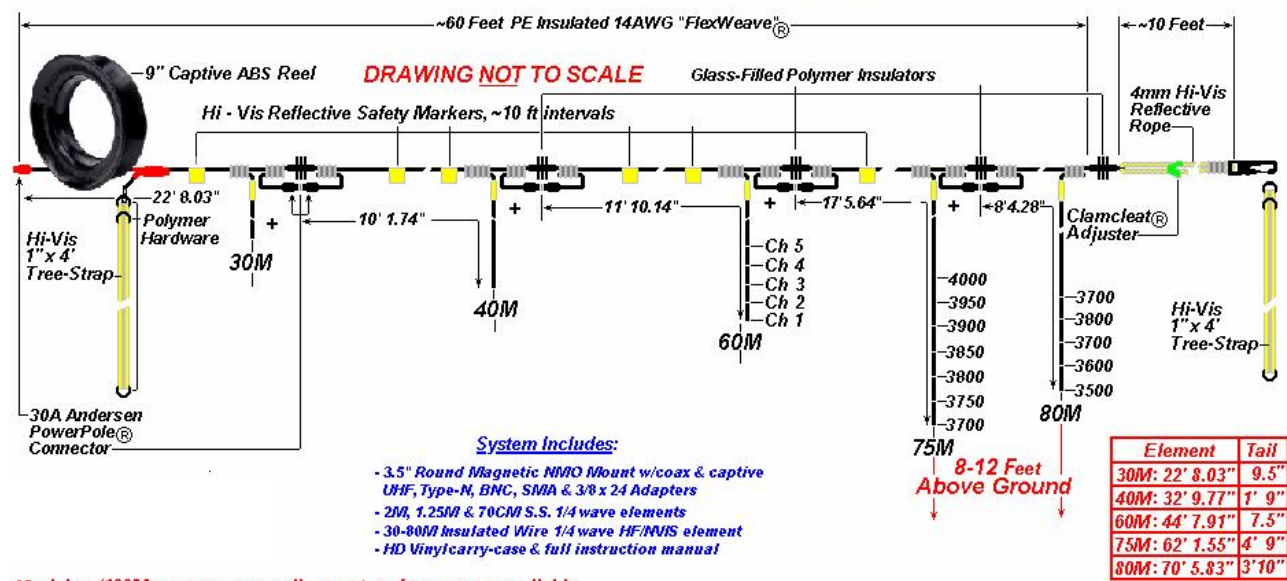


RADS-Quarter-wave 2M, 1.25M, 70CM U/VHF PLUS 30, 40, 60, 75, 80 Meter HF/NVIS
Mobile/Roadside Portable EmComm Antenna

EmComm Products LLC

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RADS-Q PLUS® Rapid Antenna Deployment System
U/VHF & HF/NVIS Roadside Portable Quarter-Wave Antenna System

The **RADS-Q PLUS™** Combination U/VHF and HF/NVIS Roadside-Portable Quarter-wave EmComm Antenna System was designed expressly for Amateur Radio EmComm use in a roadside-portable deployment on the 2M, 1.25M and 70CM Amateur U/VHF bands and the 30, 40, 60 and 80/75 meter HF bands at up to 200 watts PEP. Its design also allows coverage of adjacent public safety/emergency services, MARS, CAP and U.S.C.G. Auxiliary frequencies. The HF element is designed for use with most HF, U/VHF or combination transceivers with up to 200 watts PEP output, with or without a tuner. This system is complete with all components listed below:

1 Instruction Sheet

- 1, 19 Inch (48.26 cm) S.S. Whip with brass 3/8 -24 inch fitting, preset frequency: 146.00 MHz
- 1, 12.5 Inch (31.75 cm) S.S. Whip with brass 3/8-24 inch fitting, preset frequency: 223.00 MHz
- 1, 6 Inch (15.24 cm) S.S. Whip with brass 3/8-24 fitting, preset frequency: 442.00 MHz
- 1, Brass 3/8-24 base fitting w/attached 6 inch (15.24 cm) 14AWG PE Insulated wire with red, 30A Andersen PowerPole™ connector (for attachment between NMO to 3/8-24 Adapter and HF/NVIS Wire Element Assembly.
- 1, 3/8-24 to NMO Adapter w/Rubber Gasket and Allen Wrench.
- 1, HF/NVIS Wire Element Assembly on 9 inch (22.86 cm) black ABS reel. Element wire is 14AWG, black, PE insulated, Flex-Weave™ stranded copper wire; complete with attached polymer strain insulators and black, 30A Andersen PowerPole® connectors at each band segment juncture. Each band-segment has a "tuning tail" for tuning to your regional/state EmComm frequencies and an adjustable 10 foot (3.048M) x 3/16 inch (~4mm) reflective, day-glo® rope end-section, with attached glow-in-the-dark adjuster. High visibility reflective safety markers are attached approximately every 10 feet (3.048 M) along the length of the wire element.
- 1, 3.5 Inch (8.89 cm) round Radial-Larsen™ magnetic NMO mount w/12 feet of attached RG-58 A/U coax, UHF male (PL-259) connector w/captive UHF female to type-N male, UHF female to BNC male and UHF female to SMA male adapters.
- 2, 4 foot (~1.22M) adjustable End-Straps, made of 1 inch (2.54 cm), high-visibility yellow polypropylene webbing.
- 1, OD Green, military-grade Vinyl Carry Case. This case is much larger than required for a reason! Use it to store your system when not in use and add additional equipment items to start your own EmComm Ready Kit. It is ideal for the carry and storage of message forms, EmComm publications and other supplies; including an HT, spare batteries, hand tools, spare fuses for all equipment and their operations manuals, wire, coax, SWR bridge, small antenna tuning unit, even a small, multi-band, all-mode HF, U/VHF transceiver! Spare eye glasses, personal medications, drinking water and water purification supplies, high-energy survival foods, small first aid kit, LED flashlight w/batteries, etc. Build and carry a "ready kit"

wherever you go! It could save your life, or the life of someone else. It most certainly will make you more of an asset than a liability in an emergency or disaster situation!

Please ensure all parts and components listed above are included within your RADS-Q PLUS™ carry bag before attempting to adjust or deploy the system. If any part is missing or damaged, contact EmComm Products LLC immediately for replacement.

Please note that each antenna element; be it one of the three included U/VHF whips or the HF/NVIS wire; has its own machined brass base fitting, held in place by two Allen screws. Unlike the U/VHF whips, the HF element wire has a single installed 30A red Andersen PowerPole™ connector at its feed-point. This connector is mated to another red connector attached to a short feed wire, which is held in a brass 3/8-24 fitting by two Allen screws, just like the U/VHF whips. This brass fitting is first screwed into the included NMO to 3/8-24 base, then the red PowerPole™ connector on this short feed wire is joined with the matching connector on the feed-point end of the HF element wire. The preset U/VHF whip lengths should provide a usable VSWR over most of the FM portion of each U/VHF Amateur band but if you require resonance on any given frequency, the whips may be adjusted as set forth below:

U/VHF Whip Adjustment

Using an SWR bridge, antenna analyzer or field strength meter designed for use in the proper frequency range and power level, and using the supplied Allen wrench; loosen the two set screws in the brass base fitting and slide the whip DOWN into its fitting to RAISE the resonant frequency above its preset point. Do this in very small increments of about 1/16th inch at a time, re-tighten the set screws, reassemble the antenna to its adapter and check VSWR. Repeat this procedure until the desired resonance is obtained. If you require adjustment BELOW the preset frequency; use the same procedure as outlined above but adjust the whip UP, within its brass fitting. Again, adjust only in small 1/16th inch increments between checks of your instrument. If this procedure will not allow enough adjustment of the resonant frequency ABOVE its preset; remove NO MORE than 1/16th inch of whip material from the bottom end of the whip, using a file or other suitable tool. Once a satisfactory SWR is found, we recommend you apply a drop of *Loctite*™ or similar product on both the set screws, to prevent loosening due to vibration. If you can not obtain a good match on a frequency HIGHER than the preset frequency by the method outlined; you may remove the plastic end piece from the top of the whip and remove material from this end (again, no more than 1/16th inch at a time, until a satisfactory match is obtained). Once adjusted to resonance, replace the small plastic piece and apply a drop of general purpose adhesive to hold it in place. The **RADS-Q PLUS™** HF/NVIS element wire is adjusted one band at a time, by shortening the attached “tuning tail” between each band segment in small increments of about 1/8 to 1/4 inch at a time. Adjustment procedures for this element are covered below and must be followed before the HF element is used.

HF/NVIS Element Adjustment

Deploy the HF wire element 8 to 12 feet (~2 to 4M) off the ground and secured at both ends. The recommended height above ground is the distance from the end of the longest of the attached “tuning tails” to ground. Pay special attention to ensure proper stress relief on the feed-point end, closest to the vehicle. If not done properly, there is a chance the red connectors at the feed-point will be pulled apart. If this should occur during a lengthy transmission, at the very least your message will not be heard and at the worst, your transceiver may be damaged because it is transmitting into nothing!

EmComm Products LLC assumes no responsibility whatever, for damages to the customer's transceiver that are caused by a maladjusted or disconnected antennas!

With all band segment jumper connections (black PowerPole™ connectors) open and with the two red PowerPole® connectors at the feed-point joined; use an HF SWR bridge or antenna analyzer and low power output to adjust for best match on your chosen 30 meter frequency, or use 10.125 MHz by clipping no more than ¼ inch of wire from the end of the “tuning tail” between the feed-point and the end of the 30 meter band segment. **DO NOT** attempt to obtain a match better than 1.5:1. Remove only very small “bits” of wire at a time from the bottom end of the 30 meter “tuning tail” and recheck your measuring instrument for best match before removing the next bit of wire. When a match of 1.5:1 or better is reached, **STOP!** You are now ready to move on to the 40 meter segment.

Leaving all PowerPole™ connectors as they were when adjusting the 30 meter segment, close the next pair of black connectors down the wire toward the far end between the 30 and 40 meter segments of the antenna element. Again, using low power check the match at the desired frequency on the 40 meter band by the same method used to adjust the 30 meter segment. Remove no more than 1/8 to 1/4 inch of wire at a time from the end of the 40 meter “tuning tail” and check your instrument reading before removing the next bit. **DO NOT** attempt to obtain a reading better than 1.5:1 VSWR. Once you reach a VSWR of 1.5:1 **STOP**. Repeat the procedures outlined for your choice of channel in the 60 meter band and finally, your choice of frequency in the 75 and 80 meter bands.

Remember, you must ensure that the jumper connection between the 40 and 60 meter segments is closed; before attempting to match 60 meters. Likewise, close the segment jumper between bands each time you move from the highest band to the next lowest one (go from the higher frequency to the lower frequency segment). Please note that the 75 meter segment is adjusted **BEFORE** the segment jumper is closed between it and the 80 meter segment. We recommend you apply a drop of *Loctite*™ or similar product on both the set screws at the feed-point of the HF element after adjustments, to prevent loosening due to vibration. All “tuning tails” vary in length according to frequency; allowing the maximum amount of adjustment, regardless of how high or low in frequency you adjust the preceding band segment. On some band segments, especially the 75 and 80 meter bands; you may have to remove a lot of wire before finding a match. **DO NOT** remove too much wire at a time, as it is far easier to remove wire than to add wire to a tuning tail! Once all band segments of the antenna have been adjusted to a match of 1.5:1 or better; use electrical tape or better yet, liquid electrical tape, to insulate and seal the end of each tuning tail against moisture. Recover the antenna element by rolling it back on to the take-up reel from the car end to the far end and return the reel to its place in the system carry bag.

End-Strap Adjustment and Use

The two (2) supplied end-straps are identical and designed to be used at both ends of the HF Element Wire. These straps can be used to attach to whatever is available, such as trees, sign posts, etc. On the far end of the wire, a strap is used simply to attach it to a tree, fence post or whatever is handy. On the feed-point end however; a strap serves to take the strain off the feed-point connection through the two red Andersen PowerPole™ connectors. This strap should be attached to the vehicle itself, or any nearby fixed object. On the vehicle, a door handle sometimes serves, as does an attached luggage rack or whatever. If you can't find a spot on the vehicle where the strap can be attached, use whatever fixed object may be close at hand. In some cases, one end of the strap can simply be trapped between one of the car doors and its body. Attachment to just about anything is easy using these straps! The straps are attached to the wire using one or both of the “D” rings at the ends of the strap and the snap-hooks attached to the wire element. You'll notice that each strap has a total of three (3) “D” rings; one on each end and one that is placed to “travel” along the length of the strap, forming an adjustable loop. On objects such as trees, where you are unable to place the strap over the object; simply place it around the object and attach it to the wire using both the end “D” rings. Other objects such as car door handles, fence posts, etc., can be secured to be placing within the loop of the strap formed by the “D” ring that slides along the length of the strap. Once the strap is secured around the object, simply attach the opposite end of the strap to the wire, using the strap “D” ring and the snap-hook on the wire.

Remember, contact EmComm Products for replacement parts or repairs if they should ever be required. A number of optional accessories are planned for the **RADS-Q Plus**™. Contact us for availability and price. Some smaller cars do not have enough body mass to serve well on the lower HF bands as a suitable counterpoise. This situation may require that the vehicle with the antenna and another, be electrically attached. The idea is to make the ground-side of the antenna system appear electrically larger. This can sometimes be accomplished by an electrical connection between the body and chassis of the car and any large metallic object nearby. A set of jumper cables attached to the vehicles chassis and a nearby metallic object such as another vehicle, highway guard rail, metal fence, trestle, bridge, culvert, etc., may do the trick as well!

ALWAYS RECOVER THE ANTENNA AND DISCONNECT ANY GROUNDING ATTACHMENTS, BEFORE MOVING THE VEHICLE TO WHICH THE ANTENNA SYSTEM IS ATTACHED! FAILURE TO DO SO MAY RESULT IN DAMAGE TO PROPERTY OR WORSE - INJURY OR EVEN DEATH TO SOMEONE ELSE! IT IS YOUR RESPONSIBILITY TO ENSURE ALL ROADSIDE-PORTABLE ANTENNAS AND GROUND ATTACHMENTS ARE REMOVED FROM THE VEHICLE BEFORE IT IS MOVED! PLACE THE BLACK TAKEUP REEL OF THE HF/NVIS WIRE ELEMENT ON THE ROOF OF THE VEHICLE, OR PLACE SOMETHING ON THE WINDSHIELD OF THE CAR ON THE DRIVER SIDE, TO REMIND YOU TO DISCONNECT ALL ATTACHMENTS TO THE CAR BEFORE MOVING IT! YOU MAYBE INJURED OR KILLED AND/OR PROPERTY DAMAGED, IF YOU FAIL TO DO THESE THINGS!

REMEMBER, YOU CAN'T HELP OTHERS, IF YOU YOURSELF ARE INJURED, OR YOUR EQUIPMENT IS DAMAGED! YOU ARE RESPONSIBLE FOR SAFE OPERATION! DO NOT PARK YOUR VEHICLE UPON A ROADWAY, OR SHOULDER AREA OF ANY ROADWAY TO DEPLOY THE HF/NVIS ELEMENT OF THIS SYSTEM! DOZENS OF PERSONS, INCLUDING TRAINED LAW-ENFORCEMENT OFFICERS AND OTHER EMERGENCY SERVICES WORKERS, EVEN THOSE WITH EMERGENCY LIGHTING EQUIPPED AND MARKED VEHICLES; ARE KILLED AND INJURED EVERY YEAR IN THE UNITED STATES BY BEING STRUCK BY PASSING VEHICLES! PULL WELL OFF ANY ROADWAY BEFORE ATTEMPTING TO DEPLOY AND USE THIS SYSTEM! EMCOMM PRODUCTS LLC ACCEPTES NO RESPONSIBILITY WHATEVER FOR PERSONAL INJURY, DEATH, OR DAMAGE TO PROPERTY THAT MAY OCCUR DIRECTLY OR INDIRECTLY, AS A RESULT TO THE DEPLOYMENT AND/OR USE OF THIS ANTENNA SYSTEM!

RADS-Q PLUS ADJUSTMENT RECORD

2M FREQUENCY _____	2M WHIP LENGTH _____	VSWR _____
1.25M FREQUENCY _____	1.25M WHIP LENGTH _____	VSWR _____
70CM FREQUENCY _____	70CM WHIP LENGTH _____	VSWR _____
30M FREQUENCY _____	30M TAIL LENGTH _____	VSWR _____
40M FREQUENCY _____	40M TAIL LENGTH _____	VSWR _____
60M FREQUENCY _____	60M TAIL LENGTH _____	VSWR _____
75M FREQUENCY _____	75M TAIL LENGTH _____	VSWR _____
80M FREQUENCY _____	80M TAIL LENGTH _____	VSWR _____