

**QUT Student ePortfolio for Grant Ashley Dare**

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**Introduction****EGB240 Buzzer Assessment**

Welcome to my Student ePortfolio. Here you can view a selection of my Experiences, as well as Artefacts which are examples of my work. The information I have made available to you demonstrates the QUT commitment to developing graduates who can contribute effectively as citizens, leaders in the wider community and competent professionals within their chosen discipline.

This portfolio contains reflections upon my Experiences and Artefacts across a range of skills and settings including academic, work, community and personal and is presented as evidence of my success in these skill areas.

## Professional skills

### 3.2 Effective oral and written communications

#### EGB240 Assessment 1 written report

##### Document the design of a Bi-Tone Buzzer

##### Level: Basic

The Bi-Tone Buzzer assignment is an electronic design task to communicate the design and development of the Bi-Tone Buzzer circuit appropriately to others. Interested in this design might include parties such as hobbyists and particularly security firms. The practical use for this circuit would be in a security service. Particularly a security firm would be interested in this design as the overall PCB size has been design as minimalist and provides an appropriate alarm system at a low cost. The design task outlined in this portfolio provides the necessary knowledge where a security firm could further expand on the design with innovations such as: a sweeping tone, more than 2 tones, and periodic pauses.

Hobbyists might also be interested in this design as it implements a low-cost Bi-Tone Buzzer in a confined space. Hobbyists could potentially look to use this in DIY security systems or any application that would require audible cues. The design documentation outlines to these hobbyists the use and design of a relaxation oscillator to be adapted to other applications if desired or how to modify the design to meet the frequency requirements of their application.

The portfolio is presented in a format appropriate to any third party that may want to replicate the design with technical data such as: theoretical design, PCB design, PCB component overlay, and expected results. As such the style of the portfolio has been written to appeal to a wide range of audiences with a formal style. It was assumed that any reader would at least have introductory knowledge in electronics and electronic design and as such beginner electronics terms, such as resistor and capacitor, were not defined but rather assumed knowledge. The use of a Schmitt Trigger to design a relaxation oscillator was explored and explained to provide this design knowledge to any audience reading the portfolio given hobbyists may not have an established knowledge.

Included in the portfolio are sections pertaining to the: theoretical design, physical design, reproduction and analysis. The theoretical design details would interest other engineers or parties interested in electronic design to allow for modifications of the design or innovations. The physical design and reproduction interests fabricators and assemblers in that it displays the PCB design and the PCB assembly for the interested parties to reproduce the design. The portfolio also includes details of expected results in both simulation and production. This would assist test engineers in assessing if the components used are within acceptable tolerances or other engineers in expected results from further innovations or redesigns. The forms of documentation included in this design portfolio should allow any party from design engineers to manufacturers to test engineers to design, produce, and validate their implementation of the Bi-Tone Buzzer.

This portfolio should provide any reader the necessary information required to understand the design of the Bi-Tone Buzzer and how to replicate the circuit. Included in the report was information on the design theory, the design simulation, the PCB design, the component overlay, and analysis on both simulation and practical results. Given these sections the reader should be able to understand the theory of the design and how to replicate the design in practice. Given that the reader should choose to replicate the design the analysis section provides the reader the necessary resources to appropriately compare their implementation to the results I observed. The design report could have included a section on further innovation and a discussion on innovative options. The experimental plots could have been presented neater with an oscilloscope with a screenshot function, however during the design I only had access to an older oscilloscope.

The structure of this assessment provides a good foundation for an understanding of proper engineering design documentation and will continue to be beneficial.

##### Related Files

[EGB240 Assessment1 Portfolio n9476512.pdf \(file n/a in print\)](#)