



University College Sedaya International



SCHOOL OF ENGINEERING

DESIGN OF A SMART ANTENNA ARCHITECTURE BASED ON SDMA PROTOCOL

FINAL REPORT

Name :LIM FEI LEE
Student ID :99208507
Major :B.ENG (Hons) COMMUNICATIONS AND ELECTRONICS
1st Supervisor :MS.RUZITA ABU BAKAR
2nd Supervisor :MR.FAWWAZ
Project Coordinator :DR. KHEDR M.M. ABO-HASSAN

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ABSTRACT

A standard antenna works for a simple RF (Radio Frequency) environment and usually interrupted by interference problem and energy wasted. Thus, Smart Antennas are antenna arrays that have either fixed or adaptive (time and space varying) radiation patterns that are used in wireless communications to improve the service by the range extension and/or interference reduction. Furthermore, smart antenna also provide greater capacity and performance benefits than standard antenna because they can used to customize and fine-tune antenna coverage patterns that match the traffic conditions in wireless network. Moreover, a smart antenna is an array of antenna elements connected to a digital signal processor. In Smart antenna system the arrays by themselves are not smart, it is the digital signal processing that makes them smart. So far these technologies have brought about tremendous increase in wireless network capacity to meet the increasing demand for wireless services. Therefore new technologies are required in the area of mobile communications to accommodate future capacity needs. Space division multiple access (SDMA) has emerged as a key technology and holds a lot of promises for the future of mobile communication. This research is mainly focus on design of a smart antenna system architecture based on the SDMA by using MAC Layer protocol. The objectives of this research are to analyze the potential benefits and cost factors, and will also briefly describe the implications on radio planning for smart antenna. Software MATLAB 6.5 is using to simulate the parameters such as quantities elements of a smart antenna, diameter (distance) in between of antennas, phase shift, and beam former.