

## Vehicle Tracking System Using GPS



### Engineering

**KEYWORDS :** GPS, RF, embedded system, VTS (vehicle tracking system).

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### ABSTRACT

*In this project we are going to make an embedded system which will help to provide protection against theft. This system will send the data to the user who wants to track the vehicle showing the using position of vehicle in terms of latitude and longitude. Most of the people know that GPS[1] is more secure but that don't apply because it is costly. This design is needed for the real time location of information of the vehicle. It changes the microcontroller AT89552 interfaces with various hardware peripheries this uncontrolled interfaces serially with RF modem and GPS receiver. The hardware which interfaces to microcontroller AT89552 are LCD display, RF modem and GPS receiver. This uses RS-232 protocol for serial communication between modem and uncontrolled .A serial driver IC is used which is used for converting the TTL voltage level to RS-232 voltage level.*

### I. INTRODUCTION

The GPS satellite transmits to low power radio signals. One is L1 and other is L2. L1 is used civilization purposes which uses frequency of 1575.42 MHz in UHF band. This signal pass through the glass, cloud and plastic but it will not pass through the solid objects like building and mountains.

GPS signal receive 3 bit of information pseudorandom code, ephemeris data and almanac data. Pseudorandom code his an ID code which identifies the satellite transmitting information.

Ephemeris data is transmitted by each satellite that contains the important information about the status of the satellite.

The almanac data tells the GPS receiver where each GPS satellite should be at any time throughout the day.

### II. GPS

GPS (Global Position System) is a space based satellite navigation system that provides the location and time of a person or vehicle or any devices in every weather and anywhere on the earth 24 hour's a day.GPS system is a network of 24 satellite placed in an orbit by the U-S department of defense. Earlier GPS was used for military purpose. But then the government decided to make it available for the people use also.GPS can be used for commercial purpose, sports advertisement, public services. It is a pillar for the global vehicle tracking system. GPs satellite revolves around the earth and transmits signal information to the earth. The GPs receiver will receive the signal information from the satellite and with the help of triangulation; the exact location of the vehicle is traced. The GPS receiver must receive the signal at least three satellite to calculate the 2D position and tracking movement. If GPS receiver is made to receive the signal for four or more satellite, then the receiver can calculate the 3D position of user is determined, and then micro processor can calculate other parameters also such as speed, source to destination etc.

### III.RF

RF is abbreviates as radio frequency it is used in communication of wireless technologies which include phones, RADAR ,GPS, radio and TV broadcaster is all around is from monitor to cell phones ,from Bluetooth to remote controlled toys.

RF is the radio wave which propagates at the speed of light or 3, 00,000km /sec. The frequency of RF is lower as compare to the visible light therefore it is invisible to the human eye.

RF ranges from 3 kHz to 300 GHZ which corresponds to fre-

quency of radio waves and Ac current carrying radio signals. This antenna will select thousand of radio signals at a time so the radio tuner is required tune into a particular frequency.

Feature of RF modem—

- 1.High data rate.
2. Long transmission distance.
3. Communication protocol is self controlled and completely transparent to user interface.

### IV.VTS

This system will locate the position of vehicle in terms of longitude and latitude.

### Major components

- GPS module
- Microcontroller AT89S52
- RF Modem
- LCD 16\*2Lampex
- Crystal 11.0592MHz
- Transformer 6V 500mA
- Bridge rectifier W10
- Voltage Regulator 7805
- Misc. Resistor, Capacitor

### V WORKING

This project is based on vehicle tracking and positioning in which we locate our vehicle in globe with mean see level as a reference.

This is done with the help of Microcontroller 8052, GPS receiver, GSM modem, MAX 232, EEPROM. Microcontroller used is AT89S52. The instruction is written in the internal memory of Microcontroller i.e. ROM (Read Only Memory). With the help of the information it processes the data and act to it accordingly as it interfaces with GPS and RF. There is a serial communication of 8052. Here GPS act as a transmitter as it transmits the data and RF transmit as well as receive the data.

GPS pin transmitter is connected to Microcontroller via MAX232. Pins of RF transmitter and receiver are connected to serial ports of microcontroller.

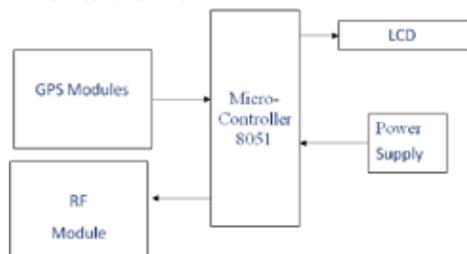
Microcontroller will take the data from the GPS receiver and then send information to the user in the form of coordinates on the LCD with the help of RF modem. GPS receiver works on 9600 baud rate is used to receive the data from space Segment (from Satellites). GPS values of all the satellite are send to the microcontroller AT89S52 which are processed and forwarded to RF

module. At the time of processing GPS receives only \$GPRMC values only. Out of these values microcontroller takes only latitude and longitude values excluding time, altitude, name of satellite, authentication etc. E.g. LAT: 1728:2470 LOG: 7843.3089

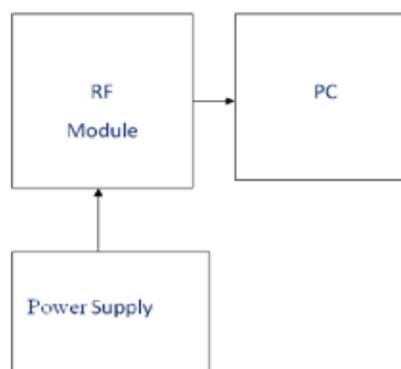
The power is supplied to components like RF, GPS and Micro control circuitry using a 12V/3.2A battery RF requires 12v,GPS and microcontroller requires 5v .with the help of regulators we regulate the power between three components.

**Block Diagram**

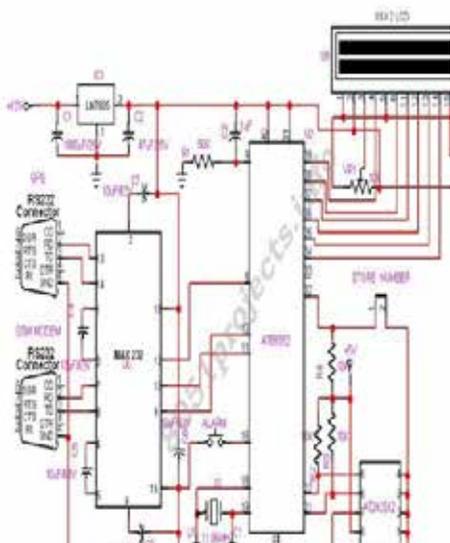
Transmission section



Receiver Section



**Circuit Diagram**



**Abbreviations**

- (GPS) Global positioning system
- (RF) Radio Frequency
- (VTS) vehicle tracking system
- (LCD) Liquid crystal Diode
- (EEROM) Electrically erasable read only memory
- (UHF) Ultra high frequency

**VI. APPLICATION**

- Better way to track an individual vehicle
- Theft protection
- Historical Report
- Real time alert
- Manages the route
- School vehicle tracking
- Police department tracking
- Industrial Transport tracking
- Defense service
- Airlines services
- Transport service

**Result**

With the help of this system position of a device or person can be detected. This system covers all the theoretical and practical areas related to n this project. A small movement of a person or a device is noticeable with this system. It enables its user to track and trace their vehicle, mobile assets. It performs the task which can be used by military or police and also it can be used for personal security.

**Future Enhancement**

For years tracking and locating a vehicle is needed in both commercial and government sectors. The vehicle tracking system is a solution to monitor vehicle, driver location and status and other necessary information. This system meets the need of every person. It provides awareness of all the resources. It can be used to study the migration of animals which have become extinct day by day so that some measure can be taken out to save them.

**VII. CONCLUSION**

The three potential of this project is reach, relevant and result.

Firstly it will provide marketers a fantastic reach. Today almost all people carry their mobile phones.

Secondly this system gives customer control since they get more precise information, personalized message and targeted offer. Thirdly, it is a unique medium since marketers have better understanding of customers need. This will result in high impact of advertisement and greater human satisfaction.

This system has both strength and weaknesses. Some consumers think that this system hack their privacy and they feel the risk of being monitored. In order to have the system in the market, it is necessary to establish and maintain the trust of a consumer. The best way is to give confidence to the consumers that they will only receive the relevant information.

**REFERENCE**

[1] en.wikipedia.org/wiki/ | [2] www.trackinggenie.com/ | [3] www.engineersgarage.com/articles/global-positioning-system-gps | [4] www.beaglesoft.com/gpstechnology.htm | [5] The 8051 microcontroller and embedded systems. | [6] The 8051 Microcontroller and Embedded System: using Assembly and C,2nd Edition,ISBN:9780131194021 by Mazidi, Muhammad Ali.(2008) | [7] AT89C51 detail, available http://www.ic--on-line.cn/io\_AT89S51/PdfView/103030/ | [8] Keel micro vision, available in http:// http://www.keil.com/c51/ |