Test Report issued under the responsibility of:

ITC ENGINEERING SERVICES, INC.

RF Exposure Calculation Report – Rev. 1	
Testing Laboratory.....:	ITC Engineering Services, Inc.
Address.....:	9959 Calaveras Road, Box 543, Sunol, CA 94586
Applicant's Name.....:	Zerene Inc.
Address.....:	33 Jerome Court, Walnut Creek, CA 94596
Contact..... :	Mr. Arash Sabet
Phone.....:	314-707-2039
Test Item Description.....:	Bluetooth Smart Enabled
Trade Mark.....:	Zerene
Manufacturer.....:	Zerene Inc.
Model/Type Reference.....:	Zerene 100
RF Operating Frequency Bands .:	2.402 - 2.48 GHz
FCC ID.....:	2BHQJ-ZERENE100

Test Parameters:

- **Power at Antenna:** 0.001 Watts
- **Transmit Duty Cycle:** Continuous transmission for 30 minutes (100% duty cycle)
- **Antenna Peak Gain:** -2.0 dBi
- **Operating Frequency:** 2402 MHz
- **Distance from Antenna:** 20 cm

Power Density Calculation:

The power density S is calculated using the following formula:

$$S = \frac{P_t \cdot G_t}{4\pi r^2}$$

Where:

- Pt = Transmitted power at the antenna (W)
- Gt = Antenna gain (linear scale)
- r = Distance from the antenna (meters)

Step 1: Conversion of Antenna Gain to Linear Scale

The antenna gain in dBi is converted to linear scale using the formula:

$$G_{t\,(\text{linear})} = 10^{\frac{G_t(\text{dBi})}{10}}$$

$$G_t = 10^{\frac{-2.0}{10}} = 0.631$$

Step 2: Power Density Calculation at 20 cm Distance

Substituting the values into the power density formula:

$$S = \frac{0.001 \cdot 0.631}{4\pi \cdot (0.2)^2}$$

$$S = 0.001255\ \text{W/m}^2$$

Step 3: Convert Power Density to mW/cm²

1 W/m² is equal to 0.1 mW/cm². Therefore:

$$S = 0.001255 \text{ W/m}^2 \times 0.1 = 0.0001255 \text{ mW/cm}^2$$

Conclusion:

The calculated power density at 20 cm from the antenna is 0.0001255 mW/cm².

According to FCC guidelines, the Maximum Permissible Exposure (MPE) limit for general public exposure at 2402 MHz (Low channel) is 1 mW/cm². The calculated power density of 0.0001255 mW/cm² is well below the MPE limit, indicating compliance with FCC RF exposure requirements.

The RF exposure calculations for 2444 MHz (Mid Channel) and 2478 (High Channel) MHz yield a power density of 0.0001255 mW/cm² at 20 cm from the antenna, well below the FCC's MPE limit of 1 mW/cm², confirming compliance with RF safety standards.