

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:

- $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 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

Worse case is as below: [902.75 MHz 7.1dBm (5.13mW) output power]

$(5.13\text{mW} / 5\text{mm}) \cdot [\sqrt{0.90275(\text{GHz})}] = 0.975 < 3.0$ for 1-g SAR

$eirp = pt \times gt = (Exd)/2/30$

where:

pt = transmitter output power in watts,
 gt = numeric gain of the transmitting antenna (unitless),
 E = electric field strength in V/m, --- $10((\text{dBuV/m})/20)/106$
 d = measurement distance in meters (m)---3m
So $pt = (Exd)/2/30 \times gt$

Ant gain 0dBi ;so Ant numeric gain=1

Field strength = 95.92 dBuV/m @3m

So $Pt = \{ [10^{(95.92/20)/106} \times 3]^2 / 30 \times 1 \} \times 1000 \text{ mW} = 1.17 \text{ mW}$

So $(1.17 \text{ mW}/5\text{mm}) \times \sqrt{2.441 \text{ GHz}} = 0.37 < 3$

$0.975 + 0.37 = 1.345 < 3$

Then SAR evaluation is not required