

RF exposure evaluation

Subject: FCC Application for FCC ID: ZME-MLWG3

According to 447498 D01 General RF Exposure Guidance v06

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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, 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

$$\text{eirp} = \text{pt} \times \text{gt} = (\text{EXd})^2 / 30$$

where:

pt = transmitter output power in watts,

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

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

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

$$\text{So pt} = (\text{EXd})^2 / 30 \times \text{gt}$$

DTS (2.4G Band) :

Field strength = 94.13 dBuV/m @3m (2412 MHz) (Test Report page 275)

Ant gain = 3.07 dBi ;so Ant numeric gain = $10^{(3.07 / 10)} = 2.02$

$$\text{So pt} = \{ \{ [10^{(94.13 / 20)} / 10^6] \times 3 \}^2 / 30 \times 2.02 \} \times 1000 \text{ mW} = 1.574 \text{ mW}$$

$$\text{So } (1.574 \text{ mW} / 5\text{mm}) \times \sqrt{2.412} = 0.489 < 3$$

NII (5.1G & 5.8G Band) :

Field strength = 85.47 dBuV/m @3m (5200 MHz) (Test Report page 289)

Ant gain = 2.84 dBi ;so Ant numeric gain = $10^{(2.84 / 10)} = 1.92$

$$\text{So pt} = \{ \{ [10^{(85.47 / 20)} / 10^6] \times 3 \}^2 / 30 \times 1.92 \} \times 1000 \text{ mW} = 0.20 \text{ mW}$$

$$\text{So } (0.20 \text{ mW} / 5\text{mm}) \times \sqrt{5.2} = 0.093 < 3$$

Then SAR testing/evaluation is not required