

## RF EXPOSURE REPORT



**Applicant:** INVENTEC CORPORATION  
No.66, Hougang street, ShihLin District, Taipei City, Taiwan.  
**Product Name:** All-In-One PC  
**Brand Name:** HP  
**Model No.:** TPC-I051-32  
**Model Difference:** N/A  
**Report Number:** ER/2021/80017  
**FCC ID** DGI-TPC-I051-3201  
**Issue Date:** September 15, 2021  
**Date of Test:** August 12, 2021  
**Date of EUT Received:** August 4, 2021

Approved By

John Yeh

**We hereby certify that:**

The above equipment was verified by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1091.

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

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## Revision History

Report Number	Revision	Description	Issue Date	Revised By
ER/2021/80017	00	Original	September 15, 2021	Yuri Tsai

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## 1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

### 1.1 Product Description

Product Name:	All-In-One PC
Brand Name:	HP
Model No.:	TPC-I051-32
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	0001760BG0
Power Supply:	12.58Vdc from Switching Power Supply

### 1.2 Test Facility

Laboratory	Test Site Address		FCC Designation number
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	<input checked="" type="checkbox"/>	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	TW0027
	<input type="checkbox"/>	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	TW0028

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## 2 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### 2.1 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.

### 2.2 Limits for Maximum Permissible 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.

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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

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## 2.3 The Worst Charging Condition:

Ancillary Equipment	Charging Condition	Verdict
Load	Full Loading	PASS
Load	99% Loading	PASS
Load	50% 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.		

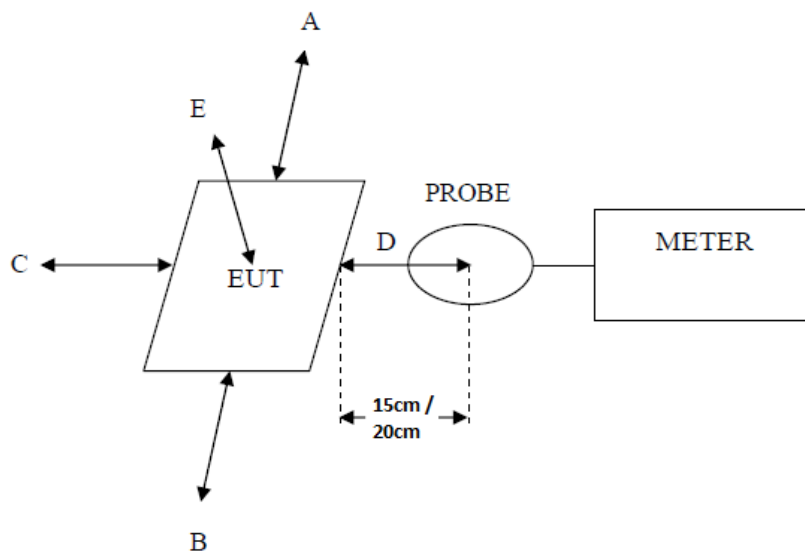
## 2.4 Measurement Procedure:

For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance. 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 proper distances measured from the center of the probe(s) to the edge of the device as per KDB 680106 D01.

## 2.5 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Probe-Analyzer	Narda	EHP 200AC	180ZX00635	01/26/2021	01/25/2022

## 2.6 Test Set-up:



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## 2.7 Maximum Permissible Exposure (MPE) Evaluation:

### Full Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	0.42	0.2512
Back	10 cm	0.33	0.2013
Left	10 cm	0.39	0.2667
Right	10 cm	0.36	0.2013
Top	10 cm	0.42	0.2667
Bottom	10 cm	0.37	0.1784
Limit		614	0.815

### 99% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	0.50	0.2638
Back	10 cm	0.44	0.1919
Left	10 cm	0.36	0.2559
Right	10 cm	0.39	0.1980
Top	10 cm	0.31	0.1980
Bottom	10 cm	0.40	0.2512
Limit		614	0.815

### 90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	0.40	0.2505
Back	10 cm	0.38	0.1751
Left	10 cm	0.40	0.1455
Right	10 cm	0.39	0.1585
Top	10 cm	0.44	0.1706
Bottom	10 cm	0.33	0.2390
Limit		614	0.815

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## 50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	0.43	0.2552
Back	10 cm	0.36	0.1942
Left	10 cm	0.44	0.2568
Right	10 cm	0.34	0.2455
Top	10 cm	0.42	0.1781
Bottom	10 cm	0.43	0.2552
Limit		614	0.815

## 10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	0.42	0.2559
Back	10 cm	0.31	0.2190
Left	10 cm	0.43	0.2285
Right	10 cm	0.45	0.2579
Top	10 cm	0.45	0.2166
Bottom	10 cm	0.32	0.2166
Limit		614	0.815

## 1% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	10 cm	0.41	0.2579
Back	10 cm	0.43	0.1887
Left	10 cm	0.48	0.2461
Right	10 cm	0.39	0.2285
Top	10 cm	0.40	0.2547
Bottom	10 cm	0.50	0.2224
Limit		614	0.815

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### Full Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.25	0.1406
Back	15 cm	0.38	0.2505
Left	15 cm	0.32	0.1538
Right	15 cm	0.33	0.1503
Top	15 cm	0.39	0.2461
Bottom	15 cm	0.34	0.2468
Limit		614	0.815

### 99% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.38	0.2468
Back	15 cm	0.35	0.1651
Left	15 cm	0.30	0.1419
Right	15 cm	0.34	0.1540
Top	15 cm	0.38	0.2512
Bottom	15 cm	0.21	0.1208
Limit		614	0.815

### 90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.33	0.2075
Back	15 cm	0.31	0.2586
Left	15 cm	0.29	0.2123
Right	15 cm	0.28	0.1688
Top	15 cm	0.38	0.2461
Bottom	15 cm	0.40	0.1503
Limit		614	0.815

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## 50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.38	0.2579
Back	15 cm	0.27	0.1485
Left	15 cm	0.29	0.1937
Right	15 cm	0.34	0.1419
Top	15 cm	0.27	0.2446
Bottom	15 cm	0.37	0.2503
Limit		614	0.815

## 10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.28	0.2009
Back	15 cm	0.37	0.1384
Left	15 cm	0.34	0.1384
Right	15 cm	0.33	0.1569
Top	15 cm	0.28	0.1672
Bottom	15 cm	0.39	0.2667
Limit		614	0.815

## 1% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	15 cm	0.30	0.1635
Back	15 cm	0.31	0.1700
Left	15 cm	0.25	0.1275
Right	15 cm	0.30	0.1275
Top	15 cm	0.37	0.2416
Bottom	15 cm	0.34	0.1851
Limit		614	0.815

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### Full Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.30	0.2019
Back	20 cm	0.38	0.2505
Left	20 cm	0.33	0.2019
Right	20 cm	0.33	0.1739
Top	20 cm	0.24	0.2559
Bottom	20 cm	0.39	0.2559
Limit		614	0.815

### 99% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.35	0.1851
Back	20 cm	0.33	0.1953
Left	20 cm	0.30	0.1700
Right	20 cm	0.31	0.1764
Top	20 cm	0.32	0.1851
Bottom	20 cm	0.32	0.1726
Limit		614	0.815

### 90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.36	0.1645
Back	20 cm	0.33	0.1791
Left	20 cm	0.33	0.1680
Right	20 cm	0.31	0.1624
Top	20 cm	0.32	0.1523
Bottom	20 cm	0.34	0.1319
Limit		614	0.815

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## 50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.36	0.1254
Back	20 cm	0.31	0.1254
Left	20 cm	0.39	0.2667
Right	20 cm	0.34	0.1887
Top	20 cm	0.29	0.1781
Bottom	20 cm	0.29	0.1368
Limit		614	0.815

## 10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.31	0.1319
Back	20 cm	0.28	0.2547
Left	20 cm	0.36	0.2128
Right	20 cm	0.25	0.1937
Top	20 cm	0.21	0.1690
Bottom	20 cm	0.31	0.1569
Limit		614	0.815

## 1% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	V/m	A/m
Front	20 cm	0.32	0.1813
Back	20 cm	0.30	0.2468
Left	20 cm	0.32	0.1847
Right	20 cm	0.31	0.1368
Top	20 cm	0.34	0.1884
Bottom	20 cm	0.30	0.1779
Limit		614	0.815

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