

C715577 : MAJOR ELECTRICAL ENGINEERING

KEY WORD: MICROSTRIP ANTENNA / MIXED POTENTIAL INTEGRAL EQUATION / FINITE ELEMENT METHOD

MONTAKARN SRIPHANLAM : ANALYSIS OF A MICROSTRIP ANTENNA WITH AN ARBITRARILY SHAPED PATCH BY USING THE FINITE ELEMENT METHOD.
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This thesis has the objective to analyze an arbitrarily shaped microstrip patch antenna by numerical method using the Mixed Potential Integral Equation (MPIE) in conjunction with the finite element method to analyze the surface current density on the patch. The set of vector basis functions are used in the finite element method where the unknown parameters that are associated with the edges of triangular elements in representing the unknown surface current density in the MPIE. The primary feature of the vector basis functions is preservation of the normal component continuity of the surface current density at the boundary of each element.

The analysis of an arbitrary shaped patch microstrip fed by a coaxial probe results in the input impedance and radiation pattern which correspond with the calculated results and demonstrate the validation of this numerical technique. The verification results show that the results from the finite element method are comparable to other methods. Then, this numerical technique can be used to analyze a microstrip antenna as well.

ภาควิชา.....วิศวกรรมไฟฟ้า.....

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ลายมือชื่อนิสิต.....มอนตาคาร์ สรีphanlam.....

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