FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA

FINAL REPORT OF DIPLOMA PROJECT

PROJECT TITLE :

ULTRASONIC PEST REPELLER

21.03.2003

PREPARED BY:

KHAIRUL ANWAR BIN ABDUL RAZAK
2000425688
AZHAR BIN SHAHIDAN
2000425624

SUPERVISOR
TUAN HAJI MOHD NOR BIN TAJUDDIN

Abstract

Ultrasonic pest repeller is some sort of repeller that we used in order to repelled the insect and pest. This repeller is not the same as in the current market .

We say this because the repeller that we have designed is based on the convenient of the user. We have design the repeller that have small in size which make it is easier to carry anywhere. This repeller is designed to use the wave between the ranges of 30 kHz to 50 kHz. Human being can't hear these high-frequency sounds. Unfortunately, all pests do not react at the same ultrasonic frequency. While some pests get repelled at 35 kHz, some others get repelled at 38 to 40 kHz.

To increase the effectiveness, this circuit is designed to make it able to vary the frequency. The frequency can be varied in certain limits step by step automatically. Here are 5 steps of variation are used but the same can be extended up to 10 steps, if desired. For each clock pulse output from op-amp IC1 CA3130, the logic 1 output of IC2 CD4017 shifts from Q0 to Q4 (or Q0 to Q9). 5 presets VR2 through VR6 are set at the different values. VR1 is used to change the clock pulse rate. IC3 is wired as an astable multivibrator operating at a frequency nearly 80 kHz.

Its output is not symmetrical. IC4 is CD4013, a D-type flip-flop which delivers symmetrical 40kHz signals at its Q and Q outputs which are amplified in push-pull made by transistor T1, T2, T3 and T4 to drive a lower cost, high frequency piezo tweeter. For frequency adjustments, you may use the oscilloscope. It can be done by trial and error also if you do not have the oscilloscope.

This pest repeller to be much more effective then those published earlier because here ultrasonic frequency is automatically changed to cover the different pests and the output power is also sufficiently high.

Acknowledgement.

Assalamualaikum. First of all, we want to express our gratitude to the Almighty because let us finish our KEU 380 (Project 2) final report. We also want to thank our supervisor Tuan Haji Mohd. Noor bin Tajuddin because of his guide; we can finish our final report in the given time. We also want to thank our friend because of their moral support and the other help that they have been given to us like give permission to borrow their tools and other thing in order for us to finish this final report. Without the help of you guys this final report can't finish in the expected time. You are my best friend.

This final report is our second step after Project 1 where we used the software to design and run the project. In Project 2, we are dealing with the hardware, making a model and prepare for the presentation in front of the panel. We trying our best in order to make this final report as the best that we could produce. This report concludes all our progress about our project, the problem that we faced in order to finish it, how we troubleshoot the problem and the other elements that related with our project. This project are the best project that we could produce and we hope that this project could give something useful to our daily life.

Contents

Introduction.

This project is called Ultrasonic Pest Repeller. What is Ultrasonic Pest Repeller actually? Why this product is different from the product that on the market right now? Is this product having the reasonable price?

Ultrasonic pest repeller is the some sort of electronic application that have the same function like the product on the market right now. It is well know that pests like rat, mice, and other can be repelled by the ultrasonic frequency. What is ultrasonic frequency actually? Ultrasonic frequency is a range of frequency above than 30kHz.Human beings cannot hear this high frequency sound. While some pests get repelled at 35kHz,some others get repelled at 38 to 40kHz.Thus to increase the effectiveness, frequency of ultrasonic oscillator as to be continuously varied between certain limits.

Compared to the pest repeller available in the market right now, the pest repeller that we have design is the most economical one. This is because this is the cheapest one and you can build it without using the complex equipment.