

RF Exposure and SAR exclusion

For

Cambridge Consultants Limited

On

RCOM BCM (MOBILE PART)

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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 below 100 MHz to 6 GHz and test separation distance of 200mm, the SAR Test Exclusion Threshold for operation in the 5470MHz to 5725 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) = 200
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 5.4825 GHz

$$\begin{aligned} MP &= \{ [(3.0 * 50) / \sqrt{5.4825}] + (200 - 50) * 10 \} \\ MP &= \{ [150 / 2.34] + (150 * 10) \} \\ MP &= 1564.1mW \end{aligned}$$

Operating Frequency 5.6025 GHz

$$\begin{aligned} MP &= \{ [(3.0 * 50) / \sqrt{5.6025}] + (200 - 50) * 10 \} \\ MP &= \{ [150 / 2.37] + (150 * 10) \} \\ MP &= 1563.3mW \end{aligned}$$

Operating Frequency 5.7125 GHz

$$\begin{aligned} MP &= \{ [(3.0 * 50) / \sqrt{5.7125}] + (200 - 50) * 10 \} \\ MP &= \{ [150 / 2.39] + (150 * 10) \} \\ MP &= 1562.8mW \end{aligned}$$



Channel Frequency (MHz)	EIRP (mW)	SAR Exclusion Threshold (mW)	SAR Evaluation
5482.5	100	1564.1	Not Required
5602.5	126	1563.3	Not Required
5712.5	129	1562.8	Not Required

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