Basic Radio Physics Exercises

Network Startup Resource Center
www.nsrc.org

Electromagnetic Waves

- What's the wavelength at
  - 2.4 GHz
  - 5.8 GHz
  - 900 MHz

Electromagnetic Waves

- What is the polarization of the electromagnetic field emitted by a dipole?

Satellite Math

- What's the one-way delay for waves to:
  - Geostationary Orbit at 36,000 km
  - Medium Earth Orbit at 8,000 km
  - Low Earth Orbit at 1,200 km
- How long does a ping (round-trip) take?

Radio Protocol Timeouts

- If a radio protocol has a timeout window of 50 microseconds:
  - What's the longest link you can make?

Light

- What's the wavelength of
  - Visible Light
  - Single Mode Fiber Optic laser
  - Multi-Mode Fiber Optic laser

Radio Wave Propagation

- What frequency works through trees?
  - 2.4 GHz
  - 5.8 GHz
  - 900 MHz

dB / mW Conversion

- What's the value in dB for:
  - 0mW
  - 10mW
  - 100mW
- What's the value in Watts (mW) for:
  - 2dBm
  - 12dBm
  - 27dBm

Questions/Discussion?