

Efficiency Dynamics of Wireless Mouse Antenna Influenced by Position of User's Index Finger.

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Abstract

In this paper, Finite Difference Time Domain (FDTD) and the Method of Moments (MoM) are used to analyze the effect of a human hand index finger on a wireless mouse antenna. The important parameters of the wireless mouse that are affected by a human hand index finger such as input resistance, reflection coefficient, bandwidth (resonance frequency) and efficiency, have been evaluated. It is established that the index finger decreases the input resistance of the mouse. The results show that the finger also reduces the efficiency of the mouse antenna. This can be explained by the fact that the human hand absorbs energy. It was further established that the wireless mouse antenna's efficiency depends on the position of the index finger. When the finger is at the middle of the mouse antenna, the efficiency is relatively low. Moving the finger along the wireless mouse antenna, to either the right or to the left of the feed point, increases the efficiency rapidly. Beyond a certain distance on either side, there is rapid deterioration of the wireless mouse antenna's efficiency.

Keywords: Antenna Dipole, Efficiency, Electromagnetic Field, FDTD, Wireless Mouse

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