

# QRZ NEWS

A MONTHLY PUBLICATION OF  
SOUTHERN PENNSYLVANIA AMATEUR RADIO CLUB, INC  
PO BOX 422- Mount Joy, PA 17552

(Founded June 1960)

AN AFFILIATED SPECIAL SERVICE CLUB OF THE ARRL, INC.

*"Public Service through Communication"*

Website: WWW. K3IR.org

Email address: k3ir@arrl.net

Repeaters: 145.230 - 449.975 - Packet 145.030 - ATV 923.250, FN10se  
Club site 1715 Breneman Road, Rapho Twp. (Manheim P.O. 17545 NO DELIVERY)

## July 2015

### President's Message

#### Like Elves in the Night

There is an old saying in sailing; Get 2 boats next to each other and there will be a race.

This year's Field Day was almost a wash out. We had the worst of both worlds, 90° heat on Friday and rain the rest of the weekend. While others on the Eastern seaboard bailed we had the fortune to have someone drop a huge shed on site. We opted to seek shelter in the shed and use the tent for food, that turned into food in the old op building, hoping the ants would take that tin can away. No such luck BTW.

With radios going and for the most part ahead of schedule, we got working. Radios were running but the rates were low. We mingled and conversed, the new building was definitely a topic.

By 8 we were doing okay with plenty of digital, and CW and SSB contacts but nowhere near where we were the last few years. That is when the elves arrived.

We are blessed to have a team of heavy hitting CW ops associated with the club. While Jon Rudy K3QF was far away in VE-land, Jonathan Charles NB3I and Dale Long N3BNA rolled in to take care of business.

I sacked in around 1:30 AM when Jeff KC3ETC had his fill of the PSK waterfall. This left Harry, Jonathan and Dale to work the night. By 5 AM, I rolled into the shed to see Jonathan

tired but displaying his trademark smile, Dale intently listening to his station, and we were up another 500 contacts. I fired up my rig and started back at it.

We did okay this year with 1022 contacts and 1300 bonus points for a total of 3780 points. We were down a bit from last year but considering the East coast was drowning, the bands were still reeling from a major solar storm, and the antenna plan was not fully developed, I think we are up relatively speaking.

Field Day is about catching up with others, we had many visitors from Red Rose, eating food, this year there were cookies abound, and that night shift of dedicated elves who burn the candles through to the end.

By 11 the generator ran dry on fuel and we opted to taking advantage of a break in weather to pack it in. By noon we were all packed up when Jonathan came down the road. After a full day out and about and a solid night of

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operating, he came by to power through another 2 hours of operation. The elves were back for more.

Your President

Kevin Lampo  
K3LLC

P.S. Speaking of Dale, please make a point to read the article regarding the Haiti broadcast project below.

We are fortunate to be involved with such a cause, and we have raised to date over \$500 through sales of materials for the project.

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Miles Newman **W3DRB, SK**

It is with deep regret that I must inform you of the passing of Dr. Miles Newman. Miles passed away on June 23 after a two year battle with cancer. He was 76.

Some time ago I was at the site on a summer afternoon when a car I didn't recognize pulled into the lot. A gentleman got out and approached me. The first thing I noticed was an ID badge on a lanyard. This was about the time we were working on removing the fuel tank and my first thought was that someone from the DEP was here to harass us.

As he got closer, I realized that I was meeting a local legend. Dr. Newman was well known and loved by most everyone in the Elizabethtown area.

Doc was a fixture at the Northwest Ambulance Building and other area Fire Companies and Ambulance Associations. I had heard a lot about him through members of our church who lived in Elizabethtown. I regret never getting to know him better. He will be missed.

Harry Bauder, WA3FFK

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## Radio Lumiere

Some of you may have heard bits and pieces about a project that SPARC is currently involved in. Rev. David Hartt, a US missionary to Haiti with West Indies Mission had a dream. He wanted to reach Haiti for Christ by means of radio. But this was the early 50's and radio was in its' infancy. His mission didn't think it would work. Finally in 1959 they agreed to let him try, as long as it didn't cost the mission anything! So with a couple of microphones, a small mixer and an old rebuilt WWII vintage AM transmitter Radio Lumiere was born.

Keeping Radio Lumiere on the air is a continuing struggle, what with hurricanes, and more recently the earthquake, the network is in need of attention.

We received word from Dale Long, N3BNA that he had received a donation of a large amount of tower and antennas for this project and needed a place to sort and temporarily store the tower. We have allowed Dale and Jonathon Charles, NB3I to use SPARC's property for this purpose. Dale and Jonathon also asked if we would sell the antennas and tower sections they could not use, with the funds going to the project. In return SPARC received a goodly quantity of coax for our use.

If you visit the site you will see a large pile of Rohn 25 tower sections behind the old operating building, various antenna parts, and piles of coax scattered around. I have been trying to get things somewhat organized but it has been a slow go. The stacked tower sections and the materials on top of that pile are scheduled to go to Haiti. Everything else is up to us.

The membership voted to go one step further and donate all the proceeds of our sales at the Firecracker Hamfest to the cause. So far we have raised approximately \$500 to be given to Least of These Ministries for use on the Radio Lumiere project.

A full and detailed history of Radio Lumiere is available at:

<http://www.k3ir.org/wp-content/uploads/2015/07/Radio-Lumiere-History.pdf>

Harry, WA3FFK

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## Coming Events

Tuesday, 28 July 2015, 7:00PM SPARC meeting at the club site 1715 Breneman Rd. (Manheim P.O. 17545 for GPS).

The meeting presentation will be on chirp and RT Systems programming by Dave St. Pierre. He invites everyone to bring their rig, and computer to load everything.

A short business meeting will follow.

Tuesday, 25 August 2015, 6:30PM SPARC meeting at the club site 1715 Breneman Rd. (Manheim P.O. 17545 for GPS).

August is a family night. The meeting will start 30 minutes early at 6:30 with a cookout and a discussion by Harry on what all the codes we say on the air mean.

A short business meeting will follow.

### Monthly Breakfast

**The second Saturday of every month at 0800 is a SPARC breakfast at Gus's Keystone Restaurant, 1050 W. Main St, Mt Joy, PA.** Contact [Gerry Wagner, KB3SSZ](mailto:Gerry.Wagner@KB3SSZ), for more details. Everyone interested in Amateur Radio

is invited to attend. See <http://guskeystone.com/> for restaurant details.

## Other Events

### UKSMG Summer Marathon

The UKSMG organises Summer and Winter Marathon events to promote activity on the Six Metre band. The aim of these events is to work as many grid squares as possible. These contests are easy to enter and only require an ADIF file export from your logging program to be uploaded to the UKSMG website. The Marathon is open to all (you don't have to be a member to take part) and sections for all regions have been established. So why not take part, upload your log for any terrestrial QSO between the dates below and you could win one year's free "Digital Membership" to the UKSMG for coming top of your regional table.

The Summer Marathon runs between the first Saturday of May (02 May 2015 at 00:00 UTC) and the first Sunday of August (02 Aug 2015 ending at 23:59 UTC) on the Six Metre band.

Further information can be found on the [UKSMG Summer Marathon page](#), and the full rules are available on the [UKSMG Summer Marathon Rules page](#).

P.S. The contest is now grid square rather than DXCC based so everybody has the opportunity to get a good score. I am hopeful for some big scores entered from over the pond.

73,  
[Dave Edwards](#)

### August PEMA Conference Cancelled

Dear ACS/RACES Officers and Friends,

You may have seen the email below from my agency director... It is with a heavy heart that I tell you that we will not be holding the PEMA

Conference (with the ACS track) this August as planned. Due to an overwhelming amount of preparation that must be completed to support the Papal visit this September we will not be able to hold the conference. Too many folks from our agency who would normally be working on or at the conference will be tied up in meetings and preparations. I know that I have already felt the crunch and have had to miss several of the conference planning meetings.

We are hoping that this is just a postponement and will be trying to move the date to sometime this coming spring. If I had spoken with you regarding presenting at the conference, I hope that you will be available at that time. Such a shame, because we had a really good program planned. But it is what it is... Just wanted to let you know as soon as I found out.

Susan, KB3KDC

**Susan D. Singer** | Emergency Management Specialist  
Commonwealth EMAC & ACS Coordinator  
Division of Logistics & Resource Management  
Pennsylvania Emergency Management Agency  
2605 Interstate Drive | Harrisburg, PA 17110

### Monday, July 13, 2015



Pluto & Charon

NASA Photo

This July 13, 2015, image of Pluto and Charon is presented in false colors to make differences in surface material and features easy to see. It was obtained by the Ralph instrument on NASA's New Horizons spacecraft, using three

filters to obtain color information, which is exaggerated in the image. These are not the actual colors of Pluto and Charon, and the apparent distance between the two bodies has been reduced for this side-by-side view.

The image reveals that the bright heart-shaped region of Pluto includes areas that differ in color characteristics. The western lobe, shaped like an ice-cream cone, appears peach color in this image. A mottled area on the right (east) appears bluish. Even within Pluto's northern polar cap, in the upper part of the image, various shades of yellow-orange indicate subtle compositional differences.

The surface of Charon is viewed using the same exaggerated color. The red on the dark northern polar cap of Charon is attributed to hydrocarbon materials including a class of chemical compounds called tholins. The mottled colors at lower latitudes point to the diversity of terrains on Charon.

This image was taken at 3:38 a.m. EDT on July 13, one day before New Horizons' closest approach to Pluto.

*Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute*

### What kind of computer is used on New Horizons?

Rick Walter, WB3CSY, sends us the story.

This is the computer used on the New Horizons spacecraft.

Click on the development board link on the lower left, then look at the price at the bottom of that page.

<http://synova.com/proc/mg5.html>

It has two for backup. The cost is probably a drop in the bucket for NASA. I always wonder

what they pay their programmers. They made at least one mistake on an instruction timing error that put the spacecraft in safe mode on July 4<sup>th</sup>. Waiting for auto recovery must have been a stressful time.

## Thursday, September 17, 2015

CPRA/CPIN general meeting at a different venue, the Blue Ridge Country Club, Grill Room, next to the Ryder's Pub. The first Regional APRS meeting with Bob Bruninga, WB4APR the founder of APRS. More info to follow.

<http://www.clubsatcolonialridge.com/#!/restaurants/cltrg>

<http://www.clubsatcolonialridge.com/#!/contact-us/cyha>

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### Editor's Notes

Unfortunately Field Day was depressed by the weather, but our stalwart operators came through for a good score. Congratulations to all who participated.

Fully implementing our new operating building will be a long term project. Note the article on lighting considerations by Rich Kaelberer (AB3RK) below. This is just the tip of the iceberg of the planning and execution ahead.

I know this must sound like a broken record, but I need more articles for publication in this newsletter.

73, George, W3FEY

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## Six Metre DX Report

15 July 2015

Opening Remarks

Hello again from wet and warm southeastern Pennsylvania. Summer came here after almost no spring, and I am still trying to catch up on jobs that should have been done in May. In

much of the U.S., six metres has tracked the weather. The E season was late in starting; the first transatlantic E opening of any substance didn't occur until 4<sup>th</sup> June. Since then, with a few hiccups, the band has been at almost full throttle. When the band has been open, it's been very good. When it hasn't been good, it's been dead.

As of the end of June, the VP2MTT and FS/K9EL DXpeditions have finished their operations. The C6AUX and PJ5A efforts are in full swing. Pete VE3IKV is doing a great job from Mayaguana Island in FL32. He's given a new grid to many, and today, 30<sup>th</sup> June, he worked JW5QIA. Dick K5AND and Terry K4RX seemed to be into Europe endlessly from Statia until the band went completely dead for them a couple days ago. I was expecting to join them but a couple family matters intervened and I had to beg off. I hope to be able to return to the DXpedition trail next year. In this column you will see several changes in the roster of high-profile six metre operators. Bob ZL1RS, who for many years has been a stalwart on six from the South Pacific, has announced that he is taking a hiatus from the band. Nicolas TJ3SN is leaving Cameroon for another as yet unannounced African location. Nicolas has given many of us a new DXCC from central Africa; I regret that I was not one of the fortunate. Fred K6IJ, formerly KH7Y, has moved back to California from the big island of Hawaii. For 11 years Fred was one of the regulars on the band from the central Pacific.

In last issue's column I posted an incorrect picture of T30D's QSL card. I also omitted ZD8D's report. I apologize for the foul ups. When I sent out request for reports a few days ago, a number of you in Europe noticed a request for reports about four metre activity. Even though 70MHz is not an authorized amateur band in many parts of the world, the Committee believes the band deserves more

recognition and regular coverage. As a result, you will see a new item in this column – “Four Metre happenings.” If you have propagation reports, equipment or antenna evaluations or items related to four metres that you believe may be of interest to the readers, please send them in.

Plans are firming up for the G3WOS and W6JKV/K5AND BBQs; I hope to see you at one or both of them.

This evening, 3<sup>rd</sup> July local time, I caught a bit of an opening to Europe. The bulk of the opening centered on New England. K1SIX, K1TOL, K1WHS and others in the Northeastern US described the band as “20 metres.” MD0CCE, MM0AMW, GM4WJA and Tom EI4DQ made it into the log here. In this issue there are more than 40 reports from six metre enthusiasts around the world. These reports give a great idea of what the band has been doing and a lot of insight into our common affliction. Enjoy!

### **July 2015 Solar Report to Six News KH6/K6MIO**

07/03/15 Solar Cycle 24

While it actually has nothing to do with whether propagation will get better or worse, in the sunspot world, at least, a major technical milestone was very recently achieved. In the current “modern” era, high-precision cameras and computers can be used to calculate the areas of sunspot features, their brightness, magnetic intensity, and so forth, all in reliably calibrated ways. On the other hand, the older historical data, going back to 1700s and before, were gathered by individual human beings, looking at the Sun’s filtered image with their eyes, and assigning subjective a number to what they saw.

Different people got different answers; different telescopes in different locations also

had different characteristics and weather. As a result, there were well known systematic differences between different datasets. Generally, the *trends* in the different data tracked pretty well, but not the values themselves. That is to say, different databases were likely to more or less agree on when solar maximum occurred, but disagree greatly on the index value of the maximum.

On 1<sup>st</sup> July the Royal Observatory of Belgium, in Brussels, whose data I frequently present, announced that they have completed the monumental task of going through their own data, back to 1749, and systematically recalibrating it to remove these systematic variations in their solar R indices. By and large, they have rescaled the values *upward* significantly. During the period from 1992 to the present, it has resulted in about a 61% average retroactive upward change in R indices values.

For the readers of my reports, these rescaled plots now show much higher index values, but unfortunately that doesn’t change the reality of the propagation impact. One likely outcome is that the revised values will correspond much more closely with the NOAA Boulder index values, even though their computational algorithms are somewhat different.

Figure 1 shows the most recent, newly scaled data. Note that previous presentations have used an R scale to about 100; now the same information is on a scale of 130. The northern solar hemisphere Rn continues to hang out around 40, as it has for nearly three years. At the same time, southern solar hemisphere continues its steady decline. There is no current evidence for either of these patterns changing over the next few months.

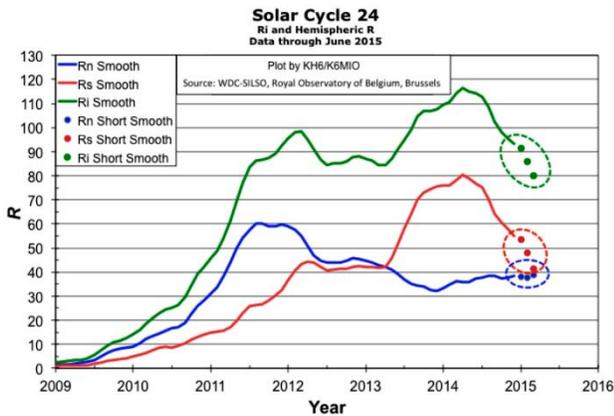


Fig. 1 Overall Solar Activity Ri and indices of northern solar hemisphere Rn and southern solar hemisphere Rs.

Looking forward to the future, in the next report I plan to discuss what some of the solar experts are speculating about Cycle 25.

### Recent Pacific Propagation

The Pacific northern Spring TEP and related propagation, which was rather good, has since undergone its normal seasonal decline. So far, the Summer Es season here in KH6 has been very thin indeed. One must bear in mind that the nearest inhabited land is at least a double-hop distance away. Nevertheless, the last two summers have so far been unusually poor. That just happens sometimes, and it probably isn't connected to the solar cycle.

For example, I note that there seems to have been a fair amount of Es single-hop and greater activity going on over land paths, both in the eastern and western hemispheres, including north-south paths that suggest TEP-like assistance.

73,

Jim KH6/K6MIO

### Local Reports

NZ3M (Dave reports from FN10PD)  
Hi Chris,  
Really nothing worth reporting for me. Work

and other things getting in the way. I missed this whole week of strong Es. Before that it was just a couple days to CT and EA.

73, Dave NZ3M

### Parting Remarks

That's all there is as of 4<sup>th</sup> July, 2015. W7GJ has been in from his mountain top DXpedition to rare grid DN24, and K0GU has apparently just worked Sergy UT3UA on an otherwise quiet band.

I'm looking forward to reporting on a better second half of the E season, the summer DXpeditions, and the G3WOS and W6JKV/K5AND BBQs in the next column. For now it's time to finish the spring jobs that were delayed, finish picking cherries in the orchard, and try to fit in some band monitoring in my spare time.

Thanks go to the following for their contributions: 4S7JL, CT1FJC, CU1EZ, DL7VEE, DU7/PA0HIP, CX8DS, DL8YHR, EA6VQ, EI7BMB, G6TGO, G8BCG, G8VR, GM0EWX, GW4BLE, GM8IEM, HA5KI, HA0DU, JE1BMJ, KH6/K6MIO, K1HTV, K5AND, K5QE, K6IJ, K7CW, KA9FCD, K0GU, LU5FF, *MMonVHF*, OZ6OM, MM0AMW, N5DG, NZ3M, OA4TT, ON4IQ, OZ6OM, *SixItalia Weekly*, TJ3SN, UN8GC, VE2XK, VK4CZ, VK4MA, W1JJ, W6JKV, XE2OR, ZD8D, ZL1RS, ZL3NW, ZS6NK, *CQ Six 50MHZ DX News*, and everyone else who contributed to this column. If I forgot anyone, please excuse the omission.

Since it is Independence Day here in the USA, I thought I'd change up the usual quote a bit. Two of my favorites, with no disrespect intended to our UK friends, are:

"There, I guess King George will be able to read that." - John Hancock when signing the Declaration of Independence.

"We must, indeed, all hang together or, most assuredly, we shall all hang separately." - Benjamin Franklin in the

Continental Congress just before signing the Declaration of Independence.

If you have anything you would like to see in upcoming columns, or anything to submit, please contact me at [DXNEWS@UKSMG.org](mailto:DXNEWS@UKSMG.org), or [W3CMP@comcast.net](mailto:W3CMP@comcast.net). This is your column, and your comments, ideas, and reports are welcome.

73,

Chris, W3CMP

*Ed Note: The report above is a small excerpt from Chris' "What's on Six" report for the UK Six Metre Group. See <http://www.uksmg.org/landing.php> for more information. Internet only membership in UKSMG is available worldwide for £10.00. Paypal works fine.*

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## ARES/RACES



As part of the SPARC commitment to emergency communications, the SPARC repeater system is maintained as available for linking with other area repeaters.

Lancaster County RACES VHF Net is held on the first Tuesday of the month at 2030 hours local time on the 145.310 MHz repeater in Rawlinsville.

The Lancaster County primary ARES/RACES repeater is on 145.310 MHz with minus offset and 118.8 PL.

Pennsylvania RACES HF Nets are held at 3993.5 kHz LSB on all Sundays except holidays.

The statewide net is on the first Sunday of the month at 0800 hours local time.

The Central Area (including Lancaster County) net is at 08:30 local time.

EPA NBEMS Net, Tuesday, 7:30pm local EST, 3.5920mhz Mode: Olivia 8/500 1khz, Net Mgr: [WA3WSJ@arrl.net](mailto:WA3WSJ@arrl.net)

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## SPARC Nets

**[SPARC holds nets every Tuesday at 2100](#)** local time on 145.230 MHz minus offset and PL of 118.8. The **[449.975MHz](#)** repeater is linked to the 2m repeater for the net.

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## Club Officers

President Kevin Lampo – [K3LLC](#)  
Vice President Scott Lithgow – [KN3A](#)  
Secretary – Peg Hamm – [KB3SCA](#)  
Treasurer – David St. Pierre - [AB3VJ](#)  
Repeater Trustee - Dave Payne - [N3LOM](#)

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## Membership Info Update Request

Please send all changes of address, email, and ham status to me for the MDB to Gerry Wagner at 1309 Willow Creek Drive, Mount Joy, PA 17552 or [Gerry.Wagner@ComCast.Net](mailto:Gerry.Wagner@ComCast.Net), Cell=[717-344-1427](tel:717-344-1427),

Home Phone=[717-653-0659](tel:717-653-0659) (Fax Opt); Skype  
Thanks Gerry Wagner KB3SSZ

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## Nearby Nets of Local Interest

If you need information on access tones etc, the referenced web sites below will usually provide the information needed. For more information, see <http://arcc-inc.org/arc-fdbas.html>

**Monday [Ephrata Area Repeater Society](#) Net**

9:00 PM on 145.450MHz.

**Monday [Keystone VHF Club](#)**

Combined Club & ARES/RACES Net 8:30PM on 146.970MHz.

**[Monday South Mountain Radio Amateurs](#)**

SMRA Club Net 9:00PM on [145.430MHz](#)

SSB net 9:00PM on 146.210MHz. May be slightly delayed by SMRA club net.

**Tuesday [Digital Net](#)** 8:00 PM on the York 146.970MHz Repeater -- This is a busy digital data training net for beginners and advanced users. The primary mode used is MT63-2k. Other experimental modes are also used.

The leaders of the Tuesday Digital NET have decided to take a summer hiatus. So the official NET will not be held for a couple of months. Anyone who wants to continue practice, may contact each other and exchange digital traffic as you desire.

**Morse Code Net** Tuesday, 2000 local time (8:00p). [SMRA](#) repeater 145.430- (67.0 Hz) with alternate frequency of 146.460+ (1,000 kHz offset, tone 67.0 Hz)

**Wednesday York County SSB Net** 7:45PM on 50.135MHz. Informal net getting started. Contact Steve Cruse, K3WHC, for more information.

Wednesday [Pottstown Area Amateur Radio Club](#) 8:30PM 50.130MHz Contact [Leonard, WV3P](#) for more information.

**Wednesday [Red Rose Repeater Association](#) Net** 8:30 PM on 147.015MHz. This is an

experiment to see if net attendance improves by starting a half-hour earlier.

**Wednesday [QCWA Net](#)** 9:00PM on 146.97MHz.

**Thursday [Lancaster Radio Transmitting Society Net](#)** 9:00 PM on 145.390MHz

**Friday Lebanon County Digital Roundup Net** 8:PM on the EARS 145.450MHz (tone 100.0Hz) repeater.

I cover all types of digital/data modes, training on computer/radio interfacing and message handling.

The primary focus is with Fldigi and Flmsg and lots of SSTV, using MMSSTV. The nets are always very informal and have sometimes lasted for 2 or more hours to cover all the evening's interest.

73,

[Bob Sanborn/AB3GF](#)

Sunday Info Net

On the N3TUQ 900MHz repeater: 8:30PM Output: 927.5875MHz Input: 902.5875MHz (-25MHz) PL 114.8Hz.

The N3TUQ 900MHz repeater is located on the [LVSRA tower on Cornwall Mountain](#).

Net control: Bob Howard, [KB3QAQ](#)

For more information visit <http://www.n3tuq.com/repeater.aspx>

PACKRAT VHF/UHF NETS

Visit the Mt Airy VHF Radio Club at: <http://packratvhf.com/airtimes.htm> for the latest information on VHF/UHF nets.

## NTS Eastern Area Phone net

3.917 at 4:00 PM daily for traffic going to EPA, MDC, WPA and Maryland. We have a callup, pass any traffic, after that a round of comments. Traffic manager is WA3QPX. Net could use more checkins from EPA as we normally only get one checkin from EPA and sometimes none. This is where the Fone traffic for EPA net normally comes from. Any questions I will be on 3.917 at 4:00 PM.  
73 , [Paul, WA3QPX](#)



Two EPA Nets Now Accessible via Echolink  
Posted By: egroups\_n3sw egroups\_n3sw

Mon Aug 27, 2012 11:40 pm

<>The EPA AA3RG and Echolink Traffic Net (EAETN) has been accessible since its inception via Echolink at node AA3RG-R (#149493). See the group Calendar for more information. [Thursday 8:00PM]

<>Now the Capital Area Traffic Net (CATN) is also accessible via Echolink at node N3TWT-R (#743026). See the group Calendar for more information. All (*licensed hams*) are welcome to join in on these nets.

73 -Scott N3SW EPA STM-

<>AA3C note: To visit our group on the web, go to NTS-EPA Group web site:

<http://groups.yahoo.com/group/nts-epa/>

Both nets will utilize the 146.640(tx-) MHz.

Transmit access tone: 82.5 Hz.

AA3RG Repeater. <http://www.aa3rg.org/>

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## QRZ News Publication

QRZ News is published monthly. The deadline for submission of items for publication is 11 days before the regular membership meeting on the fourth Tuesday of each month. If material is not copy and paste ready for publication, more lead time is required.

We operate on an exchange basis with other not for profit publications. Articles printed in QRZ News may be reprinted in a not for profit publication provided proper credit is given.

QRZ News is archived at

<http://www.k3ir.org/>

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## Lighting our Club Shack

By: Rich Kaelberer (AB3RK)

Yes, I know, for the least RF Interference, a good old fashioned candle is likely the best, but it does present a fire hazard and they don't have a very long life.

So, with that said, as we at SPARC move forward with the build out of our new operating and meeting building at our club site, the question of illumination has surfaced. There are several foregone conclusions or truths that have been learned over years of experience:

- Incandescent lighting is inefficient and generates significant heat.
- Fluorescent lighting, whether the older multi-tube ceiling fixtures or the modern CFLs tend to be somewhat noisy in the RF domain. They are after all, a plasma discharge through mercury vapor confined to a glass tube that is coated with a substance that fluoresces when exposed to the Ultra Violet light generated by the Mercury Plasma Discharge.
- Solid State Dimmers are known to be unfriendly to the RF environment. They

generate significant noise due to the technique they use to dim lights. Essentially, they hold off conduction during a portion of the sine wave, and then switch it on. This tends to generate significant transients and the associated RF noise.

The obvious question is what about the new Light Emitting Diode (LED) lamp technology? Well, it is efficient as far as electrical usage is concerned. A typical lamp producing the light output equivalent of a 60 Watt incandescent consumes only about 8 ½ watts. Life expectancy of the typical LED lamp is far greater than an equivalent incandescent. While an incandescent lamp may be expected to last for 750 to 1000 hours, typical LED lamps may be expected to last for 20,000 to 25,000 hours. Initially, LED lamps were rather costly when they were introduced a few years ago. Industry advances and economics have brought the cost down to within reason. Some of the Big Box stores are selling LED lamps for around \$5.00 apiece. In short, they do make a lot of sense for the club as a lighting choice providing they are not significant RF noise generators that would cause issues with our receiver operations in the building.

To help assess the merit of these lamps, our President, Kevin Lampo (K3LLC) provided me with a Phillips LED lamp rated at 60 watts equivalent light output. Granted, this bulb is a bit strange looking, but the design combines the need to achieve an even distribution of light in a spherical pattern with the need to dissipate the heat generated by the driver electronics in the lamp.

Here is a photo of the lamp:



To perform my evaluation, I devised a two pronged approach. First, I set the lamp on my desk in the proximity of both my Yaesu FTDX3000D HF transceiver and my Yaesu FT-8900 VHF transceiver. I listened to the background noise on several bands with the lamp both illuminated and off. I noticed no appreciable difference in the background RF noise received as a result of the LED lamp.

My second examination was a bit more scientific. I felt that I needed to reduce or attempt to eliminate ambient RF noise present in my work area to provide a meaningful evaluation. To accomplish this I constructed an approximation of a Faraday Cage. This was done by purchasing a few feet of aluminum window screening from my local lumber yard and then forming it into a rectangular box. This was accomplished without cutting the screening by folding triangles in the corners much the same way you might do when wrapping a present at the Holidays (in sheet metal work this technique is known as Box Corners). I would have preferred copper screening, but that is difficult,

if not impossible, to obtain these days. The folding method of construction was chosen to eliminate the need to make joints at the corners and edges since aluminum could not be soldered to insure good continuously covered joints. The Faraday Cage was then grounded to my station ground.

To evaluate the RF emissions of the lamp under test the following was done:  
The lamp was screwed into a standard lamp electrical outlet adaptor. That assembly is then plugged into an extension cord and placed inside the Faraday Cage.



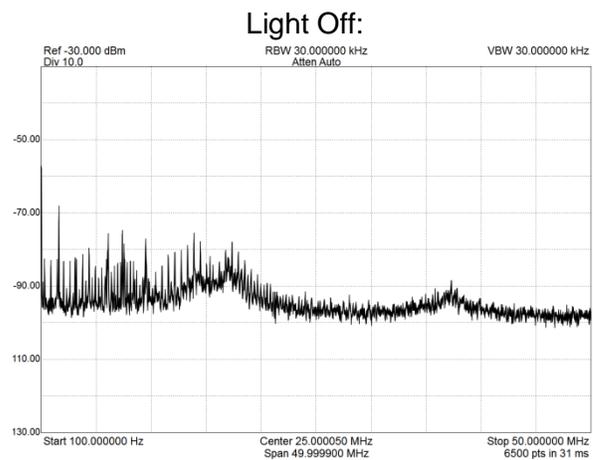
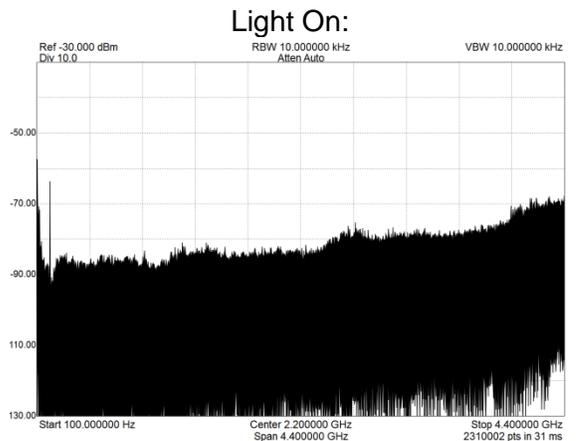
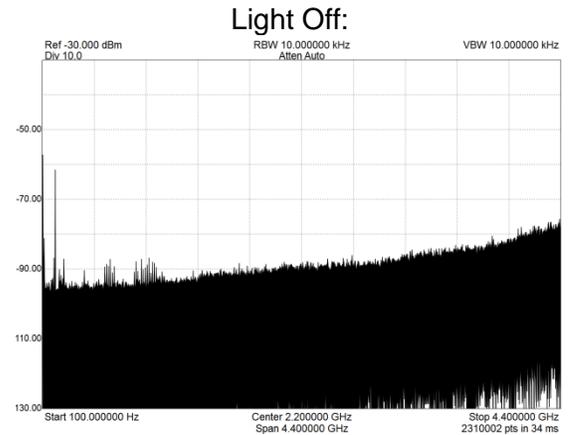
The probe from my SignalHound ® USB-SA44B Spectrum Analyzer was fed into the Faraday Cage with the shield of the probe connected to the grounded cage with a clip lead.

A second clip lead was connected to the tip of the probe to act as a quasi-antenna, and placed in close proximity to the lamp (actually lying in close contact with the body of the lamp).

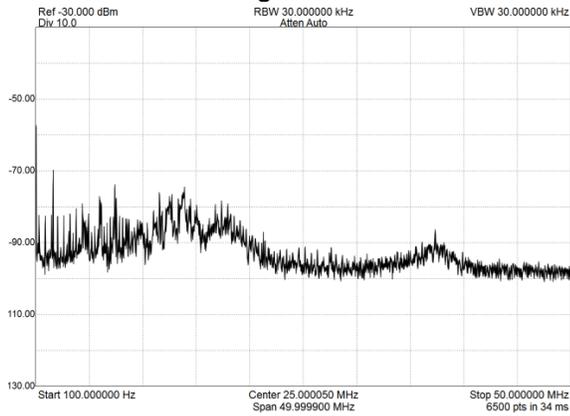
Full spectrum sweeps (100Hz to 4.4 GHz) were conducted with the lamp to establish the background RF environment. The lamp was illuminated and similar sweeps were conducted to see what the emission spectrum of the lamp might be.

Keeping in mind that I am not an expert by any means of evaluation, and that my test equipment is relatively new to me, so I am still

learning its capabilities, the results are shown in the images below. You be the judge:

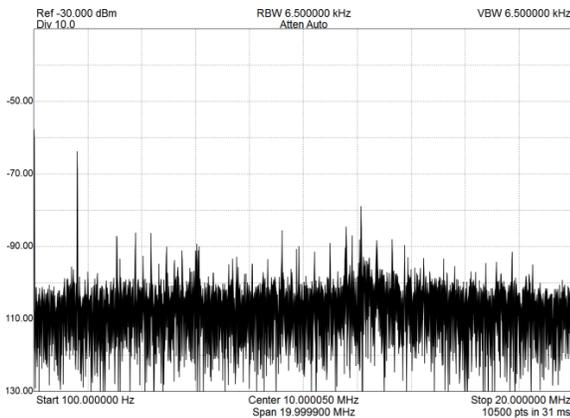


### Light On:

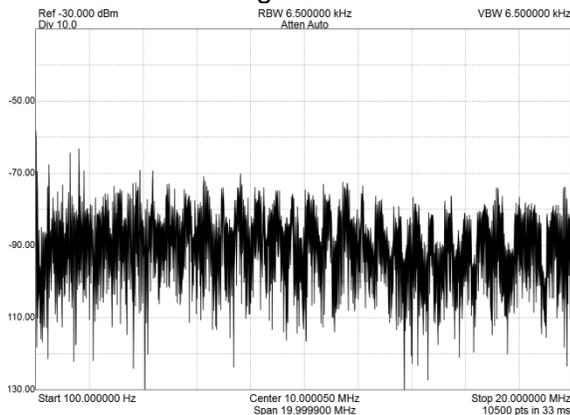


In the following, the quasi-antenna was closely wrapped around the lamp:

### Light Off:



### Light On:



## History of Crystals

I am sure many of us remember the old famous FT-243 crystals we used as a Novice or on the 6 and 2 Meter bands in rigs of the 50's, 60's and 70's. They were the phenolic cases that were held together with three screws and generally had a metal nameplate. As a side note, those packages are called "Compression Mounts" having reference to the fact that the crystal blank is compressed between two metal plates that match the size of the crystal blank. The entire "sandwich" is compressed in the package and held together with the screws. By today's standards that design was pretty bad, but consider that it was designed 65 plus years ago. Today crystals are enclosed in vacuum-sealed cases and the electrodes are gold or silver and/or other metals depending on the application. They are far more sophisticated by necessity. Sometimes it is hard to believe that we "won the war" with technology such as the FT-243 crystal! Having spent my entire working career working around and with quartz crystals, I was always fascinated by the unique history of this device. An old timer in the business told me that during WW II, there were about 150 companies cranking out crystals for the war effort and many of them were FT-243 types. I decided to set out on a mission to see just how many different manufactures I could scrounge up at hamfests, etc. I had a few "scouts" helping me also... After 20 years or so of looking in junk boxes and carrying my list around at ham-fests, I have 109 different companies represented in my collection! There must have been some truth to that old timers story. All but a very few of these companies are gone and those that remain, probably have no one on their staff who even remembers an FT-243,

unless he is an older ham!! What is the collection worth? Probably nothing, except the sentimental value to someone

who may want to preserve a bit of history as I have done.

73

de Glenn Kurzenknabe, K3SWZ

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