Abstract

RFID is a system that are used for identification of an object within a certain distance. RFID system consists of the reader and the tags that attached to an object. Reader serves to make the process of reading and receiving data while the tag function is to store the unique data about an object that was attached on and transmit the data when passing through the signal field that generated by the reader.

Problems arise when multiple tags simultaneously within the field produced by the reader. A data collision occurs when a tag sends data at the same time. Therefore in this thesis discussed the handling of the collision in RFID using Framed slotted ALOHA algorithm (FSA).

FSA kind used in this thesis is a Basic Framed Slotted Aloha (BFSA). In BFSA data submission process will be divided into slots that are clustered in a frame. Tags will randomly select a slot to be used to transmit data. Tags that successfully transmit tag data is occupying the slot filled by the tag. A data collision will occur when more than one tag sends data in the same slot. Tags are not successfully transmit data will be re-transmit the data to the next reading. This process will be repeated until all tags successfully identified.

In this final testing the performance of the algorithm BFSA based on the time required in the process of reading. From the results of the analysis are shown when the number of tags is handled the more, the time resulting rise exponentially. In addition, with the upper limit obtained formula Y = 1.6 + 0.561X and lower limit Y = -0266 + 0.646X where Y is the size of the frame and the X is the number of tags, to predict the exact size of the frame is capable of producing the most minimum reading time based on the number of tags to be addressed.

Keywords*: collision,* RFID, FSA