1.12 Weekly Status Report for Software Defined Radio

October 24, 2018

Faculty Advisor: Dr. Stapleton

Sponsor: Texas State University

Submitted by: James Bell

Team Members:
James Bell [PM]
Samuel Hussey
Zachary Schneiderman

Yellow Current Project Status

We built the amplifier we designed using parts available on campus from the parts carts in RFM 5216 and compared the results to the simulation of the same design. The simulation and the actual build did not match at all and the gain dropped dramatically as the frequency was increased. We are researching the possible causes and new designs for the amplifier to eliminate this problem.

Activities/Accomplishments this week

Team Member	Description
James Bell	I am updating the signal flow chart, and submitting orders for parts so we may begin analog testing as soon as our parts are in.
Samuel Hussey	Modifications to functional spec sections. Prepared IDR presentation.
Zachary Schneiderman	Added components to parts list, worked on IDR presentation

Problems Encountered

Severity	Description
High	Pre-designed amplifiers do not have the frequency response we desire. The 80m and 40m bandpass filters do not have the roll-off characteristics we desire, so a redesign for all those components is necessary.
Med	We are unsure which type of inductor to get/build for our project as we have received multiple differing opinions on it, we are doing extra research in to it now.
Low	LTSpice testing shows that amplifier maintains gain with increase in frequency but in circuit tests show that in drops significantly.

Activities planned for next week

Team Member	Description

James Bell	Updating the functional schematic to fix errors pointed out in the functional design review, and studying digital signal processing.
Samuel Hussey	Start construction of analog components to begin in circuit testing.
Zachary Schneiderman	Order parts, and construct bandpass filters

Upcoming Course Deliverables (next 2 to 3 weeks)

Deliverable	Due Date	Status
Functional Specifications	10/15/18	Complete

Sponsor and Faculty Advisor Meetings Held/Planned

Who	Date	Topic(s)
Dr. Aslan	Wednesdays, 8:20am	Weekly Meeting and discussion on project.

1.12 Software Defined Radio Open Action Items

10/24/2018 Last Update

Date	Description	DRI	Due By	#D	Notes / Comments
10/24/2018	Updating simulations of analog components with most recent information from research	Samual Hussey	11/1/2018	8	Working with Zackary to update simulations
10/24/2018	Labor Cost Schedule	James Bell	11/18/2018	25	This is a class deliverable
10/10/2018	Understand the fundamentals of digital signal processing within the bounds of our design and project.	James Bell	11/22/2018	29	My goal is to be able to completely understand the data flow and processing for the desgin. This will take longer then first thought
10/3/2018	Ordering Parts	James Bell	10/28/2018	4	Fill out and submit paperwork for ordering parts.
10/10/2018	Working on RF Ampligier and Bandpass filter design as our simulations and test for the amplifier design did not meet our needs.	Zachary Schneiderman	10/22/2018	-	Review/ redesign our bandpass filters and amplifer.

1.12 Software Defined Radio Milestone Schedule

10/24/2018 Last Update

44 calendar days until Senior Design Day

DRI	Task	Dur	Start	End	Status
Samuel Hussey	Statement Of Work (Executive Summary)	24	8/31/2018	9/24/2018	Finished
Zachary Schneiderman	Statement Of Work (Buisness Need)	24	8/31/2018	9/24/2018	Finished
James Bell	Statement Of Work (Product Scope Description)	24	8/31/2018	9/24/2018	Finished
Zachary Schneiderman	Statement Of Work (Project Scope Description)	24	8/31/2018	9/24/2018	Finished
Samuel Hussey	Statement Of Work (Sponser Support Elements)	24	8/31/2018	9/24/2018	Finished
James Bell	Statement Of Work (Aprovals Signature)	24	8/31/2018	9/24/2018	Finished
James Bell	Watch and take notes on Videos of SDR	14	8/31/2018	9/14/2018	Finished
Zachary Schneiderman	Watch and take notes on Videos of SDR	14	8/31/2018	9/14/2018	Finished
Samuel Hussey	Watch and take notes on Videos of SDR	14	8/31/2018	9/14/2018	Finished
Zachary Schneiderman	List of components in Prototype priced and deliver estimates	40	9/12/2018	10/22/2018	In progress
James Bell	Data/Signal Flow chart	40	9/12/2018	10/22/2018	In progress
Samuel Hussey	Schematics for Prototype in multi-sim or other such software	40	9/12/2018	10/22/2018	In progress
James Bell	Organizing, and commenting pre-existing code for Prototype	33	9/12/2018	10/15/2018	Finished
James Bell	Functional Spec section 1.1 (Summary)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 1.2 (Sponser Requirments)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 1.3 (Existing System)	14	10/1/2018	10/15/2018	Finished
Zachary Schneiderman	Functional Spec section 1.4 (Terminology)	14	10/1/2018	10/15/2018	Finished
Zachary Schneiderman	Functional Spec section 2.1 (User Attributes and Use Cases)	14	10/1/2018	10/15/2018	Finished
Samuel Hussey	Functional Spec section 2.2 (Administration Functions)	14	10/1/2018	10/15/2018	Finished
Samuel Hussey	Functional Spec section 2.3 (Error Handling)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 2.4 (Saftey and Security)	14	10/1/2018	10/15/2018	Finished
Zachary Schneiderman	Functional Spec section 2.5 (Help and User Documentation)	14	10/1/2018	10/15/2018	Finished
Zachary Schneiderman	Functional Spec section 2.6.1 (User)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 2.6.2 (Software)	14	10/1/2018	10/15/2018	Finished
Samuel Hussey	Functional Spec section 2.6.3 (Hardware)	14	10/1/2018	10/15/2018	Finished
Samuel Hussey	Functional Spec section 2.6.4 (Mechanical)	14	10/1/2018	10/15/2018	Finished
Zachary Schneiderman	Functional Spec section 2.7 (Boundary Conditions and Constraints)	14	10/1/2018	10/15/2018	Finished
James Bell (Team)	Functional Spec section 2.8 (Performance)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 2.9 (Software Platforms)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 2.10 (Service, Support, & Maintence)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 2.11 (Expandability or Customization)	14	10/1/2018	10/15/2018	Finished
Samuel Hussey	Functional Spec section 3 (Project Alignment Matrix)	14	10/1/2018	10/15/2018	Finished
James Bell (Team)	Functional Spec section 4 (References)	14	10/1/2018	10/15/2018	Finished
James Bell	Functional Spec section 5 (Approvals)	14	10/1/2018	10/15/2018	Finished
Samuel Hussey	RF Amplifier Simulation v0.1	5	10/10/2018	10/15/2018	Finished
James Bell	IDR Power Point	12	10/10/2018	10/22/2018	Finished
Zachary Schneiderman	RF Amplifier Biuld/ research, (redesign?)		10/10/2018	10/15/2018	Finished
Samuel Hussey	Speaker Amplifier	5	10/10/2018	10/15/2018	Finished
Samuel Hussey	Bandpass Filter Simulation	5	10/10/2018	10/15/2018	Finished
James Bell	Labor Cost Schedule	35	10/15/2018	11/19/2018	In progress
James Bell	Prep and do initial design review	14	10/15/2018	10/29/2018	Finished
James Bell	Order Parts	4	10/24/2018	10/28/2018	In progress
Samuel Hussey	All Siumulations Completed for analog components we are constructing	8	10/24/2018	11/1/2018	In progress
Zachary Schneiderman	Bandpass Filter and Radio Frequeny Amplifier built	8	10/24/2018	11/1/2018	In progress
James Bell	Poster Draft	21	11/5/2018	11/26/2018	Not Started
	Test/Benchmark Circuits	14	11/5/2018	11/19/2018	Not Started
	Develop Passthrough Tests	14	11/5/2018	11/19/2018	Not Started
	Create Quadrature Converter	21	11/5/2018	11/26/2018	Not Started
James Bell	Test Plan	11	11/19/2018	11/30/2018	Not Started
	Configure LCD/Tuner Knob	13	11/19/2018	12/2/2018	Not Started
	Implement RF Receive Code	7	11/19/2018	11/26/2018	Not Started
	Thanksgiving Break	4	11/21/2018	11/25/2018	Not Started
	Receive/Tune tests	9	11/26/2018	12/5/2018	Not Started
	Receive/Tune tests	9	11/26/2018	12/5/2018	Not Started
	Print Poster, Finalize Display	16	11/12/2018	11/28/2018	Not Started
	Transmitting/Tune tests	9	11/26/2018	12/5/2018	Not Started
	Senior Design Day	0	12/7/2018	12/7/2018	Not Started
	Final Preparations for Senior design day	2	12/5/2018	12/7/2018	Not Started
	Add licensing selection to radio	28	1/22/2019	2/19/2019	Not Started
	Raspberry Pi implementation	41	1/22/2019	3/4/2019	Not Started
	Custom PCB	41	1/22/2019	3/4/2019	Not Started
	Higher Power Amplifier	21	2/19/2019	3/12/2019	Not Started
	Alternate Power Sources	21	2/19/2019	3/12/2019	Not Started
	Custom Cases	28	3/12/2019	4/9/2019	Not Started
	Head phone output jack	27	4/9/2019	5/6/2019	Not Started
	Finalize Poster	0			Not Started
	Print Poster, Finalize Display	0			Not Started