

RF Exposure evaluation

According to 447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where $f(\text{GHz})$ is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation
The result is rounded to one decimal place for comparison

$$\text{eirp} = \text{pt} \times \text{gt} = (\text{EXd})^2 / 30$$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10^{((\text{dBuV/m})/20)} / 10^6$

d = measurement distance in meters (m)---3m

$$\text{So pt} = (\text{EXd})^2 / 30 \times \text{gt}$$

For Worst case Mode: 433.92MHz

Field strength = 77.97 dBuV/m @3m

Ant gain 0 dBi; so Ant numeric gain=1

$$\text{So pt} = \{ [10^{(77.97/20)} / 10^6 \times 3]^2 / 30 \times 1 \} \times 1000 \text{ mW} = 0.0188$$

$$\text{mW So } (0.0188 \text{ mW} / 5 \text{ mm}) \times \sqrt{0.43392 \text{ GHz}} = 0.0025 < 3$$

Then SAR evaluation is not required