

Wavelengths & Frequencies

$$\text{Distance} = (\text{Rate}) \times (\text{Time Interval})$$

$$\text{Wavelength} = \frac{\text{Speed of light (m/sec)}}{\text{Frequency (cycles/sec)}} \quad (\text{m/cycle})$$

Speed of light = 299,792,458 meters per second

1 MHz = one million cycles per second

Carrier Phase:

$$\text{L1:} \quad 0.19 \text{ m/cycle} = \frac{299,792,458 \text{ m/sec}}{1,575.42 \text{ MHz}}$$

$$\text{L2:} \quad 0.24 \text{ m/cycle} = \frac{299,792,458 \text{ m/sec}}{1,227.60 \text{ MHz}}$$

Code Measurements:

$$\text{C/A Code: } 293 \text{ m/cycle} = \frac{299,792,458 \text{ m/sec}}{1.023 \text{ MHz}}$$

$$\text{P-Code: } 29.3 \text{ m/cycle} = \frac{299,792,458 \text{ m/sec}}{10.23 \text{ MHz}}$$

Electronic signal processing techniques routinely resolve each cycle into 100 pieces. Greater resolution is achieved with newer techniques.