

WORK BASED PROJECT PROPOSAL

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1 ABSTRACT

This document is a proposal that defines the project to be pursued for the work based project module.

The proposed project is the development of a triple test jig for a microcontroller product manufactured at Sony UK Technology Centre to be used in existing automation equipment. The jig is based off an existing single test jig. The scope of the project is to develop a prototype jig.

2 OVERVIEW

One of the products manufactured at Sony UK Technology Centre is a microcontroller. This product must be tested before it is shipped to the customer. An existing test jig has already been designed to test this product and is currently in use in the production area. It is a pin bed type jig that uses pins to interface with the device under test (DUT) and to confirm it functions correctly. It is a manual process however, and an operator must be present in order for it to be used. The current test jig only tests a single DUT at a time.

Within Sony UK Tech, work has been carried out to develop automated production lines for the manufacture, test and packing of circuit boards. The microcontroller test fixture has been targeted as a product that would benefit from an automated production line. Some benefits of an automated line would include: money savings due to less manual operators, more efficient movement of product, faster loading/unloading of product into test jig and potentially greater output of product.

The automation of the manufacturing test is what will be explored and developed in the project. In order for the microcontroller test to be integrated into the existing automation hardware there must be several developments. Firstly, the pin base must be redesigned to fit the form factor of the current automation pin bases. The electronics within the pin base must also be designed to fit within.

To increase the output of an automated test system, the pin base will also be changed to test multiple DUTs in parallel. This will triple the output of the product for the same cycle time, per test jig.

3 AIM

The aim of this project is to develop a working prototype jig. This will be a single pin base that can load 3 microcontrollers and test them simultaneously. The new pin base will require the design of new PCBs that are capable of running 3 tests at once. The software for testing each product will be almost identical to the current jigs, however a method of running 3 tests at once will need to be developed.

The prototype that will be developed will be used to verify the test automation concept for this product and will be a part of the factory automation as a whole.

4 SKILLS REQUIRED

Electrical design – Some new circuits must be designed for the new pin base. Altium Designer will be used to develop the electrical circuit designs.

PCB design – New PCBs must be designed to fit within the triple test automation pin base. Altium Designer will be used to develop the PCBs.

Software design – Software will need to be developed to implement a parallel test. The software that is currently used on the test jigs within Sony, is C and Python. Both will be required for this project.

Teamwork – The new jig will require a mechanical designer to design the metal work for the jig. A collaboration between the mechanical and electrical designer will be required to ensure that all parts fit inside the pin base correctly. This would include the dimension of the PCBs for example.