

Report No: E2/2019/C0016 Page: 1 of 11

RF EXPOSURE REPORT

Applicant:	
Applicant.	66 Hou-Kang st., Shih-Lin District, Taipei, Taiwan, R.O.C
Product Name:	All-in-One PC
Brand Name:	HP
Model No.:	TPC-I038-24
Model Difference:	N/A
Report Number:	E2/2019/C0016
FCC ID	DGI-TPC-I038-2401
FCC Rule Part	Part 2.1091
Issue Date:	Dec. 20, 2019
Date of Test:	Dec. 06, 2019 ~ Dec. 17, 2019
Date of EUT Received:	Dec. 06, 2019

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation in this report is in compliance with FCC Rules Part 2.

The test results of this report relate only to the tested sample identified in this report.

Approved By:

Yeh John / Asst. Manager



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Revision History					
Revision Description Issue Date Remark					
Rev.00	Original.	Dec. 20, 2019	Revised By: Susan Lin		

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MAXIMUM PERMISSIBLE EXPOSURE (MPE) 1

1.1 STANDARD APPLICABLE

According to KDB 680106 D01 RF Exposure Wireless Charging App v03

RF exposure potential to users and bystanders is expected to vary according to factors inherent to the design of individual systems, which generally requires different evaluation considerations to show compliance.

When exposure concerns arise; for example, due to evolving products and operations, RF exposure evaluation may be requested under the provisions of Sections 1.1307 (c) and (d) to determine compliance. Because of significant variations in design and operating characteristics, the procedures required to evaluate RF exposure compliance for wireless power transfer are considered according to the exposure potentials of individual implementations

The RF exposure requirements must be determined in conjunction with the device operating characteristics, according to the mobile and portable exposure requirements in Sections 2.1091 and 2.1093 of the rules. SAR and MPE limits do not cover the frequency range for wireless power transfer applications which operate below 100 kHz and 300 kHz respectively; therefore, RF exposure compliance needs to be determined with respect to Sections 1.1307 (c) and (d) of the FCC rules.

1.2 LIMITS FOR MAXIMUM PERMISSIVE EXPOSURE (MPE)

Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging <mark>t</mark> ime (minutes)
	(A) Limits for C	Occupational/Controlled Expo	sure	
0.3-3.0	614	1.63	*100	6
3.0-30	1842/1	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 Gene	ral Population/Uncontrolled	Exposure	
0.3-1.34	614	1.63	*100	30
1.34-30	824/1	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	. 30
300-1,500			f/1500	30
1,500-100,000			1.0	30

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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

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THE WORST CHARGING CONDITION: 1.3

Ancillary Equipment	Charging Condition	Verdict		
Load	Full Loading	PASS		
Load	99% Loading	PASS		
Load	90% Loading	PASS		
Load	50% Loading	PASS		
Load	10% Loading	PASS		
Load	1% Loading	PASS		
Note: For Wireless Power Consortium Qi specification, a lower operating frequency or high duty cycle result in the transfer of a higher amount of power and charging current.				

MEASUREMENT PROCEDURE: 1.4

For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 10cm, 15 cm and 20 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 10cm, 15 cm and 20 cm measured from the center of the probe(s) to the edge of the device.

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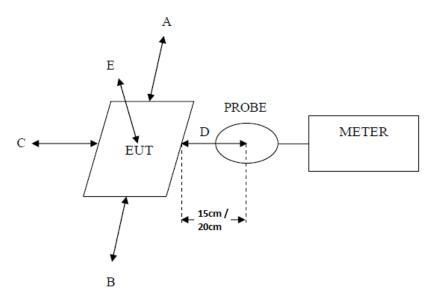
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1.5 **MEASUREMENT EQUIPMENT USED:**

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
BROADBAND FIELD METER	NARDA	NBM-550	F-0375	08/13/2019	08/12/2020

1.6 TEST SET-UP:



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1.7 MAXIMUM PERMISSIBLE EXPOSURE (MPE) EVALUATION:

Full Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	10 cm	1.55	0.0045	
Back	10 cm	0.62	0.0024	
Left	10 cm	1.45	0.0038	
Right	10 cm	1.36	0.0045	
Тор	10 cm	4.11	0.0103	
Bottom	10 cm	0.49	0.0023	
Limit		614	0.8150	

99% Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	10 cm	1.55	0.0053	
Back	10 cm	0.61	0.0020	
Left	10 cm	1.47	0.0034	
Right	10 cm	1.37	0.0053	
Тор	10 cm	4.13	0.0097	
Bottom	10 cm	0.47	0.0027	
Limit		614	0.8150	

90% Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	10 cm	1.56	0.0035	
Back	10 cm	0.60	0.0014	
Left	10 cm	1.43	0.0032	
Right	10 cm	1.33	0.0041	
Тор	10 cm	4.11	0.0111	
Bottom	10 cm	0.53	0.0023	
Limit		614	0.8150	

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50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	1.58	0.0053
Back	10 cm	0.65	0.0018
Left	10 cm	1.46	0.0030
Right	10 cm	1.33	0.0051
Тор	10 cm	4.15	0.0099
Bottom	10 cm	0.48	0.0029
Limit		614	0.8150

10% Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	10 cm	1.56	0.0039	
Back	10 cm	0.60	0.0020	
Left	10 cm	1.42	0.0034	
Right	10 cm	1.32	0.0039	
Тор	10 cm	4.08	0.0101	
Bottom	10 cm	0.48	0.0029	
Limit		614	0.8150	

1% Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	10 cm	1.55	0.0043	
Back	10 cm	0.60	0.0022	
Left	10 cm	1.46	0.0044	
Right	10 cm	1.34	0.0049	
Тор	10 cm	4.11	0.0103	
Bottom	10 cm	0.49	0.0023	
Limit		614	0.8150	

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Full Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	15 cm	0.81	0.0022	
Back	15 cm	0.56	0.0017	
Left	15 cm	1.07	0.0027	
Right	15 cm	1.16	0.0032	
Тор	15 cm	4.01	0.0108	
Bottom	15 cm	0.36	0.0016	
Limit		614	0.8150	

99% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.79	0.0012
Back	15 cm	0.54	0.0015
Left	15 cm	1.09	0.0017
Right	15 cm	1.19	0.0034
Тор	15 cm	3.99	0.0098
Bottom	15 cm	0.33	0.0024
Limit		614	0.8150

90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.79	0.0012
Back	15 cm	0.52	0.0027
Left	15 cm	1.05	0.0035
Right	15 cm	1.13	0.0026
Тор	15 cm	4.02	0.0102
Bottom	15 cm	0.34	0.0014
Limit		614	0.8150

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50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.80	0.0016
Back	15 cm	0.55	0.0019
Left	15 cm	1.07	0.0023
Right	15 cm	1.17	0.0034
Тор	15 cm	4.03	0.0104
Bottom	15 cm	0.38	0.0006
Limit		614	0.8150

10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.84	0.0016
Back	15 cm	0.54	0.0015
Left	15 cm	1.07	0.0029
Right	15 cm	1.20	0.0040
Тор	15 cm	4.01	0.0106
Bottom	15 cm	0.34	0.0026
Limit		614	0.8150

1% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.79	0.0014
Back	15 cm	0.60	0.0023
Left	15 cm	1.07	0.0035
Right	15 cm	1.16	0.0032
Тор	15 cm	3.98	0.0112
Bottom	15 cm	0.35	0.0008
Limit		614	0.8150

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Full Loading

Maximum Permissible Exposure				
Probe from EUT Side	Test Distance	V/m	A/m	
Front	20 cm	0.53	0.0016	
Back	20 cm	0.42	0.0012	
Left	20 cm	0.76	0.0021	
Right	20 cm	0.82	0.0023	
Тор	20 cm	3.89	0.0100	
Bottom	20 cm	0.27	0.0010	
Limit		614	0.8150	

99% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.53	0.0012
Back	20 cm	0.42	0.0022
Left	20 cm	0.77	0.0029
Right	20 cm	0.83	0.0021
Тор	20 cm	3.89	0.0090
Bottom	20 cm	0.25	0.0016
Limit		614	0.8150

90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.57	0.0022
Back	20 cm	0.39	0.0014
Left	20 cm	0.78	0.0013
Right	20 cm	0.81	0.0023
Тор	20 cm	3.88	0.0110
Bottom	20 cm	0.31	0.0010
Limit		614	0.8150

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50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.55	0.0020
Back	20 cm	0.43	0.0004
Left	20 cm	0.78	0.0027
Right	20 cm	0.84	0.0029
Тор	20 cm	3.93	0.0100
Bottom	20 cm	0.30	0.0008
Limit		614	0.8150

10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.53	0.0024
Back	20 cm	0.39	0.0010
Left	20 cm	0.74	0.0021
Right	20 cm	0.82	0.0021
Тор	20 cm	3.93	0.0100
Bottom	20 cm	0.30	0.0012
Limit		614	0.8150

1% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.55	0.0020
Back	20 cm	0.40	0.0008
Left	20 cm	0.74	0.0029
Right	20 cm	0.83	0.0025
Тор	20 cm	3.92	0.0106
Bottom	20 cm	0.30	0.0014
Limit		614	0.8150

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