

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

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

$$\text{Field strength} = 102.26 \text{ dBuV/m @3m}$$

$$\text{Ant gain} = 0.5 \text{ dBi ; so Ant numeric gain} = 1.122$$

$$\text{So pt} = \{ [10^{(102.26/20)} / 10^6 \times 3]^2 / 30 \times 1.122 \} \times 1000 \text{ mW} = 4.5 \text{ mW}$$

$$\text{So } (4.5 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.441 \text{ GHz}} = 1.4 < 3$$

Then SAR evaluation is not required