

## RF EXPOSURE REPORT

<b>Equipment Under Test</b>	<b>Perfume Bluetooth Speaker</b>
<b>Model Name</b>	<b>SPK-2</b>
<b>Variant Model Name</b>	-
<b>FCC ID</b>	<b>2BE6Q-SPK-2</b>
<b>Applicant</b>	<b>Sound Perfume Korea Co., Ltd.</b>
<b>Manufacturer</b>	<b>Sound Perfume Korea Co., Ltd.</b>
<b>Date of Test(s)</b>	<b>2024. 02. 23 ~ 2024. 02. 29</b>
<b>Date of Issue</b>	<b>2023. 03. 20</b>

In the configuration tested, the EUT complied with the standards specified above.

<b>Issue to</b>	<b>Issue by</b>
<b>Sound Perfume Korea Co., Ltd.</b>  46, Jiyang-ro, Yangcheon-gu, Seoul Korea	<b>DEKRA Korea Co., Ltd.</b>  498-2, Geumeo-ro, Pogok-eup, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17030
Tel.: +82-10-6430-2253  Fax: -	Tel.: +82-31-338-8837  Fax: +82-31-338-8847

## RF EXPOSURE

### 1. Regulation

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this Chapter.

Limits for Maximum Permissive Exposure: RF exposure is calculated.

Frequency Range	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [mW/cm <sup>2</sup> ]	Averaging Time [minute]
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 ~ 1 500	/	/	f/1 500	30
1 500 ~ 15 000	/	/	1	30

f=frequency in MHz, \* = plane-wave equivalent power density

### MPE (Maximum Permissive Exposure) Prediction

Predication of MPE limit at a given distance: Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2 \quad (\Rightarrow R = \sqrt{PG/4\pi S})$$

S = power density [mW/cm<sup>2</sup>]

P = Power input to antenna [mW]

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna [cm]

### 2. RF Exposure Compliance Issue

The information should be included in the user's manual:

This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

## MPE Calculations : Bluetooth BDR

- Frequency Range : 2 402 MHz ~ 2 480 MHz
- Measured RF Output Power (Peak) : 7.52 dBm
- Target Power & Tolerance 7.00 dBm &  $\pm$  1.00 dB  
( Maximum : 8.00 dBm & Minimum : 6.00 dBm )
- Maximum Peak Antenna Gain : -0.58 dBi
- Maximum Output Power for the Calculation : 8.00 dBm**

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the The MPE calculation for this exposure is shown below.

$  \begin{aligned}  - \text{EIRP} &= P + G \\  &= \underline{8.00} \text{ dBm} + \underline{-0.58} \text{ dBi} \\  &= \underline{7.42} \text{ dBm} \\  &= \underline{5.52} \text{ mW}  \end{aligned}  $	<p><b>- NOTE</b></p> <p>P : Max tuneup Power (dBm)</p> <p>G : Maximum Peak Antenna Gain (dBi)</p>
---	---

### Power Density at the specific separation

$  \begin{aligned}  - S &= \text{EIRP} / (4 \times R^2 \pi) \\  &= 5.52 / (4 \times 20^2 \times \pi) \\  &= \underline{0.001\ 098} \text{ mW/cm}^2  \end{aligned}  $	<p><b>- NOTE</b></p> <p>S : Maximum Power Density (mW/cm<sup>2</sup>)</p> <p>EIRP : Equivalent Isotropic Radiated Power (mW)</p> <p>R : Distance to the center of the radiation of the antenna ( <u>20</u> cm )</p>
--	---

## MPE Calculations : Bluetooth EDR

- Frequency Range : 2 402 MHz ~ 2 480 MHz
- Measured RF Output Power (Peak) : 7.94 dBm
- Target Power & Tolerance 7.00 dBm &  $\pm$  1.00 dB  
( Maximum : 8.00 dBm & Minimum : 6.00 dBm )
- Maximum Peak Antenna Gain : -0.58 dBi
- Maximum Output Power for the Calculation : 8.00 dBm**

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the The MPE calculation for this exposure is shown below.

$  \begin{aligned}  - \text{EIRP} &= P + G \\  &= \underline{8.00} \text{ dBm} + \underline{-0.58} \text{ dBi} \\  &= \underline{7.42} \text{ dBm} \\  &= \underline{5.52} \text{ mW}  \end{aligned}  $	<p>- NOTE</p> <p>P : Max tuneup Power (dBm)</p> <p>G : Maximum Peak Antenna Gain (dBi)</p>
---	--

### Power Density at the specific separation

$  \begin{aligned}  - S &= \text{EIRP} / (4 \times R^2 \pi) \\  &= 5.52 / (4 \times 20^2 \times \pi) \\  &= \underline{0.001\ 098} \text{ mW/cm}^2  \end{aligned}  $	<p>- NOTE</p> <p>S : Maximum Power Density (mW/cm<sup>2</sup>)</p> <p>EIRP : Equivalent Isotropic Radiated Power (mW)</p> <p>R : Distance to the center of the radiation of the antenna ( <u>20</u> cm )</p>
--	--

## MPE Calculations : Bluetooth LE 1 Mbps

- Frequency Range : 2 402 MHz ~ 2 480 MHz
- Measured RF Output Power (Peak) : 7.39 dBm
- Target Power & Tolerance 6.50 dBm &  $\pm$  1.00 dB
  - ( Maximum : 7.50 dBm & Minimum : 5.50 dBm )
- Maximum Peak Antenna Gain : 2.00 dBi
- Maximum Output Power for the Calculation : 7.50 dBm**

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the device. The MPE calculation for this exposure is shown below.

$  \begin{aligned}  - \text{EIRP} &= P + G \\  &= \underline{7.50} \text{ dBm} + \underline{2.00} \text{ dBi} \\  &= \underline{9.50} \text{ dBm} \\  &= \underline{8.91} \text{ mW}  \end{aligned}  $	<p>- NOTE</p> <p>P : Max tuneup Power (dBm)</p> <p>G : Maximum Peak Antenna Gain (dBi)</p>
--	--

### Power Density at the specific separation

$  \begin{aligned}  - S &= \text{EIRP} / (4 \times R^2 \pi) \\  &= 8.91 / (4 \times 20^2 \times \pi) \\  &= \underline{0.001\ 773} \text{ mW/cm}^2  \end{aligned}  $	<p>- NOTE</p> <p>S : Maximum Power Density (mW/cm<sup>2</sup>)</p> <p>EIRP : Equivalent Isotropic Radiated Power (mW)</p> <p>R : Distance to the center of the radiation of the antenna ( <u>20</u> cm )</p>
--	--

## MPE Calculations : Bluetooth EDR + Bluetooth LE 1 Mbps

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the device. The MPE calculation for this exposure is shown below.

### Simultaneous MPE for Bluetooth EDR and Bluetooth LE 1 Mbps

Bluetooth EDR + Bluetooth LE 1 Mbps

<p>- Total (%) =</p> $[ \text{Bluetooth EDR Result(mW/cm}^2\text{) / Limit(mW/cm}^2\text{) } + [ \text{Bluetooth LE 1 Mbps Result(mW/cm}^2\text{) / Limit(mW/cm}^2\text{) } * 100 ] ]$ $= [ \underline{0.001\ 098} / 1 ] + [ \underline{0.001\ 773} / 1 ] * 100$ $= \underline{0.287} \%$	<p>- NOTE</p> <p>Bluetooth EDR + Bluetooth LE 1 Mbps</p> <p>Bluetooth EDR = <u>0.001 098</u> mW/cm<sup>2</sup></p> <p>Bluetooth LE 1 Mbps = <u>0.001 773</u> mW/cm<sup>2</sup></p> <p>Distance to the center of the radiation of the antenna ( <u>20</u> cm )</p> <p>Limit : <math>\leq 100 \%</math></p>
---	---

### RF Exposure Compliance Issue

Therefore, EUT is not required the SAR Evaluation.