

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

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

For Worst case Mode: 433.89MHz

Field strength = 79.24 dBuV/m @3m

Ant gain 2 dBi; so Ant numeric gain=1.58

So $\text{pt} = \{[10^{(79.24/20)}/10^6 \times 3]^2/30 \times 1.58\} \times 1000 \text{ mW} = 0.03979 \text{ mW}$

So $(0.03979 \text{ mW}/5 \text{ mm}) \times \sqrt{0.43389 \text{ GHz}} = 0.00524 < 3$

Then SAR evaluation is not required