COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL ENGINEERING
UNIVERSITY OF NORTH TEXAS, DENTON TX 76203

23 Nov 16

MEMORANDUM FOR RECORD

FROM: CHRISTOPHER ASKINGS
FORREST GATES
NATHAN RUPRECHT

SUBJECT: VLC Dev Kit Progress - Week 8

1. The purpose of this memorandum is to report our progress in accordance with our predetermined schedule.

2. The specific purpose of this memorandum is to review the objectives of week 8 and what we have accomplished.

3. Over the course of the week, we went off on our own time to accomplish what we could for the projected goals, then came back together to consolidate our efforts. This utilized our free time since our schedules usually conflict. We worked based off of the Week 8 Schedule:

Week	*Date*	*Projected Goals*	*Comments*
8	11/13/16	Prototype 1 Code T0: Tx portion of source code using PWM Code R0: Rx portion of source code using PWM	Build a Tx and Rx circuit. Run source code with separate Tx and Rx (vary Rx LED brightness depending on Tx LED) Separate source code so 2 launch pads can be used. One as Rx, and the other as Tx.

4. We figured out what was wrong with building the code onto the Launchpad. We needed to update CCS on our desktop PCs to show the FR2311 variant as an option. On laptops, we ended up reinstalling CCS since the updates would not take place. We have working code for the Rx running the source code from TI. A dichroic cube is ordered to act as a filter for each color, but is still in China.

5. We met in person to hammer things out together. Chris showed his current driven circuit that can be used on the Tx side. It works using a potentiometer to control the voltage limit. In the future, this will most likely be replaced by a DAC. The current driver keeps the current going through the LED within certain limits so it won't explode on us. He plans to either do PWM or FM with his Rasp Pi to send data using the LED. Chris and Nathan sat down to talk about the Rx side. Nathan has been struggling to understand the source code given by TI. Chris helped with understanding making the circuit. With what we have, we are looking at using a Raspberry Pi for the Tx and Rx circuits. We've done signal processing in Project 5, so now we'll apply what we know and learn Python for the Rasp Pi.

6. We also made a plan for the rest of the semester for our progress.

a. Chris: by the end of the semester (hard deadline of 8 Dec), have your Pi send a packet of data (arbitrary start and stop sequence) to the LED. Use either PWM or FM and choose which path you want to go by next Sunday. We'll meet on Sunday, 27 November at 4:30pm to do the report that is due next week.

b. Forrest: by the end of the semester (hard deadline of 8 Dec), use eagle / orcad / some other PCB design tool to draw up the hardware schematic for our circuits. Chris will send you a drawing of the Tx, I'll send a drawing of Rx. Use the program to make the PCB and find a total cost to build it, and timeline for parts to get in. We'll meet on Sunday, 27 November at 4:30pm to do the report that is due next week.

c. Nathan: by the end of the semester (had deadline of 8 Dec), have your Pi receive a set amount of bits at a time (received at 2 specific frequencies, "0" at f and "1" at 2f) and match that sequence of bits to values (case statement to ASCII for example). We'll meet on Sunday, 27 November at 4:30pm to do the report that is due next week.

7. If you have any questions, comments, or concerns, please feel free to contact us at:

- Chris Askings: (817) 367 – 8273 or via email at chrisaskings@gmail.com
- Forrest Gates: (979) 733 – 2454 or via email at forrestgates2016@gmail.com
- Nathan Ruprecht: (903) 268– 9600 or via email at nathan.ruprecht@outlook.com.

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1 Attachment:
Documentation

Documentation:

All materials can be found on the shared Google drive at:
https://drive.google.com/drive/folders/0By7y3FFBUvR4SVNmVHlfZjVmZ0U