SCOPE

A newsletter by and for the Palomar Amateur Radio Club of San Diego, California.

Nash W6HCD, Almost 97 Years YOUNG! Photo from Dennis N6KI.

To the Boards of PARC and EARS, I want to thank Ham radio in general, and Dave (Wd6DRI), Gene (Wb9COY), John (W9EN), Phil (Ka9Q), and Jim McLaughlin in particular, for their help with the Mt. Carmel High School balloon project. My students were thrilled with both the experience, and with all the work leading up to a successful event. But none of this would have happened without our mentors. The news article should have said more about their support. I certainly do not have the expertise nor the experience to pull this off! I also want to thank Dennis (N6KI) for his years of support of the Mt. Carmel High School Amateur Radio Club.Once again, ham radio shows that it is the best organization around!

Here's a link to the article if you missed it:
http://www.utsandiego.com/news/2012/mar/01/high-school-sttudents-send-balloon-edge-space/?sciquest

John A. Earnest
Mt. Carmel High School

Save the Date

Club Meeting
4 April 2012

Transmitter Hunting

Board Meeting
11 April 2012

Palomar Amateur Radio Club board meeting at 7:30pm at W6GNI QTH.

Save the Date
Late April?

Operating Day at... Fry's Electronics in San Marcos! Come "Shop and Op" with us.

Club Membership

New Members Joining PARC. KJ6TOG, KJ6TOQ, KJ6TOP, KJ6TKS, KJ6TOT, and KJ6TOO. In addition, two past members reinstated their membership.
Of course we welcome all members, new and "old", especially "new" old timers.

Please check your SCOPE label for your renewal date. If you are receiving the SCOPE by Web, please remember your renewal date is now posted on the web. If you are not listed on the web listing, there is an excellent chance that your membership has expired. There is also a small chance that I messed up the computer file - in any case, let me hear from you!! We now take PayPal for renewals. Please - Please renew.

Al
W6GNI

March Issue Fold & Staple Crew
March Issue Fold & Staple Crew
KB6NMK Jo WA5ACE Sonny
KB6YHZ Art & Janet W6GNI Al & Kathy

The WOUXUN 2m/440 handheld radio was given out at the March meeting. The radio has been programmed with simplex and 42 2m repeaters, and 10 440 repeaters in San Diego County. All channels were alpha tagged for easier identification.

WANTED! CHAIRMAN FOR PALOMAR's Field Day.

Site will be in San Marcos at Santar and Rancheros unless you find a better site! Dates are June 22, 23, and 24, 2012

Help provided by Board members and past Field Day chairs.
Chance to learn about placement of transmitters and antennas in limited spaces. See or contact any Board member.

Do you have a mobile installation? Do you want to have a mobile installation, and need some motivation?

We're looking for a few good mobile installations - whether they're completed, on the drawing board, or half-way done and tripping you and your passengers every time you get in and out of the vehicle - to be featured in the Scope. We'd love to show your installation.

Tips, narratives, explanations, techniques, problems encountered and solved (or encountered and evaded) are what we're looking for. Send them in!
scope@palomararc.org

Advertisements are free for members

Have items that need to find a new home? Advertise here! Send your ads to scope@palomararc.org

For Sale

Selling HT-37 and HQ-180 as a pair for $400. They are in perfect working condition and actively used by Brian, W0NW these last 20 years. If interested, I can forward a picture of the radios.

Bernie, N6FN
cell 760-505-6537
n6fn@niftyaccessories.com

For Sale

AMERITRON ALS-600 SOLID STATE NO TUNE FET AMPLIFIER WITH AMERITRON 50 VOLT SWITCHING POWER SUPPLY. NEW, NEVER BEEN OUT OF THE BOX $900.00 FIRM.
ED GENEST
w6abe@arrl.net

For Sale

Hammarlund HQ 129X receiver (vintage 1946) in great working condition (New Filter Caps) and above average appearance. $150. K2RP@ARRL.NET or 760-436 -8109

For Sale

Hello:

My 93 year old neighbor (Richard Krist) has requested my assistance with re-listing his radio gear (as he is going deaf).

For Sale (BEST OFFER)

Cushcraft Ringo Ranger, Model ARX1, Vertical 2M	**$30.00**
YAESU FT-1000D Transceiver	**$2,000.00**
Kenwood TS-950 S, 10-160 M Transceiver	**$2,000.00**
Heathkit Phone Patch, Model HD 15	**$30.00**
Remote Motor driven, 6 Pos Coax SW with Control Box	**$100.00**
YAESU FT 2500 M, with Astro PS 12 A	**$300.00**
Kenwood TR-7330 2 M, with Astro PS7A	**$150.00**
Ten-Tec Titan amp 1kw, 10 to 160 M	**$2,000.00**

Contact: R. F. Krist, W6KTE, (760) 724-2786

Buyers are welcome to contact me with their offers via email or on my cell phone so that I can present them to Richard. I can send photos if that will help. Thanks for your assistance in this matter.

Regards, A good neighbor

Dennis S. Stizza
Home: 760.724.2786
Mobile: 760.717.2214
dstizza@pacbell.net

Call for Volunteers

The 3rd running of The Harding Hustle is only 20 weeks away! Maybe that sounds like a long time, but putting together a race takes a lot of early planning. Of course the biggest part of putting on a successful race is volunteers. So - I'm putting out my first call for volunteers. If you can help - please let me know. If you aren't sure yet - then let me know you are a "maybe". If you have friends or a group whom you can tell about this event, I would greatly appreciate it. The more help the better.

Some duties that I need to fill:

- Ham Radio
- Race Prep (course marking, etc)
- Aid Station workers on race day
- 4x4 drivers for transportation

Remember - volunteers get a short sleeve tech shirt + food for helping. Shift times vary. Please let me know if you are interested/available to help - and/or please help spread the word.

Thanks much!
Jessica DeLine, RD
http://www.hardinghustle.com

Palomar Amateur Radio Club is looking for help to provide for the coffee goods table. The individual(s) would maintain the coffee service items for the Club. Jim W6SST has provided these services for the past few years, and has been very appreciated. Due to changes in his personal schedule he will not be able to continue. We all wish him well in his adventures and look to hear him on the radio. Individuals willing to assist the club with coffee service should contact a Board Member.

Dennis

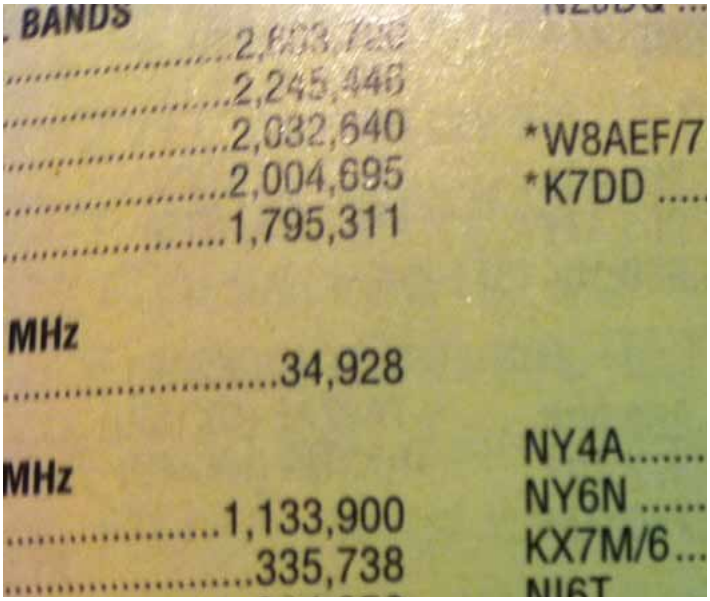
Coming Soon: New ARRL Benefits

We are excited to announce two new ARRL membership benefits that will be introduced in June 2012.

In addition to the print copy of QST, all members will have access to an online, digital edition of QST at no extra cost. You will be able to access QST from anywhere--on nearly any computer, laptop, mobile device, smartphone and tablet (including Apple iPad, iPhone, and devices using the Android operating system).

Also in June, members will gain access to archived issues of QST from December 1915 to the present (previously, only issues through 2007 were available to members). If you are familiar with the current periodicals archive (which serves images of pages), that platform will be expanded to include all of QST from December 1915 through December 2011. A second, new archive will be introduced for issues beginning January 2012, featuring enhanced functionality including full-text search.

Be Prepared!
Members must have a valid ARRL website login to access the current digital edition of QST and archived editions. For a smooth launch of these exciting new benefits, and so that you will be able to quickly access the digital version of QST as soon it becomes available, we are e-mailing you some information that will help you login to the ARRL website prior to launch.



WQ6X FIFTH PLACE USA WPX CW MS HP 2011

"Ham Radio Now" Episode 3

...is on-line at www.HamRadioNow.TV

OK, hopefully many of you are thinking: Ham Radio WHAT is WHERE? And where are Episodes 1 and 2? (They're also at www.HamRadioNow.TV ... you've got some catching up to do)

Here's the deal. As you know, when I launched Amateur Radio/Video News, I started it by selling DVDs. That worked OK, but mailing DVDs is so 20th-Century. Internet delivery is ready to take over, and I'm shifting to that.

I began with the 2011 ARRL/TAPR DCC. Every forum is on-line at www.ARVN.TV.

And you may notice that I have a new web address, ARVN.TV. "ARVN.com" is not available, but "TV" is what we're all about, so that seemed like a good domain to get. My hosting service is working on transitioning the site there, but good old www.ARVideoNews.com will redirect you (and all those links out there).

Oh, yes, the DCC. It's all on-line at www.ARVN.TV. The video is actually hosted on YouTube, in wide-screen, high-definition. And that means you can watch it free. I'm asking for a contribution, as you'll see. So far, contributions have brought in about half of what previous year DVD sales did at this point. So I can't say that's working great, but I have a bigger plan.

And that brings me to:
HamRadioNow.TV

Ham Radio Now is my new video 'podcast.' This will be a weekly, maybe more than weekly some weeks, video talk show with occasional field produced pieces. Kind of like what I was doing in my guest-host slots on Bob Heil's Ham Nation. I had a lot of fun there, but I realized that there was so much I wanted to do that I couldn't squeeze into a guest spot now and then on Ham Nation. And it all comes much closer to my original vision for ARVN - to do something frequent and topical. DVD delivery didn't lend itself to that, but the Internet does.

FREE TO WATCH, BUT NOT FREE TO MAKE

Ham Radio Now videos are also on YouTube, so they're also free to watch. But they are part of my business, my livelihood. They take up a serious chunk of my week, in addition to the expense of equipment, travel, web sites, and people (no employees yet, but I pay all the expenses for Cyndi, Jeff, Cliff and others who have assisted me on the road).

So I'm asking you to help. And here's my goal:

10,000 Hams — $10 a year

And that would be for everything. All the documentaries, seminars and Ham Radio Now programs. If you'd still want a DVD, it would cost more, per DVD.

Yay, Gary gets $100 Grand! First, I don't expect to reach that any time soon, if ever. It's a goal. Second, if I did hit that, I'd get maybe half. The rest would pay for all the stuff it takes to make this work.

So enough email. Time to watch some video. I hope you like it! Let me know.

And I'll see many of you at the Dayton Hamvention in May.

73,
Gary KN4AQ

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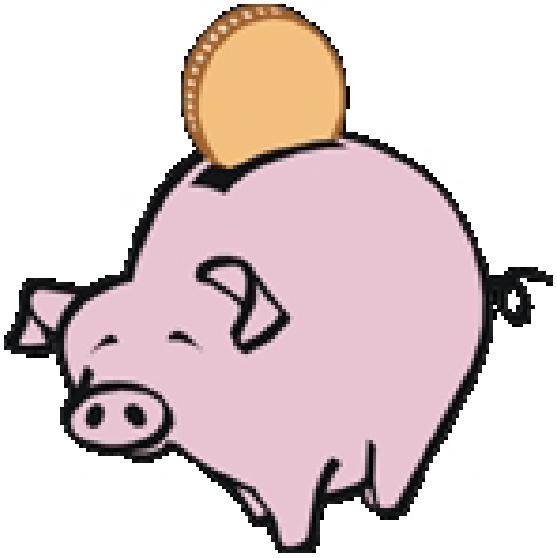


Arvin, the ARVN Mascot

Minutes
Palomar Amateur Radio Club
Board of Directors Meeting

February 8, 2012

The meeting was called to order by President Dennis Baca KD6TUJ at 7:39pm at the home of Ron Pollack K2RP. In attendance were:

President	Dennis Baca KD6TUJ
Vice President	Ron Pollack K2RP
Treasurer	Dave Ochs KI6LKP
Secretary	Paul Williamson, KB5MU
Director #2	Eric Hutchins K7ELH
Membership Chairman	Al Donlevy W6GNI
Repeater Technical Chairman	Conrad Lara, KG6JEI

Treasurer's Report
KI6LKP distributed copies of the Treasurer's Report. The entry for "Bank Charge" is the Paypal fee for dues received via Paypal. The "Rental" income is from the Convair/220 Club. Motion by K2RP to approve the Treasurer's Report as published. Seconded by KG6JEI. Motion passed unanimously. KG6JEI noted that a CD is scheduled to mature on the date of the next Board meeting.

Secretary's Report
KB5MU distributed copies of the minutes of the January board meeting, previously sent by email. Motion by K7ELH to approve the board meeting minutes as published. Seconded by W6GNI. Motion passed unanimously.

Upcoming General Meetings
K2RP reported the March meeting is tentatively scheduled to be on Logbook of the World, and that Joe N6SZO will present on hidden transmitter hunting in April.

Membership
W6GNI reported that the membership is 268. Postage rates are up a little, and the cost of newsletters that can't be delivered as addressed is way up. Because of changes in USPS procedures, it now takes a minimum of 45 minutes to "drop off" the Scope at the Post Office.

Repeater Technical Report
KG6JEI reported that the failure of the 147.130 MHz repeater immediately after the last work party visit was due to a ground line left unconnected. Art McBride KC6UQH has a different squelch board for the 147.075 MHz repeater and will swap it in soon. The cavities for the 6m repeater are in KD6TUJ's garage.

Historical Goodies
KG6JEI reported that he has scanned some frequency coordination and other historical documents received from Stan Rohrer W9FQN.

SANDARC
KD6TUJ reported on the recent meeting of the San Diego Amateur Radio Council. The Lakeside ARC requested $1000 for equipment to loan to their local fire department. This request might be on hold pending a potential grant. SANDARC is only supposed to spend excess funds from the present year (and there has been no income this year, other than the committed funds for SANDARC-VEC).
SANDARC is asking clubs whether they want to support the San Diego County Fair booth this year. Do we? Some discussion followed.

Operating Day
KD6TUJ reported that Fry's corporate headquarters has approved our request to hold Operating Day in the parking lot at the San Marcos store. We still need approval from the local manager. Tom Martin KG6RCW is interested in cooking, and Robert Todd KJ6RET is interested in bringing his solar trailer. The

PAPA system hasn't replied yet.

Field Day
Field Day is coming. We don't have a chairman or a site yet. KD6TUJ stated that somebody needs to ask Lusardi if we can use the San Marcos site again. K7ELH suggested two other possible sites. K2RP asked for Scope article soliciting Field Day volunteers, including a chairman.

Equipment Cabinet for Repeater Site
K2RP asked if we need an equipment cabinet on the repeater site. KG6JEI said no.

Help with Antennas
K2RP mentioned a new ham in ShadowRidge asking for help with antennas. KI6LKP said that Paul Dorey WN6K is already helping him.

Next Board Meeting Location
It was agreed that the next Board meeting would be held at the home of K2RP at 7:30pm on March 14, 2012.

Adjournment
The meeting was adjourned at 8:43 pm.

Respectfully submitted,
Paul Williamson KB5MU
Secretary

OffroadHam Yahoo Group

We wanted to make you aware that there is a new Yahoo Group for those who enjoy Offroad & HAM Radio. It is called OffroadHam and you can join for Free at www.offroadham.com and also join us for our HF Net on 40 meters / 7 MHz this Friday at 0100 UTC/GMT.

This Group is dedicated to those who enjoy Offroad touring and/or HAM Radio communication. Whether you travel via Jeep, Dirtbike, mountain bike, ATV or other Offroad vehicles; whether you like gravel roads, trails, mud or rock-crawling; whether you like scenery or challenges; whether you communicate with a HAM Radio from a base station or a mobile rig, this group is for you. We welcome singles, families, and people from all walks of life. Come join us and Enjoy the Journey!

73s

Ron, K4ORV

ARRL Seeks Comments on Proposed 9 cm Band Plan

03/06/2012
A few months ago, the ARRL UHF/Microwave Band Plan Committee asked the Amateur Radio community about current, planned and projected uses of the amateur bands between 902 MHz and 3.5 GHz. The response was beyond our expectations, with hundreds of comments and suggestions received. Thanks to all of you who took the time to share information with us.

After reading the feedback, the committee began working on the band plans; the first draft plan ready for review is for the 9 cm band (3300-3500 MHz). Please take a moment to look over the accompanying draft (see below) and let the committee know if you have any major concerns. Draft plans for the remaining bands under study will be released for comment as they become available over the next few months.

As a reminder, the purpose of these band plans is to share information about how the amateur bands are being used and to suggest compatible frequency ranges for various types of application. We recognize that local conditions or needs may necessitate deviations from a band plan, and regional frequency coordinating bodies may recommend alternatives for use in their respective regions.

Please submit your comments via e-mail by April 9, 2012.

Thank you once again for helping us complete this important project.

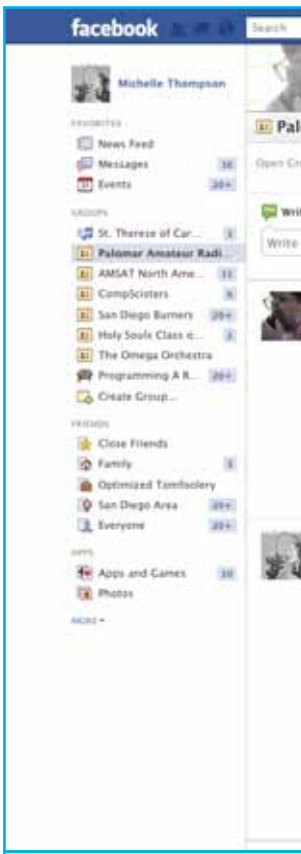
73,

Rick Roderick K5UR, Chair

ARRL Microwave Band Plan Committee

MARCH MEMBERSHIP MEETING PHOTOGRAPH BY DON WD6FWE

DENNIS KD6TUJ, PRESIDENT OF PALOMAR AMATEUR RADIO CLUB, PRESIDES OVER THE MARCH MEMBERSHIP MEETING. PHOTOGRAPH BY DON WD6FWE



Palomar Amateur Ra
Facebook. If you're c
our group at

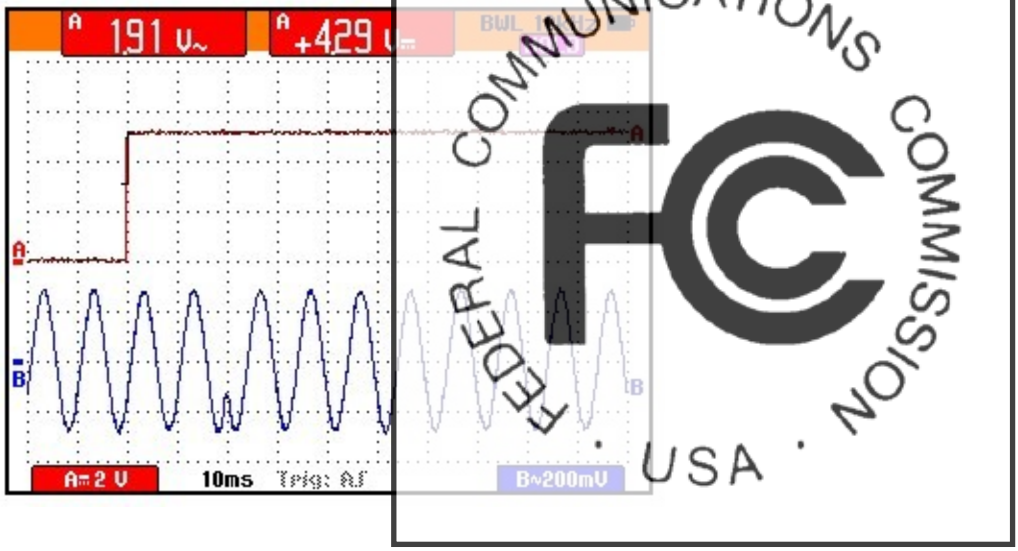
https://www.faceboo

dio Club has a page on
on Facebook, consider joining

ok.comgroups/194674987710/

FCC Comment Period To Close Soon

On April 30 the FCC comment period will close for proposed regulations restricting the use of CTCSS (PL) tones 103.5Hz, 107.2Hz, 110.9Hz, and 114.8Hz at power levels above 5 watts on Sundays from 0800 to 1200 local time within 1 mile of a church. The proposed regulations stem from an investigation by Official Observers into complaints lodged by church choir directors nationwide that Ham radio CTCSS audible tone harmonics were interfering with some choir voices.



Back to Basics

by Howard KY6LA

Let's go back to basics for just a moment and understand where and why a roofing filter is needed and why a roofing filter might actually be detrimental under some conditions.

The purpose of a receiver is to receive a signal. (Basic enough?) Signals vary in strength. Your receiver can receive signals normally over a wide range of input power.

At one end is the noise floor.

Generally speaking you can't receive a signal whose power is less than the noise power in the same bandwidth. (No, let's not jump into a discussion of integration time and energy in coherent vs. non-coherent signals -- save that for another time.) At the other end is the point where the receiver starts to become non-linear, i.e. where the signal coming out is no longer an analog of the signal coming in. This is the compression point. At this point the receiver starts to generate a bunch of unwanted signals from the desired signals (intermodulation distortion or IMD). The range between these two points is the dynamic range of the receiver. (Yes, this is a simplistic description but please bear with me. We can get into the nuances some other time.)

Now here is an important point: each stage in the receiver has its own dynamic range and its own contribution to nonlinearity and IMD. The dynamic range of the receiver is the combination of all the dynamic ranges of all the stages. We can improve things by making the receiver have fewer stages and/or making sure that the signal doesn't pass through a stage to contribute to the problem. (Keep this in mind, it will become an important point later on.)

If there was only one signal to receive, we would be done but in HF and especially in ham radio, there are a lot of other signals besides the one we want to receive. Those signals are entering the receiver along with the desired signal. The combination of the desired and all the undesired signals passing through the receiver contribute to the RF power being amplified by the stages of the receiver. The trick is to remove as much of the undesired signals before they have a chance to saturate a stage causing compression and/or additional IMD.

Stages of the Radio

1. Antenna

The first place we can do this is at the antenna. Resonant antennas do a good job of receiving RF power at desired frequencies. Signals at frequencies outside the operating frequency are attenuated so their effect on the total RF power reaching the receiver is reduced.

2. Preselector

The next place we can attenuate the undesired frequencies is the preselector preceding the RF-amp and/or first mixer. The goal is to eliminate, as much as possible, the undesired signals before they reach the next active (amplifying) stage. The only problem is, if the undesired signal is very close to the desired signal in frequency, neither the antenna nor the preselector will be able to filter it out.

The undesired signal will then have to pass through the following stages of the receiver. We have no choice.

3. Mixer

The next place to get rid of undesired signals is in a filter immediately following the first mixer.

4. IF Stages

If we have a single-conversion receiver, we call this the IF filter. It is the only narrow bandpass filter we have. It gets rid of everything except a narrow band of frequencies, those that we want to receive. If we have a multiple-conversion receiver (one with multiple IF frequencies) then this filter has come to be known as a "Roofing Filter".

They call it that because the intention is not to use this filter to provide the final selectivity of the receiver but rather just to get rid of unwanted signals near the desired signal, that is, it shields or "roofs" the subsequent stages from most or all of the unwanted RF power. The final selectivity will be provided in a subsequent IF stage, usually at a lower frequency where selectivity is easier to come by.

If you have a "traditional" receiver, i.e. one made within the last 20 years designed to end of life 20th century standards like the FT-5000 or so, it probably has at least two (double conversion) and maybe three (triple conversion) IF strips. These receivers often provide general coverage and have a first IF in the low VHF (up around 70MHz) in order to eliminate images. The problem

with this high IF is that it is really difficult to make a very narrow filter. Getting a filter that is only 500 Hz wide at this frequency is very, very difficult. Most get by with a first IF "roofing filter" (Sometimes called a Bandpass Filter) of about 20KHz. That means that if a strong undesired signal is within 20KHz of the desired signal, it makes it through the first IF and must be dealt with in the subsequent stages. This is why it was so difficult in the past to get receivers that had good close-in (less than 20KHz) specs, e.g. blocking dynamic range (BDR), intermodulation by the undesired signal (IMD DR3), etc. And given that, in a contest, the undesired signals may only be a few hundred Hz away, these filters do nothing to make things better. They may as well not be there.

5. Retro-Design IF

So to deal with this some people decided to go back to the original receiver approach that was used many years ago, i.e. use the lowest first IF that will get you adequate image rejection but where you can get really narrow filters. I believe that it was Ten-Tec and Elecraft that "pioneered" this retro-design. As a result, their receivers got rid of all that undesired RF power early on in the receive chain and they performed better. All they gave up was general-coverage. For most hams that didn't matter and it was a general win. You have only to look at the performance of these receivers to be convinced. The FT-5000 is a uses the Retro Approach (9MHz) on VFO-A receiver and the "Modern 20th Century" Approach (40MHz) in VFO-B for General Coverage… basically a compromise with multiple IF's.

6. DSP

But now most good receivers have DSP. DSP has some real advantages. It is possible to build ideal filters, amplifiers, attenuators, modulators, and demodulators mathematically. Frankly, they perform much better than anything that can be constructed out of analog components. The only problem is, given the state-of-the-art in analog-to-digital converters (ADCs) and processors, these functions must be performed at a relatively low frequency, i.e. tens of KHz or so if you want dynamic ranges in excess of 100dB. (albeit ADC's are getting up into the 3GHz range) That means that we must convert again to a second or third, low IF so that the DSP can process the signal. The DSP then does the filtering functions and gives us the final filter shape with narrow bandwidths and very steep skirts.

Anyway, it turns out that several of the other "SDR" radios, e.g. the Elecraft K3, are really pretty standard dual-conversion superhet receivers, albeit very well designed. Yes, they have narrow roofing filters in the first IF but once your undesired signal is inside the passband of your roofing filter, it must get through that second mixer and the second IF amp to get to the ADC where it can be eliminated in the DSP. These additional components and stages degrade the receiver performance. Because they introduce all sorts LO Phase Noise and IMD…..

7. Design Limits of Traditional Filters

Their approach is to use narrower and narrower roofing filters to get rid of more and more undesired signal. If you want to spec your receiver at 2KHz spacing, make sure you have a roofing

continued on page 12

continued from page 11

filter at 1.9KHz spacing to get rid of that signal 2KHz away before it reaches the 2nd mixer. This works, after a fashion, but eventually you reach a point of diminishing returns and that is -- analog filters aren't perfect.

As you have probably experienced using very narrow analog filters on CW, you know that, as they get narrower they perform more poorly. They have increased loss, ringing, increased group delay at the edges of the passband, etc. Frankly, they muck up the signal. There is a point where they stop helping and hurt. In most cases you are better off using a wider roofing filter and letting the DSP be the sole provider of selectivity. This works because most of the time you don't need to get rid of a -20dBm undesired signal that is 200Hz away from a -110dBm desired signal. You can let the undesired signal(s) come through the first IF "roofing filter" to be dealt with by the DSP where you won't have the problem introduced by the narrow analog roofing filter. (This is why most people are throwing their money away when they fill their
K3 or Orion II up with many expensive roofing filters.)

8. Why SDR's like Flex are Better.

Now we come down to the Flex radios and why they are different and why they don't really need roofing filters.

First off, the only reason you need a non-zero first IF frequency is for image rejection. If you don't care about image rejection or if you can get image rejection some other way, you can use an IF of zero Hz. (By Now almost everyone has probably heard a good direct-conversion receiver and marveled at the clarity of the signal relative to a superhet. Just ask Larry N6NC about his SDRIQ receiver if you want to hear a really fabulous receiver)

Back before we had good, cheap crystal filters, people made SSB transmitters and receivers using the "phasing" method. This method used two separate RF and baseband (zero Hz) IF channels that are 90-degrees out of phase. By combining the signals from the two channels properly you could cancel out either the upper or lower sideband, the unwanted sideband being the image. These were the first I/Q radios (I = in-phase, Q= quadrature/90-degree phase). The difficult part of these radios that made them tricky to align and perform only moderately was coming up with the all-pass filters that introduced the 90-degree phase shift for the low IF. With modern DSP this is a piece of cake as it is now very easy to do this with great accuracy.

So that is basically how the Flex radio works:

1. RF from the antenna is split into two mixers Quadrature Switching Detector (QSD) fed from
2. a Local Oscillator (LO) that has two outputs in quadrature, converted to baseband, and
3. fed into two ADCs which then comprise the digital I and Q channels for processing in the DSP.

This gets rid of a LOT of extra hardware. If the hardware isn't there it cannot contribute to IMD which really improves the performance over older style radios filled with all those extra noise producing stages.

And the QSD, because it is basically just several on/off switches, is amazingly robust in the presence of very high-level signals. We don't need to worry about linearity because it isn't linear to begin with!

So now we have only a few components between the RF signal and the DSP, i.e.:

1. the input bandpass filter;
2. the RF [pre]amp;
3. the QSD;
4. the first IF amp;
5. the anti-aliasing filter;
6. the ADC.

This is almost the simplest RF/IF section you can build. There is very little there to contribute to reduced dynamic range and increased IMD because, well, there is very little there. Only receivers that dispense with the first mixer and connect the ADC directly to the bandpass filter are simpler but their need to do analog-to-digital conversion at RF frequencies limits their dynamic range as well. (Yes, I know we can narrow the bandpass filter, do subrate sampling, and then decimation to improve the dynamic range but I don't want to get into that here.)…BTW… there are now several newer ADC chips now that will do this up to 1GHz in the $50 price range…

Flex Has Filters

And I promised I would explain why I say that the Flex radios have a roofing filter. As you recall, I said that the roofing filter follows the first mixer to get rid of RF power that is outside the spectrum of interest. Turns out the Flex radios have this but they call it by a different name -- anti-aliasing filter. The anti-aliasing filter is there to reduce the power above the Nyquist frequency, i.e. half the sampling rate. Power above the Nyquist frequency is folded back into the passband. It is another sort of image. So the filter is there following the QSD.

It is in the same location as a roofing filter and even performs many of the same functions. The only thing is, you can't change it. I suppose that an I/Q radio using a QSD could have anti-aliasing filters that track the sample rate or even cut off well below the Nyquist frequency in order to get rid of even more crud before it reaches the ADCs, just like a roofing filter.

So, when you get right down to it, the receiver design in the Flex family of radios should be able to outperform other receivers when the undesired signal is inside the passband of the roofing filter. This is why Flex says that they don't care what spacing anyone uses between the desired and undesired signal for test purposes. The performance of the receiver is the same for all spacing's. The FLEX has NO RINGING, DISTORTION or SIGNAL DEGRATION on CW down to 1 Hz Filter Bandwidth …The other guys such as K3 and the FT5000 need to make sure that the "undesired" test signal is filtered out by the roofing filter in order to make their specs look as good as possible. And it is true that, if you can ensure that the undesired signal DOES fall outside the roofing filter, the other approach does work really well. But try a 250Hz interference spacing on a 300Hz Filter on you FT5000. It will get through unattenuated while the Flex Software will just dial down the software filter to 249Hz and completely block it.

After all, the K3, the Orion II, and the megabuck radios from Yaecomwood sport really good receivers. But, they are all dealing with issues from yesteryear that do not even arise in modern SDR receivers.

They are just not anywhere as good as the Flex in my not-so-humble opinion.

Did you know there are a lot of ham radio operators on Twitter? Above is a sample of some of the recent chatter about ham radio on Twitter.

Our family recently discovered MakerPlace, a complete metal, wood and electronic shop, classroom and work area.

They have a large number of expensive tools, many computer controlled, available for use to the membership. This is a subscription shop, with memberships available for the day, the week, the month, or the year.

www. makerplace.com

Transmitter hunting

From Wikipedia, the free encyclopedia

Transmitter hunting (also known as T-hunting, fox hunting, bunny hunting, and bunny chasing), is an activity wherein participants use radio direction finding techniques to locate one or more radio transmitters hidden within a designated search area. This activity is most popular among amateur radio enthusiasts, and one organized sport variation is known as amateur radio direction finding.

Transmitter hunting is pursued in several different popular formats. Many transmitter hunts are organized by local radio clubs, and may be conducted in conjunction with other events, such as a radio enthusiast convention or club meeting. Before each hunt, participants are informed of the frequency or frequencies on which the transmitters will be operating, and a set of boundaries that define a search area in which the transmitters will be located. Transmitter hunters use radio direction finding techniques to determine the likely direction and distance to the hidden transmitter from several different locations, and then triangulate the probable location of the transmitter. Some hunts may include limits on the amount of time allowed to find a transmitter. Although many transmitter hunts are conducted just for the fun of the activity, some more competitive hunts will recognize winners in publications and offer awards, such as medals or trophies.

Mobile transmitter hunts are organized events where participants travel exclusively or primarily in motor vehicles. Most mobile transmitter hunts use VHF transmitters and receivers. Some participants use radio direction finding equipment and antennas mounted on a vehicle, whereas others use antennas that are temporarily deployed in an open window or an opening in the vehicle roof that can be easily rotated by hand while the vehicle is in motion. Other participants employ handheld antennas and radios that can only be used when the vehicle is stationary. Some mobile transmitter hunts require participants to leave their vehicles and proceed on foot to reach the actual location of the radio transmitter. The winner of a mobile transmitter hunt can be either the first vehicle to arrive at the hidden transmitter, or the vehicle that travels the shortest overall distance to locate the hidden transmitter. Mobile transmitter hunts are more popular in North America than other parts of the world.

A regulated sport form of transmitter hunting by runners on foot is called Amateur Radio Direction Finding, known worldwide by its acronym, ARDF. It is an amateur sport that combines the skills of orienteering and radio direction finding. ARDF is a timed race in which individual competitors use a topographic map and a magnetic compass to navigate through diverse, wooded terrain while searching for hidden radio transmitters. ARDF is the most popular form of transmitter hunting outside North America.

Some transmitter hunts feature a "mail-in" competition, in which teams in fixed locations work together to locate hidden transmitters, then secretly give the coordinates to the organizers without actually traveling to the transmitter location. The team which provides the closest coordinates wins, thus a team which believes that the transmitter is in the northwest parking lot at 2nd and Elm (if it actually is there) will beat a team which says that the location is 2nd and Elm. This type of hunt enables participation by contestants who are unable to travel, such as shut-ins, school groups, etc., and requires a greater level of skill and coordination.

Equipment

Directional antennas are popular choices for transmitter hunting. A directional antenna is more sensitive to received signals in some directions than others. When a directional antenna is rotated, a received signal will either increase or decrease in signal strength, information from which a skilled hunter can determine the likely direction to the transmitter. The most popular designs for mobile transmitter hunts are quad antennas with three to five elements. Special design considerations include adequate strength to withstand the wind at highway vehicle speeds and ease of repair after collisions with overhead tree branches. In mobile transmitter hunts, directional antennas are often turned by hand while the vehicle is in motion.

Some radio direction finding equipment popular with mobile transmitter hunters operates on the time difference of arrival principal. Two identical antennas are mounted a precise distance apart from one another. Specialty electronics compare the phase of the signal received on each antenna and determine whether the signal is coming from a direction closer to one antenna or the other. This information is commonly displayed with LEDs on a display. These devices are popular for mobile transmitter hunts where participants have to exit their vehicles and proceed to the transmitter location on foot.

Come to the April membership meeting to learn more about transmitter hunting.

OPERATING DAY

Sunday, March 18, 2012

FRY'S ELECTRONICS
150 South Bent Street
[illegible]RCOS, CALIFORNIA 92069
[illegible] 5:30 PM
[illegible]R RADIO CLUB

Event was postponed due to weather! It is in the process of being rescheduled. Stay Tuned!

Palomar Amateur Radio Club will be conducting an Operating Day at Fry's Electronics at the North end of the parking lot nearest Highway 78 on some date in the future between 9:30 AM and 5:30 PM. Invited to join us in our event are CERT, San Marcos ARC, PAPA D-Star, possible participation by the Red Cross, and Skywarn. This will be a fun day demonstrating Amateur Radio to the public. With this location, there should be lots of opportunity. Wonder who we will contact this time! Also wonder what will Ron bring from the vintage warehouse. Come on out and join us for some radio fun. Thank Sean Archer, Manager, for approving the request locally and Glen Johnson WA6GHW in electronic componets (computer) for speaking in our benefit. When this goes better than planned, we might be able to have a FRY'S Operating Day in November at all the Fry's with local clubs participating.

Dennis KD6TUJ

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Featured Program:

At 7:30pm on the 4th of April 2012, the program will be about Transmitter Hunting.

Arrive at 7:00pm to socialize. We look forward to seeing you at the Carlsbad Safety Center, 2560 Orion Way, Carlsbad, CA.