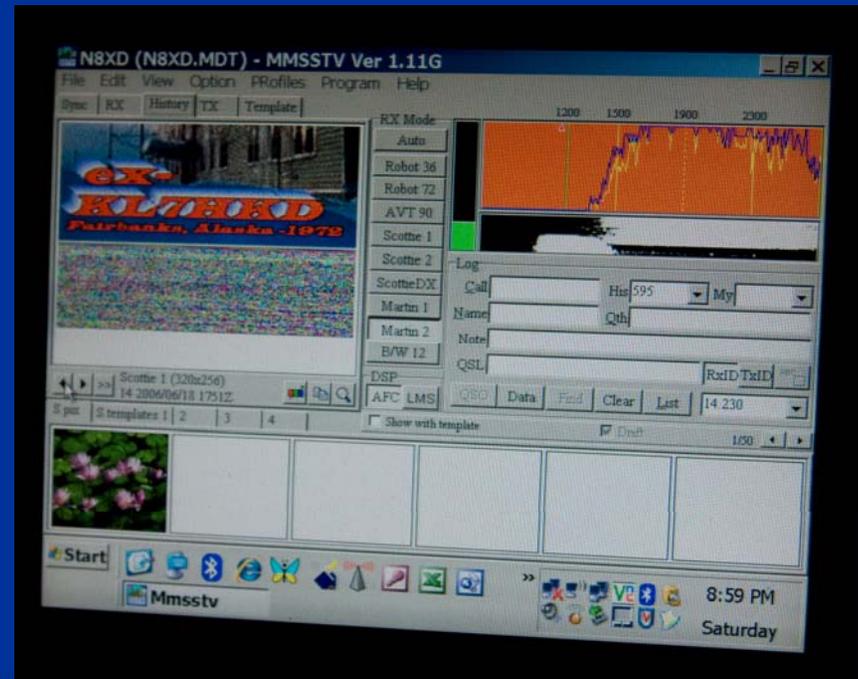
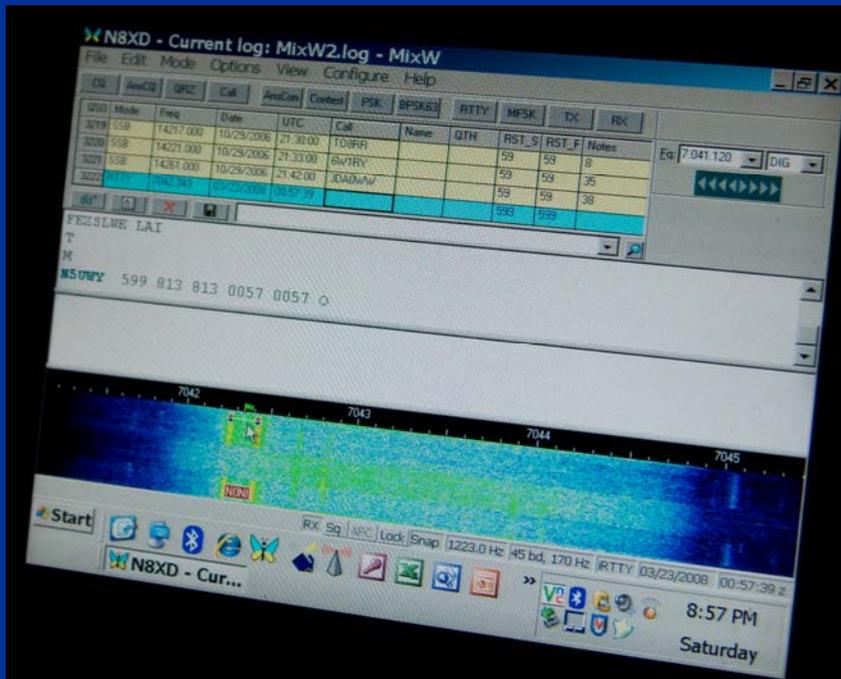


# Mobile Radio Ideas

Power, RF, and Computers

# Why? Would you like to...

- Use Digital modes like: psk, rtty, sstv?



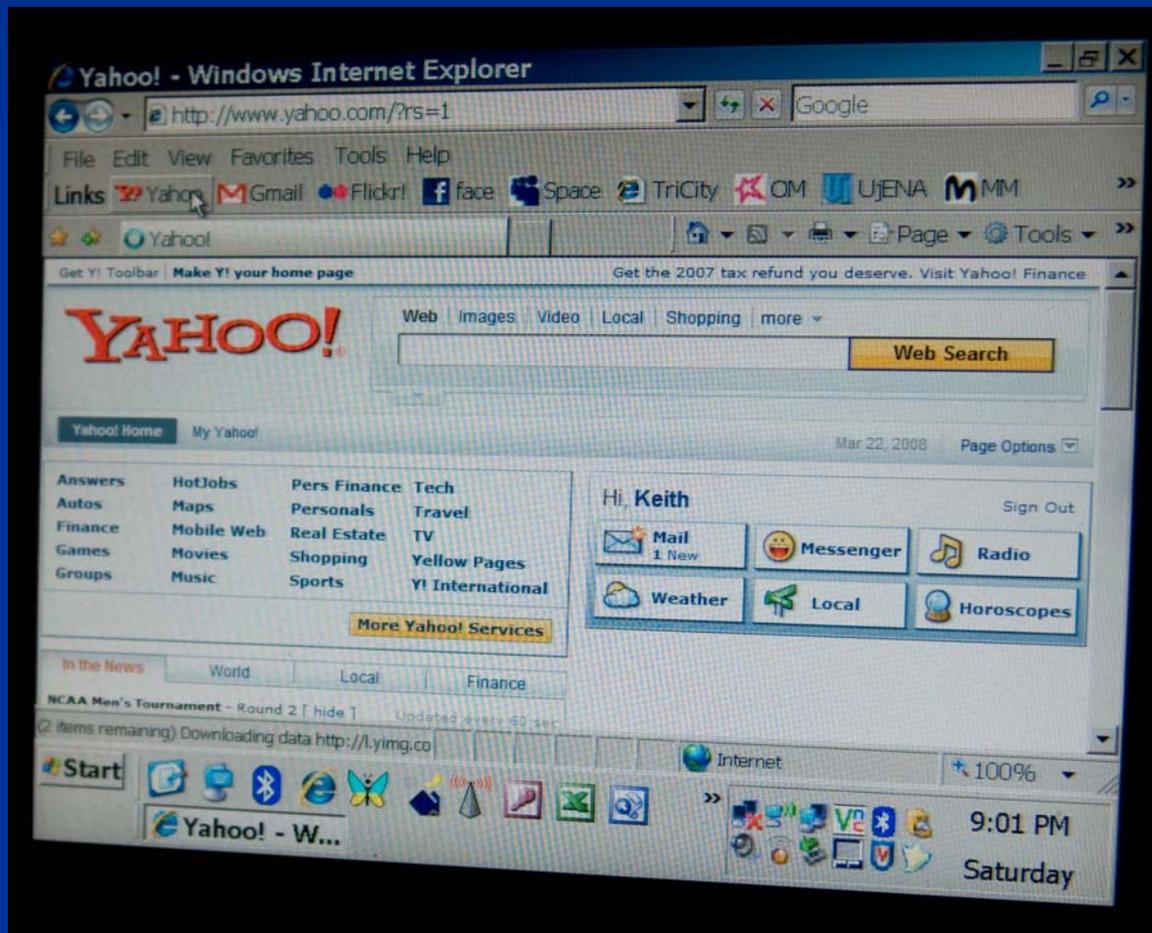
# Why? Would you like to...

- Extend the range of your handheld radio?
- 2 m / 70cm Cross Band
- 2 m / 70cm to HF



# Why? Would you like to...

- Check the Internet or your email?



# Why? Would you like to...

- Hear your ham radios through the car stereo?



# Why? Would you like to...

- Start your car after running down the battery?



# Focus Categories

- Power
- Audio
- RF
- Computing
- Internet

# Power

- Most modern automobiles use negative ground to the frame, and +12v through insulated cables.

# Power

- A fully charged and rested battery should read between 12.7v to 13v on a voltmeter.
- A battery reading 11.4v is discharged without damage.
- A battery reading less than 11.4v...

# 12v Batteries

- 12.8v fully charged / 11.4v fully discharged
- Rated in Ah – amp hours
- Car batteries have thinner metal plates
- Deep Cycle batteries have thicker metal plates
- Always recharge a drained battery

# Amp Hours – Deep Cycle

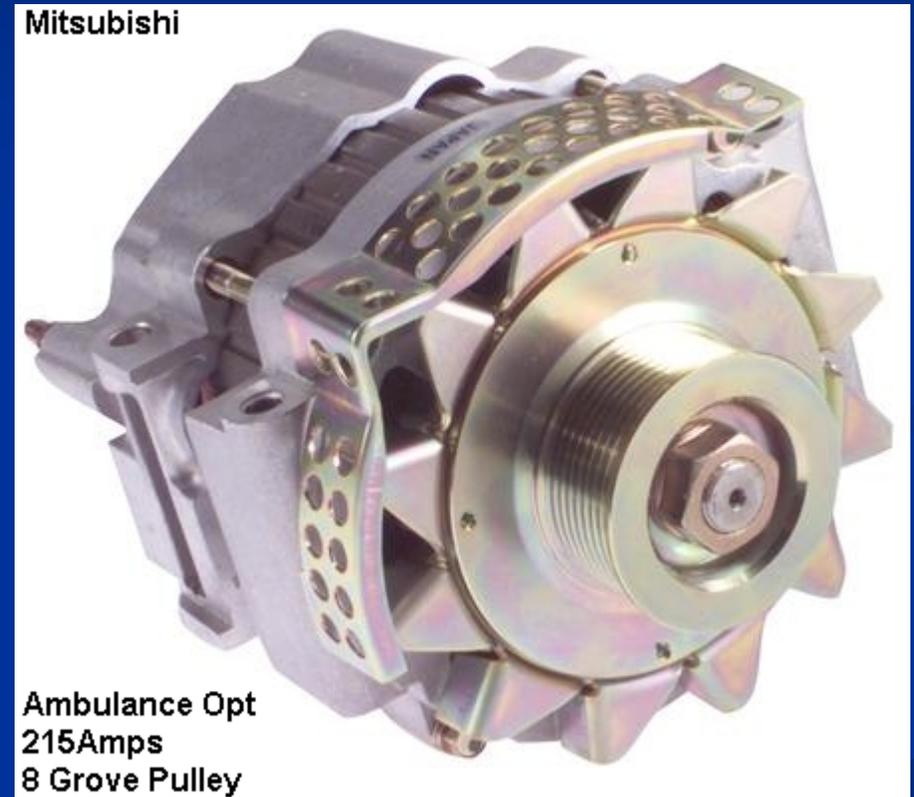
40 Ah battery

■ 40 Ah =

- 1 amp for 40 hours
- 2 amps for 20 hours
- 4 amps for 10 hours
- 10 amps for 4 hours

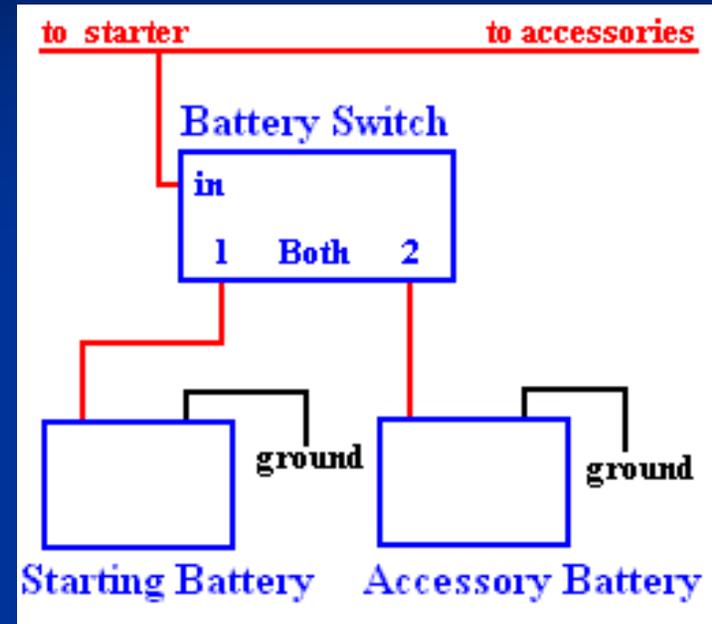
# Power

- The car's alternator normally provides 13.5v to 15v, charges the battery and powers the electric equipment in the car. It's built to maintain a full battery, but not recharge a dead one.



# Multiple Batteries - Switch

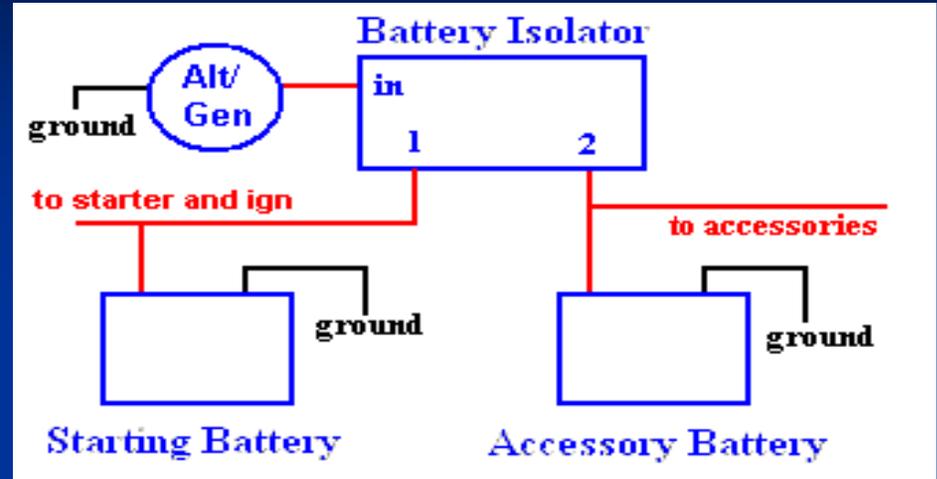
- Simple Battery Switch



# Multiple Batteries – Diode Isolator

- Diode Isolator

Alternator connects to diode pack, pack splits two ways to batteries



- Pros

- No mechanical parts to wear out.

- Cons

- 0.6v voltage drop



# Multiple Batteries – Solenoid/Relay

- Relay (solenoid) Isolator

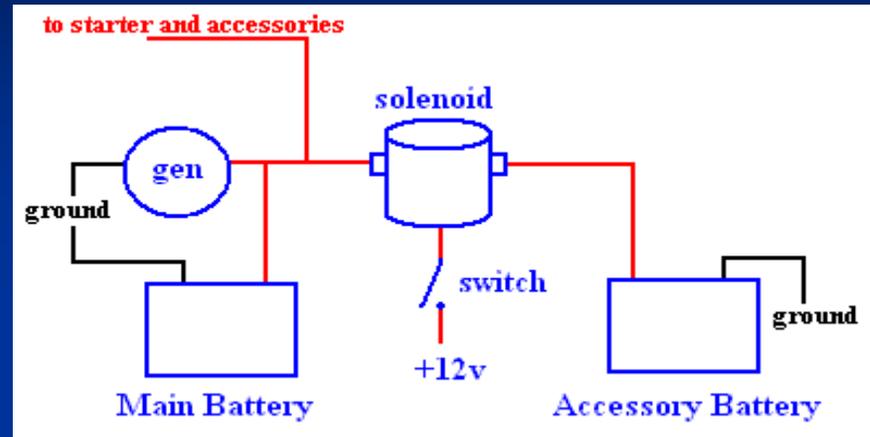
Connects batteries while alternator charging.  
Separates batteries at engine start and power off.

- Pros

- No voltage drop

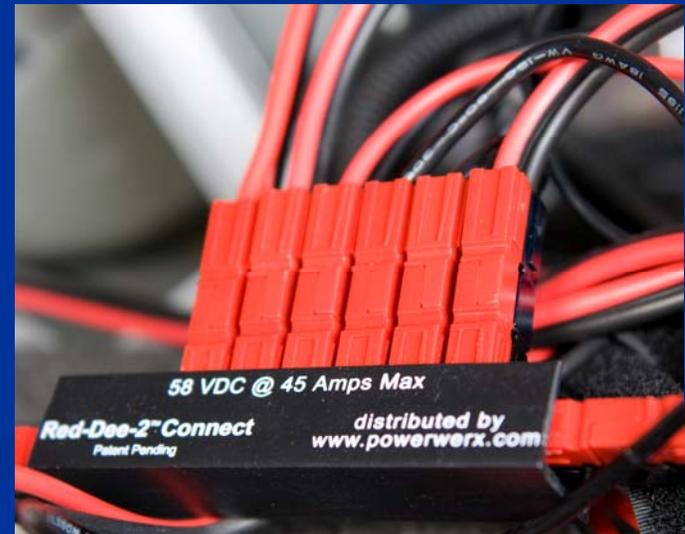
- Cons

- Mechanical Relay



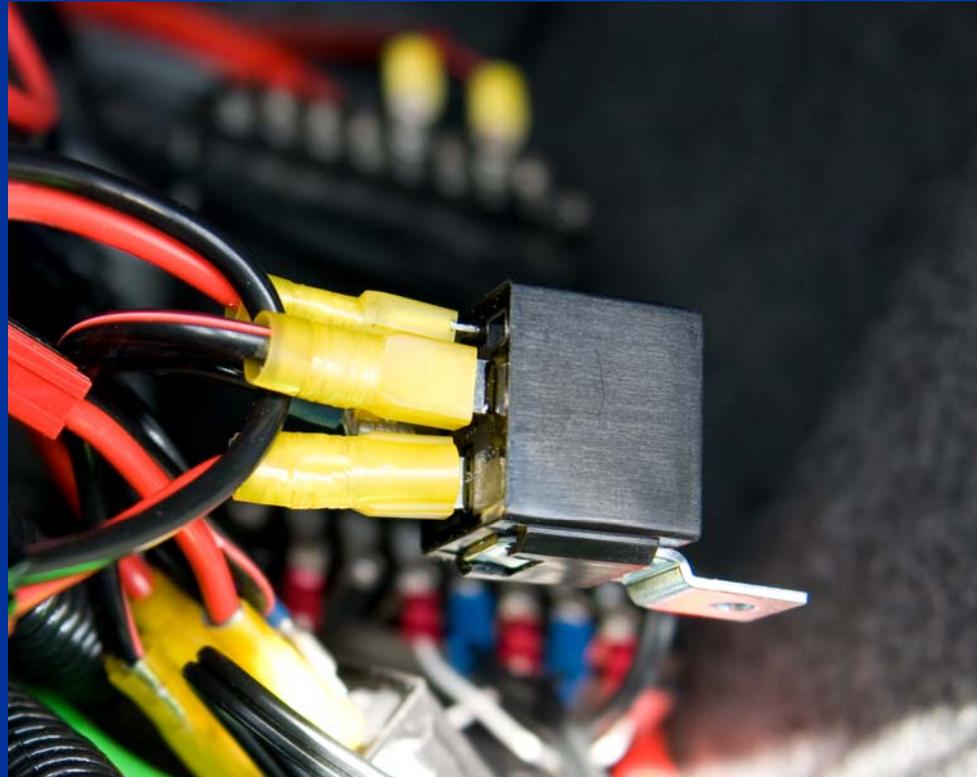
# More Power Distribution

- Direct Battery Connection
- Distribution



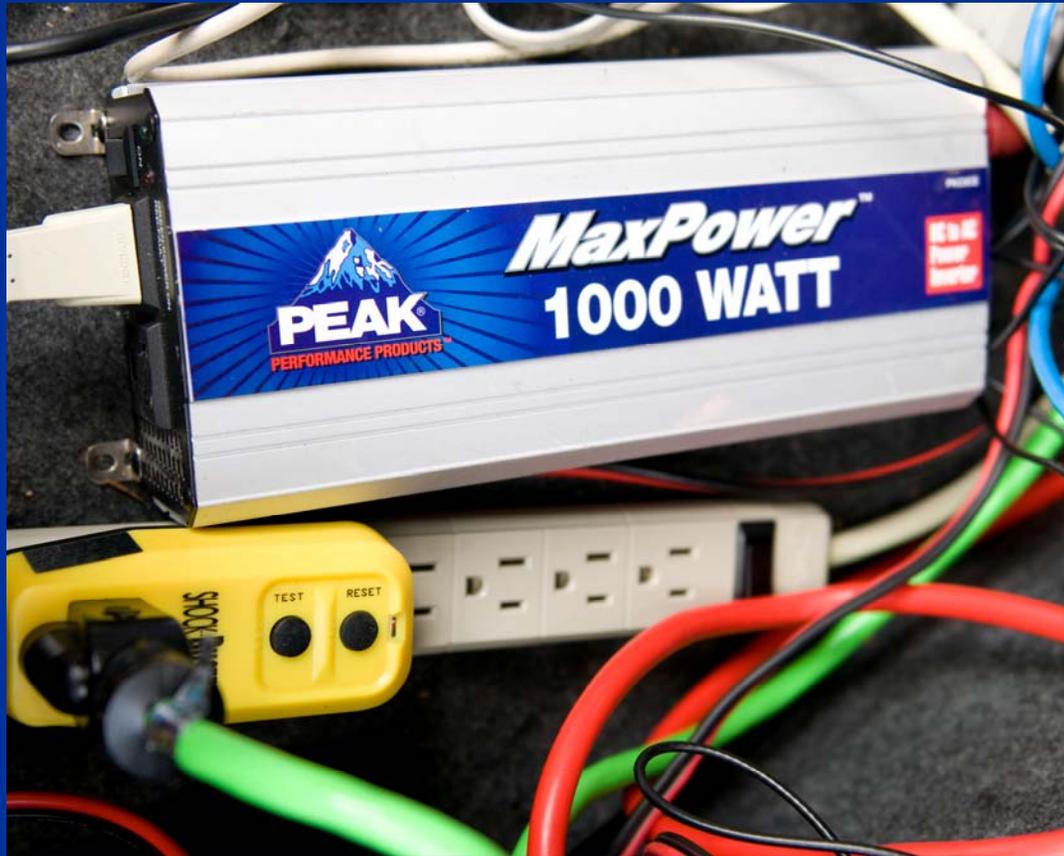
# More Power

- Timer/Relay control of Direct Battery Connection



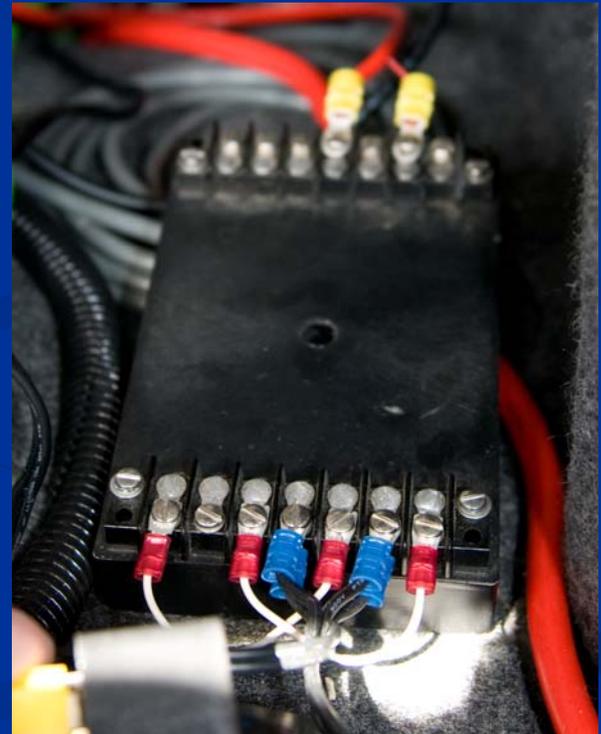
# AC Inverter

- Power for AC devices



# 12v to 5v DC/DC

- Powering 5v devices like USB hubs and Wireless Routers



# Audio

- Direct Wire (1/8" plug or iPod dock)
- Antenna Feed (hard wired rf modulator)
- Cassette Feed (imitation cassette with jack)
- RF Modulator
  - wireless transmitter on FM broadcast band
- Mixing / Switching
  - Combining several audio sources into two stereo channels.

# Audio to Car Stereo

- RF Modulator



# Audio to Car Stereo

- Cassette Adaptor



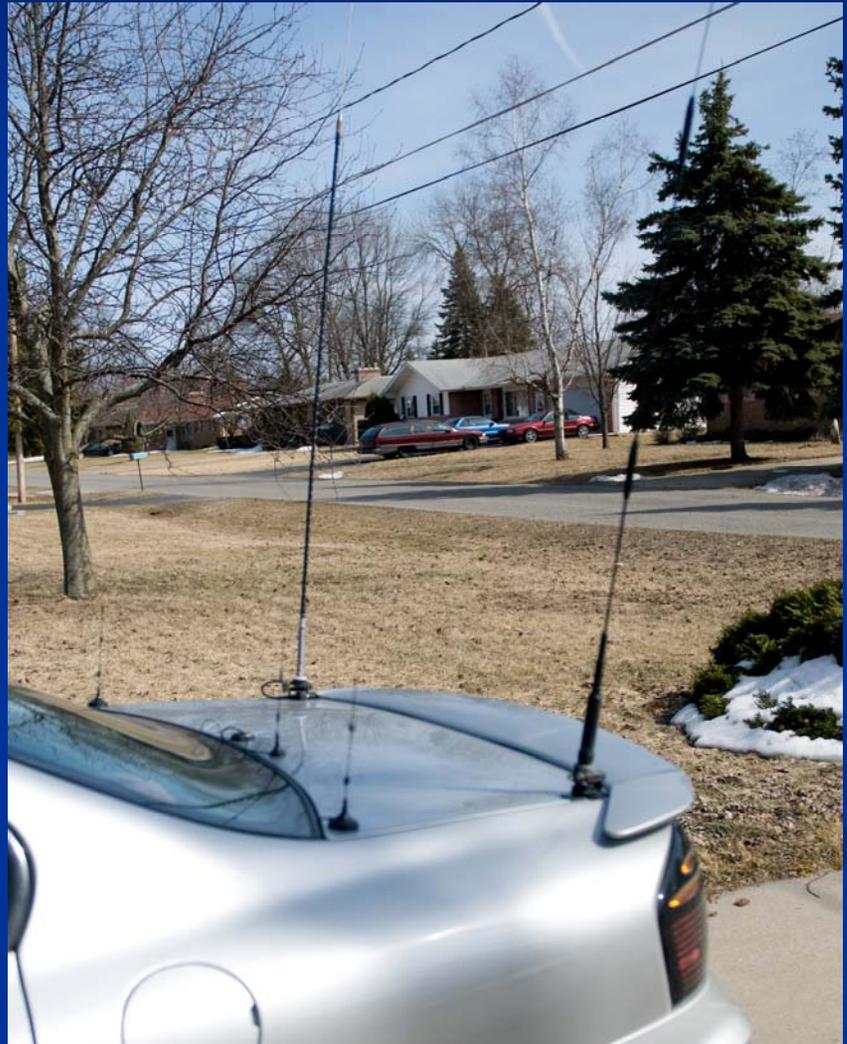
# Mixing

- Breaking up Several Audio Sources into your left and right stereo speakers



# RF

- Radios
- Coax
- Antenna Mounts
- Antennas



# Radio Functions

- VHF / UHF -- Simplex / Repeater Voice
- SSTV via Simplex / Repeater
- Digipeater (repeat packet data/aprs/etc)
- Cross Band repeater
- HF long distance ssb/cw/data
- VHF/UHF – ssb, cw, fm
- Microwave – ssb, cw, fm

# Satellite Radio

- VHF / UHF cross band space repeater
- Microwave -- L-band (1.2GHz) and S-band (2.4GHz)
- Music – XM and Sirius

# Computers

- Laptops
- Docking Stations
- Car Computers
- Touch Screens
- Trackball
- GPS



# Computer Types

- Car Computer Package



# Computer Types

- Laptop Computer
- Laptop Docking Bay

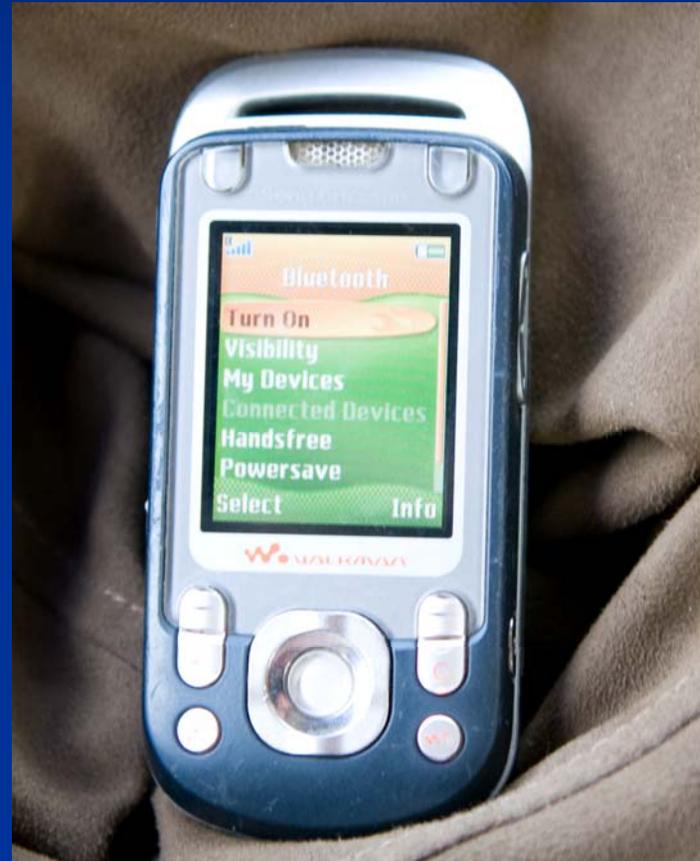


# Computer Modes

- APRS / Mapping of other stations
- PSK keyboard to keyboard text
- RTTY keyboard to keyboard text
- SSTV photographs
- Packet messages/files by land, sea, or space

# Internet Access

- Cell Phone to Computer
  - Wired via USB
  - Bluetooth wireless
- Wisp – Wireless internet provider
  - Speednet
  - Mercury
- WiFi
  - In driveway at home, Culvers, Staples, etc.



# Internet Access

- Sharing internet access with other devices around the car.

