

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

$$\text{eirp} = \text{pt} \times \text{gt} = [(EXd)^2/30]$$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10^{[(\text{dBuV/m})/20]}/(10^6)$

d = measurement distance in meters (m)---3m

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

RF Exposure evaluation for KP1TA

Field strength = 90.4 dBuV/m @3m&902.25MHz,

Antenna min distance to the shell: 3 mm

Ant gain =1.5dBi ;so Ant numeric gain= 1.08

$$E = 10^{[(90.4)/20]}/(10^6) = 0.03311$$

$$\text{So pt} = \{ [(0.03311 \times 3)^2/30] \times 1.08 \} \times 1000 \text{ mW} = 0.355 \text{ mW}$$

$$\text{So } (0.355 \text{ mW}/3\text{mm}) \times \sqrt{0.90225 \text{ GHz}} = 0.1124 < 3$$

Then SAR evaluation is not required