EMC TEST REPORT

Test Report No.	:	KES-E2-19T0010-R1
Date of Issue	:	May. 20, 2019
Product name	:	Smart Ashley+F
Model/Type No.	:	YDL100FP
Variant Mode	:	-
Applicant	:	Yasuda Co., Ltd
Applicant Address	:	Nagahori YASUDA Bldg 7F, 1-11-9, Minamisenba, Chuo-ku, Osaka, Japan
Manufacturer	:	UNION COMMUNITY Co.,Ltd
Manufacturer Address	:	1201-ho, Munjeong Daemyung Valleyon,127 Beobwon-ro, Songpa-gu, Seoul, Korea
FCC ID	:	2AMALYDL100FP
Date of Receipt	:	Nov. 28, 2018
Test date	:	Jan. 28, 2019
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KOLAS.

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Feb. 15, 2019	KES-E2-19T0010	Issued
May. 20, 2019	KES-E2-19T0010-R1	1. Added FCC ID 2.The EUT photos deleted

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1.0 General Product Description

Main Specifications of EUT are:

Item	Specification
Power Requirement	Lithium Battery [CR1230A x 4 EA (DC 6 V)]
Dimension	Inbody : (74 x 154 x 45) ㎜ Outbody : (72 x 206 x 18) ㎜
Cpu	ATSAM4LS4
Memory	16 Mbit
Operating Frequency	RFID : 13.56 ㎒ Bluetooth : 2.4 ㎓

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 ☒ DC 6 V(Battery)

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
Smart Ashley+F	YDL100FP	-	UNION COMMUNITY Co.,Ltd	EUT

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
SmartPhone	A1429	-	Apple	-
RFID Tag	-	-	-	-

1.6 External I/O Cabling

■ RFID / Bluetooth Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
Smart Ashley+F (EUT)	Wireless	SmartPhone	Wireless	-	-
	Wireless	RFID Tag	Wireless	-	-

■ Touchpad Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
Smart Ashley+F (EUT)	-	-	-	-	-

* Unshielded=U, Shielded=S

■ Fingerprint Mode

Start		END		Cable Spec.	
Description	**I/O Port**	**Description**	**I/O Port**	**Length**	**Shield**
Smart Ashley+F (EUT)	-	-	-	-	-

* Unshielded=U, Shielded=S

1.7 EUT Operating Mode(s)

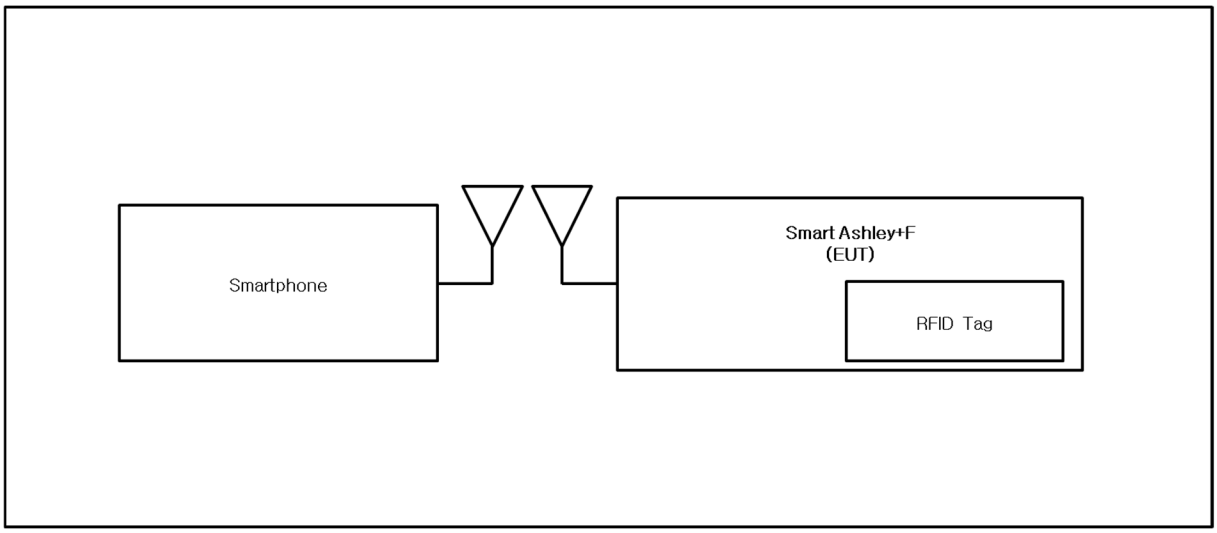
Test mode	operating
RFID / Bluetooth	1 . Checked bluetooth(BLE) condition with app of smartphone. 2 . Checked locking device condition with RFID TAG.
Touchpad	1 . Checked locking device condition with touchpad.
Fingerprint	1 . Checked locking device condition with fingerprint.

EUT Test operating S/W		
Name	**Version**	**Manufacture Company**
BLE Scanner	3.0.0	Bluepixel Technologies

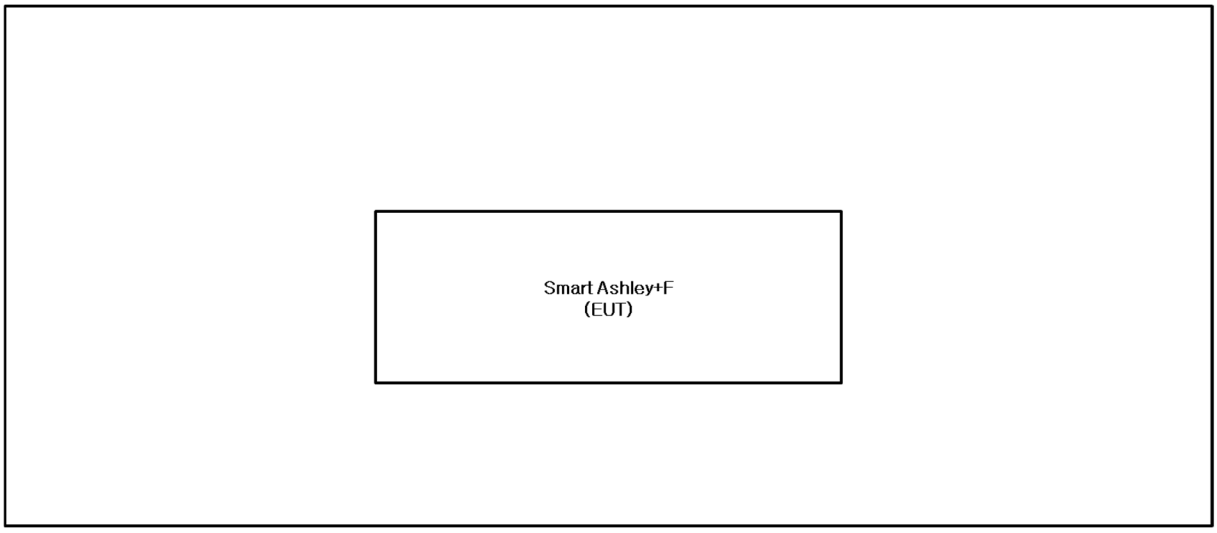
1.8 Configuration

■ AC Main
□ DC Main

■ RFID / Bluetooth Mode



■ Touchpad / Fingerprint 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, 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 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	**RRA**	EMI (3 m & 10 m Semi-Aechoic Chamber ,10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
International	**KOLAS**	EMI (3 m & 10 m Semi-Aechoic Chamber , and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KT489
USA	**FCC**	3 m & 10 m Semi-Aechoic Chamber, 10 m Open Area and Conducted test site to perform FCC Part 15/18 measurements.	KR0100
Canada	**ISED**	3 m & 10 m Semi-Aechoic Chamber and Conducted test site	23298-1
JAPAN	**VCCI**	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	R-4308, C-4798, T-2311, G-914
Europe	**TÜV SÜD**	EMI (3 m & 10 m Semi-Aechoic Chamber , 10 m Open Area and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	CARAT 17 07 01633 001

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

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

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55032:2015 ☐ Class A ☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013

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

☐ **RE– Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

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

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

2.1 Conducted Emissions at Mains Power Ports

Test Date
N/A

Test Location
Electro wave Shieldroom #6

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EMC32	R & S	9.12.00	-
☒	EMI TEST RECEIVER	ESR3	R & S	101781	04, 25, 2019
☒	LISN	ENV216	R & S	101787	01, 04, 2020
☒	LISN	ESH2-Z5	R & S	100450	04, 25, 2019
☒	PULSE LIMITER	ESH3-Z2	R & S	101915	11, 26, 2019

Test Conditions
Temperature: ℃
Relative Humidity: % 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
N/A : It is not tested apply because it is powered by battery.

2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Jan. 28, 2019

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

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 11, 2019
☒	AMPLIFIER	SCU 01	R & S	100603	11, 26, 2019
☒	TRILOG-BROADBAND ANTENNA	VULB9163	Schwarzbeck	715	11, 29, 2020
☒	ATTENUATOR	8491A	HP	32173	03, 21, 2019

Test Conditions
Temperature: 22.8 ℃
Relative Humidity: 47.9 % 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
Jan. 28, 2019

Test Location
SEMI ANECHOIC CHAMBER #4(10 m)

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test S/W	EP5/RE	TOYO Corporation	6.0.0	-
☒	EMI TEST RECEIVER	ESU26	R & S	100551	04, 11, 2019
☒	PREAMPLIFIER	8449B	AGILENT	3008A01742	01, 11, 2019
☒	HORN ANTENNA	BBHA 9120D	SCHWARZBECK	9120D-1802	09, 04, 2019

Test Conditions
Temperature: 22.8 ℃
Relative Humidity: 47.9 % 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

N/A

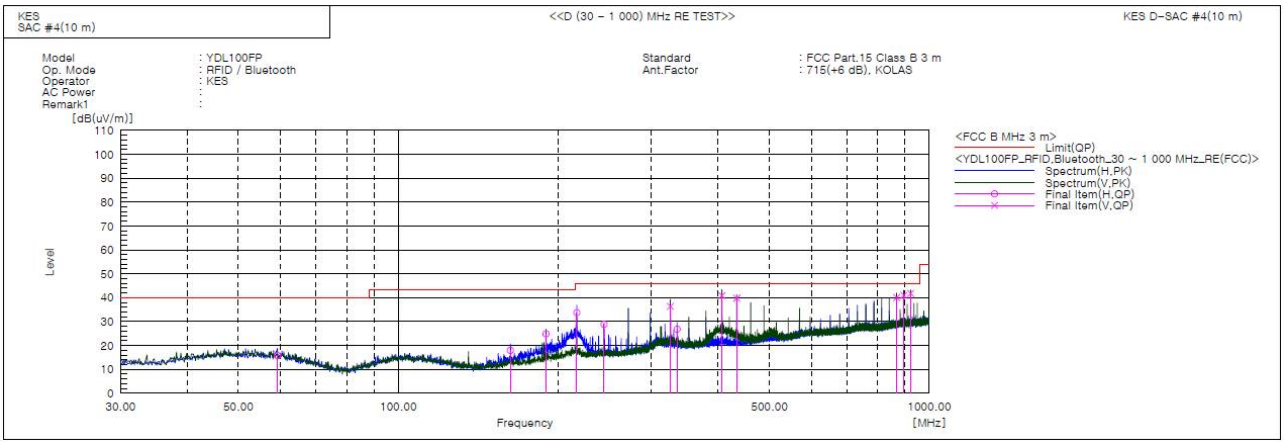
NEUTRAL LINE

N/A

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

Radiated Electric Field Emissions(Below 1 ㎓)

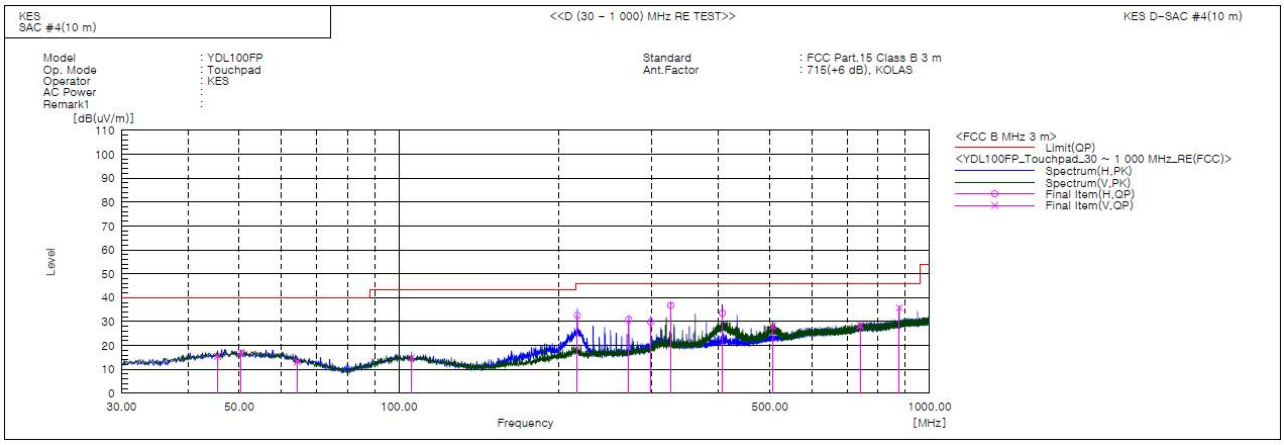
■ RFID / Bluetooth Mode



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	59.238	H	38.8	-23.0	15.8	40.0	24.2	160.0	225.0	
2	162.648	H	43.8	-25.8	18.0	43.5	25.5	203.0	114.0	
3	189.808	H	48.8	-23.9	24.9	43.5	18.6	342.0	197.0	
4	216.954	H	55.7	-21.9	33.8	46.0	12.2	337.0	114.0	
5	244.128	H	50.2	-21.3	28.9	46.0	17.1	127.0	197.0	
6	325.486	V	55.0	-18.6	36.4	46.0	9.6	185.0	138.0	
7	335.186	H	44.9	-18.1	26.8	46.0	19.2	164.0	233.0	
8	406.845	V	57.5	-16.6	40.9	46.0	5.1	188.0	99.0	
9	434.005	V	56.2	-16.4	39.8	46.0	6.2	210.0	87.0	
10	867.959	V	48.4	-8.3	40.1	46.0	5.9	127.0	142.0	
11	895.119	V	49.0	-8.0	41.0	46.0	5.0	370.0	135.0	
12	922.287	V	49.6	-7.8	41.8	46.0	4.2	166.0	142.0	

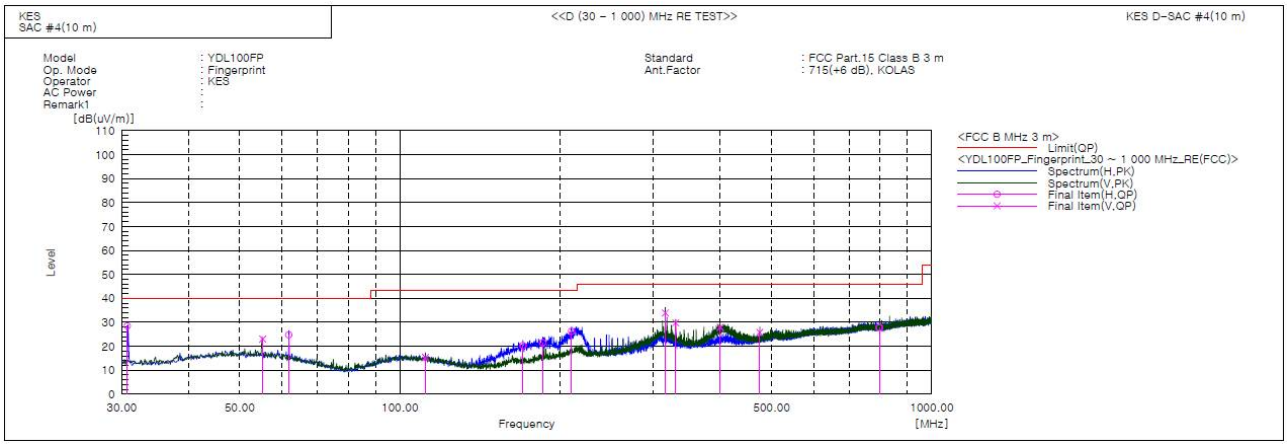
■ Touchpad Mode



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	45.536	V	37.9	-22.4	15.5	40.0	24.5	207.0	143.0	
2	50.370	V	39.1	-22.0	17.1	40.0	22.9	166.0	354.0	
3	64.314	V	37.4	-24.1	13.3	40.0	26.7	185.0	230.0	
4	105.644	V	38.3	-23.3	15.0	43.5	28.5	137.0	95.0	
5	216.972	H	54.5	-21.9	32.6	46.0	13.4	389.0	293.0	
6	271.160	H	51.7	-20.9	30.8	46.0	15.2	224.0	281.0	
7	298.329	H	49.8	-20.0	29.8	46.0	16.2	327.0	281.0	
8	325.480	H	55.4	-18.6	36.8	46.0	9.2	330.0	281.0	
9	406.836	H	50.2	-16.6	33.6	46.0	12.4	208.0	281.0	
10	506.259	V	42.4	-14.3	28.1	46.0	17.9	256.0	115.0	
11	740.061	V	37.9	-9.5	28.4	46.0	17.6	225.0	163.0	
12	877.162	V	44.0	-8.2	35.8	46.0	10.2	138.0	123.0	

■ Fingerprint Mode



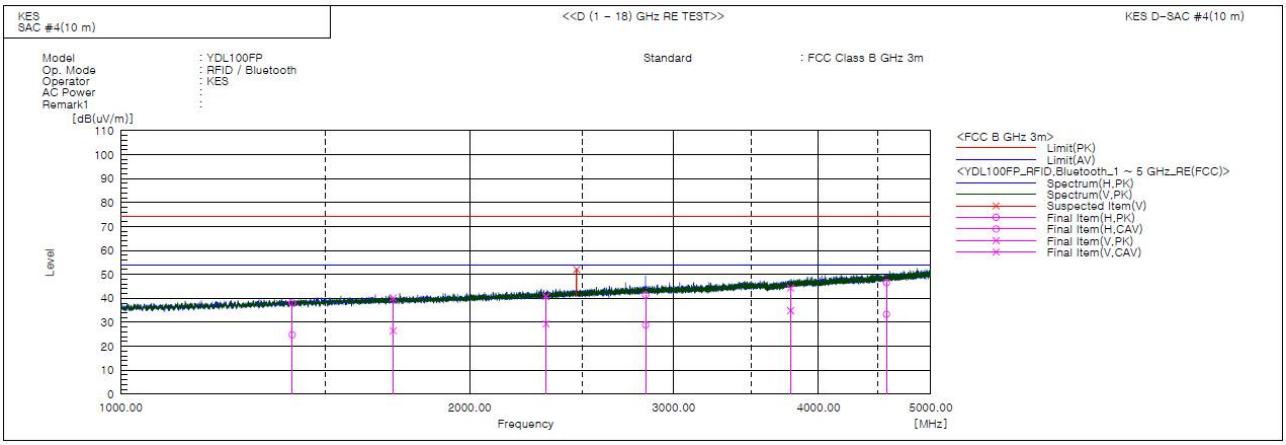
Final Result

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	30.730	H	54.2	-25.7	28.5	40.0	11.5	127.0	266.0	
2	55.236	V	45.4	-22.4	23.0	40.0	17.0	110.0	351.0	
3	61.826	H	48.3	-23.5	24.8	40.0	15.2	366.0	214.0	
4	111.751	V	39.1	-23.7	15.4	43.5	28.1	221.0	308.0	
5	170.421	H	45.7	-25.4	20.3	43.5	23.2	300.0	154.0	
6	185.570	H	45.9	-24.4	21.5	43.5	22.0	103.0	154.0	
7	210.280	H	48.5	-22.2	26.3	43.5	17.2	115.0	150.0	
8	315.616	V	53.0	-19.1	33.9	46.0	12.1	120.0	289.0	
9	330.226	V	48.1	-18.3	29.8	46.0	16.2	185.0	297.0	
10	400.161	V	44.7	-16.7	28.0	46.0	18.0	245.0	157.0	
11	474.941	V	41.2	-15.3	25.9	46.0	20.1	200.0	137.0	
12	796.824	H	37.5	-9.7	27.8	46.0	18.2	375.0	79.0	

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

Radiated Electric Field Emissions(Above 1 ㎓)

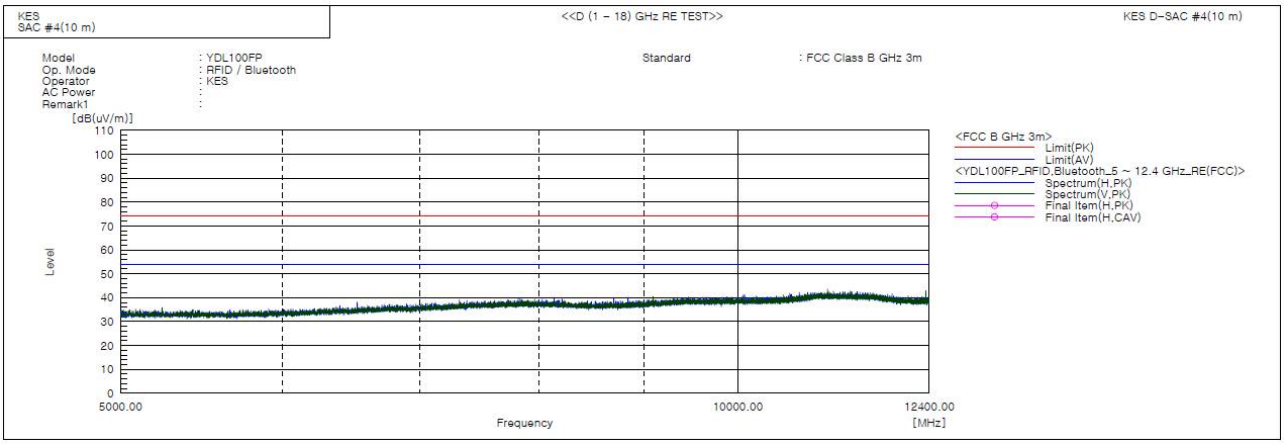
■ RFID / Bluetooth Mode – (1 ~ 5 ㎓)



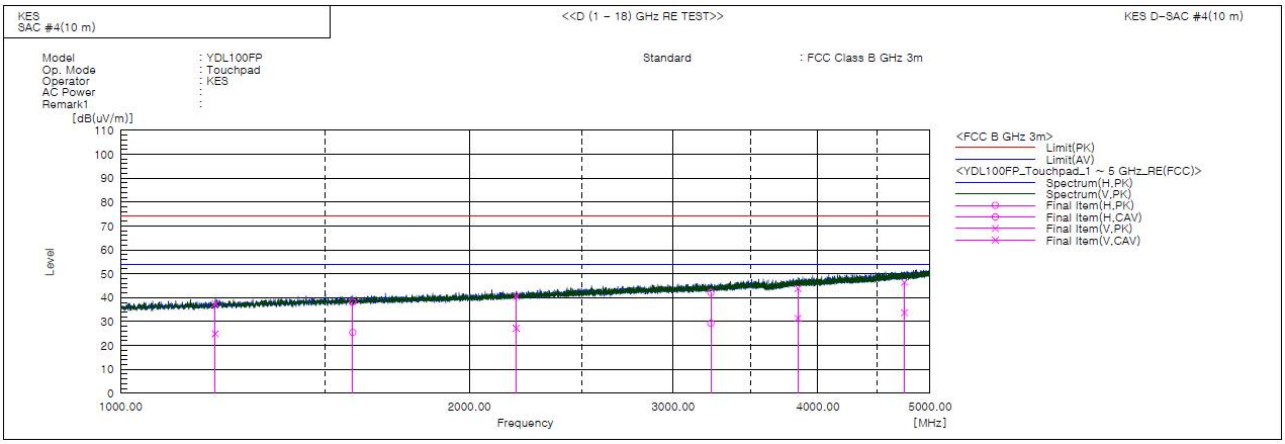
Final Result

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	1406.125	H	41.6	28.3	-3.5	38.1	24.8	74.0	54.0	35.9	29.2	110.0	301.0	
2	1718.351	V	42.1	28.4	-1.9	40.2	26.5	74.0	54.0	33.8	27.5	203.0	233.0	
3	2328.369	V	39.8	28.4	0.9	40.7	29.3	74.0	54.0	33.3	24.7	228.0	30.0	
4	2837.275	H	38.5	26.0	2.9	41.4	28.9	74.0	54.0	32.6	25.1	105.0	205.0	
5	3784.828	V	37.8	28.4	6.5	44.3	34.9	74.0	54.0	29.7	19.1	262.0	165.0	
6	4579.123	H	37.0	23.9	9.5	46.5	33.4	74.0	54.0	27.5	20.6	138.0	29.0	
7	2474.000	V	--------	--------	1.5	--------	--------	74.0	54.0	--------	--------	100.0	105.0	

– (5 ~ 12.4 ㎓)



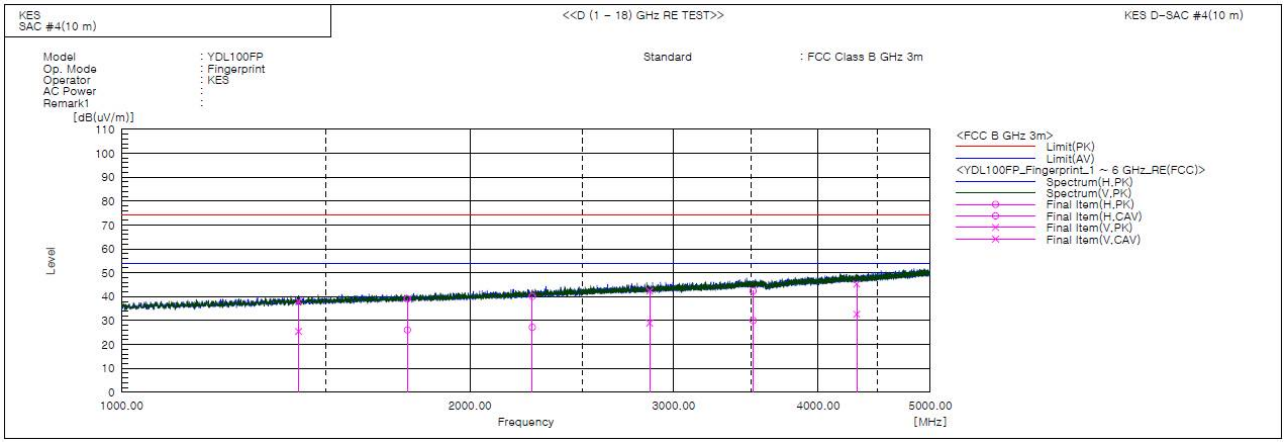
■ Touchpad Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1207.130	V	42.4	29.8	-4.9	37.5	24.9	74.0	54.0	36.5	29.1	128.0	99.0	
2	1586.320	H	40.7	28.0	-2.5	38.2	25.5	74.0	54.0	35.8	28.5	224.0	273.0	
3	2196.247	V	40.4	27.0	0.2	40.6	27.2	74.0	54.0	33.4	26.8	209.0	255.0	
4	3234.116	H	37.9	25.1	4.2	42.1	29.3	74.0	54.0	31.9	24.7	120.0	317.0	
5	3844.526	V	37.0	24.6	6.8	43.8	31.4	74.0	54.0	30.2	22.6	394.0	170.0	
6	4752.061	V	36.3	23.6	10.1	46.4	33.7	74.0	54.0	27.6	20.3	354.0	114.0	

■ Fingerprint Mode



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Result CAV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin CAV [dB]	Height [cm]	Angle [deg]	Remark
1	1422.245	V	41.5	28.9	-3.4	38.1	25.5	74.0	54.0	35.9	28.5	270.0	131.0	
2	1766.221	H	40.9	27.8	-1.7	39.2	26.1	74.0	54.0	34.8	27.9	306.0	61.0	
3	2264.524	H	39.5	26.6	0.6	40.1	27.2	74.0	54.0	33.9	26.8	370.0	254.0	
4	2860.364	V	39.3	26.0	3.0	42.3	29.0	74.0	54.0	31.7	25.0	228.0	304.0	
5	3514.148	H	37.5	25.1	4.9	42.4	30.0	74.0	54.0	31.6	24.0	347.0	237.0	
6	4318.213	V	36.8	24.2	8.5	45.3	32.7	74.0	54.0	28.7	21.3	136.0	203.0	

♦ 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

* Exclusion Band : 2.4 GHz
* No spurious emission were dectected above 5 GHz