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A Path Loss Model for Through the Soil Wireless Communications in Digital Agriculture

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In this paper[1], a path loss model is developed to predict the impact of soil type, soil moisture, operation frequency, distance, and burial depth of sensors for through-the-soil wireless communications channel. The soil specific model is developed based on empirical measurements in a testbed and field settings. The model can be used in different soils for a frequency range of $100MHz$ to $1GHz$. The standard deviation between measured and predicted path loss is from 4-6dB in the silt loam, sandy, and silty clay loam soil types. The model leads to development of sensor-guided irrigation system in the field of digital agriculture [1-21].

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