

## FCC RF Exposure

EUT Description: ACTIVE SPEAKER

Model No.: V3412

FCC ID: 2AIQW-V3400

Equipment type: fixed equipment

### 1. Limits

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)

#### 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> ) | Averaging time (minutes) |
|---------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures        |                               |                               |                                     |                          |
| 0.3–3.0                                                 | 614                           | 1.63                          | *(100)                              | 6                        |
| 3.0–30                                                  | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | 6                        |
| 30–300                                                  | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300–1500                                                |                               |                               | f/300                               | 6                        |
| 1500–100,000                                            |                               |                               | 5                                   | 6                        |
| (B) 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

Formula:  $Pd = (P_{out} * G) / (4 * \pi * r^2)$

Where :

Pd = power density in mW/cm<sup>2</sup>,

Pout = output power to antenna in mW;

G = gain of antenna in linear scale,

$\pi = 3.14$ ;

R = distance between observation point and center of the radiator in cm

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

### 2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Test Result of RF Exposure Evaluation

BT

| Modulation | Channel Freq. (MHz) | Conduct ed power (dBm) | Max tune-up power (mW) | Antenna Gain (dBi) | Antenna gain numeric | Evaluation result (mW/cm2 ) | Power density Limits (mW/cm2) |
|------------|---------------------|------------------------|------------------------|--------------------|----------------------|-----------------------------|-------------------------------|
| GFSK       | 2402                | 3.75                   | 2.37                   | 0.98               | 1.25                 | 0.000589                    | 1                             |
|            | 2441                | 3.57                   | 2.27                   | 0.98               | 1.25                 | 0.000565                    | 1                             |
|            | 2480                | 3.60                   | 2.29                   | 0.98               | 1.25                 | 0.000569                    | 1                             |

BLE

| Modulation | Channel Freq. (MHz) | Conduct ed power (dBm) | Max tune-up power (mW) | Antenna Gain (dBi) | Antenna gain numeric | Evaluation result (mW/cm2 ) | Power density Limits (mW/cm2) |
|------------|---------------------|------------------------|------------------------|--------------------|----------------------|-----------------------------|-------------------------------|
| GFSK       | 2402                | 3.70                   | 2.34                   | 0.98               | 1.25                 | 0.000582                    | 1                             |
|            | 2440                | 3.65                   | 2.32                   | 0.98               | 1.25                 | 0.000577                    | 1                             |
|            | 2480                | 3.68                   | 2.33                   | 0.98               | 1.25                 | 0.000579                    | 1                             |

Conclusion:the max result: 0.000589 1.0 compliance with FCC's RF Exposure.