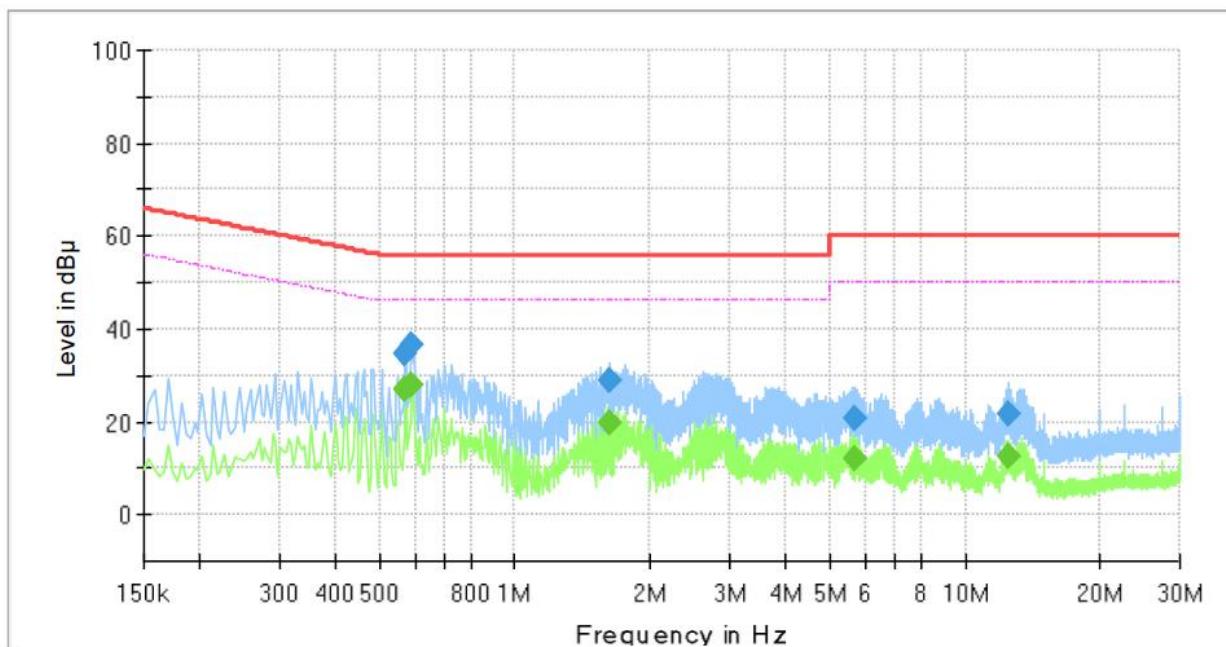
Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.590000	---	35.41	46.00	10.59	1000.0	9.000	L1	20.0
0.590000	42.44	---	56.00	13.56	1000.0	9.000	L1	20.0
1.606000	---	28.05	46.00	17.95	1000.0	9.000	L1	20.4
1.606000	33.72	---	56.00	22.28	1000.0	9.000	L1	20.4
1.674000	---	25.31	46.00	20.69	1000.0	9.000	L1	20.5
1.674000	33.13	---	56.00	22.87	1000.0	9.000	L1	20.5
5.602000	---	18.76	50.00	31.24	1000.0	9.000	L1	19.9
5.602000	27.79	---	60.00	32.21	1000.0	9.000	L1	19.9
5.626000	---	19.93	50.00	30.07	1000.0	9.000	L1	19.9
5.626000	27.35	---	60.00	32.65	1000.0	9.000	L1	19.9

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NEUTRAL LINE
Common Information

Test Description: Conducted Emission
 Model No.: MTH-I-1
 Phase:
 Mode: Charge
 Operator Name: KES


Final_Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.570000	---	27.12	46.00	18.88	1000.0	9.000	N	19.9
0.570000	34.82	---	56.00	21.18	1000.0	9.000	N	19.9
0.590000	---	28.18	46.00	17.82	1000.0	9.000	N	20.0
0.590000	36.76	---	56.00	19.24	1000.0	9.000	N	20.0
1.630000	---	19.78	46.00	26.22	1000.0	9.000	N	20.4
1.630000	28.93	---	56.00	27.07	1000.0	9.000	N	20.4
5.658000	---	12.24	50.00	37.76	1000.0	9.000	N	19.8
5.658000	20.51	---	60.00	39.49	1000.0	9.000	N	19.8
12.502000	---	12.59	50.00	37.41	1000.0	9.000	N	20.5
12.502000	21.88	---	60.00	38.12	1000.0	9.000	N	20.5

◆ Calculation

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

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

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



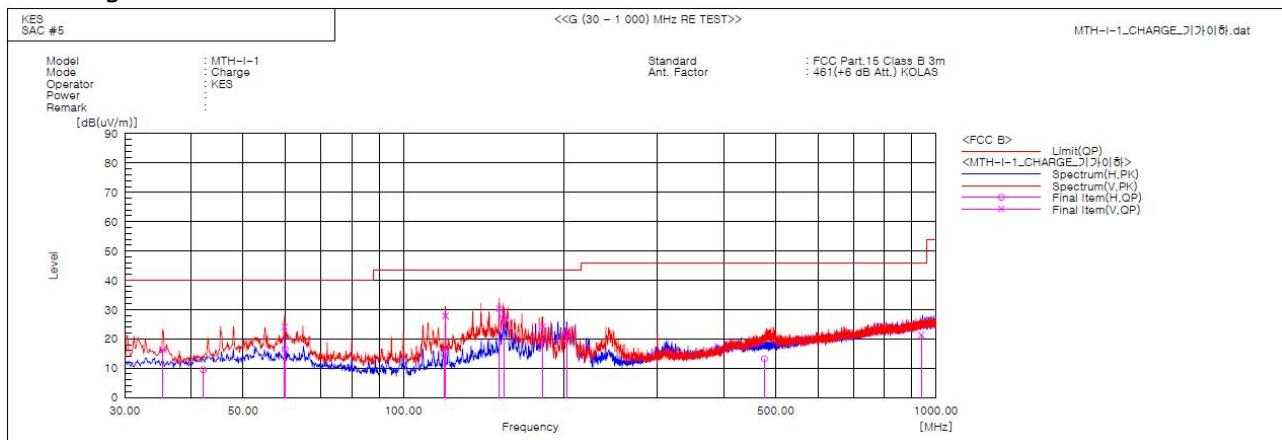
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Radiated Electric Field Emissions(Below 1 GHz)

■ Charge Mode



Final Result

No.	Frequency [MHz]	(P) [dB(uV)]	Reading QP [dB(1/m)]	c.f [dB(uV/m)]	Result QP [dB(uV/m)]	Limit QP [dB]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	35.335	V 30.1	-13.9	16.2	40.0	23.8	108.0	193.9		
2	42.125	H 22.5	-13.0	9.5	40.0	30.5	400.0	301.1		
3	59.828	V 37.0	-12.9	24.1	40.0	15.9	133.0	291.0		
4	59.949	H 29.5	-12.9	16.6	40.0	23.4	100.0	271.2		
5	119.152	V 43.2	-15.3	27.9	43.5	15.6	100.0	174.2		
6	119.968	H 30.3	-15.4	14.9	43.5	28.6	325.0	1.6		
7	151.371	V 42.7	-12.4	30.3	43.5	13.2	100.0	311.6		
8	154.888	H 39.8	-12.4	27.4	43.5	16.1	227.0	63.2		
9	182.775	V 38.9	-14.6	24.3	43.5	19.2	100.0	182.9		
10	202.660	H 37.3	-15.5	21.8	43.5	21.7	400.0	78.1		
11	476.443	H 20.9	-7.7	13.2	46.0	32.8	400.0	49.4		
12	937.435	V 20.2	1.1	21.3	46.0	24.7	100.0	283.7		

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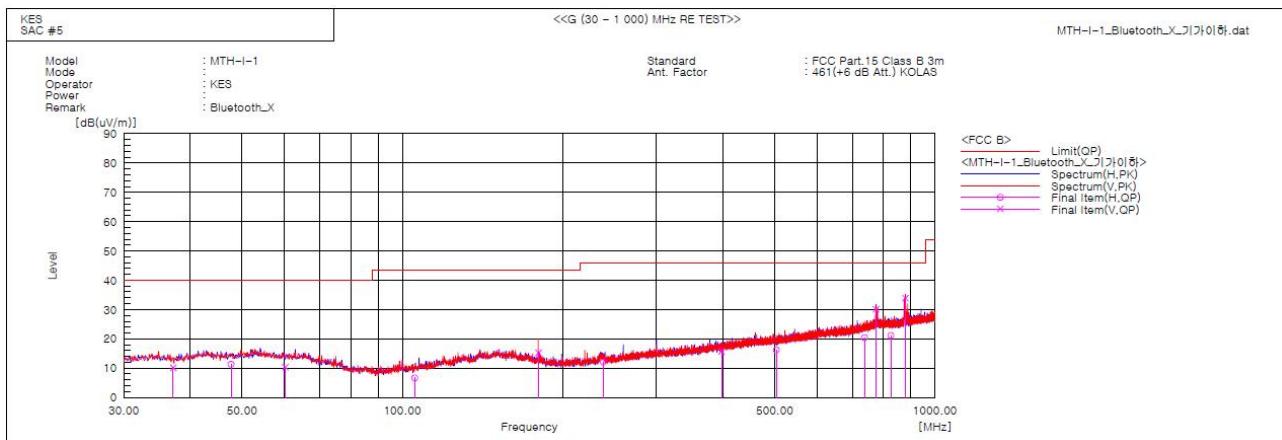


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■ Bluetooth Mode

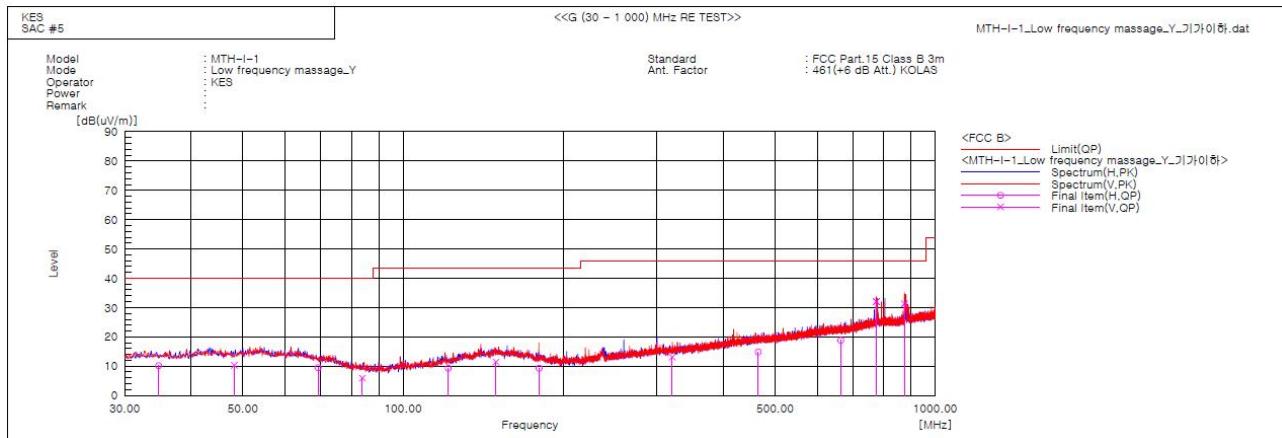


Final Result

No.	Frequency [MHz]	(P) [dB(uV)]	Reading QP [dB(1/m)]	c.f [dB(uV/m)]	Result QP [dB(uV/m)]	Limit QP [dB]	Margin QP [cm]	Height [cm]	Angle [deg]	Remark
1	37.154	V	23.9	-13.7	10.2	40.0	29.8	105.0	99.8	
2	47.703	H	24.0	-12.7	11.3	40.0	28.7	400.0	93.4	
3	60.313	V	23.4	-13.0	10.4	40.0	29.6	132.0	8.4	
4	105.539	H	23.7	-17.0	6.7	43.5	36.8	400.0	281.6	
5	179.986	V	29.6	-14.3	15.3	43.5	28.2	100.0	265.5	
6	238.550	H	26.4	-14.3	12.1	46.0	33.9	298.0	148.5	
7	397.388	V	25.4	-9.6	15.8	46.0	30.2	100.0	71.7	
8	503.603	H	23.6	-7.4	16.2	46.0	29.8	400.0	32.5	
9	737.494	H	23.1	-2.7	20.4	46.0	25.6	361.0	216.9	
10	774.475	V	31.8	-1.7	30.1	46.0	15.9	118.0	144.5	
11	826.370	H	22.3	-1.2	21.1	46.0	24.9	400.1	187.7	
12	879.599	V	34.3	-0.4	33.9	46.0	12.1	100.0	295.2	

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■ Low Frequency Massage Mode



Final Result

No.	Frequency [MHz]	(P) [dB(uV)]	Reading QP [dB(1/m)]	c.f [dB(uV/m)]	Result QP [dB(uV/m)]	Limit QP [dB]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	34.729	H 24.1	24.1	-13.9	10.2	40.0	29.8	123.0	225.0	
2	48.188	V 22.9	22.9	-12.6	10.3	40.0	29.7	105.0	50.6	
3	69.285	H 23.8	23.8	-14.3	9.5	40.0	30.5	400.0	186.5	
4	83.835	V 23.7	23.7	-17.8	5.9	40.0	34.1	100.0	86.9	
5	121.544	H 24.4	24.4	-15.1	9.3	43.5	34.2	400.0	271.4	
6	149.431	V 23.8	23.8	-12.4	11.4	43.5	32.1	143.0	105.1	
7	180.229	H 23.6	23.6	-14.3	9.3	43.5	34.2	400.0	113.0	
8	320.394	V 24.7	24.7	-11.6	13.1	46.0	32.9	100.0	133.6	
9	464.924	H 22.6	22.6	-7.8	14.8	46.0	31.2	400.0	43.3	
10	664.259	H 23.1	23.1	-4.3	18.8	46.0	27.2	400.0	275.8	
11	774.351	V 33.8	33.8	-1.7	32.1	46.0	13.9	165.0	211.4	
12	874.870	V 31.8	31.8	-0.5	31.3	46.0	14.7	100.0	77.0	

◆ 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)

■ Charge Mode



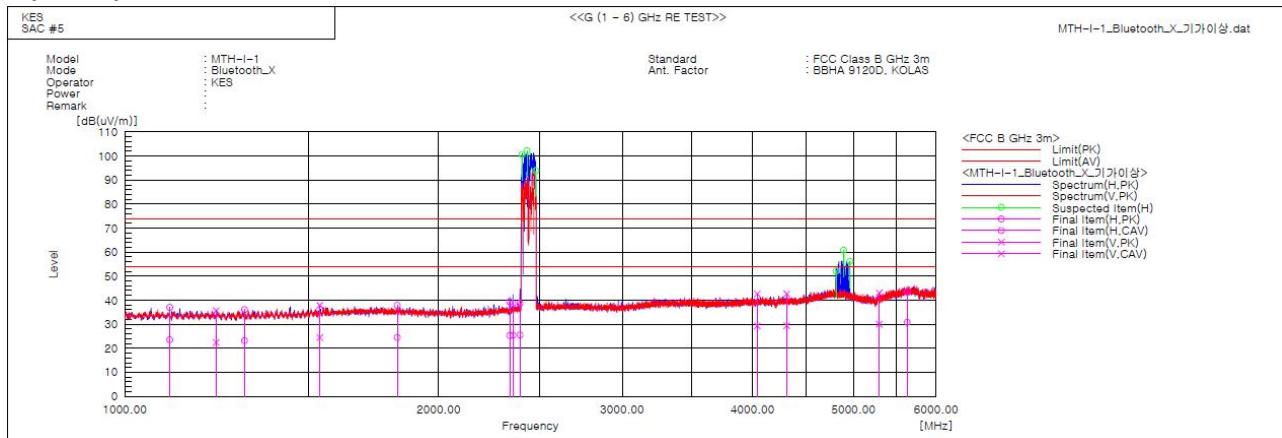
Final Result

No.	Frequency (P) [MHz]	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	1055.364	H 44.2	30.4	-7.7	36.5	22.7	74.0	54.0	37.5	31.3	400.0	354.1	
2	1145.012	V 44.9	31.0	-7.2	37.7	23.8	74.0	54.0	36.3	30.2	100.0	162.3	
3	1341.872	H 43.1	30.1	-6.1	37.0	24.0	74.0	54.0	37.0	30.0	284.0	304.5	
4	1805.477	V 41.8	29.3	-4.1	37.7	25.2	74.0	54.0	36.3	28.8	119.0	237.3	
5	1931.879	H 42.3	28.7	-3.7	38.6	25.0	74.0	54.0	35.4	29.0	400.0	110.3	
6	2260.058	V 40.0	26.8	-2.6	37.4	24.2	74.0	54.0	36.6	29.8	100.0	343.7	
7	2430.240	H 40.9	28.1	-1.9	39.0	26.2	74.0	54.0	35.0	27.8	100.0	73.7	
8	3042.306	V 39.7	26.6	0.2	39.9	26.8	74.0	54.0	34.1	27.2	211.0	243.6	
9	3317.691	H 39.8	27.4	0.6	40.4	28.0	74.0	54.0	33.6	26.0	100.0	16.6	
10	3906.331	V 40.4	27.2	1.7	42.1	28.9	74.0	54.0	31.9	25.1	172.0	88.4	
11	4822.050	H 39.5	26.7	5.3	44.8	32.0	74.0	54.0	29.2	22.0	100.0	189.2	
12	5546.989	V 37.9	25.4	6.7	44.6	32.1	74.0	54.0	29.4	21.9	100.0	86.6	

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■ Bluetooth Mode

- (1 ~ 6) GHz



Final Result

No.	Frequency (P) [MHz]	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]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1104.375	H 44.4	V 31.0	-7.4	37.0	23.6	74.0	54.0	37.0	30.4	362.0	134.5	
2	1223.125	V 42.5	29.2	-6.8	35.7	22.4	74.0	54.0	38.3	31.6	102.0	250.2	
3	1302.534	H 42.5	29.6	-6.4	36.1	23.2	74.0	54.0	37.9	30.8	400.0	95.9	
4	1538.123	V 43.1	29.7	-5.2	37.9	24.5	74.0	54.0	36.1	29.5	100.0	1.8	
5	1825.641	H 41.9	28.5	-4.0	37.9	24.5	74.0	54.0	36.1	29.5	398.0	255.0	
6	2340.041	H 41.6	27.5	-2.2	39.4	25.3	74.0	54.0	34.6	28.7	258.0	149.4	
7	2356.875	H 40.9	27.6	-2.2	38.7	25.4	74.0	54.0	35.3	28.6	400.0	168.6	
8	2393.752	H 40.8	27.6	-2.0	38.8	25.6	74.0	54.0	35.2	28.4	400.0	153.9	
9	4041.255	V 40.6	27.2	-2.1	42.7	29.3	74.0	54.0	31.3	24.7	128.0	39.3	
10	4313.135	V 39.4	26.1	-3.3	42.7	29.4	74.0	54.0	31.3	24.6	100.0	280.6	
11	5291.241	V 36.6	23.5	6.5	43.1	30.0	74.0	54.0	30.9	24.0	100.0	5.9	
12	5627.968	H 36.8	24.1	6.7	43.5	30.8	74.0	54.0	30.5	23.2	145.0	189.3	
13	2405.000	H		-2.0			74.0	54.0			400.0	149.4	
14	2431.875	H		-1.8			74.0	54.0			400.0	153.9	
15	2478.750	H		-1.7			74.0	54.0			400.0	302.9	
16	4810.625	H		5.3			74.0	54.0			400.0	125.2	
17	4891.875	H		5.6			74.0	54.0			400.0	164.1	
18	4960.625	H		5.9			74.0	54.0			400.0	168.6	

* Exclusion Bands

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

It was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

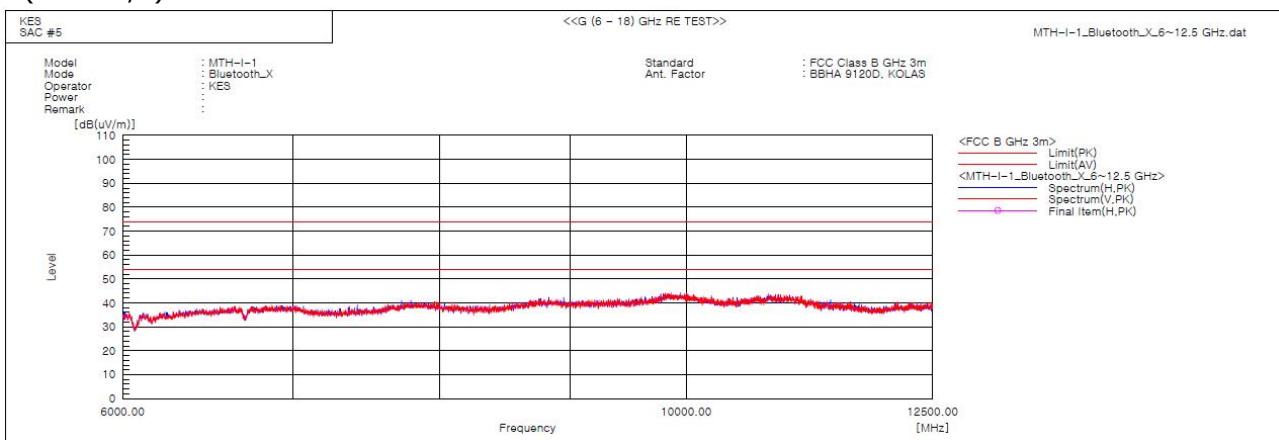


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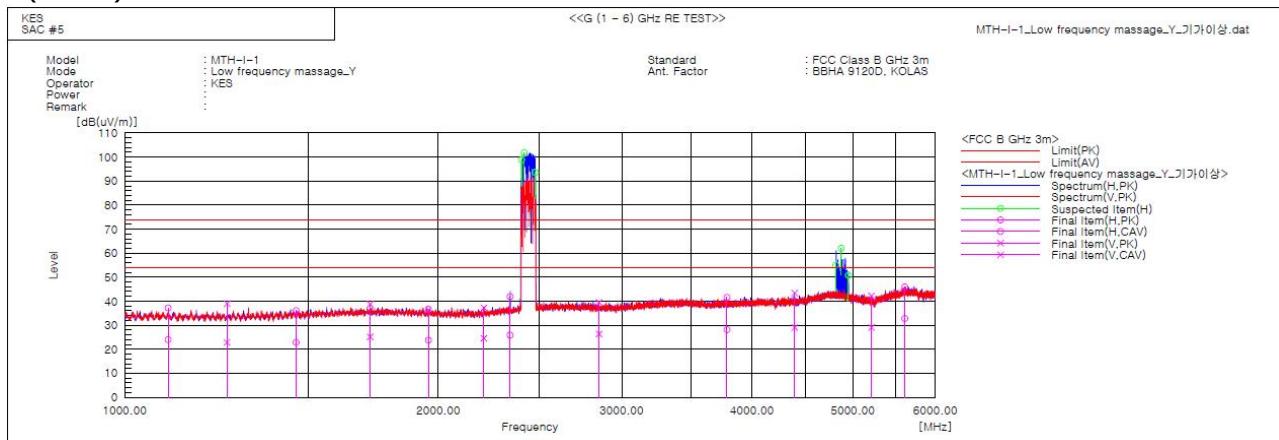
- (6 ~ 12,5) GHz



* No spurious emission were detected above 5 GHz.

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■ Low Frequency Massage Mode - (1 ~ 6) GHz



Final Result

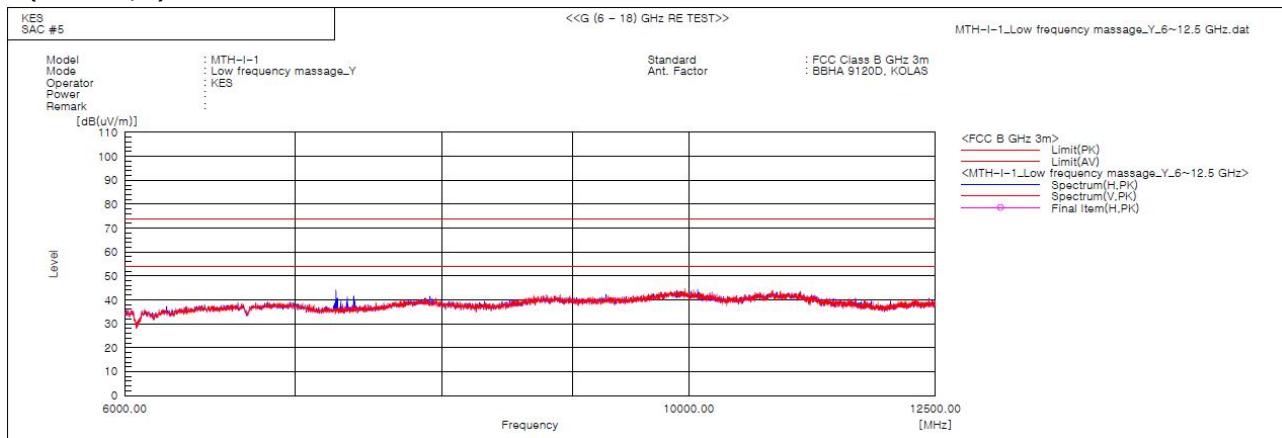
No.	Frequency [MHz]	(P) PK [dB(uV)]	Reading CAV [dB(uV)]	Reading CAV [dB(1/m)]	c.f. [dB(uV/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1100.635	H 44.6	31.4	-7.4	37.2	24.0	74.0	54.0	36.8	30.0	216.0	47.6		
2	1253.753	V 45.6	29.5	-6.6	39.0	22.9	74.0	54.0	35.0	31.1	106.0	209.0		
3	1460.633	H 41.6	28.4	-5.5	36.1	22.9	74.0	54.0	37.9	31.1	100.0	270.5		
4	1720.028	V 43.2	29.6	-4.4	38.8	25.2	74.0	54.0	35.2	28.8	100.0	251.9		
5	1956.968	H 40.4	27.5	-3.7	36.7	23.8	74.0	54.0	37.3	30.2	100.0	52.4		
6	2211.874	V 40.1	27.4	-2.8	37.3	24.6	74.0	54.0	36.7	29.4	118.0	81.7		
7	2344.337	H 44.1	28.1	-2.2	41.9	25.9	74.0	54.0	32.1	28.1	221.0	151.7		
8	2853.182	V 39.7	26.6	-0.2	39.5	26.4	74.0	54.0	34.5	27.6	100.0	87.9		
9	3785.627	H 40.3	26.9	1.3	41.6	28.2	74.0	54.0	32.4	25.8	400.0	294.5		
10	4395.623	V 39.7	25.4	3.7	43.4	29.1	74.0	54.0	30.6	24.9	100.0	108.3		
11	5208.799	V 36.2	23.1	6.0	42.2	29.1	74.0	54.0	31.8	24.9	132.0	293.4		
12	5608.121	H 39.3	26.1	6.7	46.0	32.8	74.0	54.0	28.0	21.2	400.0	324.0		
13	2403.750	H	-----	-2.0	-----	-----	74.0	54.0	-----	-----	100.0	111.3		
14	2418.125	H	-----	-1.9	-----	-----	74.0	54.0	-----	-----	100.0	165.5		
15	2478.750	H	-----	-1.7	-----	-----	74.0	54.0	-----	-----	100.0	72.5		
16	4816.250	H	-----	5.3	-----	-----	74.0	54.0	-----	-----	100.0	159.2		
17	4872.500	H	-----	5.6	-----	-----	74.0	54.0	-----	-----	100.0	153.7		
18	4953.125	H	-----	5.9	-----	-----	74.0	54.0	-----	-----	100.0	62.1		

* Exclusion Bands

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

It was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

- (6 ~ 12,5) GHz



* No spurious emission were detected above 6 GHz.

◆ Calculation

$$\text{Result(PK/CAV)} [\text{dB}(\mu\text{V}/\text{m})] = (\text{Reading(PK/CAV)} [\text{dB}(\mu\text{V})] + \text{c.f} [\text{dB}(1/\text{m})])$$

$$\text{Margin(PK/CAV)} [\text{dB}] = \text{Limit} [\text{dB}(\mu\text{V}/\text{m})] - \text{Result(PK/CAV)} [\text{dB}(\mu\text{V}/\text{m})]$$

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: Marjin value

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