

# Localization using SDR in ORBIT - Week 4

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# Introductions (again)



Rahul



Vineet

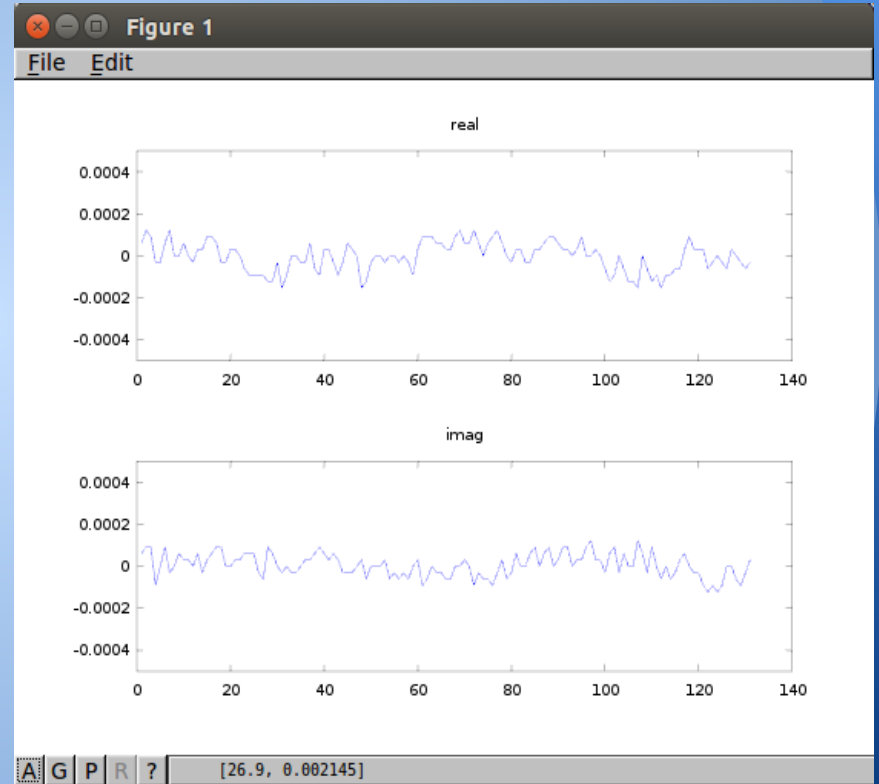
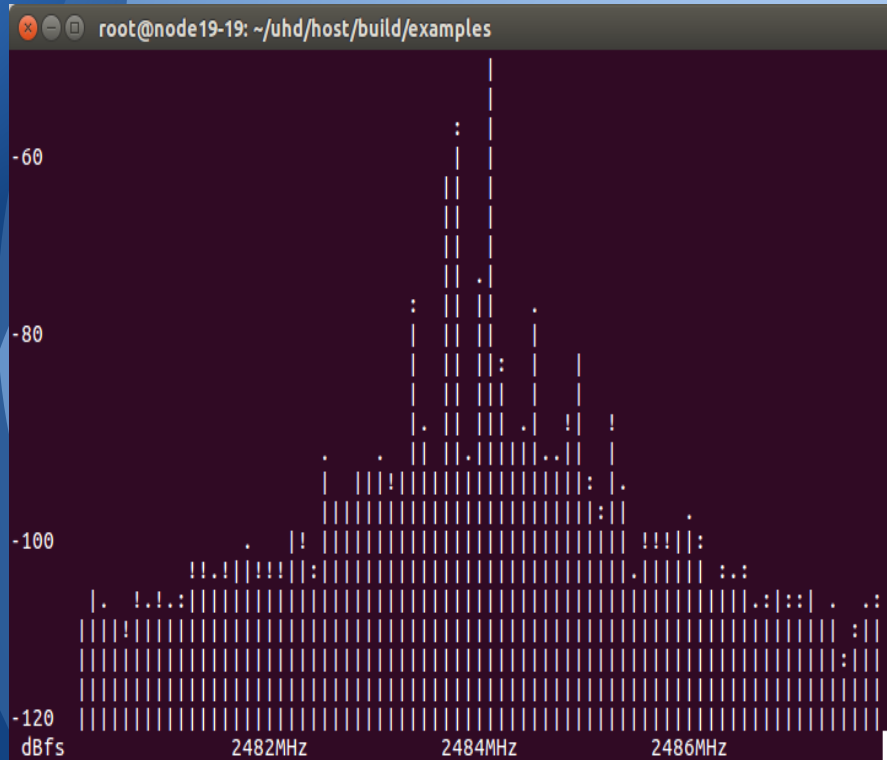


Karan

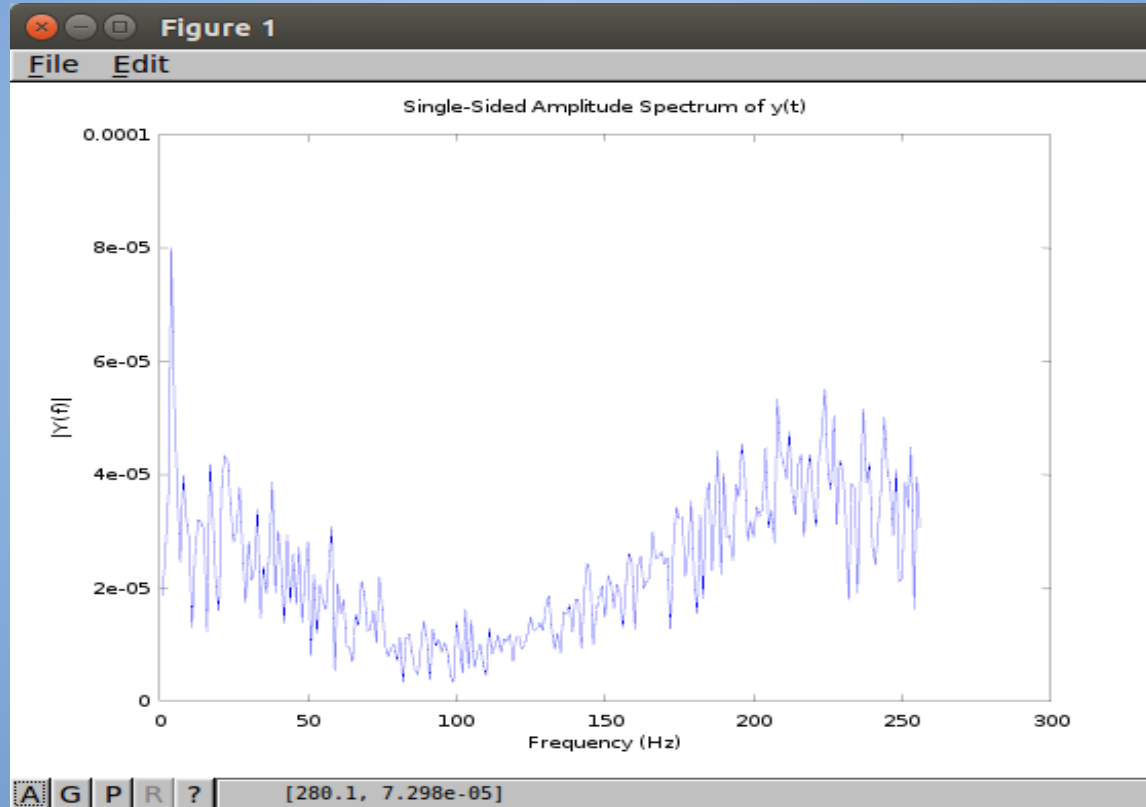
# Current Week's Accomplishments

- Obtained I/Q samples using USRPs
- Verified reception of the signal using FFT
- Calculated power of the signals
- Plotted signal power vs distance

# Obtaining I/Q Samples



# Verifying Reception of Signal (FFT)



# Calculating Power

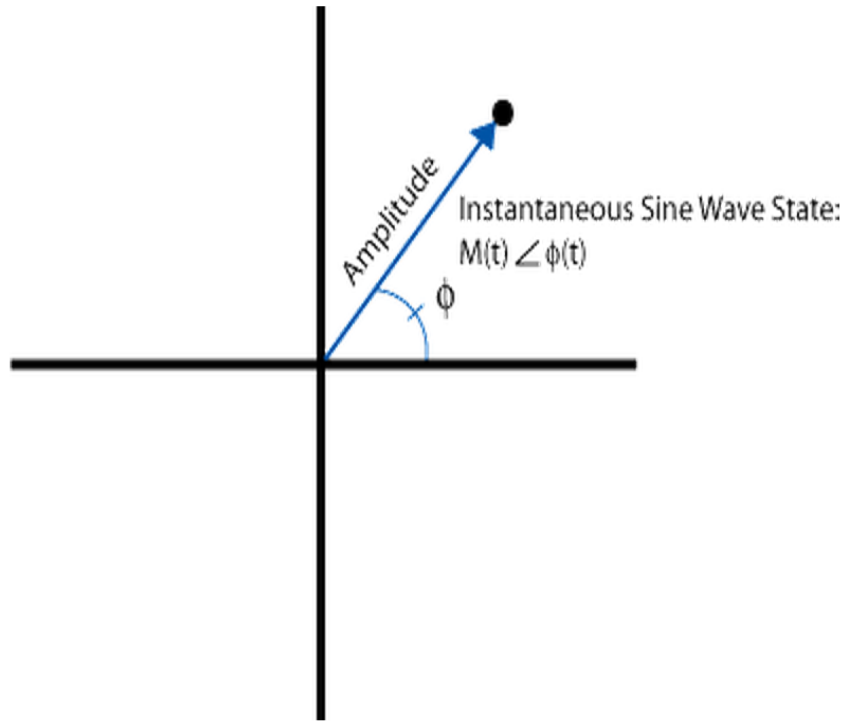
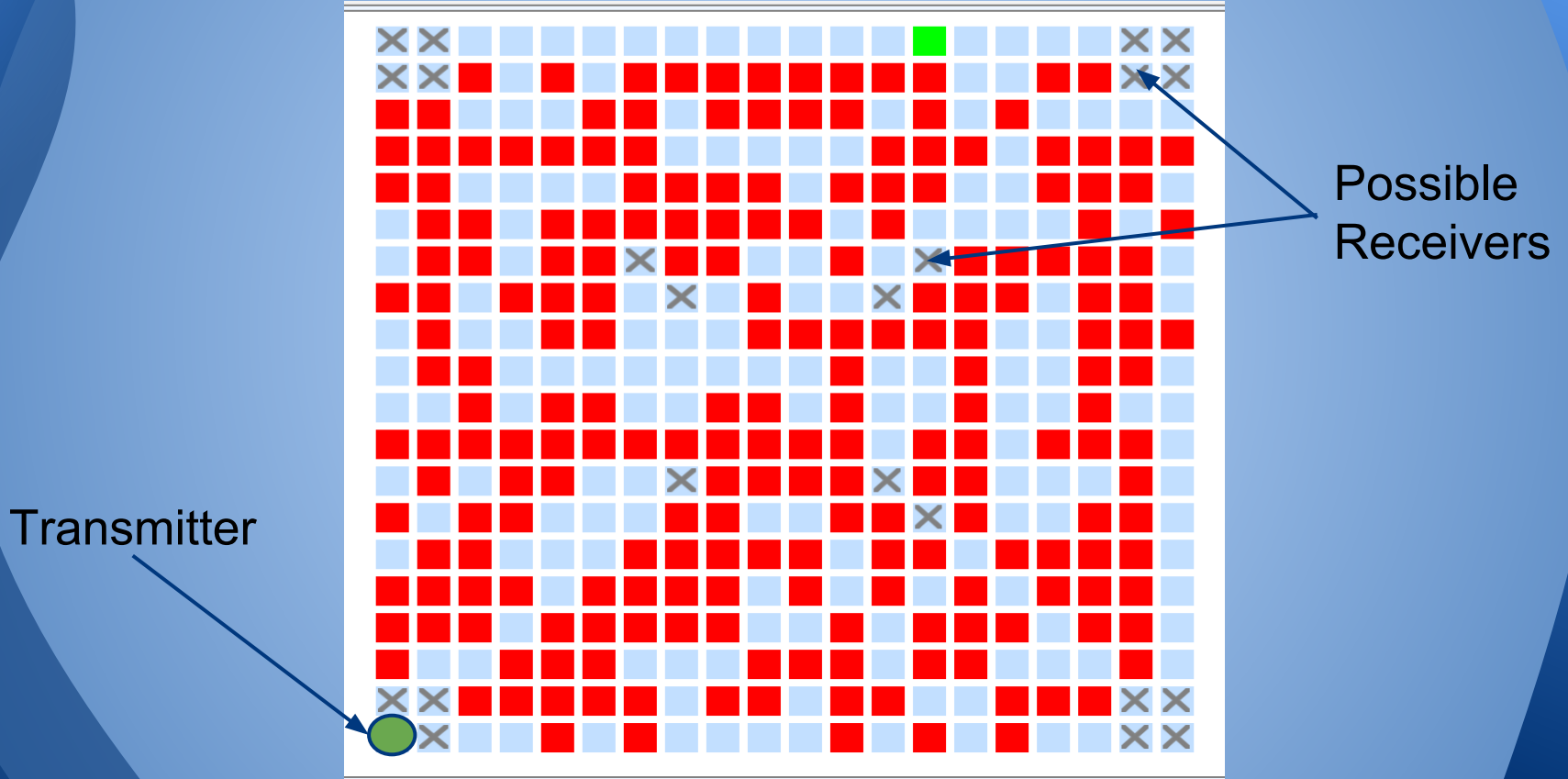


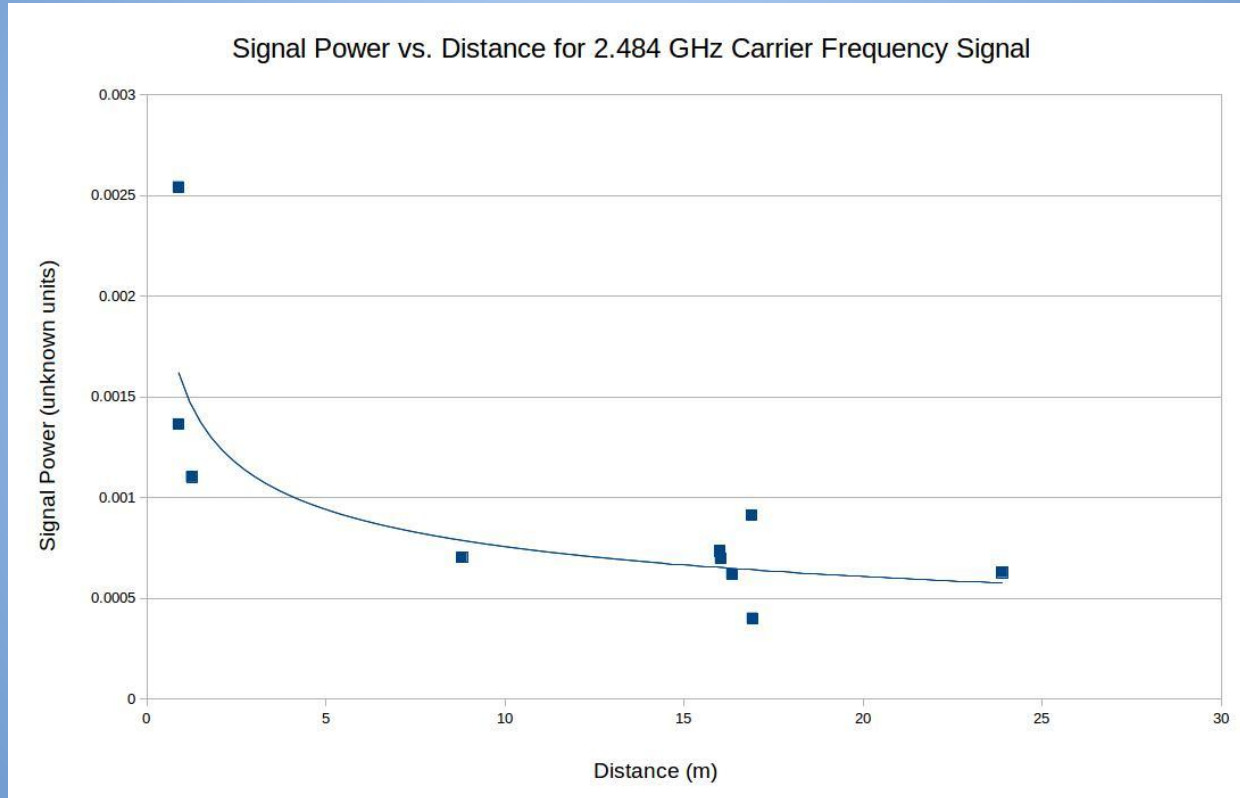
Figure 2. Polar Representation of a Sine Wave

```
calculatePower.m (~) - gedit
Open Save Undo
calculatePower.m x
function power = calculatePower(real,imaginary)
power = 0;
for n = 1:length(real)
    power = power + sqrt(real(n).^2 + imaginary(n).^2);
end
avgpower = power/length(real)
Octave Tab Width: 8 Ln 1, Col 1 INS
```

# Plotting Signal Power vs. Distance



# Plotting Signal Power vs. Distance (cont.)





# Plans for Next Week

- Obtain I/Q samples again and recalculate the signal power for all possible receiver nodes to verify accuracy
- Obtain I/Q samples for when there is no carrier frequency to see the noise amplitude → calculate signal to noise ratio (SNR)
- Modify program to calculate the signal power from 3 receiver nodes simultaneously