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WAVELENGTH

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PARTICIPATE – LEARN – ENJOY

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SARC Nets

28.730 Mhz
CW 10:00 AM
SSB 10:30 AM
147.060 MHz (VE3RPT)
7:30 PM
Alternate frequency
146.520 MHz simplex
28.730 MHz
SSB 7:00 PM

Everyone is invited to check in on CW before the nets start.

These are open nets. All licensed hams are welcome. Come and join us.

We also want to emphasize that 28.730 MHz is our calling frequency. Please monitor and/or call your friends. 7:00 PM is a good time.

Merry Christmas and Happy New Year!

Cheap Yagi Antennas for VHF/UHF

by Kent Britain, WA5VJB

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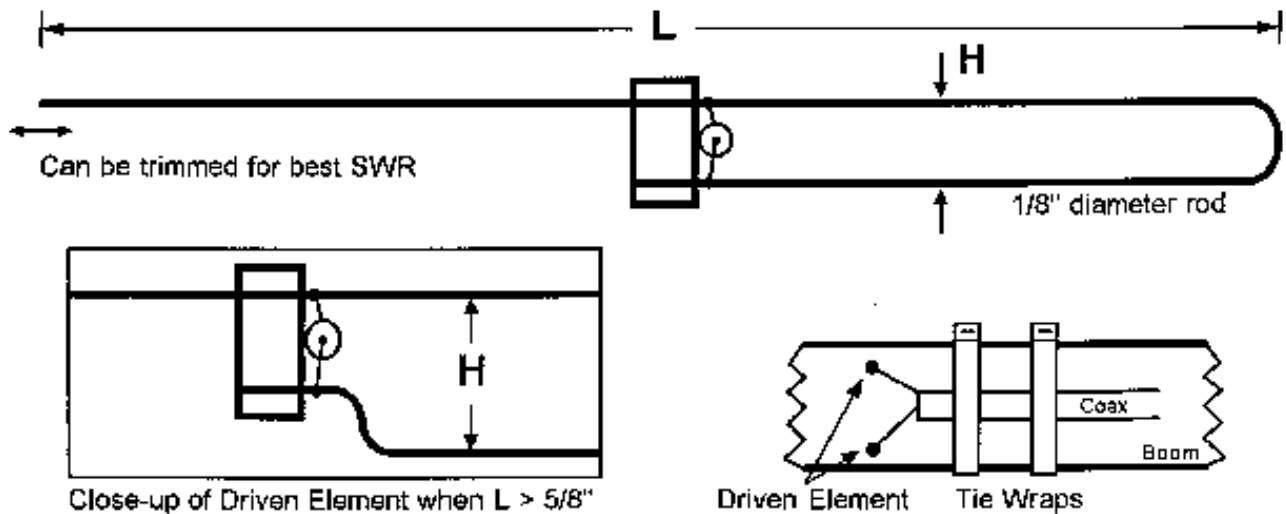
If you're planning to build an EME array, don't use these antennas. But if you want to put together a VHF Rover with less than \$500 in the antennas, read on.

The simplified feed uses the structure of the antenna itself for impedance matching. So the design started with the feed and the elements were built around it. Typically a high gain antenna is designed in the computer, then you try to come up with a driven element matching arrangement for some weird impedance. In this design, compromises for the feed impedance, asymmetrical feed, simple measurements, wide bandwidth, the ability to grow with the same spacing, and trade-offs for a very clean pattern cost about 1/2 dB of gain. But you can build these antennas for about \$5!!!!

The antennas were designed with YagiMax, tweaked in NEC, and the driven elements experimentally determined on the antenna range.

The boom is 3/4" square, or 1/2 X 3/4" wood. The elements have been made from Silicon Bronze welding rod, Aluminum rod, Hobby tubing, and solid ground wire. You really want to solder to the Driven Element. Silicon Bronze Welding rod, Hobby tubing, and #10 or #12 solid copper wire have been used to make the driven element. A drop of "Super Glue", Epoxy, or RTV is used to hold the elements in place.

Driven Element Construction (all versions)



144 MHz

The design is peaked at 144.2 MHz, but performance is still good at 146.5 MHz. (Emergency use only!) Driven element dimensions are L = 38.5" and H = 1.0". Elements are 1/8" diameter.

144 MHz		REF	DE	D1	D2	D3	D4
3 Element	Length	41.00		37.00			
	Spacing	0.00	8.50	20.00			
4 Element	Length	42.00		37.50	33.00		
	Spacing	0.00	8.50	19.25	40.50		
6 Element	Length	40.50		37.50	36.50	36.50	32.75
	Spacing	0.00	7.50	16.50	34.00	52.00	70.00

222 MHz

This antenna is peaked at 222.1 MHz, but performance has barely changed at 223.5 MHz. Driven element dimensions are L = 24.5" and H = 1.0". Elements are 3/16" diameter.

222 MHz		REF	DE	D1	D2	D3	D4
3 Element	Length	26.00		23.75			
	Spacing	0.00	5.50	13.50			
4 Element	Length	26.25		24.10	22.00		
	Spacing	0.00	5.00	11.75	23.50		
6 Element	Length	26.25		24.10	23.50	23.50	21.00
	Spacing	0.00	5.00	10.75	22.00	33.75	45.50

432 MHz

At this band the antenna is getting very practical and easy to build. Driven element dimensions are L = 13.0" and H = 3/8". Elements are 1/8" diameter.

432 MHz		REF	DE	D1	D2	D3	D4	D5	D6	D7	D8	D9
6 Element	Length	13.50		12.50	12.00	12.00	11.00					
	Spacing	0.00	2.50	5.50	11.25	17.50	24.00					
8 Element	Length	13.50		12.50	12.00	12.00	12.00	12.00	11.25			
	Spacing	0.00	2.50	5.50	11.25	17.50	24.00	30.75	38.00			
11 Element	Length	13.50		12.50	12.00	12.00	12.00	12.00	12.00	11.75	11.75	11.00
	Spacing	0.00	2.50	5.50	11.25	17.50	24.00	30.75	38.00	45.50	53.00	59.50

902/903 MHz

This was the first antenna I built using the antenna to control the driven element impedance. The 2 1/2 ft length has proven practical so I haven't built any other versions. Driven element dimensions are L = 5.7" and H = 1/2" Elements are 1/8" diameter.

902/903 MHz		REF	DE	D1	D2	D3	D4	D5	D6	D7	D8
10 Element	Length	6.20		5.60	5.50	5.50	5.40	5.30	5.20	5.10	5.10
	Spacing	0.00	2.40	3.90	5.80	9.00	12.40	17.40	22.40	27.60	33.00

1296 MHz

This antenna is the veteran of several "Grid Peditions" and has measured 13.5 dBi on the CSVHFS antenna range. Dimensions must be followed with great care. The driven element is small enough to allow 0.141 semi-rigid to be used instead of RG-58. I used 1/8" Silicon Bronze welding rod for the elements, but any 1/8" dia material can be used. Driven element dimensions are L = 4.0" and H = 1/2" Elements are 1/8" diameter.

1296 MHz		REF	DE	D1	D2	D3	D4	D5	D6	D7	D8
10 Element	Length	4.30		3.90	3.80	3.75	3.75	3.65	3.60	3.60	3.50
	Spacing	0.00	1.70	2.80	4.00	6.40	8.70	12.20	15.60	19.30	23.00

Note: I had been corresponding with KA9LNV about this design. Ed showed up with a copy of my antenna at the 1994 Central States VHF Society antenna contest. Ed won the 1296 MHz category, beating me by 0.2 dB with my own design!

435 MHz AMSAT

I appreciate the help and motivation from KA9LNV for these antennas. N5EM even built an array of 16, 11-element versions of these antennas for Field Day. A high Front to Back ratio was a major design consideration of all versions. The computer predicts 30 dB F/B for the 6 element, and over 40 dB for the others. Using 3/4" square wood for the boom makes it easy to build two antennas on the same boom cross polarized. Offset the two antennas 6 1/2" and feed in phase for Circular Polarization. Or just use one for portable operations.

Driven element dimensions are L = 13.0" and H = 1/2". Elements are 1/8" diameter. Spacing is the same for all versions.

435 MHz AMSAT		REF	DE	D1	D2	D3	D4	D5	D6	D7	D8	D9
All	Spacing	0.00	2.50	5.50	11.25	17.50	24.00	30.50	37.75	45.00	52.00	59.50
6 Element	Length	13.40		12.40	12.00	12.00	11.00					
8 Element	Length	13.40		12.40	12.00	12.00	12.00	12.00	11.10			
10 Element	Length	13.40		12.40	12.00	12.00	12.00	12.00	11.75	11.75	11.10	
11 Element	Length	13.40		12.40	12.00	12.00	12.00	12.00	11.75	11.75	11.75	11.10

NEC predicts 11.2 dBi for the 6 element, 12.6 dBi for the 8 element, and 13.5 for the 10 element, and 13.8 dBi for the 11 element.

450 MHz

Yea, I understand, it's FM, but sometimes a newcomer needs a cheap antenna to get into a repeater or give you a simplex QSO during a contest. Radio Shack 1/8" dia Aluminum ground wire Catalog # 15-035 was used in the prototype for all the elements except the Driven element. Other 1/8" dia material could be used.

450 MHz		REF	DE	D1	D2	D3	D4
6 Element	Length	13.00		12.10	11.75	11.75	10.75
	Spacing	0.00	2.50	5.50	11.00	18.00	28.50

421.25 MHz ATV

421 MHz Vestigial SideBand Video is popular in North Texas for receiving the FM video input repeaters. These antennas are made of 421 MHz use and the driven element is designed for 75 Ohms. So RG-59, or an 'F' adapter to RG-6 can be directly connected to a-cable TV converter/Cable Ready TV on channel 57. Driven element dimensions are L = 13.0" and H = 1/2" Elements are 1/8" diameter. Spacing is the same for all versions.

421 MHz ATV		REF	DE	D1	D2	D3	D4	D5	D6	D7	D8	D9
All	Spacing	0.00	3.00	6.50	12.25	17.75	24.50	30.50	36.00	43.00	50.25	57.25
6 Element	Length	14.00		12.50	12.25	12.25	11.00					
8 Element	Length	14.00		12.50	12.25	12.25	12.00	11.25				
11 Element	Length	14.00		12.50	12.25	12.25	12.00	12.00	12.00	11.75	11.75	11.50

Sliding a quarter wave sleeve along the coax had little effect, so there's not much RF on the outside of the coax.

I've had a Polyurethane varnished 902 MHz version in the air for two years now with little deterioration. The life of the antenna is determined by what you coat it with.

These antennas have been carefully designed to have the highest dB's/Dollar ratio of anything around. I recently saw a 20 Meter antenna with the dimensions specified in 1/10,000 thousands of an inch!! That guy needs to get real! A 1 degree change in temperature would change the lengths more than that! I kept dimensions to tenths of an inch to make these antennas easier to build.

Finally a bit of history on the design of these antenna. In 1993 at Oklahoma City Central States VHF Society Arnie CO2KK spoke on the difficulties building VHF antennas in non-industrialized nations. Sure, just run down to the store and pick up some Delrin Insulators and 0.141 Teflon Coax??? Arnie's tales were the motivation to use advanced technology to come up with something simple.



A Beginner's Guide to Making CW Contacts (Part 1)

by Jack Wagoner WB8FSV

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Editor's note: This guide was written several years ago, so some references may be out of date, but the general principles are the same. This month we present the first part of the guide.

There are dozens of specialities or activities under the broad banner of Amateur Radio. Amateur radio is also known as ham radio, why, nobody knows for certain. From working DX, to building radios from scratch, to satellite communications, to slow-scan TV, to just plain rag chewing(or talking) with new and old friends all over the world; there is something for everybody.

As a true ham radio fanatic, my personal favorite ham activity is yakking with other hams in Morse Code, also called CW(for continuous waves). Morse Code has a mystique to it, it is an extremely cool method with which to communicate. In this Beginner's Guide to Making CW Contacts I am going to try and give those hams new to CW a better idea of how to start. How to find someone to talk with, what to talk about, how to deal with QRM, how to end a CW contact, how to get lots and lots of QSL cards, and much more useful and practical information.

I wrote this Guide from the perspective of hams in the United States. Many of my references, for example to frequencies and to radio propagation, pertain to amateur radio in North America, although most of the CW operating techniques I discuss apply to worldwide CW operation.

Learning the Code

Morse Code has a way of polarizing hams, they either love it, or can't stand it. CW(or Morse Code) has been decreasing in popularity over the last several decades as voice and other digital modes become more popular. But a listen across the CW portion of the ham radio bands will find thousands of hams still using this vintage communications technique. The FCC still requires a code proficiency test, just 5 wpm, as part of their license to use the HF amateur radio spectrum. Besides, CW is way cool, but I'm prejudiced. HI.(HI is the telegraphic equivalent of a laugh)

I believe that learning and using Morse Code is very similar to learning a foreign language. Don't try to learn Morse Code the way I first did when I was a BoyScout: don't memorize a list that tells you "A" is "dot dash" or "B" is "dash dot dot dot". This method will stunt your progress and lead to frustration. Ideally, when you hear the "dot dash" sound in your ear, your mind will immediately recognize that as "A". Inserting a third step, where your mind first translates the "dot dash" sound into the written dot dash you learned from a list, and then into the letter "A", is one thing that makes learning Morse Code so difficult for so many people.

There are a number of techniques suggested to help learn Morse Code. Among these are:

Learn the code in groups, beginning with letters comprised of all dits first, then on to letters with all dahs next, then finally learning letters with both dits and dahs.

Learn the code in groups of letters that have related sounds. For example, U(dit dit dah), F(dit dit dah dit), and the question mark(dit dit dah dah dit dit).

Learn the more frequently used letters and characters first, and the more difficult ones last.

Listen to the Morse Code characters sent at a high speed, with long pauses between each. This is known as the Farnsworth method.

Thanks to L. Peter Carron, Jr., W3DKV and his book, *Morse Code: The Essential Language*, The American Radio Relay League, 1991, for this partial list of techniques.

Learning CW from a practice tape is, I believe, one of the best ways. Many companies offer these audio tapes or CD-ROMS, although they can be a bit dry and boring, and I recommend a bit of live CW listening with a shortwave receiver. Try the US novice bands 40 meters 7100-7150 kHz and 80 meters 3675-3725 kHz for practice. Lots of beginning novices and technician-plus hams here using much slower CW (like 5 to 10 wpm) than you'll find on the US general CW bands. Learning CW with the personal help of another ham is also a great idea, as is taking a class in CW operation. Many amateur radio clubs offer classes for beginning hams in licensing, including Morse Code.

The Morse Code used today by amateur radio operators is also known as the International Code. By definition, the duration of the dah is three times as long as that of a dit, and the space between dits and dahs inside an individual character (such as dit dit dah or U) is equal to the duration of one dit. The space between characters is equal to three dits, and the space between words is equal to seven dits. During a CW QSO nobody is checking to see if you are using the correct spacing, just do your best. It takes practice. Code sent with the correct spacing sounds better and is easier to copy.

Forcing yourself to listen to Morse Code that is slightly faster than you are able to copy comfortably is a good way to increase your code speed. You don't need to copy every letter, just concentrate on better learning the CW letters and symbols you already know, and the others will follow. When I was first learning CW I enjoyed listening to the CW speed demons (20 wpm plus) at the bottom of each ham band, just to see if I could get their callsign. Hams often send their callsigns several times at the beginning and end of a transmission, making it easier to copy. Everything else they sent was usually a blur. I then kept a running list of the different countries I had heard, just to see how many countries I could get. I'm sure this helped me increase my code speed.

Actual on-the-air CW contacts are probably the best way to increase your code speed and CW proficiency. And to have fun while practicing.

SARC Events

All meetings take place at the Seniors Lounge in the Don Montgomery Community Recreation Centre, 2467 Eglinton Ave E.

Classes have finished for the season and will start again next September. We will have TECH NIGHTS every Friday night between 6 and 9 PM. All are welcome.

2009

Monday, December 14 @ 7 PM – Christmas Party

Friday, December 18 @ 6 PM – Tech Night

2010

Friday, January 8 @ 6 PM – Tech Night

Monday, January 11 @ 7 PM – Annual General Meeting

Friday, January 15 @ 6 PM – Tech Night



How to Repair an Electronic Instrument

Courtesy of Luc VA3LMS

1. Approach the instrument in a confident manner. This will give it the (often mistaken) idea that you know what you are doing. This will also impress anyone who happens to be looking over your shoulder, and if the instrument suddenly starts working, you will be credited with its repair. If this step fails, proceed to step two.
2. Wave the manual at the instrument. This will show everyone, and perhaps the instrument, that you are at least somewhat familiar with the sources of knowledge. You will no doubt have to proceed to step three.
3. In a forcible manner, recite Ohm's Law to the instrument. Before you do this, refer to your old textbooks to be sure you still remember what Ohm's Law is for.) This may be a traumatic experience, for both you and the instrument, and should only be attempted after the first two steps fail.
4. Jar the instrument slightly. This may require anything from a three to six foot drop. Most repair shops prefer a concrete floor for this step. This is, of course, a drastic step, and if it fails you have no recourse other than to proceed to step five.
5. Add a resistor and capacitor. This will put an added load on the instrument and thereby increase your advantage over it. Should these five steps fail to work, you will have to proceed to six, the most drastic step of all, which is seldom used except as a final resort.
6. THINK!

SARC Elections

Elections took place on Monday, December 7. All positions on the 2010 Board of Directors and Executive Panel were open. Here are the results. The posts of Assistant Secretary and Assistant Treasurer are still open.

President	Bernadine Dinnard-Williams VE3YDB
Vice-President	Ralph Muecke VE3VXY/VE3CIW
Secretary	Ray Chow VE3ZXC
Treasurer	Lambert Philadelphia VE3LYP
Assistant Secretary	Open
Assistant Treasurer	Open
Membership Coordinator	Ian Gibbard VA3IGD
Field Day Coordinator	Rod Long VE3SOY (with assistance from Ralph VE3VXY/VE3CIW)
Communications Coordinator	Hugh Gillon VE3HAG
Education Coordinator	Ralph Muecke VE3VXY/VE3CIW (with assistance from Lambert Philadelphia VE3LYP)

Appointed Positions

Examiner	Nick Blacklock VE3EBC
Archives	Gord Hogarth VE3CNA/Audrey Little VA3YD

Radio to the Rescue

Courtesy of ARNewline, <http://www.eham.net/articles/22950>

Amateur radio was first on the scene on Wednesday, December 2nd. This, after a dairy truck crashed near Logan, Utah, and rolled into the Logan River.

According to the Logan Herald Journal, Brent Yeates, KA7FAP, happened across the accident scene and stopped to help. With cellular telephone service sparse at best Yates used a local repeater to contact Brent Carruth, AD7VF in Logan. Carruth listened to Yeates give a first-hand account of the condition of the driver and the seriousness of the crash. He then notified authorities which dispatched assistance to the scene.

The accident occurred on Utah Route 89 as it passed through Logan Canyon. The semi-trailer was filled with 38,000 pounds of dairy products much of which was leaked into the river. More is on-line <http://hjnews.townnews.com/articles/2009/12/06/news/news04-12-06-09.txt> (HJ News)

Transition

By Bob Chrysler VE3IEL

Change is a normal way of things. Today, change comes quickly. In our hobby of Amateur Radio it seems that change has come too fast. What used to be in our realm alone is now available, in one way or another to all, even the youngest school girl or boy. It seems that today the cell phone with its Bluetooth accessory is just everywhere. Like the Internet, its use has just exploded over a very short time.

Oh, we hams have our own niche of course. We talk to other hams when we feel like it. But let's be honest - we talk on our cell phones a little more often. There are the contesters among us who prefer the fun of piling up points with their radio hobby. There are still some CW enthusiasts who enjoy that part of the hobby. What about people like me, who got into the hobby mainly for its public service value to our community and its events? People like me were the free communicators. I, and other Radio Amateurs would show up with our equipment and help out various events by way of providing communication. Very often it also meant doing other errands in our cars as we could be directed by radio from event officials. Our club, the Scarborough Amateur Radio Club, took a very active part in Public Service events. We showed up at hospital fun runs, Variety Village bike events, early Red Cross simulated emergencies, and of course the Robbie youth soccer events. We very early became active in ARES, when it became a viable resource for public service communications. There is no doubt that the Scarborough Amateur Radio Club was the backbone of ARES when ARES began operations in this area. The Scarborough club stood behind the local ARES executive when local ARES officers were under attack by the national ARES headquarters regime. With ARES, Scarborough members have helped out in various simulated exercises; and helped in real events as well. During the Y2K time frame we were there, at the Red Cross headquarters. During the three day power blackout we were there at either the EMO headquarters, or at the EOC headquarters. We have participated in just about every event where communications is, or was required. Our members have consistently participated in the Warriors Day parade event, the Scarborough MS SuperCities Walk, Santa parades; and, have been an ever present value to the local ARES radio nets.

Now comes the transition. With nearly everyone walking around with communication devices of one kind or another, are we needed for public service any more? Is it not easier for officials who know their jobs just contact another official on their cell phone rather than from a relay through Amateur Radio operators. Car breakdowns along the road can call for help in the same way. Only if the power goes out for a long time, might we be needed for communication, otherwise it is just an exercise for us.

Believe me, we are not experts. There may be times when maybe we just should not be there. I think of the Goblin patrols that we used to do. I think there were times when we in our patrolling cars were looked on with suspicion by the police. We were an oddity. We had no official business. We were not coordinated with them. Yes, a headquarters operator could telephone the police if trouble was reported.

Otherwise we were on our own. How often have I thought as I see people with their cell phones do I see Radio hams actually using any of their radio equipment. Most of us have at least two metre hand-held radios. Only die-hards carry them on a regular basis. Let's face it - our hobby has changed. Our hobby is in transition. Let us keep an open mind to new ideas and ways of keeping our hobby active.

One last rant: The malicious interferers, are in the process of killing our hobby completely. If they do not quit, the money they have spent on their equipment will be for nothing. There will be no one to listen to their rude interference.