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## FCC 47 CFR MPE REPORT

Omega Electronic Limited

Nostalgic PLL Radio and Bluetooth Speaker

Model Number: CA510ABT

FCC ID: 2AA67OMEGA1301

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Report Number: ESTE-R1310028

Date of Test : September 27~ October 18, 2013

Date of Report : October 21, 2013

## Maximum Permissible Exposure

### 1、Applicable Standard

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 level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

### (a)、Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Times   E   2 ,   H   2 or S (minutes) |
|-----------------------|----------------------------------|-----------------------------------|---|--|
| 0.3-3.0               | 614                              | 1.63                              | (100)*                                  | 6  |
| 3.0-30                | 1842/f                           | 4.89/f                            | (900/f)*                                | 6  |
| 30-300                | 61.4                             | 0.163                             | 1.0                                     | 6  |
| 300-1500              |                                  |                                   | F/300                                   | 6  |
| 1500-10000            |                                  |                                   | 5                                       | 6  |

### (b)、Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Times   E   2 ,   H   2 or S (minutes) |
|-----------------------|----------------------------------|-----------------------------------|---|--|
| 0.3-1.34              | 614                              | 1.63                              | (100)*                                  | 30   |
| 1.34-30               | 824/f                            | 2.19/f                            | (180/f)*                                | 30   |
| 30-300                | 27.5                             | 0.073                             | 0.2                                     | 30   |
| 300-1500              |                                  |                                   | F/1500                                  | 30   |
| 1500-10000            |                                  |                                   | 1.0                                     | 30   |

Note: f=frequency in MHz; \*Plane-wave equivalent power density

### 2、MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G) / 0.5/d \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = E^2 / 377$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = (30 \cdot P \cdot G) / (377 \cdot d^2)$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained



### 3、Calculated Result and Limit

| Mode   | Frequency<br>(MHz) | Peak<br>output<br>power<br>(dBm) | Peak<br>output<br>power<br>(mW) | Antenna gain |          | Power<br>Density (S)<br>(mW/cm <sup>2</sup> ) | Limited of<br>Power<br>Density (S)<br>(mW/cm <sup>2</sup> ) | Test<br>Result |
|--------|--------------------|----------------------------------|---------------------------------|--------------|----------|---|---|----------------|
|        |                    |                                  |                                 | (dBi)        | (Linear) |   |   |                |
| GFSK   | 2402               | 0.770                            | 1.194                           | 2            | 1.585    | <b>0.00038</b>                                | 1   | Compiles       |
|        | 2441               | 0.279                            | 1.066                           | 2            | 1.585    | <b>0.00034</b>                                | 1   | Compiles       |
|        | 2480               | -0.696                           | 0.852                           | 2            | 1.585    | <b>0.00027</b>                                | 1   | Compiles       |
| 8-DPSK | 2402               | 0.401                            | 1.097                           | 2            | 1.585    | <b>0.00035</b>                                | 1   | Compiles       |
|        | 2441               | 0.134                            | 1.031                           | 2            | 1.585    | <b>0.00033</b>                                | 1   | Compiles       |
|        | 2480               | -0.811                           | 0.830                           | 2            | 1.585    | <b>0.00026</b>                                | 1   | Compiles       |