

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 \leq 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where } f(\text{GHz}) \text{ is the RF channel transmit frequency in GHz}$
Power and distance are rounded to the nearest mW and mm before calculation
The result is rounded to one decimal place for comparison

$$\text{eirp} = \text{pt} \times \text{gt} = (E \times d)^2 / 30$$

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

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

For Worst case Mode: 433.92MHz

Field strength =73.15 dBuV/m @3m

Ant gain 0 dBi; so Ant numeric gain=1

$$\text{So pt} = [10^{(73.15/20)}/10^6 \times 3]^2 / 30 \times 1 \times 1000 \text{ mW} = 0.0062 \text{ mW}$$

$$\text{So } (0.0062 \text{ mW}/5 \text{ mm}) \times \sqrt{0.43392 \text{ GHz}} = 0.000817 < 3$$

Then SAR evaluation is not required