

RF Exposure Report

Report No.: SABBXY-WTW-P22040459

FCC ID: C3K1915

Test Model: 1915

Received Date: Apr. 06, 2022

Test Date: Apr. 26, 2022

Issued Date: May 12, 2022

Applicant: Microsoft Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SABBXY-WTW-P22040459	Original Release	May 12, 2022

1 Certificate of Conformity

Product: Wireless charger

Brand: Microsoft

Test Model: 1915

Sample Status: Engineering Sample

Applicant: Microsoft Corporation

Test Date: Apr. 26, 2022

Standards: FCC Part 1 (Section 1.1307(b), Section 1.1310)
FCC Part 2 (Section 2.1091)

References Test Guidance: KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01

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 :

Gina Liu

Date:

May 12, 2022

Gina Liu / Specialist

Approved by :

Jeremy Lin

Date:

May 12, 2022

Jeremy Lin / Project Engineer

2 General Information

2.1 General Description of EUT

Product	Wireless charger
Brand	Microsoft
Model	1915
Sample Status	Engineering Sample
Nominal Voltage	5Vdc, 200mA
Modulation Type	ASK
Operating Frequency	13.56 MHz
Field Strength	-3.04 dBuV/m (30m)
Antenna Type	NFC FPC loop antenna
Accessory Device	N/A
Data Cable Supplied	USB to type C shielded cable (0.45m)
Dimensions	162.9mm*17mm*9.9mm
Maximum Power Output from the Charging Coil	300mW

Note:

1. This report is issued as a supplementary report to BV CPS report no. SA190716C36. The difference compared with original report are adding U2 Second source and removal of the zero-ohm resistors outlined, therefore the EUT is re-tested in this report.
2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3 RF Exposure

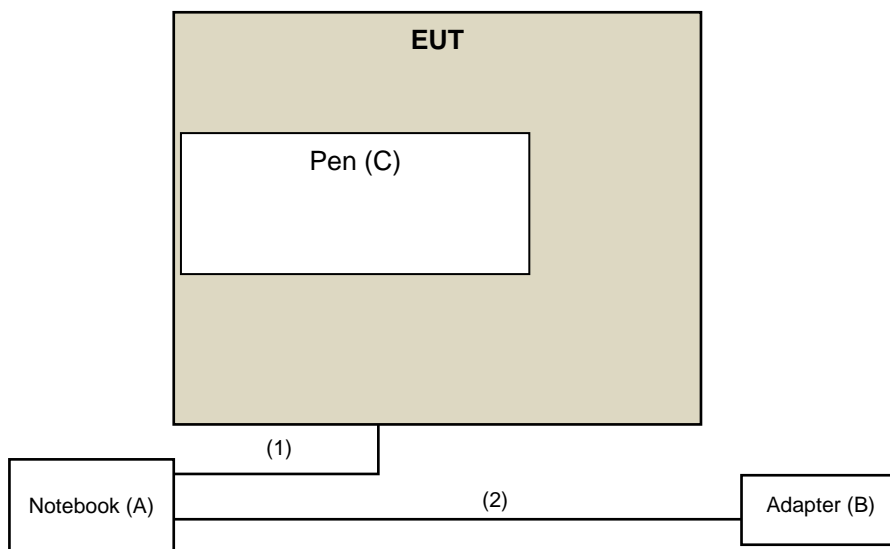
3.1 Description of Support Units

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.

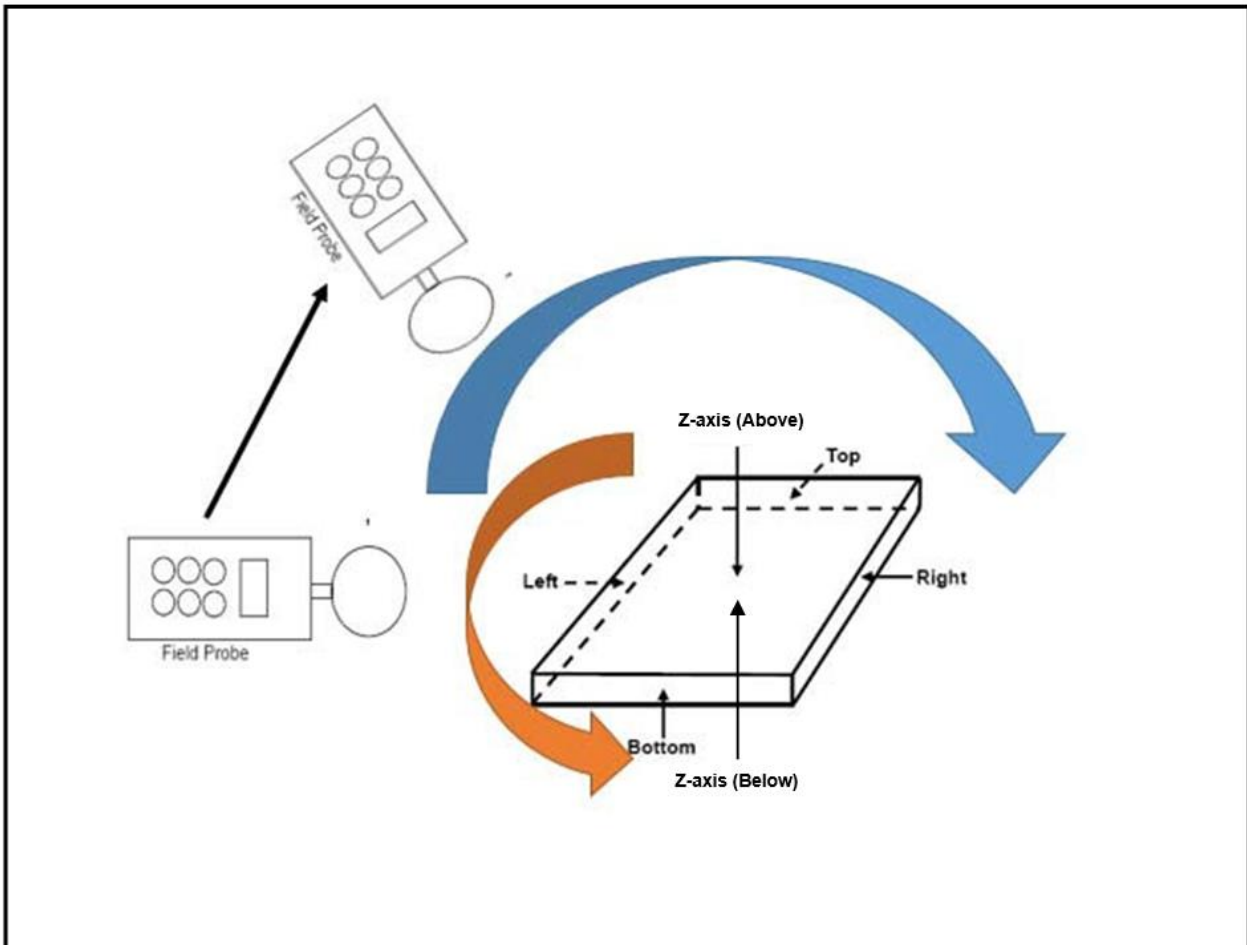
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	N/A	N/A	N/A	N/A	Provided by client
B.	Adapter	N/A	N/A	N/A	N/A	Provided by client
C.	Pen	Microsoft	1962	N/A	C3K1962	Provided by client

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB to type C	1	0.45	Y	0	Provided by client
2.	Adapter Cable	1	1.5	N	0	-

6.1.1 Configuration of System under Test



6.2 Test Setup



Note:

1. Measurements were made from all sides and the top of the primary/client pair, with the 0cm measured from the center of the probe(s) to the edge of the device.

6.3 Test Instruments

Description	Brand	Model No.	Frequency Range	Calibrated Date	Calibrated Until
Broadband Field Meter	NARDA	NBM-550	-	Mar. 18, 2022	Mar. 17, 2023
Magnetic Field Meter	NARDA	ELT-400	1Hz – 400MHz	Feb. 09, 2022	Feb. 08, 2024
Magnetic Probe	NARDA	HF-3061	300kHz – 30MHz	Feb. 24, 2022	Feb. 23, 2024
Magnetic Probe	NARDA	HF-0191	27 – 1000MHz	Feb. 24, 2022	Feb. 23, 2024
Electric Field Meter	COMBINOVA	EFM 200	5Hz – 400kHz	Dec. 16, 2021	Dec. 15, 2023
E-Field Probe	NARDA	HF3061	100kHz – 3GHz	Feb. 24, 2022	Feb. 23, 2023
E-Field Probe	NARDA	EF-6091	100MHz – 60GHz	Mar. 18, 2022	Mar. 17, 2023

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 HwaYa RF Chamber

6.4 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/cm ²)	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/f ²)	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/f ²)	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

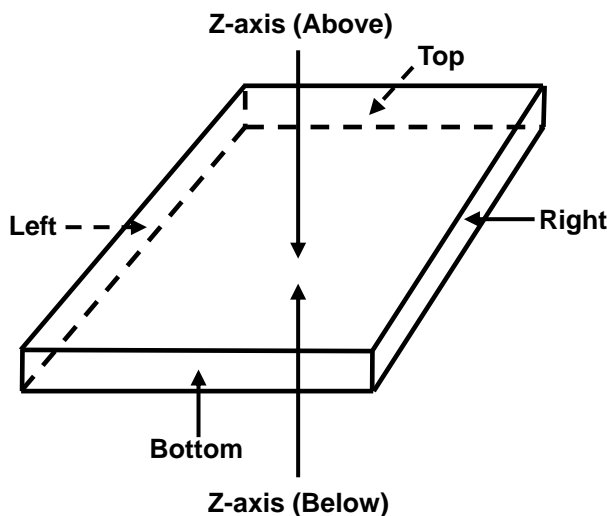
NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply 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-fields strengths at 15 or 0cm surrounding the device and 20 or 0cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

6.5 Test Point Description



7. Calculation Result of Maximum Conducted Power

Oprated Mode Charging 10%

E-Field (15cm)								E-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max E-field (V/m)	0.1600	0.2000	0.1600	0.1800	0.1700	0.1600	0.1600
13.56	Limit (V/m)	60.7670	60.7670	60.7670	60.7670	60.7670	60.7670	60.7670
13.56	Margin (V/m)	-60.6070	-60.5670	-60.6070	-60.5870	-60.5970	-60.6070	-60.6070
13.56	50 % Limit (V/m)	30.3835	30.3835	30.3835	30.3835	30.3835	30.3835	30.3835
13.56	50 % Margin (V/m)	-30.2235	-30.1835	-30.2235	-30.2035	-30.2135	-30.2235	-30.2235

H-Field (15cm)								H-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max H-field (uT)	0.0052	0.0048	0.0056	0.0057	0.0050	0.0052	0.0048
13.56	Max H-field (A/m)	0.0042	0.0038	0.0045	0.0046	0.0040	0.0042	0.0038
13.56	Limit (A/m)	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615
13.56	Margin (A/m)	-0.1573	-0.1577	-0.1570	-0.1569	-0.1575	-0.1573	-0.1577
13.56	50 % Limit (A/m)	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808
13.56	50 % Margin (A/m)	-0.0766	-0.0769	-0.0763	-0.0762	-0.0768	-0.0766	-0.0769

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

Oprated Mode Charging 50%

E-Field (15cm)								E-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max E-field (V/m)	0.1700	0.2100	0.1700	0.1900	0.1800	0.1700	0.1700
13.56	Limit (V/m)	60.7670	60.7670	60.7670	60.7670	60.7670	60.7670	60.7670
13.56	Margin (V/m)	-60.5970	-60.5570	-60.5970	-60.5770	-60.5870	-60.5970	-60.5970
13.56	50 % Limit (V/m)	30.3835	30.3835	30.3835	30.3835	30.3835	30.3835	30.3835
13.56	50 % Margin (V/m)	-30.2135	-30.1735	-30.2135	-30.1935	-30.2035	-30.2135	-30.2135

H-Field (15cm)								H-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max H-field (uT)	0.0053	0.0049	0.0057	0.0058	0.0051	0.0053	0.0049
13.56	Max H-field (A/m)	0.0042	0.0039	0.0046	0.0046	0.0041	0.0042	0.0039
13.56	Limit (A/m)	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615
13.56	Margin (A/m)	-0.1573	-0.1576	-0.1569	-0.1569	-0.1574	-0.1573	-0.1576
13.56	50 % Limit (A/m)	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808
13.56	50 % Margin (A/m)	-0.0765	-0.0768	-0.0762	-0.0761	-0.0767	-0.0765	-0.0768

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

Oprated Mode Charging 90%

E-Field (15cm)								E-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max E-field (V/m)	0.1800	0.2200	0.1800	0.2000	0.1900	0.1800	0.1800
13.56	Limit (V/m)	60.7670	60.7670	60.7670	60.7670	60.7670	60.7670	60.7670
13.56	Margin (V/m)	-60.5870	-60.5470	-60.5870	-60.5670	-60.5770	-60.5870	-60.5870
13.56	50 % Limit (V/m)	30.3835	30.3835	30.3835	30.3835	30.3835	30.3835	30.3835
13.56	50 % Margin (V/m)	-30.2035	-30.1635	-30.2035	-30.1835	-30.1935	-30.2035	-30.2035

H-Field (15cm)								H-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max H-field (uT)	0.0054	0.0050	0.0058	0.0059	0.0052	0.0054	0.0050
13.56	Max H-field (A/m)	0.0043	0.0040	0.0046	0.0047	0.0042	0.0043	0.0040
13.56	Limit (A/m)	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615
13.56	Margin (A/m)	-0.1572	-0.1575	-0.1569	-0.1568	-0.1573	-0.1572	-0.1575
13.56	50 % Limit (A/m)	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808
13.56	50 % Margin (A/m)	-0.0764	-0.0768	-0.0761	-0.0760	-0.0766	-0.0764	-0.0768

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

Standby Mode

E-Field (15cm)								E-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max E-field (V/m)	0.1400	0.1800	0.1200	0.1600	0.1400	0.1400	0.1000
13.56	Limit (V/m)	62.0944	62.0944	62.0944	62.0944	62.0944	62.0944	62.0944
13.56	Margin (V/m)	-61.9544	-61.9144	-61.9744	-61.9344	-61.9544	-61.9544	-61.9944
13.56	50 % Limit (V/m)	31.0472	31.0472	31.0472	31.0472	31.0472	31.0472	31.0472
13.56	50 % Margin (V/m)	-30.9072	-30.8672	-30.9272	-30.8872	-30.9072	-30.9072	-30.9472

H-Field (15cm)								H-Field (20cm)
Frequency (MHz)	EUT Side	Left	Right	Top	Bottom	Z-axis (Above)	Z-axis (Below)	Z-axis (Above)
13.56	Max H-field (uT)	0.0049	0.0046	0.0050	0.0052	0.0048	0.0050	0.0046
13.56	Max H-field (A/m)	0.0039	0.0037	0.0040	0.0042	0.0038	0.0040	0.0037
13.56	Limit (A/m)	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615	0.1615
13.56	Margin (A/m)	-0.1576	-0.1578	-0.1575	-0.1573	-0.1577	-0.1575	-0.1578
13.56	50 % Limit (A/m)	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808	0.0808
13.56	50 % Margin (A/m)	-0.0768	-0.0771	-0.0768	-0.0766	-0.0769	-0.0768	-0.0771

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

8. Photographs of the Test Configuration

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

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