

UNIVERSITI TEKNOLOGI MARA

**MODELLING OF THE ANTI-COLLISION
ALGORITHM IN RFID SYSTEM**

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ABSTRACT

Radio Frequency Identification (RFID) is a wireless technology that has replaced barcodes. This technology is used in today's world to identify, track, and manage the tagged animate or inanimate objects automatically using wireless communication technology.. Unlike barcode readers, an RFID reader is capable of reading multiple tags located in its range. When this occurs, the probability of tag collision at the reader's end is high. In RFID system, the greatest challenge faced is the tag could not be read due to collisions. To avoid these collisions, there are several anti-collision algorithms used in the RFID system. The major classifications of the algorithms are Aloha based protocols and tree based protocols. This proposal studies on the modeling of the anti-collision algorithm in RFID system and will focus on analyzing the performance of the pure Aloha and slotted Aloha algorithms by deriving the performance metrics of throughput. Theoretical throughput analysis of pure Aloha and slotted Aloha was done and carried out by using Matlab software. Theoretical result was compared with simulation result by Opnet software. The result obtained from the slotted Aloha protocol has shown a better throughput.

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CHAPTER ONE

INTRODUCTION

1.1 OVERVIEW OF RFID SYSTEM

Nowadays, Radio Frequency Identification (RFID) is developing as a major technology enabler for tracking goods and assets around the world. “Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic field to transfer data, for the purpose of automatically identifying and tracking tags attached to objects”[1]. According to Roy Want, “Radio Frequency Identification Technology (RFID) has moved from obscurity into mainstream applications that help to speed up the handling of manufactured goods and materials”[2].

RFID is widely used to identify, track, and manage the tagged animate or inanimate objects automatically using wireless communication technology. For example, barcode is still the dominant player in supply chain industries and departmental stores. However, RFID technology is becoming more important in replacing barcode technology nowadays as several main advantages such as communication without line-of-sight (LOS), robust system, greater data capacity, higher read rate than barcode, and write capability because RFID tags can be rewritten with new data [3].

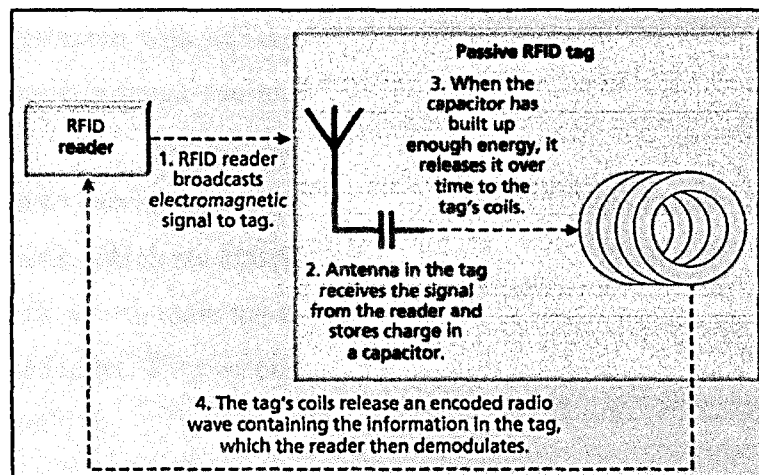


Figure 1.1 : RFID System