

ICNIRP Letchworth Calculation

Frequency: 106.9 MHz

Power: 50 W horizontal + 50 W vertical

Antenna: Standard half-wave dipole (≈ 2.15 dBi gain $\rightarrow$ linear gain ≈ 1.64)

Height: 15 m

Assessment point: 15 m away

Total Radiated Power

$$50\text{w} + 50\text{w} = 100\text{w}$$

EIRP

Dipole gain: 2.15 dBi = 1.64 linear

$$\text{EIRP} = 100 \times 1.64 = 164 \text{ W}$$

Far-field power density at 15 m

$$S = \text{EIRP} / 4\pi r^2$$

$$4\pi \times 15^2 = 4\pi \times 225 = 2827$$

$$S = 164 / 2827 \approx 0.058 \text{ W/m}^2$$

Result:

$$0.058 \text{ W/m}^2 (\approx 0.06 \text{ W/m}^2)$$

How does this compare with ICNIRP 2020 public limit

At 106.9 MHz, the ICNIRP reference level for power density is:

10 W/m² (public exposure) (Source: ICNIRP 2020, 100 kHz–300 GHz limits.)

The calculated field is: 0.06 W/m² vs 10 W/m² allowed

Which is: $\approx 170\times$ below the limit

Conclusion

At 15 m, a 100 W (50 W H + 50 W V) FM transmitter feeding a dipole is comfortably within ICNIRP public-exposure limits by a large margin.

No exclusion-zone issue at that distance for general public.