



ABSTRACT

Category: ENE – Engineering: Electrical and Electronics

Title of Project: Modular GSM GPS Tracker

Name: Daniël Wykerd

School: High School Parel Vallei

Grade: 10

Region: Stellenbosch

Purpose of Project:

Due to the high rate of vehicle and petty theft as reported by last year's governmental crime statistics and high prices of existing GPS trackers on the market, the decision was made to design, test and manufacture a modular GSM GPS tracking unit that can be used for multiple applications. There was also decided on making a secondary SD card datalogging module for the core GPS GSM module to prove the modular nature of the device.

Procedure/Method:

Research was done on the parts and skills required to design a GPS GSM tracker and SD card datalogger accordingly. Thereafter a schematic and PCB layout was created. Two prototypes of the core module preceded the final design to test the concept and improve on the design criteria. After the module was designed, the final PCB layout was sent to a factory to be fabricated. The next step was to assemble the board, develop software to compliment the hardware and test the board to determine how well it met the criteria. Thereafter a secondary datalogging module was made. One prototype preceded the final prototype to test the concept and chosen parts. Next, a schematic and PCB layout was created and sent to a factory for fabrication. Lastly the module was assembled, new software was written for the hardware and the final module with the core module was tested to see how well it met the design criteria.

Data/results:

Both modules had to comply to the following criteria to meet its goal: it had to be modular, easily manufacturable, compact, draw low current. Enthesis was placed on reducing the possible retail cost below the prices of currently available alternatives. The final core module also should not need a subscription to a third party. The core module proved to be very effective and accurate in its GPS tracking capabilities. All criteria were met and some even exceeded beyond expectation. The datalogging module also worked well and logs data in a common file format that can be used with most maps or fitness software.

Conclusion:

The Modular GSM GPS Module and SD Card Datalogging Module designed and manufactured in this project met the requirements and criteria of this project exceptionally well, thus it has met the engineering goal.