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## **Part 1 - Human exposure to electromagnetic fields**


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### 1.3 Intro

This report demonstrate that the Wamblee W400 MSLD is compliance with US requirements for protection of the general public (uncontrolled) from exposure to electromagnetic fields.

### 1.4 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>.

### 1.5 Computation

Form the test report (Our Doc: RPT-FCC\_W400 , chapter 1.15), the RF output power is +17.9 dBm (62 mW) with a duty cicle = 1 (continuos AM modulation). Purely precautionary purposes, the power considered is brought to +20 dBm ( 100 mW).

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

$$r = \sqrt{\left(\frac{P_{out}}{4 * \pi * P_{density}}\right)} = \sqrt{\left(\frac{100}{4 * \pi * 0.2}\right)} = 6.31 \text{ cms} = 2.48 \text{ inches} @ 0.2 \text{ mW/cm}^2$$


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

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

Where :

- P is the time averaged maximum conducted power in mW
- minimum separation distance in mm

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- f is the frequency in Ghz.

Power and distance are rounded values:

- For : d= 20mm , f = 0.1215 GHz and P = 100mW

$$\left(\frac{100}{20}\right) * \sqrt{(0.1215)} = 1.74$$

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

Therefore the Wamblee W400 meets the requirements for exposure to radiated electromagnetic fields at a worst case distance of 11.7 cms from the transmitting antenna in both the USA and Europe.