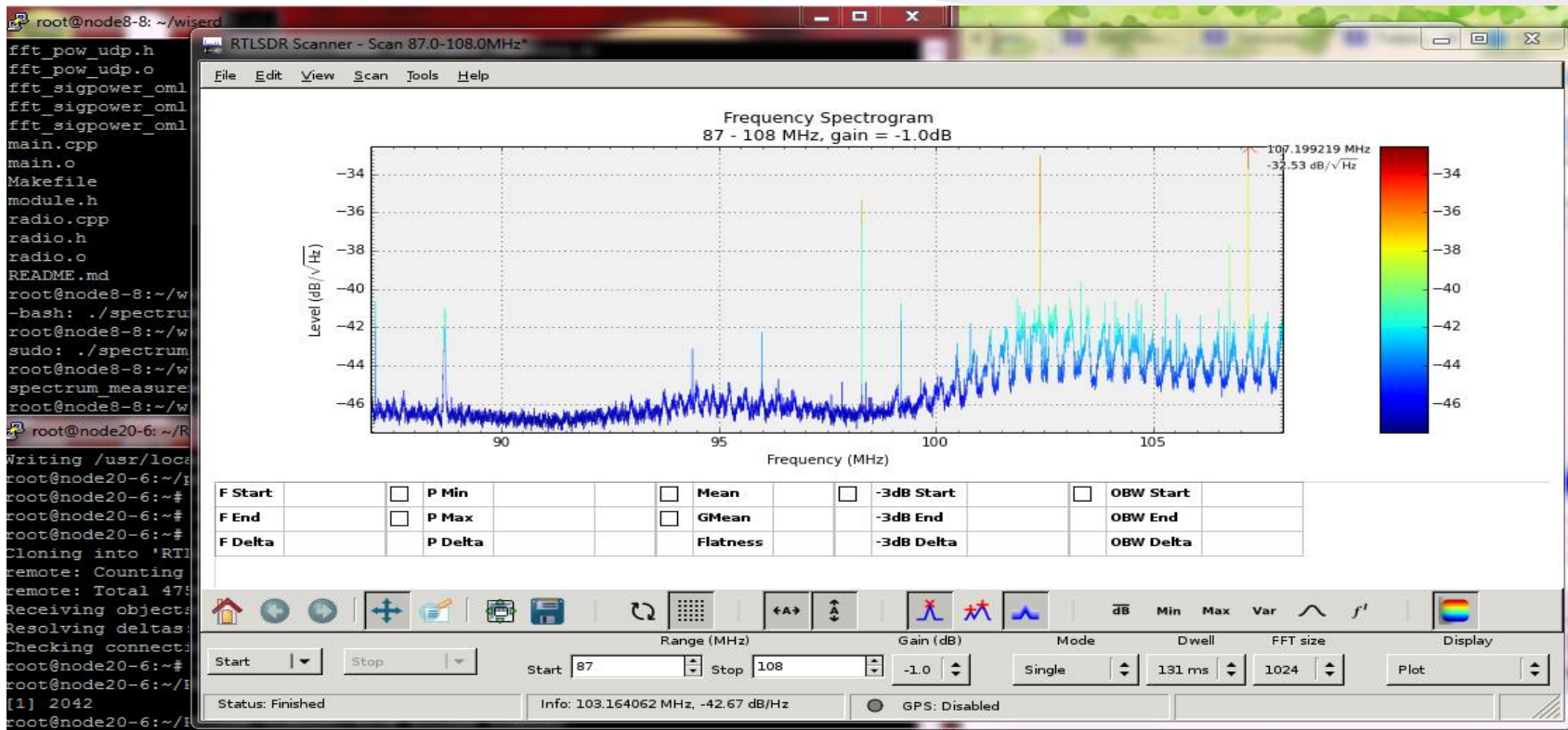# SDR in ORBIT: LTE-U

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Propagation

- Radio channels- pose challenges to wireless communication systems
- Attenuation- loss of strength of signal over distance ($P \sim r^{\wedge}(-a)$ relationship)
- Propagation exponent- value of a depends on environment
  - In free space- $a = 2$
  - In urban environments $a \sim$ 3.5-4

RTLSDR Scanner

RTLSDR Scanner

PROS

- Software-based spectrum analyzer
- Convenient when not at WINLAB
- Trying to use with LTE observations

CONS

- Realtek 2832 EZCap can't tune to frequencies higher than 1.8GHz

This Week

- Worked on transmitting LTE signal from basestation ORBIT
- Learned how to obtain I/Q samples and plot into frequency domain and waterfall plot

Next Week

- Analyze OpenAirInterface code
- Write program in C/C++ to obtain and measure I/Q samples from basestation
- Apply in the GRID