THE DESIGN OF FEED NETWORKS FOR ENHANCED BANDWIDTH OPERATION OF MICROSTRIP PATCH ANTENNAS
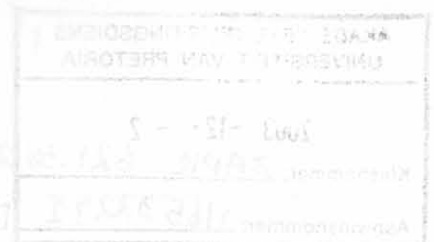
by

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Summary

This dissertation investigates a simple LC-matching network for the impedance bandwidth enhancement of microstrip patch antennas. Wideband impedance matching is a standard practice for active circuits. Simple impedance matching of antennas is also quite common, but data on wideband impedance matching of antennas is not found very much in the open literature. The matching circuit presented consists out of a resonant LC-circuit with a quarterwave matching line as part of the design. Results for a number of experimental antennas, on which the new technique was applied, are included in the report. A well-defined design procedure is also presented, and results in a relatively small circuit to implement. It is shown that the antenna VSWR bandwidth could be improved to more than double the original size in most of the antennas investigated.

Opsomming

Die verhandeling ondersoek 'n eenvoudige LC-aanpasnetwerk vir die impedansie bandwydte verbetering van mikrostrook antennas. Wyeband impedansie aanpasnetwerke word standaard toegepas op aktiewe hoëfrekwensie stroombande. Eenvoudige aanpasnetwerke word gereeld op antennes toegepas, maar die kombinering van wyeband aanpasnetwerke op antennes word nie baie bespreek in die literatuur nie. Die aanpasnetwerk wat in die verhandeling bespreek word bestaan uit 'n resonante LC-stroombaan met 'n kwartgolftransformator as 'n integrale deel van die stroombaan ontwerp. Die nuwe aanpasnetwerk is op 'n aantal eksperimentele antennas toegepas en die resultate word in die verhandeling bespreek. Die stroombaan, wat daarop gemik was om 'n eenvoudige en fisiese klein ontwerp te wees, se resultate toon dat die LC-aanpasnetwerk daartoe in staat is om die VSWR bandwydte van die oorspronklike antenne te verdubbel.

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Thanks for the opportunity!

"Ywer sonder kennis deug nie;
oorhaastigheid bring foute."

- Spreuke 19:2

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