

Why radio?

.Immediacy

.Lack of infrastructure

.Group communication



Why NOT radio?

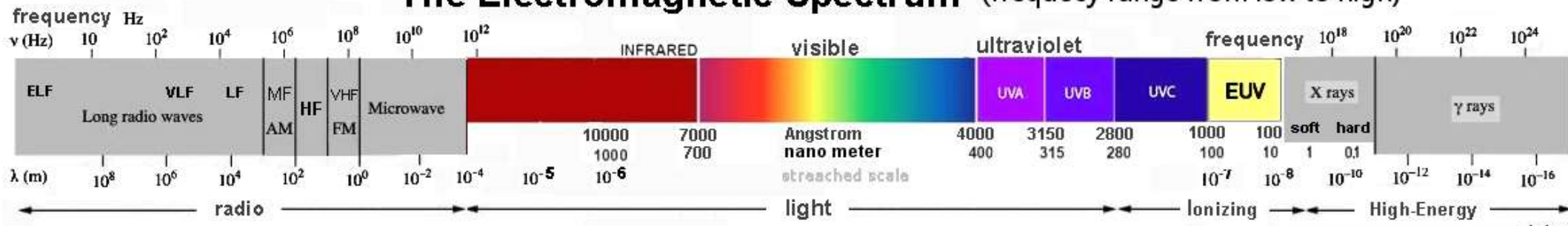
- .Some radios “need” licensing
- .Range
- .Not secure (usually)
- .Can have ‘add on’ legal penalties



Radio Basics

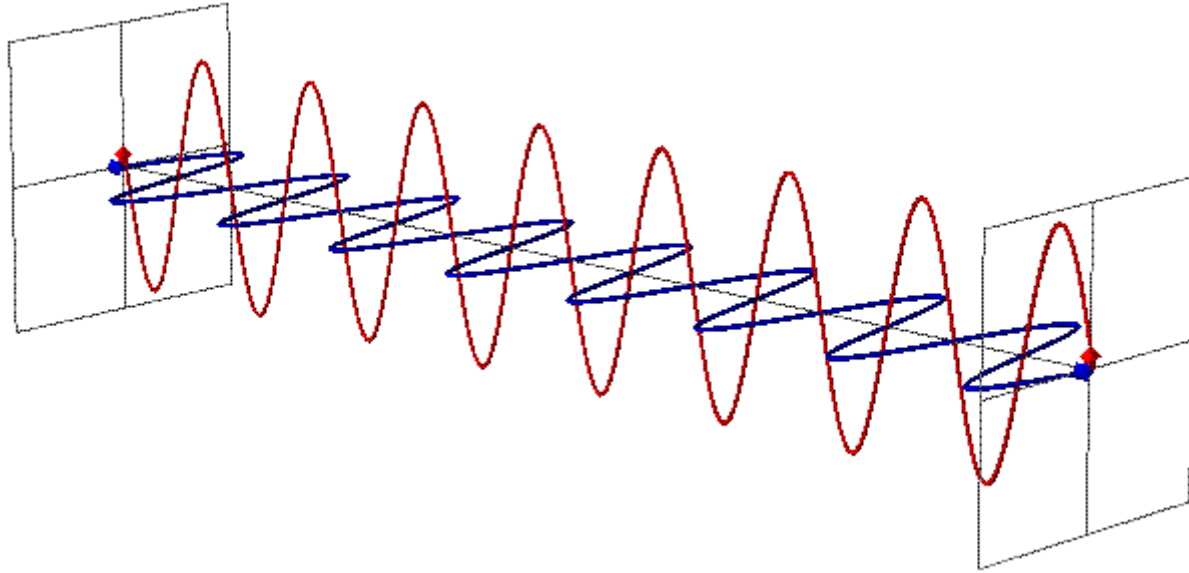
- EM Spectrum

The Electromagnetic Spectrum (frequency range from low to high)



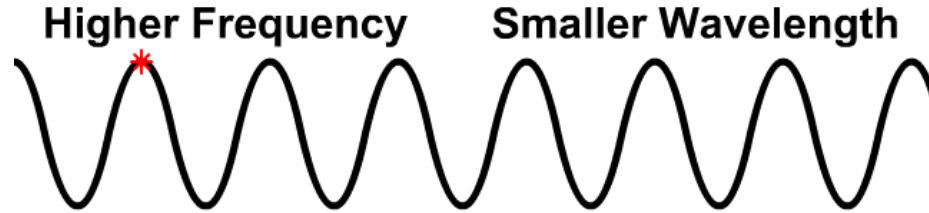
Radio Basics

- What is a radio wave?

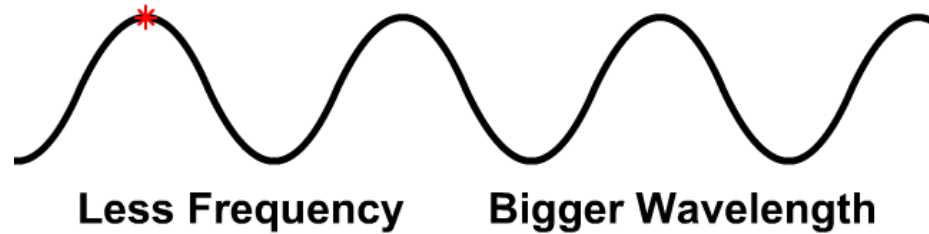


Radio Basics

- Frequency vs. Wavelength



**Wavelength and Frequency
are Inversely Proportional**



Wavelength = speed of light
divided by frequency

$$\lambda = c/f$$

$$f = c/\lambda$$

Wavelength in meters

Frequency in MHz

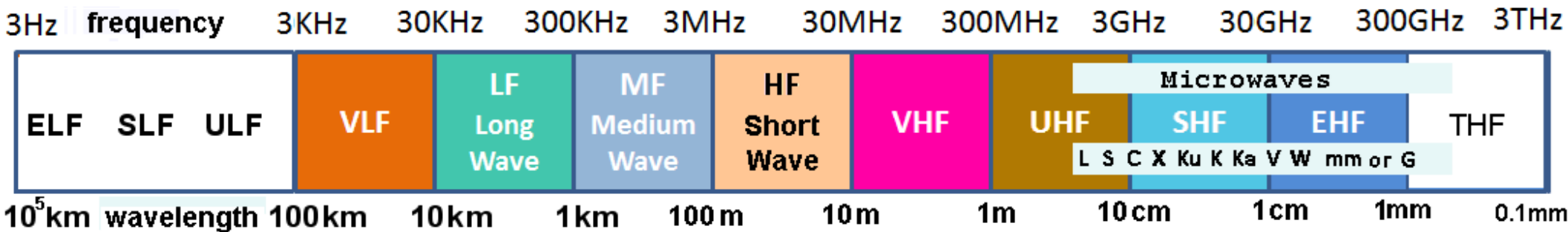
Speed in MM/S (300)



Radio Basics

- Radio Spectrum (Bands)

The Radio Spectrum



ELF = Extreme Low Frequency

SLF = Super Low Frequency

ULF = Ultra Low Frequency

VLF = Very Low Frequency

LF = Low Frequency

MF = Medium Frequency

HF = High Frequency

VHF = Very High Frequency

UHF = Ultra High Frequency

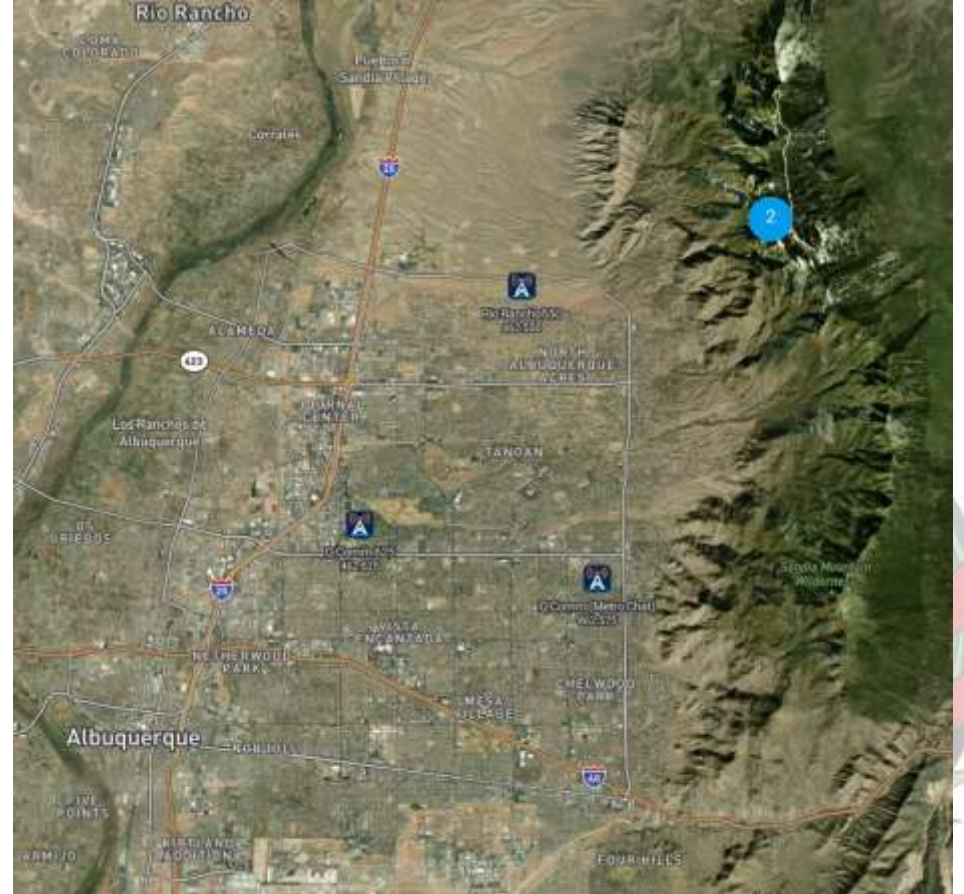
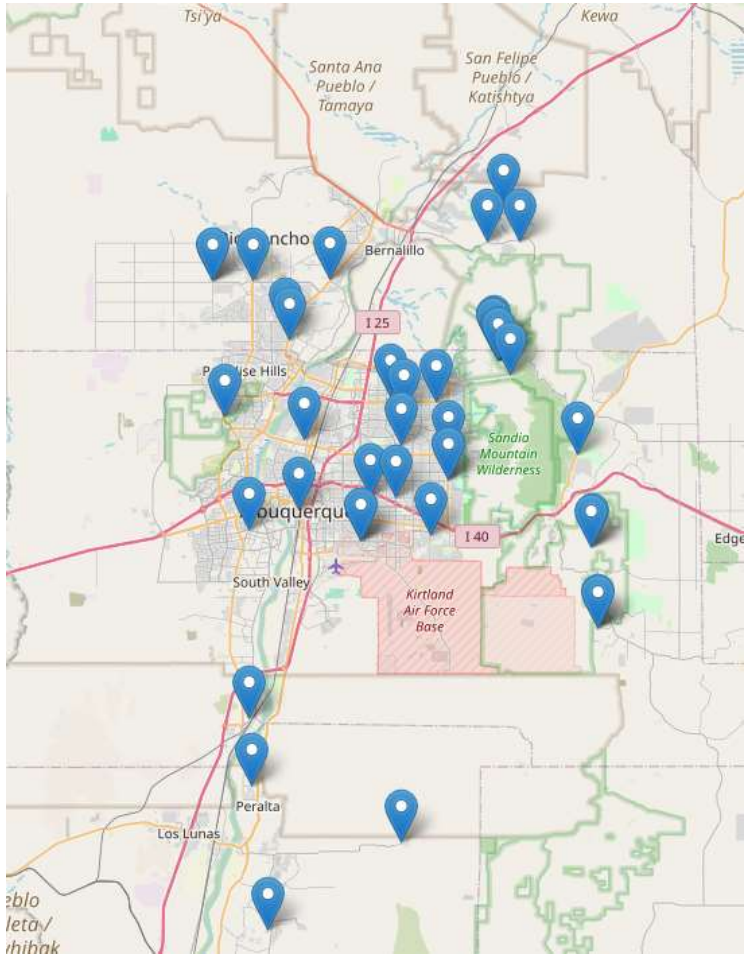
SHF = Super High Frequency

EHF = Extremely High Frequency

THF = Tremendously high frequency



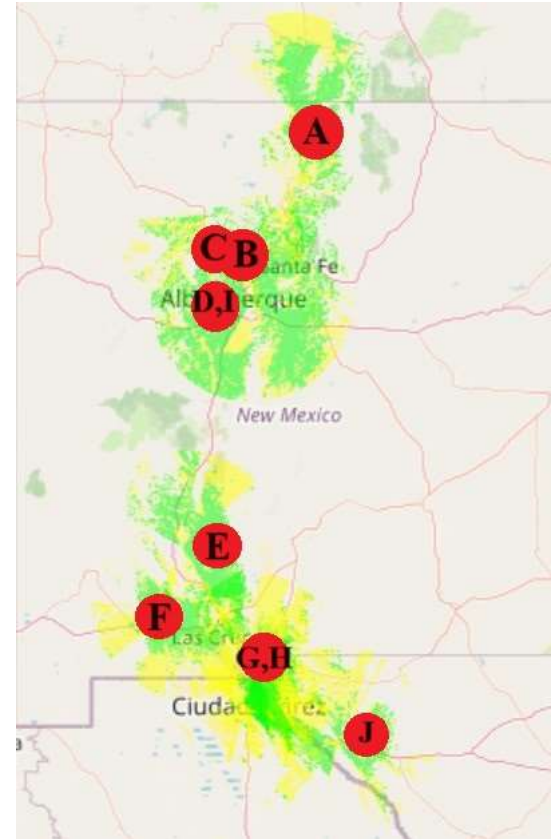
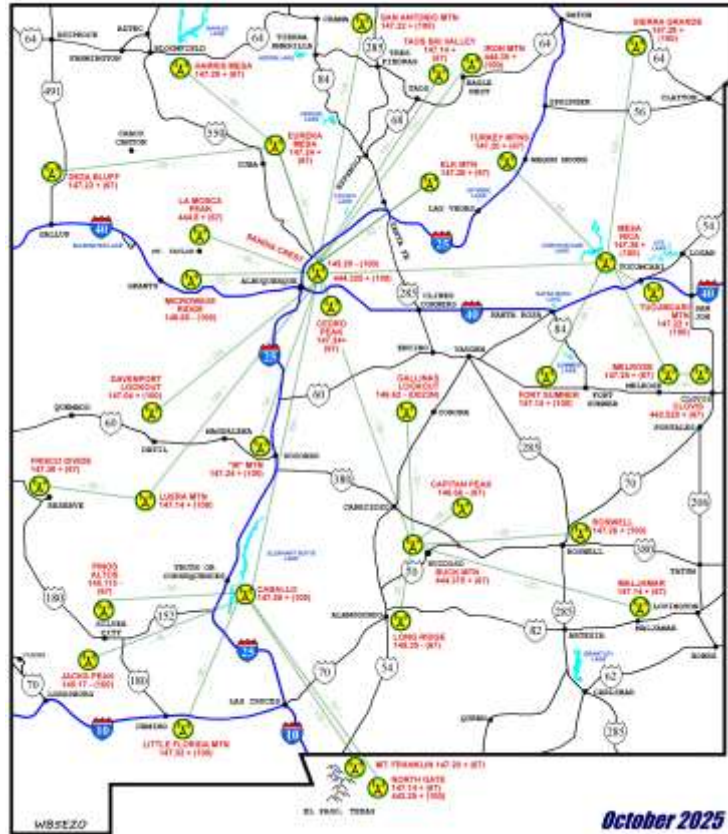
Repeaters



Repeaters

New Mexico
Mega-Link Association

New Mexico Mega-Link Association, LLC
www.nm5mi.com



Cross-Band Repeat

- “Poor man’s repeater”
- Transmits on one band, repeats on the other
- Can extend range
- More private than a repeater



Radio Options

- Ham
 - Needs license, with test
 - Ties real name and address to call sign
- FRS
 - No license
 - Limited to $\frac{1}{2}$ watt
- GMRS
 - Needs license, no test
 - Ties real name and address to call sign
 - $\frac{1}{2}$ watt, 5 watt, and 50 watt limits



