RF Exposure Test Report

Report No.:	SA190222D16
FCC ID:	EMJHSAP001MP
Test Model:	HSA-P001MP
Received Date:	Feb. 22, 2019
Test Date:	Mar. 4, 2019
Issued Date:	Mar. 14, 2019
Applicant:	PRIMAX ELECTRONICS LTD.
Address:	No. 669, Ruey Kuang Road, Neihu, Taipei, Taiwan, R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
FCC Registration / Designation Number:	198487 / TW2021

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
SA190222D16	Original release	Mar. 14, 2019

1 Certificate of Conformity

Product: OMEN Outpost Mousepad with Qi Wireless Charging

Brand: hp

Test Model: HSA-P001MP

Sample Status: Engineering sample

Applicant: PRIMAX ELECTRONICS LTD.

Test Date: Mar. 4, 2019

Standards: FCC Part 1 (Section 1.1307(b), 1.1310)

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Annie Chang , **Date:** Mar. 14, 2019

Annie Chang / Senior Specialist

Approved by : Rex. Lai , **Date:** Mar. 14, 2019

Rex Lai / Associate Technical Manager

2 General Information

2.1 General Description of EUT

Product	OMEN Outpost Mousepad with Qi Wireless Charging
Brand	hp
Test Model	HSA-P001MP
Sample Status	Engineering sample
Rating	Input: 5Vdc, 3A, Output: 5W
Modulation Type	FSK
Operating Frequency	111-148kHz
Antenna Type	Coil antenna
Field Strength	79.00dBuV/m
Dimensions	14.86cm^2 (diameter = 435mm)
Accessory Device	USB-C to two USB-A Dongle (with two USB cables (0.15m each))
Data Cable Supplied	Shielded USB type C cable (1.2m) attached on EUT
Maximum Power Output from the Charging Coil	5W

Note:

1. The EUT is an OMEN Outpost Mousepad with Qi Wireless Charging with Qi charging function.
2. EUT has been pre-tested under following test modes, and test **mode 1** was the worst case for final test.

Mode	Test Condition
1	EUT Link to System (via USB Type C cable)
2	EUT Link to System (via USB-C to two USB-A Dongle)

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 RF Exposure

3.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Load	N/A	N/A	N/A	N/A	Supplied by client
B.	Notebook PC	Lenovo	20L6-S4GW00	PF1EZSA2	N/A	Provided by Lab

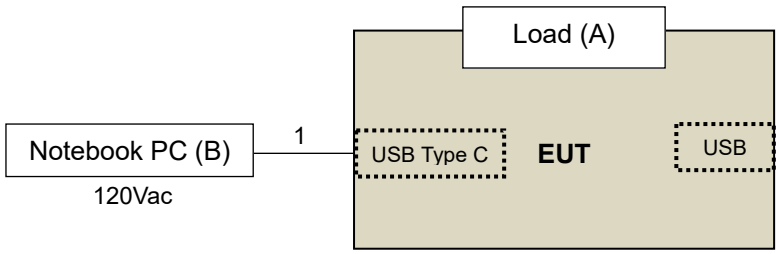
Note: All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Type C cable	1	1.2	N	0	Supplied by client

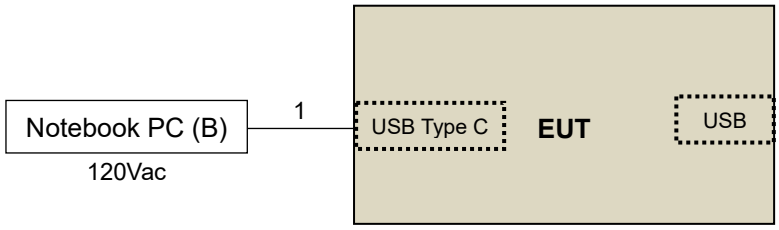
Note: The core(s) is(are) originally attached to the cable(s).

3.1.1 Configuration of System Under Test

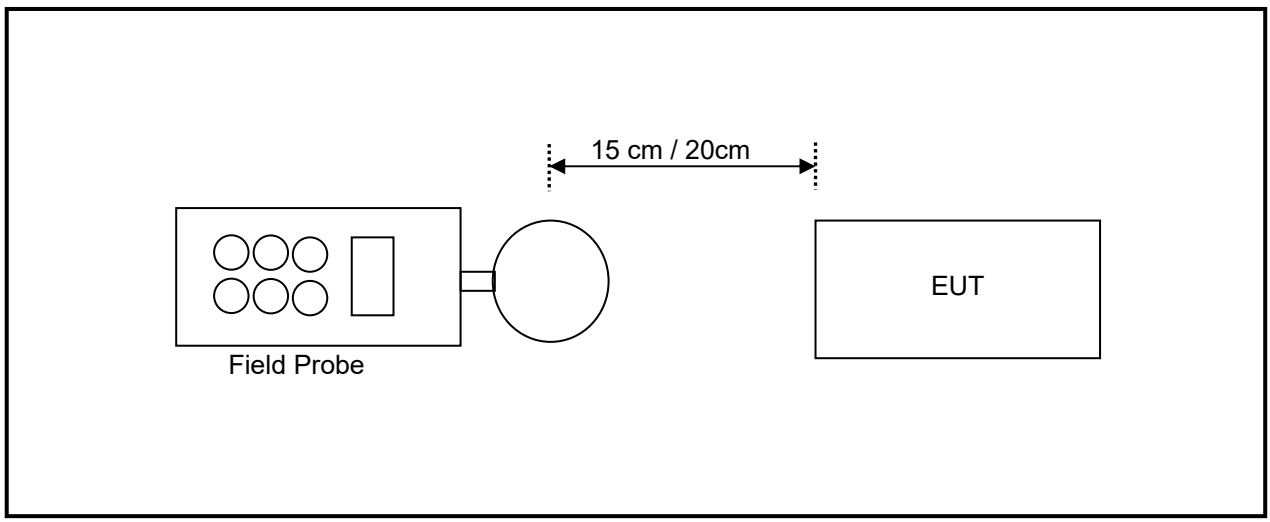
Charging Mode with Load:



Standby Mode:



3.2 Test Setup



Note: Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device.

3.3 Test Instruments

Description	Brand	Model No.	Frequency Range	Calibrated Date	Calibrated Until
Broadband Field Meter	NARDA	NBM-550	-	Mar. 28, 2018	Mar. 27, 2020
Magnetic Field Meter	NARDA	ELT-400	1 – 400kHz	Apr. 12, 2018	Apr. 11, 2020
Magnetic Probe	NARDA	HF-3061	300kHz – 30MHz	Apr. 16, 2018	Apr. 15, 2020
Magnetic Probe	NARDA	HF-0191	27 – 1000MHz	Apr. 17, 2018	Apr. 16, 2020
Broadband Field Meter	NARDA	NBM-550	-	Mar. 28, 2018	Mar. 27, 2020
Electric Field Meter	COMBINOVA	EFM 200	5Hz – 400kHz	Dec. 6, 2017	Dec. 5, 2019
E-Field Probe	NARDA	EF-0391	100kHz – 3GHz	Mar. 28, 2018	Mar. 27, 2020
E-Field Probe	NARDA	EF-6091	100MHz – 60GHz	Mar. 29, 2018	Mar. 28, 2020

NOTE: 1. The calibration interval of the above test instruments is 12/24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Chia Pau RF Chamber

3.4 Limits for Maximum Permissible Exposure (MPE)

§ 1.1310 The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency(RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 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/cm²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

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

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

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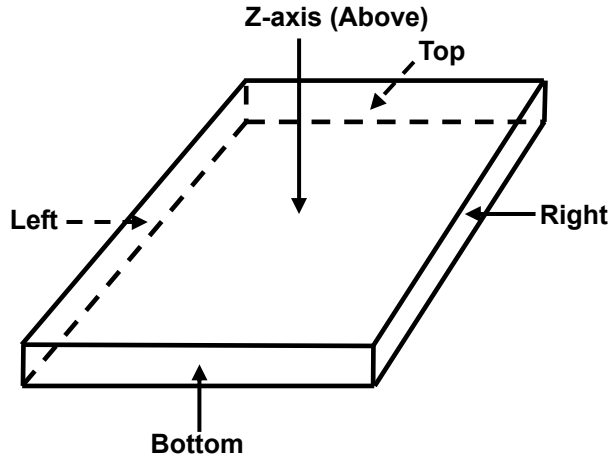
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

3.5 Test Point Description



4 Calculation Result of Maximum Conducted Power

Charging Mode with 10% Load (at center)

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	1.1900	0.5300	1.1300	5.1400	2.3300
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-612.8100	-613.4700	-612.8700	-608.8600	-611.6700
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-305.8100	-306.4700	-305.8700	-301.8600	-304.6700

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1110	0.1010	0.1320	0.1290	0.1980
Max H-field (A/m)	0.0888	0.0808	0.1056	0.1032	0.1584
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5412	-1.5492	-1.5244	-1.5268	-1.4716
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.7262	-0.7342	-0.7094	-0.7118	-0.6566

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

Charging Mode with 50% Load (at center)

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	1.1500	0.5100	1.0400	4.7300	2.1400
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-612.8500	-613.4900	-612.9600	-609.2700	-611.8600
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-305.8500	-306.4900	-305.9600	-302.2700	-304.8600

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1060	0.0990	0.1180	0.1110	0.1650
Max H-field (A/m)	0.0848	0.0792	0.0944	0.0888	0.1320
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5452	-1.5508	-1.5356	-1.5412	-1.4980
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.7302	-0.7358	-0.7206	-0.7262	-0.6830

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

Charging Mode with Full Load (at center)

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	0.8100	0.4800	0.8200	4.9500	2.0200
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-613.1900	-613.5200	-613.1800	-609.0500	-611.9800
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-306.1900	-306.5200	-306.1800	-302.0500	-304.9800

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1030	0.0970	0.1150	0.1090	0.1580
Max H-field (A/m)	0.0824	0.0776	0.0920	0.0872	0.1264
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5476	-1.5524	-1.5380	-1.5428	-1.5036
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.7326	-0.7374	-0.7230	-0.7278	-0.6886

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

Standby Mode

E-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max E-field (V/m)	0.6500	0.4100	0.9100	5.1700	1.3000
Limit (V/m)	614	614	614	614	614
Margin (V/m)	-613.3500	-613.5900	-613.0900	-608.8300	-612.7000
50 % Limit (V/m)	307	307	307	307	307
50 % Margin (V/m)	-306.3500	-306.5900	-306.0900	-301.8300	-305.7000

H-Field Measurement					
Distance	15cm				20cm
EUT Side	Left	Right	Top	Bottom	Z-axis
Max H-field (uT)	0.1040	0.1020	0.1070	0.1090	0.1150
Max H-field (A/m)	0.0832	0.0816	0.0856	0.0872	0.0920
Limit (A/m)	1.63	1.63	1.63	1.63	1.63
Margin (A/m)	-1.5468	-1.5484	-1.5444	-1.5428	-1.5380
50 % Limit (A/m)	0.815	0.815	0.815	0.815	0.815
50 % Margin (A/m)	-0.7318	-0.7334	-0.7294	-0.7278	-0.7230

Measurements were made from all sides and the top of the primary/client pair, with the 15 cm or 20 cm measured from the center of the probe(s) to the edge of the device. The highest emission level was recorded.

5 Photographs of the Test Configuration

Please refer to the attached file (Test Setup Photo).

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