The Signal Report

A Publication of the Greenwood Amateur Radio Society (GARS)

VOLUME 19 ISSUE 9 SEPTEMBER 2021

HTTP://WWW.W4GWD.ORG W4GWD@ARRL.NET

Analog Repeaters are up.
DMR and D-Star are up.
Echo link is down, continuing to undergo technical evaluation.
Repeater Linking Project-Linked during nets and special occasions

September 2021

The Greenwood Amateur Radio Society (GARS) will be meeting on September 14, 2021. The location will be the Wesley Commons Library, 1110 Marshall Road, Greenwood, SC. We will continue to hold our meetings on the second Tuesday of every month at 7:30 p.m. at this location until further notice.

2021 CLUB OFFICERS

President
Russell Myrick, KN4TUI

Vice President
Tommy Owens, K4XB

Secretary
George Crane, W3RXF

Treasurer
Tedd Davison, AI4WN

Repeater Trustee
Buddy Willis, W4DEW

Activities Manager
Mitchell Litwer, KJ4JGP

Editor in Chief
Michael Wills, KA4CSM

Librarian
Jack Witt, KN4SIK

The W4GWD Repeater Network
147.165+ t107.2
Echolink: 584003
443.900+ t107.2
W4GWM/R
145.420- DV
W4DEW/R
146.910- t123.0

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Greenwood Amateur Society Recurring Events:

Chat 'N' Chew

Every Friday around 11:15 a.m. the members of the Greenwood Amateur Radio society meet at a local restaurant. Please feel free to join us and wear a mask if you would like. Locations will vary from week to week and will be announced on the weekly nets. *See you there!*

Weekly Nets

Each Thursday night at 9pm on the 147.165+ machine, The Greenwood Amateur Radio Society holds our weekly 2 meter net.
Our UHF net on 443.900+ is held Mondays at 8pm
Help spread the word for everyone to check-in to our nets. If you would like to fill in or be a backup net controller please contact Tedd Davison, AI4WN.

VE Exam Session

The next GARS ARRL Volunteer Examiners (VE) session is scheduled for Oct. 5, 2021 in the Wesley Commons Library at 7 pm, 1110 Marshall Rd, Greenwood, SC. Questions should be directed to Buddy Willis, w4dew@arrl.net

Congratulations!!

Happy Birthday!

Betty Crane	Fmly Mbr	Sep 9
David Collins	N4WDC	Sep 13
Tommy Owens	K4XB	Sep 13
Margaret Hayes	KJ4HDK	Sep 26
Mark Tussey	WT4KY	Sep 26
Earl Powell	KC4AXY	Sep 27
Carlis Myers	KG4RIT	Sep 28

Happy Anniversary!

Al (KB4RA) & Jane West
Sep 8

Jim (SK) W3COX & Karla Cox WB3LNX
Sep 16

Are you an ARRL Member? Joining ARRL helps protect our rights as Amateur Radio Operators as well as providing education, QSL Bureau, technical advise, and the ARRL VEC. http://www.arrl.org

Presidents QSO

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Sure glad we had such a good turnout for the in-person GARS meeting at Wesley Commons. I thought the interaction was good among members and during the formal meeting. Always appreciate the input from everyone.

Hopefully we can meet there for sometime to come. Seems to be a convenient and suitable location for everyone. So glad they are agreeable to have us meet there.

We have several people express interest in Amateur Radio and possibly getting a license. We are following up on them and providing information as they request. If you know of anyone interested, invite them to a club meeting, point them to a few links, like ARRL, QRZ and others you find helpful. Also make them aware of our VE session scheduled at Wesley Commons Library Tuesday 10/5/21 at 7:00pm.

Aside from that we have regular monthly meetings scheduled for September, October and November and our Christmas Dinner in December. Following that we have the HAMFEST January 8th 2022 with setup the day before.

Spoke with W4DEW the other day about several things. He was working on another weed eater to use at the Repeater Site. They always welcome a number of workers as to the size of the lot, fast growing grass and weeds and the heat.

We continue to stay current on the Covid-19 activity, guidelines etc. Hopefully that will stabilize.

Short comments this month, but do hope you all stay well and safe. Watch the heat.

Russ, KN4TUI

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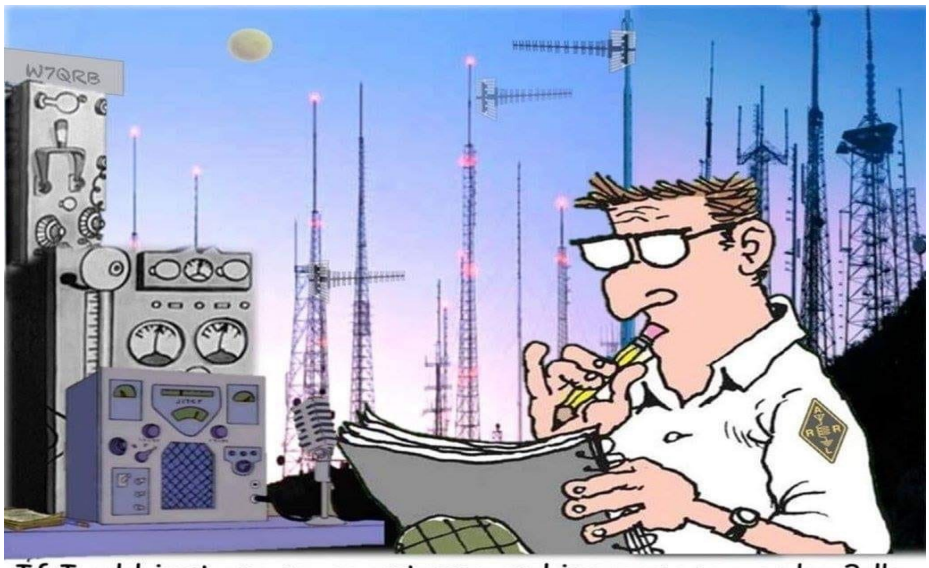
Kevan Nason N4XL placed first in the United States and Canada in the March ARRL SSB Contest. He was in the Single Operator, Unlimited, Low Power category. Proud of you Kevan!

Please welcome back a former member

George Miller, WD4GBB

Thank you to Buddy Willis, W4DEW and all those who maintain our repeaters. Buddy and several volunteers have not only maintained the repeaters but also the grounds on which they are located. If you are looking for a way to support your club this might be it. Volunteers are always needed to help with this. Please contact Buddy for times and locations.



If I add just one more antenna and increase power by 3db, I can bounce signals off Jupiter.

Our first face to face club meeting since COVID. It was held in the Wesley Commons Library. Sorry, not all present made in into the picture. One Guest, Philip Chandler, KM4WLS from the York County Amateur Radio Society. Seated next to Buddy, W4DEW in blue shirt.

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GARS July 2021 Net Summary, courtesy of Tedd, AI4WN

2m

check-ins	139
traffic	7
sessions	6

70cm

check-ins	69
traffic	4
sessions	4

Interesting links, courtesy of Teddy, AE4TI

https://www.reddit.com/r/amateurradio/comments/6pzlsh/new_guy_antenna_question_re_10m_and_270_signals/

https://www.youtube.com/watch?v=DovunOxlY1k&t=4s

Amateur Radio Operators still in high demand, not our area but still relevant, courtesy of Tommy, K4XB

https://www.wthitv.com/templates/AMP?conten-tID=574372471&fbclid=IwAR2N5ilWBFcSAvmj0Y6WJ_Q3OY65oRwHUumO-vMxZzM5AoeXh8quAf0LInE

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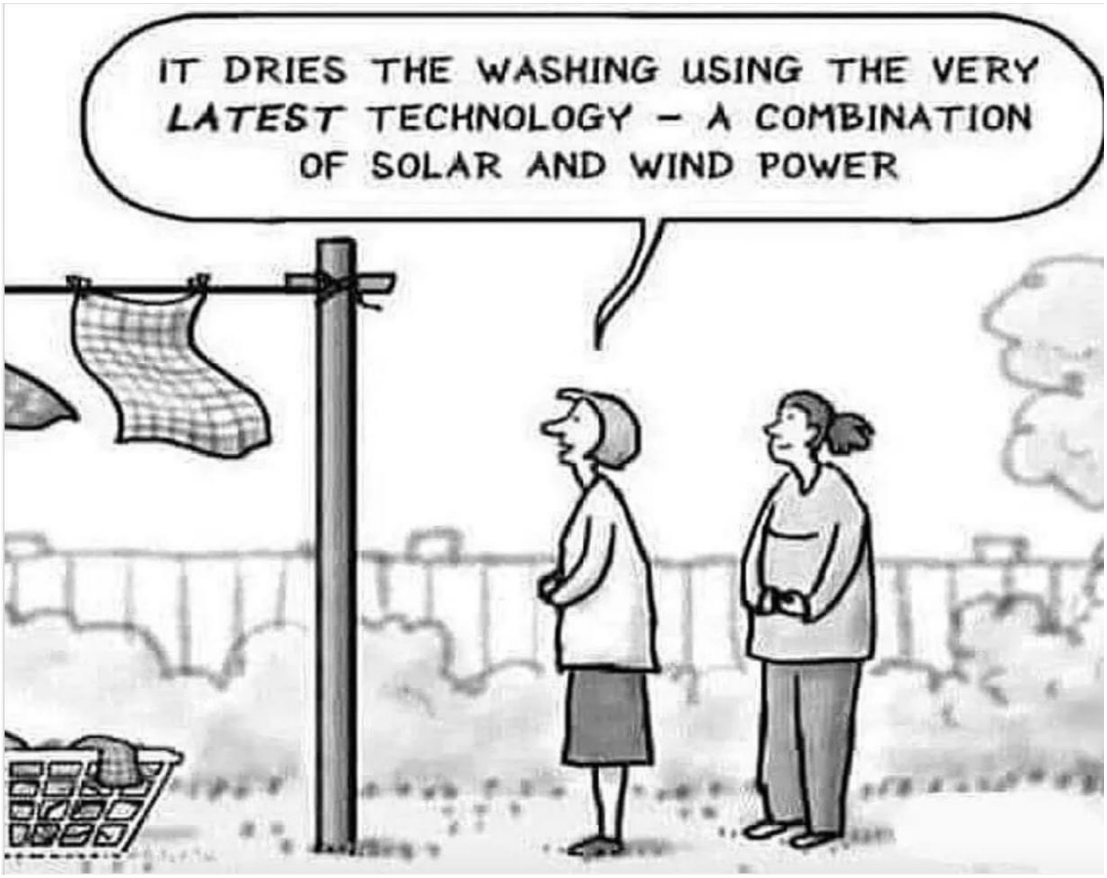
Radio News July 1919

Radio-News-1919-07.pdf (worldradiohistory.com)



Marc's Technical Pages

Antenna Gain Explained AF5NF

This one stumps even some of the most advanced RF engineers, that is, the "gain" of an antenna. Even the law states that the "Effective Radiated Power (ERP) will not exceed..." and this is based on the input into the antenna multiplied by the antenna gain. There is this concept that, the moment they exhibit gain, antennas magically create power within themselves. Sadly, this is not the case. If one examines an antenna it will be noted it is constructed of basic materials, the best being gold, silver, copper, then aluminium following on. These materials in themselves cannot create power.

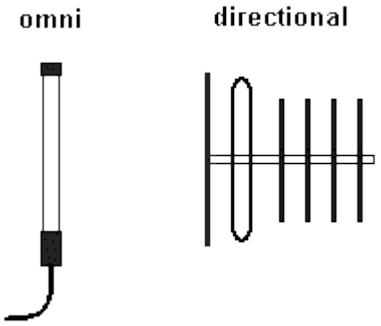
Before we go into any explanations there are some terms that need definition so-as to assist in the explanation of antenna gain.

decibel (dB): unit of measure of loss or gain. Gain has a positive value, loss has a negative value, and is equal to 10*log(Pout/Pin)

Antenna Gain: The relative increase in radiation at the maximum point expressed as a value in dB above a standard, in this case the basic antenna, a ½-wavelength dipole (as in Two-Poles) by which all other antennas are measured. The reference is known as 0dBD (zero decibel referenced to dipole). An antenna with the effective radiated power of twice the input power would therefore have a gain of 10*log(2/1) = 3dBD.

A note of warning: There is a second 'reference' used in antenna gain figures but is used to simply give an antenna a higher gain figure than what is truly achieved. It is known as dBi and represents the gain of an antenna with respect to an imaginary isotropic antenna - one that radiates equally in a spherical pattern (equal in all directions). It increases the antenna gain figure by 2.14dB, this being the 'gain' of a dipole over an isotropic antenna; But this is not a head start! This is covered more in the paper "Cheating with Antenna Gain"

Radiation Pattern: A graphical representation of the intensity of the radiation vs. the angle from the perpendicular. The graph is usually circular, the intensity indicated by the distance from the centre based in the corresponding angle.



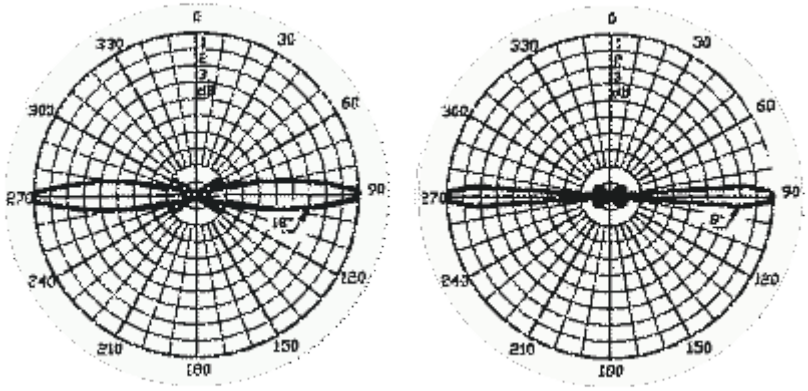
All radiation patterns on this page are with the antenna element(s) mounted vertically, and viewed from the side (i.e. right-angles to the antenna) as seen alongside.

Radiation Angle: It has been generally accepted that beamwidth is the angle between the two points (on the same plane) at which the radiation falls to "half power" i.e. 3dB below the point of maximum radiation. Using anything other than 3dB does not do an antenna's reputation any good as this could give the impression the antenna has a wider/narrower beamwidth and if a serious engineer looks at this he would, rightly so, discredit the design.

Coverage: The physical geological area where signal is still at a level which can be received, usually described as a radius distance from the antenna site.

Antenna Gain (continued) AF5NP

This focusing can be even further intensified such that gains of 6dB (4 times) to 9dB (8 times) can be achieved. The resultant two patterns shown below.



As can be seen the method by which an antenna is made to have "gain" is merely to focus the radiation (i.e. taking the doughnut and flattening it into a pancake) thus intensifying the radiation along the horizontal. Antennas with omni-directional radiation and gains of beyond 9dB are impractical owing to the fact that the focusing is directly related to the length (in wavelengths) of the antenna. There is, however, one further method of focusing, to now intensify the radiation in only one direction.

With directional antennas, there is one further figure to bear in mind.

Front-Back Ratio: The driven element of most directional antennas is a dipole with the classic "doughnut" shape radiation pattern perpendicular to its axis. The idea, as shown, is to take this doughnut radiation pattern and squeeze it in to a beam off the front of the antenna. The reflector is usually just a single rod, maybe a collection of them. Even if a bunch, the reflector is not going to stop every scrap of energy from escaping between the cracks! Some will be radiated towards the rear (or, in the case of reception, bypass the reflector and be intercepted by the dipole). Remember, when in free space the dipole is just as sensitive to this direction as it is to the front of the antenna, and has a natural tendency to want to continue with the doughnut pattern.

Even a solid sheet of metal as a reflector will not completely isolate the front from the rear because of "diffraction". Yip, the very tips of the metal will cause some signal to "bend" on the edges of the reflector and toward the rear (or, in the case of reception, from the rear toward the dipole).

The ratio of this front-rear difference is defined with reference to the front (wanted) direction of the antenna, and is usually expressed in dB.

Antennas do not somehow magically create power but simply focus the radiated RF into narrower patterns such that there appears to be more power coming from the antenna in the required direction.

As can be seen, "gain" is also "loss". The higher the gain of an antenna the smaller the effective angle of use. This is the part people forget i.e. that they have robbed power from other directions and superimposed it on the radiation in the intended direction.

This directly impacts the choice of the antenna for a specific function. Choosing the correct antenna is dealt with in "Choosing the correct antenna".

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What is antenna Gain, courtesy of W1GV

https://www.youtube.com/watch?v=cVOo-miuIFQ

Mark your calendars, the Greenwood Amateur Radio Society (GARS) Christmas Banquet will be held at TW Boone's in downtown Greenwood on December 14. Dutch treat, more details to follow. As usual this will take the place of the December meeting.

Any Veterans wishing to be recognized in our November Newsletter please submit information about your service to Mike31406@gmail.com. If you were recognized in last Novembers newsletter and do not desire to change what was printed, there is no need to provide me with anything as I will use the same information.

HAMFESTS & EVENTS

Shelby Ham fest, September 3-5, 2021

W4DXCC Contest Convention, Pigeon Forge, September 24 & 25, 2021

Rock Hill Hamfest, Saturday October 2, 2021, 8AM—3PM., 175 Museum Rd, Rock Hill, SC 29732 Questions contact John at NJ4Z@ycars.com

42nd Annual Lake Hartwell Ham fest sponsored by the Anderson Radio Club, October 16, 2021

Greenwood Amateur Radio Society Ham fest (GARS) January 8, 2022.

Hamcation , Orlando, Florida 11-13 February 2022,

* The American Radio Relay League protects our rights as Amateur Radio Operators **http://www.arrl.org**
* Support for SERA supports proper coordination! **http://www.sera.org**
* Remember your local and regional interest clubs!
* Southeast DX Club **http://www.sedxc.org**
* Spread the word GARS weekly nets: 147.165 2m Net Thursdays 9 p.m.
  443.900 70cm Net Mondays 8 p.m.
* Callsign info **http://www.ae7q.com***
* Track us on APRS: **http://aprs.fi**,
* Swamp Fox Contest Group **http://swampfoxcontestgroup.com**

Classifieds:

Al West, KB4RA, is looking for a variable transmitting capacitor that can handle 100 watts and vary from 0 to around 500 pf. If you know of one please contact him at his email.

Classifie
may be p

I hope you have enjoyed reading our newsletter. Please contact me at Mike31406@gmail.com to place a classified ad or with any ideas/ comments/suggestions etc.

Mike