

SAR evaluation

MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = E^2 / 377$$

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.

Calculated Result and Limit(WORSE CASE IS AS BELOW)

| | Directional Antenna Gain (Numeric) | Peak Output Power (mW) | Power Density (S) (mW/cm ²) | Limit of Power Density (S) (mW/cm ²) |
|--------------|--|---------------------------|--|--|
| 2.4G WIFI | 5.13 (7.10dBi) | 6.067 (7.83dBm) | 0.0062 | 1 |
| 5G UNII | 3.95(5.97dBi) | 7.656 (8.84dBm) | 0.006 | 1 |
| ZIGBEE | 2.1(3.22dBi) | 5.15 (7.12dBm) | 0.0022 | 1 |
| BT | 2.1 (3.22dBi) | 4.477 (6.51dBm) | 0.0019 | 1 |
| BLE | 2.1 (3.22dBi) | 0.54 (-2.681dBm) | 0.00023 | 1 |

$$0.0062+0.006+0.0022+0.0019+0.00023=0.01653<1$$