|  |
| --- |
| **MEETING MINUTES – Sponsor Meeting** |
| DATE: February 4, 2015 |
| POSTING TIME: 02/18/15 10:22:58 PM EST |
| OWNER: Julia Kim |

Present: Joshua Cushion, Patrick Delallana, Julia Kim, Benjamin Mock, Jasmine Vanderhorst

Time: 5:00 p.m. – 5:40 p.m.

One of the first task is to get the transmit chain working. The VCO should be in next week. The riskiest function in this whole thing is the switching. The single pole double throw switch should be in by Friday. The most critical function is to get the switch to switch at 20 nanoseconds and that the RF gives us a 20 nanosecond pulse. We’re getting the detector at the output of the switch before it goes into the multiplier to make sure we’re getting a good pulse. It’s going to be a pretty large signal. We also got the field strength meter.

Pete also inquired about getting two pieces of equipment: a signal generator and a signal analyzer. It seems that we can rent it for $2000 per month. This is something that is in stock and can be here in between 1 to 5 days.

Pete suggested we focus and get the transmit chain done first, then the receive chain and then the IQ demodulator. For the midterm demonstration, Pete suggested we show we have the programming started. We don’t have test equipment at 10 GHz, so it might be trickier. Pete will bring a detector so we can look at the output. Hopefully Pat can create a reference from the FPGA board. Josh asked how to connect from the PMOD on the FPGA board to SMA connection. Pete suggested using audio jack connector that connects to the PMOD that we can get from the Diligent website. He has a couple that he can bring to us during his visit to use meanwhile.

For the hardware, we would show we’re integrating the VCO with the FPGA board that we’re programming and producing some output. Then we would add in the wideband amplifier and put the detector on the other side of it and progressively add components. If the VCO puts out -4dBm and we get that, then we’re on the right track. Then when the wideband amplifier is added, the detector should reflect that change. On the receive path, there wouldn’t be a signal to inject, so a source would need to be used. We can show them and cascade them so that the reviewers can see. Our lab technician suggested that we have some type of adapter to solder on to so that we won’t wear out the pins of the components.

In terms of programming, as far as the transmit chain goes, we need the timing signals. A reference of up to a 100 MHz would need to be supplied for the transmit chain. Pat can set up a program for testing the subassemblies, sort of like a test bench code/test mode and have a separate code for that, have a reference output where we can control the frequency reference. For the demo for the receive chain, we want the board to take the two analog signals and display them on the seven segment display if possible. If we can hook up an analog voltage to the two A/D inputs and show that we can sample that and show it on the seven segment display, that would be another demo for the software. We can also demonstrate the discrete control on the oscilloscope.

For the mechanical part, the MEs are still waiting on more quotes. They need to have the structure ready for the integration on time as they need time to put everything together. The full integration will be realized around early March, so the horns need to be installed, the cross assembled, the component box ready, and all the bolts and nuts in by then. A decision needs to be made sooner than later.

For the bench level integration, we can use the power supplies in order to make everything is working out so that we can make any changes and debug.

For the signal processing, we will take the I and Q data, which are just analog voltages, and import them to the Excel file we have already. The calculations would need to be enhanced a little and the one-dimensional image obtained can be converted into a two-dimensional image by using a surface graph.