

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= 0 dBi ; so Ant numeric gain= 1

Field strength =69.87dBuV/m @3m

$$\text{So Pt} = \{ [10^{(69.87/20)} / 10^{6 \times 3}]^2 / 30 \} \times 1000 \text{ mW} = 0.003 \text{ mW}$$

$$\text{So } (0.003 \text{ mW} / 5\text{mm}) \times \sqrt{0.3122 \text{ GHz}} = 0.00034 < 3$$

Then SAR evaluation is not required