Department of Electronic Engineering & IEEE AP/MTT Hong Kong Joint Chapter Jointly Present a Postgraduate Research Seminar Series

Session II

Tunable Active Quasi-Circulator for Wireless Communication

By

Mr Wai Yin MUNG

Supervisor: Dr W S Chan

Date : 14 October 2011 (Friday)
Time : 3:00pm – 3:30pm
Venue : Lecture Theatre 17, 4/Floor, Academic Building, City University of Hong Kong

Abstract

The tremendous growth in multi-band wireless communication has stimulated the development of compact and low cost single devices operating at multiple frequency bands as opposed to the more conventional multiple devices, one for each frequency band. An advantage of multiple devices with one for each band is that each can be optimized for their assigned bands while their disadvantages are larger size and higher cost. With larger numbers of multiple devices there is a point when there is not much improvement in performance due to the increase in loss with the increase in switching complexity.

A tunable quasi-circulator is proposed which operates over a wide frequency range with high isolation between port 1 and port 3 that is tunable at any frequency within this wide frequency range. Experiment results demonstrate that the circuit can achieve a minimum isolation of around 15 dB from 0.8 to 2.2 GHz and a tunable isolation of more than 40 dB between isolated ports at any frequency within 0.8 to 2.2 GHz. It is suitable for use in mobile units in multi-band RF communication systems. Multi-band RF front-end circuits which requires multimode operation is an ideal application for the proposed topology.

Brief Biography

Mr Mung received the B.Sc. (with first-class honor) in applied physics and M.Phil. degrees in electronic engineering from the City University of Hong Kong in 2006 and 2009 respectively and is currently working toward the Ph.D. degree at the same university. His research interests include RF/Microwave circuits.

**** All are welcome ****