



RF Exposure Evaluation Report

For

MODEL NO. 1710

FCC ID: C3K1710

IC ID: 3048A-1710

Test Report No. R-TR188-FCCIC-MPE-1

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FCC CFR47 Part 2.1093

Industry Canada RSS-102: Issue 5

Prepared by

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TESTING CERT #3472.01

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Test Report Attestation

Microsoft Corporation

Model: 1710

FCC ID: C3K 1710

IC ID: 3048A-1710

Applicable Standards

Specification	Test Result
FCC CFR47 Part 2.1093 Industry Canada RSS-102 Issue 5	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.

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:	Sahithi Kandula
Functional Description of the EUT:	Wireless input accessory device
Model:	1710
FCC ID:	C3K1710
IC ID:	3048A-1710
Radio Description:	BTLE (2402- 2480 MHz)
Modulation:	GFSK
Max Antenna Gain:	-2.41 dBi
EUT Classification:	DTS device
Equipment Design State:	EV2/Production
Equipment Condition:	Good
RF Exposure Conditions:	Extremity Exposure, Body Exposure

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

IC Registration Number: 3048A-1, 3048A-2, 3048A-3, 3048A-4

4.3 Test Configurations

Test Software Details:

The EUT was preprogrammed to transmit continuously in GFSK mode. Channel numbers 0, 19 and 39 are used as the Low/Mid/High channels of test.

5 Peak Conducted Output Power Measurements

5.1 Test Method

Antenna port conducted measurements were performed on a bench-top setup consisting of a spectrum analyzer, power meter (as necessary), splitters/combiners (as necessary), attenuators, and pre-characterized RF cables.

The correction factors between the EUT and the Spectrum Analyzer is added internally in the Analyzer settings. The plots displayed accounts for these correction factors.

Spectrum Analyzer Settings:

Peak Measurements:

RBW= 1 MHz

VBW= 3 MHz

Trace Mode: Peak Detector (Max Hold)

Span= 3 MHz

Sweep time= Auto

Peak e.i.r.p. was calculated based on the following formula:

$$e.i.r.p. (dBm) = \text{Conducted Output Power (dBm)} + \text{Antenna Gain (dBi)}$$

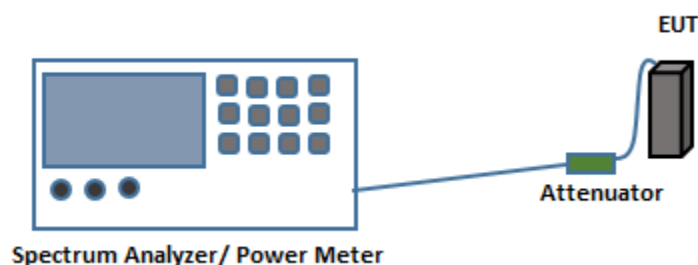


Fig.1. Test setup for antenna port conducted measurements

5.2 Test Equipment List

Manufacturer	Description	Model #	Asset #	Calibration Due
Agilent	Spectrum Analyzer	N9030A	RF-011	2/29/2016

5.3 Test Results

Frequency (MHz)	Mode	Peak Power (dBm)	Peak Power (mW)	Maximum Antenna Gain (dBi)	e.i.r.p. (dBm)	e.i.r.p. (mW)
2402	GFSK	-0.82	0.83	-2.41	-3.23	0.48
2440	GFSK	-1.26	0.75	-2.41	-3.67	0.43
2480	GFSK	-1.94	0.64	-2.41	-4.35	0.37

6 SAR Test Exclusion

6.1 SAR Test Exclusion Criteria

According to RSS-102 Table 1, routine SAR evaluation is exempt for transmitters operating with an output power < 4mW assuming a worst case separation distance of 5mm. The maximum value of conducted output power is used since it is greater than the e.i.r.p.

According to FCC KDB 447498 D01 General RF Exposure Guidance v05r02 (Feb. 2014) Section 4.3.1, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm is defined as

$$\frac{(\text{max.power of channel, including tune-up tolerance, mW})}{(\text{min.test separation distance, mm})} X [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \dots \dots \dots <\text{eq.1}>$$

where

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

6.2 SAR Test Exclusion Evaluation

Using a worst case peak conducted output power of 1 mW, the EUT was excluded from routine SAR evaluation measurements (since this is < 4mW, and eq.(1) is satisfied).

End of Report