

RF Exposure Report

Report No.: SA200206E05

FCC ID: C3K1884

Test Model: 1884

Received Date: Feb. 06, 2020

Test Date: May 09 to 19, 2020

Issued Date: June 12, 2020

Applicant: Microsoft Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
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**FCC Registration /
Designation Number:** 723255 / TW2022

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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits for Maximum Permissible Exposure (MPE).....	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
2.4 Antenna Gain	5
2.5 Calculation Result of Maximum Conducted Power	6

Release Control Record

Issue No.	Description	Date Issued
SA200206E05	Original release.	June 12, 2020

1 Certificate of Conformity

Product: 802.11a/b/g/n/ac 2T2R dual-band wireless LAN radio

Brand: Microsoft

Test Model: 1884

Sample Status: ENGINEERING SAMPLE

Applicant: Microsoft Corporation

Test Date: May 09 to 19, 2020

Standards: FCC Part 2 (Section 2.1091)

IEEE C95.3 -2002

References Test Guidance: KDB 447498 D01 General RF Exposure Guidance v06

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 EMC characteristics under the conditions specified in this report.

Prepared by : Phoenix Huang, **Date:** June 12, 2020
Phoenix Huang / Specialist

Approved by : Clark Lin, **Date:** June 12, 2020
Clark Lin / Technical Manager

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
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

2.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 20 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Ant. No.	Transmitter Circuit	Ant.Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type
1	0	2.88	2.4~2.4835	PCB	None
		3.43	5.15~5.25		
		3.65	5.25~5.35		
		3.22	5.47~5.725		
		3.52	5.725~5.85		
2	1	3.62	2.4~2.4835	PCB	None
		3.41	5.15~5.25		
		3.56	5.25~5.35		
		3.74	5.47~5.725		
		3.2	5.725~5.85		

2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN (2.4GHz)	2412~2462	89.898	3.27	20	0.03797	1
WLAN (U-NII-1)	5180~5250	62.543	3.42	20	0.02735	1
WLAN (U-NII-2A)	5260~5320	69.112	3.61	20	0.03157	1
WLAN (U-NII-2C)	5500~5720	57.931	3.49	20	0.02574	1
WLAN (U-NII-3)	5745~5825	63.567	3.36	20	0.02741	1

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- 2.4GHz: Directional gain = $10 \log[(10^{G0/10} + 10^{G1/10}) / 2] = 3.27 \text{ dBi}$
- 5GHz:
 - U-NII-1: Directional gain = $10 \log[(10^{G0/10} + 10^{G1/10}) / 2] = 3.42 \text{ dBi}$
 - U-NII-2A: Directional gain = $10 \log[(10^{G0/10} + 10^{G1/10}) / 2] = 3.61 \text{ dBi}$
 - U-NII-2C: Directional gain = $10 \log[(10^{G0/10} + 10^{G1/10}) / 2] = 3.49 \text{ dBi}$
 - U-NII-3: Directional gain = $10 \log[(10^{G0/10} + 10^{G1/10}) / 2] = 3.36 \text{ dBi}$
- This max average power could cover tune-up power tolerance.

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