



## CTC Laboratories, Inc.

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# Maximum Permissible Exposure Evaluation

FCC ID: 2AJ9K-UT888

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

### EUT Specification

|                            |                                                                                                                                                                                                                                |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT                        | Mini Wireless Speaker                                                                                                                                                                                                          |
| Frequency band (Operating) | <input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz<br><input checked="" type="checkbox"/> EDR: 2.402GHz ~ 2.480GHz<br><input type="checkbox"/> BLE: 2.402GHz ~ 2.480GHz<br><input type="checkbox"/> Others                     |
| Device category            | <input type="checkbox"/> Portable (<20cm separation)<br><input type="checkbox"/> Mobile (>20cm separation)<br><input checked="" type="checkbox"/> fixed (>20cm separation)<br><input type="checkbox"/> Others                  |
| Exposure classification    | <input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> )<br><input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )                                  |
| Antenna diversity          | <input checked="" type="checkbox"/> Single antenna<br><input type="checkbox"/> Multiple antennas<br><input type="checkbox"/> Tx diversity<br><input type="checkbox"/> Rx diversity<br><input type="checkbox"/> Tx/Rx diversity |
| Max. output power          | EDR:-6.79dBm( $\pi/4$ -DQPSK)                                                                                                                                                                                                  |
| Antenna gain (Max)         | -0.58dBi                                                                                                                                                                                                                       |
| Evaluation applied         | <input checked="" type="checkbox"/> MPE Evaluation<br><input type="checkbox"/> SAR Evaluation                                                                                                                                  |

### 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 |
|-------------------------------------------------------|------------------------------|------------------------------|------------------------------------|--------------|
| (A) Limits for Occupational/Control Exposures         |                              |                              |                                    |              |
| 300-1500                                              | --                           | --                           | F/300                              | 6            |
| 1500-100000                                           | --                           | --                           | 5                                  | 6            |
| (B) Limits for General Population/Uncontrol Exposures |                              |                              |                                    |              |
| 300-1500                                              | --                           | --                           | F/1500                             | 6            |
| 1500-100000                                           | --                           | --                           | 1                                  | 30           |

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Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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

$P_d$  the limit of MPE 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## Measurement Result

### EDR:

| Support type | Operating Mode | Channel Frequency (MHz) | Max. Measured Power (dBm) | Tune up tolerance (dBm) | Max. Tune up Power (dBm) | Antenna Gain (dBi) | Power density at 20cm (mW/cm <sup>2</sup> ) | Power density Limits (mW/cm <sup>2</sup> ) |
|--------------|----------------|-------------------------|---------------------------|-------------------------|--------------------------|--------------------|---------------------------------------------|--------------------------------------------|
| EDR          | GFSK           | 2402                    | -6.92                     | $-6.92 \pm 1$           | -5.92                    | -0.58              | 0.00004                                     | 1                                          |
| EDR          | GFSK           | 2441                    | -7.06                     | $-7.06 \pm 1$           | -6.06                    | -0.58              | 0.00004                                     | 1                                          |
| EDR          | GFSK           | 2480                    | -7.51                     | $-7.51 \pm 1$           | -6.51                    | -0.58              | 0.00004                                     | 1                                          |
| EDR          | $\pi/4$ -DQPSK | 2402                    | -6.79                     | $-6.79 \pm 1$           | -5.79                    | -0.58              | 0.00004                                     | 1                                          |
| EDR          | $\pi/4$ -DQPSK | 2441                    | -6.85                     | $-6.85 \pm 1$           | -5.85                    | -0.58              | 0.00004                                     | 1                                          |
| EDR          | $\pi/4$ -DQPSK | 2480                    | -7.31                     | $-7.31 \pm 1$           | -6.31                    | -0.58              | 0.00004                                     | 1                                          |

### Note

The transmitter signals are correlated:

For a more detailed features description, please refer to the RF Test Report.

\*\*\*\*\*THE END\*\*\*\*\*