## Calculation of power density

The following calculation is based on the ANSI IEEE C95.1-1991 method, as that provides a worst case analysis. Details of the assessment to EN50383:2002 can be provided, if required.

Peak power density in the far field of a radio frequency point source is calculated as follows:

$$S = \frac{P.G}{4\pi d^2}$$

| Where: | Is: |
|---|---|
| S | power density in $W/m^2$ |
| P | maximum average transmit power capability of the radio, in W |
| G | total Tx gain as a factor, converted from dB |
| d | distance from point source, in m |

Rearranging terms to solve for distance yields:

$$d = \sqrt{\frac{P.G}{4\pi.S}}$$

## Calculated distances and power compliance margins

Table 69 and Table 71 shows calculated minimum separation distances, recommended distances and resulting margins for each frequency band and antenna combination for the USA and Canada. These are conservative distances that include compliance margins. At these and greater separation distances, the power density from the RF field is below generally accepted limits for the general population.

PMP 450 platform equipment adheres to all applicable EIRP limits for transmit power when operating in MIMO mode. Separation distances and compliance margins include compensation for both transmitters.

Explanation of terms used in Table 69 and Table 71:

- P burst – maximum average transmit power during transmit burst (Watt)
- P – maximum average transmit power of the radio (Watt)
- G – total transmit gain as a factor, converted from dB
- S – power density (Watt/m2)
- d – minimum safe separation distance from point source (meters)

**Table 68** FCC minimum safe distances – PMP 450m 5.1 GHz, 5.2 GHz, 5.4 GHz and 5.8 GHz

| Band (GHz) | Antenna | PG (W) | S (W/ $m_2$) | d (m) |
|---|---|---|---|---|
| 5.1 | 90° sector | 3.38 | 10 | 0.16 |
| 5.2 | 90° sector | 0.85 | 10 | 0.08 |
| 5.4 | 90° sector | 0.85 | 10 | 0.08 |
| 5.8 | 90° sector | 3.38 | 10 | 0.16 |