



Palomar Amateur Radio Club

December 2017

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## It Appears By Spears



Now that we have all eaten our fill of turkey, it is time to get ready for the holiday treats. As a child the only cooking I remember my dad doing was the BBQ and making fudge at Christmas time. As I make it now it brings back lots of holiday memories

In his months issue we have a list of the

individuals who have offered to serve the club by running for office. Page 6 contains statements from two candidates who chose to provide them.

There is also an article on local RFI interference which is an ever growing issue within the ham community.

I am always looking for articles of interest for

the Scope. If you get a new toy for Christmas feel free to write a review for the us. I am sure all our fellow club members would enjoy it.

Wishing you and your family a very happy holidays.

73 de KM6CXW

Keith Spears

Editor

*"I hope to see all of you at the holiday party on December 6,"*

## Presidents Corner

Greetings and Happy Holidays!

As we all know, this season is always quite busy with family, friends, and loved ones. It is my hope that you still find time to get on the air, and

your stockings are full of radio gear.

I hope to see all of you at the holiday party on December 6, bring a sweet treat or dessert to share, and some radio gear to show-and-tell if you

want. There's no formal program this month, but we will get our business taken care of and then socialize and share stories!

Thanks and 73 de K6JPE!

## December 9th 2017 9 am – 4 pm Fundraiser for the Encinitas Lions Club Cardiff Elementary School

1888 Montgomery Ave, Cardiff-by-the-Sea, CA 92007

Need a pick up before the event – contact K2RP @ 760-436-8109

## FREE Electronics Accepted:

• Servers• Server Racks• Plotters• UninterruptiblePower Supplies• Car Batteries• Cords & Wires• Printer Cartridges• Laptops• Cell Phones• Computers• Plasmas• Televisions• LCD monitors• Eye Glasses• Printers• Notebooks• Stereo Systems• Computer Accessories• Speakers• Telephones• DVD Players• Hearing Aids

Shredding Accepted (\$5 per Box) to be shredded on site.



## Board Members and Committee Chairs

### Board of Directors

President	Joe Peterson, K6JPE	(619) 630-8283
Vice President	Michael Gottlieb, KB6D	(858) 212-4646 Text Welcome
Treasurer	Tom Ellett, W0NI	(858) 546-1148
Secretary	Sandy Pratt, KK6EED	(858) 748-2611
Director 1	Kevin Walsh, KK6FRK	(858) 722-5069 (Text Welcome)
Director 2	John Kuivinen, WB6IQS	(760) 727-3876
Membership Chair	Glen Christensen, AI6RR	(858) 735-1144
Repeater Technical Chair	Mark Raptis, KF6WTN	
Scope Editor	Keith Spears, KM6CXW	(858) 472-8442 Text Welcome

### Not on Board

Repeater Site Chair	Mark Raptis, KF6WTN	(Acting)
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### Committee Chairs

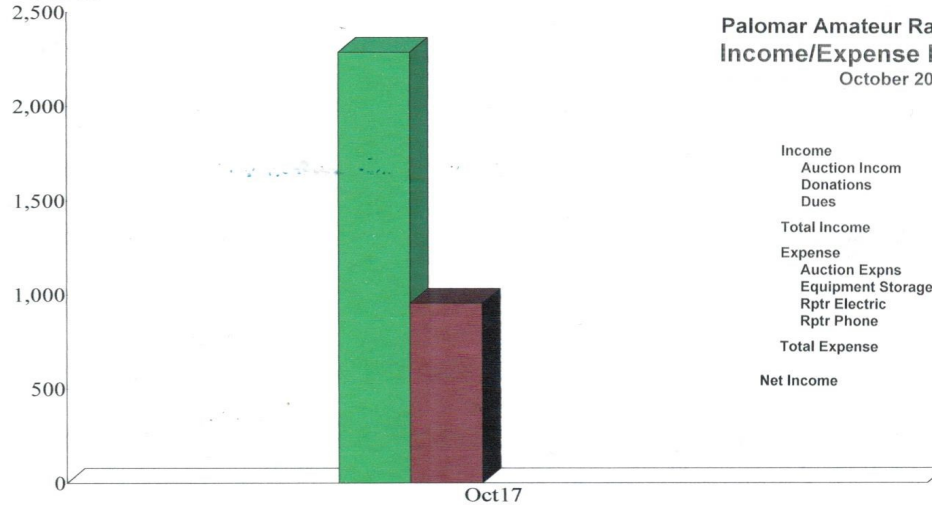
Boy Scouts	Michael Palugod	mpalugod@yahoo.com
Digital ATV	Michelle Thompson, W5NYV	mountain.michelle@gmail.com
Echo Link	Bernie Lafreniere N6FN	N6FN@niftyaccessories.com
HF Remote	HF Remote SIG	hfremote@palomararc.org
Mesh Networking	Michelle Thompson, W5NYV	mountain.michelle@gmail.com
Operating Day	Tom Martin K6RCW	k6rcw@amsat.org
SANDARC Representative	John Walker AC7GK	ac7gkjohn@gmail.com
SANDARC Representative	Paul Williamson KB5MU	kb5mu@amsat.org
SD Microwave Group Liaison	Kerry Banke N6IZW	kbanke@sbcglobal.net

**For Sale:** Icom-746pro with an MFJ versatuner and dummy load for sale for \$700 or best offer...see attached photos. Interested parties can contact me at 858-205-5751 (Del Mar).

Joe Smith, K6BMX

Palomar Amateur Radio Club, Inc.  
Income/Expense - October 2017

\$ in 1's

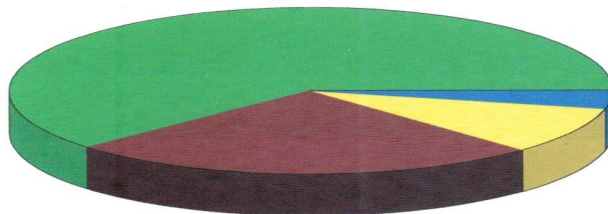


Palomar Amateur Radio Club, Inc.  
Income/Expense by Category  
October 2017

	Oct 17
Income	
Auction Income	1,702.00
Donations	130.57
Dues	455.00
<b>Total Income</b>	<b>2,287.57</b>
Expense	
Auction Expns	589.50
Equipment Storage	245.00
Rptr Electric	86.68
Rptr Phone	33.05
<b>Total Expense</b>	<b>954.23</b>
<b>Net Income</b>	<b>1,333.34</b>

Expense Summary  
October 2017

Auction Expns	\$589.50
Equipment Storage	245.00
Rptr Electric	86.68
Rptr Phone	33.05
<b>Total</b>	<b>\$954.23</b>



By Account

## December Program—Holiday Party and Election

Join us on December 6th for our annual holiday party. Please bring your favorite treat to share with the group.

We will also have our annual election of officers. The below individuals have agreed to run for office. Since there are two candidates for Vice President, we will have a secret ballot election for that office.

### Position

President

Vice President

Vice President

Treasure

Secretary

Director 1

Director 2

### Candidate

Joe Peterson

Dennis Baca

Charlie Ristorcelli

Tom Ellett

Rainer Muller

Greg Gibbs

John Kuivinen



## Upcoming Events

Wednesday, December 6th	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, December 13th	7:00	PARC Board Meeting	Poway Fire Station #3
Wednesday, January 3rd	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, January 10th	7:00	PARC Board Meeting	Poway Fire Station #3
Wednesday, February 7th	7:30	PARC Meeting	Carlsbad Safety Center
Wednesday, February 14th	7:00	PARC Board Meeting	Poway Fire Station #3

## Candidate Statements

### **NN3V Charlie Ristorcelli—Running for Office of Vice President**

I am a Navy veteran of 35 years of service on Navy destroyers, other combatant ships including command, and management of major electronic systems programs.

My interest in all things radio began while I was raised in Venezuela in the 50s. We were in an isolated area. No telephone, routine mail delivery, etc. The only timely contact with the “outside world” was through radio, especially ham radio.

I graduated with BSEE from Northrop Institute of Technology in Los Angeles. Later I obtained a MSEE, and a PhD (ABD). I was first licensed as WB2SFS in 1976, and began enjoying the ham radio hobby with my Heathkit HW-8 QRP CW transceiver, that I built, and operated on several of my Navy ships. The little rig still operates like a champ, but is much more effective now with a 4 element SteppIr Yagi behind it!

In 1982 I upgraded to Extra as NN3V in Ft. Washington, MD. The reason I have not changed my call sign is because, as an annual attendee to the Dayton Hamvention, were I to change my call, none of the eyeball QSO friends from the Right Coast would know me! With a 3 call in California, I get two chances to work a rare DX station that is calling CQ by the numbers. When they call for “3s” I am NN3V. When they call for “6s” I am W6/NN3V. Two opportunities to bust the pileup! Because IS!!

I enjoy all modes of ham radio, and operated them all: CW, SSB, Digital, ATV, and satellite.

Since joining PARC when I retired in Poway in 1998, I served in several different positions on the Club Board. Most recently I was again PARC President through 2015. In 2016 I had to resign because of a medical issue that is not terminal, but did require I dedicate 100% effort to getting better, and did not want my vicissitudes to affect my ham radio activity.

I am pleased to say I’ve participated hands-on in multiple activities with PARC. Enhanced the capabilities of the Club’s repeater site, helped emphasize the importance of mentoring, mentored new hams into the world of HF, sponsored recent upgrades to our repeater equipment and operating capability, all implemented by a very talented group of our club’s members. There is tremendous untapped talent throughout PARC membership. I am very honored to have been directly involved in getting the City of Poway to approve the new Poway Ham Radio Antenna ordinance. That effort was a joyous political and public battle, won through the aggressive action of the local San Diego County ham radio community, including many PARC members.

### **John W. Kuivinen, WB6IQS— Running for Office of Director 1**

I first got involved with some volunteer technical projects around 1975. I was helping with radio maintenance and antennas on the mountain. In 1978 I took over as repeater technical chairman. I am still active in club projects. Currently working with the Board and offering help when I can on repeater equipment, antennas, field day and the “For Sail” table.

John Kuivinen, P.E. (Registered Professional Engineer)

WB6IQS (Amateur Extra)

PARC Repeater Technical Chairman, 1978 – 1998

PARC Field Day Technical Chairman

Ex - Navy Mars, NOKFH



## Repeater Status

This list includes W6NWG repeaters operated by PARC and other repeaters open to use by PARC members. All W6NWG repeaters are located on Palomar Mountain and are open to all amateurs.

Frequency	TX	Tone	Call sign	Remarks
52.680	-	107.2	W6NWG	Back on the air
146.730	-	107.2	W6NWG	System Fusion enabled. See Note 1
147.075	+	107.2	W6NWG	System Fusion enabled. See Note 1
147.130	+	107.2	W6NWG	System Fusion enabled. See Note 1
447.000	-	107.2	W6NWG	FM only for EchoLink Call Sign N6FN-R
224.900	-	107.2	WD6HFR	Convair/220 ARC
224.380	-	107.2	KK6KD	HARS Hispanic Amateur Radio Society Open
224.940	-	107.2	KK6KD	HARS: Sharp Chula Vista Hospital, Open
145.260	-	107.2	KK6KD	HARS: San Diego Open
147.945	-	107.2	KK6KD	HARS: System Fusion Mt. Miguel Open
448.460	-	151.4	KK6KD	HARS: Mt. Miguel, San Diego Open
145.460	-	110.9	XE2DXA	HARS: Tijuana, Mexico Open
146.970	-	107.2	KA3AJM	Vista-Sponsored by MetroNET
146.175	+	107.2	N6FQ	Fallbrook ARC; linked to 445.600
445.600	-	107.2	N6FQ	Fallbrook ARC; linked to 146.175
145.050	s	N/A	W6NWG-1	Packet node; linked to metro 9600 net 1
146.700	-	N/A	W6NWG-3	Packet duplex repeater; Duplex 3

PARC operates an armature fast-scan television repeater. It's currently off the air. Currently there are not links to other ATV sites.

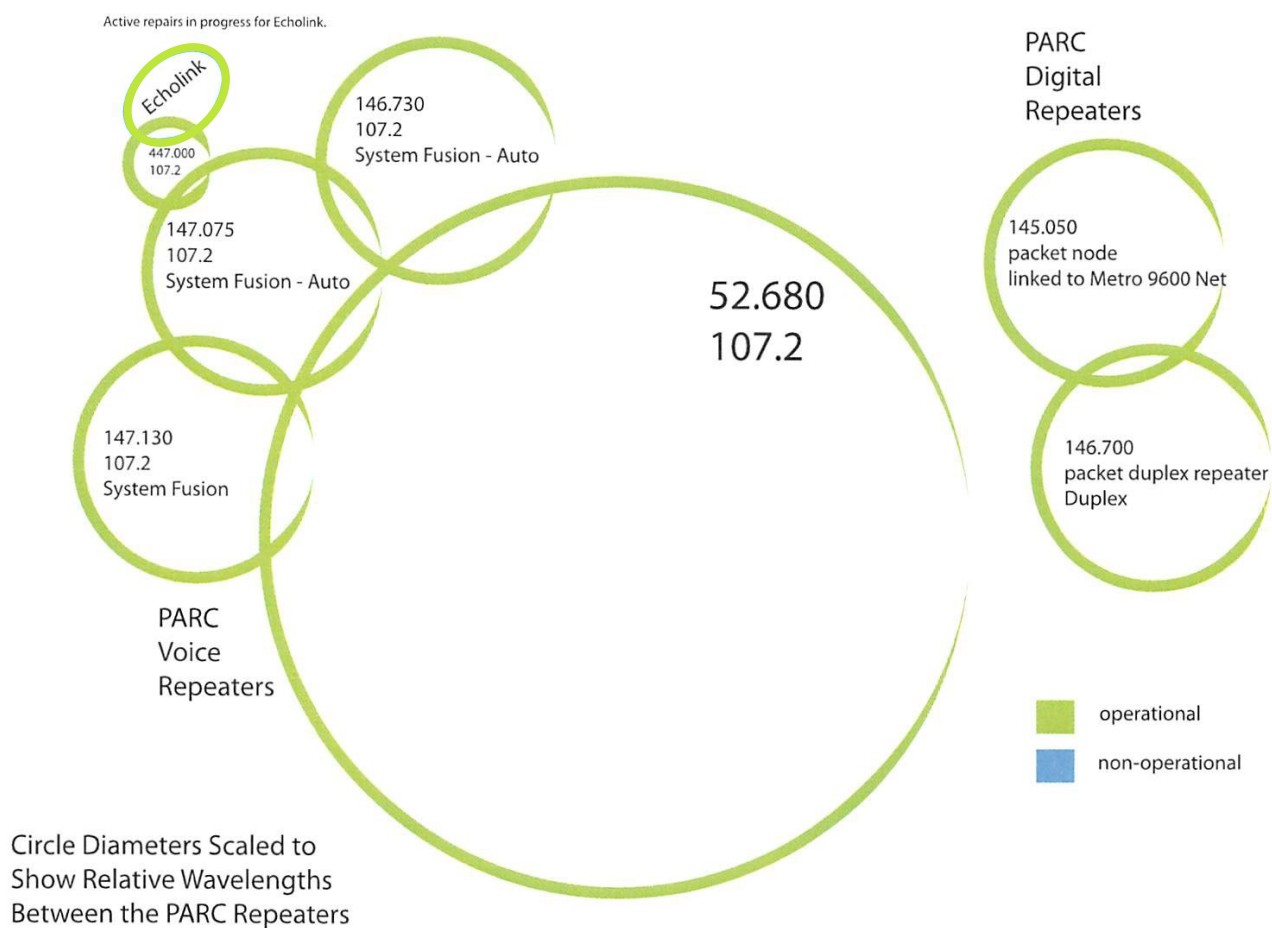
- ATV in: 915 MHz WBFM audio subcarrier 5.8 MHz
- ATV in 2441.5 MHz WBFM, audio subcarrier 6.0 MHz
- Intercom: 146.415 MHz NBFM simplex (tone 79.7). Currently not working.
- ATV out: 1241.25 MHz VSB, NTSC Standard

The PARC repeater site on Palomar Mountain is located at 5560 feet above mean sea level and 2132 above mean terrain. It covers most of San Diego County and beyond into Mexico and out to sea, and is shielded from the North.

**Note 1:** All Fusion enabled repeaters require a CTCSS tone of 107.2 Hz to access the repeater and also transmit a 107.2 Hz tone. Since the repeater output has a 107.2 tone you can enable CTCSS receive tone squelch on your transceiver which will eliminate interference from spurious noise and other repeaters. Control operators have the capability of setting the Fusion Repeaters to FM only operation. Consequently if you can't bring up the repeater in C4FM digital mode, try using normal FM mode. When in FM mode all Fusion repeaters have a 3 minute maximum transmit time, after which the repeater will cut off transmission until after the received signal drops. To prevent timing out the repeater after someone finishes talking, wait until you hear the courtesy beep which indicates that the 3 minute time has been reset. If a transmit timeout happens the repeater will provide a voice message indicating that the maximum transmit time has been exceeded.

**Note 2:** PARC no longer operates an autopatch or packet BBS

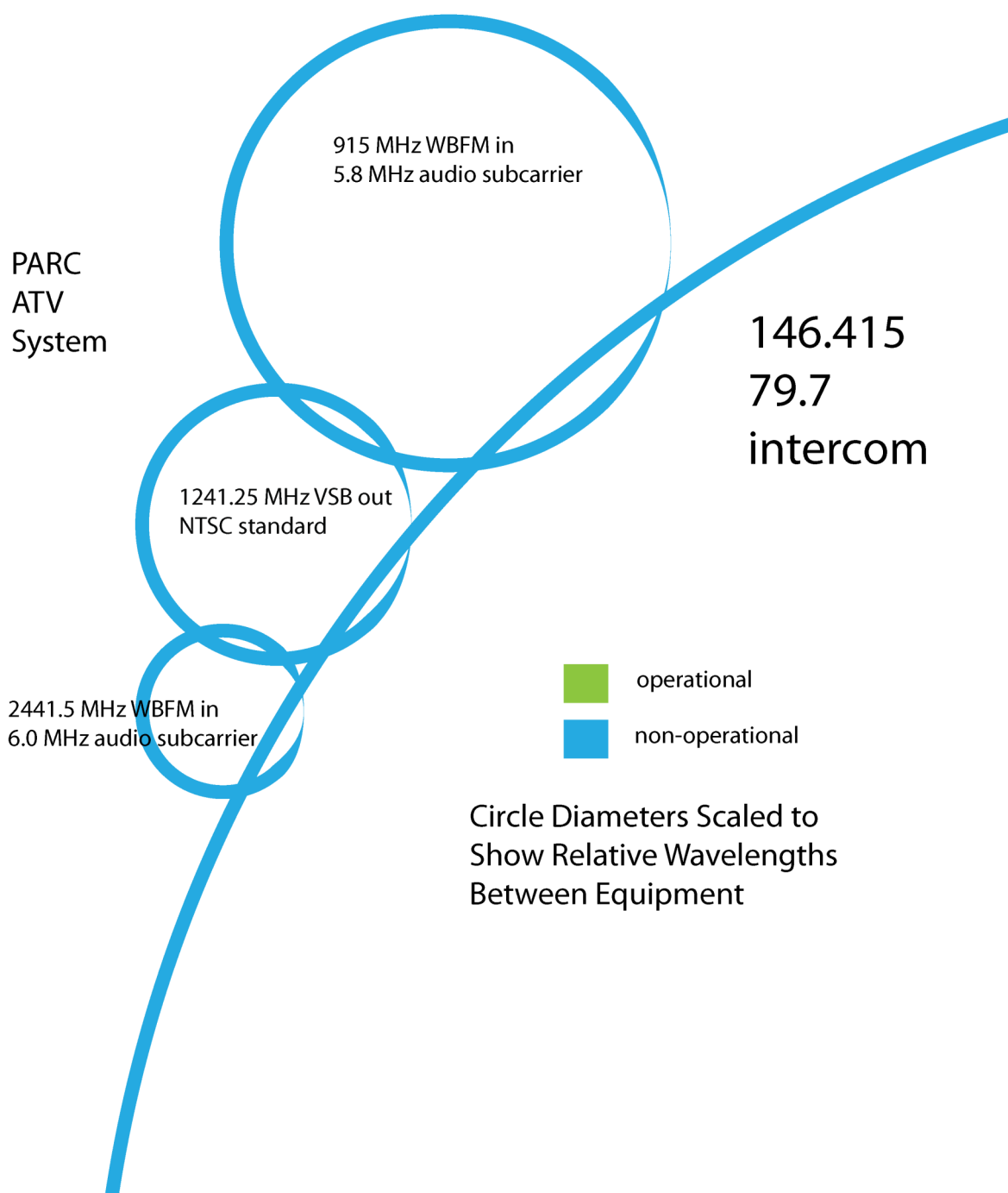
# Reported Repeater Status



Thanks to Michelle Thompson, W5NYV for the repeater status graphics.



# Reported ATV Status



## Local RFI - Taming Neighborhood Noise

**Editors Note:** John Fallows, VE6EY has provided this article on Local RFI.

Every ham or shortwave listener struggles with local RFI. This article kicks off a new series on how to use noise cancelers and get your spectrum back.



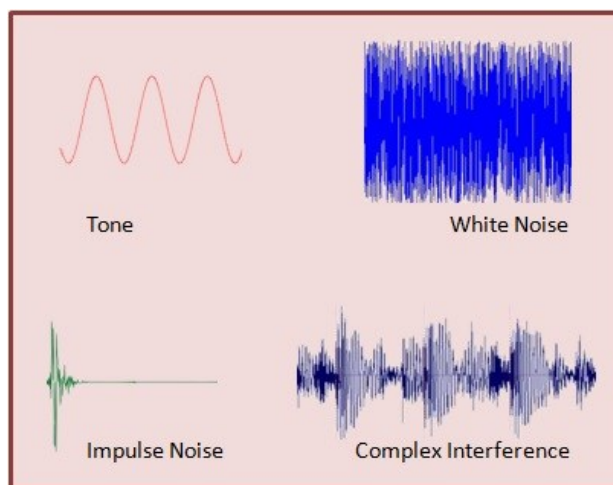
You turn on your radio and tune the bands. Usually, you hear some signals. But often, those signals are drowned out or hurt by local radio frequency interference. Especially, if you live in an urban neighborhood. Even with a really good antenna on a tower, local RFI is troublesome. I hear about lots of folks being tempted to just give up. My message is "not yet". Every ham or shortwave listener should at least try using a noise canceler before packing it in. They can work surprisingly well.

More than a century ago, radio operators adopted a series of Brevity or Q Codes, shorthand ways of saying complicated things quickly in Morse Code. They are still in use. Two of the original Q Codes still in use are QRN and QRM. QRN means I am experiencing atmospheric or static interference. QRM means I am experiencing signal interference. Perhaps today we need a new code, QRFI, which means I can't hear you through all of the local RFI.

### Many Sources of Local RFI

If you want to see and hear the most frequent sources of local RFI, take a look at [Sounds of RFI](#) at the ARRL web site. For advice on how to identify and locate sources of radio frequency interference, check my video [Adventures with RFI](#).

There is a lot you can do to clean up sources of local RFI in your own home. Most of your problems will come from switching power supplies, either AC/DC or the so called "electronic transformers" which provide AC/AC for low power lighting. Any switching power supply is essentially a free running oscillator. Often you can kill or reduce the RFI by winding ferrite chokes on the power cables. Same with birdies or radio tones coming out of your computer or network



## Local RFI– Continued

gear. But my most complex in-house RFI comes from my front-loading washer and treadmill and defies easy filtering. Fortunately, these appliances are used only occasionally.

But even if you clean up your own nest, you still get local RFI from your neighbors, often hundreds of meters away. Having a good outdoor antenna does not help, in fact it can just pick up more noise. This is where setting up a noise canceler can really help. The trick is setting up noise probes around your perimeter. More on that shortly.

Let's consider the four basic types of local RFI signal content. We will see when and where a noise canceler can make a critical difference to your radio listening.

Before we start, a few thoughts about terminology. We are really talking about cancelling or reducing *interference*, not noise. Interference is something that makes it hard to discern a signal. It could be noise (e.g. atmospheric or thermal noise) but it could also be another signal that we might call "noise".

Now let's consider some rather simple forms of noise: tones and white noise. I call these simple because they can be analyzed and reduced with simple techniques based on statistics.

Tones, often called "birdies" are just sine waves. If a tone is on a nearby frequency, it also gets demodulated and interferes with your desired signal. Computer and network gear produces tons of birdies around your house. Usually they are quite weak and more annoying than disruptive. You can use a noise canceler, for example with a local noise antenna next to the source, but this is hard when there are many different sources.

Besides, your receiver has a tool that does a good job removing tones: the notch filter. Typically, notch filters are located in IF or AF stages. They can recognize tones because of their statistical regularity – high correlation over time – and just remove them. Some software defined radios also include tracking notch filters at the front end.

Second, white noise is similar to atmospheric noise – very broadband and statistically uncorrelated. Some local RFI signal content contains white noise. But, similar to tones, your receiver has a tool for that: noise reduction. NR can track and remove uncorrelated noise, typically by 10 dB or more.

### Local RFI Signal Content – Getting More Complex

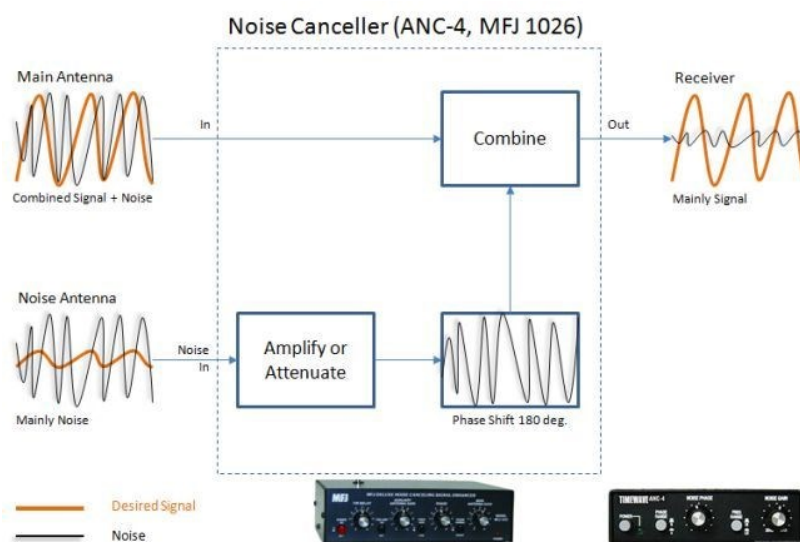
Impulse noise is generally power line and motor ignition noise. Basically, it is a voltage spike that gets radiated. In engineering terms, impulse noise is created by rapid change of voltage over time, or  $\delta V/\delta t$ . Short time domain impulses create very broad and strong frequency domain noise.

Unlike tones and white noise, you can't treat it; you have to remove it.

Enter the noise blanker, which has been around since 1936. NB works by effectively turning your receiver Off for the duration of the impulse. A separate circuit or algorithm senses the (very) sudden rise in the noise floor and uses a switch or gate to remove the pulse before it can get into the radio. Some NB are free running (reactive) while others are synchronous (predictive). The synchronous NB usually provides blanking at the frequency of your power lines – 50 or 60 Hz.

## Local RFI- Continued

Finally, we must increasingly deal with complex interference – for which there are not yet any real tools built into radios. This is where the noise canceler shines by reducing the interference before it gets to your radio. With complex interference, local RFI signal content contains tones, impulses



and white noise all together.

With software defined radio, I dream that one day tools for complex interference reduction will arrive. But they ain't here yet. Noise cancellers are an essential resource for HF radio listening. No longer a last resort as the noise floor becomes worse and worse. Unless you live in a quiet rural location – and sometimes even then – radio frequency interference makes HF listening a challenge.

These devices should actually be called “interference cancellers”. You

use them to remove or reduce a whole range of signals from unintended emitters – power lines, power supplies, home appliances, motorized tools and consumer electronics.

Noise cancellers work on a deceptively simple principle. If you shift the phase of a signal by 180° then you can use the resulting wave to cancel the original signal. These devices receive the interference on a separate antenna, reverse its phase and then mix it together with the original combination of desired signal and noise. If you get the phasing and amplitudes right, the result is almost magic.

There is so much RFI these days that I can't imagine *not* using one of these devices. There is only one trick to success: setting up a proper (separate) noise antenna.

Get the noise antenna right, and the noise canceller will do its job. It's simpler than you think. Setting up the external noise antenna for your ANC-4 or MFJ-1026 is the most important part of reducing RFI from noisy neighbors. There is lots of advice available, some good, some not. You should start by looking at the recommendations from the manufacturers..

According to MFJ, “If the primary problem is removal of local noise, it is preferable the noise (AUXILIARY) antenna *hear* the noise much louder than it hears desired signals. The noise antenna should be located as close to the noise source as possible, so the noise antenna picks up the least amount of desired signal and largest amount of noise possible. In this case the polarization is unimportant, and the spacing between antennas can be any convenient distance.”

According to Timewave, “For noises generated outside the home, we recommend that you mount a small noise dipole outside perhaps down in the shrubs or some other area a foot or two above

## Local RFI– Continued

ground, and broadside to the noise source, such as parallel to power lines. Any noise antenna that works, including combinations of horizontal and vertically polarized antennas, may be used.”

After conducting lots of experiments, I agree with these recommendations, particularly that from MFJ, and summarize my findings as follows:

- Your noise antenna should do a good job of picking up the interference you want to cancel, and a lousy job of picking up the signals you want to hear. An easy way to find out what your noise antenna receives is to disconnect your main antenna, and just use the noise probe as an active antenna.
- Polarization is not that critical, but RFI tends to be more vertically polarized. Start with a vertical noise probe.
- You should not worry about impedance matching for the noise antenna. As long as it picks up lots of noise, it works. If the noise is too strong or not strong enough, you can easily attenuate or amplify to get the level right.

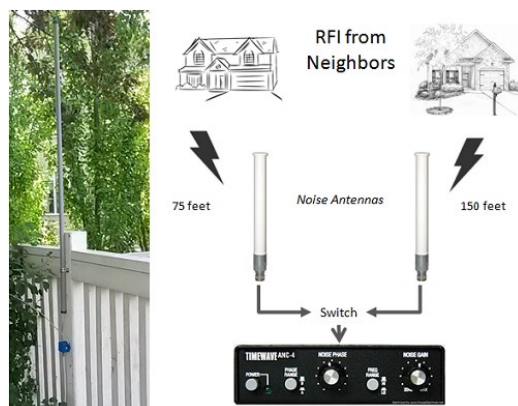
Unfortunately, users will find lots of “advice” on the Internet about using a “proper” antenna for the noise probe. Don’t, unless you plan to use the phasing devices for signal enhancement. For cancellation, users get best results from lousy antennas that just hear mostly noise.

### Noise Antenna that Works for Me

At my location, the main noise sources are located in two neighboring houses. One is about 150 feet to the west, the other is about 75 feet east. I have put up a noise antenna for each source. The antenna is a 4 foot ground plane. The vertical element is a #14 wire inside a ½” plastic conduit. I 3D printed mounts for the wire that snap onto the top and bottom of the pipe. Each antenna is as close as I can get to the noise source, and vertically mounted on a fence post using a ½” clamp. See the picture above.

The noise probes are connected to runs of RG6 coaxial cable. I can switch between them in the shack, using “A” or “B” with my ANC-4. The antennas are largely hidden by surrounding foliage. Gray plastic conduit is not very noticeable, either.

These noise probes do nothing for RFI from within my house, but they work wonders on interference from either neighbor over the range of 6 – 25 MHz.





The December meeting is traditionally our election for the Board of Directors, and that remains the same this year! One change is that we will be voting to adopt a change in who makes up The Board.

The amendment was previously considered as 2016-I, but was not properly announced at the time so we did not vote on it.

That amendment is included below.

**2017-A To make the Webmaster an official member of The Board.**

**Purpose**

To recognize the club's webmaster as a standing committee chair, eligible to be designated a board member.

**Discussion**

The board consists of the four elected officers (President, Vice President, Treasurer, and Secretary), plus two elected directors, plus zero to three (typically three) of the chairs of specific standing committees. Originally, these three committee chairs were fixed: the editor of the newsletter, the membership chair, and the repeater chair. Later, in 1997, the repeater chairman job was split up into a Repeater Technical chair and a Repeater Site chair, and the President was given the power to designate which three of the four chairs would serve on the board, with the approval of the board.

The newsletter is discussed in the bylaws, but the newsletter editor is barely mentioned. The other three jobs are not mentioned at all, except where they are listed as standing committee chairs eligible to be designated to the board. None of them have defined responsibilities. There are potentially lots of committees, and they are all important to the success of the club. Only a few of those committees operate year in and year out, and have a direct impact on most club members. Since these bylaws were written, technology has changed and now it may be seen that the club's web site is in the same category as its newsletter. Both are vital to the club, and the editor of the newsletter and the webmaster of the web site need to keep abreast of a wide variety of club activities so they can report them to the members.

This amendment adds the webmaster to the list of standing committee chairmen who may be designated to serve on the board by the President.

**Text of Amendment**

In Section 8(t), add the following item to the numbered list:

- (5) the Webmaster



## Membership Report

You can check the status of your membership 24/7 at Member List or go to the club's website and navigate to Join and click on "here" at the top of the page. Enter your call sign into the box and click the "Look up my membership status

now" button. To renew your membership or extend your membership, fill in the form on the Join page. Make sure you select the correct value from each of the drop-down menus (Type of Membership, How many years, I'm an ARRL Member,

Newsletter option and License Class). If you want to receive an email when your membership is coming due for renewal, please make sure that I have a valid email address for you. To do that, please send an email to [Membership@palomararc.org](mailto:Membership@palomararc.org).



Check the status of your membership 24/7 at [Member List](#). If you don't find your name and callsign on that page, then your dues have lapsed. If you have questions, send email to [Membership@palomararc.org](mailto:Membership@palomararc.org).

## Donate to PARC by Shopping at Amazon

As publicized earlier this year, PARC is now a not-for-profit charity, and funds donated to PARC are deductible for income tax purpose if you itemize. PARC also announced

that in cooperation with Amazon, it is now possible to shop on Amazon at NO cost increase, and have Amazon distribute a percentage donation to PARC.

This is done by shopping on [www.smile.Amazon.com](http://www.smile.Amazon.com). If you choose to avail yourself of this opportunity, when shopping on [www.smile.amazon.com](http://www.smile.amazon.com),



## Polo Shirts

We're ordering Polo shirts! Some of you already have orders in with me from the last meeting, please be ready to pre-pay for them so we can get the order placed ASAP! We need

20 shirts to get the price I've been quoted. If we end up with 30+ then the price goes down and I'll have a little change for those who have pre-paid once your shirts come in! Base price: \$21.00 includes printing on the front, PARC logo on one

side and your name/ callsign over the pocket. Add \$2.00 for 2XL, \$3.50 for 3XL, or \$5.00 for 4XL. Add \$5.00 if you also want the logo printed large on the back.

73 de K6JPE



SCOPE  
PUBLISHED BY THE  
PALOMAR AMATEUR RADIO  
CLUB

EDITOR  
KEITH SPEARS  
KM6CXW

## Editorial Policy

The Scope welcomes and encourages members to submit articles, photos, stories, equipment reviews and any other items of interest to ham radio.

The Palomar Amateur Radio Club reserves the right to edit all submissions for content and length.

Please submit documents in MS Word format and photos as JPEG or GIF. Flyers may be submitted in PDF.

**All submissions need to be received by the 20th of the month.**

Send submissions to:

[scope@palomararc.org](mailto:scope@palomararc.org)



## Palomar Amateur Radio Club

**The Back page is a place for ham radio humor. If you have a joke, cartoon or just a fun story about ham radio, please share it with me.**



### Santa Jokes

Why does Santa have three gardens?  
So he can Ho, Ho, Ho!

Why did Santa bring 22 reindeer to Walmart?  
Because what he wanted costs 20 bucks, but just in case it was more, he brought some extra doe!

Why does Santa go down the chimney?  
Because it Shoots him!

What do you call someone who does not believe in Santa?  
A rebel without a Clause!

### Christmas one-liners

I bought my kid a set of batteries that with a note that said "Toys not Included"

You know you are getting older when Santa starts looking younger!