

# Technical Note

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Subject: **Ampy 5252 Meter RF Exposure Levels**

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## 1 Summary

This document outlines RF radiation exposure level calculations for the AMPY 5252 Meter. Levels are specified as a power density.

Limits are those defined in FCC § 1.1310 *Radio frequency radiation exposure limits*.

In summary, the RF radiation exposure levels at a distance of 20 cm are below the specified FCC limits.

## 2 FCC § 1.1310 Limits

### 2.1 Limits for General Population/Uncontrolled Exposure

This is appropriate for the meter since it is typically deployed on the side of residential property.

Limit:

$$PD_{\text{lim}} = \frac{f}{1500} \text{ mW/cm}^2, \text{ where } f \text{ is the frequency in MHz.}$$

At 902 MHz, the limit is 0.601 mW/cm<sup>2</sup>.

## 3 RF Radiated Exposure Calculations

### 3.1 Power Density Expression

The power density,  $PD$ , at a range  $R$  from the transmitter with an effective isotropic radiated power  $EIRP$ , is given by:

$$PD = \frac{EIRP}{4\pi R^2}.$$

To calculate the closest range at which the power density reaches the FCC limits, the following expression is used.

$$R = \sqrt{\frac{EIRP}{4\pi PD_{\text{lim}}}}.$$

### 3.2 5252 Meter

#### 3.2.1 Power Density at 20 cm

A worst case EIRP of 400 mW is assumed for the outstation. At 20 cm, the power density is 0.080 mW/cm<sup>2</sup>, which is below the FCC limit of 0.601 mW/cm<sup>2</sup>. This is based on a duty cycle of 100%.



However, during normal operation, the transmit duty cycle will typically be less than 1% when averaged over a 30 minute period which will mean that in practice the averaged power density will be much lower than the above calculated value.