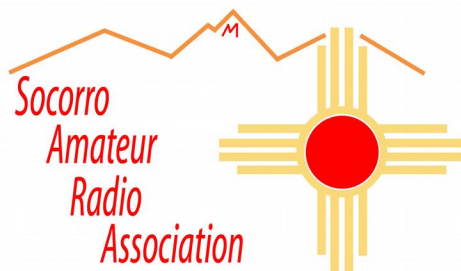


SOCORRO AMATEUR RADIO ASSOCIATION

SARA NEWS

WWW.SOCORROARA.ORG

AUGUST 2017



MEETINGS

The minutes for meetings are at
www.socorroara.org/sara/minutes.

The agenda for meetings is located at:

www.socorroara.org/sara/agenda/agenda.pdf

The August 2017 meeting will be at the Socorro County EOC on Neel Avenue on August 9.

SARA REPEATER

SARA supports a VHF repeater located on Socorro Peak immediately west of Socorro. The repeater is “open”. The auto patch is currently inoperative.

146.68 (-)

100 or 123 Hz required

123 Hz on output

SARA also supports a UHF D-STAR module ‘B’ operating at 444.500 MHz + 5.000
Registration instructions are at
www.socorroara.org/sara/repeaters/D_STAR_Gateway.pdf

CLUB OFFICERS

President: T. Reese Janca KD7GSB
Vice President: Brad Smith KD5JNI
Secretary: Bear Albrecht W5VZB
Treasurer: Luis Aguilar WB5JMD
Past President: Jim Lommen KC7QY

COMING EVENTS

Duke City Hamfest 2017 - Aug. 11-13
Sid Cutter Pilot's Pavilion
9400 Balloon Museum Dr., NE
Albuquerque, NM 87113
<https://www.dukecityhamfest.org/>

Alamogordo ARC Hamfest Aug. 30 2017
Otero County Fairgrounds
Alamogordo, NM 88310
<http://www.qsl.net/k5lrw/index.htm>

THE PRESIDENT'S CORNER

T. Reese Janca KD7GSB

July was a busy month that concluded with Socorro Chile Triathlon Harvest event. I am glad I could participate in this even with those of you who volunteered. I was impressed by the original packet of information showing the route and operating stations along with guidance on radio communications. The triathlon race hosted over 150 participants and SARA was an important part to keeping the riders' safe and providing coordination throughout the event. My thanks to David Finley for handling the coordination and planning of the even and each of you who participated and demonstrated why SARA members are valuable to this community. Amateur Radio in one aspect is about using our ability to serve our community.

Two meetings were also conducted with NM Tech leadership during the month of July to clarify what has transpired and what can be done to continue our radio operations from the East peak. The meetings were productive and I am grateful to Joe Franklin and Jim Ottino for meeting with me to discuss the history of the radio site and bring clarity to the situation. Society has changed a lot in the last two decades at minimum and days of gentleman's agreements and handshakes have been swallowed by tighter bureaucracy and an economy where everyone is looking for income sources and streams. As a non-profit club, we must be aware of this and increase our strength in knowing our worth as licensed radio operators, technicians, engineers, and managers. NM Tech is favorable to accepting technical services in lieu of an annual payment. However, SARA's services must be fair market value, invoiced and billed at the time of service and documented both in our own internal records and provided to the client in this case NM Tech. If we charge for, invoice and document our services in log books and by providing NM Tech and invoice, those services can allow us to use our talent and expertise to support our radio operations on M-Mountain while providing NM Tech the labor and skills necessary to manage and maintain it to all the site users benefit. We need to decide as a club what services we can professionally provide and give consideration to the liabilities and risk with each along with doing an inventory of the equipment we have to provide such services.

It has been a busy July and I look forward to seeing you at our next SARA meeting.

Reese KD7GSB

WHAT IS SDR?

Bill Heller KG5NGN

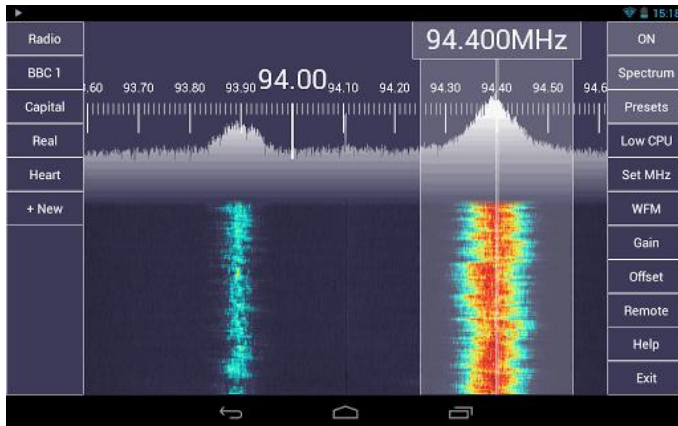
Software Defined Radio (SDR) is a radio system where as much as possible of the processing of the signal is done in the digital domain. This makes supporting multiple modulation schemes such as CW, AM, USB, LSB, and digital packet can all use a common RF element and the filtering and detection is done in software.

The most common first time you will experience this versatility will be on the receive side with a RTL2832 based USB dongle and one of the many software packages that work with it. These systems tend to cover 50MHz to 1700MHz or wider and give a panoramic view of at least 2Mhz and a waterfall display of signal strength versus time as well as controls to tune the center frequency gain and bandwidth of the filters. The most common software for windows includes SDR#, HPSDR, Winrad, and SDRradio. The choices for Linux are more limited but include GNURadio and Gqrx. These systems allow introduction to the benefits of SDR for as little as \$25.00 assuming an existing computer is available.

When you become more experienced you might want to try something like the HackRF which has both transmit and receive capabilities and covers 10Mhz to over 2Ghz. These units sell for around \$350.00 and were first designed as radio intercept tools. Then you can go hog wild and look at the performance of Flex series of equipment which has some of the best specs of any Ham equipment ever sold.

I hope to write a series of articles discussing my efforts in designing a stand alone package with no external computer required over the next months and describe the design choices made and why.

This is a screen-shot of the display for an SDR program:



HAM AND RASPBERRY PI

Ray Calkins N0RBT

Computer hardware keeps getting smaller, more powerful and cheaper. The Raspberry Pi is an inexpensive little credit card sized (and smaller) computer motherboard that empowers amateur radio operators with many new capabilities. This little machine is as powerful as the desktop machines of just a few years ago and only costs \$35 for the top of the line, while the smaller Zero version with fewer features costs a mere \$5. Creative ham operators are putting this power to use in an inspired variety of applications.

F5OEO has done some impressively clever development with the PiTX. Using only software and a simple piece of wire to serve as an antenna, he has written and released code to allow the motherboard to modulate and transmit FM, AM, SSB, SSTV and FSQ signals anywhere between 130 kHz to 750 MHz. The resulting transmission is very low power and full of harmonics, but still fairly amazing. Combine it with an inexpensive RTL-SDR solution for receive and a filtered amplifier section for an interesting and accessible software defined transceiver.

<http://www.rtl-sdr.com/transmitting-fm-am-ssb-sstv-and-fsq-with-just-a-raspberry-pi/>

Speaking of Software Defined Radio, Adafruit has a

pretty nifty Raspberry Pi RTL-SDR Scanner project. <https://learn.adafruit.com/freq-show-raspberry-pi-rtl-sdr-scanner>

Raspberry Pi as RTL2832 Remote Server

<http://www.dxzone.com/dx29659/raspberry-pi-as-rtl2832-remote-server.html>

SDR Server with Raspberry Pi ZR6AIC

<http://www.dxzone.com/dx30993/sdr-server-with-raspberry-pi.html>

Raspberry Pi WebSDR N5DUX

<http://www.dxzone.com/dx31522/raspberry-pi-websdr.html>

APRS – Raspberry Pi Virtual TNC

<https://wcares.org/special-interests-3/aprs/aprs-raspberry-pi-virtual-tnc/>

This project shows you how to make a very low cost (as cheap as \$40, you are likely to have many of the bits and bobs around your ham shack). The resulting system is ultra low draw and makes a dandy Digipeater, IGate, or APRS Beacon. Add a GPS receiver to take it mobile. The project is fairly well documented with fairly straightforward instructions, though it may seem a little confusing if are not familiar with Linux.

D-STAR has been ported to the ARM chip used in the Raspberry Pi, and a few repeater servers have been built on the hardware. This may accelerate as patents protecting the proprietary D-STAR protocols have recently expired.

There are a number of groups working on using the Raspberry Pi for a D-STAR repeater controller around the globe, this seems to be a very popular approach. One interesting variation is to make the hardware portable and connect to the internet through a cell phone, creating a D-STAR repeater for the road.

<https://geardiary.com/2015/03/03/raspberry-pi-and-d-star-work-the-world-from-where-you-are/>

FRACTALS FOR ANTENNAS

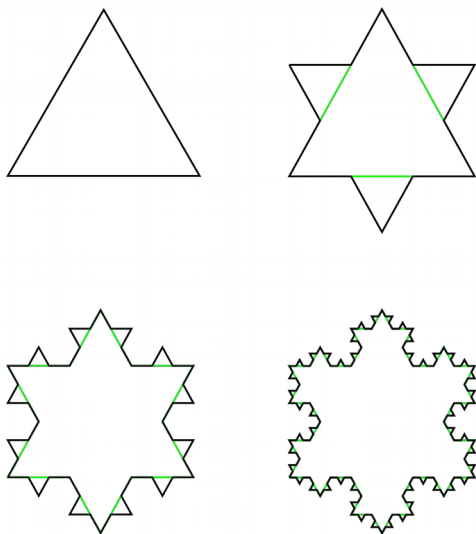
Anneliese Bowman, AD6UY

A fractal is a construction that has almost infinite layers of self-similarity; at any scale it looks essentially the same. And they are found all over the natural world: fern leaves, the branching of bronchi and blood vessels, coastlines, tree branches – all of those are natural fractals.

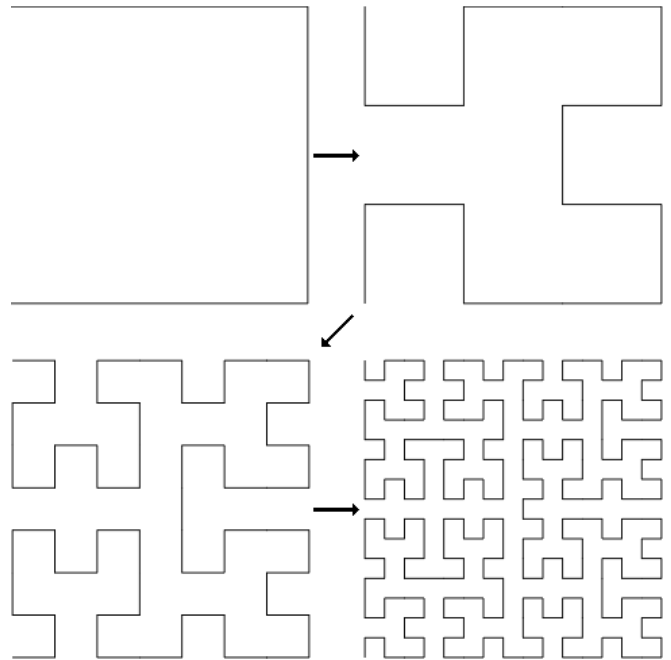
According to www.dictionary.com a fractal is “a geometrical or physical structure having an irregular or fragmented shape at all scales of measurement between a greatest and smallest scale such that certain mathematical or physical properties of the structure, as the perimeter of a curve or the flow rate in a porous medium, behave as if the dimensions of the structure (fractal dimensions) are greater than the spatial dimensions.”

So what do these things have to do with antennas? Well they allow a long conductor to be squashed into a small space. Of course they must be adjusted so they actually work. Several fractal curves have been used.

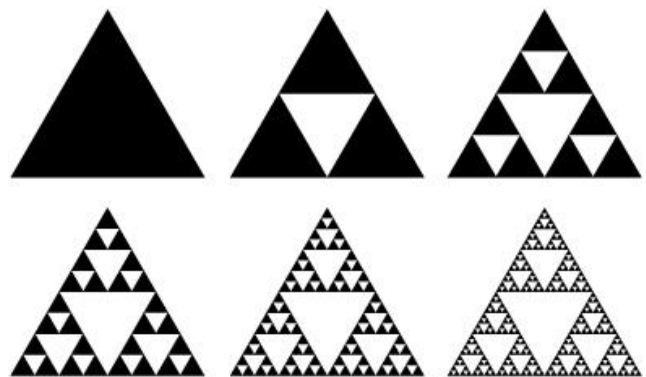
Koch Snowflake:



Hilbert Curve



The Sierpinski gasket, while not exactly linear, has also been used as an antenna.



It is beyond my scope here to do an in-depth discussion of fractal antennas. Next month I will discuss more of how fractals are used as antennas. And there will be some links.

MORE PICS OF BEAR'S FIELD DAY ADVENTURES



Thank you, Gentle Readers, for perusing this newsletter. Feel free to contact me at ad6uy@powerc.net or 575-838-4257 with suggestions or submissions.
Your editor Anneliese Bowman AD6UY