

MPE Calculation

FCC ID: A6GD4M35MD02

RF Exposure Requirements:	47CFR§1.1307(b)
RF Radiation Exposure Limits:	47CFR§1.1310
RF Radiation Exposure Guidelines:	47CFR§2.1091
EUT Frequency Band:	824.2 – 848.8MHz
	1850.2 – 1909.8MHz
	2402 – 2480MHz

Limits for General Population/Uncontrolled Exposure in the band	300 – 1500MHz	1500 – 100000MHz
Power Density Limit	F/500 mW/cm ² *;	1.0mW/cm ² ;

Note: f=frequency in MHz; *f is as indicated in the frequency range column

Equation: $S = PG/4\pi R^2$
Where, S=Power Density
P=Power Input to Antenna
G=Antenna Gain
R=distance to the center of radiated antenna

EUT GPRS (850) mode Frequency Band: 824.2 – 848.8MHz; Low Channel (848.8MHz):

Power=32.93dBm, Antenna Gain=1dBi, Prediction distance 20cm

$$S = (1963.360 \times 1) / (4 \times 3.14 \times 20^2) = 0.3908 \text{ mW/cm}^2$$

$$\text{Percentage} = S/\text{Limit} = 0.3908 \text{ mW/cm}^2 / 1.6976 \text{ mW/cm}^2 = 23.021\%$$

EUT GPRS (1900) mode Frequency Band: 1850.2 – 1909.8MHz; Low Channel (1880.0MHz):

Power=29.50dBm, Antenna Gain=1dBi, Prediction distance 20cm

$$S = (1116.863 \times 1) / (4 \times 3.14 \times 20^2) = 0.1774 \text{ mW/cm}^2$$

$$\text{Percentage} = S/\text{Limit} = 0.1774 \text{ mW/cm}^2 / 1.0 \text{ mW/cm}^2 = 17.74\%$$

EUT BT mode Frequency Band: 2402 – 2480MHz; High Channel (2480MHz):

Power=4.37dBm, Antenna Gain=0dBi, Prediction distance 20cm

$$S = (2.735 \times 1) / (4 \times 3.14 \times 20^2) = 0.00054 \text{ mW/cm}^2$$

$$\text{Percentage} = S/\text{Limit} = 0.00054 \text{ mW/cm}^2 / 1.0 \text{ mW/cm}^2 = 0.054\%$$

According test data, Bluetooth will transmit at the same time with GPRS850 radio.

$$\text{Percentage} = \text{Percentage (BT)} + \text{Percentage (GPRS850)} = 23.021\% + 0.054\% = 23.075\%$$

Result

The above result had shown that device complied with Bluetooth will transmit at the same time with GPRS850 radio, The BT and GPRS850 together Percentage below 100%.So Power density requirement for distance of 20 cm.

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