

RADIOACTIVITIES

NEWSLETTER OF THE ARGONNE AMATEUR RADIO CLUB



Volume XLVII, Number 5

May 2006

Club Meeting

Another month has gone by without a presentation or a scheduled meeting. Because of that, full and associate members have expressed their concerns to me about the club's future. I decided to do something about it. I brought it up at the last two board meetings and we decided to have an informal meeting at the Argonne Cafeteria (building 213, north end). Associate members needing access to the lab should contact me on the Monday night 9:00 net or contact me via phone or email; check the roster. I'm hoping that everyone, including full members, can attend. It's a chance for all of us to meet during lunch. We can "hobnob" with our fellow amateurs and bring something to show and tell. The meeting is Tuesday May 9th from 12:00 to 1:00.

The Treasurer's Report

by Jack Albert, WA9FVP

Members: East 15; Associate 34; Newsletter 6; Retired 12

Balances: Checking \$ 5262.44; Cash \$13.00; ANL fund \$30.00

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For the period Mar 30, 2006 thru Apr 30, 2006:

Income: Dues \$4.00; Club \$4.00; Rptr \$5.00; Newsline \$0.00; ANL \$0.00

Expenses: Club \$0.00; Rptr \$0.00; Newsline \$0.00

REMINDERS

CLUB BREAKFAST: Always the 2nd Saturday of each month, 8:30 AM at:

Old♦Country Buffet♦

59th Street and LaGrange Road in LaGrange

CLUB NETS: Thru our Club Repeater 145.19.

SKYWARN NET: Mondays in season at 7 PM with Deni, W9DS.

THE CLUB'S 9PM NET: every Monday with Jack WA9FVP.

THE NIGHT PATROL: every night at 10:30 PM with Paul, W9FNM.

THE BREAKFAST CLUB: every morning at 8 AM.

THE NOONTIME NET: every weekday at noon.

Mil's Corner for February

Nothing received.

The Bent Aerial

by Deni, W9DS

W.C. Babcock discussed the radiation resistance of a vertical aerial bent into an inverted "L" shape in the Bell Telephone record dated May 1949, pages 172 – 175. Capt. Hay, USN W4LW wrote about folded bent aerials in CQ Magazine 1953. For 80/160 meters, but it can apply to any frequency. Other authors published their findings about multi-wire ¼ wave verticals called folded "unipoles" or "monopoles".

The single wire ¼ wave vertical was 36 ohms resistance. A two wire ¼ wave came in at 150 ohms and a three wire job at 300 ohms. These ¼ waves hung horizontally are worthless. The author experimented with bending the aerial, and what was the best vertical length and horizontal length.

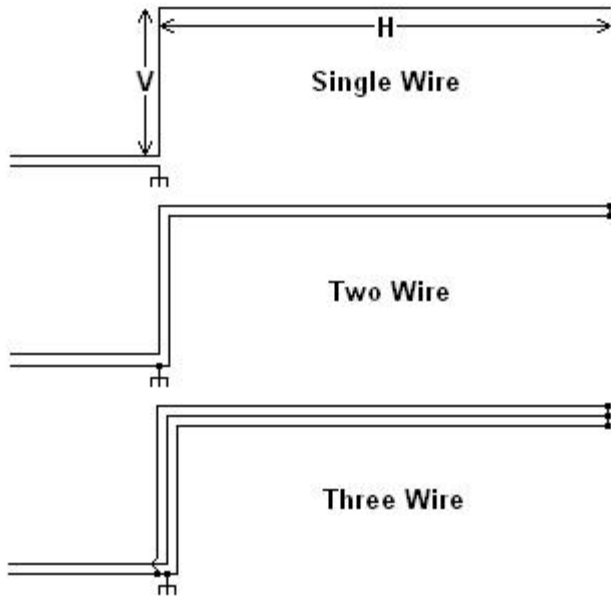
So, the inverted "L" was born using one, two, or three wires. Aerial resistance (known today as impedance) at the feed line is 360 ohms when 100% vertical, but as the aerial is bent to a horizontal position impedance drops. Ground losses may add to the impedance or radiation resistance and note a value higher than theoretical values.

Next we choose a two or three wire folded bent aerial. How high vertically can we go, and how long horizontally will the aerial be? Here are our perimeters: L=lengthen, S=shorten, V=vertical length, H=horizontal length.

		Impedance		
		To High	Correct	To Low
R e s o n a n t y	To High	LH	LH LV	LV
	Correct	SV LH	Right On	LV SH
	To Low	SV	SH SV	SH

Aerial Impedance		
# of wires in aerial	Feeder length	Vertical dimension as % of total length
3	52 ohm coax	22%

3	72 ohm coax	27%
3	300 ohm twin lead	78%
2	52 ohm	36%
2	72 ohm	44%
2	150 ohm twin lead	100%
1	Two 52 ohm coax lines in parallel	60%
1	Two 72 ohm coax lines in parallel	100%



Bent Aerials: $H + V$ length = $1/4$ wave length

$1/4$ or $1/2$ Wave Ring Radiator

by Deni, W9DS

These types of wire aerials are not easy to make, install, hang, or get to work properly. But, if you have patients like John Schultz, W2EEY, who published in 1967 73 Magazine. What's the difference between the $1/4$ and $1/2$ wave is this: One quarter wave ring needs a good ground connection at one end and the other end is open, not connected to anything. It is omni directional, vertically polarized at a height of 0.01 waves above ground and I guess that's above the car wheels, so, we must be thinking of the metal roof. Anyway, at 0.01 waves above ground you have a Q of 100 to 200. Guess what Q means? Give up? No? Well I won't tell you. Why not ask KC9EUY. W2EEY never drove his car and operated this aerial driving, but stopped and parked and hammed.

The operating bandwidth using a ring radiator on ten meters is 300kHz and less on higher bands. The $1/2$ wave ring or dipole has lower Q and omni directional when up from ground heights comparable to $1/2$ wave dipole. Polarization then is horizontal. Lower to the ground resonance is sharper and radiates off its ends mostly vertical polarized radiation. It doesn't need a ground

plane & can be mounted in an attic. The current flows in one direction right or left. You can reverse the connections to see if that makes any difference.

The $1/4$ wave ring is gamma matched shield grounded and center conductor is run back and forth from the base out to $1/40$ wave and adjusted for 1.5 to 1. 72-ohm coax was used on the $1/4$ wave and 72 ohm twin lead on the $1/2$ wave square. Attach a $1/8$ wave open stub 72-ohm twin lead at the $1/2$ feed point for 72 ohm coax feedline.

Cell Phones

by Deni, W9DS

I was listening to Paul Harvey and the new broadcast on WGN about noon. He advised every one should buy the tracer cell phone by Nokia selling for twenty bucks at Wal-Mart. Ok, I bought one to see what it is all about. I took it home, pried the package apart with a knife and a screwdriver. I got to the instructions. I had to charge the battery after putting it inside the cell phone. It was to take three hours to charge, so I read the instructions using a magnifying glass, and this is for real. Maybe I need a pair of new glasses. What I could make out was that the cell phone diagram was to be pointed out away from the head 30 degrees. Was I to shout out loud to talk? It didn't say. I was getting an idea that it was dangerous to have the two antennas right next to my head at these frequencies. I returned it to Wal-Mart.

I came across an article in Feb 2000 Portable Design by the chief editor John Donovan where he describes the world of UHF and Microwave [cook your head] propagation and modes of communication. Frequencies sold off under the Clinton administration.

Today, Sky High Communication includes Wi-Fi, Bluetooth, Zigbee, Wimak, cell phones, and data services: HSPDA, GPRS, EVDO, and EDGE which use UHF to the lower microwave bands. The frequency dictates the modulation, aerial design, power levels used, and propagation levels.

It all means that the higher the frequency, the greater the path losses. Joining in are atmospheric losses as frequencies move up due to water and its vapors, obstacles in the path of travel suck-up the energy from the wave, and that's why the fellow in the TV ad was forever saying "CAN YOU HEAR ME NOW!" You see he was looking for the best path for communication.

We as hams know about Doppler effect and fading dealing with this environment. We will need a variety of multiple receivers to improve reception, other than just using aerial diversity.

If you need that minute to minute of phone harassment every step you take no matter where ever you are your cell will ring it's bell, and you can answer the question "Can you hear me now?"

P.S. NO!

<p>ARGONNE AMATEUR RADIO CLUB P.O. Box 741 Lemont, IL 60439</p> <p>————— Officers —————</p> <p>PRESIDENT George Moshko KB9YYW VICE PRESIDENT Bruce Epperson KA9H SECRETARY Jack Albert WA9FVP TREASURER Jack Albert WA9FVP DIRECTOR Dick Konecny K9IB DIRECTOR Torben Lauritsen KF9MI DIRECTOR Charles Doose KB9UMF DIRECTOR Jim Jorgensen K9RJ DIRECTOR Tim Smith N9UEB DIRECTOR Dale Travis AG9H</p> <p>e-mail: w9anl@bigfoot.com www.bigfoot.com/~w9anl</p>	<p>MEMBERSHIP is open to all who are interested in amateur radio. This club is sponsored by Argonne National Laboratory. Employees of ANL or DOE-Chicago are eligible for full membership. Auxiliary membership is available to non-employees.</p> <p>W9ANL/R is an open repeater, coordinated on 145.19 MHz (-600 input). The AARC repeater has been in operation on this frequency pair continuously since February 5, 1982.</p> <p>CLUB NETS: 2 meter fm 1) Regular, every Monday evening at 9:00 and 2) the Night Patrol every night at 10:30, both on W9ANL/R. The Peanut Whistle Net (PWN) every Sunday at 1:30 p.m., and many evenings at 8:30 p.m. on 1932 kHz (cw/am/ssb), QRP.</p>	<p>RADIOACTIVITIES is published monthly by the Argonne Amateur Radio Club as a nonprofit newsletter intended only for the use of its membership. Material appearing here does not represent the official position of Argonne National Laboratory or the U. S. Department of Energy. Please give credit to the author and to Radioactivities or the Argonne Amateur Radio Club, when using original material published here. Deadline for submissions normally is the 20th of the preceding month.</p> <p>EDITOR Dale Travis AG9H EVENTS SKYWARN ACTIVITIES Deni Lamoreaux W9DS</p> <p>Please send club and editorial correspondence to the club address, or to travisdj@bigfoot.com Please include "AARC" in the subject.</p>
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