EMC TEST REPORT

Test Report No.	:	KES-EM-20T0476
Date of Issue	:	Jul. 24, 2020
Product name	:	Petife
Model/Type No.	:	Petife100
Variant Mode	:	-
Applicant	:	KSRM Co., Ltd
Applicant Address	:	607Ho, 11-41, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	KSRM Co., Ltd
Manufacturer Address	:	607Ho, 11-41, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea
FCC ID	:	2AW2DPETIFE100
Date of Receipt	:	Jun. 10, 2020
Test date	:	Jun. 20, 2020
Test Results	:	☒ In Compliance ☐ Not in Compliance

Tested by

Min Seong, Kim
EMC Test Engineer

Reviewed by

Dong Hun, Jang
EMC Technical Manager

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Jul. 24, 2020	KES-EM-20T0476	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Weight	2.0 Kg
Color	grey
Feeder Volume	1.2 L
Water Volume	620 ml
Video	HD/720 P (1280 x 720) 25 fps
Camera	1 million pixels
Sensing	Feed and drinking water level detection sensor
App	ISO, Android (Korean, Japanese, English)
Power	DC 12 V/1 A

1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage ☐ 230Vac ☒ 120 Vac ☐ DC 12 V ☐ DC 24 V ☐ PoE

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Petife	Petife 100	-	KSRM Co., Ltd	EUT
AC ADAPTER	RS-AB02J00-K	-	Dongguan Jinhuasheng Power Technology Co.,Ltd	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
Smartphone	SM-N971N	-	SAMSUNG	-
Wireless router	T3004	T300436701229	IPTIME	-
Wireless router Adapter	DCP005C09080K	EA011 17062638541	Zioncom Electronics (Shenzhen) Ltd.	-

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Petife (EUT)	Wireless	Wireless router	Wireless	-	-
Smartphone	Wireless			-	-

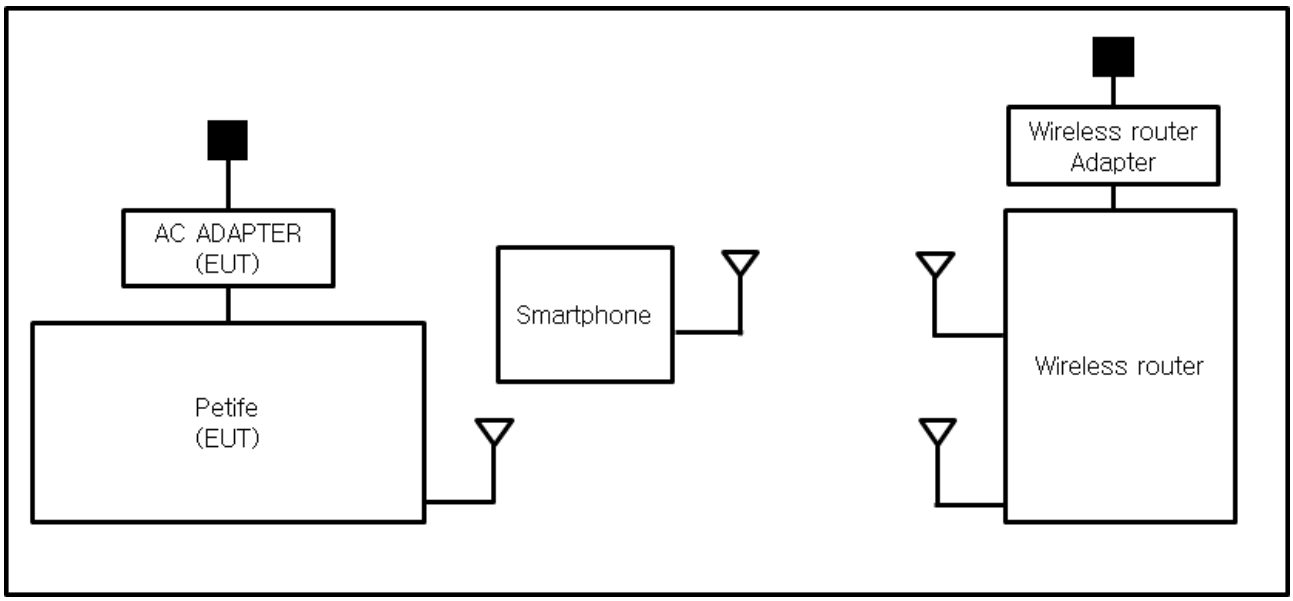
1.7 EUT Operating Mode(s)

Test mode	operating
Operate	Tested by wireless communication between a smartphone and EUT.

EUT Test operating S/W		
Name	Version	Manufacture Company
Petica	1.0	Petica

1.8 Configuration

■ AC Main
□ DC Main



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 16-1-4:2012

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 ㎑ to 30 ㎒. 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㎓ at 10 m or 3 m distance and a Peak and Average detector above 1 ㎓ 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	TÜ V SÜ D	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 0003

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ EMC – Directive 2014/30/EU

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010 ☐ Group 1 ☐ Class A ☐ Group 2 ☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015 ☐ Class A ☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013

☐ VCCI V-3 / 2015.04	☐ Class A	☐ Class B
☐ AS/NZS:2013	☐ Class A	☐ Class B
☒ 47 CFR Part 15, Subpart B		
☐ CISPR 22:2009 +A1:2010	☐ Class A	☐ Class B
☒ ANSI C63.4-2014	☐ Class A	☒ Class B
☐ IC Regulation ICES-003 : 2016		
☐ CAN/CSA CISPR 22-10	☐ Class A	☐ Class B
☐ ANSI C63.4-2014	☐ Class A	☐ Class B

☐ RE– Directive 2014/53/EU

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

2.1 Conducted Emissions at Mains Power Ports

Test Date
Jun. 20, 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: 23,1 ℃
Relative Humidity: 50,8 % R.H.

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

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 ㎓)

Test Date
Jun. 20, 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: 23,2 ℃
Relative Humidity: 50,5 % R.H.

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

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 ㎓)

Test Date
Jun. 20, 2020

Test Location
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
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 02, 2021	1 Year
☒	ATTENUATOR	8491A	HP	35496	03, 10, 2021	1 Year
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	12, 13, 2020	1 Year

Test Conditions
Temperature: 23,2 ℃
Relative Humidity: 50,5 % R.H.

Frequency Range of Measurement
1 ㎓ to 12.4 ㎓

Instrument Settings
IF Band Width: 1 ㎒

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

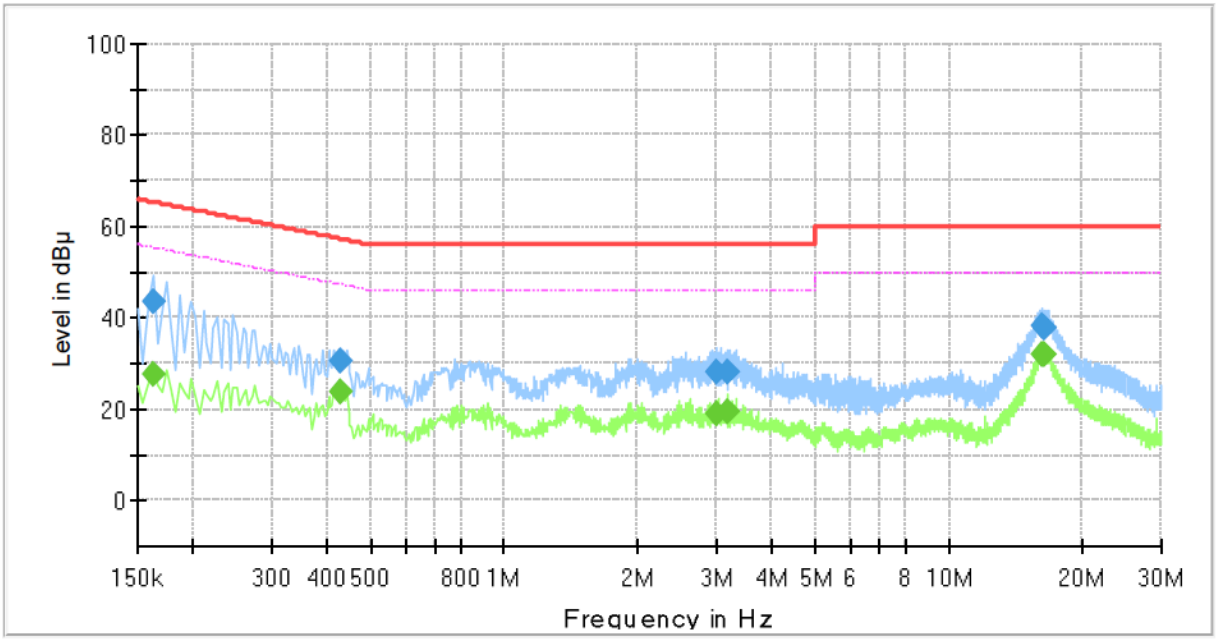
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

HOT LINE

Common Information

Test Description:	Conducted Emission
Model No.:	Petife 100
Phase:	H
Mode:	
Operator Name:	KES



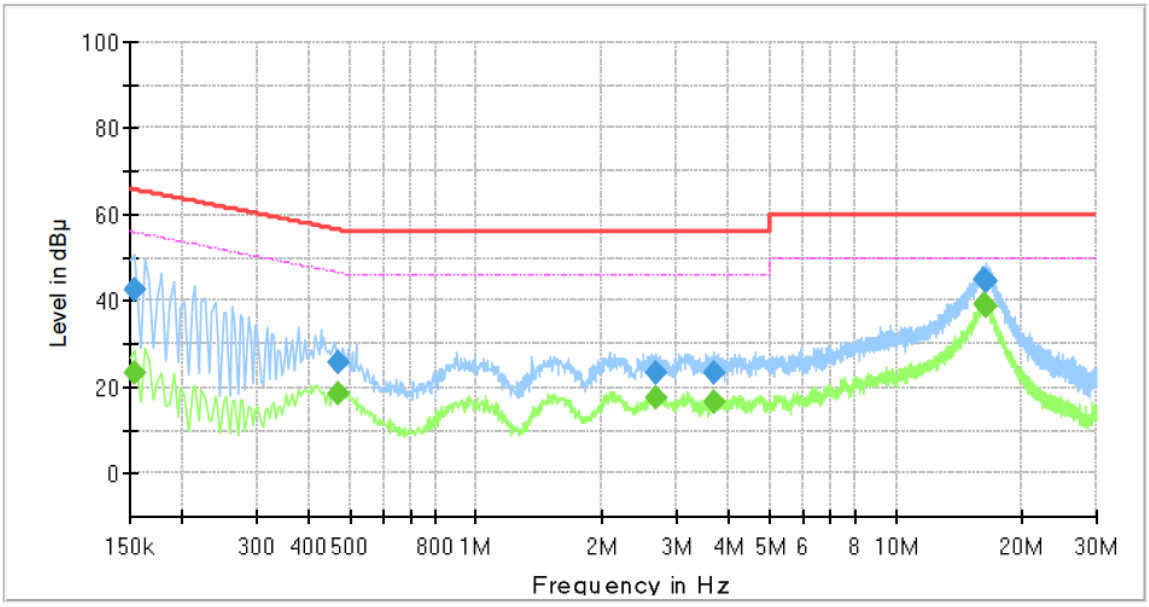
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.162000	---	27.82	55.36	27.54	1000.0	9.000	L1	19.5
0.162000	43.37	---	65.36	21.99	1000.0	9.000	L1	19.5
0.430000	---	23.66	47.25	23.59	1000.0	9.000	L1	19.6
0.430000	30.63	---	57.25	26.62	1000.0	9.000	L1	19.6
3.014000	---	19.09	46.00	26.91	1000.0	9.000	L1	19.7
3.014000	27.88	---	56.00	28.12	1000.0	9.000	L1	19.7
3.178000	---	19.24	46.00	26.76	1000.0	9.000	L1	19.7
3.178000	27.97	---	56.00	28.03	1000.0	9.000	L1	19.7
16.274000	---	32.14	50.00	17.86	1000.0	9.000	L1	20.1
16.274000	38.36	---	60.00	21.64	1000.0	9.000	L1	20.1
16.430000	---	31.90	50.00	18.10	1000.0	9.000	L1	20.1
16.430000	37.92	---	60.00	22.08	1000.0	9.000	L1	20.1

NEUTRAL LINE

Common Information

Test Description:	Conducted Emission
Model No.:	Petife 100
Phase:	N
Mode:	
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.154000	---	23.07	55.78	32.71	1000.0	9.000	N	19.5
0.154000	42.46	---	65.78	23.32	1000.0	9.000	N	19.5
0.470000	---	18.63	46.51	27.88	1000.0	9.000	N	19.6
0.470000	25.60	---	56.51	30.91	1000.0	9.000	N	19.6
2.686000	---	17.70	46.00	28.30	1000.0	9.000	N	19.7
2.686000	23.43	---	56.00	32.57	1000.0	9.000	N	19.7
3.702000	---	16.48	46.00	29.52	1000.0	9.000	N	19.7
3.702000	23.09	---	56.00	32.91	1000.0	9.000	N	19.7
16.242000	---	39.02	50.00	10.98	1000.0	9.000	N	20.2
16.242000	45.06	---	60.00	14.94	1000.0	9.000	N	20.2
16.402000	---	38.73	50.00	11.27	1000.0	9.000	N	20.2
16.402000	44.69	---	60.00	15.31	1000.0	9.000	N	20.2

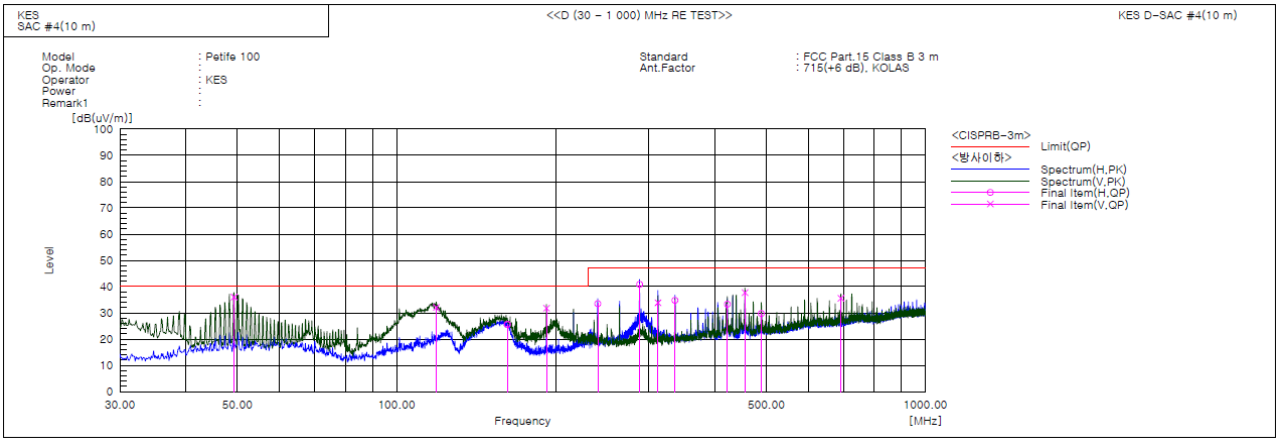
♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

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)

Radiated Electric Field Emissions(Below 1 ㎓)



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	49.279	V	58.0	-21.9	36.1	40.0	3.9	102.0	81.0	
2	118.876	V	56.8	-24.7	32.1	40.0	7.9	100.0	169.0	
3	162.041	H	51.4	-25.8	25.6	40.0	14.4	400.0	256.0	
4	191.990	V	55.4	-23.6	31.8	40.0	8.2	109.0	295.0	
5	240.005	H	54.7	-21.2	33.5	47.0	13.5	359.0	73.0	
6	288.020	H	61.3	-20.4	40.9	46.0	5.1	400.0	85.0	
7	312.028	V	53.2	-19.3	33.9	47.0	13.1	157.0	162.0	
8	336.035	H	52.8	-18.0	34.8	46.0	11.2	397.0	271.0	
9	422.001	H	49.7	-16.4	33.3	47.0	13.7	312.0	191.0	
10	455.588	V	53.6	-15.8	37.8	46.0	8.2	100.0	73.0	
11	489.174	H	44.4	-14.6	29.8	47.0	17.2	302.0	180.0	
12	691.661	V	46.1	-10.5	35.6	47.0	11.4	164.0	77.0	

♦ Calculation – SAC #4(10 m)
Result(QP) [㏈(㎶/m)] = (Reading(QP)[㏈(㎶)] + c.f[㏈(1/m)]
Margin(QP)[㏈] = Limit[㏈(㎶/m)] - Result(QP) [㏈(㎶/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

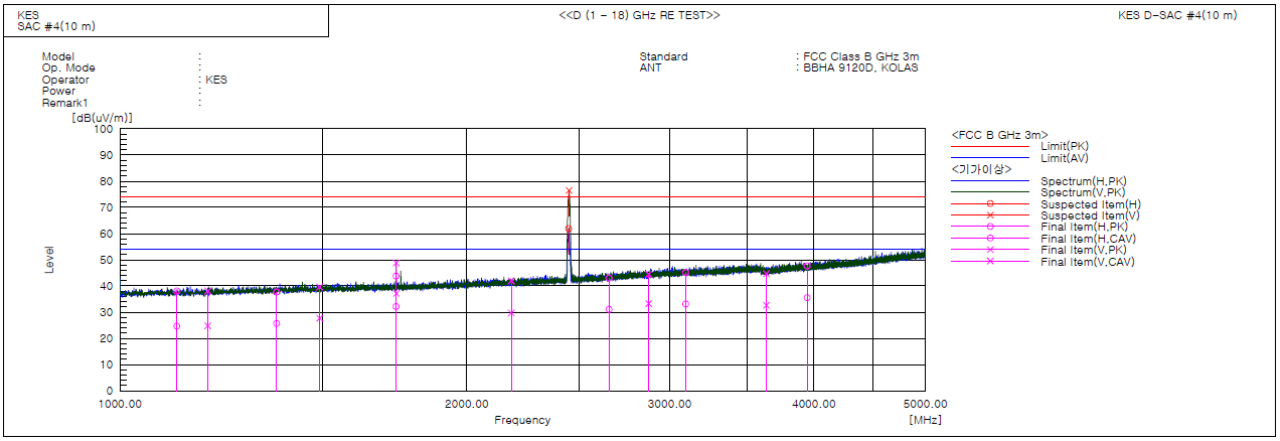
Uncertainty of measurement

Horizontal : Uncertainty of measurement 4.40 ㏈
(Confidence level: Approx. 95 %, *k*=2)

Vertical : Uncertainty of measurement 4.36 ㏈
(Confidence level: Approx. 95 %, *k*=2)

Radiated Electric Field Emissions(Above 1 GHz)

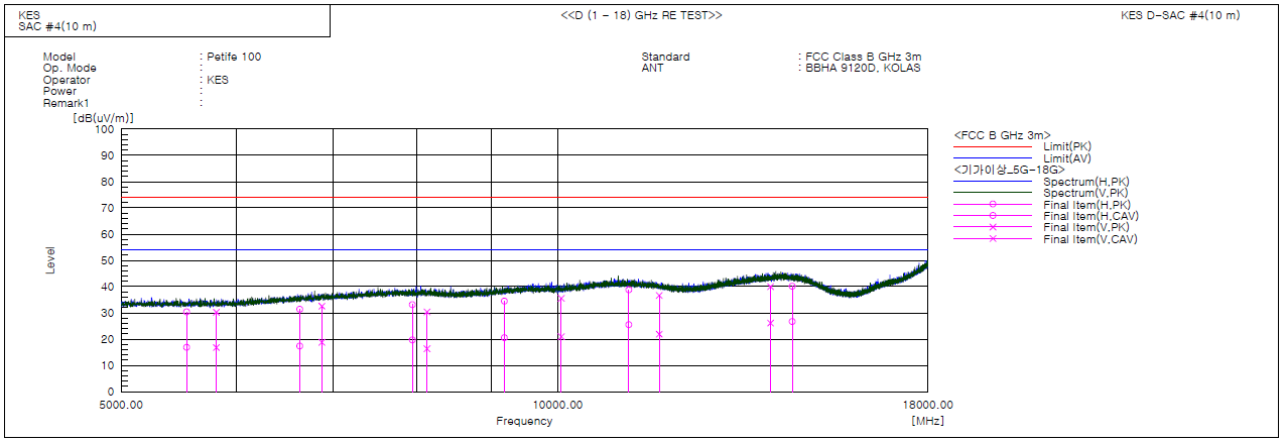
- (1 ~ 5) GHz



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	1120.445	H	42.6	29.2	-4.5	38.1	24.7	74.0	54.0	35.9	29.3	400.0	127.0	
2	1191.575	V	42.1	28.8	-4.0	38.1	24.8	74.0	54.0	35.9	29.2	102.0	316.0	
3	1367.512	H	40.7	28.7	-3.0	37.7	25.7	74.0	54.0	36.3	28.3	400.0	100.0	
4	1490.354	V	42.1	30.1	-2.4	39.7	27.7	74.0	54.0	34.3	26.3	100.0	74.0	
5	1736.178	H	45.1	33.5	-1.3	43.8	32.2	74.0	54.0	30.2	21.8	351.0	345.0	
6	1736.503	V	50.1	38.5	-1.3	48.8	37.2	74.0	54.0	25.2	16.8	154.0	315.0	
7	2185.164	V	41.3	29.1	0.7	42.0	29.8	74.0	54.0	32.0	24.2	100.0	15.0	
8	2656.588	H	40.0	28.1	3.0	43.0	31.1	74.0	54.0	31.0	22.9	359.0	4.0	
9	2875.597	V	40.3	29.1	4.2	44.5	33.3	74.0	54.0	29.5	20.7	104.0	15.0	
10	3096.245	H	40.1	28.1	5.1	45.2	33.2	74.0	54.0	28.8	20.8	397.0	193.0	
11	3637.678	V	38.4	26.4	6.3	44.7	32.7	74.0	54.0	29.3	21.3	152.0	22.0	
12	3947.514	H	39.6	27.5	8.1	47.7	35.6	74.0	54.0	26.3	18.4	400.0	317.0	
13	2450.500	H	--------	--------	2.0	--------	--------	74.0	54.0	--------	--------	100.0	69.0	
14	2453.000	V	--------	--------	2.0	--------	--------	74.0	54.0	--------	--------	100.0	195.0	

- (5 ~ 18) 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: Marjin value

Uncertainty of measurement

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