

**HALF-CIRCULAR DIPOLES FOR  
NON-DESTRUCTIVE TESTING**

**This thesis is presented in partial fulfilment for the award of the Bachelor of  
Engineering Electronic (Communication) with honours**

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## ABSTRACT

A design of two planar half-circular dipoles combination is presented to study the feasibility in transferring signal wirelessly across a small circular area. Two identical sets of half-circular dipoles, placed in front of each other, are used for transmitting and receiving. The operation frequency is chosen to be centred around 0.8 GHz, to ensure small dimensions of the overall circuit. The proposed configuration is designed and simulated using Computer Simulation Technology (CST), and realized using microstrip technology on FR4 substrate of 4.3 dielectric constant, and of 1.6 mm thickness. From the simulated and measured insertion and return loss, it is shown that the power transmission using the proposed configuration can be achieved around the targeted frequency of 0.8 GHz, where the S11 is smaller than -10 dB. The influence of the dimensions of the half-circular dipoles is investigated using simulation software. The obtained numerical results agree well with the experiment data.

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