

Immediate Vacancy for Graduate Research Assistant

Faculty of Engineering, Multimedia University, Cyberjaya, Malaysia.

Project title:

Auxiliary Envelope Tracking Technique for Efficient RF Power Amplifier of 5G Mobile Applications

Abstract:

Energy efficiency is one of the most crucial aspect in fifth generation (5G) base station transmitter. The energy efficiency attainment also means the cooling cost will be reduced [1]. In a transmitter, the RF power amplifier (RF PA) is the main component that uses up the most energy. Other than the energy efficiency, in 5G, the RF PA design is also challenged by the technical requirement of 5G that is affecting RF PA design such as broad bandwidth, high frequency spectrum and high data rates. In this project, an efficiency technique called Auxiliary Envelope Tracking (AET) [2] will be applied to an RF PA to achieve an efficient RF PA for 5G. Due to limitation of equipment, we will focus to apply the technique to a 10 W GaN RF PA at 3 – 4 GHz (low band 5G freq). The existing RF PA performance in the literature can be found in [3]. The methodology is as follows: a new supply modulator and a broadband combiner will be implemented using the AET technique for broadband 5G. After the AET supply modulator and combiner are designed and tested, the AET supply modulator will be attached to a 3 GHz RF PA. The result of attaching this AET supply modulator and combiner to the RF PA will be studied. It is expected that the overall AET RF PA efficiency will be improved more than 50% as compared to a conventional fixed bias RF PA efficiency even when it is operated at power-back-off (PBO). The new technique applied to the RF PA will improve the energy efficiency which results in a cost reduction in the overall power usage.

Project duration: **2 years**

Monthly stipend: **RM 1800**

Other benefits: **Eligible to apply for tuition fees waiver from Institute of Postgraduate Studies, Multimedia University.**

Responsibilities:

1. MUST register as a full-time candidate of Master in Engineering Science (M.Eng. Sc) in Faculty of Engineering, Multimedia University, Cyberjaya.
2. To perform the research and to achieve all the objectives.
3. To write technical papers, prepare documentations and perform administrative tasks related to the project.

Requirements:

1. A Bachelor's degree with a minimum CGPA of 3.00 or equivalent in an Engineering or Engineering Technology or a related field from Multimedia University, Malaysia or any institutions recognized by Multimedia University Senate.
2. Malaysian.
3. Good command of written and oral English.
4. Knowledge in using Keysight ADS software is an advantage.
5. Highly self-motivated, thus able to work independently and with minimal supervision.

Interested candidate may submit resume and academic transcript to Dr. Zubaida Yusoff (zubaida@mmu.edu.my). Interviews will be conducted for shortlisted candidates.