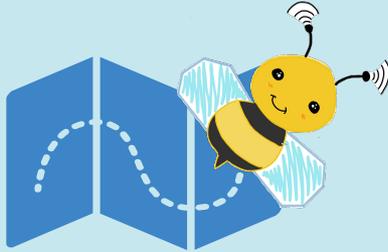


# Critical Design Review



Team Bumblebee  
Spring 2020



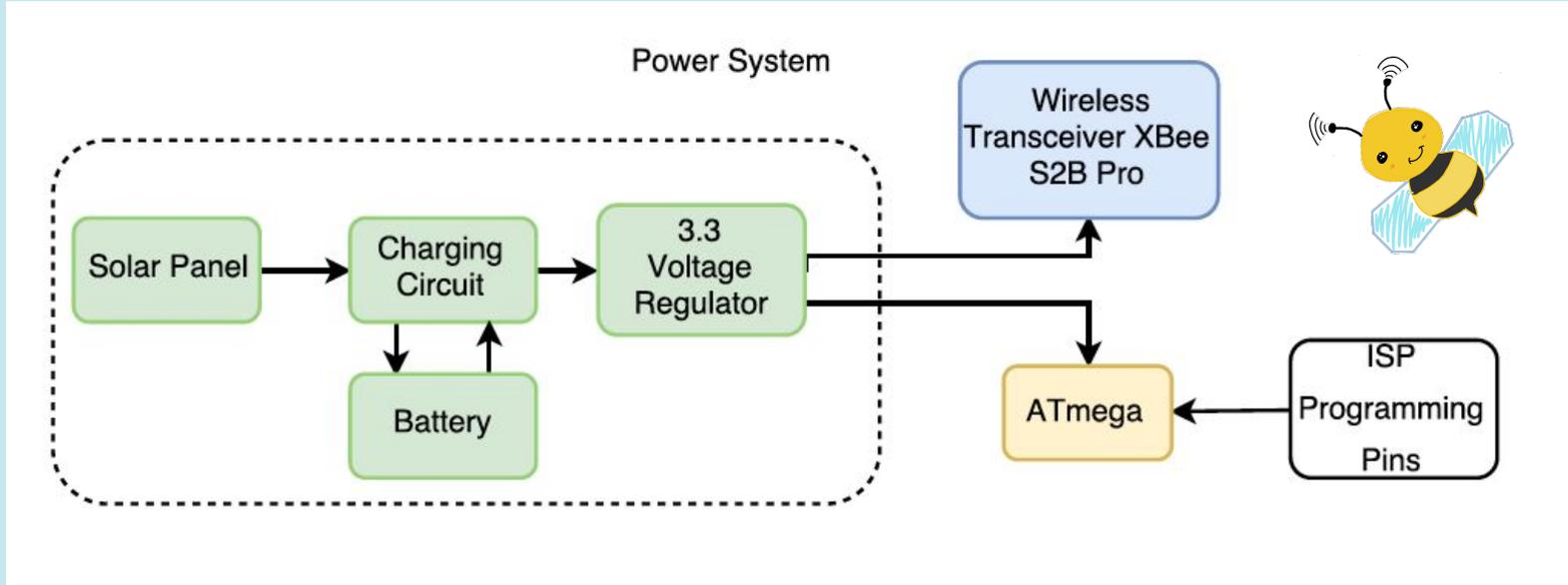


# Presentation Overview

- Block Diagram
  - Power
  - Signal/Communication
- Team Progress
- New PCB Layout
- Problems
- New Plans/Upcoming Tasks
- Gantt Chart
- Questions

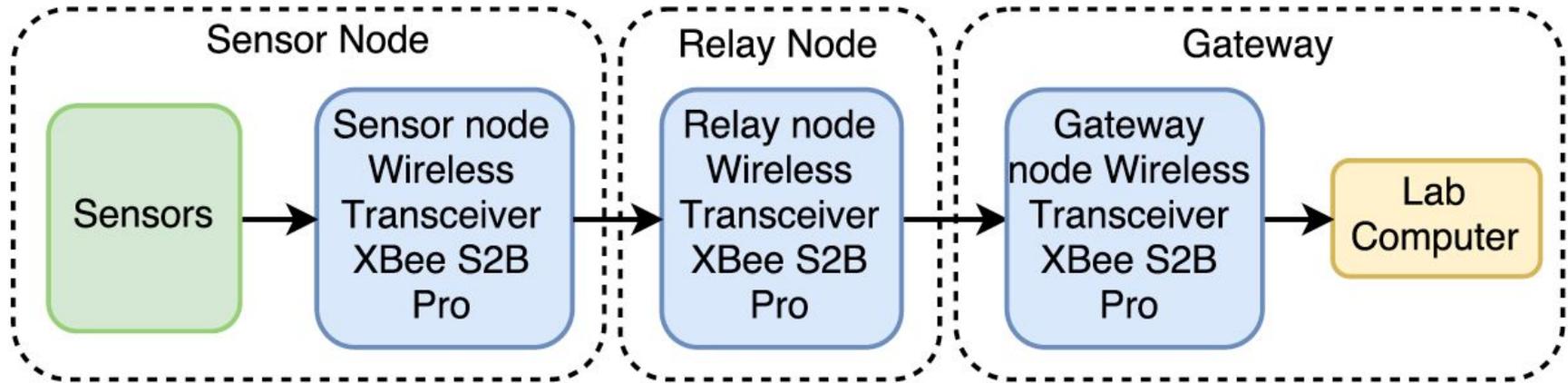


# Block Diagram - Power





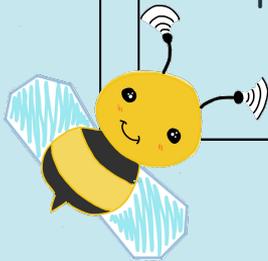
# Block Diagram - Signal/Communication





## Team Progress

- Fabricated and ordered ver. 4.1
- Conducted Range Testing
- Received both new PCB (ver 4.0 and ver 4.1)
- Populated one ver. 4.0 board
- Finished boot loading





# Bumblebee Ver. 4.0 and 4.1

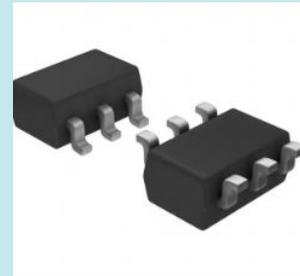
## Version 4.0

- Uses 5V Step Up Breakout board



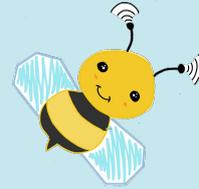
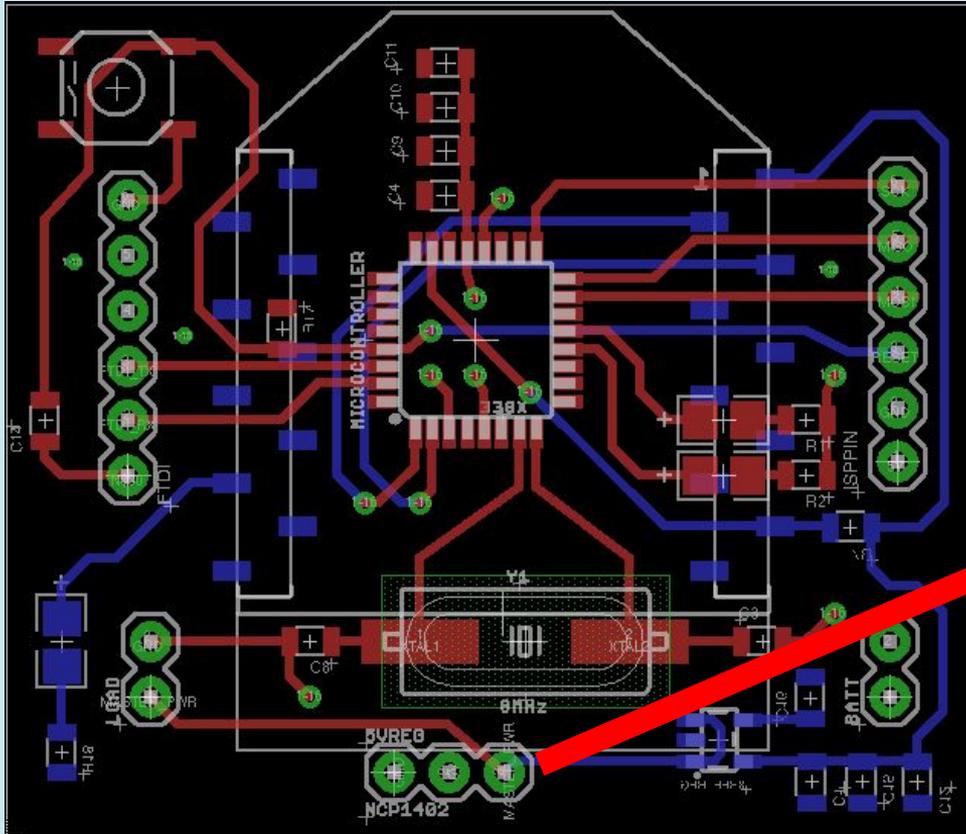
## Version 4.1

- Implemented a 5V regulator SMD (TPS61222DCKR)





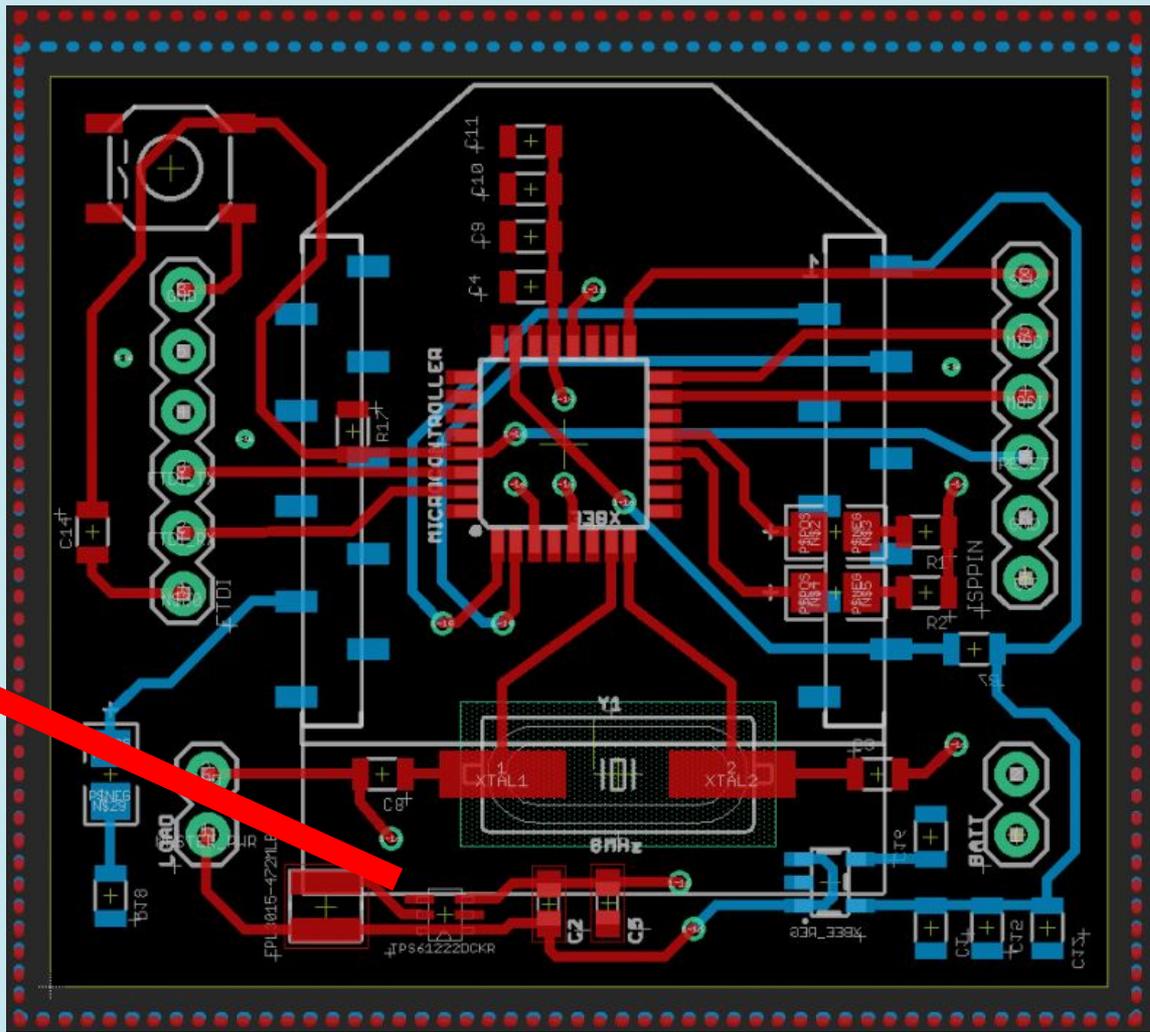
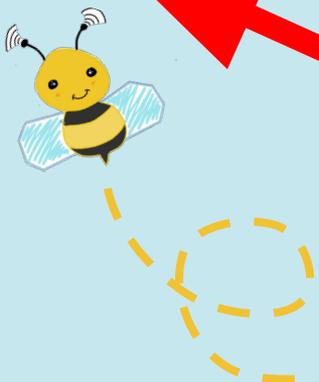
# PCB Design Version 4.0



5V Regulator Breakout Board



# PCB Design Version 4.1

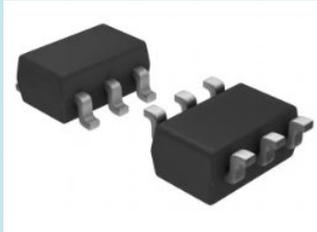




# 5V Voltage Regulator (Bumblebee Ver.4.1)

Part Number: TPS61222DCKR

IC Reg Boost 5V 200mA



Function	Step-Up
Output Configuration	Positive
Topology	Boost
Output Type	Fixed
Number of Outputs	1
Voltage - Input (Min)	0.7V
Voltage - Input (Max)	5.5V
Voltage - Output (Min/Fixed)	5V
Voltage - Output (Max)	-
Current - Output	200mA (Switch)
Frequency - Switching	Up to 2MHz



## Problems



- After populating new board (ver 4.0) had problems bootloading
  - Eventually successfully boot loaded right before Spring Break
- Coronavirus
  - PCB Manufacturing and Delivery
  - Social Distancing

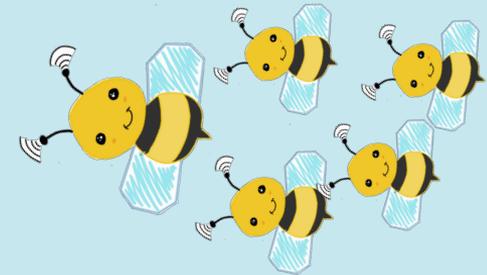
$$\frac{\text{social}}{\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}} \\ \text{-ing}$$





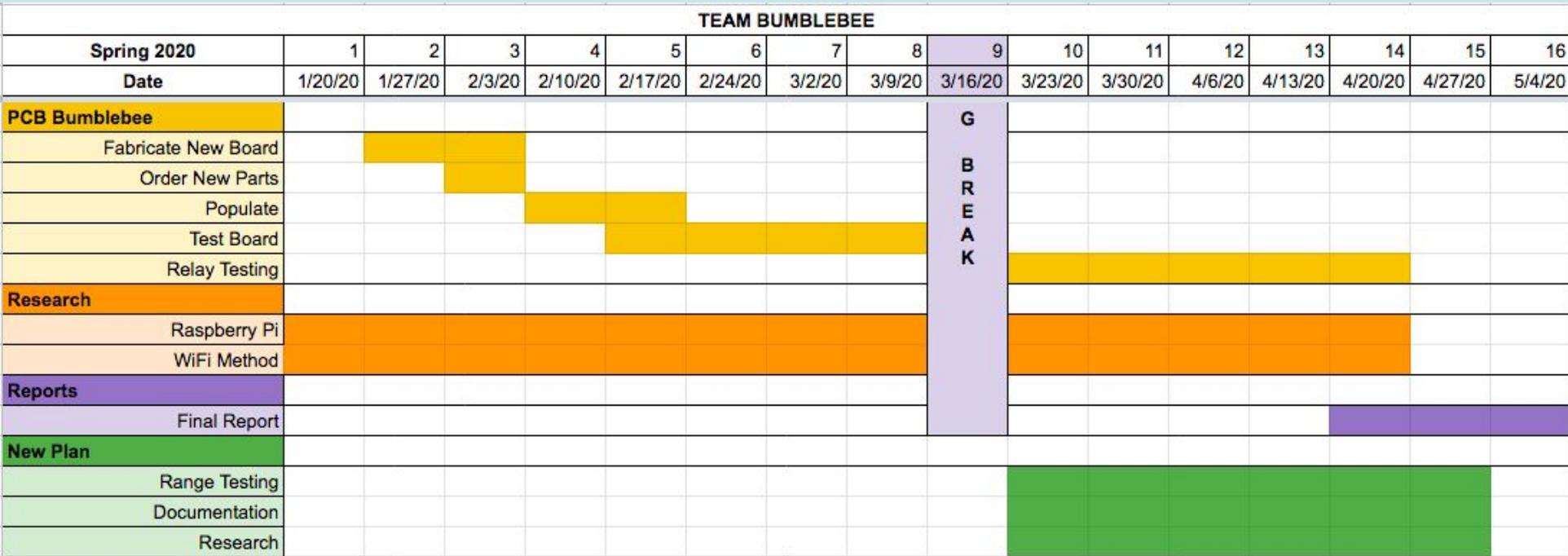
## New Plan/Upcoming Tasks

- Summarize + Document on current Progress
  - Wrap up what we are doing in the lab
- Continue range testing in our community while practicing social distancing
  - Obtain Bare Bumblebee from SCEL room
- Research - Understand Networking of Xbee
  - Networking of many nodes
    - One - to - many
    - Many - to - many
  - Resources - Zac (previous SCEL member), online





# Gantt Chart





# Questions?

