TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: A3LEPP5200

Equipment Under Test	:	WIRELESS CHARGER
Model Name	:	EP-P5200
Applicant	:	Samsung Electronics Co., Ltd.
Manufacturer	:	Samsung Electronics Co., Ltd.
Date of Receipt	:	2018.12.13
Date of Test(s)	:	2018.12.14 ~ 2019.01.03
Date of Issue	:	2019.01.21

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Date:** **2019.01.21**

Nancy Park

Technical Manager: **Date:** **2019.01.21**

Hyunchae You

Table of contents

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.

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1.2. Details of Applicant

Applicant : Samsung Electronics Co., Ltd.
Address : 19 Chapin Rd., Building D, Pine Brook, New Jersey, United States, 07058
Contact Person : Chun, Jenni
Phone No. : +1 973 808 6375

1.3. Details of Manufacturer

Company : Samsung Electronics Co., Ltd.
Address : Yen Phong 1 Industrial park, Yen Phong District Ninh Province VIETNAM

1.4. Description of EUT

Kind of Product	WIRELESS CHARGER		
Model Name	EP-P5200		
Power Supply	DC 12.0 V		
Frequency Range	Normal charging (DC 5.0 V)	Fast charging (DC 9.0 V)	Fast charging 2.0 (DC 12.0 V)
	Ant. 1: 110 ㎑ ~ 148 ㎑	Ant. 1: 110 ㎑ ~ 148 ㎑	Ant. 1: 110 ㎑ ~ 148 ㎑
	Ant. 2: 110 ㎑ ~ 148 ㎑	Ant. 2: 110 ㎑ ~ 148 ㎑	-
	Ant. 3: 125 ㎑ ~ 148 ㎑	-	-
Antenna Type	Internal Type		

1.5. Declaration by the manufacturer

- The EUT has 3 inductive loop coil antennas and can be operating maximum 2 antennas simultaneously. (For the details, please refer to Test setup photo)
- EUT is operated with input DC 12.0 V but internal circuit of EUT can divide DC 5.0 V, DC 9.0 V and DC 12.0 V depend on client devices.

1.6. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
E-Field Probe	D.A.R.E!! Instruments	RadiSense 4	13I00444SNO04	Jun. 21, 2018	Annual	Jun. 21, 2019
3 cm^2 Magnetic Field Sensor	HIOKI	3472	0850-C1	Jul. 24, 2018	Annual	Jul. 24, 2019
Magnetic Field Hitester	HIOKI	FT3470-50	140430999	Jul. 24, 2018	Annual	Jul. 24, 2019
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.

▶ Support equipment

Description	Manufacturer	Model	FCC ID
Samsung Mobile Phone	Samsung Electronics Co., Ltd.	SM-G960U	A3LSMG960U
Samsung Mobile Phone	Samsung Electronics Co., Ltd.	SM-N960U	A3LSMN960U
Smart Wearable Device	Samsung Electronics Co., Ltd.	SM-R805U	A3LSMR805U
C type USB Cable	RFTECH, KSD, CRESYN, NINGBO BROAD TELECOMMUNICATION, LUXSHARE ICT	EP-DN930CWE	-
TRAVEL ADAPTER	Samsung Electronics Co., Ltd.	EP-TA300	-

1.7. Test Report Revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL013372	2019.01.04	Initial
1	F690501/RF-RTL013372-1	2019.01.21	Added AC/DC adapter and cables information

1.8. Worst Case of Test Configurations

In order to check all kinds of possible configurations, EUT was evaluated with appropriate client and under each charging condition as below table.

<table>
<tr><th>Charging mode with client device</th><th colspan="3">Mode</th><th>Description</th></tr>
<tr><td rowspan="5">Model: SM-G960U
FCC ID: A3LSMG960U

Model: SM-N960U
FCC ID: A3LSMN960U

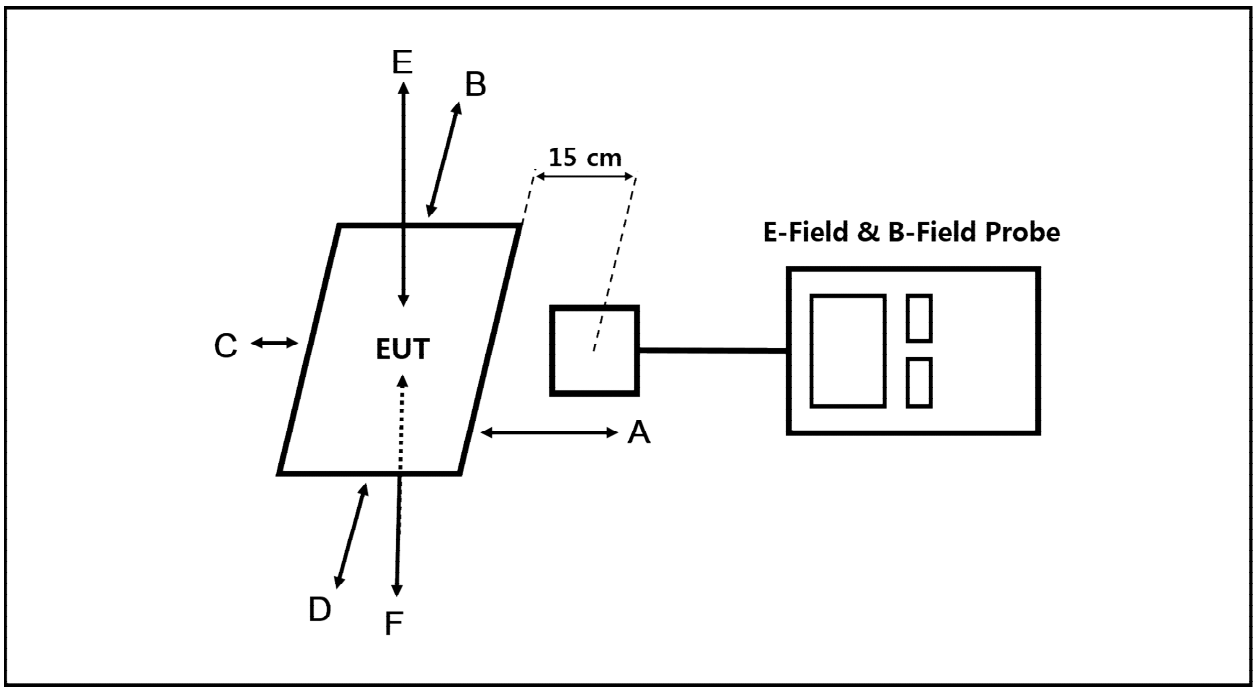
Model: SM-R805U
FCC ID: A3LSMR805U</td><td colspan="3">SISO</td><td rowspan="5">1 % of battery
50 % of battery
99 % of battery</td></tr>
<tr><td>Operating
DC 5 V</td><td>Operating
DC 9 V</td><td>Operating
DC 12 V</td></tr>
<tr><td>(Ant. 1)
(Ant. 2)
(Ant. 3)</td><td>(Ant. 1)
(Ant. 2)</td><td>(Ant. 1)</td></tr>
<tr><td colspan="3">MIMO</td></tr>
<tr><td colspan="3">(Ant. 1_DC 5 V + Ant. 2_DC 5 V)
(Ant. 1_DC 5 V + Ant. 2_DC 9 V)
(Ant. 1_DC 5 V + Ant. 3_DC 5 V)
(Ant. 1_DC 9 V + Ant. 2_DC 5 V)
(Ant. 1_DC 9 V + Ant. 2_DC 9 V)
(Ant. 1_DC 9 V + Ant. 3_DC 5 V)
(Ant. 1_DC 12 V + Ant. 3_DC 5 V)</td></tr>
</table>

Note;

- EUT was investigated with client device under normal charging condition as above then worst value was only reported.

2. Test Result

2.1. Test Setup



2.2. Measurement procedure

a) The RF exposure test was performed in anechoic chamber.
b) The measurement probe was placed at test distance (15 ㎝) which is between the edge of the charger and the geometric center of probe.
c) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.
d) The EUT was measured according to the dictates of KDB 680106 D01 v03.

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

(1) Power transfer frequency is less that 1 ㎒.
- The device operates at a frequency 110 ㎑ to 148 ㎑.

(2) Output power from each primary coil is less than or equal to 15 watts.
- Output power from primary coil: 15 watts.

(3) 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 including a charging system with one primary coils is to detect and allow only between individual pairs of coils.

(4) Client device is placed directly in contact with the transmitter.
- Client device is placed directly in contact with the transmitter.

(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
- Mobile exposure conditions only.

(6) 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.
- Refer to following test results.

The EUT H-Field Strength levels at 15 ㎝ < 50 % of the MPE H-Field Strength limit 1.63 A/m
0.297 A/m (Max. at 15 ㎝) < 0.815 A/m

2.4. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310.

§1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of FCC part 2.1093 of this chapter.

TABLE 1 - LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (㎒)	Electric Field Strength(V/m)	Magnetic Field Strength (A/m)	Power Density (㎽/㎠)	Average Time (minutes)
(A) Limits for Occupational /Control Exposures				
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
1 500-100 000			5	6
(B) Limits for General Population / Uncontrol Exposures				
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
1 500-100 000			1.0	30

f = frequency in ㎒
* = Plane wave equivalent power density

2.5. E and H field strength

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

2.5.1. E-Field Strength at from the edges surrounding the EUT

Test Condition: DC 5 V Operating mode with client device (1 % battery status of client device)

Frequency Range (㎑)	Antenna	Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Probe Position E (V/m)	Probe Position F (V/m)	Limits (V/m)
110 ~ 148	1	7.34	4.75	7.18	5.41	7.37	7.77	614
	2	6.87	5.55	7.13	4.97	8.12	6.63	
125 ~ 148	3	7.46	6.52	8.44	6.79	10.80	11.60	

Test Condition: DC 9 V Operating mode with client device (1 % battery status of client device)

Frequency Range (㎑)	Antenna	Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Probe Position E (V/m)	Probe Position F (V/m)	Limits (V/m)
110 ~ 148	1	7.88	6.19	9.21	7.12	10.50	9.88	614
	2	8.08	7.50	9.04	6.68	12.10	11.20	

Test Condition: DC 12 V Operating mode with client device (1 % battery status of client device)

Frequency Range (㎑)	Antenna	Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Probe Position E (V/m)	Probe Position F (V/m)	Limits (V/m)
110 ~ 148	1	7.65	6.59	8.67	7.88	11.80	10.80	614

Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Probe Position E (V/m)	Probe Position F (V/m)	Limits (V/m)
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 5 V (110 ㎑ – 148 ㎑)						614
9.26	7.35	10.10	7.32	10.60	11.20	
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 9 V (110 ㎑ – 148 ㎑)						
7.16	7.62	8.23	7.17	12.20	11.50	
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)						
6.86	6.10	10.80	7.38	10.80	11.00	
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 5 V (110 ㎑ – 148 ㎑)						
9.71	7.16	10.30	7.54	11.10	11.30	
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 9 V (110 ㎑ – 148 ㎑)						
7.59	7.93	8.73	8.01	11.80	11.10	
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)						
7.03	5.31	7.35	5.54	7.26	7.77	
Ant. 1_DC 12 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)						
7.52	6.93	8.61	7.67	10.20	10.90	

2.5.2. H-Field Strength at from the edges surrounding the EUT

Test Condition: DC 5 V Operating mode with client device (1 % battery status of client device)

Frequency Range (㎑)	Antenna	Probe Position A (A/m)	Probe Position B (A/m)	Probe Position C (A/m)	Probe Position D (A/m)	Probe Position E (A/m)	Probe Position F (A/m)	Limits (A/m)
110 ~ 148	1	0.149	0.126	0.153	0.134	0.238	0.290	1.63
	2	0.150	0.146	0.125	0.109	0.125	0.122	
125 ~ 148	3	0.097	0.090	0.096	0.102	0.188	0.110	

Test Test Condition: DC 9 V Operating mode with client device (1 % battery status of client device)

Frequency Range (㎑)	Antenna	Probe Position A (A/m)	Probe Position B (A/m)	Probe Position C (A/m)	Probe Position D (A/m)	Probe Position E (A/m)	Probe Position F (A/m)	Limits (A/m)
110 ~ 148	1	0.139	0.151	0.104	0.136	0.238	0.258	1.63
	2	0.122	0.138	0.131	0.170	0.178	0.142	

Test Condition: DC 12 V Operating mode with client device (1 % battery status of client device)

Frequency Range (㎑)	Antenna	Probe Position A (A/m)	Probe Position B (A/m)	Probe Position C (A/m)	Probe Position D (A/m)	Probe Position E (A/m)	Probe Position F (A/m)	Limits (A/m)
110 ~ 148	1	0.131	0.114	0.142	0.270	0.297	0.264	1.63

Test Condition: MIMO Operating mode with client device (1 % battery status of client device)

Probe Position A (A/m)	Probe Position B (A/m)	Probe Position C (A/m)	Probe Position D (A/m)	Probe Position E (A/m)	Probe Position F (A/m)	Limits (A/m)
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 5 V (110 ㎑ – 148 ㎑)						1.63
0.124	0.122	0.101	0.100	0.088	0.142	
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 9 V (110 ㎑ – 148 ㎑)						
0.095	0.092	0.088	0.087	0.106	0.118	
Ant. 1_DC 5 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)						
0.161	0.141	0.172	0.121	0.149	0.288	
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 5 V (110 ㎑ – 148 ㎑)						
0.105	0.138	0.138	0.117	0.094	0.101	
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 2_DC 9 V (110 ㎑ – 148 ㎑)						
0.089	0.090	0.092	0.094	0.098	0.178	
Ant. 1_DC 9 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)						
0.162	0.139	0.146	0.150	0.281	0.206	
Ant. 1_DC 12 V (110 ㎑ – 148 ㎑) + Ant. 3_DC 5 V (125 ㎑ – 148 ㎑)						
0.126	0.118	0.163	0.127	0.115	0.114	

Remark;

- H-field strength (A/m) = B-field (μT) / 1.25

- End of the Test Report -