

Appendix A: FCC Part 1.1307, 1.1310, 2.1091, 2.1093; ISED RSS-Gen: RF Exposure

According to KDB 447498 D01 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 Test Exclusion Threshold condition, listed below, is satisfied.

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:

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

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before the calculation
- 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.

FCC EUT RF Exposure

SAR test exclusion is determined based on KDB 447894 D01 General Exposure Guideline v06 Section 4.3.1(a) based on the max ERP peak output power of 0.23 mW at 2480 MHz EIRP.

The maximum antenna gain is 2.5 dBi / 1.78 numeric (from antenna specification).

$-3.8 \text{ dBm EIRP} - 2.5 \text{ dBi} = -6.3 \text{ dBm (0.23 mW) ERP}$

$-6.3 \text{ dBm ERP} + 1 \text{ dB tune-up tolerance} = -5.3 \text{ dBm} = 0.3 \text{ mW (rounding to the nearest mW} = 0 \text{ mW)}$

$$\text{General RF Exposure} = (0 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.480 \text{ GHz}} = X$$
$$0.0 \times 1.575 \text{ GHz} = 0.0 < 3.0$$

Therefore, SAR test is not required since the result is below the ≤ 3.0 1-g SAR limit.

ISED RSS-102 Issue 5 Technical Brief

RSS 102 Section 2.5.1 Limit: 3.94 mW @ 2480 MHz for 5 mm distance

$\text{EIRP} = -6.3 \text{ dBm} + 1 \text{ dB tune-up tolerance} = -5.3 \text{ dBm} = 0.3 \text{ mW} < 3.94 \text{ mW}$

Per section 2.5.1 Table 1, this device is exempt from SAR as the output power is less than the Exemption Limits at a separation distance of less than or equal to 5 mm.