

# UPARC Mobile Comms Presentation

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# How I got to this area of amateur radio

- I didn't have any initial goals of getting into mobile radio, at least not for HF
- Working with county ACS volunteer group & learning more and more about those kind of operations
- Seeing first hand after Ian how radio comms are so critical and helpful





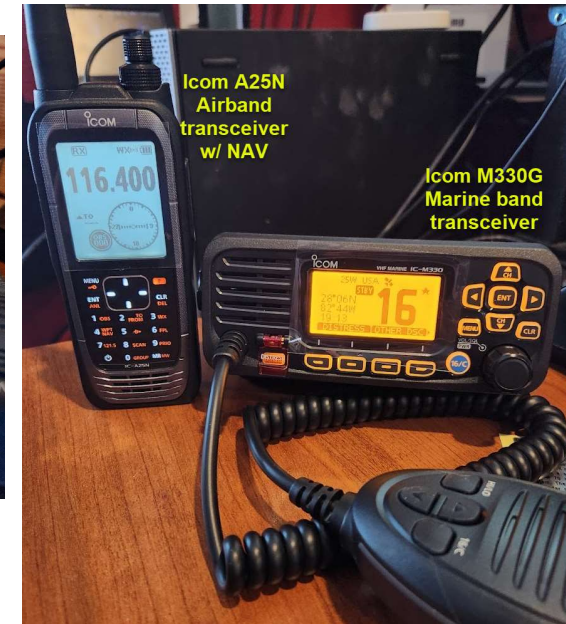


# Definition of mobile and portable operations

- Mobile radio operation is operating while underway (safely and not distracted)
- Portable radio operation is operating while parked but not at your home QTH/shack

# Types of mobile radio operation (non-Ham)

- Land Mobile Radio (LMR)
  - Digital
  - Analog
  - Typically seen in public safety, First Responder and fleet of mobile user type scenarios
- Marine mobile
- Airband mobile
- General Mobile Radio Service (GMRS)
  - My callsign: **WRVP556**
- Scanners (not pictured)





# Overview of various mobile install types

- HT on a dash or cup mount and stock antenna
- HT on mount but with external antenna
- Mobile radio with external antenna
- Multiple radios with multiple antennas

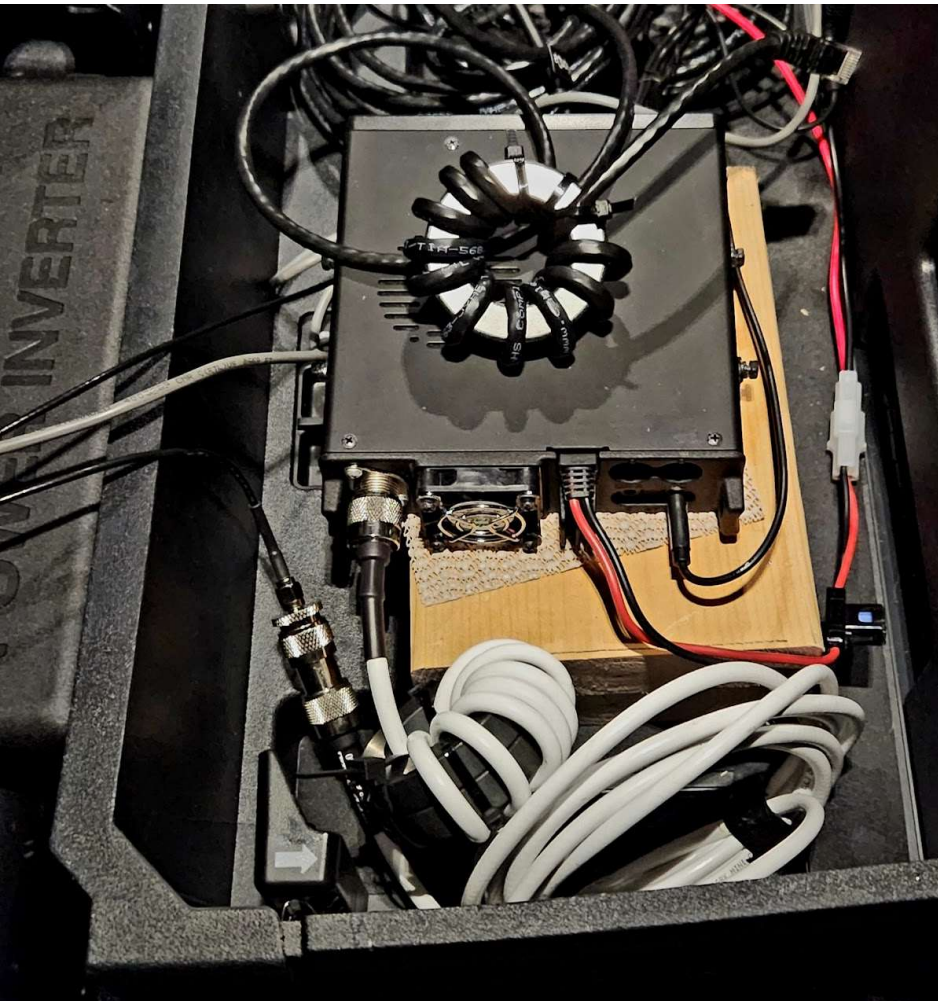


# Mobile install options

- Antenna mount options
  - Mag mounts
  - Lip mounts
  - Luggage rack mounts
  - Hitch mounts
  - Thru-roof mounts
- Antenna type options
  - I'm assuming all verticals for this presentation
  - Shorter than half wavelength
    - *Ground plane typically required*
  - Half wavelength or longer
    - *Ground plane not required typically, but can still help performance*
- Radio mount options
  - Fixed mounts
    - Single unit
    - Remote head
  - Portable cases







# Mobile install tips/tricks

- Beware the RFI & RF noise gremlins.
  - Grounding straps (tinned copper braid and crimped terminal ends) to frame and exhaust pipe
  - Mix31 chokes are your friends!
  - Test, test, and test some more!
- Getting cables and coax from outside into the interior
  - Firewall routing
  - Routing under rubber/plastic door trim
  - Trunk access in cars
  - Cargo area in SUVs
  - Pressure port in most pickups
- Antenna placement
  - Rule of thumb is have the radiator above the roofline of the vehicle and place it such that you have as much of the metal of the vehicle directly under the antenna



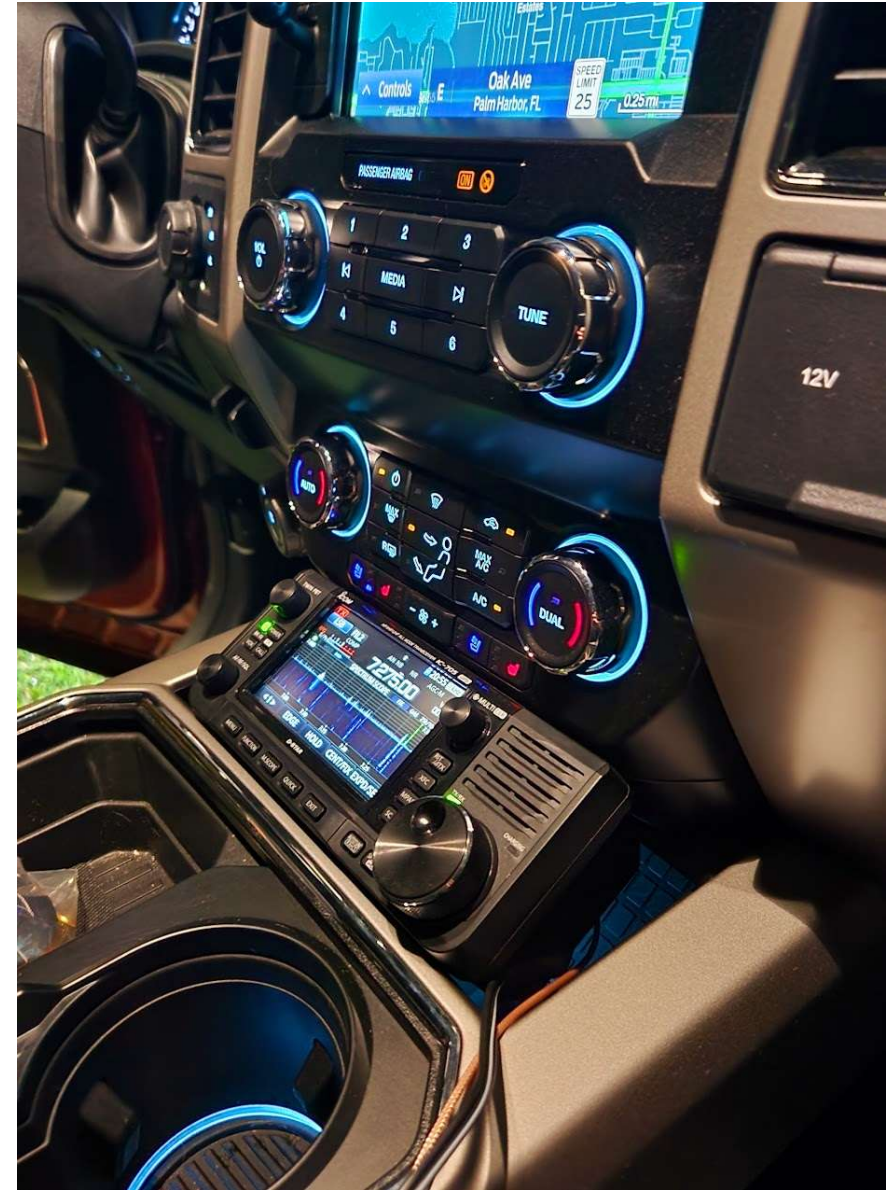
## Mobile install tips/tricks - cont.

- Mobile power options (12v power)
  - Dedicated Battery
    - Typically not the most practical
    - Needs to be secured
  - Factory vehicle battery
    - Power cables run from battery to radio(s)
    - Ensure to size wiring for proper load and the length of run
    - Inline fuses at battery end and fused before radio or distribution device
    - If only a single battery and vehicle has an battery management system and/or Electrical Load Detectors, land the negative on the factory chassis ground, **NOT** the battery
    - If wiring to dedicated/secondary battery without a BCM or ELD, you can land the negative lead on the negative terminal or chassis ground



# Quick overview of my mobile design and options

- Don't break the golden 'rule' from the XYL – NO HOLES will be drilled in new truck!
- Key Design goals of my mobile install
  - 1<sup>st</sup> primary goal was to make sure no safety issues were created, no airbag deployments were blocked, fuses in all the appropriate places, etc. No cutting corners!



# Quick overview of my mobile design and options – cont.

- 2<sup>nd</sup> primary goal was for a functional, every day driver mobile install for 2m/440 and HF, but with a minimal visible footprint to passengers (antennas notwithstanding), and not impact day to day functional use of the truck
- “Bonus” goal was for functionality & flexibility to support various portable comms as needed
  - POTA, Potential special event station, satellite or 6m ops for rare grid squares





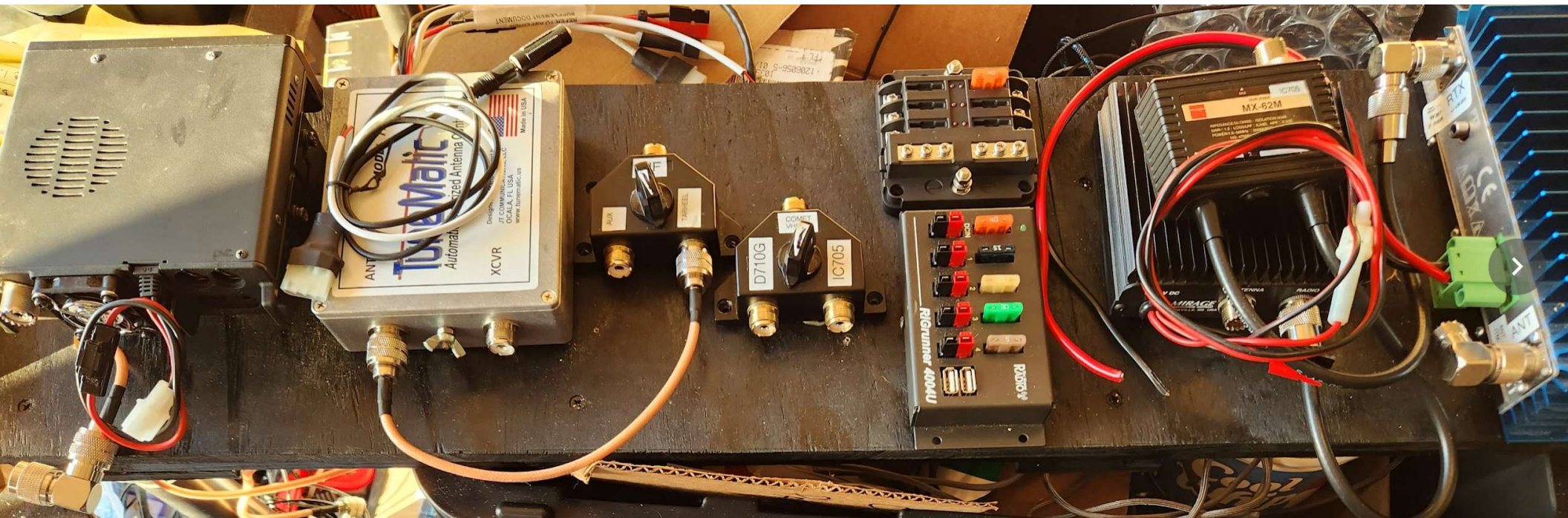
# Quick review of my mobile install

- HF (VHF/UHF alt)
  - Icom 705 radio (10w max output)
  - RM Italy 305 SS, 200w HF amp
  - Little Tarheel II antenna, w/  
Tunematic controller
  - Comet diplexer (HF/6m – VHF/UHF)
  - Mirage 45w VHF/UHF amp
- VHF/UHF
  - Kenwood TM-D710g dualband radio
  - Comet CA-2x4SR NMO, broadband,  
half wavelength antenna



# Quick notes for any mobile install

- It **absolutely** doesn't have to be complex
- I didn't start out with a QRP rig and amp(s) in mind, duplexers and coax switches, multiple power line runs, splicing the amp into the factory upfitter switches, etc.
- In fact I wouldn't recommend going this route- it's just where I ended up in this process

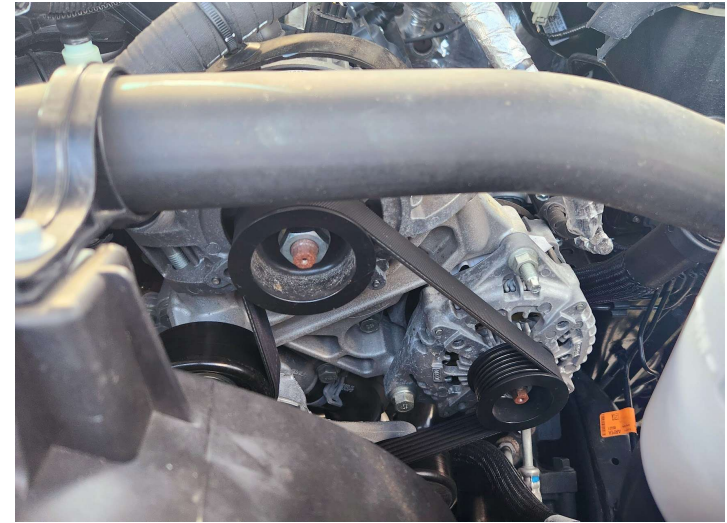




# Nice to have options

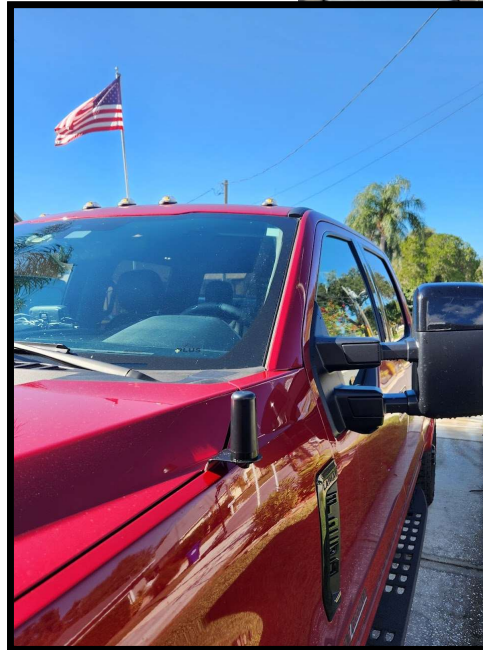
*(I just got lucky finding this build)*

- Dual Batteries
  - Split the load of radios and vehicle's electrical loads
- Heavy duty/High output alternator
  - My setup's peak output is 397 amps (that's not continuous)
- Upfitter switches
  - Gives you switched power control of devices



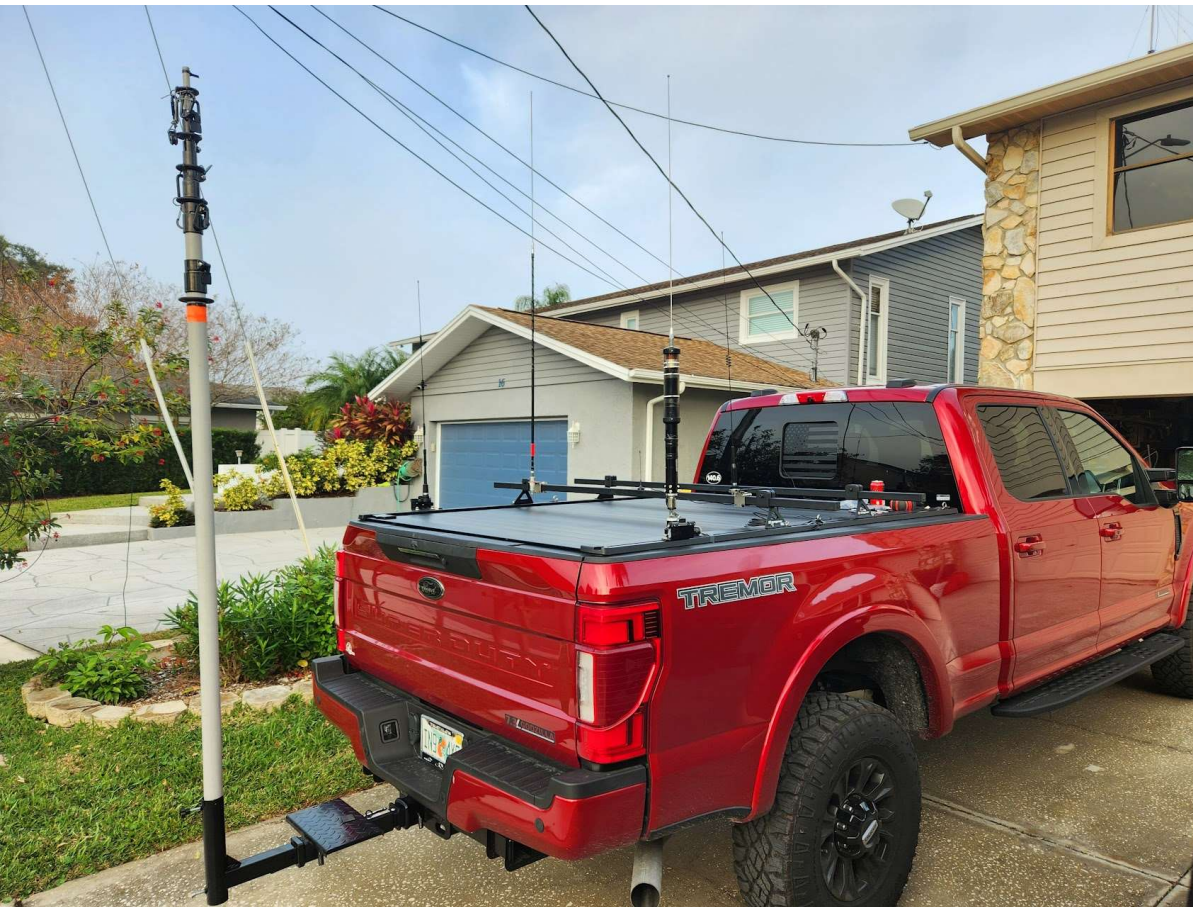
# Links to mobile radio info site

- <https://www.k0bg.com/>
- <http://www.arrl.org/my-first-mobile-installation>
- <https://www.instructables.com/No-Damage-Ham-Radio-Installation/>
- <http://www.n1gy.com/mobile-installation-guide.html>





I have no idea why N4BOZ  
calls me “Outta Control”









*Now go get your kicks on Route 66...  
with your new mobile rig, of course!*

**Questions / Feedback**

