

Analisis karakteristik medan magnet dan medan listrik pada antenna wireless power transfer = Analysis of magnetic and electric field characteristics on the wireless power transfer antenna

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Abstrak

Skripsi ini membahas tentang analisis karakteristik dari medan magnet dan medan listrik yang dihasilkan oleh antenna pemancar Wireless Power Transfer. Dalam studi ini, disimulasikan tiga jenis antenna sederhana, yaitu antenna tipe pejal, antenna tipe berongga dan antenna tipe mikrostrip. Beberapa parameter dianalisis secara numerik menggunakan Finite Integration Technique (FIT) yaitu medan magnet (H-field), induksi magnet (B-field) dan medan listrik (E-field). Dimana grafik hasil simulasi menunjukkan, nilai distribusi medan magnet H tertinggi didapat pada antenna mikrostrip dengan frekuensi 0.7 MHz yaitu sekitar 2350 A/m pada koordinat 48 mm. Untuk nilai induksi magnet B didapat nilai tertinggi juga pada antenna mikrostrip dengan frekuensi 0.7 MHz yaitu sekitar 0.00295 Wb/m² pada koordinat 48 mm. Begitu juga untuk nilai medan listrik E, nilai tertinggi terdapat pada antenna mikrostrip yaitu sekitar 1150 V/m pada koordinat 28 mm. Untuk nilai distribusi medan pada antenna lainnya, yaitu antenna tipe pejal dan antenna tipe berongga, memiliki nilai lebih rendah dibanding antenna mikrostrip.

.....This thesis discusses the analysis of magnetic and electric field characteristics those are generated by the Wireless Power Transfer antenna at the transmitter. In this study, three simple model of the antennas are investigated, namely a solid coil model, a hollow coil model and microstrip coil model. Some parameters of those models are numerically analyzed by using the Finite Integration Technique (FIT) such as magnetic field intensity (H-field), the magnetic flux density (B-field) and electric field intensity (E-field). As the results of the simulation, the highest value of H-field distribution occurs on the microstrip coil type by about 2350 A/m at the position 48 mm at the frequency 0.7 MHz. The highest B-field is also detected on microstrip coil type by about 0.00295 Wb/m² at the position 48 mm at the frequency 0.7 MHz. Moreover, the microstrip coil also gives the highest E-field value by about 1150 V/m at the position 28 mm. The value of fields distributions of the others, those are the solid coil and the hollow coil are relatively less than that of the microstrip coil has.