

WiFi Fact Sheet

History

- By 1886, Hertz had developed the Hertz antenna receiver
- 1887: Hertz experimented with radio waves in his laboratory. Through these experiments, he proved that transverse free electromagnetic waves can travel over some distance
- Hertz conducted a lot of experiments which explain reflection, refraction, polarization, interference, and velocity of electric waves
- Nikola Tesla researched the wireless transmission of power
- The Tesla Effect is the movement of energy through space and matter
- The Tesla coil can be used to transmit power wirelessly

Radio

- Uses radio waves (obviously)
- Two information transmission techniques, AM and FM
- AM - Amplitude Modulation - signal represented through changes in wave amplitude - best for voice (narrow frequency spread)
- FM- Frequency Modulation - signal represented through changes in radio frequency - best for music (wider frequency spread)

Remote Control

- Infrared remote controls were introduced in 1980. Infrared light emits in frequency that receiver is tuned to, so it can ignore other source of infrared.
- First wireless remote control was designed 1955, and flash lights and photocells were used to control the channels and volume.

WiFi

- operates on the same principals as radios, using the unlicensed radio spectrum
- has many everyday uses including cell phones, PDA's, Laptops, Game Counsels, MP3 players.
- Operates based on the IEEE's 802.11 standards
- Uses a hub and spoke system or a mesh system

Cell Phone

- Cellular network consists of: cell sites - antennas that transmit and receive data to and from mobile devices; cells - areas of coverage, typically hexagonal in shape; mobile telephone switching office - connects cell sites to each other and to landlines; and mobile devices.

- Uses radio communication that was originally analog as FM radios but has since switched to digital, where the wave represents binary code.

Satellite

- The first satellite to be launched into Earth's orbit was Sputnik 1, which was launched by the Soviet Union on October 4, 1957.
- The spacecraft "bus" is what holds everything in a satellite together.
- The "communication payload" is made up of transponders, which are capable of receiving, amplifying, and re-transmitting radio signals to and from the Earth.