



W420

W420 SAR Emission according FCC 47CFR chapter 1.1310

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## 1 Intro

This report demonstrate that the Wamblee W420 AIS MSLD is compliance with US requirements for protection of the general public (uncontrolled) from exposure to electromagnetic fields

## 2 Basis

In the US regulation 47CFR chapter 1.1310 (Radio frequency radiation exposure limit) , specifies that in the bands 30 – 300MHz the exposure limit is 0.2mW/cm<sup>2</sup>.

## 3 Computation

Form the test report (Our Doc: IRPT-0010 ), the RF output power is +31 dBm (1.2 W) at frequency AIS1 = 161.975 Mhz and AIS2 = 162.025 Mhz.

Equivalent power emission adjusted on the basis of the duty cycle (8 packet length 26.7 ms every 60 seconds):

$$P_{emission} = 1.2 \text{ W}$$

$$P_{equivalent} = \frac{(P_{emission} * (0.0267 * 8))}{60} = 0.00428 \text{ W} = 4.28 \text{ mW}$$

Distance at which the power density meets the 0.2mW/cm<sup>2</sup> limit is given by:

$$r = \sqrt{\left(\frac{P_{out}}{4 * \pi * P_{density}}\right)} = \sqrt{\left(\frac{4.28}{4 * \pi * 0.2}\right)} = 1.305 \text{ cms} = 0.513 \text{ inches} @ 0.2 \text{ mW/cm}^2$$

According to the procedure in KDB447498 (v05r02) section 4.3, SAR testing is excluded if the following criteria is met.

$$\left(\frac{P}{d}\right) * \sqrt(f) \leq 3.0 \text{ for 1-g SAR}$$

Where :

- P is the time averaged maximum conducted power in mW ( $P_{equivalent}$ )
- minimum separation distance in mm

- f is the frequency in Ghz.

Power and distance are rounded values:

- For : d= 20mm , f = 0.162 GHz and  $P_{equivalent} = 4.28 \text{ mW}$

$$\left(\frac{4.28}{20}\right) * \sqrt{(0.162)} = 0.0861$$

Which is less the value of 3 specified for exemption to 1-g SAR evaluation.