

ECC 33 Model

The ECC model is electronics communication system developed for fixed wireless access systems. [1]

ECC 33 Path Loss

$$PL_{ECC}(dB) = A_{sf} + A_{mb} - G_d - G_s$$

where

$$A_{sf} = 92.4 + 20 \log_{10}(d) + 20 \log_{10}(f), \text{ free space attenuation}$$

$$A_{mb} = 20.41 + 9.83 \log_{10}(d) + 7.894 \log_{10}(f) + 9.56(\log_{10}(f))^2, \text{ basic medium path loss}$$

$$G_d = \log_{10}\left(\frac{h_{tr}}{200}\right)[13.958 + 5.8(\log_{10}(d))^2], \text{ base station antenna height gain factor}$$

$$G_s = [42.57 + 13.7(\log_{10}(f))][\log_{10}(h_{tt}) - 0.585], \text{ receiver antenna height gain factor}$$

whereas for big cities

$$G_s = 0.759h_{tt} - 1.862$$

f: is the frequency in Megahertz,

d: is the distance between transmitter and receiver in km,

h_{tr} is the BS antenna height in meters

h_{tt} is the CPE antenna height in meters.

References

- [1] Bengawan Alfaresi, Taufik Barlian, Feby Ardianto, and Muhammad Hurairah. 2020. Path Loss Propagation Evaluation and Modelling based ECC-Model in Lowland Area on 1800 MHz Frequency. *J. Robot. Control* 1, 5 (2020). DOI:<https://doi.org/10.18196/jrc.1534>