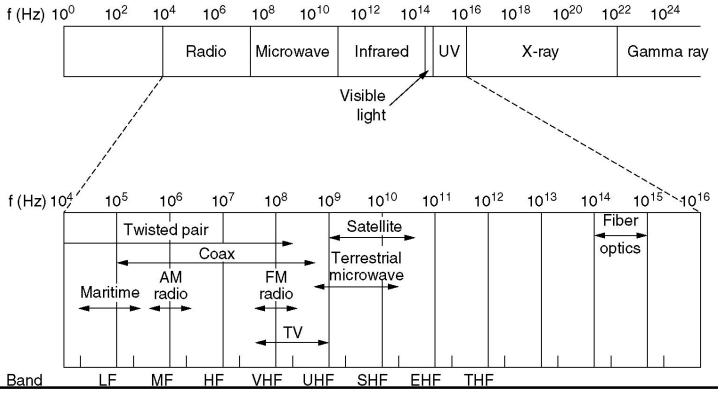
Wireless Transmission

- Electromagnetic Spectrum
  - Data transmission
- Types of waves
  - Radio
  - Microwave
  - Infrared
  - Light

Electromagnetic Spectrum

- Electromagnetic waves
  - Advantages: _____
    _____
  - Disadvantages: _____

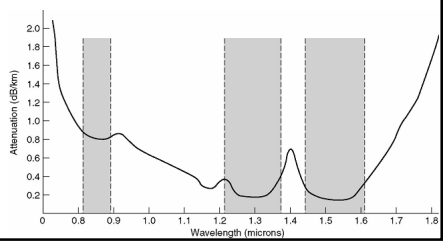


Electromagnetic Spectrum (2)

- Frequency (f) _____
- Wavelength (λ) _____
- Speed (c) _____
- $\lambda f = c$
- Transmission
  - Frequencies: _____
  - Methods: _____
- Why not others?
  - Production _____
  - Propagation _____
  - Danger _____

Information transmitted

- How much information?
  - Bandwidth _____
  - Bits per Hertz _____
  - Frequency _____
    - Fiber Optics _____
  - Example _____

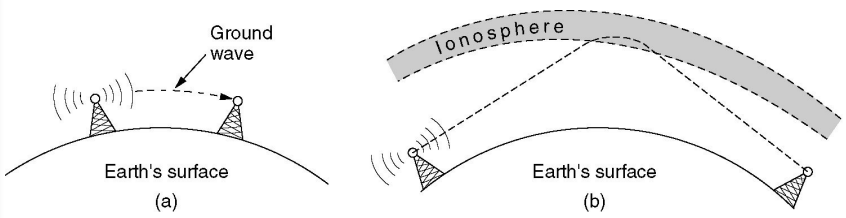


Frequency bands

- Narrow frequency bands are used to _____
  _____
- Wide bands are used
  - Frequency hopping spread spectrum _____
    _____
  - Direct sequence spread spectrum _____
    _____

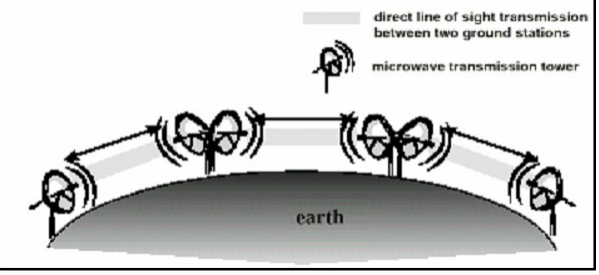
Radio

- Properties
  - Distance _____
  - Penetration _____
  - Omnidirectional _____
  - Bandwidth _____
  - Curvature _____



Microwave

- Properties
  - Curvature _____
  - Alignment _____
  - Distance _____
  - Multipath fading _____
  - Absorption _____



Infrared & Millimeter waves

- Uses _____
- Properties
  - Curvature _____
  - Penetration _____
  - Cheap to produce

Lightwave

- Coherent optical signaling _____

_____

  - Laser _____
  - Atmospheric conditions _____