



SAR TEST REPORT

for

MODEL NO. 1914

FCC ID: C3K1914

Test Report No. S-TR191-FCCSAR-1

Issue Date: May 23, 2020

FCC CFR 47 PART 2.1093

IEEE 1528-2013

Prepared by

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425-421-9799



TESTING CERT #3472.01

1 Record of Revisions

Revision	Date	Section	Page(s)	Summary of Changes	Author/Revised By:
1.0	05/23/2020	All	All	First Version	Wei Sun

Test Report Attestation

Microsoft Corporation
Model: 1914

Applicable Standards

Specification	Test Result
FCC CFR 47 PART 2.1093 IEEE 1528-2013	Pass

Microsoft EMC Laboratory attests that the product model identified in this report has been tested to and meets the requirements identified in the above standards. The test results in this report solely pertain to the specific sample tested, under the conditions and operating modes as provided by the customer.

This report shall not be used to claim product certification, approval, or endorsement by A2LA or any agency of any Government. Reproduction, duplication or publication of extracts from this test report is prohibited and requires prior written approval of Microsoft EMC Laboratory.



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2 Deviations from Standard

None.

3 Facilities and Accreditation

3.1 TEST FACILITY

All test facilities used to collect the test data are located at Microsoft EMC Laboratory:
17760 NE 67th Ct, Redmond, WA, 98052, USA.

3.2 ACCREDITATIONS

The lab is established and follows procedures as outlined in IEC/ISO 17025 and A2LA accreditation requirements.

A2LA Accredited Testing Certificate Number: 3472.01
Expiration Date: Aug 31, 2019

3.3 Test Equipment

The site and related equipment are constructed in conformance with the requirements of IEEE 1528-2013 and other equivalent applicable standards.

The calibrations of the measuring instruments, including any accessories that may affect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors are applied in accordance with instructions contained in the user manual for the measuring equipment.

control

4 Product Description

Company Name:	Microsoft Corporation		
Address:	One Microsoft Way		
City, State, Zip:	Redmond, WA 98052		
Customer Contact:	Kyle Chen		
Functional Description of the EUT:	Wireless Input Device		
RF Exposure Conditions:	Extremity Exposure		
Model:	1914		
FCC ID:	C3K1914		
Radio Descriptions:	2.4 GHz: 802.11g, 802.11n 20 MHz BW's 5 GHz: 802.11a, 802.11n 20MHz BW's Bluetooth LE		
Frequency Range of Operation:	WLAN: 2412 – 2462 MHz 5180 – 5825 MHz		
	BTLE: 2402 – 2480 MHz		
Modulations:	WLAN: CCK, BPSK, QPSK, 16-QAM, 64-QAM BLE: GFSK		
Antenna Peak Gains (dBi):	Band	Main	AUX (RX Only)
	2400 – 2483.5 MHz	1.74	N/A
	5150 – 5250 MHz	3.77	4.03
	5250 – 5350 MHz	4.40	3.08
	5500 – 5700 MHz	4.12	3.97
	5720 – 5850 MHz	3.71	3.56
Equipment Design State:	Prototype/Production Equivalent		
Equipment Condition:	Good		
Dates of Testing:	05/16/2020 – 05/17/2020		

4.1 TEST CONFIGURATIONS

N/A

4.2 ENVIRONMENTAL CONDITIONS

Ambient air temperature of the test site was within the range of 18 °C to 25 °C. Testing conditions were within tolerance and any deviations required from the EUT are reported.

4.3 EQUIPMENT MODIFICATIONS

No modifications were made during testing.

4.4 EQUIPMENT UNDER TEST

N/A

4.5 Supported Air Interfaces and Transmission Configurations

The EUT only has one TX antenna which support the following air interfaces and transmission configurations. The antennas is labeled as Main Antenna.

4.5.1 Supported Air Interfaces

Band	Air Interface	BW (MHz)		
		20	40	80
WLAN 2.4 GHz	802.11g	X		
	802.11n	X		
WLAN 5 GHz	802.11a	X		
	802.11n	X		
2.4 GHz	BTLE	NA		

5 Test Configurations

The standalone SAR test exclusion equations (KDB 447498 D01 4.3.1) were used to determine if the device requires testing for a given antenna and air interface technology. A 5mm minimum antenna-user separation distance was used for the evaluation. Since the device is hand-held, it was evaluated for extremity exposure test exclusion.

- 1) For antenna to edge separation distances $\leq 50\text{mm}$, the 10-g extremity SAR test exclusion threshold can be determined by evaluating whether the following is true:

$$\frac{P_{max}}{d} * \sqrt{f} \leq 7.5$$

- P_{max} = maximum possible average conducted power of transmitter, including tolerances, rounded to the nearest mW.
- d = closest intended separation distance between transmitting antenna and edge / face of device (mm) (5mm at the least)
- f = frequency of the transmitter for that power level in GHz

5.1 Evaluation of Required Test Configurations

The following table shows the maximum frequency of each transmitter in GHz and the maximum output power levels including tolerances rounded to the nearest mW:

Parameters used to Evaluate SAR Test Exclusion	Air Interface		
	WLAN 2.4 GHz	WLAN 5 GHz	BTLE
Max Freq. (GHz)	2.472	5.825	2.48
Max Power (dBm)	6.5	9.5	5.5
Max Power (mW)	4	9	4

5.1.1 SAR Test Exclusion Evaluation for antenna-user separation distances less than 50mm

SAR evaluation is not required when the calculated values below are ≤ 7.5 (**numeric threshold**). These values are calculated from each frequency (GHz), output power (mW), and antenna-user separation distance less than 50mm. The antenna to user separation distance used was 5 mm to be conservative.

Band	Min. Test Separation Distance (mm)	SAR Exclusion Result
WLAN 2.4 GHz	5	1.3
WLAN 5 GHz	5	4.3
BTLE	5	1.3

The computed values are ≤ 7.5 . Therefore, the EUT qualifies for standalone SAR test exclusion for all bands and modes.

End of Test Report