

## RF Exposure Evaluation

### 1. Standalone SAR test exclusion

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.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

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

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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

$$\text{EIRP} = \text{PT} * \text{GT} = (\text{E} \times \text{D})^2 / 30$$

where:

PT = transmitter output power in watts,

GT = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m,  $10^{(dB\ \mu\text{V}/\text{m})/20} / 10^6$ ,

D = measurement distance in meters (m) --- 3m

$$\text{So PT} = (\text{E} \times \text{D})^2 / 30 / \text{GT}$$

Test Frequency (MHz)	Level (dBuV/m)	Level (mW)	Test Distance (mm)	Test data	Limit	SAR Exclusion
2440	71.35	0.0024	5	0.00075	<3	Pass

Where:

Ant gain: 2.39dBi; so Ant numeric gain = 1.73

$$\text{EIRP} = \text{PT} * \text{GT} = (\text{E} \times \text{D})^2 / 30 = (10^{(71.35\ \text{dB}\ \mu\text{V}/\text{m})/20} / 10^6 * 3)^2 / 30 = 0.0000041$$

$$\text{So PT} = \text{EIRP} / \text{GT} = (\text{E} \times \text{D})^2 / 30 / \text{GT} = 0.0000024\text{W} = 0.0024\text{mW}$$

$$\text{So } (0.0024\text{mW} / 5\text{mm}) * \sqrt{2.44\text{GHz}} = 0.00075$$

exclusion = 0.00075 < 3.0 for 1-g SAR

So the SAR report is not required.