

RF Exposure evaluation

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

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 calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

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

where:

pt = transmitter output power in watts,

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

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

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

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

The worst case (refer to report FCC16104052) is below:

For 2.4G wireless:

| Mode | Pmax | Pmax | Distance | f(GHz) | Calculati on Result | Standalone SAR test exclusion Threshold | SAR test exclusion |
|------|-------|------|----------|--------|---------------------------|---|-----------------------|
| | (dBm) | (mW) | (mm) | | | | |
| BT | 4.35 | 2.72 | 5.00 | 2.450 | 0.85 | 3.00 | Yes |

0.85 < 3.0 for 1-g SAR

So the SAR report is not required.