TEST REPORT

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1. Client

- Name : Kum Oh Electronics Co., Ltd.
- Address : 35, Gilju-ro 444beon-gil, Bucheon-si, Gyeonggi-do, Republic of Korea
- Date of Receipt : 2019-07-03

2. Use of Report : -

3. Name of Product and Model : USPs Button Module(Vertical) / KDUB-019V

4. Manufacturer and Country of Origin : Kum Oh Electronics Co., Ltd. / Korea

5. FCC ID : 2AJKSKDUB-019V

6. Date of Test : 2019-07-31 to 2019-08-14

7. Test Standards : 47 CFR Part 1.1310

8. Test Results : Refer to the test result in the test report

Affirmation	Tested by	Technical Manager
	Name : MyeongJun Kwon (Signature)	Name : Jaehyong Lee (Signature)

2019-09-26

KCTL Inc.

Report revision history

Date	Revision	Page No
2019-08-20	Initial report	-
2019-08-23	Updated	6 ~ 8
2019-09-26	Delete for BLE exposure	6

CONTENTS

1. General information

Client	:	Kum Oh Electronics Co., Ltd.
Address	:	35, Gilju-ro 444beon-gil, Bucheon-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	Kum Oh Electronics Co., Ltd.
Address	:	35, Gilju-ro 444beon-gil, Bucheon-si, Gyeonggi-do, Republic of Korea
Factory	:	NCC VINA ELECTRONICS CO., LTD
Address	:	LotB1, Song Khe-Noi Hoang Industrial zone, Bac Giang city, Bac Giang Province
Laboratory	:	KCTL Inc.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-3327, G-198, C-3706, T-1849 Industry Canada Registration No. : 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	USPs Button Module(Vertical)
Model	:	KDUB-019V
Frequency range	:	2 402 ㎒ ~ 2 480 ㎒ (Bluetooth LE) 0.531 ㎒ (WPT)
Modulation technique	:	Bluetooth LE_GFSK WPT_AM
Number of channels	:	40 ch (Bluetooth LE)
Power source	:	DC 5 V
Antenna specification	:	PCB Antenna (Bluetooth LE) Loop Coil Antenna (WPT)
Antenna gain	:	3.10 ㏈i (Bluetooth LE)
Software version	:	Rev1.0
Hardware version	:	Rev1.0
Test device serial No.	:	N/A
Operation temperature	:	-20 ℃ ~ 50 ℃

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
Stylus Pen	Samsung Electronics Co., Ltd	EN-PN960	-	-

3. RF Exposure

Regulation

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1310 of the FCC rules and Regulations.
The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1.
According to FCC §1.1310: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b).

Table 1 – Limits for Maximum Permissible Exposure (MPE)

Frequency Range (㎒)	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [㎽/㎠]	Averaging Time [minute]
(A) Limits for Occupational / Controlled Exposure				
0.3 ~ 3.0	614	1.63	*100	6
3.0 ~ 30	1842/f	4.89/f	*900/f^2	6
30 ~ 300	61.4	0.163	1.0	6
300 ~ 1 500	/	/	f/300	6
1 500 ~ 15 000	/	/	5	6
(B) Limits for General Population / Uncontrolled Exposure				
0.3 ~ 1.34	614	1.63	*100	30
1.34 ~ 30	824/f	2.19/f	*180/f^2	30
30 ~ 300	27.5	0.073	0.2	30
300 ~ 1 500	/	/	f/1 500	30
1 500 ~ 15 000	/	/	1.0	30

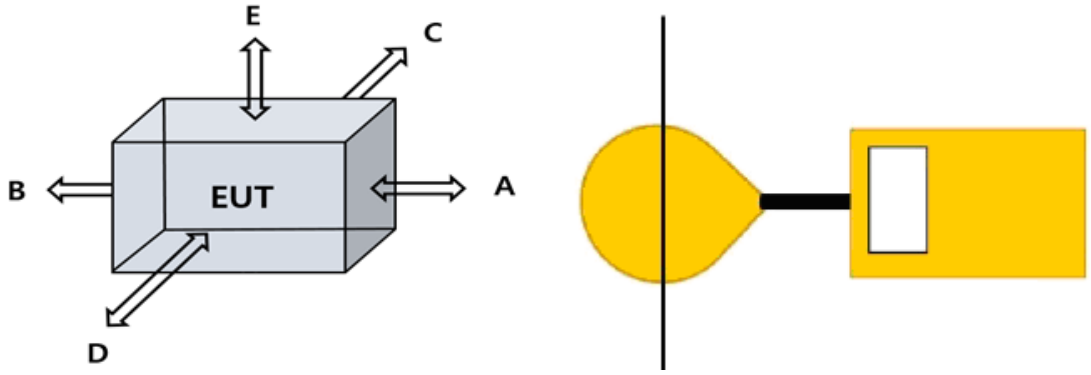
*f=frequency in ㎒, *= plane-wave equivalent power density*

Per the guidance of KDB 680106, the E-field and H-field limits shown in the table above are extended down to 100 ㎑

4. Test results

4.1. WPT(Wireless Power Transfer)

Test setup



Test configurations

In order to check configurations, EUT was evaluated with S-pen and charging condition.
The EUT information was declared by the manufacturer.

Measurement Procedure

a) The RF exposure test was performed on the table in anechoic chamber.
Testing was performed with a calibrated field probe.
b) The measurement was investigated between the edge of the charger and center of the field probe in the closest state.
c) Maximum E-field and H-field measurements were made on each of five sides of the EUT that could come in contact with a user. Five sides are defined as follows:
Right (B), Top (E), Left (A), Rear (D) and Front (C).
Refer to the test position diagram above.
d) According to the guidance of KDB 680106 D01 v03 test distance was 15 cm on the surrounding sides from the EUT.

Equipment Approval Considerations item 5.b) of KDB 680106 D01 v03

a) Power transfer frequency is less than 1 ㎒.

► This device is operates at a frequency of 531 ㎑.

b) Output power from each primary coil is less than or equal to 15 watts.

► DC 5.0 V condition / Output power from each primary coil : 0.23 watts.

c) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

► The transfer system includes only single primary and secondary coils.

d) Client device is placed directly in contact with the transmitter.

► The client device is placed directly in contact with the transmitter.

e) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion)

► This device is mobile exposure condition.

f) The aggregate H-field strengths at 15 ㎝ surrounding the device and 20 ㎝ above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

► The EUT field strength levels < 50 % of the MPE limit 1.63 A/m
0.069 3 A/m (Max) < 0.815 A/m

Test results

The probe was positioned at the location where there is maximum field strength on each side of the EUT.

Test mode : H-field

Frequency [㎒]	Probe Orientation [X,Y,Z]	Distance [㎝]	Corrected H-field [A/m]						Limits [A/m]
			EUT sides						
			A	B	C	D	E	F	
0.531	Sum	20					0.062 4		1.63
0.531	Sum	15	0.065 1	0.066 1	0.069 3	0.069 3	0.069 7	0.065 9	1.63
0.531	Sum	5	0.063 3	0.066 0	0.065 5	0.064 3	0.070 3	0.064 9	1.63
0.531	Sum	4					0.070 7		1.63
0.531	Sum	3					0.071 9		1.63
0.531	Sum	2					0.073 9		1.63
0.531	Sum	1					0.081 5		1.63
0.531	Sum	0					0.097 3		1.63

Test mode : E-field

Frequency [㎒]	Probe Orientation [X,Y,Z]	Distance [㎝]	Corrected E-field [V/m]						Limits [V/m]
			EUT sides						
			A	B	C	D	E	F	
0.531	Sum	20					0.384 2		614
0.531	Sum	15	0.381 9	0.474 5	0.398 0	0.387 8	0.400 1	0.383 8	614

5. Measurement Equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
E&H Field Probe	narda	EHP-200A	170WX81015	20.02.08

End of test report