



COLLEGE OF ENGINEERING & TECHNOLOGY

Department: Electronics and Communications Engineering, Cairo

Graduation Project Description Form

Project Title: Ultra wide band antenna with nearby wireless systems Interference Immunity for high speed microwave applications

Duration from mo/year _____ till mo/year _____

Project Supervisor(s): Dr M abdalah

Product Category

Algorithm _____ Hardware _____ Software _____

Standards:

Safety: UL, CE _____ IEEE _____ FCC _____ Other _____

Practical Realization Form

PCB _____ Firmware _____ Embedded CPU Kit (ARM, ..etc): _____

PC Software _____ Ready-made Package _____ DSP Kit _____ FPGA Kit _____

VLSI Schematics _____ VLSI Layout _____ VLSI Silicon (ASIC) _____

Language

VHDL/Verilog _____ Matlab _____ C/C++/Java _____

Productization

Finished Product Form: _____ Possible Commercialization _____

Amount of funds needed for buying components: _____

IEEE GOLD Made-In-Egypt/Engineering Day: _____

ITAC (ITIDA) or NTRA Funding Application: _____

Testing

Functional _____ Simulation _____ Parameters _____ Final Hardware _____ Other: _____

Lab Test Setup

EMC _____ Environmental _____ Microwave _____ Analog Lab _____ Other: _____

CAD Tools (*No unauthentic software is allowed*):

Elective Classes Required:



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Abstract

Mobile communications continue to be a dominating application for many antenna designers. Cell phone systems are still expanding as providers aim for increasing capacity to enable many new user services. In parallel with this, wireless local area networks (WLAN) are gaining in importance. The convergence of these two systems put further demands upon antenna designers. The likely advent of ultra wideband (UWB) communication systems will pose further interesting challenges. According to the Federal Communications Commission (FCC), UWB is defined as any signal that occupies a bandwidth at least 500 MHz in the 7.5-GHz chunk of spectrum between 3.1 GHz and 10.6 GHz.

On the other hand, the different increasing wireless communication systems such as Wifi and WiMAX are allowed to occupy some of the specified frequencies for the FCC UWB bandwidth. For example one of the common bands for WiMAX equipment is called the upper WiMAX band which uses the frequencies 5.2/5.3/5.8 GHz. This of course became a potential interference source for UWB systems.

This project is to design and implement a wide band antenna for high speed communication applications with notching characteristics at the different wireless possible nearby sources.



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During the project, the analytical design procedures for the UWB antenna and the notching stopband structures are introduced. Also, the design should be verified using full wave electromagnetic simulation CAD programs for antenna designs. Practical measurements will be done for possible verifications.

تجد تطبيقات الاتصالات الحديثة سواء لتطبيقات المحمول أو الاتصالات اللاسلكية اهتماما وطلبا كبيرا في خلال الهوائيات . تتطلب لمواجهة التقدم في أنظمة الاتصالات تقدما مماثلا في الهوائيات المستخدمة. الأعوام الأخيرة ذات الحيز الترددي الواسع تمثل نموذج مقترح.

3.1 – 10.6 GHz الهوائيات ذات الحيز الترددي الواسع لها القدرة على العمل في الحيز الترددي من

كذلك مصادر التشويش من مصادر الاتصالات اللاسلكية مثل (واي فاي & واي ماكس) تمثل مصدر للتشويش على عمل هذه الهوائيات

الهوائى .المشروع يهدف الى تصميم وتنفيذ هوائى مسطح ذو حيز ترددي واسع باستخدام الدوائر الشريطية المصمم له القدرة على التخلص من مصادر التشويش القريبة

تصميم الهوائى يتم باستخدام برامج التصميم بواسطة الحاسب الآلي في تصميم وتحليل الدوائر والنظم الميكروموجية. كذلك سوف يتم تصنيع هذه الدوائر وقياس خواصها و مقارنتها بنتائج التحليل.



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References and Links