

## RF EXPOSURE EVALUATION

### 1. PRODUCT INFORMATION

|                     |                             |
|---------------------|-----------------------------|
| Product Description | Bluetooth FM Transmitter    |
| Model Name          | BH163B,BH163C,BH163D,BH163E |
| FCC ID              | 2AIL4-BH163B                |

### 2. EVALUATION METHOD

According to 447498 D01 General RF Exposure Guidance v05

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR.

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

### 3. CALCULATION

According to the follow transmitter output power ( $P_t$ ) formula :

$$P_t = (E \times d)^2 / (30 \times g_t)$$

$P_t$ =transmitter output power in watts

$g_t$ =numeric gain of the transmitting antenna (unitless)

$E$ =electric field strength in V/m

$d$ =measurement distance in meters (m)

$$\text{BT } P_t = -0.690\text{dBm} = 0.85\text{mW}$$

The result for RF exposure evaluation

$$\text{SAR} = (0.85\text{mW} / 5\text{mm}) \cdot [\sqrt{2.48(\text{GHz})}] = 0.27 < 3.0 \text{ for 1-g SAR}$$

$$\text{FM } P_t = 0.0000091\text{mW}$$

The result for RF exposure evaluation

$$\text{SAR} = (0.0000091\text{mW} / 5\text{mm}) \cdot [\sqrt{0.1079(\text{GHz})}] = 0.00000060 < 3.0 \text{ for 1-g SAR}$$

Simultaneous transmission between Bluetooth and FM transmitter

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg, for test separation distances } \leq 50 \text{ mm;}$

where  $x = 7.5$  for 1-g SAR and  $x = 18.75$  for 10-g SAR.

$$\text{SAR} = (0.27 + 0.00000060) / 7.5 = 0.036\text{W/kg} < 1.6\text{W/kg}$$

### 4. CONCLUSION

The SAR evaluation is not required.