Smart Irrigation For Greenhouses (RIO)
Intelligent Systems and Telecommunications

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Abstract

This work describes the development of an embedded system for irrigation control in greenhouses, using radio frequency communication technology. It incorporates a 16F877 microcontroller as the main module for information processing.

The embedded system contains temperature and humidity measurement sensors to obtain the environmental conditions, in addition to integrating different electronic components that help process the information to optimize the water consumption of a conventional greenhouse. The system is intended to be applied in conventional greenhouses to establish an improvement in water management and automate part of the agricultural production process in this sector.

Introduction

Figure 1 Sensor tests
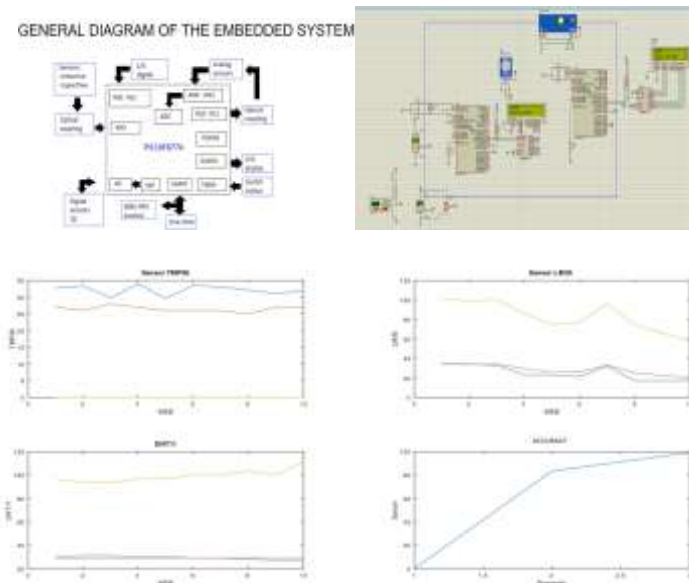
Materials and methods

Figure 2 Block diagram, simulation and graphics

Results

Figure 3 Circuit construction and results

Conclusions

An RF transmitter and receiver were developed. This was achieved in a simulated way, in physical (protoboards) and PCB. It is intended to make these boards with XBEE and the use of oled screens, as well as the reception of multiplexed sensor readings as an improvement.

In addition, from the graphs obtained in Figure 1 it will be possible to obtain information on plant growth, amount of water to provide and variables that will help to improve the product.
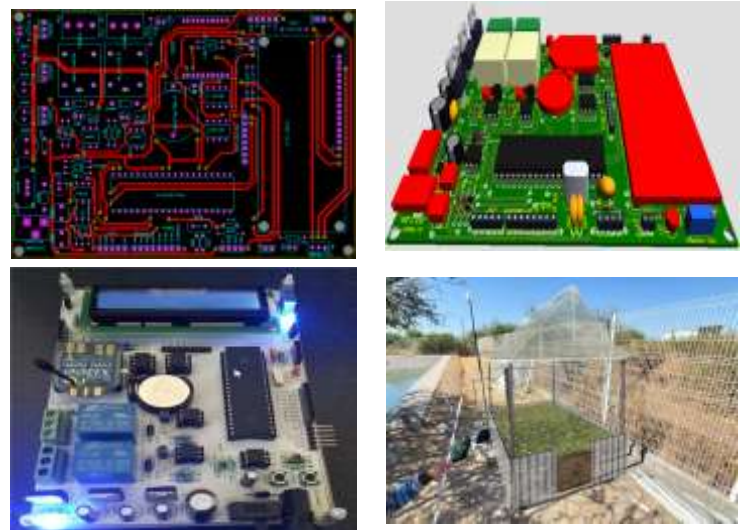
Future of research

Figure 4 PCB and future work

Acknowledgments

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