

SCOPE

A newsletter by and for the Palomar Amateur Radio Club of San Diego, California.

Our club logo (to the right) is in the process of being redrawn by Paul KB5MU. Thank you Paul for cleaning up and improving our club logo! Look for the new version soon.



In this issue, Roger AD5T presents a practical antenna modeling example of a 2m Moxon, pictured here on the cover. Roger compared modeled to measured data. He used EZNEC to generate the model and antenna patterns and used Excel to present the measured data.

Read about High Definition ATV starting on page 4.

A series of essays about the required maintenance of the

MonstIR antenna by SteppIR begins on page 8.

Be sure to check out Terry's photos on page 14!

We put out a call for a Field Day Chair on page 15. Want to make the job fun and easy? Volunteer with a friend! Better yet, volunteer your friend. This will give you a chance to critique them in action. They will be sure to appreciate it.

Save the Date

Club Meeting
6 January 2010

Monica Zech speaks about Amateur Radio at 7:30pm.

Board Meeting
13 January 2010

Palomar Amateur Radio Club board meeting at 7:00pm at W6GNI QTH

Hamcation!
February 12-14, 2010

<http://www.hamcation.com/>
Central Florida Fairgrounds
4603 West Colonial Drive
Orlando, Florida 32808

Classified Ads are Free for Members!

HAM RADIO OUTLET

Jose XE2SJB
Jerry N5MCJ

H
R
O

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HUSTLER
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Astron,
AEA,
OUTBACKER
Larsen Antennas
TEN-TEC
Hy-gain, Tri-EX,
Cushcraft And Others
too
Numerous to
Mention!

Drop in to see our display of working equipment. Find out about Pkt location determining equipment (APRS). Check our complete line of magazines, ARRL books, license manuals, and Bulletin Board with all sorts of Goodies listed.

Directions: On 163, take **Clairemont Mesa Blvd.** off ramp to East. Stay in right-hand lane. Turn right at stoplight. As you are turning right you can see our beams in this shopping center. Travel 100 yds. On Kearny Villa Rd. and U-turn back to shopping area and HRO sign. Be sure to see our equipment in action on **real** antennas!

Club Reports Membership

Three members reinstated their membership. Welcome back.

If the Post Office returns your SCOPE, and we have an e-mail address, we can often find out why the mail didn't make it. I also phone if this happens. It seems that sometimes SCOPE's are returned, even though the address is correct. Please check what is there, and send me a correction if appropriate. If you want your "special" e-mail address or phone number kept confidential, let me know, and it will not be printed.

The renewal reminder for our members receiving the SCOPE by Web is helping. As a courtesy reminder, we print the calls of expired members for two issues. Hopefully the x-members will see it on the web, and respond with the usual \$20 check - to the Post Office Box.

Those on our list this time are: KI6IID, KC6VXY, K0DHE, KF6GOF and W6CD. We really do need and appreciate renewals.

AI
W6GNI

Fold and Staple

KB6NMK Jo
KB6YHZ Art
W6GNI AI @ Kathy
WA5ACE Sonny
KI6LLC Roni

PALOMAR ENGINEERS

Box 462222, Escondido, CA 92046

TOROID CORES

Palomar stocks a wide variety of cores and beads. Our RFI Tip Sheet is free on request.

Our RFI kit keeps RF out of your telephones, TVs, stereo, etc. **Model RFI-4**
\$35 +tax+\$8 to ship.

BALUN KITS

Ferrites slip over coax. Shrink tubing holds them in place. Works from 3.5-60 MHz (Use two kits for 160m).

Model BA-58 (for RG58, RG8X & similar cables up to 1/4" dia.) \$8.50+tax+\$8 S&H/order

Model BA-8 (for RG-8, RG-213, 9913 and similar cables up to 1/2" dia.) \$16.50+tax+\$8 S&H/order.

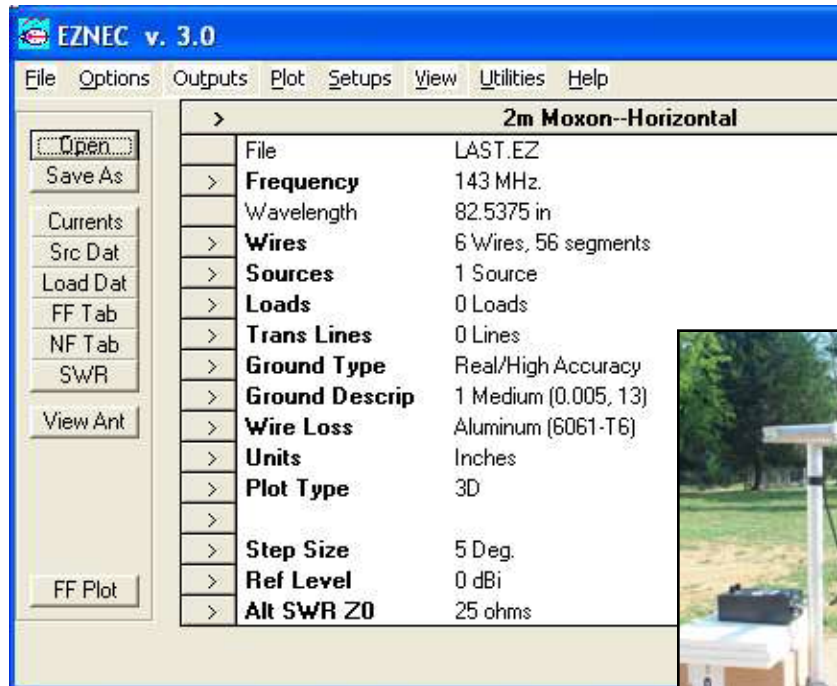
See catalog at www.Palomar-Engineers.com

Please check our complete ads in **QST**, **CQ**, and **WorldRadio** magazines.

Practical Antenna Models - The Moxon Antenna

by Roger AD5T

This article describes the EZNEC antenna modeling program and how it is used to optimize a 2m Moxon antenna. EZNEC is a program, developed and sold by W7EL. It is available from www.eznec.com. The version used for this article is 4.0. A free demo is available for download. The figure below shows the main screen of the program where the user inputs the antenna physical characteristics and selects the types of outputs desired. Photos of the completed Moxon are below to the right.



The primary input form is Wires, shown in the figure below, where Cartesian coordinates (x,y,z) are used to locate each wire in space. The wire diameter, which can be tubing sizes as well, and the number of segments, which are used in the program calculations, are also input by the user. The dimensions for this Moxon were based on a design at <http://www.cebik.com/moxon/mvhf.html>. The defining characteristics of a Moxon antenna are the compact size and excellent front-to-back ratio.

Wires											
Wire Other											
<input type="checkbox"/> Coord Entry Mode <input type="checkbox"/> Preserve Connections											
Wires											
	No.	End 1				End 2				Diameter	Segs
		X (in)	Y (in)	Z (in)	Conn	X (in)	Y (in)	Z (in)	Conn	(in)	
▶	1	8.125	-14.125	52.5		11.5	-14.125	52.5	W2E1	1	3
	2	11.5	-14.125	52.5	W1E2	11.5	14.125	52.5	W3E1	1	21
	3	11.5	14.125	52.5	W2E2	8.125	14.125	52.5		1	3
	4	6	-14.125	52.5		0	-14.125	52.5	W5E1	1	4
	5	0	-14.125	52.5	W4E2	0	14.125	52.5	W6E1	1	21
	6	0	14.125	52.5	W5E2	5.58	14.125	52.5		1	4
*											

continued on page 6

High Definition ATV

by Michelle W5NYV

We discussed amateur television (ATV) last month under the assumption that the television in amateur television was of a traditional analog NTSC format. What about high-definition ATV?

NTSC displays pictures consisting of 525 lines of resolution at 30 frames per second. Still pictures are first drawn on the odd numbered lines. Then, the same picture information is drawn on the even numbered lines. This odd-line then even-line drawing pattern is called interlacing, and the resolution using this technique is called 480i. 240 unique lines of information are drawn on each frame. The format was driven by a need to conserve transmission bandwidth.

The progressive scan format provides a picture quality improvement over interlacing, especially for large screens, where the interlacing becomes quite noticeable. Progressive scanning puts 480 unique lines of picture information into one picture frame, all at once, and is called 480p. Just going from interlacing to progressive scan improves the quality of the video, but that alone doesn't make it high-definition video.

High-definition video has a picture resolution of 1080i or 720p.

After an effort to design, build, and deploy digital satellite ground stations for AMSAT Eagle evaporated, those of us that had been greatly enjoying the technical challenge decided to continue on as a terrestrial microwave project.

We decided to call ourselves MEP, which stands for Microwave Engineering Project.

Project website:
[http:// www.delmarnorth.com/microwave](http://www.delmarnorth.com/microwave)

We aim to design, build, test, and deploy a high-bandwidth duplex digital amateur radio system that is capable of both multiple-access and point-to-point communication. High-definition video is the central application. Automated station discovery and functions inspired by modern communication formats are also intended. The bandwidth is 10 MHz and the desired range for terrestrial applications is 50 miles.

Due to the amount of technology required, the number of patents required to comply with the various high-definition formats can be daunting. For this reason, it's important to choose a path that is as free of patent burdens as possible.

MEP decided to go with a video codec called H.264. This codec is widely used and has good performance. With H.264, the bandwidth requirements are greatly reduced. This means that the same video quality can be transmitted with a lower data rate, and therefore a smaller bandwidth. Or, you can think about it as being able to transmit a higher-quality video signal given the same data rate and bandwidth you may have been using before.

The H.264 codec utilizes many different patents that were granted to many different companies. In order to better promote and enable the technology, one organization manages a portfolio of patents that, in aggregate, allow you to implement H.264. So, instead of dealing with all the individual companies, you deal with this one technology licensing company. This company is called MPEGLA.

It took several conversations to explain how we were planning to use H.264. MPEGLA normally deals with commercial enterprises and not amateur radio projects. The negotiations hinged on whether or not the amateur radio operator who used our stations to communicate would be considered "end users". If they were considered end users, then they would not pay royalties. If MPEGLA was not convinced they were end users, and each amateur radio operator was considered to be a broadcaster, then they would trigger relatively large amounts of royalties owed.

It was emphasized by MEP during the negotiations that the nature of amateur radio was not broadcast and was non-commercial. This explanation resulted in MPEGLA agreeing with the interpretation of the license agreement defining amateur radio operators as end users. The group that creates the stations is considered to be a manufacturer, and pays royalties only after a large number of stations are sold.

The licensing adventure is only one small part of the journey. The system design involves everything from baseband to RF and requires an understanding of various communications protocols. To say we've made much headway would be very kind, but we do have a roadmap and intermediate goals.

The project is open source and open process. Open source means that all hardware and software is published. Open process means that the design process is done transparently. The project is open to participation and observation at all levels, and we welcome feedback, ideas, and criticism. Ω

November Board of Directors Meeting Minutes

The meeting was called to order at 7:07 PM by President Dennis Baca KD6TUJ. The meeting was held at the home of Al Donlevy W6GNI.

---Treasurer's Report

Georgia, KI6LAV presented the October Treasurers' report. Total assets are \$12,392.14 and prepaid dues are \$5,844. A motion was made to accept the treasurers' report by Loren AD6ZJ and seconded by Michelle W5NYV. Motion Carried.

General Meeting: December Meeting – Election and Social

Membership Report: Presented by Al W6GNI
Current club membership is 299.

Repeater Site/Technical Report:

- Mike, K6MRP gave the repeater site report. We still need to get 48VDC to 13.8V power supplies for all the units. We have decided on the Meanwell SD350C-12. It is fed from 48VDC and can deliver 13.8V at 27A. We can run two repeaters off of each supply. Loren AD6ZJ made a motion to purchase three 350W power supplies suitable to run 6 repeaters at a cost not to exceed \$450.00. Motion was seconded by Mike K6MRP. Motion carried. Loren will order the power supplies.

See SCOPE in **color**
on our website at
www.palomararc.org!

Discussion items:

- Class and test for Marines. There is a desire to provide Ham classes for Marines. Dennis will talk to his contact about putting something together.
- Should PARC begin to design a new ATV system from scratch? Should PARC build a microwave beacon?

OLD Business:

- PARC Camper Trailer – The old trailer has been transferred to the tow yard is ready for termination. Interior pictures of the trailer will be in an upcoming Scope.
- 75th anniversary logo contest. Should we do one? Will discuss further
- Generator – Is now operating and Dennis is looking into propane conversion kit and will see about getting a used tank from a local supplier.

Repeater Down? Hanging?

Let us know!

Send an email to:

board@palomararc.org
with your observation,
the date, and time (approximation OK). Many
ears make light work.

Upcoming General Meeting Topics

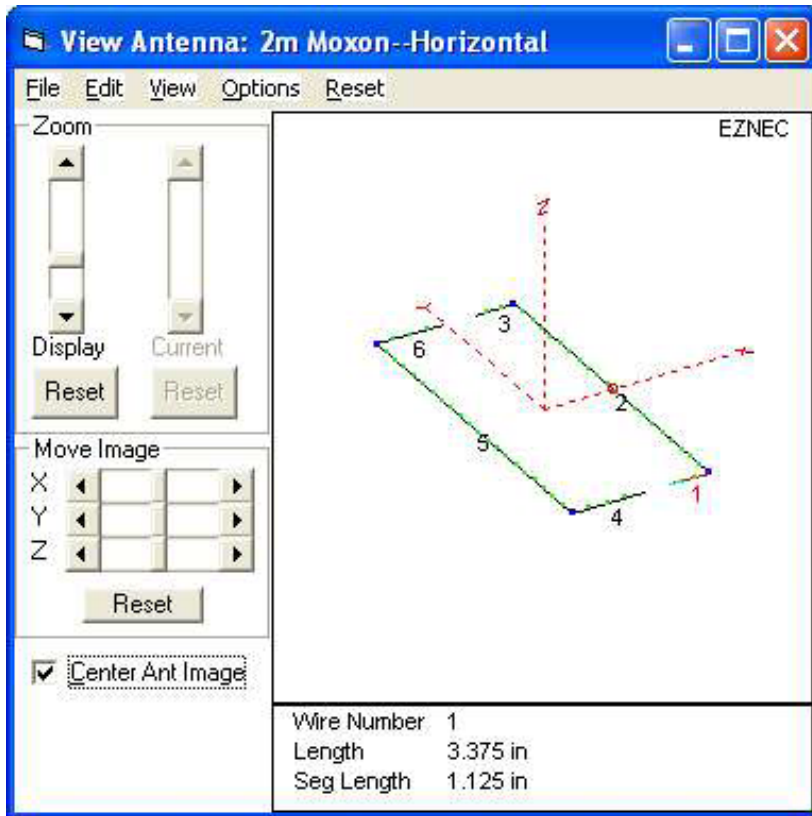
January 2010 Monica Zech
February 2010 - PARC 74th Anniversary
Month TBD - Lin Robertson KJ6EF – Vintage broadcast radios
Month TBD - KC6YSO – AM and other boat anchors
Month TBD - AK6QJ – Subject TBD
Month TBD – Ed Zeranski KG6UTS – Military radios

Board Members Attending November Meeting

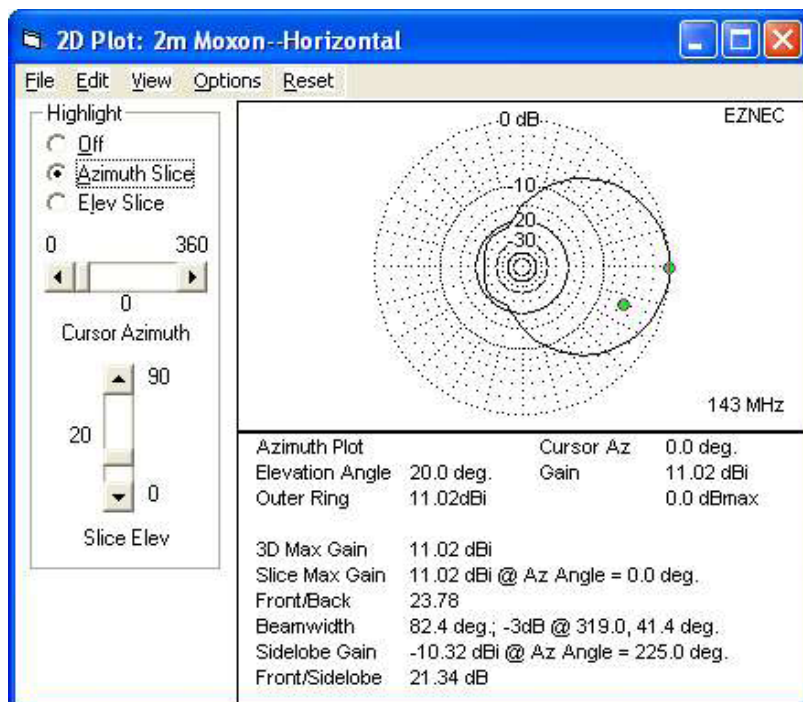
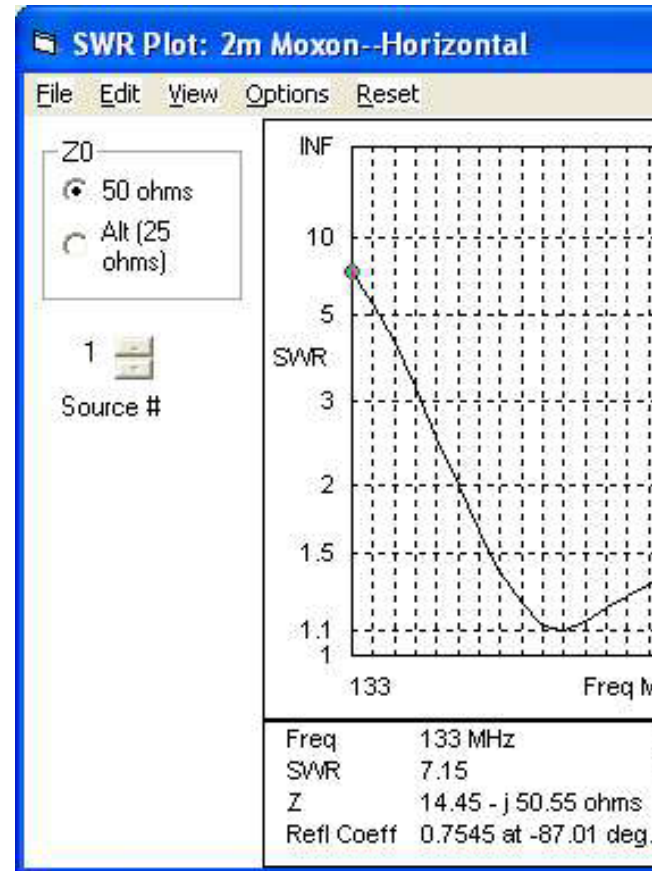
President Dennis Baca KD6TUJ
Secretary Loren Hunt AD6ZJ
Director #2 Conrad Lara KG6JEI
Membership Al Donlevy W6GNI
Director #1 Paul Williamson KB5MU
Scope Editor Michelle Thompson W5NYV
Treasurer Georgia Smith KI6LAV
Repeater Chair Mike Pennington K6MRP

continued from page 3

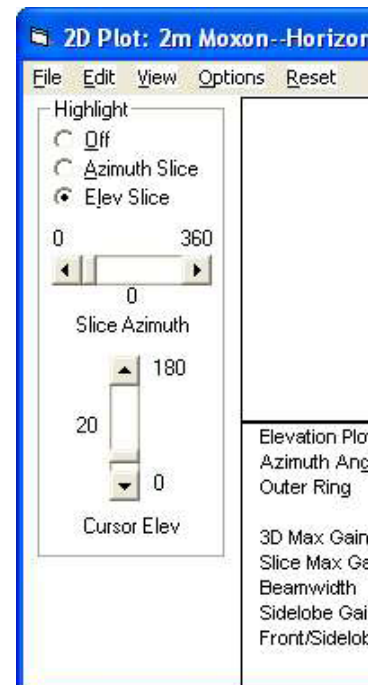
The figure below shows a view of the antenna based on the inputs in the Wires table. This view is useful in finding if the antenna is properly described.



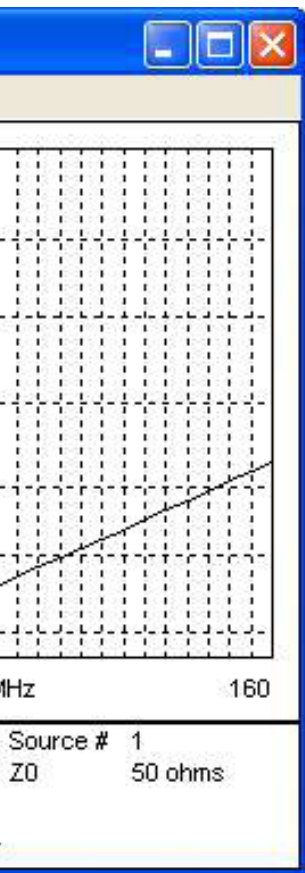
SWR plots are a useful output of the program. The SWR response of the Moxon from 133 to 143 MHz is shown in this figure below.



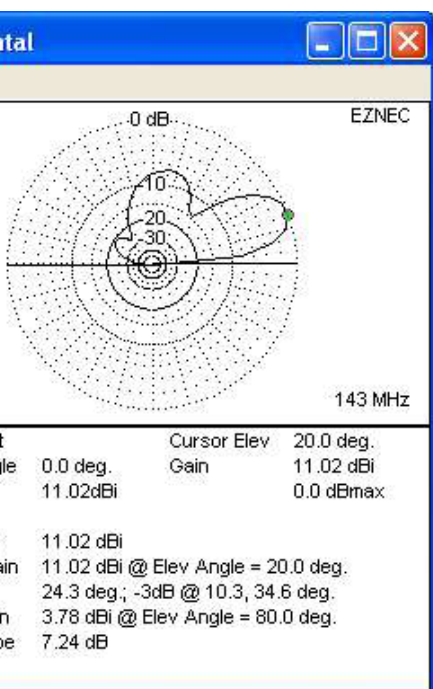
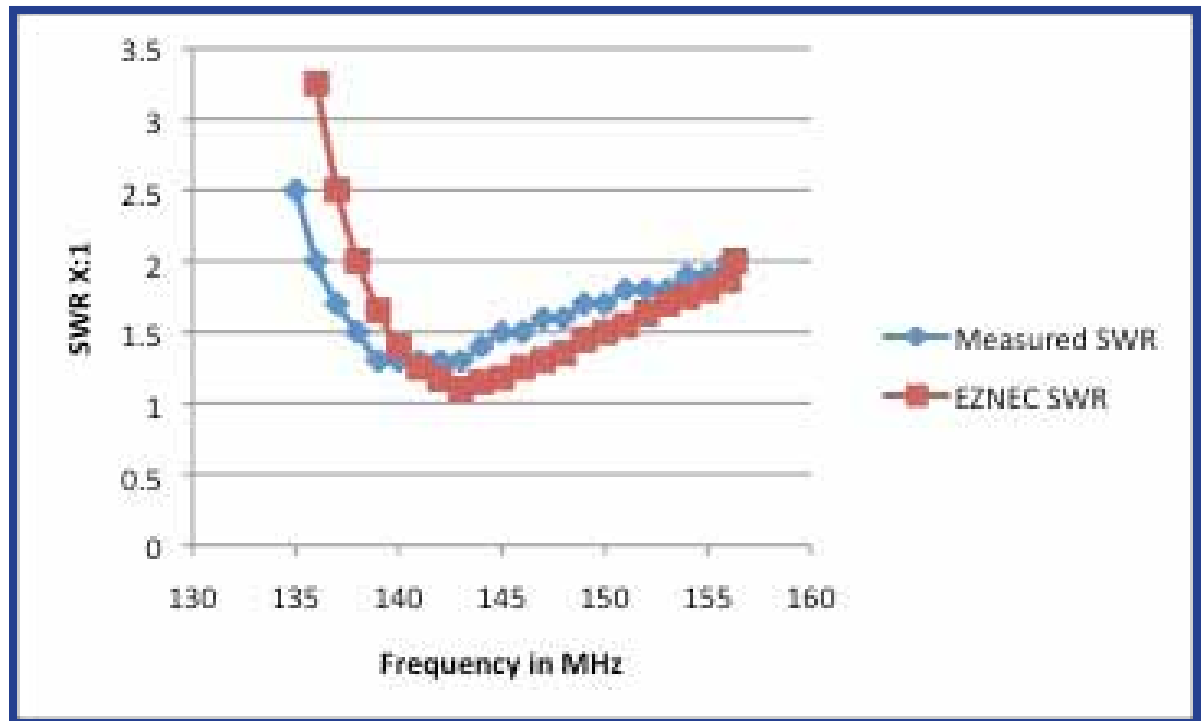
The azimuth pattern of the Moxon at about 50 inches above ground can be seen to the left. Azimuth patterns are antenna patterns viewed from above. The elevation pattern can be seen to the right. Elevation patterns are the antenna pattern as if you are looking at it from the side. Together, they give a good idea of the overall antenna pattern of the model.



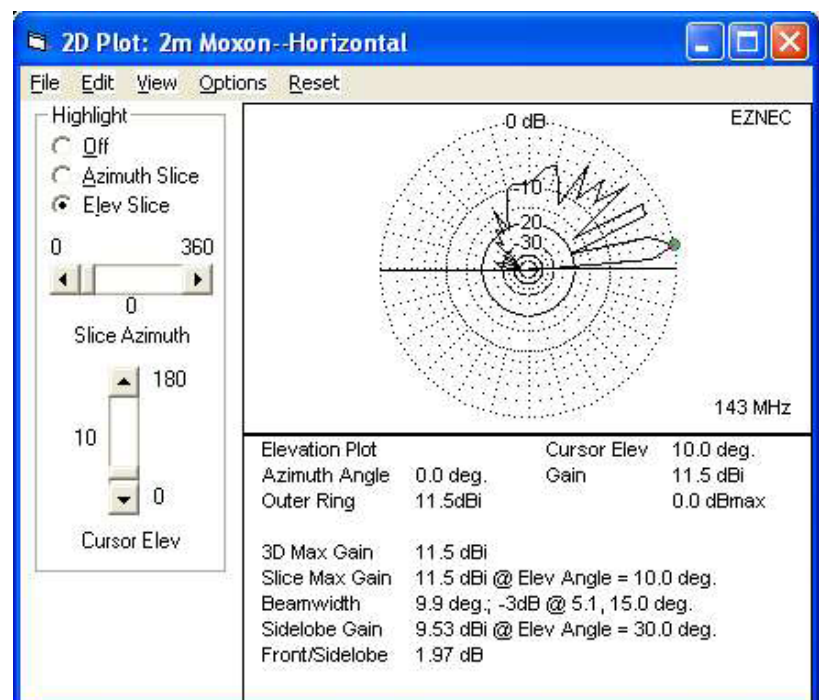
m.
to 160 MHz is shown



A comparison of model predicted SWR and measured SWR is shown in the chart below. The measured response is shifted down in frequency from the model data. Some causes of this shift may be the end loading of the PVC pipe, effects of the mount and feedline, and presence of the person doing measurements.



The pattern of any gain antenna changes with changing height above ground. To the right is the elevation pattern of the 2m Moxon at an elevation of 30 feet. Compare it to the elevation pattern to the left, where antenna height was 50 inches.



MonstIR SteppIR Mash

*a conversation with Dennis N6KI
and Howard KY6LA about their ex-
periences with the SteppIR MonstIR
antenna.*

by Michelle W5NYV

The MonstIR Mash

I was working in the shack late one night, when my eyes beheld an eerie sight. For my MonstIR from his base began to rise! And suddenly to my surprise, he did the mash, he did the MonstIR mash!

MonstIR Care and Feeding

Howard KY6LA begins

Has it been almost 5 years since I put up the world's first MonstIR ever shipped, MonstIR#1?

http://www.ky6la.com/monstir_project.htm

First I have to say that it is the best antenna I have ever owned. I have owned all sorts of beams and quads so I speak from experience. It plays fabulously. When hunting DX or in contest I am actually quite surprised if I am not the first person that they respond to in the pile up, as it would seem that in 95+% of the cases I am usually the first to punch through even though I only run 1kW. And I can hold a frequency indefinitely during a contest. It's a fabulous antenna. So what is happening with my MonstIR?

I have been using the MonstIR with an Icom IC-756 Pro3 and a PW-1. I bench tested it with an IC-7800 and a K3. Both seemed superior to the Pro3 so I almost went there, but then I discovered the Flex SDR-5000 which beats the socks off of both the K3 and the IC-7800, as well as the IC-7700. So, I upgraded my station to a Flex5000. The Pro3 is now relegated to SO2R

operations. One advantage of an SDR radio is the computer interface to the radio so it is remarkably easy to run remotely. As I travel a lot, I thought it would be great to run my home station during a contest from the DX side of the world. To test it out, during the 2009 CQ WW DX Contest, I remoted my station from my shack over the Internet to the living room so I could watch football games on a larger screen while contesting. I had full remote control of the radios, computers, rotors, antennas, etc., etc. It was really cool, but what I forgot to control is to have feedback on the elevation of my tower. Big mistake and a good reason to run a real world test from another room. I had recently installed a VHF antenna on a guyed pole on the roof. Unfortunately when my MonstIR's tower is totally nested one of the guys intersects the turning radius of the MonstIR. So there I was, blindly working the radio, automatically tuning antennas and rotating, then bang! I rotated an element into the guy and busted the 18' fiberglass end pole of Director #2.



Bottom Line

Dennis "Great antenna idea, poor implementation of design, little to no quality control and lousy to mediocre customer service."

Howard "They are the best performing antennas on the market. Would I have bought the MonstIR again? ABSOLUTELY. It just works so damn well. But this time I am going to spend much more time, money and effort to protect it better from UV and salt so that it will survive another 10 years without further maintenance."

Needless to say it had to be fixed and this was a good time to go up and inspect the MonstIR to see how well it survived 5 years in the elements. So I rented a 60' boom lift truck for the weekend and went up to inspect the damage. My plan was just to inspect things, replace the broken 18' tip (\$38) and if nothing else was damaged, that would be it. No more lift truck rentals, no more expense. On the other hand, if any of the motors or tapes were damaged then I would have to return them to the factory for repair. This would mean another lift truck rental. In this case, I would have the motors modified to add the 80m dipole to the MonstIR. This does not add any significant weight or wind area and may even strengthen it. In a funny way, I was proba-

bly hoping that the antenna motors needed to go back to the factory as an 80m rotatable dipole with no added wind area was very attractive, especially since Dennis N6KI with MonstIR #2 had already sent his into the factory for the upgrade. And the new controller looked cool. Well, of course, the best laid plans of mice and men oft go



Above, the view from the boom lift truck. Photo from KY6LA.

astray. What I found I got up there to find that not only was Director #2 (the unpainted element) missing its tip, but the motor was not working to fully retract the element. Funny enough the MonstIR worked so well that I probably did not even notice that Director #2 was not working. The motor issue turned out to be a broken control cable. 5 years of intense UV had made the cables very brittle. Also, one of the 2 tapes had jumped its reel and was stuck. It had looped over the second reel.

This might have happened when the tip broke but I do not think so. In addition, MonstIR#1 came with the infamous Mission Boots. All the unpainted ones were cracked and spit badly. Some of the painted ones were split but saved by the paint. Bottom line, all 4 motors went back to the factory for upgrades.

All the fiberglass tips needed painting. And I am going to have to rent another 60' boom lift to put them back. But, the good news is that when I am finished this antenna should last for at least 10 more years without further maintenance.

There has been a lot of controversy about painting the elements to protect them from UV. Let me end that controversy once and for all. PAINT THEM.

I live in La Jolla, CA where we get 320+ days a year of sun, which means a lot of UV. I live less than a mile from the Pacific Ocean so I get a lot of salt spray. I had been one of the original people who wanted to paint the MonstIR and in fact we did when it went up. On the advice of Harvey K6QK (SK) I deliberately did not paint one of the elements but

painted everything else so I could see if it made sense to paint. Where the element was not painted the antenna suffered severe UV damage to the point where the substrate was completely gone and only the glass fibers remained. Where it was painted the paint was damaged and discolored but the substrate was saved. Where the rubber couplings were painted, they survived relatively unscathed. Where there was bare rubber, the rubber was cracked and broken.

It was actually fortunate that I went up there to inspect it as one of the elements was only attached by friction, albeit the friction was so tight that I had to take the entire motor element to the ground to pry them apart. We had used relatively inexpensive Krylon UV Spray Paint. It survived but clearly it would not last 10 years, which is the next design goal for myself and Dennis N6KI who has MonstIR #2. I have now purchased Interlux Fiberglass Primer and Interlux Brightside Polyurethane, which is marine fiberglass paint. This is relatively expensive stuff, about \$40-45 per each quart at a local store called West Marine, but is designed for outdoor fiberglass coverage. I hope to be able to protect the MonstIR for at least 10 more years by painting it. The cost of the paint is inexpensive compared to hiring another lift truck. As I indicated earlier, the original MonstIR came with the infamous "Mission Rubber Boots". They, for the most part, failed. They will now be replaced with Fernco boots, which will then be taped with Scotch #33 tape, then covered with silicone tape and finally painted to protect even the silicone from UV.

Below, the view of the boom lift truck from the ground. Photo from KY6LA.

I connectorized MonstIR #1 so that each element could be installed and de-installed separately just by unplugging it near the





Above, the view of the beam from up on the tower. Photo from KY6LA.

motor. That turned out to be a life saver as it made the original assembly on the boom on the mast (while tilted) very easy and made the disassembly using the boom lift truck even easier. I understand that to keep costs down, SteppIR did not connectorize the motors. But realistically that pigtail approach never made any good engineering sense as the motors occasionally need to be taken down for maintenance. I originally used surplus mil-spec in-line connectors as I did not want to modify the Element Housing Unit boxes.

These disassembled easily and showed absolutely no water damage or corrosion after 5 years in the salt air. With the advantage of 20-20 hindsight I should have bitten the bullet and installed connectors right on the EHU's just like Harvey K6QK (SK) did. I am going to do this now. One of the failures turned out to be the UV-damaged connector cable to Director#2. Because of the fact that I was using in-line cable connectors, I could not just swap the cable out at the connector. So to avoid this issue in the future, both Dennis

N6KI and I are totally redesigning our connector strategy.

We are going to use

Circular Cable End Connectors 5P SOCKET
CBL END DAISY CHAIN GRMMT Mouser P/N
502-6282-5SG-3DC Switchcraft P/N 6282-5SG-3DC

Mouser Page:

<http://www.mouser.com/ProductDetail/Switchcraft/6282-5SG-3DC/?qs=I3kMT7E>
E1OWQEONxeia%252bWA%3d%3d

Bulkhead Panel Mount --Circular Connectors 5P
PIN PANEL MNT

Mouser Part #: 502-7282-5PG-300
Switchcraft Part #: 7282-5PG-300

Mouser Page :

<http://www.mouser.com/ProductDetail/Switchcraft/7282-5PG-300/?qs=zRnNmUVysJetupSt2esXPQ%3d%3d>



*Above, the view of the beam from up on the tower with the motor removed.
Photo from KY6LA.*

You need 1 of each for each part number per EHU and 1 set of each if you want to install in the interface box. We are still looking for an inexpensive waterproof 21 pin connector for the interface box.

Dennis and I are currently debating whether to connectorize the Interface box as well.

Dennis' suggestion is use connectors only at the EHU and pass the other end of cable through a grommet into the interface box and terminate that end onto terminal strips.

Dennis' point is that there is one less set of connectors to cause connection problems.

My point is to be able to replace the entire connector cable without having to deal with pigtails has a major convenience factor as cables can be assembled completely on the ground.

I might note that our guru Harvey K6QK (SK) built his SteppIR after we put our MonstIR's up using similar connectors at both ends, which corresponds to my preference, but he also buried the control cables inside the boom to protect the cables from UV. After Harvey passed away, we took down his SteppIR which had been up for 3+ years in our hostile environment. It had no visible damage. Harvey, as usual, was right after all.

As my boom is still in the air and not about to come down again, I cannot realistically do that.

Both Dennis and I found that the control cables had become brittle in our intense UV. I guess they never see the sun up in Washington!

So both Dennis and I are searching for higher quality UV-resistant control cabling. If worst comes to worst, we can always entirely wrap every cable in silicone fusion tape and then paint it.

In the next few weeks I expect to get my repaired EHU's back from SteppIR with the 80m mods, ready to go.

In the interim I am painting elements and building new control cables.

Then I get to spend \$435 per day to rent the 60' boom lift to put it back together. If you rent it Friday afternoon, you usually get the weekend for free!

The boom lift is so much fun that I am trying to put together a group of hams to buy one for ourselves.

Dennis N6KI Continues

I don't even want to think about what problems other SteppIR owners have or will have with the MonstIR and other models in really nasty climates, with extreme heat, cold, humidity, wind/ice loading, etc.

The bottom line is that some of the design features of SteppIR antennas were not ready for prime time and everyone who buys and assembles one better spend some time to re-engineer them for their particular circumstances and environment on the ground before putting up.

SteppIR antennas can be a bit more difficult than lighter and less intricate antennas to put up and take down for maintenance and repair.

I suggested to all my friends who asked me whether they should buy a SteppIR that they have a good plan on how to easily get it back down without having to hire professional climbers or bucket trucks.

I worked many years in the research and development of electronic products and know that products should be designed to last a reasonable amount of time. That time for antennas, in my opinion, was 10 years in non-hostile environments, which most US hams live in. You guys in Finland on the Arctic circle are an exception. This would be equivalent to a car with 100,000 miles. When designed and assembled properly the antennas, just like cars, should not have any major failures.

So when our MonstIRs go back in the air, we will do the necessary mods to keep them up for 10 years of normal operations.

Seeing how difficult the MonstIR is to assemble and especially take back apart in pieces upon failing, I suggested to any of my ham friends that contemplated buying one, to get a tower system that allows easy access to the antenna like a tilt fixture on the tower and a tilt bracket like NN4ZZ manufactures, and enough land area to accommodate tilting the antenna into so all work can be done at ground level.

Taking down an antenna every 3-4 years for major maintenance is not what I would consider acceptable.

Howard KY6LA concludes

Perhaps it's because I have had a lot of experience designing things such as Traffic Controls and Mobile Vehicle Monitoring Systems that need to survive in harsh outdoor environments, but I am not quite as harsh as Dennis is of SteppIR

When we first invented computerized traffic control systems in the early 60's (I own part of virtually all the original fundamental patents), we had a heck of a time with the reliability of traffic loop detectors, traffic control vaults, and other parts of the system. We designed them for what we thought would be to last indefinitely, but we quickly found that all sorts of unanticipated things happened to make them less than 100% reliable.

Because of patent revenue and the wide adoption of our technology, we had lots of money to fix our mistakes, but it took more than 10 years of trial and error to iron out all of the reliability bugs. And, in fact, I still see things today more than 45 years later that we could do better.

In the case of SteppIR, and especially the MonstIR, it was a totally new design. I own MonstIR #1, the first one ever shipped. I went into it knowing that there would be all sorts of unanticipated issues. I actually looked forward to discovering and solving the issues. Surprisingly, my MonstIR has had few issues that I did not cause myself and for the most part has been extremely reliable. In fact, compared to the fiberglass quads I had in Canada, which managed to get destroyed every winter, the MonstIR was a paragon of reliability.

As I said, I expected issues and I had anticipated that the MonstIR would need to come down in a couple of years for upgrades to resolve issues that had been discovered and corrected. In fact, it made it to 5 years and likely would have continued to be up there if I had not rotated it into a guy wire when the tower was nested. I need to move that guy wire out of the turning radius!

SteppIR is a small company with limited resources. While they are pretty good antenna designers and design antennas that perform much better than anyone else, it is obvious that they do not have significant experience with reliability engineering for harsh outdoor environments.

The other fact that mitigates this is that 5 years is a very short time in the life cycle of such a product. So they are only now getting field data from which to do the reliability analysis. Yes, if they

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*Left, KY6LA with helper.
Above, boom lift truck in action.
Photos from KY6LA.*

had had a lot of startup money, I suspect that they could have come up with a better initial design. But they didn't have the money. Hams may think that SteppIR charges premium prices, but realistically if this were a true commercial grade product it would cost ten times as much, if not more.

On the MonstIR, the metal parts seem all to be OK. They have issued a high winds elements upgrade kit but it is unnecessary where we live in San Diego, CA. The main issue is UV damage to fiberglass, rubber connections and cabling. The secondary issue is that the use of pigtail wires to connect the Element Housing Units is incredibly inconvenient. I prefer to use individual connectors for each EHU, as I did in my original installation.

So Dennis and I are going to spend a few hundred dollars each on:

1. UV resistant paint
2. UV resistant cabling
3. New rubber connectors
4. Lots of Scotch 33 tape
5. Lots of silicone tape
6. Waterproof connectors (our design choice option)

We may install the newer and apparently more reliable motor spindles.

In the scheme of things this is not a lot of money. It's probably \$500 to add another 10 years of life so it works out to be \$50 per year for extra life.

I have a tilt-over tower with a motorized tilt-over tool designed by Harvey K6QK, but I found that the \$435 I spent to rent a 60' boom truck to be well worth the money and much less work than tilting the tower. So, that extra cost is my choice rather than a necessity since I love to ride the bucket!

Dennis and I are both perfectionists, so we probably have design expectations that are much higher than a typical ham. There are thousands of SteppIR's out there now in all sorts of harsher environments, and most have had no issues whatsoever.

Since virtually everyone who has used them swears that they are the best performing antennas on the market, the necessary maintenance is well worth doing. Ω

The Magic of Ham Radio

by Terry K3PXX

Spaceman Richard Garriott came to The Society of American Magicians Convention in Buffalo, N.Y. in July. He was surprised to find that there are many magicians who are also Hams. I just happened to have a couple of HT's with me (how about that) to take these photos.



Richard is W5KWQ and he is standing next to Lisa and Craig Dickson. Craig is KB2REC. Craig is a magic dealer and I spent most of my cash at his booth. Sorry, can't tell you what I bought.

There was another Ham standing there when we took these photos but I can't remember his call.

Richard and another hamgician started a chapter of The Society of American Magicians on the ISS and any member of the SAM can join. They did a magic show up there and showed the movie at the convention.



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CQ CQ Field Day Chair

by Paul KB5MU

ARRL says Field Day is "not a contest" – but they list it under Contests on their web site and it has Rules like any other contest.

Like this one:

Object: To work as many stations as possible on any and all amateur bands (excluding the 60, 30, 17, and 12-meter bands) and in doing so to learn to operate in abnormal situations in less than optimal conditions. A premium is placed on developing skills to meet the challenges of emergency preparedness as well as to acquaint the general public with the capabilities of Amateur Radio.

PARC has participated in Field Day each year (on the fourth full weekend of June) for decades. Some years the emphasis has been on "any and all", some years it has been on "as many stations as possible"; occasionally the most applicable clause has been "less than optimal conditions". It's nearly impossible to avoid developing some skills and learning some lessons at Field Day. The lessons are not always the ones we expected.

It's early December, and Field Day is half a year off. Much of the detailed work to prepare for Field Day won't really get started until the last few

weeks before the event. If you're just going to drop by and enjoy the event or even operate a shift at one of the stations, you probably don't need to start worrying about it yet. But somebody does.

That somebody is the club's Field Day Chairman, and we need a volunteer to step forward. The Field Day Chairman sets the tone for the whole event. He or she influences how ambitious the club's participation will be, from a very casual fun outing to a hard-core competitive effort. Perhaps most importantly, the Chairman is responsible for obtaining a great site that facilitates the kind of Field Day event planned. It's much nicer when the site is decided on and confirmed well in advance.

If you've attended a number of PARC Field Day events, you'll have an idea about how we've habitually done them. You may have ideas about how we could do them better. As Field Day Chairman, you would have an opportunity to try. The Club owns lots of equipment to make Field Day

easier – you will decide how best to make use of it (or not). The Club has many members with all kinds of experience – you will recruit the talent to make Field Day work out best. You might

(or might not) delegate most of the detailed work of Field Day to a cadre of experienced Band Captains, leaving your own time free for overall coordination. If you love the way PARC Field Day has always been done, you can choose to follow in those footsteps. If you think we've had it all wrong, the Board is ready to listen to you and (I predict) will endorse your plan, if you can make it work.

Please consider volunteering to serve as 2010 Field Day Chairman.

Email board@palomararc.org to volunteer or if you have questions.

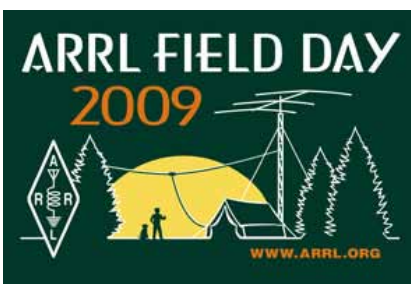
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Editor: Michelle Thompson W5NYV

Submissions: scope@palomararc.org

Questions? Ideas? Comments? W6NWG@amsat.org

Featured Program:

Monica Zech speaks about amateur radio at our January 6th meeting at 7:30pm at the Carlsbad Safety Center, 2560 Orion Way, Carlsbad, CA, USA. Arrive at 7:00pm to socialize. We look forward to seeing you!