## RF EXPOSURE CALCULATION

**Evaluation:**

The SAR test reduction is calculated at below,

**Formula description**

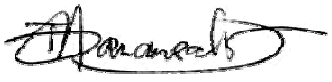
| | | |
|---|---|---|
| 1-g SAR with frequency range in 100M-6GHz | Sep≤ 50mm | ☒ [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 |
| | Sep > 50mm | ☐ a) [Power allowed at numeric threshold for 50 mmin step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz<br>☐ b) [Power allowed at numeric threshold for 50 mmin step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz |

**Calculation**

For Antenna with separation of 3 cm

| CH (MHz) | Zigbee (dBm) | Max Rated Power/CH | Sep distance (mm) | Power Threshold(mW) | Limit for SAR test reduction (mW) | SAR Test Exclusion |
|---|---|---|---|---|---|---|
| 2405 | 2.61 | 1.85 mW / 2440MHz | 5 | 0.58 | ≤3 | ☐Yes ☒No |
| 2440 | 2.67 | | | | | |
| 2480 | 2.56 | | | | | |

**Conclusion:** SAR is not required.

Completed By: Teody Manansala 

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# MPE CALCULATION

| | |
|---|---|
| **RF Exposure Requirements:** | 47 CFR §1. 1307(b) |
| **RF Radiation Exposure Limits:** | 47 CFR §1. 1310 |
| **RF Radiation Exposure Guidelines:** | FCC OST/OET Bulletin Number 65 |
| **EUT Frequency Band:** | 2405-2480 MHz |
| **Limits for General Population/Uncontrolled Exposure in the band of:** | 1500 - 100,000 MHz |
| **Power Density Limit:** | 1 mW / $cm^2$ |

**Equation:** $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density

P = Power Input to Antenna

G = Antenna Gain

R = distance to the center of radiated antenna

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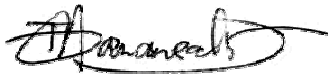
Prediction distance 20cm

Zigbee (2405-2480MHz): Power = 2.670 dBm, antenna gain = 3.3 dBi, Power density= $0.00078\ mW/cm^2$

Maximum MPE $0.00078\ mW/cm^2$, which is less than 1.

The Above Result had shown that the device complied with MPE requirement.

Completed By: Teody Manansala 

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