

## Plasma Properties Effect on Fluorescent Tube Plasma Antenna Performance

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**Abstract :** This paper presents the analysis on the performance of monopole antenna with fluorescent tubes. In this research, the simulation and experimental approach is conducted. The fluorescent tube with different length and size is designed using Computer Simulation Technology (CST) software and the characteristics of antenna parameter are simulated throughout the software. CST was used to simulate antenna parameters such as return loss, resonant frequency, gain and directivity. Vector Network Analyzer (VNA) was used to measure the return loss of plasma antenna in order to validate the simulation results. In the simulation and experiment, the supply frequency is set starting from 1 GHz to 10 GHz. The results show that the return loss of plasma antenna changes when size of fluorescent tubes is varied, correspond to the different plasma properties. It shows that different values of plasma properties such as plasma frequency and collision frequency gives difference result of return loss, gain and directivity. For the gain, the values range from 2.14 dB to 2.36 dB. The return loss of plasma antenna offers higher value range from -22.187 dB to -32.903 dB. The higher the values of plasma frequency and collision frequency, the higher return loss can be obtained. The values obtained are comparative to the conventional type of metal antenna.

**Keywords :** plasma antenna, fluorescent tube, CST, plasma parameters

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