

## 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:

$$\left[ \frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot [\sqrt{f \text{ (GHz)}}]$$
  
 $\leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,  
where

- $f$  (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: [2402 MHz -8.1dBm (0.155mW)  
output power]

$(0.155\text{mW} / 5\text{mm}) \cdot [\sqrt{2.402 \text{ (GHz)}}] = 0.05 < 3.0$  for 1-g SAR

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 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:  
 $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

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

Field strength = 64.33dBuV/m @3m  
 Ant gain 0dBi; so Ant numeric gain=1

$$\text{So pt} = \{ [10^{(64.33/20)} / 10^6 \times 3]^2 / 30 \times 1 \} \times 1000 \text{mW} = 0.0008 \text{mW}$$

$$\text{So } (0.0008 \text{mW} / 5 \text{mm}) \times \sqrt{0.1079 \text{GHz}} = 0.00005 < 3$$

$$0.05 + 0.00005 = 0.05005 < 3$$

Then SAR evaluation is not required