Electrical measuring instrument test is a process of comparing an electrical measuring instrument (EMI) with a reference standard. EMI, which is an electronic device, has measuring error when it is used for a period of times. Therefore the EMI must be tested and calibrated regularly in order to achieve the standard reference accuracy during a specific period of time.

In this thesis, a design and development of a program for test an EMI on the microcomputer is presented. The objectives of the test are to reduce the time required for the manual test, to achieve the testing accuracy, to be easy to used, and to minimize the hazards during the operation. The test is done by using a microcomputer to control the EMI and the reference standard via the IEEE-488 bus. Additionally, the microcomputer is used to store the test data into a file for each EMI test. To test an EMI, operations of the EMI and the reference standard are read from a file and stored in the main memory in the form of linked lists. Then test results are compared with the reference standard to determine whether the result tolerance is acceptable. The test results can be stored on a file or can be displayed on a screen or printer.

The program is implemented and tested on an IBM PC 386SX 20MHz, it tests a digital voltmeter (HP3455A) in 7 minutes, a signal generator (HP8656B) in 30 minutes, a frequency counter (HP5328A) in 9 minutes, whereas the manual test normally takes approximately 2 hours, 6 hours, and 2:30 hours, respectively.