**[Programmable Communication Group](https://sites.google.com/a/temple.edu/programmable-communication-group/)**

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| Date | Friday, October 18, 2013 | | |
| Advisor | Dr. Silage | | |
| Members | Cedric Destin | Brandon Keith | Brian Thibodeau |

Headline: The team has agreed that we must first research which amateur radio satellites are capable of being communicated with (i.e. active satellites with recent communication evidence). We will then design the modem to the specification necessary for communicating with said satellite(s).

The team thinks it is a necessary that we gain familiarity with the satellite communication equipment in the K3TU amateur radio lab before delving too deeply into the modem design. However, the ground station is currently not set up or ready for communicating with anything.

The Papillo Pro board (Sparkfun) is in stock more often than the Avnet LX9 Microboard. We should discontinue interest in the LX9 Microboard.

Topics to discuss (with Silage)

* Clarify the meaning of FSK uplink in the KD2BD modem. There is no evidence of there being any FSK circuitry in the transmitter of the modem.
* Provide draft design document for review.
* Candidate FPGA board: Papilio Pro ($100).

Topics to discuss (among SD team and Silage, if necessary)

* Which amateur radio satellites are capable of being communicated with right now?
* Of these satellites, which ones can we design an inexpensive FPGA-based modem for?

Dr. Silage feedback

* In the past, FSK modulation was typically done in radio transmitters, not in the modem.
* FPGA in Zynq-7000 SoC is supposedly not large enough for this senior design project.
* Reiterating that Xilink Spartan 6 LX9 series of FPGA may not be large enough for this senior design project.
* Candidate FPGA board: Opal Kelly XEM6001 FPGA board ($175).
* Suggested using LX45 FPGA on Digilent Atlys board for assessing whether to purchase Papilio Pro (LX9) or Opal Kelly board (LX16).

Topics to discuss in next SD meeting

* Provide summary of candidate amateur radio satellites. Discuss their communication schemes and how we plan to design a modem for the scheme(s).

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| **Engineer** | **Status** |
| Brian Thibodeau | * Continuing design of Costas /squaring loop gains values for appropriate lock and track time. |
| Cedric Destin | * Researching potential application for satellite as well as the satellites   + Also want to get to know the Automatic Gain Control (AGC) |
| Brandon Keith | * Researching candidate satellites. |