

PIRM Presentation 1

Team name: sddec23-20

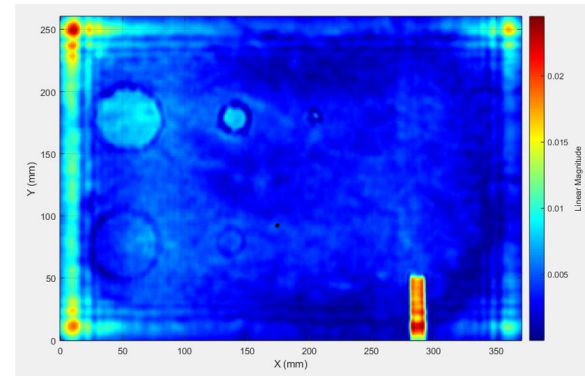
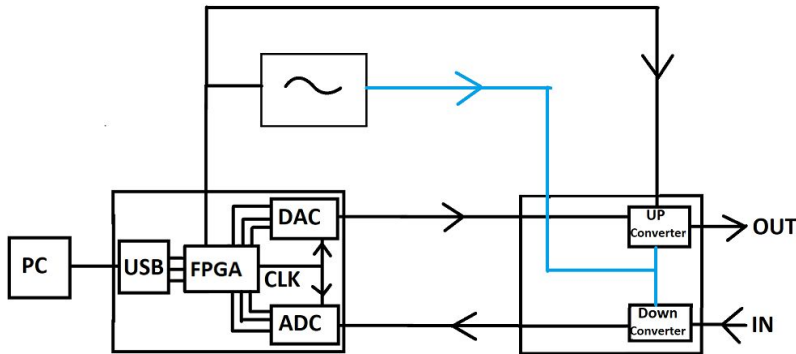
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Millimeter Wave Data Acquisition Device:

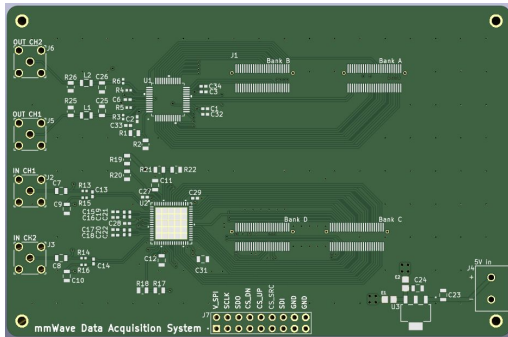
Project Topic

- For researchers and students
- Make scans of materials beyond its surface nondestructively
 - Finds defects within the sample
 - Can determine various properties of the sample
- Generates 15 MHz wave and collects signal reflection



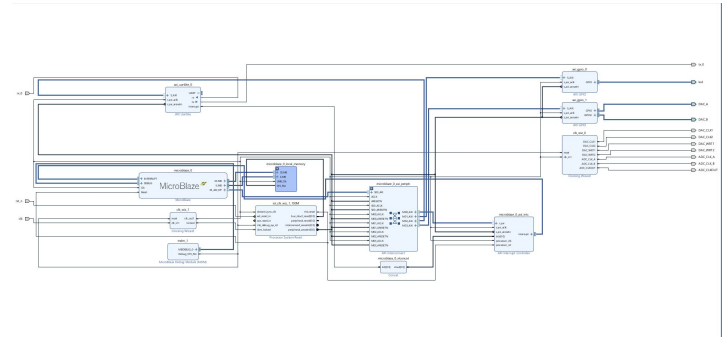
Where We're At

- PCB is completed and ordered
- USB binary data is able to be sent and received from the computer
- Hardware on FPGA is successfully built
- Working on generating arbitrary signals stored in RAM to clock out signals to the DAC on the fly

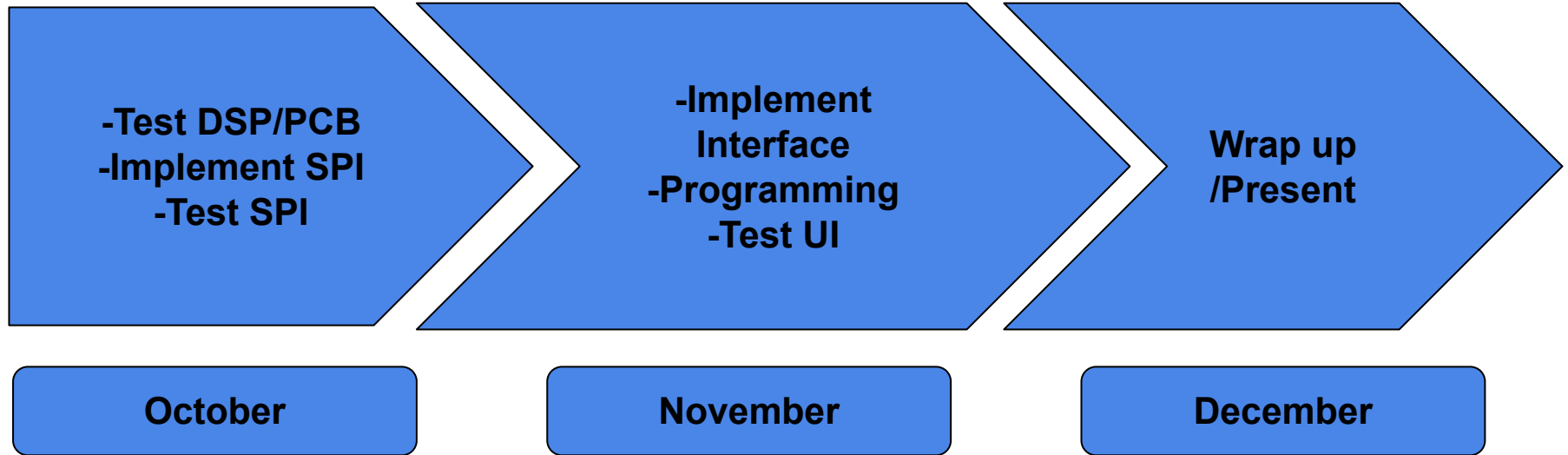


```
/* Initialize, open device, set bitbang mode w/4 outputs */
if(FT_Open(0, &handle) != FT_OK) {
    puts("Can't open device");
    return 1;
}
FT_SetBitMode(handle, LED1 | LED2 | LED3 | LED4, 1);
//FT_SetBaudRate(handle, 1); /* Actually 9600 * 16 */
FT_SetDivisor(handle, 16000);

/* Endless read loop: */
for(;;){ FT_Status = FT_Read(handle, &dataret, (DWORD)sizeof(dataret), &bytesret);
if(FT_Status == FT_OK){
    printf("Good\n");
    printf("%d\n", bytesret);
}
else {
    printf("Bad\n");
}
printf("Received: %x\n", dataret);
printf("Received: %x\n", dataret & LED1);
printf("Received: %x\n", dataret & LED2);
printf("Received: %x\n", dataret & LED3);
printf("Received: %x\n", dataret & LED4);
}
```



Project Milestones Ahead



Technical Challenges

- Availability of information
 - Online resources for the FTDI drivers(USB comm), Vivado(FPGA programming) and Alchitry(FPGA board) are scarce.
 - Reaching out to people with similar project experience.
- Component Constraints
 - Difficult to find components that will function properly with our assigned FPGA development board.
 - Solved by investing more time into part sourcing.
- Work methodology
 - The implementation is similar to a ladder.
 - We can avoid issues by communicating about interface needs.

**Thank you for listening to our
presentation!**

Questions?

