The Newsletter of The Kings County Radio Club

"Perscripto in manubus tabellariorm est"

October 2015 Volume 2, Issue 10

Next Club Meeting:

Tuesday, November 10th, 2015 at 7:30PM

Next Club Activities:

The next KCRC Sponsored VE Session is scheduled for November 29th, 1 PM at The Executive Dining Room of the Methodist Hospital.

Our Annual Year End Holiday Party will be this December!

Further details will be posted on www.KC2RC.com and www.KingsCountyRadioClub.com as they develop.

Contents

Our weekly Nets meet on Sunday at 11 AM on 28.380 (10 meters) and Tuesday on 146.730 PL 88.5 (2 Meters) at 9 PM

KCRC Sponsored Volunteer Exam Session

The Kings County Radio Club will be sponsoring another VE Exam Session! It will be held at the Executive Dining Room of The New York Methodist Hospital on November 29th, 2015 at 1PM. Although walk-in registrants are allowed, it would be best to contact the VE Coordinator John, WK2J, at johnsrealestate@yahoo.com to let him know that you are interested, and to get any details. Remember to bring your photo ID, your $15 in exact change, your number 2 pencils and your wits!

Don't Forget The Amateur Radio Parity Act of 2015!

The Amateur Radio Parity Act of 2015 is still alive and well, but **IT NEEDS YOUR HELP!**

We need you to *politely* contact both your Congressional and Senatorial representatives and impress open them that they need to support this bill.

The ARRL has help with the form your correspondence might take, as well as a database to show how you can contact your particular representatives (don't plead with representatives that are not in your voting district—unless you are a contributors they don't really care what you think).

The ARRL site is: http://www.arrl.org/amateur-radio-parity-act

Be polite, but make your thoughts known!

The Kings County Radio Club is at www.KC2RC.com or www.KingsCountyRadioClub.com

KCRC is an ARRL affiliated club (see: www.ARRL.org)

The Annual Year End Holiday KCRC Party!

Well, it's that time again for planning our Club's Annual Year End Party. Plans will be finalized during our next monthly Club meeting on November 10th, 2015. Club Office Nominations will also be discussed on this November's meeting. SO, if you are so inclined, come by and volunteer to run for one of the many positions available!

LIMARC's Indoor Hamfest

LIMARC
Long Island Mobile Amateur Radio Club

Sunday, October 25th, 2015

The Long Island Mobile Radio Club will be holding their annual Indoor Hamfest on Sunday, October 25th, 2015 at the Levittown Hall, in Hicksville, NY. Doors open at 9:00 AM. Admission is $6 per person. For more information go to www.limarc.org/fest.htm.

Heathkit Springs To Life!

Who says there is no coming back? Surprise! Heathkit seems to have risen from the dead and is planning to offer an AM Radio, the GR-150, in unassembled kit form, for a *paltry* $149.95!

Curiously, you can purchase a simple AM Radio (does anyone actually listen to AM Radio anymore?) fully assembled and tested, with more features, that runs on batteries for around $20?! Apparently there is a big mark up for nostalgia these days.

Lotsa luck Heathkit Mark II—let's see what kind of a living you can make on nostalgia, rather than state of the art design and reasonable prices...

Bennie De Vito KA2MQX/SK

We regret to report that Bernie "Bennie" DeVito, KA2MQX, a club member, has passed away. Our condolences go out to Bennie's entire family.

Minutes of the October 2015 KCRC Meeting,

October 13th, 2015

The monthly meeting was called to order by our Vice President, Mitch N2RGA. Also present at tonight's meeting were President Howard N2GOT, Treasurer Richard KA2KDQ, Howard K2IGJ, Roy AC2GS, Jaime KD2ADE, and Joe AC2AE.

Our successful VE session was discussed— we awarded two Technician's Licenses, and two General Licenses, one examinee previously obtained his Technician's License at a KCRC sponsored VE Session. Thanks to the efforts of our VE Coordinator John WK2J and our dedicated group of VE Examiners Roy AC2GS, and Jay W2CSS.

Treasury Report—Our Treasurer reported that we presently have $2,001.73 in our Club treasury. We have one new Club member, Joe AC2AE.

10 Meter Net—Most weeks we have more than a dozen check-ins. Most check-ins are local, due to 10 Meter's poor propagation lately.

2 Meter Net—Richard KA2KDQ reported that we get anywhere form 10 to 12 check-ins each week. Richard has instituted a new practice where check-ins will either begin with the call "Net Control" or "KA2KDQ", followed by dropping the carrier to insure that people will not transmit simultaneously.

Old Business—Our next KCRC sponsored VE Session is scheduled for November 29th, 2015 at 1 PM in the Executive Board Dining Room of the New York Methodist Hospital.

We are still waiting for a response from Metrocor, regarding our re-registration of our club Repeater, KC2RC.

Our annual Fall Picnic was a great success (pictures are included in this issue of the Newsletter).

So far there has been no response to our club mailing offering new Amateur Radio Operators a discount on their first year's club membership.

There are still some pieces of equipment that Tony WW2W/SK willed us, that will be sold in the next few Hamfests in the Metropolitan area.

Releasing a copy of the Club's Roster to the general membership, by email, was again discussed.

New Business—Our next Year End Holiday Party was discussed. The details will be determined during our next meeting in November. Members are advised to look for any new information on our club website www.kingscountyradioclub.com .

On our next meeting, in November, we will be asking for nominations for election of club officers, planned during our December meeting. Positions for President, Vice President, Secretary, Treasurer, and two Executive Board Members at Large are open for nominations.

A lively discussion was held on the proper treatment of Repeater jammers, and the general consensus, was that ignoring them , although difficult, would be the best way that we can presently deal with them.

At the end of the meeting Howard K2IGJ completed his talk on Shortwave Listening, begun the previous month and our October session was closed at 9:25 PM.

...and now A Message From Our President

Hello friends and fellow members ,

The weather is finally feeling like autumn is officially here now that the leaves are turning colors and the temperatures have gone down to the 40's! It's a great time get into those antenna projects you've been putting off during the summer time.

The HF bands have been in very poor shape the last couple of months or so. I usually like to ragchew on 75 meters late at night which is not as badly affected by the lack of a good solar flux index. The higher bands such as 10, 15 and 17 meters has been considerably quiet. Lets hope for better conditions there soon. I'm sure those band openings are around the corner.

Please remember to participate in our weekly Tuesday night nets at 9pm on 146.730 run by Rich KA2KDQ.
And of course our ten meter nets on 28.380 at 11am run by Juan KC2QNK.

The annual New York City Marathon will be held on Sunday, November 1st . I'm looking forward to being one of many hams who still help out with radio communications. I've been helping out on and off since 1986!

Thanks to our last VE session, we have two new technician class hams and two generals. I'm happy we've got a dedicated team of volunteers who take a few hours out of their day doing their contribution! If you are interested in becoming a volunteer examiner, please contact John WK2J or myself. Our next session will be on Sunday, November 29th.

I want to take a moment to remember a friend and fellow club member Benny Devito KA2MQX/SK . Ben frequently checked into our ten meter nets and was a good friend for many years. I'll miss his melodious voice and his happy go lucky attitude on the local repeaters and HF bands. He was just an all around great guy and friend.

See you guys at the November meeting,

Howard - N2GOT

The 2015 KCRC Fall Picnic

Just a few of our happy club picnickers!

Are you lookin' at me!?

It's all GOOD...

The 2015 KCRC Fall Picnic

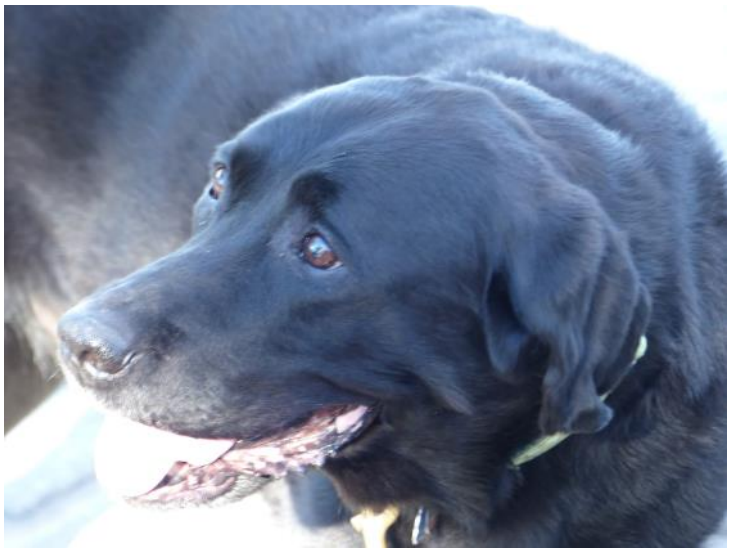
(continued)

"So, that's how I solved Fermat's Last Theorem"

"All I need is to adjust this and all the death ray satellites will be under my control!"

Another Lazy Day in good olde Brooklyn…

Did I show you my "Shack in a Sac"?



The happiest fella at the picnic!

70 Centimeters – Farther Off The Beaten Path

(So, Now What? Part Five)

Okay, ya got thru "*2 Meters - Off The Beaten Path*". Do you think your Editor would dismiss the wild and crazy world of 70 centimeters (420-450MHz.)? Surely you jest!

Hopefully having read the previous part of this continuing series you know the general guidelines and precautions of any exploration on the Amateur Bands, so we can cut most of the *chit chat* for this next trip… to 70 centimeters!

Just as 2 Meters has a generally agreed upon *Band Plan*, so does 70 centimeter band:

Frequency(MHz)	Usage
420.00 - 426.00	ATV repeater or simplex with 421.25 MHz video carrier frequency
426.00 - 432.00	ATV simplex with 427.250-MHz video carrier frequency
432.00 - 432.07	EME (Earth-Moon-Earth) "Moon Bounce"
432.07 - 432.10	Weak-signal CW
432.10	70-cm calling frequency
432.10 - 432.30	Mixed-mode and weak-signal work
432.30 - 432.40	Propagation beacons
432.40 - 433.00	Mixed-mode and weak-signal work
433.00 - 435.00	Auxiliary/repeater links
435.00 - 438.00	Satellite only (internationally)
438.00 - 444.00	ATV repeater input with 439.250-MHz video carrier frequency and repeater links
442.00 - 445.00	Repeater inputs and outputs (local option)
445.00 - 447.00	Shared by auxiliary and control links, repeaters and simplex (local option)
446.00	National simplex frequency
447.00 - 450.00	Repeater inputs and outputs (local option)

(Frequencies in RED are NOT shared simplex channels)

Here is where it gets a little confusing. I guess since 70 centimeters is such a vastly wide band available to us Hams, there are no specific simplex frequencies. The ARRL suggests a National Calling Frequency of 446.00 MHz, but where you go from there if you find someone else to talk to is not carved in stone. Just find a quiet place on the band, not allocated to a Repeater or any other specifically allocated mode and talk away! A reasonable suggestion is to try to stay somewhere in the 445.000 – 447.000MHz portion of the larger 70 cm band.

Most of my advice is the same as it was for 2 Meters – general Good Amateur Practices. Only use the minimum necessary power for your conversations. Make sure that no one is using the frequency before transmitting, be a good neighbor and choose a frequency not too close to one in use nearby, and try not to act like you haven't graduated from Junior High School yet. Being *Young At Heart* is great, being immature can be oafish.

And as always…

REMEMBER TO HAVE FUN!

- The Editor-

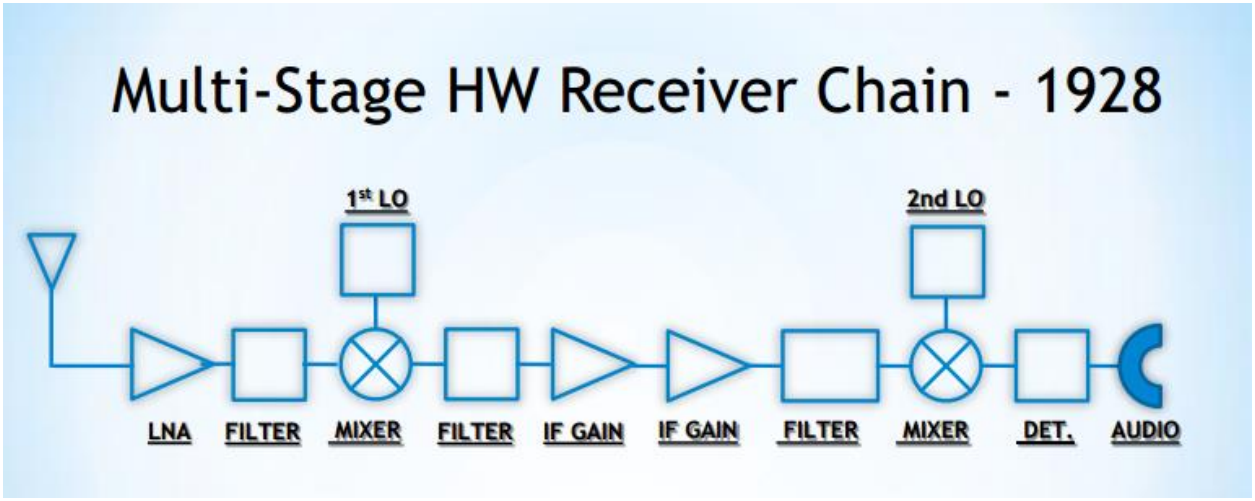
Software Defined Radio

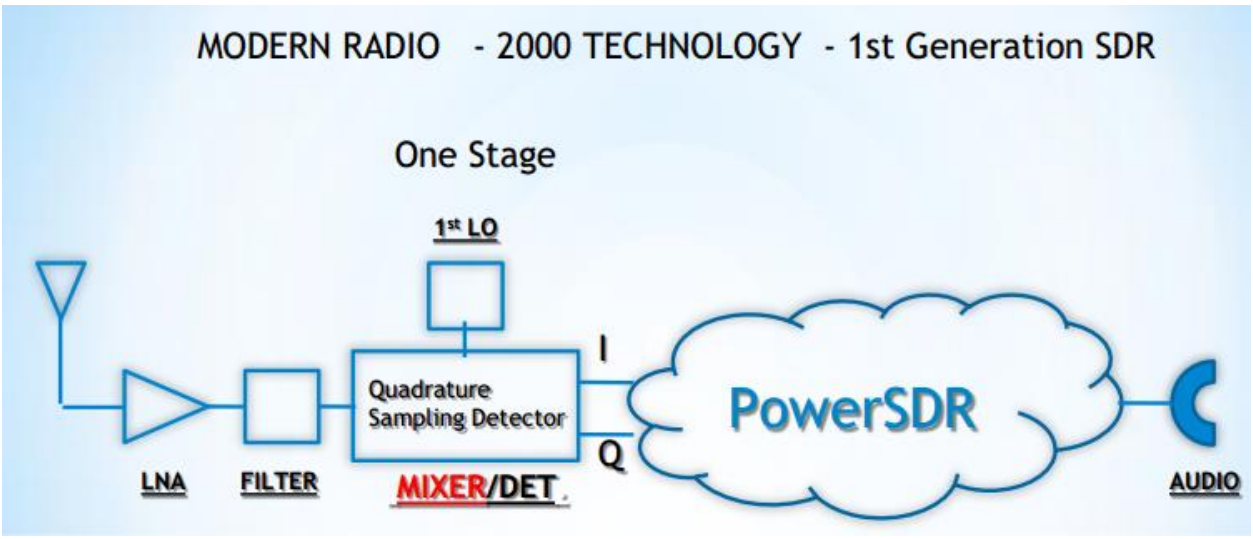
The Next Great Thing Or A Passing Fad?

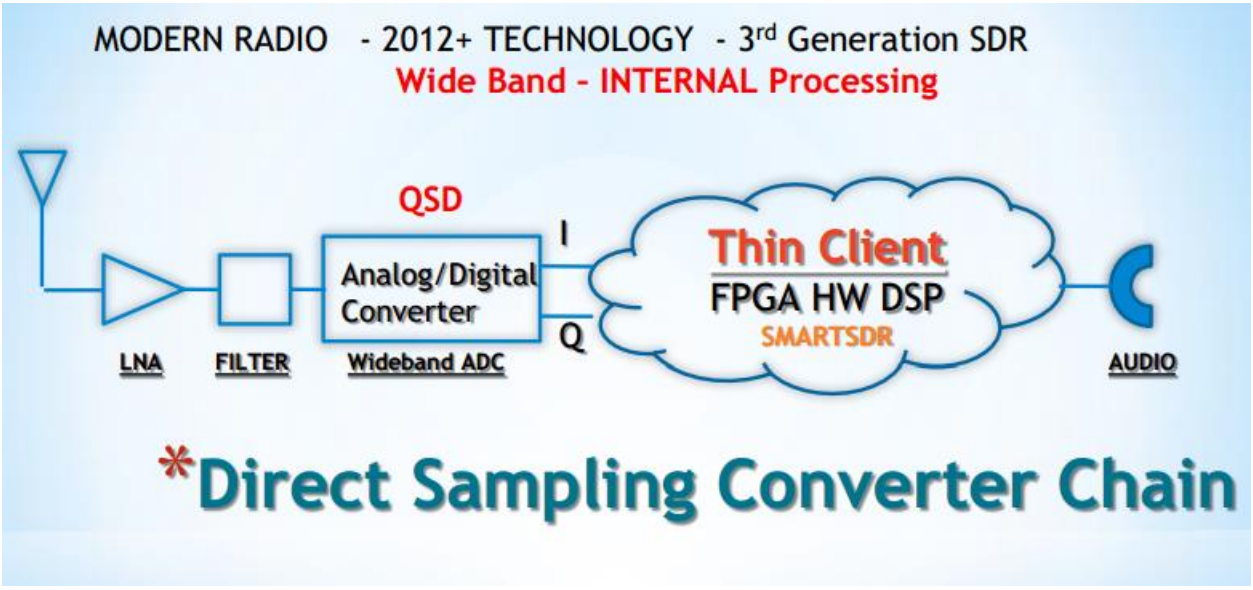
Software Designed Radio (SDR) did not *pop* into existence out of nowhere a few years ago. It started as a concept in the 1980's and got taken up by the military and their deep pockets to help develop it for practical purposes. Moore's law has made this technology possible for us common folk without the Pentagon's budget.

SDR is a communication system whose hardware components have been replaced by software and high performance solid state devices. Modulation, demodulation, equalization compression, decompression, companding, passband filtration, noise reduction are all done in the digital domain. Very much like the pluses and negatives of your personal computer – with the right software, it can do magic, with no software it can be a very expensive door stop!

Most of the *magic under the hood* is located in an SDR's receiver section, and many purely SDR Receivers are available and more are being announced regularly. The underlying radio receiver technology used in most receiver sections has not changed since the 1930's! Look up *Super-Regenerative* and *Super-Heterodyne*. They are used in most radios to this day! Where SDR Receivers innovate, is by taking what used to be a completely *analog* signal and converting it into a digital one – where the latest and greatest silicon IC's can rapidly manipulate it in any way the human mind can imagine.







One of the first SDR's built for the Amateur Radio Operater in mind was the SDR-1000, by Gerald Youngblood, now K5SDR as documented in the pages of QEX in the July/August thru March/April issues of 2002-3. Gerald also *cobbled together* software to do most of *the magic*, an early open source version of

PowerSDR. There was so much demand for this technology that Gerald decided to make a business of it and Flex Radio was born.

The state of the art presently can't do away with all analog circuits. The antenna feedline supplies the receiver's front end with RF that needs to be put through analog RF amplifiers or attenuators as well as bandpass filters. From there, different varieties of SDR technology are implemented to handle the analog signal differently. With *bleeding edge* devices, Direct Digital Sampling (DDS) technology takes the entire spectrum of the RF band received and digitizes it by a high-end analog-to-digital converter (ADC) from there the resulting bits of data are manipulated by powerful algorithms running on heavy duty silicon devices. Sometimes this work is offloaded to the Central Processing Unit (CPU) of our Personal Computers. Recently this job is increasingly going to something called a Field Programmable Gate Array (FPGA) – it's like a Lego "build it yourself CPU" where, via software, you configure its architecture to optimize its ability to carry out the computational tasks you need. Done right, it provides significantly more computing power than any CPU built. If you know anything about computers, a state of the art FPGA will soon be capable of 10 TeraFLOPS (keep in mind that the Cray-2 Supercomputer was the fastest computer until 1990 and it was only able to operate at 2 GigaFLOPS – that's 1/10,000 slower). In addition, Digital Sound Processors (DSP) are also part of the hardware design all operating within the digital domain. Only at the very end is the digital audio signal converted back into analog with a complementary ADC and amplified for your listening pleasure.

Earlier generations of Anan (the 100D) and Flex Radios (1500, 3000, 5000) don't have silicon quite powerful enough to handle the direct bandwidth of the RF antenna feed. These earlier devices use something called *a quadrature detector* that implements a down sampling Intermediate Frequency (IF) prior to being fed to a less powerful *Analog-to-Digital Converter* (ADC).

Transmission requires far less manipulation. Your transmission audio is amplified and converted into digital by an ADC, sent through a DSP to be equalized, compressed, expanded, band passed, and then digitally modulated. The digital results are back converted into analog RF and put through a chain of RF amplification circuits until it leaves your radio through the feedline to your transmission antenna.

The above is the most bleeding edge and you pay for it with more than your blood. Some SDRs use two FPGAs each, which were priced in the $3,000 single unit price when they were first manufactured a few years ago!

At the other end of the price range is an amazing little gadget. Someone found out that the European digital TV converter dongles possessed a chip (the RTL820T and RTL2832U as well as similar chips) capable of much much more (with the proper software). Just "Google RTL Dongle" – they sell for a little over $20 and can receive anywhere from 25MHz to 1.7GHz capable of 3.2MHz continuous bandwidth! Of course for that price you have to supply a computer to manipulate all those bits. Its your computer's job to *massage* the data and demodulate it with the help of your computer's CPU and soundboard. The software is freeware, but requires a degree of tinkering. Is it the same as the high end toys? Sorry, there just ain't no free lunch, but it will certainly give you a good idea what SDR is all about.

The biggest additional cost depends on whether the SDR does its own computations. All SDRs accept an RF antenna input and reduce it down to a manageable series of 1's and 0's. Less expensive SDRs use something called a Quatrature Detector and supply a binary stream of down converted IF data in two channels – one in phase, the other 90 degrees out of phase (otherwise known as quadrature phase). Using a Universal Serial Bus (USB) or the quickly disappearing "Firewire" port to transfer these pairs of bitstreams a "good" computer with the right software can select a portion of the bandwidth, demodulate it, and do a degree of digital signal processing on it so that the experimenter can listen to radio signals very inexpensively. This is the least expensive approach, but may require a degree of jury rigging to get things working and some experimenters find that some of their computers can handle it but other computers can't, with no obvious reason!

TAPR (Tucson Amateur Packet Radio) (www.TAPR.org), is an amateur radio organization that has shifted its focus from packet radio into SDR technology. They have developed circuit boards which handle different stages of an SDR Transceiver and software that could put it through its paces, squeezing the most out of its hardware. They use Direct Down Conversion (DDC) architecture. You can buy it in kit form, or if you would prefer to distance yourself from the hassle of kit building and testing, a company in India, Apache Labs (www.apache-labs.com) have taken TAPR's designs and packed it into a small case in their ANAN Series of transceivers.

ANAN SDR

The TAPR design, available in the Anan 200D Transceiver, as well as the Flex Radio System's 6000 Signature line (which uses Direct Digital Sampling, DDS architecture) uses FPGA's to do all the *heavy lifting* of figuring out what their data streams of bits mean and turns it into the audio signals that we have all been used to hearing from our radios since we were mere SWLs. Flex Radio's less expensive, older models, their 1500 model uses USB and their 3000 model uses Firewire to connect to a reasonably powerful computer to do the heavy data manipulation of their SDRs.

Just as an aside, the possible "philosophical" differences in using Flex 6000 Series vs. Anan/TAPR (in addition to the fact that APR's software is older and thereby more "mature") is similar to the difference between Apple's OS and Linux. The TAPR/Anan software, like Linux lets you get *under the hood* and tweak just about everything. If you know more than the experts with this software you might be able to squeeze a little bit more power *under the*

hood, if you aren't that much of an expert, I assume you could make a mess out of everything. The Flex/ SmartSDR approach is much more like Apple's paternal attitude that they know what's best for you. The kernel for OSX (an outgrowth of Berkley's version of BSD Unix) and Linux are very close, yet Apple has *welded the top down*, and you can't break too much, even if you try! So, if you are an intrepid software tinkerer that thinks he knows much more than the software designers, TAPR/Anan may be your *cup of tea*, otherwise you might be better suited with Flex/SmartSDR where most of the serious settings are hidden from the users. You can't screw up SmartSDR, but neither can you tweak it all, day after day, in search of *the perfect settings*. Whatever *floats your boat!*

It has not been unusual to hear Anan owners tweaking all manner of obscure settings on the air in search of fixing some minor source of nuisance or tweaking some spec that may require a 'scope to have any idea it exists. Flex 6000 owners are either thrilled with their new toy or less than happy that it's software upgrades are taking so long to fashion into a form suitable for the public. It's a different mindset (in my humble opinion).

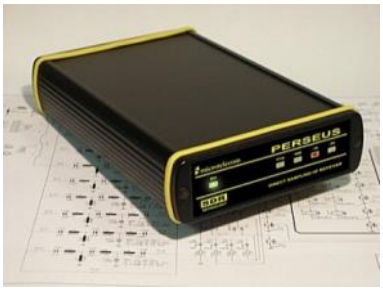
Flex 1500

Flex 6300

There are many varieties of SDR Receivers available. This is a very short list, for a bigger list check out v2.sdr-radio.com/Radios.aspx

RTL Dongles

ELAD SDR



Perseus SDR

FUNCube Dongle

Just as important as the hardware is the *software* (that's why it's called *Software* Defined Radio). The software raises the hardware from an expensive paperweight into the next age of Amateur Radio!

As an example of what's becoming technologically available is a little device coming from Great Britain, the Watson W-DRX1. This little beauty is an SDR receiver that can handle anything from 100KHz to 2GHz without a gap! It has two switchable antenna ports and can display (by freeware SDR software) a spectrum from 96KHz to 1 MHz, depending on how powerful a computer you have attached to its USB port! His device goes for the equivalent of $155 in pounds (£99.95)!

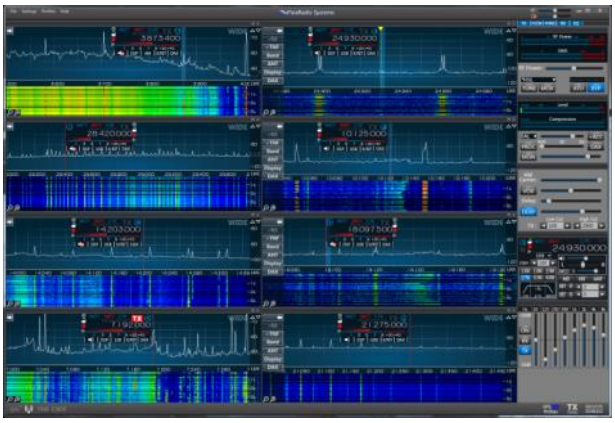
Watson W-SDRX1

Even those conservative guys over in Japan are starting to get on the bandwagon! Icom has recently announced a new HF Transceiver, the IC-7300 Which is reported to have a Direct Conversion Radio Receiver, with an FPGA and a DAC/ADC under the hood, that might be selling for something like $1,200 by early 2016. It's built to look like a legacy radio with a very nice panadapter. Details are sketchy, but I doubt that this will be the last Direct Conversion Radio planned from Japanese manufacturers!

The very recently announced Icom IC-7300 SDR HF Transceiver

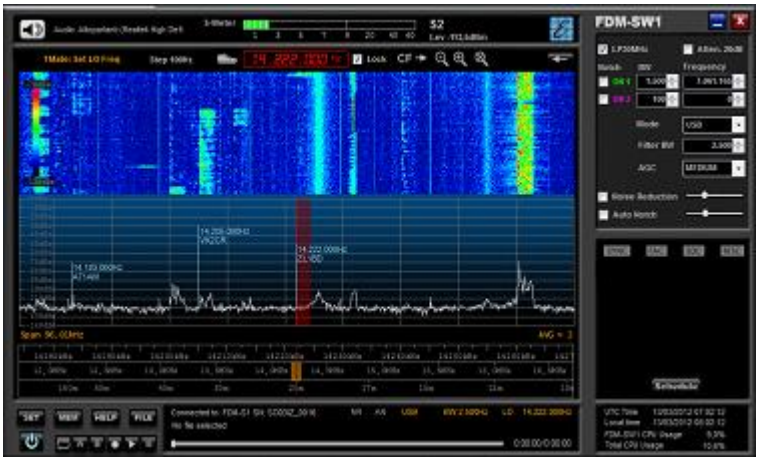
But hardware is useless without decent software! One of the oldest open source programs is PowerSDR. Originally cobbled together by Gerald Youngblood, K5SDR for his Flex Radios, he released the source code and others have tweaked it to run with many other SDRs, but there are others – here's just a sampling:

PowerSDR

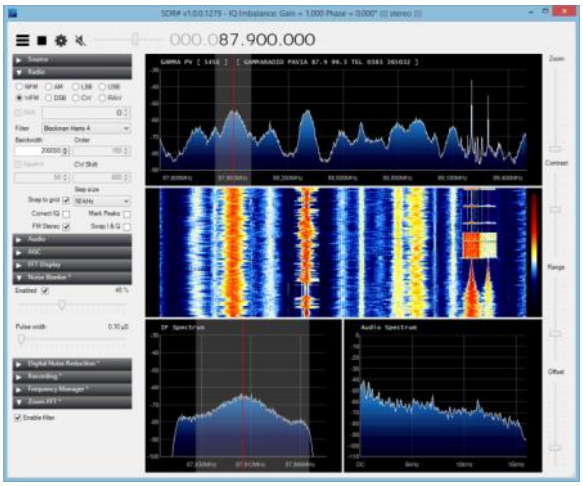


SmartSDR

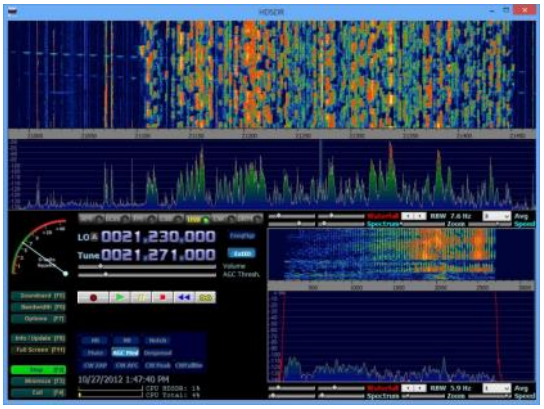
Perseus SDR Software



ELAD SDR Software



SDR#



HDSDR

SDR-Radio

A quick look at all this software shows that many features are equivalent or even identical. Visual Panadapter Screens showing wide bandwidth of the received signal with the ability to "click" directly to an active frequency, "clickable" designing of passband filters that DO NOT have "ringing artifact" that sharp analog filters often possess, "waterfall" screens showing the recent history of spectral signals received, a large display of tuned frequency with multiple methods to change reception frequency and large easily readable S-Meters. Some have more "buttons" than pop-out menus or vice versa. There are no knobs on these devices, but third parties have been trying to come up with "legacy" knobs and dials that will interface with the software – some people love them, others do not…

FlexControl Tmate2

Some hobbyists are trying to jury rig small DJ interfaces to operate as the controls of SDR devices.

Is this technology for everyone? No, probably not – if you MUST have rows and rows of knobs and dials, and mechanical buttons and lit up meters, then you probably have your eye on one of those high end old style rigs from the usual Japanese Manufacturers (but it seems like even they will be modernizing soon, although most of it will be well hidden "under the hood"). I believe that SDR technology is the future, what the final "control surface" for such technology will be, has yet to be determined, but as far as I can see, the "future" is here and it's called SDR.

Sticking with legacy radios…

-The Editor -

Nostalgia – A Two Edged Sword

We have all seen all manner of nostalgia – olde TV and Radio broadcasts, old music, faded old black and white photos showing those great olde days of yore…

Sure, everyone was younger and much more of their lives existed in the future than in the past and everything was relatively new and exciting, and now this is less the case, so it is understandable to have fond memories of what came before…

But you have to understand that you are looking at all this thru *rose colored glasses*. The good stuff is invariably in sharper focus than the bad stuff. Yeah, there was the post World War II optimism and a sense that the U.S. had emerged from it as the World Power, but there was also a lot of hypocrisy and don't forget about Polio!

There is always a place for nostalgic sentimentality in our lives. It is the way that we are wired. But taken to extremes, it gets people completely stuck in the past and lost to any possible future.

I see this often in Ham Radio. The demographics of this hobby are a bit unusual – a small "bump" in adolescents, and a much larger bump in the 50-80 age range (not to mention that over 95% of Hams are guys). This skewed demographic is, no doubt, a large contributing factor in the general topics of conversation on many of the bands. There are many more discussions of Prostates than there used to be on the bands, if you get my point.

Vintage radios can be great fun, but there are some poor souls out there that have taken to clutching to their vintage radios as if that is the only way to go. Some of the old stuff was great – beautifully engineered, built like tanks, relatively easy to repair – a marvel of that age in engineering. But a lot of the olde stuff was, face it, not very good. Whether you needed to invest in a drawer full of crystals, or expected your radio to wander all of the band as it warmed up, they were not great radios then, and they certainly aren't now!

All hobbies have people who maintain its history, and you can see it with maybe 1% of the computer hobbyists out there, but they are in an extreme minority. Most computer hobbyists look much more intensely into the future than into the past, and I hazard to guess, that is how to tell the difference between a hobby that is alive and vital, and one that is sick and waiting to die.

Amateur Radio Operators were at the forefront of the technology in the previous century. Creating new ideas and expanding old ideas in ways never before imagined. We still have some people in this hobby, trying to do the same, but I fear that too many of us are too busy polishing our olde Astatic D104 microphones, to try something new.

The next time you see some new technology, before you pronounce that you're "too old for that nonsense", look into to your *inner "14 year old"*, what would he have made of all these wonders. Remember the glee he would have felt, the recognition of some new *magic* of technology, and how he would have assaulted it until he had mastered it!

This hobby is not for technophobes, still pining for vacuum tubes and cat whisker detectors. It is for the dreamers of what can be done…

Celebrate the past, live in the present and ***dream of the future***!

-Your [Cranky] Editor-

Closing statements (from the Editor):

Another issue, another plea for a little help out there?

Nope, I'm tired of this abject apathy on everybody's part.

Ya said ya wanted a Club Newsletter – I gave you a Club Newsletter.

Have I gotten any articles by ANYONE? Have I gotten a single idea for an article from ANYONE? Have I gotten a single story, photo, "letter to the Editors" from ANYONE.

Nope! None! Nada! Nunca! Zip! Zero! Zilch!

Nothing!

Guys, this is/was YOUR Newsletter. It should have reflected your areas of interest, assuming that anyone had any areas of interest.

At this point I am closing the "spigot". The "not yet published articles", that I have on my hard drive, will fill the next few issues, and then, if this general apathy persists, I will let this Newsletter peacefully die in its crib. It will not die with a cry, but with a whimper…

If I feel the need to publish, I can always write a Weblog that no one wants to read, rather than a Newsletter that no one seems to want to read. At least it will be a 21st Century form of self indulgence rather than a 19th or 20th Century version.

For your ideas, your thoughts, your dreams, your kind words or even your epithets, I can be contacted at TheEditor@KC2RC.com .

- The Weary Editor – [Roy, AC2GS]

The Kings County Radio Club is an Affiliate of the American Radio Relay League