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Team Bumblebee
Critical Design Review

Isaiah Aribal & Kayla Amano

Overview

- Updated Block Diagram
- Team Progress
- Updated Gantt Chart
- Problems
- What we have yet to finish?
- Questions

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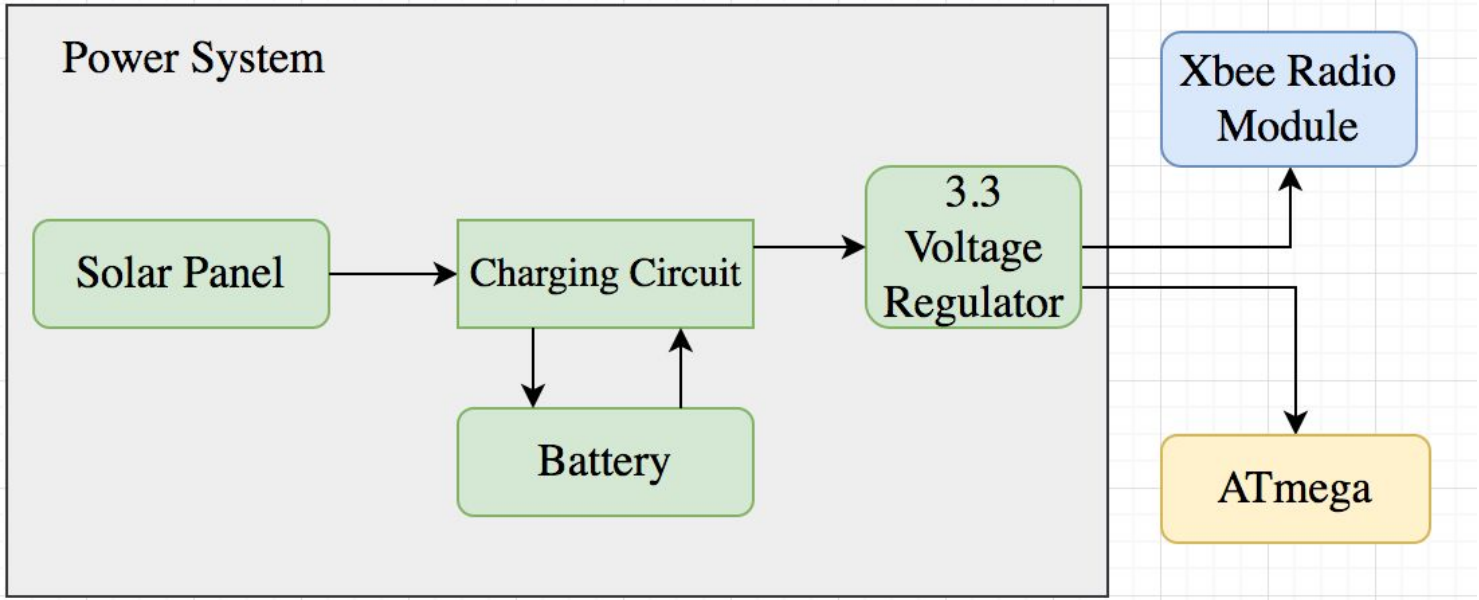
Block Diagram (Power)



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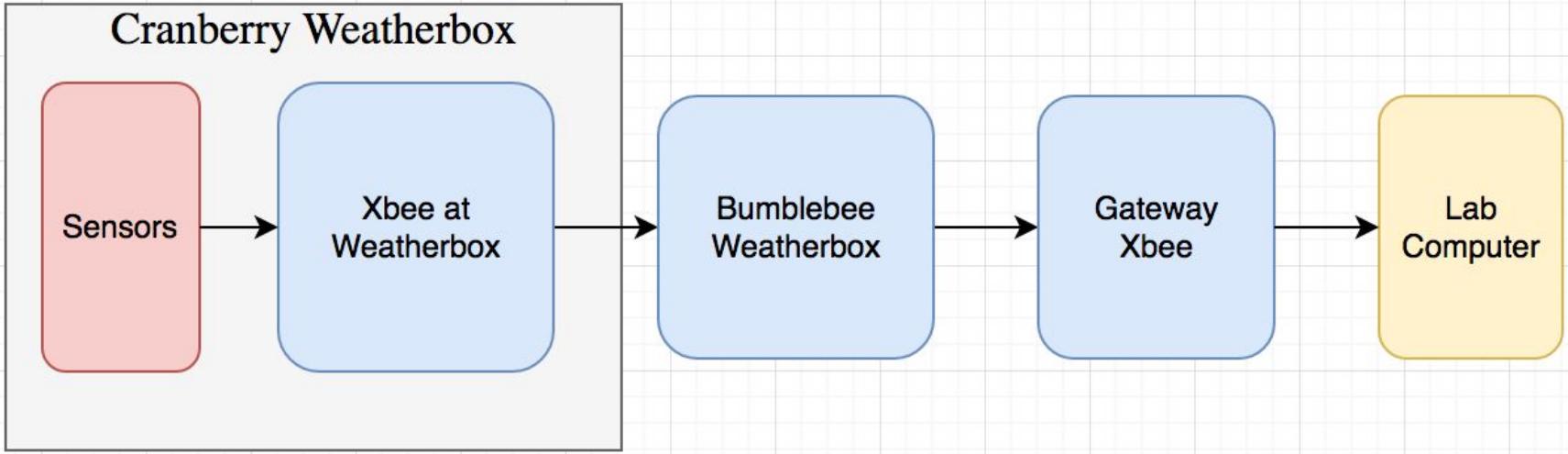
Block Diagram (Signal/Communication)



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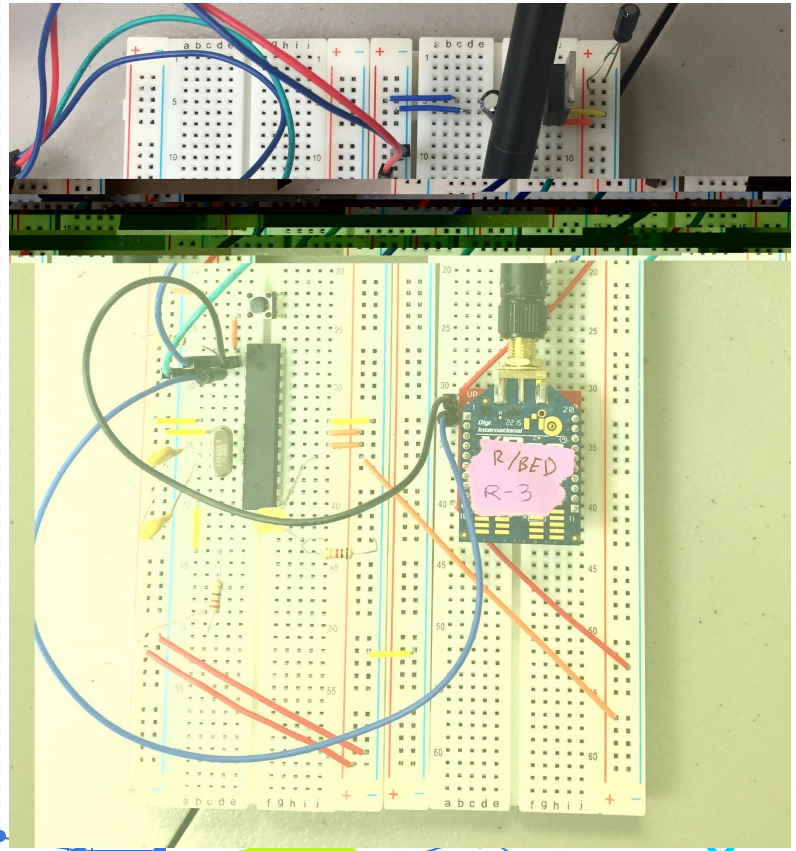
Team Progress

- Got bare arduino to work
  - Able to relay a packet
- Range Testing
  - Line of sight, non line of sight, floors

Working Bare Arduino Board



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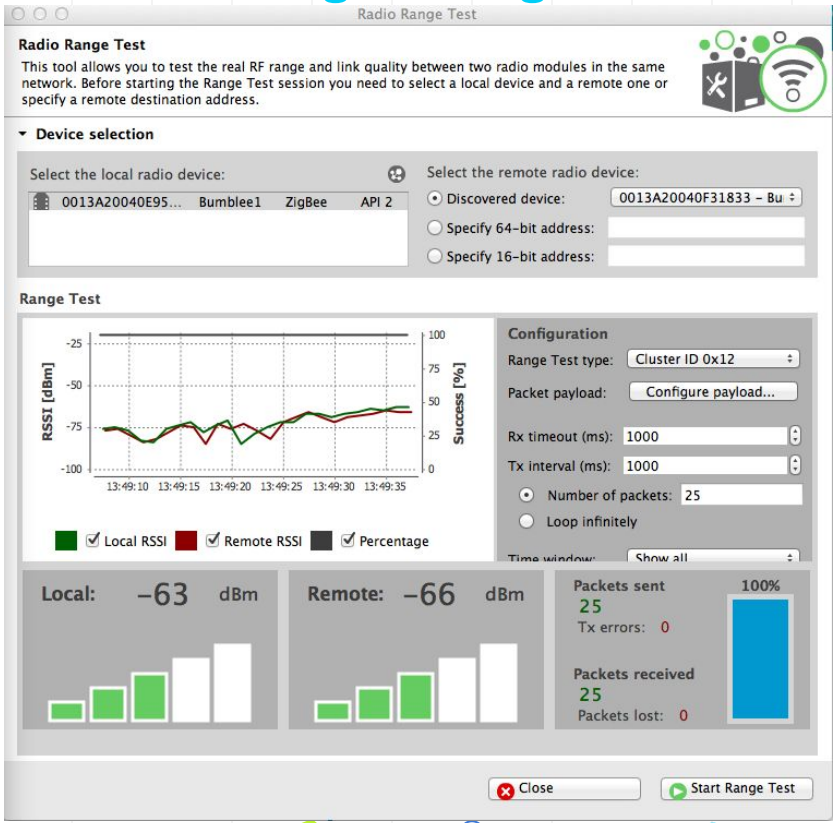
Range Testing



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Range Testing

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	Signal Strength				Packets						
Distance (ft)	Local		Remote		Sent	Received	Tx Errors	Packets Lost	Percentage	Other Variables:	Date
30	-40		-41		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Not consistent sig	4/4/17
60	-46		-48		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
90	-45		-50		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
120	-51		-52		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
150	-47		-50		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
180	-60		-63		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
210	-54		-58		25	24	0	1	96%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
240	-65		-65		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
270	-67		-71		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
300	-68		-71		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
330	-62		-65		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
360	-65		-66		25	24	0	1	96%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17
390	-63		-65		25	25	0	0	100%	Outside. Holmes hall 4th floor. Weather clear, windy. Line of sight	4/4/17

	Signal Strength				Packets						
Distance (ft)	Local (start)	Local (end)	Remote (start)	Reomote (end)	Sent	Received	Tx Errors	Packets Lost	Percentage	Other Variables:	Date
72	-72	-76	-75	-69	25	18	1	6	72%	Not line sight. Through building	4/6/17
151	-72	-66	-74	-69	25	13	0	12	52%		
253	-90	-91	-90	-92	25	8	17	0	32%		
332	-89	-89	-89	-89	25	2	23	0	8%		
404	0	0	0	0	25	0	25	0	0%		

Distance (ft)	Local (start)	Local (end)	Remote (start)	Reomote (end)	Sent	Received	Tx Errors	Packets Lost	Percentage	Other Variables:	Date
64	-45	-58	-46	-60	25	25	0	0	100%	Through foliage (by IEEE)	

Distance (ft)	Local (start)	Local (end)	Remote (start)	Reomote (end)	Sent	Received	Tx Errors	Packets Lost	Percentage	Other Variables:	Date
14	-61	-68	-63	-69	25	25	0	0	100%	4th to 3rd floor	
28	-75	-77	-76	-78	25	25	0	0	100%	4th to 2nd floor	
56	-76	-63	-77	-66	25	25	0	0	100%	4th to ground floor	

Range Testing

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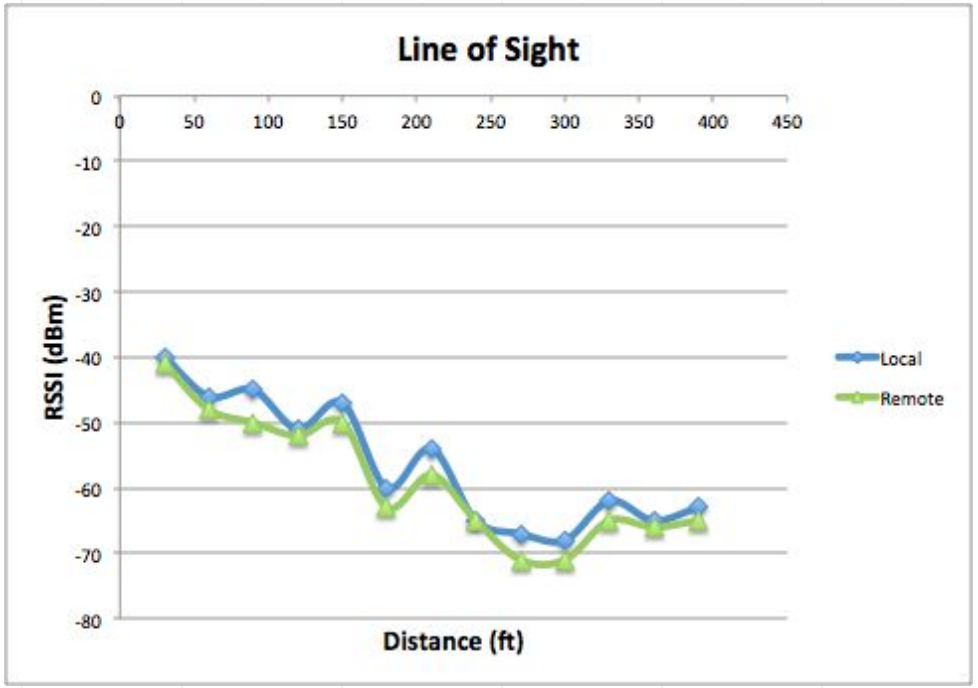

Range Testing

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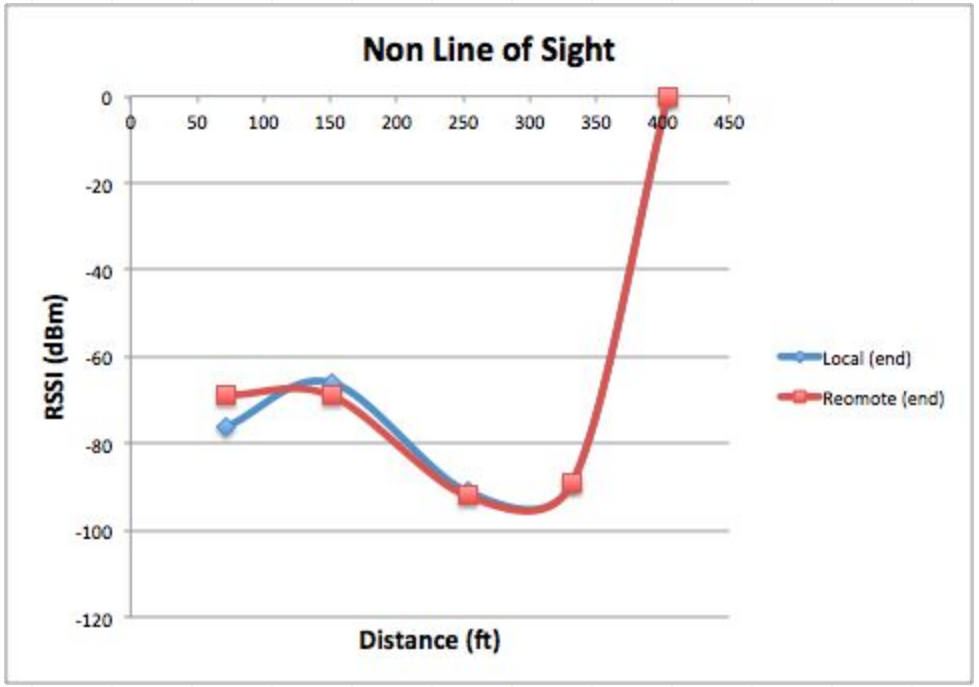
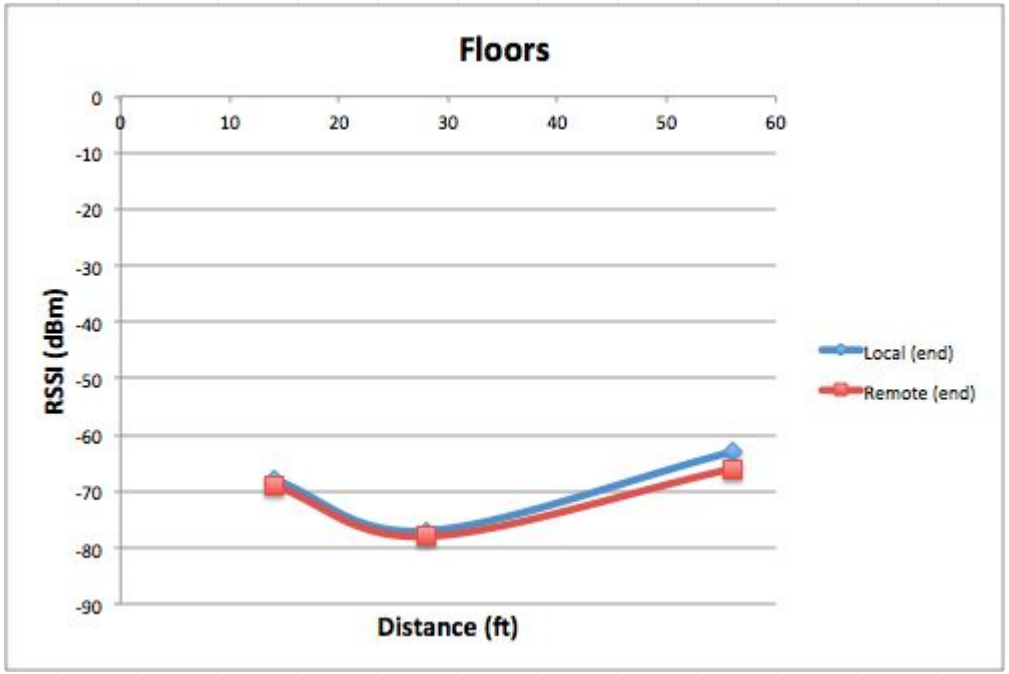


Range Testing



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Updated Gantt Chart

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Jan-21	Jan-28	Feb-4	Feb-11	Feb-18	Feb-25	Mar-4	Mar-11	Mar-18	Mar-25	Apr-1	Apr-8	Apr-15	Apr-22	Apr-29	May-6	May-13
Xbee Testing																	
Distance																	
Weather																	
Networking																	
PCB Design																	
Schematic																	
Board Layout																	
Review																	
Fabrication/Assembly																	
Fabrication Time																	
Populating																	
Testing																	
Final Report																	

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Resolved Problems

- Able to run the Atmega on 3.3 V
  - Reburned bootloader the Atmega for 3.3V at 8Mhz
- Rewired Bare Arduino
  - Helped with times when the Atmega wasn't programming

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Problems/Issues

- Unable to program bare Arduino
  - Temporary fix: Hit the reset button while programming
- Unable to use the 8Mhz internal clock of the ATmega
- Don’t have any schematic

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What Needs to Be Finished

- Range testing
  - Distance
  - Weather
  - Obstacles (buildings/walls)
- Designing PCB
- Weatherbox network
  - Working with actual weatherbox packets

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QUESTIONS?