

RF Exposure Report

Report No.: SA170326E02

FCC ID: C3K1803

Test Model: 1803

Received Date: Mar. 26, 2017

Test Date: May 16, 2017

Issued Date: June 22, 2017

Applicant: Microsoft Corporation

Address: One Microsoft Way Redmond WA 98052

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
SA170326E02	Original release.	June 22, 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.

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Approved by : May Chen , **Date:** June 22, 2017
May Chen / 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				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

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

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 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

Frequency Band (MHz)	Max Power (dBm)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (W/cm ²)
2412-2462	8.50	7.079	5.2	20	0.00466	1
5180-5240	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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