RF Exposure Report

Report No.:	SA150720E05
FCC ID:	C3K1683
Test Model:	1683
Received Date:	July 20, 2015
Test Date:	Nov. 23, 2015
Issued Date:	Dec. 18, 2015
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
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
SA150720E05	Original release.	Dec. 18, 2015

1 Certificate of Conformity

Product:	802.11a/b/g/n(/ac) 2T2R dual-band wireless LAN radio
Brand:	Microsoft
Test Model:	1683
Sample Status:	ENGINEERING SAMPLE
Applicant:	Microsoft Corporation.
Test Date:	Nov. 23, 2015
Standards:	FCC Part 2 (Section 2.1091) 447498 D01 GENERAL RF EXPOSURE GUIDANCE V06 IEEE STD C95.1-2005

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:** Dec. 18, 2015
Lori Chung / Specialist

Approved by : _____ , **Date:** Dec. 18, 2015
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

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

where

Pd = power density in mW/cm^2

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

The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Antenna Type	Connecter Type	Antenna Gain(dBi)	Frequency range (MHz to MHz)	Antenna Type
Chain (0)	Microsoft	NA	3	2400~2500	PCB
			3.9	5150~5850	
Chain (1)	Microsoft	NA	4.2	2400~2500	PCB
			3.8	5150~5850	
For 1TX configuration mode: max gain was selected as representative antenna.					

2.5 Calculation Result of Maximum Conducted Power

For 1TX Configuration

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	25.50	354.813	4.2	20	0.18566	1
5180-5240	23.50	223.872	3.9	20	0.10933	1
5260-5320	23.50	223.872	3.9	20	0.10933	1
5500-5700	23.50	223.872	3.9	20	0.10933	1
5745-5825	21.50	141.254	3.9	20	0.06898	1

NOTE: 1. This power include tune-up tolerance range (1.5dB) that specified by manufacturer.

For 2TX Configuration

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	26.51	447.713	4.2	20	0.23428	1
5180-5240	24.51	282.488	3.9	20	0.13795	1
5260-5320	24.51	282.488	3.9	20	0.13795	1
5500-5700	24.51	282.488	3.9	20	0.13795	1
5745-5825	24.51	282.488	3.9	20	0.13795	1

NOTE: 1. This power include tune-up tolerance range (1.5dB) that specified by manufacturer.

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