



FCC TEST REPORT

Job No. : GPEM2305000290EC
Applicant : GolfzonDeca Inc
Equipment Under Test (EUT) :
 Product Name : SMART PIN
 Model Name : LP-SMART PIN
FCC Authorization Type : Certification
Applied Standards : FCC Part 15 Subpart B, Class A
FCC ID : 2ALG4LPSMARTPIN
Date of Receipt : May 4, 2023
Date of Test : May 22, 2023 ~ June 7, 2023
Date of Issue : June 9, 2023
Test Results : Complied

Tested by :	 ----- Jaehyeok Lee
Technical Manager :	 ----- Julia Choi

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 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

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Revision History

Revision	Report number	Description
0	F690501-RF-EMC001444	Initial
1		

1. General Information

1.1 Client Information

Applicant	GolfzonDeca Inc
Applicant Address	253, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	GolfzonDeca Inc
Manufacturer Address	253, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

1.2 Test Laboratory

Name and Address	SGS Korea Co., Ltd.
- Giheung Laboratory	35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
- Gunpo Laboratory	4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 15807, Republic of Korea
- Dongtan Laboratory	12, Dongtansandan 10-gil, Hwaseong-si, Gyeonggi-do, 18487, Republic of Korea
FCC Registration No.	KR0150
Phone	+ 82 31 548 0710
Fax	+ 82 31 548 0719
e-mail	julia.choi@sgs.com

1.3 General Information of E.U.T.

Classification	Specification
Product Name	SMART PIN
Model Name	LP-SMART PIN
Serial No.	-
EMI Classification	Class A
Internal Clock Frequency	32 Mhz (Wireless Tx Freq. : 2 480 Mhz)
Rated Power	3.7 Vd.c, 20 000 mA
Test Voltage	120 V~, 60 Hz
H/W Version	1.1
S/W Version	34
Port	USB(C-type)
Components	-
Function	Distance calculating using by GPS signal in golf field and transferring the data

1.4 Operating Modes and Conditions

Operating mode	Operating Condition
Charging Mode	Charging the EUT

1.5 Peripheral Equipments

Description	Model	Serial No.	Manufacturer	Note.
Travel Adaptor	EP-TA200		Samsung Electronics Co.,Ltd	-

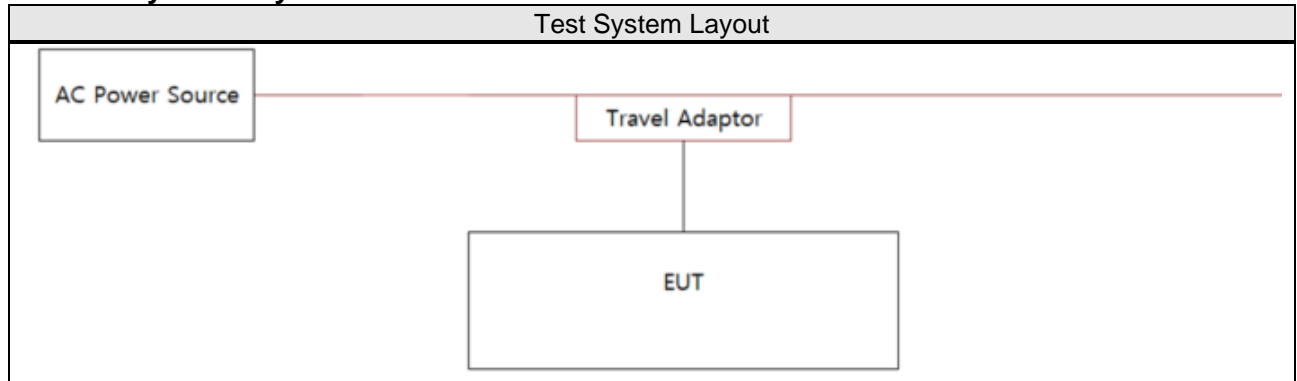
1.6 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length (m)	Shield	
EUT	USB(C-type)	Travel Adaptor	USB(A-type)	1.0	Unshielded	-

1.7 System Configurations

Description	Model	Serial No.	Manufacturer	Note
Battery Pack	BW21700-50E	-	Blackwolf	4 EA
Mainboard	LP-SMARTPIN V1.0	-	GolfzonDeca Inc	-
GPS board	SMART GPS	-	GolfzonDeca Inc	-

1.8 Test System Layout



1.9 Modifications/Notes

- There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : Subpart B	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Standards	Results
Conducted Emission	FCC Part 15 Subpart B Section 15.107 ANSI C63.4a:2017	N/A
Radiated Emission	FCC Part 15 Subpart B Section 15.109 ANSI C63.4a:2017	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Standards	Test Results
Conducted Emission	FCC Part 15 Subpart B Section 15.107 ANSI C63.4a:2017	N/A
Radiated Emission	FCC Part 15 Subpart B Section 15.109 ANSI C63.4a:2017	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 MHz ~ 1 GHz. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 MHz ~ 1 GHz and Class A and Class B equipment above 1 GHz.

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(dB μ V)		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	Class A
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

-Radiated Emission Limits below 1 GHz

Frequency Range	Limits(dB μ V/m)	Class
	Quasi-peak	
30 MHz ~ 88 MHz	39.0	Class A (10 m method)
88 MHz ~ 216 MHz	43.5	
216 MHz ~ 960 MHz	46.4	
960 MHz ~ 1 GHz	49.5	
30 MHz ~ 88 MHz	40.0	Class B (3 m method)
88 MHz ~ 216 MHz	43.5	
216 MHz ~ 960 MHz	46.0	
960 MHz ~ 1 GHz	54.0	

-Radiated Emission Limits above 1 GHz (3 m method)

Frequency Range	Limits(dB μ V/m)		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	Class A
Above 1 GHz	54.0	74.0	Class B

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3 m distance not 10 m distance.

2.3 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range (30 MHz to 13 GHz) using a max hold mode incorporating a Peak detector by using the EMI measuring software. The final test data was measured using a Quasi-Peak detector below 1 GHz, Peak and CISPR Average detector above 1 GHz. 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.

Note. Measuring software

- Giheung Lab.: EMC32(V10.40.10) from R&S
- Gunpo Lab.: EP5RE(V5.3.70) from TOYO
- Dongtan Lab.: EMC32(V10.40.10) from R&S

2.3.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
EMI TEST RECEIVER	ESU40	R&S	100075	2024.01.19
Hybrid ANTENNA	VULB 9163	SCHWARZBECK	9163-396	2024.03.22
Double Ridged Horn Antenna	HF907	R&S	100208	2024.03.09
AMPLIFIER	SCU 18	R&S	10070	2023.08.25
Pre-Amplifier	317	SONOMA	243246	2023.12.07
RF Cable	EMH-1Lab-RE-02	-	-	-
RF Cable	EMH-1Lab-RE-03	-	-	-
RF Cable	EMH-1Lab-RE-04	-	-	-

Note: The calibration period of every equipment is 1 year.

2.3.2 Test Site

10 m SEMI-ANECHOIC CHAMBER in Giheung Laboratory

2.3.3 Environment Conditions

Below 1 GHz

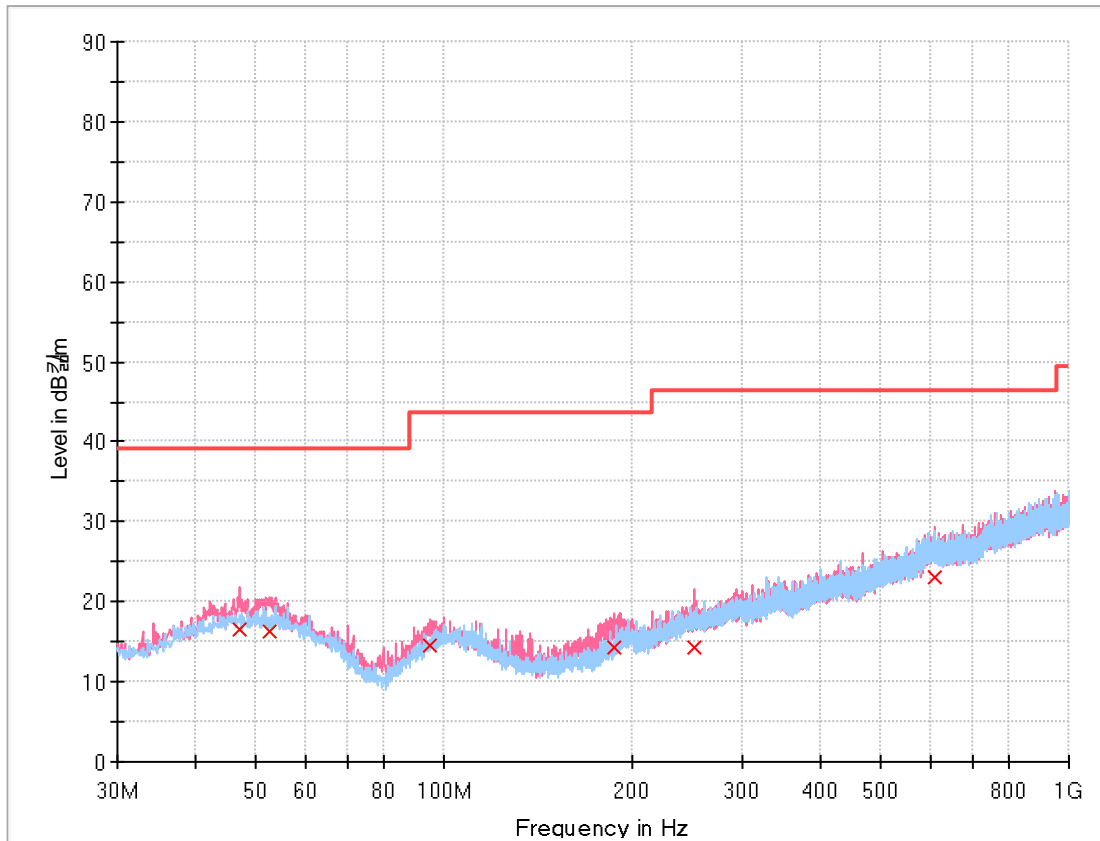
Temperature	(Minimum 22.4, Maximum 22.8) °C
Humidity	(Minimum 44.0, Maximum 48.0) % R.H.
Atmospheric Pressure	(Minimum 101.2, Maximum 101.2) kPa
Test Date	May 22, 2023

Above 1 GHz

Temperature	(Minimum 21.1, Maximum 22.1) °C
Humidity	(Minimum 30.0, Maximum 33.0) % R.H.
Atmospheric Pressure	(Minimum 101.0, Maximum 101.0) kPa
Test Date	June 7, 2023

2.3.4 Test Results

Below 1 GHz (3 m method)



Final_Result

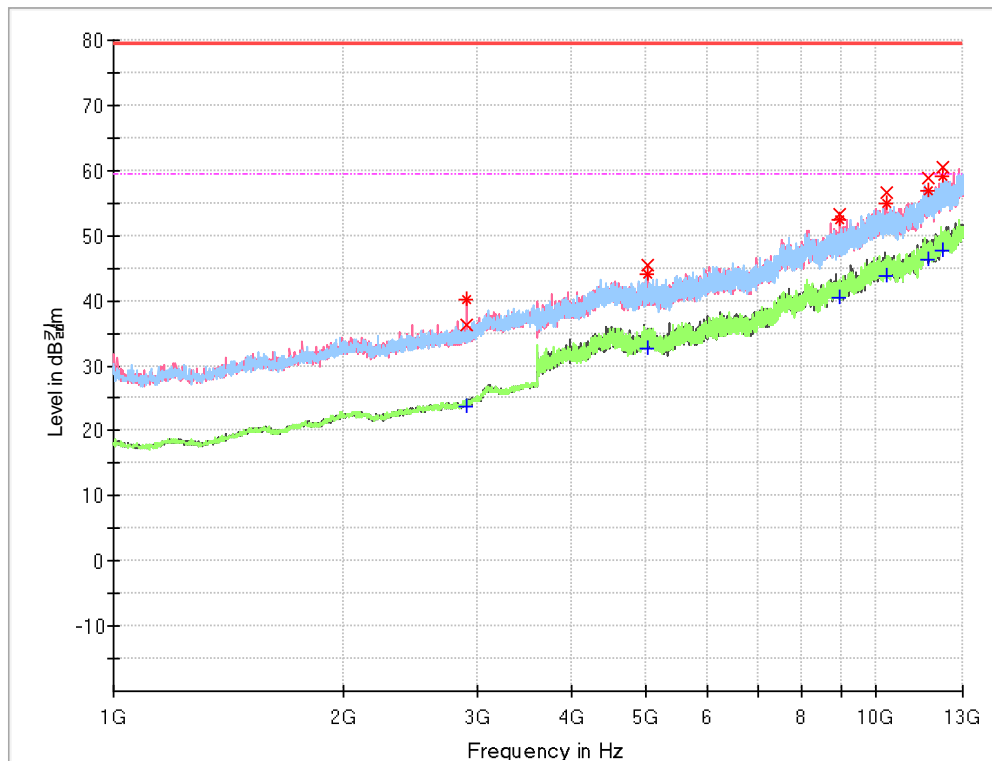
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.232	16.55	39.10	22.55	15 000.0	120.000	220.0	V	242.0	-15.9
52.395	16.21	39.10	22.89	15 000.0	120.000	237.0	V	109.0	-16.0
94.567	14.43	43.52	29.09	15 000.0	120.000	130.0	V	240.0	-18.5
187.352	14.40	43.52	29.12	15 000.0	120.000	125.0	V	66.0	-18.7
250.948	14.40	46.50	32.10	15 000.0	120.000	374.0	V	4.0	-15.2
610.152	23.17	46.50	23.33	15 000.0	120.000	330.0	V	15.0	-6.5

Measurement Uncertainty: See Appendix A

Note : • POL H = Horizontal

• POL V = Vertical

• Margin = Limit – Quasi Peak • Corr. = Antenna Factor + Cable loss – Amplifier Gain

Above 1 GHz (3 m method)

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time(ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2 899.600	36.24	---	79.50	43.26	15 000.0	1000.000	100.0	V	278.0	-5.1
2 899.600	---	23.72	59.50	35.78	15 000.0	1000.000	100.0	V	278.0	-5.1
5 012.800	45.50	---	79.50	34.00	15 000.0	1000.000	100.0	V	238.0	3.8
5 012.800	---	32.74	59.50	26.76	15 000.0	1000.000	100.0	V	238.0	3.8
8 954.800	53.25	---	79.50	26.25	15 000.0	1000.000	100.0	V	98.0	12.1
8 954.800	---	40.33	59.50	19.17	15 000.0	1000.000	100.0	V	98.0	12.1
10 304.800	56.51	---	79.50	22.99	15 000.0	1000.000	100.0	V	304.0	15.1
10 304.800	---	43.76	59.50	15.74	15 000.0	1000.000	100.0	V	304.0	15.1
11 738.800	---	46.22	59.50	13.28	15 000.0	1000.000	100.0	H	248.0	17.8
11 738.800	58.70	---	79.50	20.80	15 000.0	1000.000	100.0	H	248.0	17.8
12 253.600	---	47.78	59.50	11.72	15 000.0	1000.000	100.0	V	304.0	19.0
12 253.600	60.56	---	79.50	18.94	15 000.0	1000.000	100.0	V	304.0	19.0

Measurement Uncertainty : See Appendix A

Note : • AF = Antenna Factor

• POL H = Horizontal

• H = Height

• Corr. = AF + CL – AMP

• CL = Cable Loss

• POL V = Vertical

• Margin = Limit – Result

** The value of 'Level' includes 'Corr.'.

• AMP = Amplifier Gain

• A = Angle

Ex) In case

Freq ; 100 MHz, level ; 30 dB(µV/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

Result = Level + AF + CL – Amp

$$= 30 + 10 + 4 - 25$$

$$= 19$$

Margin = Limit – Result

$$= 43.5 - 19$$

$$= 24.5$$

Appendix A : Measurement Uncertainty

- Giheung Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	3.7 dB (The confidential level is 95 %, $k=2$)
		ESH2-Z5	3.2 dB (The confidential level is 95 %, $k=2$)
		ESH3-Z6	3.2 dB (The confidential level is 95 %, $k=2$)
		NNLK8129	3.1 dB (The confidential level is 95 %, $k=2$)
Conducted Emission - Signal		ISN T800	5.4 dB (The confidential level is 95 %, $k=2$)
		ISN ST08	6.6 dB (The confidential level is 95 %, $k=2$)
Discontinuous		2.7 dB (The confidential level is 95 %, $k=2$)	
Radiated Emission	9 kHz ~30 MHz	Horizontal	3.3 dB (The confidential level is 95 %, $k=2$)
		Vertical	3.3 dB (The confidential level is 95 %, $k=2$)
	30 MHz ~ 1 000 MHz	Horizontal	4.3 dB (The confidential level is 95 %, $k=2$)
		Vertical	4.6 dB (The confidential level is 95 %, $k=2$)
	1 GHz ~ 18 GHz	Horizontal	3.9 dB (The confidential level is 95 %, $k=2$)
		Vertical	4.0 dB (The confidential level is 95 %, $k=2$)

- Gunpo Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	4.0 dB (The confidential level is 95 %, $k=2$)
		ESH2-Z5	3.6 dB (The confidential level is 95 %, $k=2$)
		ESH3-Z6	3.8 dB (The confidential level is 95 %, $k=2$)
Conducted Emission - Signal		ISN T800	5.8 dB (The confidential level is 95 %, $k=2$)
		ISNT8-Cat6	5.8 dB (The confidential level is 95 %, $k=2$)
		ISN S751	7.5 dB (The confidential level is 95 %, $k=2$)
Disturbance Voltage at Antenna Terminal		2.9 dB (The confidential level is 95 %, $k=2$)	
Radiated Emission	9 kHz ~30 MHz	Horizontal	3.4 dB (The confidential level is 95 %, $k=2$)
		Vertical	3.4 dB (The confidential level is 95 %, $k=2$)
	30 MHz ~ 1 000 MHz	Horizontal	4.5 dB (The confidential level is 95 %, $k=2$)
		Vertical	5.1 dB (The confidential level is 95 %, $k=2$)
	1 GHz ~ 18 GHz	Horizontal	3.7 dB (The confidential level is 95 %, $k=2$)
		Vertical	3.9 dB (The confidential level is 95 %, $k=2$)

- Dongtan Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission	ENV216	3.5 dB (The confidential level is 95 %, $k=2$)	
	ESH2-Z5	3.3 dB (The confidential level is 95 %, $k=2$)	
	ESH3-Z6	3.3 dB (The confidential level is 95 %, $k=2$)	
	NNLK8129	3.4 dB (The confidential level is 95 %, $k=2$)	
Conducted Emission - Signal	ISN T800	5.7 dB (The confidential level is 95 %, $k=2$)	
	ISN ST08	5.5 dB (The confidential level is 95 %, $k=2$)	
Discontinuous		2.9 dB (The confidential level is 95 %, $k=2$)	
disturbance Power		3.9 dB (The confidential level is 95 %, $k=2$)	
Radiated Emission	9 kHz ~30 MHz (Triple Loop Ant.)	3.4 dB (The confidential level is 95 %, $k=2$)	
	9 kHz ~30 MHz (Loop Ant.)	Horizontal	3.8 dB (The confidential level is 95 %, $k=2$)
		Vertical	3.8 dB (The confidential level is 95 %, $k=2$)
	30 MHz ~ 1 000 MHz	Horizontal	4.8 dB (The confidential level is 95 %, $k=2$)
		Vertical	5.4 dB (The confidential level is 95 %, $k=2$)
	1 GHz ~ 18 GHz	Horizontal	4.1 dB (The confidential level is 95 %, $k=2$)
Vertical		4.2 dB (The confidential level is 95 %, $k=2$)	

- End of Test Report -