

RF Exposure evaluation

According to 447498 D01 General RF Exposure Guidance v05

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

$$\text{Sopt} = (\text{Exd})^2/30 \times \text{gt}$$

Ant gain= 3 dBi ; so Ant numeric gain = 2

Field strength = 80.31 dBuV/m @3m

$$\text{So Pt} = \{ [10^{(80.31/20)}/10^6 \times 3]^2/30 \times 2 \} \times 1000 \text{ mW} = 0.02 \text{ mW}$$

$$\text{So } (0.02 \text{ mW}/5\text{mm}) \times \sqrt{0.43392 \text{ GHz}} = 0.003 < 3$$

Then SAR evaluation is not required