EECE 690/890
Digital Radio Hardware Design

Team 4   Assignment 5

Due Dates:
Tuesday 11/24/98 (Design Review prior to Board Submissions, Parts Ordering)
Tuesday 12/1/98 (Design Files Sent to APC, Panels Fabricated)

Introduction

This is the fifth and final in a series of assignments designed to guide you through the tasks needed to complete the transceiver layout and mechanical engineering tasks. The object of this assignment is to have the boards fabricated and build the radios. (Who will do the actual soldering of components is yet to be determined, but you need to do everything else.)

We will hold a mini design review on or around Tuesday 11/24 to go over your design files, parts lists, and final mechanical drawings. You should have your work done by this point so that we can review it for accuracy and completeness. If the layout files and parts lists are sound, we may actually submit them before the Thanksgiving break!

EDA/Mechanical Design Engineer 1 Tasks

- Create your team's final parts list that you will provide to Steve Booth in the Electronics Shop. Your parts list should be in a table format with the items below in columns and one row for each item.
  - Quantity
  - Manufacturer
  - Manufacturer's part number
  - Vendor (e.g. Digi Key)
  - Vendor part number
  - Vendor catalog page number (provide catalog number at top of page)
  - Price each
  - Price total

  You should try to minimize costs by checking to see what parts we have in-stock and marking them on your list as being already available. Some items that we already have include headers, certain ribbon cables, all discrete capacitors/resistors, and all the ICs (except the voltage regulators).

- Do a final layout check, in conjunction with members of other teams to be sure nothing in the design has changed. Be sure your footprints match the parts you will order and that the hole sizes match those needed for the parts.

- Read through the information from Alberta Printed Circuits provided on the disk with this assignment and on their web page at www.apcircuits.com to learn how we will submit our files.

- Generate Gerber files for the solder side and component side foil patterns, and a drill file. Refer to assignment number 1 to refresh yourself on creating these files. When creating the Gerber (Photoplot) files, you will need to use select Apertures before clicking OK in the File>Photoplot>Plot window. From the Apertures window, click Auto. Then from the parent window, click OK to generate the Gerber file. When using File>NCDrill>Output, be sure to select Tools and then Auto before selecting OK to create the drill file.

- Edit the generated drill file to modify the drill sizes to ones that are on the "Free List" used by our fabricator. (See the attached information from APC).

- View the photoplot and drill files in a third-party Gerber viewer to be sure it was generated correctly. (See the zip files on the disk - starting with 'gcpcook.zip'.)

- Prepare your files for sending to the fabricator. (See attached info from APC).

Deliverables

- Complete parts list in a form ready to give to Steve Booth

- Disk(s) containing your layout artwork files

- Disk(s) containing your files to be sent to the fabricator (including the submission form file)

EDA/Mechanical Design Engineer 2

- <u>Do all of the the items above for the RF board</u>, except for the RF board parts list. The parts list for the RF board is being prepared by Team 1. Work with your teammate to be sure his/her parts list includes all of the panel mounted items needed (switches, etc.)

- Update your mechanical drawings to include the hole sizes and outer dimensions so that you can fabricate the panels.

- Work with Steve/Joe in the Electronics Shop to fabricate the panels/housing for the transceivers.

Deliverables

- Disk(s) containing your layout artwork files

- Disk(s) containing your files to be sent to the fabricator (including the submission form file)

- Panel drawings

- Completed panels (By the final due date - or slightly thereafter.)