

News from



The GLORIOUS SOCIETY OF THE WORMHOLE

November 2018

Hello Worms

Hi Worms,

Talk-in is on the Wormhole repeater system. For those coming to the meeting who cannot hit the repeater we will also monitor the Honeywell club repeater on 443.050 +141.3. I was a little bit busy for the last few weeks so this is short newsletter. If I have some submittals from other people there would be more ;-)

Bring a folding chair for the meeting if you have one.

* USING YOUR ANTENNA ANALYZER*

by Ralph WD0EJA

Many have purchased an antenna analyzer. Some expensive, some real expensive. How can you use your device to better know what your antenna is doing?

Your antenna system is not only the antenna. The electrical measurements include the feedline and grounding. A change in length in feedline will change the measurements of the antenna. A change in grounding will do likewise. Therefore, how can you determine what the measurements are of the antenna from the radio end of the feedline using your analyzer?

The readings of Impedance(Z), Resistance(R) and Reactance(X) will NOT be a direct reading of the antenna at the radio end of the coax.

Of course, the most technical way to measure is with a Smith Chart. This chart is not hard to use, but it is inconvenient. Can you use the readings on your analyzer to come close? Of course.

SIMPLIFIED MEASUREMENT

1. Measure the SWR with the analyzer at the radio end of the coax.
2. Scan frequency up or down to find the lowest SWR reading.
3. You have two values from this. This being your resonant point, you may have to adjust the antenna impedance because it did not go to 1:1.
4. One value is to multiply the SWR value times 50.
5. The second value is to divide the SWR into 50.
6. For example, a 2:1 SWR minimum could be 100 ohms at the antenna or 25 ohms.
7. Now you can make the Resistance change ($X=0$) on the antenna. Now you have limited your guessing to two choices.

***AEA ANALYZER (VIA ANALYZER)**

This could apply to other analyzers also.

1. Set F5 to S. This is SWR.
2. Set F3 to SWR: RL:. Not necessary for other analyzers.
3. Scan the area of the band you are looking for and locate minimum SWR.
4. Set the F3 to "Normalized". Not available on some analyzers.
5. Use the Freq. to move up or down in frequency to locate the minimum "j".
6. On other analyzers this is the "X" or reactance value.
7. j0 means zero reactance or "X".
8. It may not show up on the frequency you found the lowest SWR.
9. On the AEA analyzer, it may not go completely to j0.
10. With the AEA analyzer, multiply the Z value times 50.
11. On other analyzers, use the Resistance (R) scale and read it direct. It will be close to the Radiation resistance of the antenna with all you have connected.

This will let you understand your analyzer without running out to the antenna. However, it does not promote good exercise.

73,
Ralph WD0EJA Bilal Company

* MORE SOLAR PANELS MEAN MORE WASTE WITH NO EASY SOLUTION*

THE VERGE, [Angela Chen@chengela](mailto:Angela.Chen@chengela) Oct 25, 2018,

Solar panels might be the energy source of the future, but they also create a problem without an easy solution: what do we do with millions of panels when they stop working?

In November 2016, the Environment Ministry of Japan warned that the country will produce 800,000 tons of solar waste by 2040, and it can't yet handle those volumes. That same year, the International Renewable Energy Agency estimated that there were already 250,000 metric tons of solar panel waste worldwide and that this number would grow to 78 million by 2050. "That's an amazing amount of growth," says Mary Hutzler, a senior fellow at the Institute for Energy Research. "It's going to be a major problem."

Usually, panels are warrantied for 25 to 30 years and can last even longer. But as the solar industry has grown, the market has been flooded with cheaply made Chinese panels that can break down in as few as five years, according to *Solar Power World* editor-in-chief Kelly Pickerel.

To understand the challenges of solar waste, it's helpful to understand how the panels are built. There are different types of solar panels, but most of them contain aluminum, glass, silver, and an elastic material called ethylene-vinyl acetate. The problem is that they can also contain more dangerous and sometimes cancer-causing, materials such as lead, chromium, and cadmium. Functional panels are sealed off with glass and are very safe. But when the glass breaks or the panels are damaged, those substances can leak.

Recycling isn't economically viable right now for solar panels

This risk is especially high with poorly made solar panels installed in areas that experience extreme weather, like hurricanes and hail. Winds and rain can break the glass, allowing chemicals to leach into the soil and then into the water system,

according to Hutzler. Pickerel points out that though solar power helped Puerto Rico recover after Hurricane Maria, there were a couple areas on the island where panels were damaged. “In those situations, we have to make sure that we collect the damaged panels,” she says.

To be clear, damaged solar panels leaching toxic materials isn’t an enormous risk, given how much solar panels help address the near-term dangers of global warming and how many *other* dangers are present during hurricanes. But it’s one we need to keep in mind since climate change experts suggest that these extreme weather events are here to stay.

Solar panels are just one part of the problem of old electronics, which is now the fastest-growing category of waste. China once accepted about 70 percent of the world’s e-waste, but it started refusing to take recycling a couple of years ago. Since then, Western countries have started shipping their waste to Southeast Asian countries, but it’s not a long-term solution. For example, companies sometimes sell old (but not dead) panels to other countries that want them for cheap, but, again, that just moves the waste around.

While it’s far from the only industry struggling to dispose of old devices, there’s an extra challenge with solar panels: recycling isn’t economically viable right now. Solar panels do contain some valuable materials, including silver and copper, but not as much as cellphones and other gadgets. And they definitely don’t contain enough to make up for the high costs of safely breaking down a panel into its constituent parts. As a result, the Electric Power Research Institute has suggested that storing old panels long-term, like in a landfill, might be the most practical option until the recycling situation is figured out. Similarly, Pickerel adds that people sometimes collect damaged panels and put them in shipping containers so they’re all at least in one area.

Still, the Solar Energy Industries Association, the major industry group, is working with recycling centers in hopes of addressing this problem early, according to Justin Baca, SEIA’s vice president of markets and research. Two years ago, SEIA established a national recycling program, reaching out to US-based recyclers to vet their processes and make deals.

Right now, they're working with five recycling centers. "The volumes are really low right now, which is both a blessing and a curse," says Baca. "It's a blessing in that it's good not to have a lot of waste. But not having a lot of waste means traditional recyclers aren't very interested, since it only becomes economical to do at certain waste volumes." At the same time, he adds, that makes it difficult to know what recycling costs could be in the future. If the volume goes up, maybe it will be worth it to recycling companies.

Pickerel says that this is a problem that will need a legislative solution. "I don't think different materials is going to do anything," she says. "Things are changing where we're using no frames, and that makes it even harder to recycle because there's no aluminum [in the frames to reuse]." A policy change, she thinks, will really make a difference.

There are signs that policies are changing. Hutzler mentions that one solution energy policymakers are considering is adding a fee onto the cost of the solar panels that would make it easier for them to be removed and recycled. Washington state is taking an even more proactive approach: last year, it passed legislation that requires solar panel manufacturers to have a recycling plan for their products. In June, Europe opened its first solar panel recycling plant. These are all small steps in the right direction, but we still need a comprehensive plan in place before the panels shut down. It's all well and good to be excited about a promising technology, but we still need to think about what happens after.

*** NEW LiFi GETS 8 GIGABIT SPEED, FASTER THAN 5G WiFi***

BBC NEWS By Chris Baraniuk Technology reporter 11 October 2018

Internet connectivity through light waves could help 5G reach into buildings and underground. The global race towards superfast "fifth generation" mobile internet, known as 5G, is entering a key phase. The trouble is no-one knows exactly which technologies will be best for offering such a service. But one telecoms firm may just have had a light-bulb moment.

At its headquarters in Slough, O2 has installed an unusual demo. It's a room where a wireless internet connection is provided not through wi-fi, but li-fi - a system that transmits data through light waves rather than radio waves.

The mobile operator thinks the system may help to offer 5G speeds in certain locations where getting coverage from an outdoor mobile signal is difficult.

Harald Burchardt of pureLiFi, the firm behind the tech, says ceiling spotlights in the room have been spaced evenly so that their downward, cone-shaped beams can connect to a light-receiving dongle plugged into a tablet computer.

"We're using the light itself," he tells me, gesturing at the bulbs above. "These are flickering at billions of times a second, naked to the human eye."

Li-fi can offer data speeds of up to eight gigabits per second (8Gbps) - about 400 times faster than the average broadband speed in the UK.

Image caption Tablets, laptops and phones would need a special dongle to pick up the light signal

You need only walk a few steps out of the room and the signal drops. Inside, it stays ultra snappy.

Within the ceiling, the light bulbs have been connected to access points that are wired to the internet. If you didn't know that, though, you'd simply think you had walked into a well-lit room. It's a much more market-ready version of the technology demonstrated to the BBC four years ago.

So why is O2 considering li-fi as a potential way of offering 5G-style mobile connectivity in indoor spaces?

"Targeting indoor coverage is a real challenge," explains Brendan O'Reilly, O2's chief technology officer.

This is because it is harder for high-frequency, short wavelength 5G radio signals to penetrate walls and windows than 4G radio signals. Despite ostensibly being faster, the 5G signal may actually be less accessible in some places as a result.

"Li-fi could be part of a 5G solution. It provides good data rates," says Mr O'Reilly.

"I don't think we'll see O2 necessarily offering to make light bulbs themselves, but as part of a solution to a connectivity problem I can see li-fi playing a role in that."

Media caption Professor Harald Haas demonstrates his LiFi technology to Rory Cellan-Jones

Li-fi could extend mobile connectivity into those hard-to-reach indoor spaces. Or li-fi bulbs could replace streetlights in well-lit urban areas to provide high-speed connections to densely packed crowds of people.

Last year, Harald Haas, who coined the term "li-fi", published a paper in which he described the technology as a game-changer for 5G, listing a number of potential applications.

It might connect "internet of things" devices dotted around a building via light, he argued, offer connectivity to driverless cars moving along roads, or bring super-fast wireless internet to devices in data centres.

And Mr O'Reilly suggests that hospitals could easily hook up healthcare devices to the local network without having to rely on over-burdened wi-fi networks or relying on potentially hazardous cables.

Prof Dimitra Simeonidou at the University of Bristol says li-fi could help in places where radio-based connectivity is challenged - such as in train tunnels.

"When you are having the train go through the tunnel there is very little space around it, so that will definitely disturb radio signals," she explains.

Providing a seamless mobile signal to passengers on a train journey or to those using an underground rail network could be made possible with internet-enabled tunnel lighting, she says.

But li-fi is not ready to light up the 5G roll-out just yet.

"To make it work sensibly, it needs to be a bit like wi-fi, it needs to be ubiquitous," says Prof William Webb, independent consultant and author of The 5G Myth. "It needs to be in-built to lots and lots of devices."

Li-fi only works within the cone of light. Move beyond and you lose connectivity

For the O2 demo, a dongle was plugged into a tablet to receive the li-fi signal. But for the technology really to take off, these light-reading sensors would have to be built in to devices - a considerable obstacle.

And the most obvious drawback is that your phone won't be able to pick up a signal if it's in your pocket or bag. But given how much time we spend staring at our small screens, maybe this wouldn't be such an issue.

Prof Webb believes wi-fi networks could be capable of handling demand, despite that being an occasional frustration. "It isn't really a pressing problem," he says. His scepticism is echoed by Sylvain Fabre, an analyst at market research firm Gartner. He and his colleagues have been tracking the development of li-fi products and their adoption, but they are yet to see a big impact.

"There aren't many vendors and there are very few installations," he tells me. "It will be hard to go to economies of scale and get prices to drop." But that isn't stopping O2 and others from exploring the possibilities.

It might only take one engineer to change a light bulb - but Harald Haas and pureLiFi will need a lot more than that to change the world of wireless connectivity.



CLUB MEETING

The next club meeting is October 6th. We meet on the first Saturday every month at 11:00 Saturday morning at the Minnreg Building located at 6340 126th Ave N, Largo. Members are welcome to come in the rear area through the fence gate on the southeast corner of the property. Talk-in is on the Wormhole repeater system. For those coming to the meeting who cannot hit the repeater we will be monitoring the Honeywell club repeater on 443.050 +141.3. We will keep an eye peeled for you. We will take advantage of the cooking facilities with an after-the-meeting Social and Wormdog picnic.



CLUB NETS

Check in on the club net Thursdays at 1930 and 1945. 2M at 146.850 – with a tone of 146.2. At 1945 or at the end of the 2M net 53.150 – 1MHz offset 146.2 tone. We are always looking for volunteers to be the net control operator. Anyone interested, talk to one your club officers.



LOCAL NETS

MONDAY

1730 147.030 + Receiver sites and tone info <http://www.qsl.net/wd4scd/> St
Pete Yacht Club ARC

1830 147.060+ no tone St Pete ARC daily net St
Petersburg

1900 144.210 USB CARS, vertical polarization
Clearwater

1900 147.135 +146.2 Zephyrhills ARC
Zephyrhills

2000 147.165+ 136.5 Brandon ARS from
Brandon

2000 50.135 Pinellas ARK
Pinellas County

2030 NI4CE system EAGLE Net, NTS traffic net, NI4CE
system

2030 145.450 Pinellas ARK
Pinellas County

TUESDAY

1830 147.060 no tone St Pete ARC daily net from St
Petersburg

1900 50.200 USB 6M net
Brandon ARS

1900 28.450 WCF section net
Clearwater

1900 NI4CE system WCF Section VHF ARES NI4CE
system

1930 145.170 & 442.4 both pl 156.7 Pinellas ACS net Clearwater

1930 444.900 +141.3 Sheriff's Tactical ARC Tampa

2000 NI4CE system system	WCF Skywarn net	NI4CE
2000 147.105+ 146.2 Tampa	Tampa ARC net	from
2000 28.365 USB ARS	simplex	Brandon
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE
2100 28.465 USB	10/10 net	from Orlando
1900 146.490 simplex ARES simplex Net	3 RD Tuesday monthly, Hillsborough Co	

WEDNESDAY

1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
1930 52.020 simplex Petersburg	Suncoast 6'ers	from St
1930 NI4CE system system	WCF Section Digital Info Ne	NI4CE
2000 147.105 146.2 Tampa	Greater Tampa CERT net	from
2000 146.97- 146.2 Clearwater	Clearwater ARS	from
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE
2100 NI4CE system affiliated	Tampa Bay Traders Net	non-

THURSDAY

1800 146.52 simplex Tampa	Hillsborough ARES/RACES	North
1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
1900 444.750 +146.2 Tampa	Fusion net	from
1915 224.660- no tone Petersburg	St Pete ARC	from St
1930 146.6385 -127.3 Lakeland	Lakeland ARC	from
1930 444.225 + 146.2 Tampa	Hillsborough ARES/RACES	from
1930 146.850- & 442.625+ both pl 146.2 Petersburg	Wormhole	from St
1945 53.150 -1MHz 146.2 Petersburg	Wormhole	from St
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE

FRIDAY

1830 147.060 no tone Petersburg	St Pete ARC daily net	from St
2030 NI4CE system system	EAGLE Net, NTS traffic net	NI4CE

SATURDAY

0730 3.940 (7.281 Alt.)+/- QRM WCF	WCF Section HF Net	from
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1830 147.060 no tone St Pete ARC daily net from St Petersburg

2030 NI4CE system EAGLE Net, NTS traffic net NI4CE system

SUNDAY

0800 3.933 Florida Traders Net non-affiliated

1830 147.060 no tone St Pete ARC daily net from St Petersburg

1930 NI4CE system WCF Section Net NI4CE system

2000 147.550 simplex 550 Simplex Net
Pinellas County

2030 NI4CE system EAGLE Net, NTS traffic net NI4CE system

2100 144.210 USB Clearwater ARS vertical orientation



FOR SALE / WANTED

Anyone having something for sale or who might be looking for an item let me know. I will not print phone numbers or email addresses unless specifically told to since this newsletter might end up on the web. The exception is when I get the information off the web. If you are a member of the Wormhole then you have all the information you need on a club roster and if you are not a member .. why not? OK, if you are not a member you can contact me at the email address at the end of this newsletter, I will give you the information to contact the person involved.

FOR SALE, all the following from Ray KD4HUW

+Yaesu FT-857 with separation kit, MH-59 remote microphone, LDG FT_Meter and LDG-YT tuner all for \$725.00
+Icom AH-4 antenna tuner for \$175.00
+Yaesu dual band Mobile Radio (ft-7900R) New-in-the-box (never opened) for \$265.00
+Hustler antenna parts: Bumper mounting kit; 54" foldable mast with quick disconnect; Resonators RM-75, RM-40 and RM-15. All for \$75.00

FOR SALE, New MFJ TNC 1270X, never used in original box with manual and cables. \$30. Dean Sever W8IM

FOR SALE, Mosley TA-33M 10-15-20M beam with the 40M add on kit. Antenna is on the ground and in good shape. There are several parts that need replacement. The 40M kit is new in box. Antenna is broken down into six or seven feet sections so easy to handle. Asking \$300, talk to me, Bill AG4QX at arrl dot net or see me at the meeting.

FOR SALE, Cushcraft A4S 10-15-20M beam, on the ground. There are several parts that need replacement. Asking \$250, talk to me, Bill AG4QX at arrl dot net or see me at the meeting.

FOR SALE, 13 element, 14.5 ft 220 beam. Wormhole property, \$20, contact Bill AG4QX or any other officer. **Free to any Wormhole member or other club.** Pickup at Bill's house.



HAMFESTS

September 22 Odessa, **Pasco County Hamfest**, Gunn Highway Flea Market, 2317 Gunn Highway, talk-In on 145.350 no tone, contact Don Nystrom , KA2KDP at 727-868-0176, the website was down last time I tried it. <http://sarfl.com>

October 27 New Port Richey, **Gulf Coast ARC Fall Hamfest**, Millennium Academy, 10005 Ridge Road, **talk-in on** 146.67 no tone, \$5 includes tailgate, for more information goto <http://gulfcoastarc.org/2018/07/01/fall-hamfest-2018/>

November 3 Lakeland, **LARC Hamfest** Revolution Church of Lakeland, 7315 Kathleen Road, Talk-In on 146.685 tone 127.3, For info contact Kevin Rought , N4KWR 863-393-4336
<http://lakelandarc.org>

November 10 Pinellas Park, **SPARCFest**, admission FREE, tailgate free, Freedom Lake Park, 9990 46th St N, Southeast corner of US 19 and 49th Street, Talk-in on 147.060+ no tone. VE testing at 0900. For more information go to <http://www.sparc-club.org/sparcfest.html>

December 7 & 8 Plant City, the **2018 Tampa Bay Hamfest is the West Central Florida Section Convention, Friday and Saturday, at the Expo Building in the Strawberry Festival grounds, advanced admission \$9, at the door \$10, for information contact Bill Williams AG4QX, chairman@fgcarc.org or go to <http://www.tampabayhamfest.org> or you can just ask me, Jim or Dee at a meeting ;-)**

2019

February 8-10 **Orlando Hamcation and State Convention**, Central Florida Fairgrounds, 4603 West Colonial Drive, Tickets \$15 in advance, \$17 at door. Talkin 146.4760 - no PL or D-Star 146.850 -, all the information at www.hamcation.com or call 407-841-0874

February 22 & 23 Tampa, **5th Annual TECHCON Convention**, Hillsborough County Emergency Operations Center, 9450 East Columbus Drive, talk-in on 147.105 + 146.2, for more info goto <http://arrlwcf.org/> or contact Darrell Davis at kt4wx@arrl.net.

March 3 Punta Gorda, Charlotte County Hamfest, Punta Gorda Boat Club, 802 West Retta Esplanade, talk-in on 147.255 + 136.5, <https://www.prra.club/hamfest.html>

May 25

WormFest 2019, Pinellas Park, FREE, Freedom Lake Park, 9990 46th St N, southeast corner of US 19 and 49th Street, Park opens at sunrise for vendor setup, hamfest starts at 0800. Talk-in on 146.850 - 146.2. For a map and directions see <http://www.TheWormholeSociety.org> .

Mid January	Frogman swim in Tampa Bay. http://www.tampabayfrogman.com/
Last full weekend January	Winter Field Day, http://www.sparhams.org/index.php
Late January	Gasparilla celebration
Late February	West Central Florida Tech Conference http://arrlwcf.org/wcf-special-events/wcftechconference/
March/April	MS Walks
March/April	Mass Casualty Exercises
Late April	Southeastern VHF Society Conference, http://www.svhfs.org
Late April	March For Babies (was March of Dimes) https://www.marchforbabies.org/Registration/Events
Late April	Florida QSO Party
Early to Mid May	BikeMS Citrus Tour bike ride http://www.citrustour.org/register.php
Mid-May	Annual Armed Forces Crossband Test
Mid-May	Florida Hurricane Exercise
May, Memorial Day Weekend	Wormfest
Early June	Museum Ships on the Air
Fourth weekend in June	Field Day http://www.arrrl.org/contests/announcements/fd/

July 3/4	Midnight Run in Largo http://www.kiwanismidnightrun.com/
August	International Lighthouse/Lightship Week https://illw.net/
October, 3 rd weekend	JOTA, Scout Jamboree-on-the-AIR (around 14.280MHz)
Early December	ALS bike ride in Walsingham Park
December, first full weekend	Ride & Run With The Stars in Fort DeSoto Park
December, Second weekend	Tampa Bay Hamfest http://www.fgcarc.org/

YOUR WORMHOLE OFFICERS

Bill AG4QX is President and editor of this newsletter, Treasurer is Jim KD4MZL, Paul KA4IOX is the Secretary, Dee N4GD is the Repeater Trustee and Mike K4ZPE is both our club Vice President and webmaster.

YOUR WORMHOLE REPEATERS

53.150 -1Mz PL 146.2

442.625 +5Mz PL 146.2

146.850 - 600Kz PL 146.2

The Wormhole repeaters are both now dual mode Yaesu DR-1X. FM analog as always and now Yaesu Fusion, a C4FM/FM digital mode.

The Wormhole website is at: <http://www.TheWormholeSociety.org>.

West Central Florida Section website: <http://www.arrlwcf.org/>.

The ARRL website is at: <http://www.arrl.org/>

This newsletter is written for The Glorious Society of the Wormhole, an ARRL affiliated amateur radio club located around the Seminole section of Pinellas

County Florida. Anyone wishing to be added or removed from The Glorious Society of the Wormhole mailings please write to me at the address below and thy will be done.

73,

Bill Williams

AG4QX

ag4qx AT arrl DOT net