

Make A Quick, Easy, Cheap, NVIS Antenna for Roadside Operating.

Or... "K.I.S.S." (Keep It Simple Sherlock)

by D. W. Thorne, K6SOJ, SEC SV Section

I recently purchased a second hand ICOM 706 Transceiver. What a great rig! A lot of radio neatly packed in a compact rugged case. But...that is another story.

My primary set of wheels is a 1985 Toyota Land Cruiser Model FJ60. Another great rig with over 168K miles, but...that also is another story.

As most EMCOMM operators know, most of our communications are regional. (In the 30 to 200 mile range.) We also know that for this range, a NVIS (Near Vertical Incident Skywave) signal usually works best.

After installing the IC-706, and connecting it to my Outbacker Perth 2M through 80M mobile vertical, I was anxious to make a few contacts. The Outbacker is an excellent antenna, but as with all verticals, the radiation angle is towards the horizon. For regional work it left much to be desired.

On 40 meters, initial signal reports were only poor to fair between my home location in Macdoel, CA and KA7RAM, Bill, in Klamath Falls, OR, (30 air miles) and N6SSQ, Fergy, in Alturas, CA, (80 air miles). At the same time of day (1500L), and under the same conditions, good signals reports were received from Spokane, WA. It was nice to talk to the boys in the Evergreen State, but not necessarily useful for regional EMCOMM work.

I don't plan to do a lot of HF mobile operating while actually moving. In the past, for "mobile at rest" HF work, I have erected a 20 ft. (or so) portable mast, and hauled up a G5RV. This works well, but is a lot of hassle and takes more time than I wished. A "dipole" also requires more space, in two different directions, plus additional support. Also, an ATU (antenna tuning unit) of some sort is also required for non-resonant antennas.

I wanted a quick, easy to erect antenna, that would allow me to pull to the side of the road, and quickly get on the air with a NVIS signal.

The solution? Go to the shop junk box! (Or your local electronics supply house.) I found an old 3/8 x 24 antenna mount, and affixed it to the end of the steel light bar on the roof of the Land Cruiser (which is grounded well to the vehicle's body). Next, a 33 ft. long piece of #12 insulated wire was cut and a heavy duty lug (3/8" bore) was soldered to each end. (Make sure the connections are mechanically strong as well as making a good electrical connection.)

Using a short 3/8x24 cap screw and a couple of "jam nuts". One end of the 1/4 wave wire was attached to the center feed point and strung out just above head height, using a length of parachute cord tied through the solder lug on the other end. This distal end can be secured to a tree, a post, a rock, or even a stake in the ground.

The wire can be strung out in any convenient direction. The initial meter readings by the antenna analyzer gave a SWR of 1.5:1, and a impedance of 40-60 ohms depending upon where in the 40 meter band I tuned. Close enough for "government work"!

I decided to give it a try on 7232 kHz. I heard a signal just below that frequency and tuned down to 7230. There was my old friend W6US, Howard, in McArthur, CA (about 60 air miles) calling CQ!

I answered. Howard responded with, "Hello K6SOJ, you are 5 by 9 here." It tuned out that he was

also testing a new mobile installation. BINGO! We chatted for awhile. Later K7DXV, Ed, in Klamath Falls chimed in.

“You’re 5 x 9 here Dave.”

What a simple solution!

I am far from what you would call an expert on antenna theory. What I am mainly interested is being able to quickly communicate from a “mobile” location; not cause any interference; and NOT damage the transceiver.

From what little I know, the 1/4 wavelength wire element is one half of this type of antenna, and the 5000 lbs. of steel in the Land Cruiser (or your vehicle) is the other half. I now have a 40M NVIS antenna, with which I can pull off to the side of the road, and be operating in less than five minutes!

For longer distances, and if you can park close enough to a tree or other support that is high enough, and you have enough cord (and a rock and a good throwing arm - HI), you can have a vertical or “sloper” on the air in just a few more minutes.

Since most of HF EMCOMM work is in the 40 and 80 meter bands, the next step was to cut another 33 ft. long wire, solder two more lugs, and use a machine screw, lock washer, and wing nut to convert it quickly for 80M use. Or, install an insulator, and a wire jumper with an alligator clip and you have a quick ‘n easy 40-80M antenna.

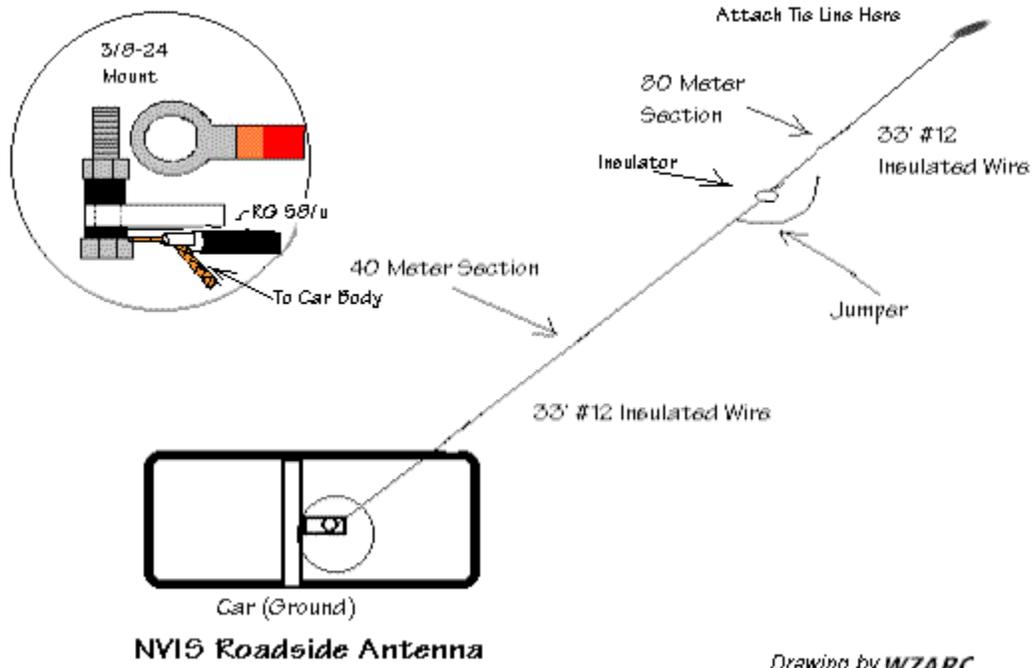
Be sure to check any antenna for SWR and impedance before transmitting. (I use an MFJ-259 antenna analyzer.)

This antenna is basically nothing more than a unbalanced, 1/4 wavelength, horizontal wire, using a vehicle as the other half of the “dipole”. A longer than 1/4 wave “random wire” will also work well if an ATU (“tuner”) is used.

So...use your ingenuity and make a “quickie, NVIS, roadside portable antenna” for yourself! I’ll wager that just about anything could be used for a mounting terminal, and could be mounted to a truck mirror mount, a roof rack, or a homebrew bracket secured to a metal camper, trailer, or motor home. Feed with a piece of RG-58 coax and make sure the mount is grounded well to the vehicle’s body and frame. NOTE: If you have a fiberglass or plastic car, this system will not work, unless you also add a 1/4 wave “counterpoise” that can be laid out on the earth.

Oh yes, don’t forget to take down your “roadside” antenna before you drive away. And, be sure to park safely, where another vehicle can’t zoom by you and get snagged on the contraption!

Antenna Detail



Back