

## RF Exposure Report

**Report No.:** SA170326E02B

**FCC ID:** C3K1803

**Test Model:** 1803

**Received Date:** Mar. 26, 2017

**Test Date:** May 16, 2017

**Issued Date:** June 30, 2017

**Applicant:** Microsoft Corporation

**Address:** One Microsoft Way Redmond WA 98052

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

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### Release Control Record

Issue No.	Description	Date Issued
SA170326E02B	Original release.	June 30, 2017

## 1 Certificate of Conformity

**Product:** 1T1R dual-band wireless accessory radio

**Brand:** Microsoft

**Test Model:** 1803

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Microsoft Corporation


**Test Date:** May 16, 2017

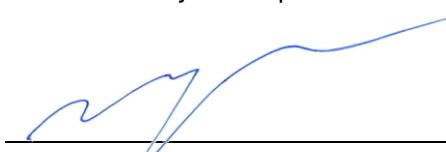
**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 :**  \_\_\_\_\_, **Date:** \_\_\_\_\_  
Wendy Wu / Specialist June 30, 2017

**Approved by :**  \_\_\_\_\_, **Date:** \_\_\_\_\_  
May Chen / Manager June 30, 2017

## 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 <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 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 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

### 2.4 Antenna Gain

Antenna No.	Brand	Model	Gain (dBi)	Antenna Type	Connector Type	Frequency range (GHz to GHz)	Function
Ant. 1 (for WLAN 2.4GHz)	Microsoft	NA	5.2	PCB	NA	2.4~2.4835	TX/RX
Ant. 2 (for WLAN 5GHz) Chan (0)			4.7			5.15~5.85	RX
Ant. 3 (for WLAN 5GHz) Chan (1)			6.1			5.15~5.85	TX/RX

## 2.5 Calculation Result

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band) data was copied from the original test report (Report No.: SA170326E02)

Frequency Band (MHz)	Max Power (dBm)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (W/cm <sup>2</sup> )
2412-2462	8.50	7.079	5.2	20	0.00466	1
5180-5240	9.00	7.943	6.1	20	0.00644	1
5260-5320	9.00	7.943	6.1	20	0.00644	1
5500-5580 & 5660-5700	9.00	7.943	6.1	20	0.00644	1
5745-5825	9.00	7.943	6.1	20	0.00644	1

**NOTE:** 1. This power include tune-up tolerance range that specified in 1803 Tune Up power table.

### Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.00466 / 1 + 0.00644 / 1 = 0.0111$

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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