



RF Exposure Evaluation Report

For

MODEL NO. 1616

FCC ID: C3K1616

IC ID: 3048A-1616

Test Report No. R-TR41-MPE-1

Issue Date: March 31 2014

FCC CFR47 Part 1.1307, 1.1310, 2.1091

Industry Canada RSS-102 Issue 4

Prepared by

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1 Record of Revisions

Revision	Date	Section	Page(s)	Summary of Changes	Author/Revised By:
1.0	03/31/2014	All	All	First Version	Sajay Jose

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Test Report Attestation

Microsoft Corporation

Model: 1616

FCC ID: C3K1616

IC ID: 3048A-1616

Applicable Standards

Specification	Test Result
FCC CFR47 Rule Parts 1.1307, 1.1310, 2.1091	Complies
Industry Canada RSS-102 Issue 4 (RF Exposure)	Complies

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 pertains to the specific sample tested, under the conditions and operating modes as provided by the customer. All indications of Pass/Fail in this report are opinions expressed by the Microsoft EMC Laboratory based on interpretations and/or observations of test result on the tested sample only.

This report shall not be used to claim product certification, approval, or endorsement by A2LA or any agency of any Government.

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2 Product Description

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Customer Contact:	Steve Stegner
Functional Description of the EUT:	Wireless input accessory device.
Model:	1616
FCC ID:	C3K1616
IC ID:	3048A-1616
Radio Description:	BT LE (2402- 2480 MHz)
Modulation:	GFSK
EUT Classification:	DTS
Equipment Design State:	DV
Equipment Condition:	Good
Equipment Modifications:	None

3 Deviations from Standards

None.

4 Facilities and Accreditations

4.1 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

4.2 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

FCC Registration Number: US1141

IC Site Registration Numbers: 3048A-1, 3048A-2, 3048A-3

5 RF Exposure Evaluation

5.1 Maximum Permissible Exposure Limits

5.1.1 FCC 47 CFR 1.1310

Frequency Range (MHz)	Power Density (mW/cm ²)	Averaging Time (mins)
300-1500	f(MHz)/ 1500	30
1500-100,000	1.0	30

5.1.2 RSS-102

Frequency Range (MHz)	Power Density (mW/cm ²)	Averaging Time (mins)
300-1500	f(MHz)/ 1500	6
1500-150,000	1.0	6

5.2 Power Density Estimation (OET Bulletin 65)

The Power Density (S) around a typical RF source can be estimated using the formula

$$S = \frac{EIRP}{4\pi R^2}$$

where

EIRP= Equivalent (or effective) Isotropic Radiated Power

R= Distance to the center of radiation of the antenna.

5.3 Test Method

EIRP is calculated using the EUT's max conducted power and rated antenna gain (as provided by the manufacturer).

5.3.1 Test Setup Diagram

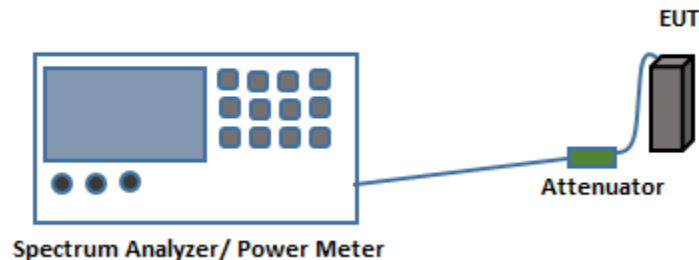


Fig.1. Test Setup for Antenna port conducted measurements

5.3.2 Test Equipment List

Manufacturer	Description	Model #	Asset #	Calibration Due
Agilent	Spectrum Analyzer	N9030A	RF-011	5/13/2014

5.4 Test Result

EIRP= -6.86 (dBm) + -14.1 (dBi)= -20.96 dBm= 0.008 mW

Power Density S at 20cm= (0.008)/ (4*3.14*400) = 1.6e⁻⁶ mW/cm² (1.6e⁻⁵ W/m²)

The EUT meets the MPE limits of FCC CFR 47 1.1310 and RSS-102.

5.5 Routine Evaluation Exclusion Limits

5.5.1 FCC 47 CFR 2.1091

Frequency Range (MHz)	ERP
<1500	1.5 W/ 31.8 dBm
>1500	3.0 W/ 34.8 dBm

5.5.2 RSS-102

Frequency Range (MHz)	EIRP
<1500	2.5 W/ 34.0 dBm
>1500	5.0 W/ 37.0 dBm

5.6 Result

Max EIRP= -20.96 dBm

Max ERP= -23.1 dBm

Since the highest ERP/EIRP is below the limits as specified above, the EUT is categorically excluded from routine evaluation.