

UNC Charlotte, ECGR 4101/5101, Fall 2005: Lab 1 Solution

Scored as 100 points possible, scaled to 20 points for class spreadsheet

Prelab Assignment

1. How much RAM does the board have?

31 KB (31744 bytes). (5 Points)

2. How much of that can you use (user RAM)?

31616 bytes (5 points).

3. How much Flash memory does the board have?

384 KB. (5 points).

4. Is there any other memory on the board?

Yes, 4KB OF EEPROM. (5 points).

5. What is the first MANUFACTURING step that is likely done for this board production (hint: There is not a picture of it, and it is implied!)

Creating the SMD (Solder Paste Mask) or making the PCB. (5 points).

6. What is done first: hand/manual placement of parts or robotic placement of parts?

Robotic. (5 points).

7. Can manufacturing of this board be done completely manually? Why or why not?

No, it can't be done all manually. Spacing and precision need robotics. (5 points).

Lab Questions

Examine your evaluation board:

1. List all of the input devices you see on the board.

Switches, thermostat, potentiometer. (15 points)

2. List all of the output devices you see on the board.

Display, LEDs (10 points)

3. How many BGA parts do you see on the board?

None. (5 points)

4. How many QFP parts do you see on the board with at least eight leads?

One. (5 points)

5. How many DFP parts do you see on the board with at least eight leads?

None. (5 points)

6. How many DIP and through-hole parts do you see on the board?

No DIPs, 16 through-hole parts (3 switches, 4 LEDs, 4 headers, 2 crystals, 2 POTS, 1 thermister). (5 points)

7. Point out what you think is the microprocessor (CPU) on the board.

It is the QFP Chip on the board. (5 points)

8. How do you think you would be able to load and test a new software build with this board?

Using the I/O ports to download the programs. (5 points)

9. What other test/debug interfaces do you see on the board? What tools would you use?

SOFTWARE: using ICD or IDE.

HARDWARE: using logic analyzers and scopes. (10 points)