

Exercise 8

8.4

If two co-channel base stations with omnidirectional antennas are separated by 5 km, calculate the minimum value of signal-to-interference ratio encountered, assuming a cell radius of 1 km and negligible directivity in the elevation plane.

8.6

Discuss the limitations of the Okumura-Hata model, assuming that the frequency range at which it has been validated is appropriate.

8.7

Estimate the range of a communication system operating in the GSM 900 MHz band using the Lee macrocell model for a suburban area, if the base station is assumed to have an effective height of 25 m. Make appropriate assumptions for any parameters not provided.

9.3

Section 9.3 states that loss contributions closest to the mobile have the most significant impact on shadowing in macrocells. Why?

9.4

Section 9.6.1 cites evidence that the decorrelation distance is largest at large base-to-mobile distances. Suggest some plausible physical mechanism for this effect.