

## 18 RF Exposure

### Section 4.3 General SAR test reduction and exclusion guidance

For Standalone SAR exclusion consideration, when SAR Exclusion Threshold requirement in KDB 447498 is satisfied, standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.

In the frequency range below 100 MHz to 6 GHz and test separation distance of 50 mm, the SAR Test Exclusion Threshold will be determined as follows

$$\text{SAR Exclusion Threshold (SARET)} = \text{Step 1} + \text{Step 2}$$

Step 1

$$\begin{aligned} \text{NT} &= [(\text{MP}/\text{TSD}^A) * \sqrt{f_{\text{GHz}}}] \\ \text{NT} &= \text{Numeric Threshold (3.0 for 1-g SAR and 7.5 for 10-g SAR)} \\ \text{MP} &= \text{Max Power of channel (mW) (inc tune up)} \\ \text{TSD}^A &= \text{Min Test separation Distance or 50mm (whichever is lower)} = 50 \end{aligned}$$

We can transpose this formula to allow us to find the maximum power of a channel allowed and compare this to the measured maximum power.

$$= [(\text{NT} \times \text{TSD}^A) / \sqrt{f_{\text{GHz}}}]$$

For Distances Greater than 50 mm Step 2 applies

Step 2

$$(\text{TSD}^B - 50\text{mm}) * 10\}$$

Where:

$$\text{TSD}^B = \text{Min Test separation Distance (mm)} = 50$$

Operating Frequency 2.411 GHz

$$\begin{aligned} \text{SARET} &= [(3.0 \times 50) / \sqrt{2.411}] + \{ (50 - 50) * 10 \} \\ \text{SARET} &= [150 / 1.55] + (0 * 10) \\ \text{SARET} &= 96.77 \text{ mW} \end{aligned}$$

Operating Frequency 2.435 GHz

$$\begin{aligned} \text{SARET} &= [(3.0 \times 50) / \sqrt{2.435}] + \{ (50 - 50) * 10 \} \\ \text{SARET} &= [150 / 1.56] + (0 * 10) \\ \text{SARET} &= 96.15 \text{ mW} \end{aligned}$$

Operating Frequency 2.461 GHz

$$\begin{aligned} \text{SARET} &= [(3.0 \times 50) / \sqrt{2.461}] + \{ (50 - 50) * 10 \} \\ \text{SARET} &= [150 / 1.57] + (0 * 10) \\ \text{SARET} &= 95.54 \text{ mW} \end{aligned}$$

| <b>Channel Frequency (MHz)</b> | <b>Max. Peak Conducted Power (mW)</b> | <b>SAR Exclusion Threshold (mW)</b> | <b>SAR Exclusion Threshold (W)</b> |
|--------------------------------|---------------------------------------|-------------------------------------|------------------------------------|
| 2411                           | 22.4                                  | 96.77                               | Not Required                       |
| 2435                           | 18.6                                  | 96.15                               | Not Required                       |
| 2461                           | 15.5                                  | 95.54                               | Not Required                       |

Therefore standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.