

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:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ 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

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

Field strength = 93.63dBuV/m @3m@2441MHz

Ant gain = -7.30dBi; so Ant numeric gain= 0.186

$$\text{So pt} = \{ [10^{(93.63/20)} / 10^6 \times 3]^2 / (30 \times 0.186) \} \times 1000 \text{ mW} = 3.72 \text{ mW}$$

$$\text{So } (3.72 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.441 \text{ GHz}} = 1.16 < 3$$

Then SAR evaluation is not required