

1 SAR Evaluation

1.1 RF Exposure Compliance Requirement

1.1.1 Standard Requirement

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.

1.1.2 Limits

1. 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:

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

So,

$$\text{Numeric Threshold} = (\text{max. power of channel}) / (\text{Min Test separation Distance}) \times [\sqrt{f(\text{GHz})}]$$

$$\text{max. power of channel} = (\text{Numeric Threshold}) \times (\text{Min Test separation Distance}) / [\sqrt{f(\text{GHz})}]$$

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

2. 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:

$\{[\text{Power allowed at numeric threshold for 50 mm in step 1}]\} + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

1.1.3 EUT RF Exposure

For WIRELESS TRANSMITTER

The Max Conducted peak Output Power is 2.495 dBm in Lowest channel (2405.35 MHz);

The best case gain of the antenna is 3.9dBi

$\text{EIRP} = 2.495\text{dBm} + 3.9\text{dBi} = 6.395\text{dBm}$

1.80dBm logarithmic terms convert to numeric result is nearly 4.36 mW

$\text{EIRP} = 4.36 \text{ mW}$

According to the formula, calculate the EIRP test result:

$\{[\text{Power allowed at numeric threshold for 50 mm}]\} + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$

$\text{SAR Exclusion Threshold} = (3.0 \times 50) / \sqrt{2.40535 + [(200 - 50) \times 10]} = 1596.7 \text{ mW}$

So the SAR report is not required.