



Team Guava

Critical Design

Review

Presentation

F17



SCEL

Smart Campus Energy Laboratory



Presentation Overview

- Introduction
- Motivation
- Block Diagram
- Progress since PDR
 - Schematic
 - PCB Design
- Final Status
- Gantt Chart
- Problems
- Future Improvements
- Questions



SCEL Motivation

Guava is the fifth iteration in the weatherbox design. The main goal for Guava's weatherbox is to incorporate newer components into the existing SCEL weatherbox layout. The motivation of team Guava is to improve upon the recent generations by using a new processor.

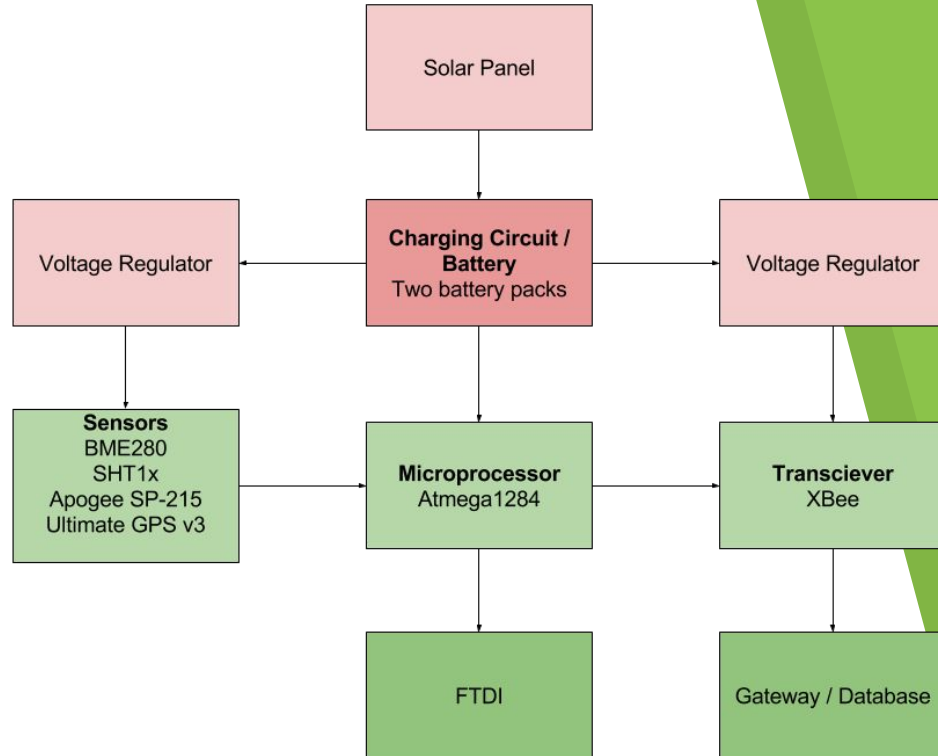


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Block Diagram

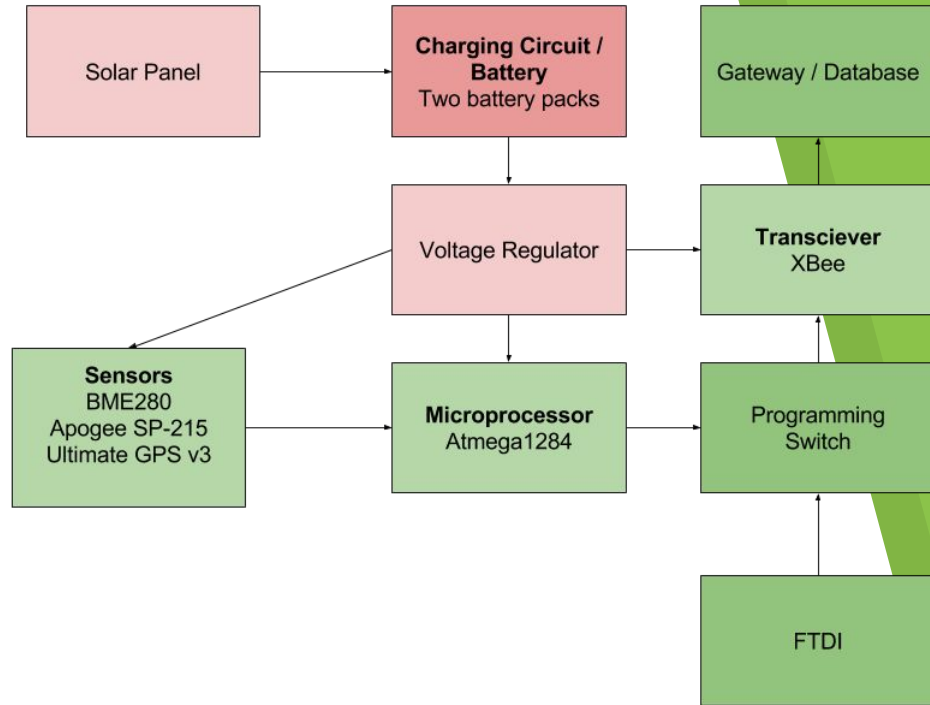
- Using just one 3.3V voltage regulator
- Not be using SHT11
- May change clock to lower MHz to decrease power consumption





Block Diagram

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- Not be using SHT11
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Guava Progress

- Finished implementing and testing all sensors (GPS/BME/IRRAD)
- Found pin assignments for 1284
- Finished schematic
- Finished PCB Design
- Began to consider housing dimensions and shape

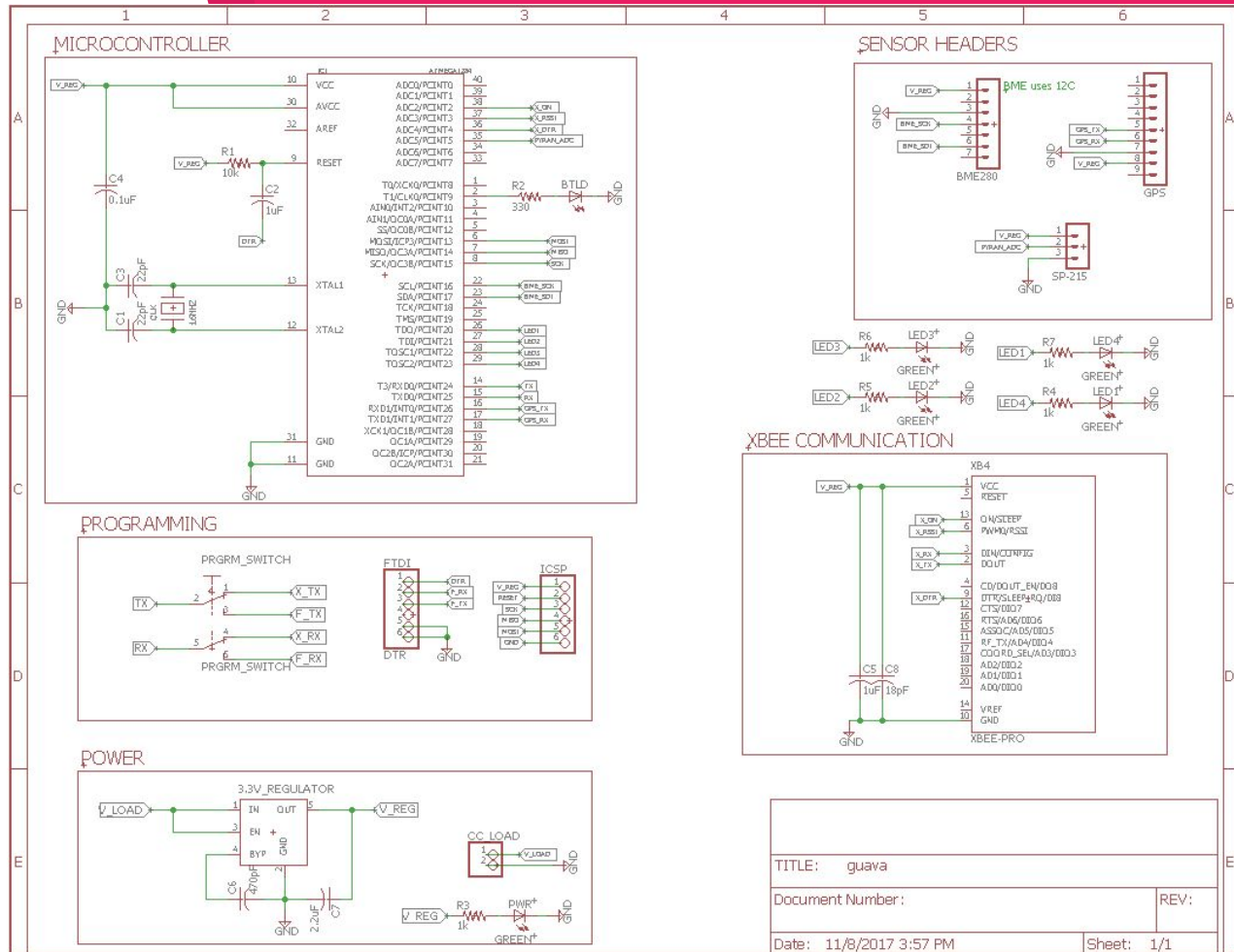


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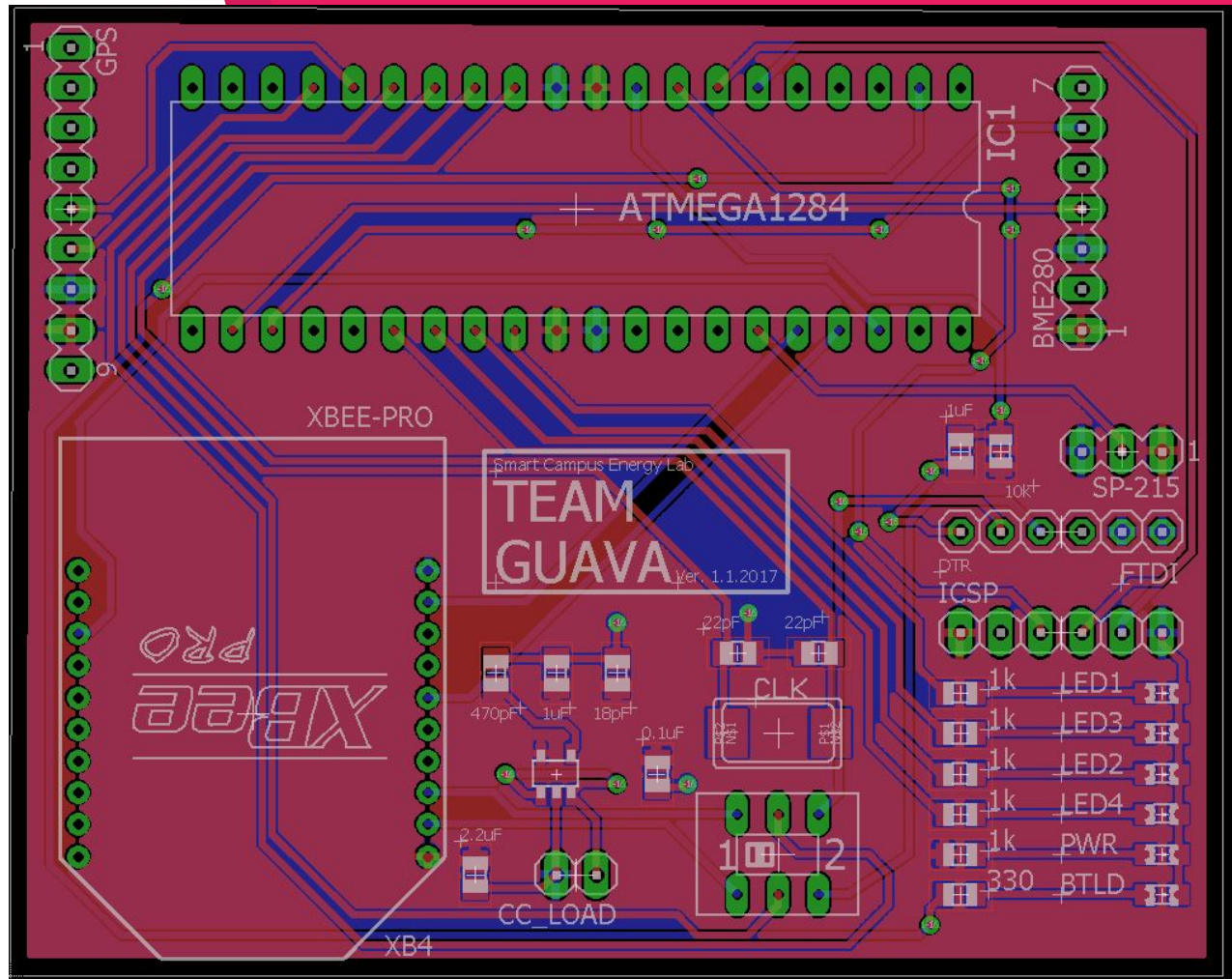
- May use a dedicated voltage regulator for XBee
- May change 1284-AU to TQFP
- Double-check pins
- May integrate BME280/GPS breakout onto PCB instead of using headers.

Schematic



- Open up voltage plane routes to prevent bottlenecking
- Change LED routing/pins
- Double-check pin orientation
- Make a separate plane for V_LOAD

PCB





Future Work

Produce a self-sustaining environmental sensor module that will collect meteorological data

- Improve PCB design
- Design and build weatherproof housing
- Test and deploy the completed weatherbox



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Guava															
(Gantt Chart)															
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	9/4/2017	9/11/2017	9/18/2017	9/25/2017	10/2/2017	10/9/2017	10/16/2017	10/23/2017	10/30/2017	11/6/2017	11/13/2017	11/20/2017	11/27/2017	12/4/2017	12/11/2017
Presentations															
Proposal			9/18/17												
PDR					10/14/17										
CDR									11/10/17						
Final												12/2/17			
PCB Design															
Schematic															
Board Layout															
Review															
Housing															
Build															
Fabrication Time															
Testing															
Reports															
Final Report															



Gantt Chart



Problems

- Didn't know all of the pin assignments
- Couldn't upload the code

Predicted Problems:

- Missing parts (have to order)
- Soldering
- Solar panels/weatherproofing



Thank you!
Any Questions?



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CREDITS

We used the following free online resources:

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