# A PRELIMINARY STUDY ON EFFECTS OF MOBILE PHONE RADIATION TO HUMAN BRAINWAVE USING EEG

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## ABSTRACT

The aim of this research is to determine whether there are any effects of mobile phone radiation to human brainwave using electroencephalograph (EEG) and how will be the alpha wave pattern due to the mobile phone radiation. EEG recording will be taken from thirty awaked samples from Faculty of Electrical Engineering aging from 19 to 28 years old. These samples will be exposed to radiation or radiofrequency (RF) emissions from a mobile phone positioned at right ear. Three experimental designs will be conducted which are before, during and after the exposure to the radiation. Samples will be interviewed with questions related to the topic before they proceed with EEG test. Then the results of captured brainwave signals were analyzed and comparisons between the three states were discussed. In conclusion, after being exposed to the radiation, alpha wave signal was decreased as compared to the other three waves. This is in line with finding of a survey studied by Santini *et al.* in France found mobile phone radiation may be causing short and long term effect such as headache and loss of memory. It is because alpha wave is associated with relaxed and long-forgotten memories.



*Keyword : EEG; Brainwave; Alpha waves; RF*

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# CHAPTER 1

# INTRODUCTION

## 1.1 OVERVIEW OF STUDY

Nowadays, development and using of mobile phone is wider than before. This high-developed technology gadget becomes one of the most important device that being used by people in this new era.

A mobile phone is an electronic device used for full duplex two-way radio telecommunications over a cellular network of base stations known as cell sites. Mobile phones differ from cordless telephones, which only offer telephone service within limited range through a single base station attached to a fixed land line, for example within a home or an office.

A mobile phone allows its user to make and receive telephone calls to and from the public telephone network which includes other mobiles and fixed line phones across the world. It does this by connecting to a cellular network owned by a mobile network operator. A key feature of the cellular network is that it enables seamless telephone calls even when the user is moving around wide areas via a process known as handoff or handover.

In addition to being a telephone, modern mobile phones also support many additional services, and accessories, such as SMS (or text) messages, email, Internet access,