This document describes in detail the analysis, design and development of a system capable of testing electronic printed circuit boards (PCBs) in an efficient way. These PCBs are mainly composed by programmable devices. The system has been tested on one model of PCB. However, it has been designed to be applicable to any other type of PCB with some devices implemented following the IEEE 1149.1 specification. The mentioned standard refers to boundary-scan testing.

In the first part of this document, a study of the hardware of one test module from Victoria Combo, a Trend Communications S.L. tester, is carried out. Afterwards, the objectives that the diagnosis system has to support are established in order to select a right development procedure.

In the second part, the design and development of the applications composed by the system are described. The flow charts and source codes are also included.

At the end of the document, the results after working with the diagnosis system on a modified PCB are exposed and evaluated. In this way, the main assembly faults produced during the manufacture of PCBs are simulated.