



## PROFESSIONAL PRACTICE

### CATEGORY A, B & C ACTIVITY LOG SHEET

#### 1. PERSONAL DETAILS

Griffith identification Number	Family Name: Barber
<div style="display: flex; justify-content: space-around;"> <span>5</span><span>1</span><span>3</span><span>8</span><span>8</span><span>7</span><span>7</span> </div>	Other Names: Jessy

#### 2. PROFESSIONAL PRACTICE ACTIVITY

<b>CATEGORY</b> <small>(See Note 1)</small>	<b>A</b>	<b>Days</b> <small>(See Notes 2 &amp; 3)</small>	<b>5</b>
<b>Week Beginning</b>	<b>9 / 1 / 22</b>	<b>Week Ending</b>	<b>13 / 1 / 22</b>
<b>Supervisor Name:</b> Alex Forward		<b>Contact Ph:</b> +61755492370	
<b>Organisation Name:</b> Gilmour Space Technologies		<b>Email:</b> alex.forward@gspace.com	
<b>Organisation Address:</b> 5 Millennium Circuit, Helensvale			

#### 3. ACTIVITY DESCRIPTION & REFLECTION

**Description of Activities Undertaken:** (Approximately 50 words)

After developing my schematics last week and getting them reviewed, I was able to finally move on to the PCB design. This was by far the hardest learning curve yet, and I had to learn many new theoretical concepts such as differential pair matching, trace width, tear drops, signal layers, power, and ground planes, polygon pouring, vias and BGA routing. This was also the most enjoyable part of the process for me and seeing all my components on the board and verifying that my dimensions were correct was a massive accomplishment. By the end of the week, I had everything connected and almost ready for a critical design review.

**Discuss the Engineering Application Abilities Developed:** (Approximately 50 words) (See Note 5)

This week involved as much theoretical research as physical implementation. In doing this I applied established engineering methods to solve a complex engineering problem. For example, I had to investigate the concept of differential pairs in signal routing and use this information to analyse design metrics such as trace width, length, and delay to ensure that CAN high and low signals are received at the same time. I conceptualised alternative engineering approaches after my initial routing attempt failed and had to restart with a new perspective to reach an optimal solution choice. This is because the routing is involved within four signal layers, and the traces cannot overlap. This results in a complex problem of routing many IC chips across the board as efficiently as possible.

**Discuss the Professional and Personal Attributes Developed:** (Approximately 50 words) (See Note 5)

After having quite a few failures in my initial attempts at the PCB layout I had to adopt a creative, innovative, and pro-active demeanour. Every time I restarted, I came back with more knowledge, and I was better equipped to execute my task. My 2<sup>nd</sup> and 3<sup>rd</sup> attempt at routing the system was far more successful than my first. I had to get creative when trying to figure out the most optimal way to route these systems, especially when routing to the BGA since it is so small. I grabbed some paper and a pen and discussed with a co-worker a mathematical model for achieving the most optimal solution using 4 different colours. We eventually arrived at a model which is the basis of my first complete PCB prototype.

#### 4. STUDENT SIGNATURE

<b>Student Signature:</b> <i>Jessy Barber</i>	<b>Date:</b> 14-1-2023
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**Notes:**

1. See the table provided in the Activity Log Guidelines for the definition of each category of professional practice.
2. For work experience paid on a casual hourly basis, a day of work is taken as 7.25 hours.
3. Only days between Monday and Friday can be counted for research undertaken at Griffith University in Category B Professional Practice, unless prior approval has been granted by the course convenor for 6008ENG.
4. At least one Activity Log Sheet must be provided with each Record Sheet for Professional Practice in categories A, B and C.
5. Refer to the Engineers Australia Stage 1 Competencies.