



**Massey University**



# Seminar

Supported by

**Institute of Information Sciences & Technology,  
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**Presenter:** Prof. Jacob Gavan  
Holon Institute of Technology

**Title:** Radio Systems Techniques for Enhancing Energy Efficiency, Reducing Interference and Parasitic Radiation

**Date:** Wednesday 7th June 2006

**Time:** 1:00pm - 2:00pm

**Venue:** Ecology Building - Seminar Rm C.

## abstract

Wireless Radio usage for communication is one of the main promoters of economic and social growth and its importance is predominant for defence and security issues. Therefore, significant resources are invested in improving radio communication systems, especially mobile Radio systems users, handsets and equipment. For cellular communication only, the number of handsets exceeds the 1000s millions and soon will outnumber wired phones.

However, the energy efficiency of the systems base stations and mobile handsets is considered to be very low. This seminar analyzes and computes base station radiation effects under far field propagation conditions and collocated handset radiation under complex near field conditions. Main mitigation techniques using other power control; signal processing methods, smart antennas and possible meta-material techniques will be described. This will be followed by proper shielding diversity, filtering, parasitic power cancellation and other mitigation techniques useful for reduction of non desired-parasitic radiation intensities and energy.

Our objective is to identify possibilities for increasing energy efficiency and quality of base stations and handsets specifically by decreasing the required transmitted radiation power, equipment's power consumption, batteries load and the radiated power and energy absorbed by human beings.

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