

# **A DESIGN OF UHF RFID READER ANTENNA WITH AIR GAP**

Thesis is presented as partial fulfilment for the award of the  
Bachelor of Electronics Engineering (Hons) (communication)

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# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND

Ultra high frequency (UHF) radio frequency identification (RFID) is a rapidly growing technology for automated identification of objects wirelessly. Globally, each country has its own frequency allocation for UHF RFID applications and generally the UHF RFID frequency ranges from 840.5 to 955 MHz [1]. The UHF banded RFID tag can be read longer and faster than the low frequency (LF) and high frequency (HF) banded tags. The reason is because the intensity of magnetic field in HF can be well defined for a specific read zone but it quickly downs as the function of distances from the antenna [2]. Hence, the networked RFID and other RFID technologies had been focused on the UHF band.

It is a well-known that communication at far-field is widely used due to its long read range while near-field reading can be useful for objects made up of metals or having liquids in their vicinity [3] because usual far-field tag's performance is affected by the presence of these objects [4]–[7].

There are several details need to be taken into consideration for optimized RFID antenna design. Some of them are for longer reading range, better accuracy, reduced fabrication cost, and simple system configuration and implementation.