PHS VEHICLE TRACKING AND LOCKING SYSTEM

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***Abstract*: The Automation for Vehicles is the current trend, which transforms the mere conveyer to well-furnished moving home-like-feeling. As the country is opened to globalization, people's income is rising. And travelling now becomes an essential part of life. So, governments prefer not only to raise their road's quality but also the width of it. As a result, there is huge four track National Highway roads are flowing throughout the country. Nowadays more number of vehicles on the road, and people prefer to travel with their own vehicle. This project has implemented in order to overcome the vehicle theft type illegal activities. If anyone tries to steal the Vehicle then immediate locking of the vehicle should be done remotely with the help of PHS.**

***Keywords:* GPS,PHS,.Tracking**

I. INTRODUCTION

The Global Positioning System is used to track the vehicles using Low Earth Orbit Satellites continuously in the present scenario. But if the vehicle moves beyond the coverage area, it will not be able to track the vehicle using GPS, for this issue personal handy system is provided which works even if the vehicle is in a not reachable area. The Personal Handy System (PHS) service was launched first in 1995 in Japan The increase in the number of vehicles on-road brings not only revenue but also a headache to the Transport Office, Police Department, and others too. It is tedious to maintain the details of each vehicle, which is running on the road.

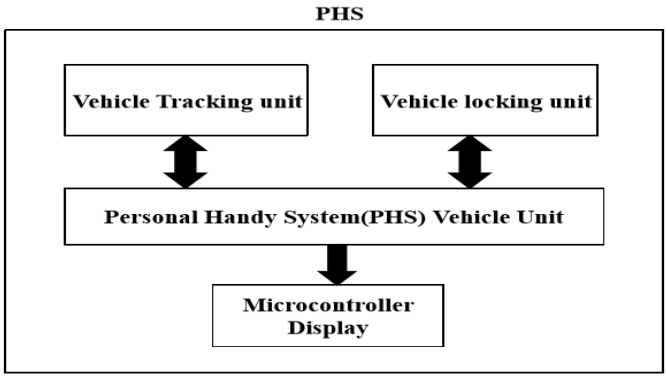
With the help of this system, it is possible to easily track vehicle for its geographical locations on a Microcontroller screen. The operator can track the vehicle's and able to see the current location in real time mode. Whenever a vehicle equipped with its ID Transmitter enters a "cell" / geographical location, that particular "Cell Unit" or "Cell Broadcaster" sends a wireless message to the centralized base unit. In turn, the base unit receives signals and after processing & decoding displays the geographical location of the vehicle on a graphical form on the MC monitor screen. This way the user can find the vehicle in real time mode & if any necessary the user can lock/immobilize the vehicle under observation; he can do so with the help of control software installed in the Microcontroller. Primarily this system is aimed at the rapidly growing segment of call center vehicles. This technology forms an integral part of the Call Centre Transportation System resulting in a reliable, secure & easy to control system for the call center vehicle transportation

PHS operates like cordless phone within a house, cell phone outside the house and satellite if out of reach. Also, it provides very high-speed wireless data transmission. The system setup can be made more interactive by adding a display to show some basic information about the vehicle and add emergency numbers, which can be used in an emergency which also makes it more efficient.

The system consists of vehicle tracking and vehicle locking unit. Vehicle Locking facility is provided using DTMF Technic. The DTMF decoder used here is CM8870.In addition to this Anti-collision and smoke detection applications are also facilitated.

In-Vehicle Tracking unit, Where ever the vehicle may be located we can track the theft vehicle each second of the clock without any interruption in the connectivity.

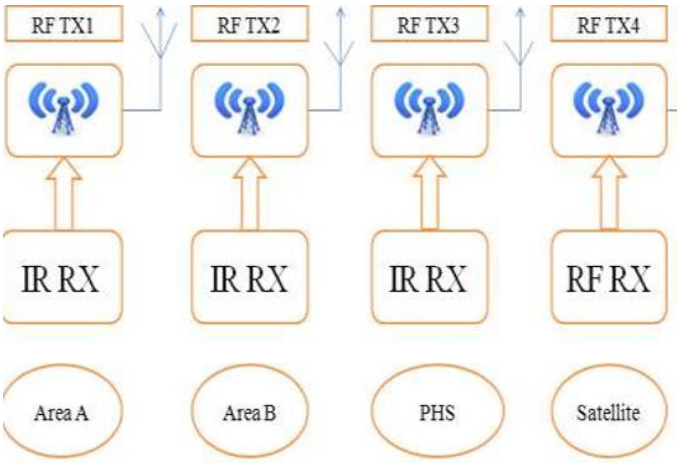
II. PROPOSED SYSTEM



Personal Handy System (PHS) mainly consists of 2 units they are:

1- Vehicle tracking unit.

2-Vehicle locking unit.



Vehicle tracking unit: In-Vehicle Tracking unit, Where ever the vehicle may be located we can track the theft vehicle each second of the clock without any interruption in the connectivity. The vehicle will be tracked based on the signal received from the RF and IR module. If the vehicle is theft and found in AREA A(Local area) then the signal will be received via IR and RF TX and RX, then the information will be displayed on the LCD display via the microcontroller. If the vehicle is in the PHS area then the signal will be received via IR and RF TX and RX, and the received signal will be sent to the receiver with the help of satellite. The information will be displayed on the LCD display via the microcontroller.

POWER SUPPLY UNIT

This section voltages viz., +12 V & +5 V, as working voltages. we are going to use a stepdown transformer to get the required voltage

IR TRANSMITTER AND RECEIVER

Infrared (IR) transmitters and receivers are commonly used in many different devices, though they are most commonly found in consumer electronics. The working of technology is that one component flashes an infrared light in a particular pattern, which another component receive and translate into an instruction. The transmitters and receivers are found in remote controls and all different types of devices, such as televisions and DVD. Devices that use this technology can also allow a computer to control various other consumer electronics.

RF TRANSMITTER

RF transmitters are electronic devices that create continuously varying the electric current, encode sine waves, and broadcast radio waves. RF transmitters use oscillators to generate sine waves, the simplest form of continuously varying waves, which contain information such as audio and video. Modulators are used to encode these sign wives and antennas broadcast them as radio signals. There are many methods to encode or modulate this information, including amplitude modulation (AM) and frequency modulation (FM). Radio techniques limit localized interference and noise.

RF RECEIVER

RF receivers are electronic devices that separate radio signals from one another and convert specific signals into audio, video, or data formats. in order to receive signals receivers use an antenna to receive transmitted radio signals and a tuner to separate a specific signal from all of the other signals that the antenna receives. Detectors or demodulators then extract this information that was encoded before transmission. There are many ways to decode or modulate this information, such as amplitude modulation (AM) and frequency modulation (FM). Radio techniques limit localized interference and noise.

DTMF Decoder:

The DTMF decoder used is CM8870. It is used to decode the mobile's audio signal, i.e., the keypad tone. When the user presses a button in the keypad of the mobile, it generates two tones at the same time. These tones are taken from a table comprising of a low frequency and a column frequency. Thus the resulting frequency signal is known as the "Dual Tone Multi-Frequency" signal. A DTMF signal is an algebraic sum of two different frequencies, one from the low frequency (higher frequency) group and another from the low frequency (column frequency) group. The CM8870 decoder decodes the received DTMF tone and then sends its equivalent binary code to the microcontroller. According to the program loaded into the microcontroller, the corresponding action starts.

BUFFERS

Buffers are the device that does not affect the logical state of a digital signal (i.e. a logic 1 input results in a logic 1 output whereas logic 0 input results in a logic 0 output). Buffers are used where extra current drive required at the output but can also be used to regularize the logic present at an interface.

RELAYS

It is an electromagnetic device which is used to drive the load connected across the relay and the o/p of the relay can be connected to the controller or load for further processing.

DC MOTOR

A DC motor relies on the facts that like magnet poles repel and unlike magnetic poles attract each other. A coil of wire having a current running through that generates an electromagnetic field aligned with the centre of the coil. When the current supply is on or off in a coil its magnetic field can be switched on or off or by switching the direction of the current in the coil the direction of the generated magnetic field can be switched 180°.

III. . PHS TECHNOLOGY

PHS (personal handy system) this system acts as a cordless phone in the home, and mobile phone outside the home and satellite phone once it goes out of reach where GSM cannot track at that time. This system is recently launched in Japan, China, and Taiwan. PHS comes under 3.9 G. It has a very vast application. PHS cells are small, with a transmission power of base station a maximum of 500 mW and range typically measures in tens or at most hundreds of meters (some can range up to about 2 kilometres in line-of-sight), as opposed to the multi-kilometre ranges of GSM. The small cell size also makes it difficult if not impossible to make calls from rapidly moving vehicles. PHS uses TDMA/TDD technique for its radio channel access method and 32Kbit/s ADPCM for its voice codec. Modern PHS phone can also support many services such as high-speed wireless data / Internet connection (64 Kbit/s and higher).

IV. METHODOLOGY

As we know that in this project there are different stages of working or we can say two are different applications used to monitor the Vehicle.

Vehicle Tracking: Here the vehicle will be tracked based on the signal received from the RF and IR modules. If the vehicle is theft and that vehicle is there in AREA A then the signal will be received via IR and RF TX and RX, then the information will be displayed on the LCD display via Microcontroller. If the vehicle is there in AREA B then the signal will be received via IR and RF TX and RX, then the information will be displayed on the LCD display via Microcontroller. If the vehicle is there in the PHS AREA then the signal will be received via IR and RF TX and RX, and the received signal will send to the receiver with the help of a Satellite. The information will be displayed on the LCD display via Microcontroller.

THEFT DETECTION

In this stage, we are monitoring the theft done to the Vehicle. As for the above discussion we were tracking the vehicle. Where ever the vehicle maybe we can track the vehicle each and every second of the clock without any interruption in the connectivity. In our project, one more application is there that is the vehicle Locking facility by using DTMF Technic. The vehicle has Mobile, DTMF Decoder, Buffer, Driver, Relay and Motor. If some is trying to theft the vehicle will be stopped automatically by deactivating the Motor.

ADVANTAGES & DISADVANTAGES

1. High-speed wireless data transmissions.
2. Effective in implementation and Easy to use.
3. Low power consumption, and compact size.
4. High reliability, due to the usage of power semiconductor devices.
5. Vehicles monitored from a remote area.
6. As in our project we are using PHS technology using this technology it is possible to detect the vehicle in not reachable area also.
7. Vehicle engine ON/OFF control.
8. Large Battery Backup is required.
3. Less automation.

APPLICATIONS

1. Tracking vehicle position
2. Surveillance
3. Fuel Monitoring
4. Stolen vehicle recovery.
5. Protection of exam paper during transportation.
6. Protection of important documents while transporting.

7. Avoiding robbery using DTMF decoder.

VI. CONCLUSION

The PHS used in the present scenario thus helps us to overcome the limitation of GPS, that is when GPS signals are not accurate due to some obstacles such as buildings, trees and by extreme atmospheric conditions. PHS also provides vehicle tracking and locking facility from a remote end of users. It includes additional application of anti-collision and smoke detection. Thus with the help of PHS technology it becomes more acceptable to avoid and control vehicle theft and to detect anti-collision. This system can be further setup to be more interactive by adding a display to show some basic information about the vehicle and add emergency numbers, which can be used in case of emergency, which also makes it more efficient

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