

FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to §15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06

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
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 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 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The maximum tune-up Peak power including tolerance is 18 dBm(63.10mW).

The device employs 15 hopping channels, each channel hopping 25 times in 6s period. Please refer to the below plots.

The duty cycle calculated as below:

$$\text{Duty Cycle} = T_{\text{on}}/T_{\text{on+Off}} = (0.00467 \times 25 \times 15)/6 = 2.9\%$$

$$\text{Conducted Average Power} = 63.10 \times 2.9\% = 1.83\text{mW}$$

$$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}] \\ = 1.83/5 \cdot (\sqrt{2.474}) = 0.6 < 7.5$$

So the extremity SAR evaluation is not required.

