

TEST REPORT

of

FCC CFR 47 part1, 1.1307(b), 1.1310

FCC ID: A3LEPP6300

1. Equipment Under Test : WIRELESS CHARGER
2. Model Name : EP-P6300
3. Variant Model Name(s) : -
4. Applicant : Samsung Electronics Co., Ltd.
5. Manufacturer : Samsung Electronics Co., Ltd.
6. Date of Receipt : 2020.08.27
7. Date of Test(s) : 2020.08.27 ~ 2020.09.25
8. Date of Issue : 2020.09.25

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

Tested by:



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Report Number: F690501-RF-RTL001208

Page: 2 of 13

INDEX

Table of Contents

1. General Information -----	3
2. Test Result -----	5

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- Designation number: KR0150

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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 Bac Ninh Province, VIETNAM

1.4. Description of EUT

Kind of Product	WIRELESS CHARGER	
Model Name	EP-P6300	
Power Supply	DC 9.0 V	
Operation Mode	2 W, 4.5 W, 7.5 W, 9W	
Frequency Range	119 kHz ~ 122 kHz	Ant.1, Ant. 2, Ant. 3, Ant. 4, Ant. 5, Ant. 6
	126.2 kHz ~ 129.2 kHz	Ant.1, Ant. 2, Ant. 3, Ant. 4, Ant. 5, Ant. 6
	136.5 kHz ~ 139.5 kHz	Ant.1, Ant. 2, Ant. 3
	144.5 kHz ~ 147.5 kHz	Ant. 4, Ant. 5, Ant. 6, Ant. 7
Antenna Type	Loop Coil Antenna	

1.5. Declaration by the Manufacturer

- The EUT has 7 loop coil antennas.
- 6 coils for 2 pairs of devices, 1 independent coil for smart watch.
- Product is designed to operate only 3 coils at a time and can charge maximum 3 devices simultaneously.

1.6. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Electric and Magnetic field Probe analyzer	NARDA	EHP 200AC	170WX91017	Dec. 05, 2019	Annual	Dec. 05, 2020
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-G973U1	A3LSMG973U
Bluetooth Headset	Samsung Electronics Co., Ltd.	SM-R170	A3LSMR170L, A3LSMR170R
Smart Wearable Device	Samsung Electronics Co., Ltd.	SM-R500	A3LSMR500
C type USB Cable	Samsung Electronics Co., Ltd.	EP-DA705BBE, EP-DA705BWE	-
TRAVEL ADAPTER	DONGYANG E&P	EP-TA800	-

1.7. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL001208	2020.09.25	Initial

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.

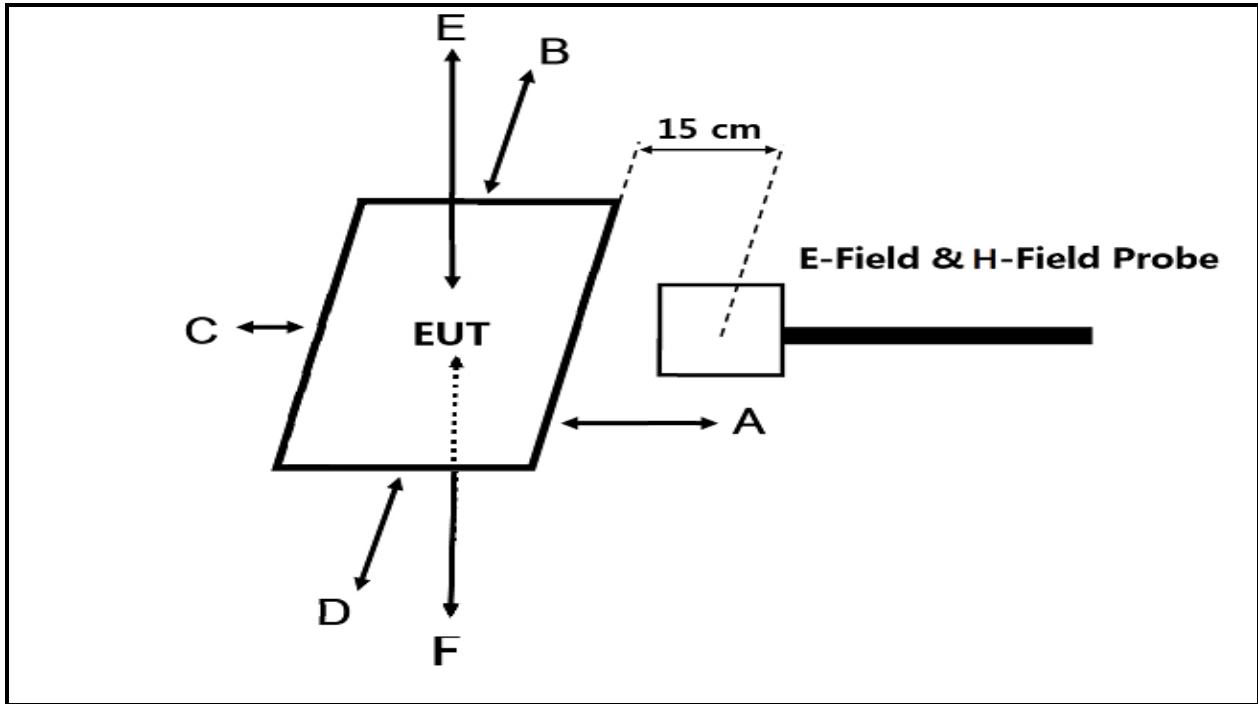
Charging mode with client device	Mode								Description
Model: SM-G973U1 FCC ID: A3LSMG973U Model: SM-R170 FCC ID: A3LSMR170L, A3LSMR170R Model: SM-R500 FCC ID: A3LSMR500	2 W		4.5 W		7.5W		9W		1 % of battery 50 % of battery 99 % of battery
	Ant 1 ~ 3	Ant 4 ~ 7	Ant 1 ~ 3	Ant 4 ~ 6	Ant 1 ~ 3	Ant 4 ~ 6	Ant 1 ~ 3	Ant 4 ~ 6	
	136.5 kHz ~ 139.5 kHz	144.5 kHz ~ 147.5 kHz	119 kHz ~ 122 kHz	119 kHz ~ 122 kHz	126.2 kHz ~ 129.2 kHz	126.2 kHz ~ 129.2 kHz	136.5 kHz ~ 139.5 kHz	144.5 kHz ~ 147.5 kHz	
			126.2 kHz ~ 129.2 kHz	126.2 kHz ~ 129.2 kHz					
			136.5 kHz ~ 139.5 kHz	144.5 kHz ~ 147.5 kHz	136.5 kHz ~ 139.5 kHz	136.5 kHz ~ 139.5 kHz			

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

- The RF exposure test was performed in anechoic chamber.
- The measurement probe was placed at test distance (15 cm) which is between the edge of the charger and the geometric center of probe.
- 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.
- The EUT was measured according to the dictates of KDB 680106 D01 RF Exposure Wireless Charging Apps v03.

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

- (1) Power transfer frequency is less than 1 MHz.
 - The device operates at a frequency 119 ~ 122 kHz, 126.2 ~ 129.2 kHz, 136.5 ~ 139.5 kHz and 144.5 ~ 147.5 kHz.
- (2) Output power from each primary coil is less than or equal to 15 watts.
 - Output power from primary coil: 9 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 cm surrounding the device and 20 cm 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 cm < 50 % of the MPE H-Field Strength limit 1.63 A/m
0.600 A/m (Max. at 15 cm) < 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 (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	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				
<u>0.3-1.34</u>	<u>614</u>	<u>1.63</u>	*(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 MHz

* = Plane wave equivalent power density

2.5. E and H field strength

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

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

Test Condition: 2 W Operating mode with client device (1 % battery status of client device)

Frequency Range (kHz)	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)
136.5 ~ 139.5	7	0.444	0.389	0.389	0.389	0.523	0.556	614

Test Condition: 4.5 W Operating mode with client device (1 % battery status of client device)

Frequency Range (kHz)	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)
119 ~ 122	1	0.459	0.808	0.591	0.761	1.187	0.621	614
126.2 ~ 129.2	1	0.416	0.700	0.681	0.894	1.029	0.520	
119 ~ 122	6	0.380	0.740	0.462	0.836	0.454	0.443	
126.2 ~ 129.2	6	0.418	0.720	0.383	0.764	0.865	0.631	

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

Frequency Range (kHz)	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)
136.5 ~ 139.5	1	0.429	0.731	0.508	0.131	1.032	0.524	614
144.5 ~ 147.5	6	0.380	0.380	0.520	0.389	0.651	0.435	

Test Condition: 2 W & 4.5W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 119 ~ 122 & Ant. 6: 119 ~ 122 & Ant. 7: 144.5 ~ 147.5	0.455	0.537	0.558	0.587	0.731	0.924	614
Ant. 1: 119 ~ 122 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.804	0.661	0.437	0.380	0.771	0.459	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 119 ~ 122 & Ant. 7: 144.5 ~ 147.5	0.702	0.773	0.617	0.704	0.735	0.471	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.824	0.647	0.671	0.744	0.577	0.585	

Test Condition: 2 W & 7.5W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 136.5 ~ 139.5 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.691	0.678	0.495	0.630	1.094	0.517	614
Ant. 1: 136.5 ~ 139.5 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.560	0.682	0.624	0.798	0.940	0.698	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.627	0.875	0.597	0.783	1.121	0.732	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.865	0.733	0.600	0.647	1.176	0.611	

Test Condition: 2 W & 9W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 136.5 ~ 139.5 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.657	0.526	0.692	0.456	0.770	0.471	614

Test Condition: 2 W & 4.5W & 9W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 136.5 ~ 139.5 & Ant. 6: 119 ~ 122 & Ant. 7: 144.5 ~ 147.5	0.532	0.555	0.414	0.686	0.406	0.424	614
Ant. 1: 136.5 ~ 139.5 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.731	0.543	0.448	0.461	0.762	0.500	
Ant. 1: 119 ~ 122 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.926	0.668	0.570	0.552	1.273	0.692	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.474	0.598	0.459	0.735	0.940	0.456	

Test Condition: Ping mode with client device (Standby mode)

Frequency Range (kHz)	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)
136.5 ~ 139.5, 144.5 ~ 147.5	All	0.736	0.599	0.480	0.411	1.044	0.484	614

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

Test Condition: 2 W Operating mode with client device (1 % battery status of client device)

Frequency Range (kHz)	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)
136.5 ~ 139.5	7	0.166	0.163	0.161	0.171	0.177	0.208	1.63

Test Condition: 4.5 W Operating mode with client device (1 % battery status of client device)

Frequency Range (kHz)	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)
119 ~ 122	1	0.166	0.171	0.166	0.166	0.215	0.226	1.63
126.2 ~ 129.2	1	0.156	0.166	0.168	0.165	0.286	0.249	
119 ~ 122	6	0.171	0.279	0.209	0.222	0.173	0.196	
126.2 ~ 129.2	6	0.168	0.263	0.159	0.182	0.171	0.248	

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

Frequency Range (kHz)	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)
136.5 ~ 139.5	1	0.168	0.308	0.270	0.345	0.600	0.239	1.63
144.5 ~ 147.5	6	0.175	0.199	0.181	0.228	0.436	0.159	

Test Condition: 2 W & 4.5W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 119 ~ 122 & Ant. 6: 119 ~ 122 & Ant. 7: 144.5 ~ 147.5	0.171	0.171	0.232	0.173	0.206	0.212	1.63
Ant. 1: 119 ~ 122 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.171	0.166	0.164	0.166	0.175	0.215	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 119 ~ 122 & Ant. 7: 144.5 ~ 147.5	0.156	0.156	0.192	0.166	0.166	0.171	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.161	0.159	0.193	0.164	0.159	0.259	

Test Condition: 2 W & 7.5W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 136.5 ~ 139.5 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.166	0.154	0.156	0.161	0.188	0.221	1.63
Ant. 1: 136.5 ~ 139.5 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.159	0.164	0.166	0.166	0.159	0.192	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.164	0.179	0.156	0.208	0.214	0.194	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.159	0.164	0.171	0.178	0.232	0.221	

Test Condition: 2 W & 9W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 136.5 ~ 139.5 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.181	0.308	0.256	0.276	0.398	0.201	1.63

Test Condition: 2 W & 4.5W & 9W Operating mode with 3 client devices (1 % battery status of client device)

Frequency Range (kHz)	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: 136.5 ~ 139.5 & Ant. 6: 119 ~ 122 & Ant. 7: 144.5 ~ 147.5	0.164	0.209	0.222	0.182	0.163	0.185	1.63
Ant. 1: 136.5 ~ 139.5 & Ant. 6: 126.2 ~ 129.2 & Ant. 7: 144.5 ~ 147.5	0.171	0.266	0.231	0.229	0.493	0.333	
Ant. 1: 119 ~ 122 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.217	0.231	0.219	0.196	0.460	0.241	
Ant. 1: 126.2 ~ 129.2 & Ant. 6: 144.5 ~ 147.5 & Ant. 7: 144.5 ~ 147.5	0.173	0.172	0.171	0.171	0.171	0.159	

Test Condition: Ping mode with client device (Standby mode)

Frequency Range (kHz)	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)
136.5 ~ 139.5, 144.5 ~ 147.5	1	0.226	0.182	0.158	0.166	0.879	0.242	1.63

- End of the Test Report -