

RF Exposure evaluation

According to KDB 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

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

Ant gain = 1.74dBi ; so Ant numeric gain = 1.49

Field strength = 98.95 dBuV/m @ 3m

$$\text{So Pt} = \{ [10^{(98.95/20)}/10^6 \times 3]^2/30 \times 1.49 \} \times 1000 \text{ mW} = 1.58 \text{ mW}$$

$$\text{So } (1.58 \text{ mW}/5\text{mm}) \times \sqrt{2.402 \text{ GHz}} = 0.5 < 3$$

Then SAR evaluation is not required