

## "Real Time Locating System"

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### Abstract

Real-time locating systems (RTLS) is used to identify as well as to track the location of objects or people in real time, within a building or other available area. Wireless RTLS tags are attached to objects that are worn by people and in most of the RTLS, fixed reference points receives wireless signals from tags to determine their particular location. Examples of real-time locating systems consist of tracking automobiles through an assembly line, location of the pallets of merchandise in a warehouse, or getting medical equipment in a hospital. Most of the wireless technologies are mainly used to establish the communication between tags and readers. Most popular ones are Wi-Fi, GPS, Infrared, Bluetooth, and active and passive RFID systems. After positioning the readers at fixed locations in a given limited environment, the location of the mobile tags are usually determined by the analysis of the various aspects of the communications between readers and tags. The choice of a method depends on the application requirements. The physical layer of RTLS technology is usually some form of radio frequency (RF) communication, but some systems use optical (usually infrared) or acoustic (usually ultrasound) technology instead of or in addition to RF.

### Introduction

Real time location system mainly gives the location of object. We are using RFID tag to track the location of that object. RFID tag and RFID reader will play the important role in getting the data of required input. RFID transceiver/writer is the core of RFID reader. Between processor and transceiver we can use parallel or serial communication. The communication distance we are using is between 10 to 50cm of range value. RFID tag will consist of radio antenna as a receiver.

RFID tag will mainly have silicon chip which will be attached to small antenna and we will mount it on substrate and we will encapsulate it in different materials like plastic or glass or may be with an adhesive on the back side of the tag which will get attached to the object. Reader will have antenna to receive and transmit signal and it will receive the information from tag to be tracked. We are using passing RFID system in RTLS. With the help of electromagnetic wave transmission we are going to achieve our tracking object.

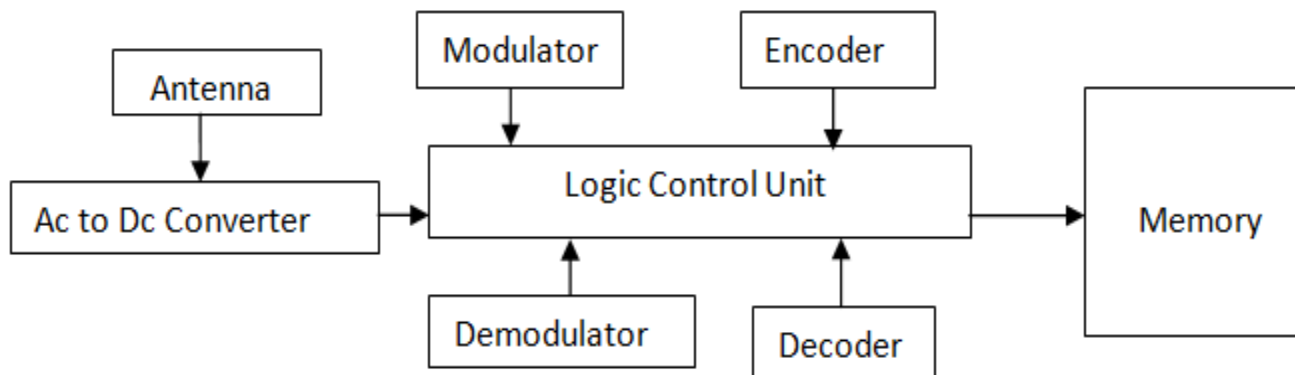


Figure 1: RFID Tag

### Existing System:

In previous times, we have used GPS for tracking the vehicles. But GPS can track only outdoor objects and there is some difficulty in getting indoor one. So GPS is not appropriate for tracking hundreds of the tags in any fixed place like indoors. Even for outdoor applications, it doesn't provide any accuracy of location of object. GPS based applications are limited to vehicles that require a cell phone and are connected to cell phone. GPS system requires high power to operate. So GPS is not responsive in tracking our object.

### Proposed System:

Advantage of this system is that with the help of electromagnetic waves, we can track object by using RFID reader and RFID tag. We are using wireless technology that can continuously determine the real time of that particular object. When any object with RFID tag passes through the reader, then reader captures the real time of object with antenna connected to it. So any indoor and outdoor object can be tracked using RFID.

### Description:

#### Antenna:

Antenna is a device which converts electric signal into radio waves. It is used to transmit and receive the signal which we are providing further. Antenna in the reader will send the signal to tag which again has antenna and then tag antenna will receive the signal

#### Ac to Dc converter:

We are using Ac to Dc converter to convert the incoming signal into direct signal. This process need to be considered for the incoming signal which will be in electromagnetic wave format. Ac to Dc converter is nothing but the rectifier which plays the same role. Antenna signal then get rectified with the help of ac to dc converter.

#### Modulator and Demodulator:

Modulator and Demodulator are used to modulate the signal means to transmit or receive that signal. When we antenna signal will get transferred to ac to dc converter then it sends that signal to modulator to transmit it further to encode.

#### Encoder and Decode:

Encoder is used in RFID tag to encode the upcoming data and to send it to logic control unit which will then store that signal into memory.

#### RFID reader:

With the help of RFID reader, we will get the transmitted signal in reader's antenna. Reader will tell us about the information of person or object that we are going to track. We can use different tags for different objects.

#### Future scope:

- 1) With the help of RTLS, we can easily achieve the exact information. This technology is cost effective and it is affordable.
- 2) More than that, in future it will definitely help us to improve our day to day living for staff safety.
- 3) Due to the provision of high information accuracy, we can use it in hospitals for monitoring the patient and his conditions.
- 4) It provides security and it can be used to prevent theft activities that mostly the world is facing right now. It will help in future accommodating the livelihood.
- 5) In most of the automated industries it can be used to monitor or detect any emergency. It can monitor the temperature at industrial level.

#### Conclusion:

Through this we concludes that the real time location will help us getting the exact location or the exact identity through which we can easily detect any criminal which is flew away. We have implemented it with the limited period of time. It will help us for the betterment of human being.

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