

of the Yaesu and Icom mobile radios. The biggest downside in my opinion is the maximum wattage in digital mode which is 30w.

### **Digital Communications:**

With digital communications it is very important to monitor your audio input/output levels. There are some devices that make this much easier such as a Signalink. A Signalink is basically an external sound card that interfaces your transceiver typically through a “data” port, but this is not always the case. In some cases a pigtail that connects directly to the mic port is sufficient. The Signalink provides easier access to level controls whereas the dongle must be controlled via software such as Microsoft’s Volume Control, Linux Pulse Audio, or Apple Audio MIDI.

However, it is not always possible to interface using just a sound card. While some digital modes have evolved to allow communications via sound card, that hasn’t always been the case and in some instances you will find that actual modems are still in use.

Current digital modes available for this setup:  
WIRES-X

FST4, FST4W, FT4, FT8, JT4, JT9, JT65, Q65, MSK144, and WSPR, as well as one called Echo under the WSJT-X application. Additionally we are able to use JS8Call and Winlink (radio email)

### **Installed Gear:**

Yaesu FTM-400XDR  
Yaesu FT-891  
LDG Z-100Plus Tuner  
Raspberry Pi 4 4GB w/ HamPi Image  
2.4GHz/5GHz TPLink Wireless Router  
(Operating with handheld device remotely)  
65Ah Dual Purpose 12v Battery  
75Ah Starting 12v Battery

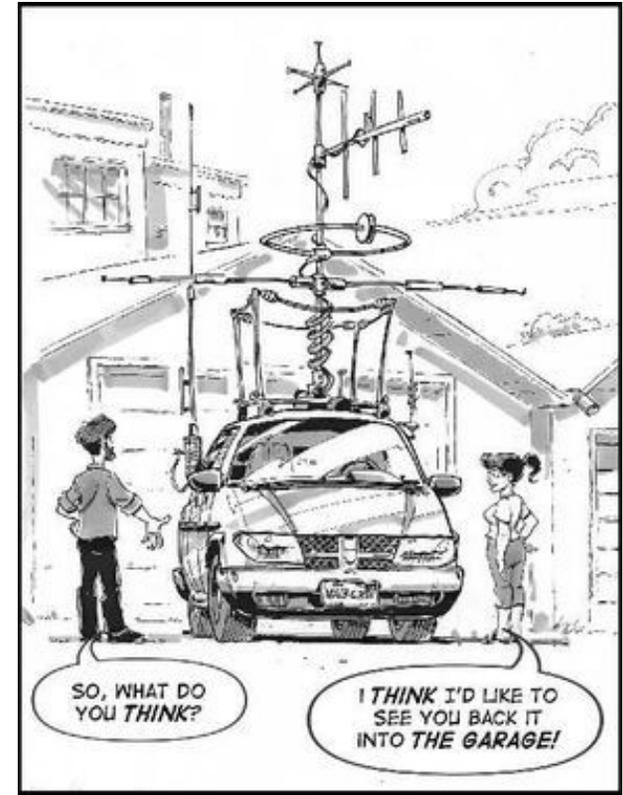
### **Antennas:**

Comet CA-2x4SRNMO  
(VHF/UHF Mobile)  
102” Steel Whip  
(HF Mobile Ops)  
17’ Chameleon Telescopic Whip CHA SS17  
(HF Stationary Ops)  
BU-353S4 USB GPS Receiver  
(Time Sync/Location for Digital Modes)

### **Additional Antennas:**

132’ OCF 7-Band Dipole w/ 40Ft Mast  
(Stationary Ops)  
Wolf River Coils SB1000 TIA  
(Stationary Ops)  
10M SharkMini Hamstick  
(Mobile)  
20M SharkMini Hamstick  
(Mobile)

Ogden ARC W7SU  
ARRL Field Day 2021  
HF/VHF/UHF Mobile Operations  
Presentation



Presented By:  
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**Mobile:** Able to move or be moved freely or easily. This is what I kept in mind when sourcing equipment for this particular setup. The ability to move from location to location without the need to uninstall/reinstall equipment.

On the VHF/UHF side of things we have the FTM-400 which provides analog along with digital communications. Combined with the local repeater network, local communications ranging up to ~100 MI (based off altitude/line of sight) and WIRES X (think VOIP with “rooms”)

HF we have the FT-891 with 100W maximum operating power. provides worldwide communications (atmospheric weather permitting). Paired with the Raspberry Pi running HamPi and a rather inexpensive USB sound card dongle, we have the ability to run many digital modes which includes the popular FT8. When paired with the 17’ whip, we have the ability to connect to Winlink services which provides a radio based email service. This is popular with maritime operators as a redundant system for position reporting and receiving weather updates. For land-based operations it is a great way to keep in touch when local infrastructure is not available or for emergency situations.

With these antenna an ATU is necessary for operation across the full frequency spectrum across each band. Note that FT8 operation is usually in the CW portion of the band while SSB is always in the upper portion of the band. The LDG Z-100Plus is a great match to several

In a mobile setup, grounding is a concern. Its not very simple to drive down the road while being wired to an 8’ ground rod. In this case we have a negative ground system which means the “ground” is typically the vehicle chassis.

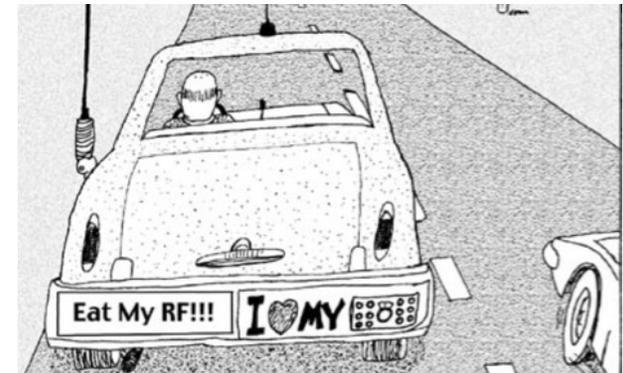
Each ground/negative wire is bonded directly to the chassis with a large gauge cable. On top of that, each HF antenna has a solid connection to the vehicle body which in turn has ground straps which bond it to the frame and the rest of the main electrical system. With the Comet VHF/UHF antenna, I have a cable running to the engine block ground to provide additional ground, but in most applications this is not needed.

In mobile tests, results vary greatly based on your location and of course equipment that is utilized. Just because something is good on top of the mountain, does not mean it will be good down in the valley. Keep in mind that each location has its pro’s and con’s. On top of that remember that with HF operations atmospheric conditions determine a lot in regards to distance. In many cases, it is possible to make international contacts with 20 watts or less.



Mobile applications are not restricted to vehicle installs. There are some people who operate using modes of transportation that range from on foot to horseback and even an airplane.

REMINDER:  
Always operate in a safe and courteous manner



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