

## 12.7: Antenna Systems (Summary)

### Key Terms

<b>transverse wave</b>	a wave, such as an electromagnetic wave, which oscillates perpendicular to the axis along the line of travel
<b>standing wave</b>	a wave that oscillates in place, with nodes where no motion happens
<b>wavelength</b>	the distance from one peak to the next in a wave
<b>amplitude</b>	the height, or magnitude, of an electromagnetic wave
<b>frequency</b>	the number of complete wave cycles (up-down-up) passing a given point within one second (cycles/second)
<b>resonant system</b>	a system that displays enhanced oscillation when subjected to a periodic disturbance of the same frequency as its natural frequency
<b>oscillate</b>	to fluctuate back and forth in a steady beat

### Summary

#### Production of Electromagnetic Waves

- Electromagnetic waves are created by oscillating charges (which radiate whenever accelerated) and have the same frequency as the oscillation.
- Since the electric and magnetic fields in most electromagnetic waves are perpendicular to the direction in which the wave moves, it is ordinarily a transverse wave.
- The strengths of the electric and magnetic parts of the wave are related by

$$\frac{E}{B} = c,$$

which implies that the magnetic field  $B$  is very weak relative to the electric field  $E$ .

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