Path Loss Modeling and Analysis for Low Antenna Height over Grass Environment

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PATH LOSS MODEL

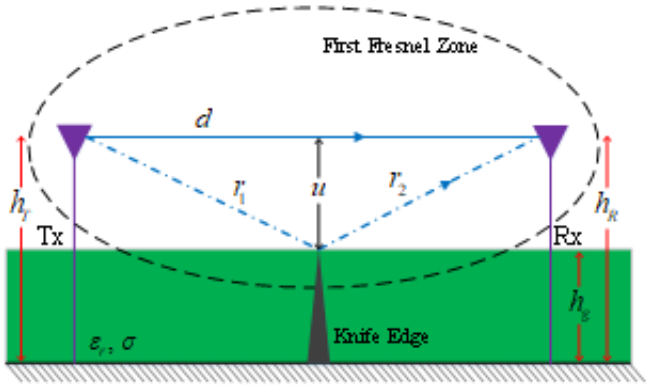
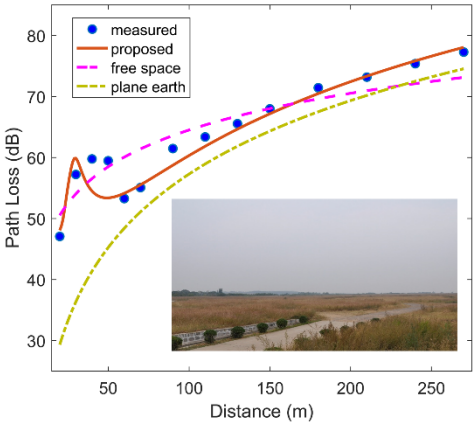


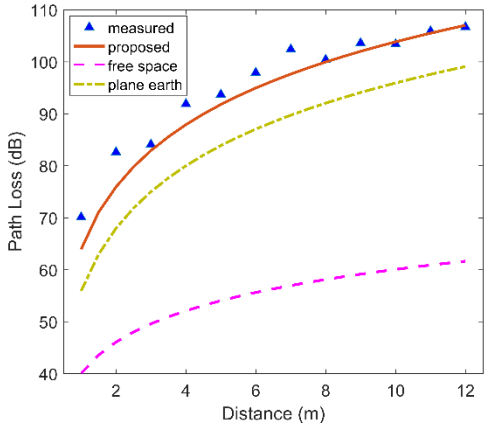
Fig. 1. Conceptual overview and geometry for path loss modeling.

Path loss in decibel is represented as

$$PL = -20\log\left(\frac{\lambda}{4\pi}\left|\frac{E_d + E_r}{E_0}\right|\right) - 20\log\left(\left|\frac{1+j}{2}\int_v^{\infty} e^{-j(\pi/2)t^2}\,dt\right|\right)$$

MODEL VALIDATION





CONCLUSIONS

In this paper, a theoretical multi-ray path loss model is proposed for low antenna height over grass environment. The proposed model is validated by measurements. Compared with the existing path loss models, better predicting accuracy is obtained for the proposed model. The proposed path loss model can be used for applications such as wireless sensor deployment and vehicular communication in grassy environment.