

## RF Exposure Report

**Report No.:** SA181205C09

**FCC ID:** 2AP3D-CT001

**Test Model:** CT001

**Received Date:** Dec. 05, 2018

**Date of Evaluation:** Mar. 04, 2019

**Issued Date:** Mar. 08, 2019

**Applicant:** Spotify USA, Inc.

**Address:** 45 West 18th Street, New York, NY 10011, USA

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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**Test Location:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)

**FCC Registration /  
Designation Number:** 788550 / TW0003



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### Release Control Record

| Issue No.   | Description      | Date Issued   |
|-------------|------------------|---------------|
| SA181205C09 | Original Release | Mar. 08, 2019 |

## 1 Certificate of Conformity

**Product:** Music Streaming Device

**Brand:** Spotify

**Test Model:** CT001

**Sample Status:** Engineering Sample

**Applicant:** Spotify USA, Inc.

**Date of Evaluation:** Mar. 04, 2019

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 RF characteristics under the conditions specified in this report.

**Prepared by :**



**Date:** Mar. 08, 2019

Ivonne Wu / Supervisor

**Approved by :**



**Date:** Mar. 08, 2019

Dylan Chiou / Project Engineer

## 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 <sup>2</sup> ) | Average Time (minutes) |
|-------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| Limits For General Population / Uncontrolled Exposure |                               |                               |                                     |                        |
| 0.3-1.34                                              | 614                           | 1.63                          | (100)*                              | 30                     |
| 1.34-30                                               | 824/f                         | 2.19/f                        | (180/f <sup>2</sup> )*              | 30                     |
| 30-300                                                | 27.5                          | 0.073                         | 0.2                                 | 30                     |
| 300-1500                                              | ...                           | ...                           | f/1500                              | 30                     |
| 1500-100,000                                          | ...                           | ...                           | 1.0                                 | 30                     |

f = Frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 Calculation Result of Maximum Conducted Power

| Band     | Frequency Band (MHz) | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------|----------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| WCDMA II | 1850-1910            | 25              | 0.1                | 20            | 0.064                               | 1.00                        |
| WCDMA IV | 1710-1755            | 25              | -0.1               | 20            | 0.061                               | 1.00                        |
| WCDMA V  | 824-849              | 25              | -0.5               | 20            | 0.056                               | 0.55                        |
| LTE 2    | 1850-1910            | 24              | 0.1                | 20            | 0.051                               | 1.00                        |
| LTE 4    | 1710-1755            | 24              | -0.1               | 20            | 0.049                               | 1.00                        |
| LTE 5    | 824-849              | 24              | -0.5               | 20            | 0.045                               | 0.55                        |
| LTE 12   | 699-716              | 24              | 0                  | 20            | 0.050                               | 0.47                        |
| WLAN     | 2412-2462            | 19              | 0.4                | 20            | 0.017                               | 1.00                        |
| BT       | 2402-2480            | 5.5             | 0.4                | 20            | 0.001                               | 1.00                        |

### Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$WWAN + WLAN + BT = 0.05 / 0.47 + 0.034 / 1 + 0.017 / 1 = 0.124$

**Therefore the maximum calculations of above situations are less than the “1” limit.**

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