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Federal Communications Commission, OET
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, Maryland 21046

Subject: RF Exposure Evaluation

Reference: FCC ID: **2AGRJ-A2TXOTT**

This evaluation is for the rf exposure contribution related to the Bluetooth transmitter. The full system rf exposure evaluation has been addressed as part of the Part 18 Declaration of Conformity process for the wireless charging signal and related emissions. This full system rf exposure evaluation was submitted to, and has been approved by, the FCC's Office of Engineering and Technology via the KDB system.

The attached assessment for the Bluetooth transmitter was prepared by Mark Briggs, Product Regulatory Engineer.

A handwritten signature in black ink that reads "Mark Briggs". The signature is written in a cursive, flowing style.

Mark Briggs, **MIET, CEng**
Product Regulatory Engineer, Intel Corporation

Bluetooth RF Exposure Evaluation

Bluetooth specifications:

- Frequency Range: 2402 – 2480 MHz
- Output power (maximum): 4dBm (2.5mW)
- Antenna gain: 2.0dBi
- Maximum eirp: 6.0dBm (4mW)

SAR Exclusion

As the charging surface and related electronics, under some conditions, may be within 20cm of the person the rf exposure evaluation will be based on requirements for a portable device versus a mobile device. Section 4.3 of KDB 447498 does not require a SAR measurement for devices operating below the SAR exclusion threshold. For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* for a body exposure condition are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] [\sqrt{f_{(\text{GHz})}}] \leq 3.0$ 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 (note - when the minimum test separation distance is < 5 mm, a distance of 5 mm is used to determine SAR test exclusion)
- The result is rounded to one decimal place for comparison

For this device, assuming a separation of less than 5mm between antenna and body, the threshold is:

$$3\text{mW} / 5\text{mm} \times \sqrt{2.48 \text{ GHz}} = \mathbf{0.9}$$

As the value is below the threshold of 3.0 the Bluetooth transmitter is excluded from stand-alone rf exposure evaluation.

Estimated SAR Value

To assess the contribution of the Bluetooth transmitter to the rf exposure potential of the complete device KDB 447498 allows use of the following formula where the antenna is within 50mm of the body:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}} / 7.5] \text{ W/kg,}$$

Estimated SAR value for this Bluetooth transmitter is: $3\text{mW} / 5\text{mm} \times \sqrt{2.48} / 7.5 = 0.126 \text{ W/Kg}$.

The highest SAR value for the wireless charging operations at 6.78MHz is below 1.4 W/Kg therefore the simultaneous SAR value for Bluetooth and wireless charging operations is below the limit of 1.6 W/Kg and Bluetooth SAR measurements **are not required**.