

## Human Exposure to Electromagnetic Fields

This document demonstrates that the Echomax Active-X Radar Target Enhancer is in compliance with both US and EU requirements for protection of the general public from exposure to electromagnetic fields.

In the US regulation 47CFR chapter 1.1310<sup>1</sup> specifies that in the band 1500 – 100,000MHz the exposure limit is 1mW/cm<sup>2</sup>.

In the EU, Directive 1999/519/EC<sup>2</sup> Annex III; Table 2<sup>3</sup> gives a limit of 10W/m<sup>2</sup> in the frequency range 2-300GHz.

(Note: converting centimetres to metres gives 1mW/cm<sup>2</sup> = 10W/m<sup>2</sup>)

From the test results in Coverise test report OPP001;

Peak Output Power = 26.4dBm

Antenna gain = 5.8dBi

∴ EIRP = 32.2dBm

Hence P = 1659.6mW

S = 1mW/cm<sup>2</sup>

Distance at which the power density meets the 1mW/cm<sup>2</sup> limit is given by

$$r = \sqrt{P/(4 \times \pi \times S)}$$

$$r = 11.5\text{cms} (= 4.5\text{inches})$$

Therefore the Active-X meets the requirements for exposure to radiated electromagnetic fields at a worst case distance of 11.5cms from the transmitting antenna in both the USA and Europe.

Note: This calculation is based on the continuous peak output power. In practice the RTE will only be illuminated for a small percentage of the time, so the safe distance will be significantly reduced.

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<sup>1</sup> 1.1310 Radiofrequency radiation exposure limits

<sup>2</sup> Council Recommendation on the limitation of exposure of the general public to electromagnetic fields(0Hz to 300GHz)

<sup>3</sup> Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz,unperturbed rms values)