

# FCC SAR Exclusion Report

Report No. : SA190626D06  
Applicant : MICROSOFT CORPORATION  
Address : ONE MICROSOFT WAY REDMOND, WA 98052-6399, U.S.A.  
Product : Bluetooth Accessory – Left  
FCC ID : C3K1938  
Brand : Microsoft  
Model No. : 1938  
Standards : FCC 47 CFR Part 2 (2.1093), IEEE C95.1:1992, IEEE Std 1528:2013  
KDB 865664 D01 v01r04, KDB 865664 D02 v01r02, KDB 447498 D01 v06  
Sample Received Date : Jun. 26, 2019  
Date of Evaluation : Aug. 15, 2019  
Lab Address : No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan  
Test Location : No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan

**CERTIFICATION:** The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch–Lin Kou Laboratories**, 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 SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

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FCC Accredited No.: TW0003

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

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## Release Control Record

| Report No.  | Reason for Change | Date Issued   |
|-------------|-------------------|---------------|
| SA190626D06 | Initial release   | Aug. 23, 2019 |
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## FCC SAR Exclusion Report

### 1. Summary of Maximum SAR Value

| Equipment Class | Mode          | Highest SAR-1g Head (W/kg) |
|-----------------|---------------|----------------------------|
| DSS             | Bluetooth EDR | Not Required               |

**Note:**

1. The SAR criteria (**Head & Body: SAR-1g 1.6 W/kg, and Extremity: SAR-10g 4.0 W/kg**) for general population/uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.

## FCC SAR Exclusion Report

### 2. Description of Equipment Under Test

|                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| EUT Type                                       | Bluetooth Accessory – Left                   |
| FCC ID                                         | C3K1938                                      |
| Brand Name                                     | Microsoft                                    |
| Model Name                                     | 1938                                         |
| Tx Frequency Bands<br>(Unit: MHz)              | Bluetooth : 2402 ~ 2480                      |
| Uplink Modulations                             | Bluetooth : GFSK, $\pi/4$ -DQPSK, 8-DPSK     |
| Maximum Tune-up Conducted Power<br>(Unit: dBm) | Please refer to section 4.6.1 of this report |
| Antenna Type                                   | PCB Antenna                                  |
| EUT Stage                                      | Engineering Sample                           |

**Note:**

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

**List of Accessory:**

|         |              |               |
|---------|--------------|---------------|
| Battery | Brand Name   | VARTA         |
|         | Model Name   | CP1254        |
|         | Power Rating | 3.7Vdc, 60mAh |
|         | Type         | Li-ion        |

## 3. SAR Measurement Evaluation

### 3.1 Maximum Output Power

#### 3.1.1 Maximum Target Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

##### <Bluetooth>

| Mode          | Channel | Frequency (MHz) | Tune-up Power |
|---------------|---------|-----------------|---------------|
| Bluetooth EDR | 0       | 2402            | 5             |
|               | 39      | 2441            | 5             |
|               | 78      | 2480            | 5             |
| Bluetooth LE  | 0       | 2402            | -5            |
|               | 19      | 2440            | -5            |
|               | 39      | 2480            | -5            |

#### 3.1.2 Measured Conducted Power Result

The measuring conducted average power (Unit: dBm) is shown as below.

##### <Bluetooth>

| Mode          | Channel | Frequency (MHz) | Average Power |
|---------------|---------|-----------------|---------------|
| Bluetooth EDR | 0       | 2402            | 4.19          |
|               | 39      | 2441            | 4.17          |
|               | 78      | 2480            | <b>4.28</b>   |
| Bluetooth LE  | 0       | 2402            | -6.43         |
|               | 19      | 2440            | -6.37         |
|               | 39      | 2480            | -6.41         |

## FCC SAR Exclusion Report

### 4.1 SAR Testing Exclusions

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

- For the test separation distance  $\leq 50$  mm

$$\frac{\text{Max. Tune up Power}_{(\text{mW})}}{\text{Min. Test Separation Distance}_{(\text{mm})}} \times \sqrt{f_{(\text{GHz})}} \leq 3.0$$

When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

- For the test separation distance  $> 50$  mm, and the frequency at 100 MHz to 1500 MHz

$$\left[ (\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times \left( \frac{f_{(\text{MHz})}}{150} \right) \right]_{(\text{mW})}$$

- For the test separation distance  $> 50$  mm, and the frequency at  $> 1500$  MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times 10]_{(\text{mW})}$$

| Mode | Max. Tune-up Power (dBm) | Max. Tune-up Power (mW) | Rear Face            |                   |                      | Left Side            |                   |                      | Right Side           |                   |                      | Top Side             |                   |                      | Bottom Side          |                   |                      |
|------|--------------------------|-------------------------|----------------------|-------------------|----------------------|----------------------|-------------------|----------------------|----------------------|-------------------|----------------------|----------------------|-------------------|----------------------|----------------------|-------------------|----------------------|
|      |                          |                         | Ant. to Surface (mm) | Calculated Result | Require SAR Testing? | Ant. to Surface (mm) | Calculated Result | Require SAR Testing? | Ant. to Surface (mm) | Calculated Result | Require SAR Testing? | Ant. to Surface (mm) | Calculated Result | Require SAR Testing? | Ant. to Surface (mm) | Calculated Result | Require SAR Testing? |
| BT   | 5                        | 3                       | 17.76                | 0.27              | No                   | 12.5                 | 0.38              | No                   | 12.5                 | 0.38              | No                   | 2.45                 | 0.94              | No                   | 22.55                | 0.21              | No                   |

#### Note:

- When separation distance  $\leq 50$  mm and the calculated result shown in above table is  $\leq 3.0$ , the SAR testing exclusion is applied.
- When separation distance  $> 50$  mm and the device output power is less than the calculated result (power threshold, mW) shown in above table, the SAR testing exclusion is applied.

#### Summary:

Since the SAR testing for all device orientations apply SAR test exclusion per KDB 447498, SAR testing for this device is not required.

#### **4. Information of the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Taiwan HwaYa EMC/RF/Safety Lab:**

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The road map of all our labs can be found in our web site also.

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### Appendix A. Photographs of EUT and Setup

The setup photographs for SAR testing are shown as follows.