

FCCID: 2AD5FMPWL1510-BK

RF Exposure evaluation

According to 447498 D01 General RF Exposure Guidance v06

4.3. General SAR test exclusion guidance

4.3.1. Standalone SAR test exclusion considerations

- a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following: $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,³⁰ where
- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation³¹
 - The result is rounded to one decimal place for comparison
 - The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below
- 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 according to 4.1 f) is applied to determine SAR test exclusion.

³⁰ This is equivalent to the formula written as: $[(\text{max. power of channel, including tune-up tolerance, mW}) / (60 / \sqrt{f(\text{GHz})} \text{ mW})] \cdot [20 \text{ mm} / (\text{min. test separation distance, mm})] \leq 1.0$ for 1-g SAR; also see Appendix A for approximate exclusion threshold numerical values at selected frequencies and distances.

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

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

RF Exposure evaluation

Copied from the FCC test report:

Carrier Frequency (MHz)	Factual Level dBm (mW)
174.200	3.8dBm(i.e.2.40 mW)
185.156	3.6dBm(i.e.2.29 mW)
215.800	3.6dBm(i.e.2.29 mW)

tune-up tolerance = ± 1 dB,

min. test separation distance = 5 mm, since the min distance from the antenna to the outer = 5.0 mm

Field strength = 3.8 dBm=2.40 mW in 174.200MHz

Field strength = 3.6 dBm=2.29 mW in 185.156MHz

Field strength = 3.6 dBm=2.29 mW in 215.800MHz

Max. power of channel after included tune-up tolerance

Field strength = 4.8 dBm=3.02 mW in 174.200MHz

Field strength = 4.6 dBm=2.88 mW in 185.156MHz

Field strength = 4.6 dBm=2.88 mW in 215.800MHz

So (3.02 mW)/5.0mm)x $\sqrt{0.174200 \text{ GHz}}$ = 0.252 <3

So (2.88 mW)/5.0mm)x $\sqrt{0.185156 \text{ GHz}}$ = 0.248 <3

So (2.88 mW)/5.0mm)x $\sqrt{0.215800 \text{ GHz}}$ = 0.268 <3

Then SAR evaluation is not required