

Appendix G: General SAR test reduction and exclusion guidance

KDB 447498

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 between 100 MHz and 6 GHz and test separation distance of 50mm, the SAR Test Exclusion Threshold for operation in the 2400 – 2483.5 MHz band will be determined as follows

SAR Exclusion Threshold

$$NT = \{ [(MP/TSD) * \sqrt{f_{GHz}}] + (TSD - 50mm) * 10 \}$$

Where:

NT	=	Numeric Threshold (3.0 for 1-g SAR and 7.5 for 10-g SAR)
MP	=	Max Power of channel (mW) (inc tune up)
TSD	=	Min Test separation Distance (mm) = 50
f_{GHz}	=	Transmit frequency (or 100MHz if lower)

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.

$$MP = \{ [(NT * TSD) / \sqrt{f_{GHz}}] + (TSD - 50) * 10 \}$$

Operating Frequency 2.402 GHz

$$\begin{aligned} MP &= \{ [(3.0 * 50) / \sqrt{2.402}] + (50 - 50) * 10 \} \\ MP &= \{ [150 / 1.55] + (0 * 10) \} \\ MP &= 96.77mW \end{aligned}$$

Operating Frequency 2.440 GHz

$$\begin{aligned} MP &= \{ [(3.0 * 50) / \sqrt{2.44}] + (50 - 50) * 10 \} \\ MP &= \{ [150 / 1.56] + (0 * 10) \} \\ MP &= 96.15mW \end{aligned}$$

Operating Frequency 2.480 GHz

$$\begin{aligned} MP &= \{ [(3.0 * 50) / \sqrt{0.92760}] + (50 - 50) * 10 \} \\ MP &= \{ [150 / 1.57] + (0 * 10) \} \\ MP &= 95.54mW \end{aligned}$$

Channel Frequency (MHz)	EIRP (mW)	SAR Exclusion Threshold (mW)	SAR Evaluation
2402	0.14	96.77	Not Required
2440	0.17	96.15	Not Required
2480	0.30	95.54	Not Required

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