

RF Exposure

1. Standard Requirement:

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

2. Limits

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:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR,}^{16} \text{ where}$$

- $f_{(\text{GHz})}$ 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.

3. EUT RF Exposure

The max. power of channel, including tune-up tolerance is 7.35dBm in lowest channel(2.412GHz); 7.35dBm logarithmic terms convert to numeric result is nearly 5.43mW.

According to the formula. Calculate the EIRP test result:

$$[(\text{max.power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}]$$

$$\text{General RF Exposure} = (5.43\text{mW} / 5\text{mm}) \times \sqrt{2.412\text{GHz}} = 1.69 \quad ①$$

SAR requirement:

$$S=3.0 \quad ②;$$

$$① < ②.$$

So the SAR report is not required.