Sidebands

The Newsletter of the EAST GREENBUSH AMATEUR RADIO ASSOCIATION

www.egara.club

October 2021

EGARA Members Turn Out for Public Service Events

Serving the public has always been a big part of Amateur Radio and many EGARA members answer the call when asked to help out. On September 12th, five members helped staff the 2021 Dunkin Run to benefit the Sidney Albert Albany Jewish Community Center.

Several EGARA members turned out to staff communications during the 2021 Dunkin Run

Those on hand to assist with race course communications were Don Mayotte, KB2CDX, Russ Greenman, WB2LXC, Steve Marsh, KC2USX, Sean Browstein, WB2RUX, and Deb Mariani, KC2LUL.

Meanwhile, Bill Leue, K2WML, and Mike Shanahan, WO2H, joined members of Rensselaer County RACES to help out with the 9/11 Memorial Walk that was sponsored by the West Sand Lake Fire Department. The 9.1 mile event was held to remember the 343 firefighters who perished in the collapse of the World Trade Center.

On October 10th, several EGARA members plan to help provide communications support for the Mohawk Hudson River Marathon & Half Marathon, which runs from Schenectady to Albany. And, on October 30th and 31st, members are set to assist with the annual Pumpkin Patrol which uses Amateur Radio operators to monitor Thruway bridges to deter vandals from throwing pumpkins into traffic. Several cars and trucks have been hit in the past, causing injuries and car wrecks. Members interested in helping with these events can get details by contacting EGARA President Bryan Jackson, W2RBJ. He can be reached by email at ***W2RBJ@Outlook.com***.

In This Issue

RACES Is Topic of October Meeting

Updates on the Rensselaer County RACES program will be featured at the club's October membership meeting, with Mike Shanahan, WO2H, as the featured speaker.

The "*Radio Amateur Civil Emergency Service*" works with Federal, State and Local agencies to provide emergency communication backup during disasters, severe weather or other events which compromise normal communication systems. Shanahan serves as the Chief Radio Officer for the Rensselaer County organization.

In addition to providing an update on local RACES activities, Shanahan will also explain how to join the group and the benefits of membership.

Next Membership Meeting - October 13, 2021 - Masonic Lodge at 7 pm

Hamfest Buying Tips

By Steve VanSickle, WB2HPR

If you're looking for a bargain in ham radio equipment, a visit to the next Hamfest may be for you! Whether you are new to the ham radio hobby, or have been in the field for a while, a hamfest may have the answer to your next equipment quest.

Given the popularity of several ham radio equipment classified ad websites and on-line auction websites, you may think that Hamfests are becoming less relevant, but -- as evidenced by the strong showing at recent Hamfests -- bargain seekers are still on the hunt for new and used radio gear and accessories at bargain prices. If you have never been to a Hamfest and perused the offerings on display, both at the tailgating area or at the commercial vendor exhibits, you may find the seeming disjointed displays a bit overwhelming at first. Don't worry, though – by arming yourself with a few tools and techniques beforehand, you should be able to land a deal on your next rig or parts or accessories to add to your station.

First - before you go, make a list of the equipment that you currently own. This will come in handy if you're trying to add an accessory to some equipment that you already have. Write down the Make and Model, for instance and a brief description like: "Yaesu FT-897D HF/VHF/UHF all mode transceiver."

Second - Jot down a "wish list" of items that you are looking for. If you are looking for an automatic tuner for your FT857D, as an example, list some of the more typical tuners which are compatible with this particular radio. Don't rely on memory – write it down. While you're at it, take a picture of the microphone plug and accessory jacks so you can be sure to purchase the correct interconnecting cables or microphone. Know the selling price of the equipment before you go – again, write it down. That way, you'll be able to judge whether or not you really are getting a good deal. Also, by knowing prices in advance, you can budget for your hamfest purchases. Bring enough cash – most all transactions at the tailgate area are cash only. Many, but not all, of the commercial vendors accept cash and credit cards, but not checks.

As part of your wish list, check on-line resources such as E-Ham reviews to see what experiences other users may have had with the equipment you are considering. Also, talk it over with an experienced ham (Elmer) – so you don't buy the wrong equipment. In fact, it's better to have your Elmer with you or available by cell phone or radio so they can help you evaluate your proposed purchase. Know what it is that you are looking at - and always ask the seller's permission to pick up or handle and examine a piece prior to purchase. If an item is still in production, ask if it still has a warranty from the manufacturer.

When you arrive at the Hamfest, be aware that many of the bargains are snapped up early – yes, the early-bird DOES get the worm! Don't arrive mid-morning expecting to get the cream-of-the-crop bargains. Bring a tote bag or backpack, if you think that you may be purchasing a number of small parts, connectors or other accessories. Most tailgaters do NOT supply shopping bags! If you are expecting to buy larger bulkier equipment like amplifiers or power supplies, you will need a means of moving your bargain find to your car. This may call for the use of a folding two-wheeled shopping cart, similar to those commonly used to transport groceries in an urban setting. Wear comfortable sturdy shoes, you may be walking around quite a bit, probably on asphalt or uneven grassy areas, or both. If the weather is calling for sun, a broad-rimmed hat can be quite helpful. Conversely, if the weather forecast is for cooler temps, a light jacket and cap is a good idea. In your tote bag, you may wish to bring along an inexpensive multi-tester or VOM to test used parts or cables prior to purchase.

So much for the prepping part - then its time to bargain for the best deal. Often, sellers will consider a package deal – when you offer to buy multiple items for a combined price. A back-and-forth of offer/counter-offer is usual and expected, so don't be afraid to ask if their asking price is the best that they can do. Trying to land a bargain is part of the fun! If you are not willing to pay the requested price, sometimes a return to the seller later in the day may result in a better deal. They don't want to have to take home all that they brought to the Hamfest - if they brought it, they want to sell it – at the best price possible.

Of course, there is much more to consider when going to a Hamfest – and if it's a long trip from home, you'll want to have made a hotel/motel reservation well in advance. Check the sponsoring clubs website for any special rules or other information about the Hamfest. Some offer other activities such as hidden transmitter (Fox) hunts and VE sessions as well as seminars on radio related topics. Use your on-line resources, and remember it's always a good time when you can travel with another friend or Elmer. Make it a fun event – you will find it enjoyable to meet and talk with other hams at these gatherings… and, who knows what bargains will be riding home in the trunk of your car! So--enjoy the hunt – Hamfests are back!

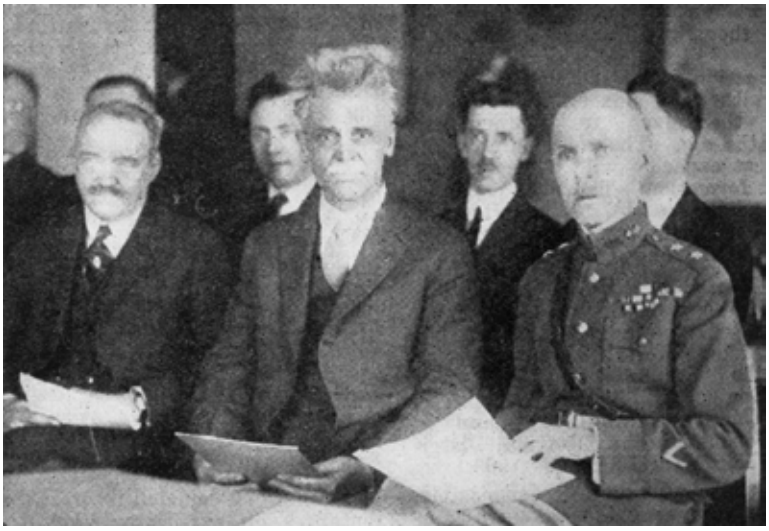
The History of Ham Radio: First Band, Top Band

Chris Codella, W2PA, author, John Pelham, W1JA, editor, Phil Johnson, W2SQ, editor

(Editor's note: By special arrangement with the authors, Sidebands is pleased to present this multi-part series on the history of ham radio. Subsequent chapters will be published in future monthly editions of the newsletter)

On 20 March 1923 Secretary of Commerce Herbert Hoover convened his second national radio conference and, as before, the ARRL was there in force. A May QST photo shows Maxim at center flanked by C. F. Jenkins, identified as "inventor of radio transmission of photographs," and Major General G. O. Squier, US Army, Chief Signal Officer. Paul Godley of transatlantics fame and ARRL Secretary Kenneth Warner can be seen in the background. Besides Maxim and crew, other prominent participants from the radio research community included inventors Edwin Armstrong, Louis Hazeltine, Professor C. M. Jansky—amateurs all—and many others from government, academia and industry.

The majority of the attendees, however, represented the broadcasting industry, as expected. After all, the conference's main purpose was to determine what could be done to ease the industry's interference problems by establishing new regulations deemed permissible under the current law, now eleven years old. Since the previous year's attempt at legislation had failed, this was the only path left.



Maxim (center) at the conference, with Godley and Warner

To accomplish any meaningful relief, other services had to give up spectrum space to create new wavelengths for the broadcasters. Recommendations included reclaiming the 450-meter maritime wavelength and the amateur extension at 275 meters to create a continuous broadcast band from 222 to 545 meters (approximately 1,351 to 550 kHz, which is very close to today's AM broadcast band limits). The "government reserve" allocation above 600 meters was then recast to include the maritime service that would be displaced from 450 meters.

The broadcast band was further divided between Class A stations, those with high power and continuous service, and Class B stations "of restricted range and ability." Class B would operate below 286 meters where wavelength assignments would be made on a geographical basis so as to minimize interference.

Assignments for Class A stations above 286 meters would be handled a bit differently. One wavelength would be assigned exclusively to each geographical region, and stations in that region would further divide up the use of the channel into time slices. The conference asserted that this would make it possible to assign fifty such regional wavelengths spaced 10 kHz apart. With this scheme in place, anyone with a good receiving setup could tune in to various other areas of the country and, conditions permitting, would have some hope of hearing them without interference.

Ten local areas within each of five national zones would have allocations separated by 50 kHz, and no areas in adjacent zones would be closer than 20 kHz. All broadcasters were required to have measuring equipment to ensure that they were operating within 2 kHz of their "assigned wave frequency," as the rule phrased it.

To ease the transition for an existing broadcaster, a temporary classification could be assigned to allow it to continue to use its present allocation until it could obtain a new one and move there.

The amateurs would get exclusive use of 150 to 200 meters (1.5 to 2 MHz), which is larger than our current 160-meter band—widely called top band by hams. Special license holders would be permitted to operate between 200 and 222, and "extra special" licensed stations could use "some quiet wave below 286 meters for use in the difficult Rocky Mountain region for the benefit of trans-continental relay work."

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History of Ham Radio...

There could be at most six of these stations—a severe restriction. Spark transmission was tentatively assigned to 175 to 200 meters, with only straight CW allowed between 200 and 220, and CW, ICW and phone between 150 and 176 meters. Further subdivision was possible and the ARRL was asked to recommend allocations by transmission type at a later date. Significantly, everything below 150 meters was designated as reserved but open to special licensing.

The department would also require all radio stations to surpress harmonics to a level yet to be specified. And the conference resolved that spark transmitters should be replaced "as rapidly as practicable by apparatus which will produce a minimum of interference." It further resolved that amateurs should "by mutual arrangement" observe periods of silence during religious broadcasts on Sundays. To put some teeth into the regulation, it stipulated that the Department of Commerce had the power to minimize or eliminate interference by rescinding licenses, regulating operation and other means.

Although the major conference benefits went to the broadcast industry as intended, nearly all concerned parties were pleased with the outcome and some wondered why the government had not done this a year earlier instead of expending energy trying to get legislation passed. (The answer would become clear a few years later.) The ARRL board was to study the proposed regulations in full and make its own recommendations before they became final.

The conference also asked the ARRL to recommend how the 200–150-meter amateur allocation might be subdivided. The League's board then canvassed the membership across the country to come up with a unified set of recommendations about allocations and other issues that might arise. Although the membership opposed any sort of elaborate subdivision plan based upon signal type, there was widespread support for something that would protect the shorter wavelengths from QRM. So, in a proposal similar to but simpler than the one made by the Conference, the board recommended that all modulated forms of transmission be limited to the band from 176 to 200 meters, and that straight CW be permitted anywhere in the amateur allocation, thus protecting the shorter wavelengths which were increasingly viewed as important by amateurs. (This reversed the previous scheme where, like today, broader modes were confined to shorter wavelengths, that is, higher in each frequency band.)

In a worrisome surprise the Commerce Department began to recall amateur licenses in order to add a stipulation that no transmitting could occur between 7:30 and 10:00 p.m.—an official mandate for the Rochester Plan. Knowing about the ARRL's voluntary program and realizing that not all amateurs were League members, the Department was trying to "help" but only ended up alarming most amateurs. After the League explained the difference between how amateurs viewed a voluntary program as opposed to a required one, the Department agreed to suspend further action and only apply the new regulation to new licenses until the ARRL Board could consider it. With unanimous objection the Board concluded that such a mandatory regulation was undesirable and, in particular, would obviously prohibit operation during emergencies. The Department's action would remain pending.

The League also suggested that the amateur allocation be expanded to 220 meters in a more formal manner and establish an "Extra First Grade Amateur Operators License" which would conform to the 1912 law permitting special licenses. Action on this was also still pending. Meanwhile all of the old 375-meter special licenses were being recalled since that wavelength was now part of the broadcast band.

On 28 June the Commerce Department signed approval of the new regulations, designated General Letter No. 252. General and Restricted Amateur Radio Station Licenses would permit the use of pure CW anywhere between 150 and 200 meters, with spark, modulated CW and unfiltered CW being restricted to wavelengths of 176 to 200 meters—basically adopting the League's suggestion. Special Amateur Radio Licenses could extend the use of pure CW to 220 meters. Pure CW was defined as oscillations produced using a power supply of "substantially direct current" such as a battery, generator, or rectified, filtered AC with less than 5% "supply modulation," the term used to describe any remaining non-DC component. Input power for all three classes was limited to 1,000 watts. Each station license would specify the equipment in use and the restrictions that applied to a specific transmitter (more than one was possible).

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On the Beam
News & Notes

Volunteer Monitor Program Warns Hams

A number os Hams were warned about their improper on air operations over the summer by the Volunteer Monitor (VM) Program, a joint initiative between ARRL and the Federal Communications Commission (FCC) to enhance compliance in the Amateur Radio Service.

- Licensees in Pawcatuck, Connecticut; Wamego, Kansas; Valley Cottage, New York; Long Valley, New Jersey; Columbia, South Carolina, and Maryville, Tennessee, were sent Advisory Notices concerning operation on frequencies that were set aside for Haiti earthquake emergency communications by the International Amateur Radio Union (IARU) Region 2 Emergency Coordinator.
- Licensees in Prineville, Winston, Silver Lake, and Roseburg, Oregon; Sioux Falls, South Dakota, and Houston, Texas, were sent Advisory Notices concerning failure to identify, as required by Section 97.119(a) of the FCC Amateur Radio Service, pursuant to a nationwide rule compliance review of operations on 3.819 MHz and 3.953 MHz.
- A former licensee in Seabrook, Texas, was sent an Advisory Notice concerning operation with an expired license.
- An FT8 operator in Orion, Michigan, was sent to an Advisory Notice reminding him of the 200 W power limit on 30 meters.
- A licensee in New Caney, Texas, was sent a final notice that his case was being referred to the FCC for license revocation or deletion of voice privileges from his license.

The Volunteer Monitoring Program also praised a California Ham for his on air performance. A *Good Operator* commendation was sent to an operator in Roseville, California, for Exemplary Amateur Procedure on May 21, 2021, during the 40-meter California Rescue Communications Net.

The revised total for VM monitoring in July was 5,746 hours -- the highest number of hours monitored since the inception of the VM Program. In addition, the IT staff at ARRL Headquarters completed work on an automated system for Volunteer Monitors to report monthly monitoring hours and Incident Reports.

Club Member is Author of Two Tech Articles for QEX Magazine

Brian Callahan, AD2BA, has written two tech articles that will appear next year in ARRL's QEX magazine. Brian holds a PhD and is Lecturer at Rensselaer Polytechnic Institute.

The first article is titled "***DataTV: protocol for embedding data into SSTV transmissions***," which will be printed in the March/April 2022 issue of QEX. It details a new operating mode that is fully backwards-compatible with existing SSTV transmissions. Using a common form of steganography, the art and science of concealing messages in plain sight, hams using this new operating mode can embed a data transmission into an SSTV image without making the SSTV image any larger and, importantly, without any extra time to transmit--quite literally adding data transmissions to SSTV transmissions without any penalty.

The second is "***Experiments in Gaming over SSTV,***" which will be printed in the May/June 2022 issue of QEX. It documents some techniques to share and play video games over SSTV. With online video game streaming platforms, such as Twitch.tv and YouTube, exploding in popularity, we need to recognize that ham radio was the original streaming service. Developing techniques for how to share and play video games over SSTV, combined with online video game streaming platforms, can serve as a novel and exciting way for hams young and old to enjoy our hobby across ages. Equally importantly, this novel use of SSTV can be used to attract new people into the ham radio hobby.

EGARA September Meeting Minutes

- The September meeting of the EGARA was called to order at 7:10PM by President Bryan Jackson, W2RBJ. A total of 13 members attended at the Masonic Temple. A raffle of various tools and a $25 gift certificate was held with many members winning prizes.
- There was no report given by the Vice President or Treasurer, nor were any minutes presented.
- An overview of the Hamfest results shows a significant increase over the 2019 event and proceeds resulted in the club treasury being well funded. A special email distribution of Sidebands was made to the many sponsors who helped us achieve such great success.
- A "Thank-you" cookout is being planned to celebrate the Hamfest success and to honor the volunteers. The time and date will be set and announced. Next year's hamfest is expected to use the entire East Greenbush town park facility. The date will have to be carefully coordinated so as to not conflict with other Hamfests and service events. David Jaeger K2DEJ suggested that the admission table be moved 20 feet closer to the park entry gate to allow easier egress and exit to/from the parking area. Some attendees requested closer parking.
- Pumpkin patrol will be conducted this coming Halloween. Volunteers are needed for the Berkshire spur bridges of the Thruway. Also operators are needed to the Dunkin run, the 9-11 run and the Arsenal city run. Members were to be emailed with sign-up instructions.
- A possible VE session is being investigated for the Fall.
- Bryan thanked members for their help with Masonic temple maintenance.
- Ridge Macdonald KB2HWL reports that there are changes being made to the Hamshack hotline. Also, ARES Connect is being reestablished to help record ham activities that benefit the public.
- Members were asked to consider volunteering for the position of program chair.
- Refreshments and cold drinks were provided to the club members. The meeting was concluded at 7:54 PM at the sound of a nearby thunder storm.

Submitted by Steve VanSickle, WB2HPR - Secretary

Rosenworcel Pushed for FCC Chair

A group of approximately two dozen U.S. senators are urging President Biden to designate acting FCC Chairman Jessica Rosenworcel to the position permanently, making her the first woman to hold the office. The chairmanship of the commission has been in limbo since Biden was sworn into office on Jan. 20, 2021, with Rosenworcel operating in acting capacity.

Some noted that they had voiced their support in a similar letter to Biden after he was declared winner of the 2020 election. They said having a permanent chair is important, in light of congressional efforts to provide funding for expanded broadband access nationwide as well as address the impacts of the 18+ month pandemic, part of the "Infrastructure Investment and Jobs Act of 2021."

"Given this once-in-a-lifetime opportunity to ensure all people have access to broadband, it is absolutely essential that there are trusted, qualified appointees leading these agencies to coordinate the deployment effort across your administration" the senators — representing 17 states — wrote in a letter to the president. "There is no better qualified or more competent person to lead the FCC at this important time than Acting Chair Rosenworcel," the senators said. "We have long experience working with her and her team, and she has already shown an ability to steer the FCC through these extraordinary and difficult times." They also noted she should face few obstacles to her confirmation.

A Quick Guide to USB Cables & Connectors

It's easy to get confused with all the letters and numbers that follow different types of USB cables and connectors. So here's a detailed guide in which we'll present the main USB cable types. We will also explain what the letters and the numbers in the USB names mean so you know exactly what to look for when you're buying a USB cable.

The Letters that Come After "USB" in the Type Name

The first thing you'll probably see when checking out USB cables is that there are different letters assigned to various connectors. These letters indicate the exact type of the USB connector and you can find them in the cable name, usually after a dash. So, we'll begin our article by explaining what these letters really mean.

When you think of a USB cable, the type that first comes to your mind is probably the USB type-A. This type is the most common one. You can find this kind of USB port on most laptops and desktop computers. Moreover, many cables that go into phone chargers have the USB Type-A on one end while the other end is based on the model of the phone you have. You can also find it on TVs, receivers, headphones, and so on. Despite being the oldest model produced, type A is still the most popular one. Its shortcomings have been updated in different speed configurations which is covered later in this article.

The least popular of all of the connector types is Type-B. It is smaller than type A and it looks like an oddly shaped rectangle. You will find it on older external hard drives. In addition, older printer models used a USB Type-B port. USB Type-B can also often be found on Amateur Radio gear, either to externally control it or for updating its firmware.

The last main type of USB connectors is Type-C. It's the newest connector type and it is present on most of the latest laptops, phones, Bluetooth speakers, headphones, and other devices. You can recognize it by its thin, kind of oval, shape. They can come with cables that have type A on one end or those with Type-C ports on both ends. That means that you can connect two devices that support the Type-C connection, which is something that wasn't thought about as much when Type-A and B were produced. A great upside to this type of USB is that it supports the highest speeds for data transmission. So, that's why it's becoming more and more popular.

As we mentioned, Type-C can support the latest technologies. So, another great feature associated with a USB Type-C is Thunderbolt 3. Thunderbolt 3 is the newest Thunderbolt interface that is only compatible with the Type-C connector. ***However, you shouldn't mix up the USB Type-C connector and Thunderbolt 3 because they are not the same thing.*** That's vital to mention because, even though you can plug Thunderbolt 3 connector into any device that supports Type-C, not all USB Type-C ports support Thunderbolt 3. Thus, you should check what your device can handle before purchasing the Thunderbolt 3 cable.

(Left) USB Type-C VS Thunderbolt 3
They look the same but are not the same thing

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USB Connectors Explained...

So, Thunderbolt 3 has a connector that is the same as the USB Type-C port, but it can transfer data at a much higher speed. In fact, its speed is two times faster than the one of USB Type-C.

"Mini" and "Micro" Labels before the Letter in the USB Type Name

While we're on the topic of innovations, most phone companies have switched to the USB Type-C or Thunderbolt 3 as their main connectors. For example, a lot of newer Android models come with this port. Moreover, Apple also adopted it for new Macbook models. In addition, many TVs and external monitors today support either USB-C or Thunderbolt 3.

Did you ever notice the "mini" or "micro" label before the letter indicating the port type? Well, that label is also important because it shows the kind of a subtype of the USB. As you can probably guess by its name, the "mini" written before the letter means that the USB port is smaller than the average size for that type. In the past, most mobile phone manufacturers used this type of connector for phone charging. However, nowadays, newer USB connectors are used for that and the mini port is not as common. It supports lower speeds, which is one of the reasons why it was replaced by the micro connector.

The "micro" connector presents a newer type of USB port. Most phones produced some 5 years ago used a micro USB. You can also see it on numerous smaller, portable devices such as batteries, game controllers, and external hard drives. Micro USB ports are much more common than mini USB.

Numbers in the USB Type Name

The numbers you can see in the USB type indicate the speeds at which they transfer data. The oldest version is the 1.0 one and it came out in 1995. The first version was quickly replaced by the USB 1.1. This version can transfer around 12 megabits of data per second. Despite being the slowest version, it can still be found on many devices.

As you can probably guess, the second version was USB 2.0 It was officially introduced to users in 2000. Its transfer rate is around 480 megabits per second. You can find it on most Type-A connectors, some USB-B ports, as well as in mini and micro USB cables. Furthermore, it is compatible with USB Type-C.

The next version was USB 3.0. It came out in 2008 and has been upgraded multiple times, which is why you'll often see 3.1 or 3.2 in the USB names today. The basic 3.0 type was able to transfer data at the speed of around 5 Gigabits per second (Gbps). It works with all three of the main types of connectors including micro subtype.

Max speeds of different USB and Thunderbolt versions

We've already mentioned that the 3.0 version has been updated a few times. The 3.1 version has two generations, with the second one having a speed of 10 Gbps. USB 3.2, on the other hand, is the latest one of all upgrades. Its maximum speed is 20 Gbps and it works with the Type-C connector.

The latest USB version is 4.0. Its speed is should go from 20 to 40 Gbps. It will work with the Type-C connector and should be able to handle the Thunderbolt 3. However, this one still isn't on everyday consumer devices.

In general, there are two main types of cables. The first one features the same USB connector on both ends. So, the cable with two Type-C ports is the Type-C cable. The other type of USB cable is the one that has the connector of one type on one end and another type of connector on the other. Their main purpose is to connect devices with different types of ports.

Now you hopefully have all the info to understand USB cable types.

Please Support Our EGARA Hamfest Sponsors!

History of Ham Radio...

Special stations had to be operated by amateurs holding an Extra First Grade Amateur operator's license, a newly established class, or a First Class or Extra First Class commercial license. The new Extra First Grade Amateur license required passing (with a 75% grade) an examination containing a new set of questions, sending and receiving code at twenty words per minute, and two years of experience as an amateur operator, as the League had recommended.

General and Restricted licenses were again being recalled for modification, this time to specify wavelength and quiet hours, whereas special licenses were being replaced with newly issued ones to reflect the new allocation.

All licenses would specify that transmitting was not permitted between 8:00 and 10:30 p.m. local time "nor Sunday mornings during local church services." On one hand, this was recognition of the effectiveness of the voluntary quiet hours in the Rochester Plan, and on the other, observation that it was not being uniformly observed. The later 8:00 p.m. start time was a welcome change.

For the first time, amateurs officially had a band assigned to them rather than a single specific wavelength (200 meters). Although the League did not get the desired access to wavelengths shorter than 150 meters, the Commerce Department assured amateurs that it would grant special licenses to operate there for all applicants who were "seriously interested" in experimenting.

Having a band of wavelengths opened up new possibilities for reducing QRM. Warner optimistically, if unrealistically, suggested that, "we have so many cycles in our band that if we distribute ourselves even approximately evenly we should have almost no QRM." But to take advantage of the space, amateurs needed a technique to make it easier to change wavelength, normally a cumbersome procedure. "This is something we have never developed because it hasn't been permitted us before," he noted. A frustrating yet common occurrence was that you would hear a station you'd like to work calling on a different wavelength from your transmitter, then fail to raise him because he was not tuning around with his receiver. The League secretary marveled at "how funny it is to call blindly and hope our correspondent will be kind enough to turn his knobs to our wave; how much more to the point to call on the wave we know he's listening on!" He cited an example where two stations miss each other, one on 200 meters and the other on 215—a difference of about 105 kHz. And he called for invention by the members, writing that, "We don't believe there is a circuit whereby it can be done efficiently with even two controls; the couplings have to be changed and it is likely to become a half-hour job" just to QSY!

The second big job was to devise transmitters that produced no spurious emissions—or at least fewer of them. The Commerce Department indicated that it might consider lifting the quiet hours requirement if amateurs could build "a transmitter which is silent on the waves it isn't supposed to be using, even when listened to next door." This was an implied reference to interference to broadcast listeners who would likely be using unselective receivers—a broadcaster on 222 meters, for example, is only 150 kHz away from 200 meters. This clearly called for the use of pure CW with no modulation effects of any kind. "When all these things are solved," predicted Warner, "a bugproof amateur transmitter will be the result; we shall be much happier, our work will be much more pleasant and more enjoyable."

Ahead of the ARRL board's upcoming detailed consideration of the new rules, Warner summed up his impressions and suspicions this way:

> ***From the standpoint of the broadcasters it's FB but from that of the amateur—? It seems somebody else has their eye on the waves below 150 meters and we did not succeed in our effort to secure an amateur band around 100 meters … The majority sentiment on the Conference was to fix up the broadcasting business so it could succeed, and tribute was exacted from the government services; the amateur, the commercial, and even perhaps the facilities safeguarding life at sea, to make that possible.***

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History of Ham Radio...

Around this time amateurs began to discuss how band allocations were specified and talked about. Echoing an increasingly popular opinion, QST correspondent A. N. Goldsmith asked how and why wavelength was chosen over frequency to describe radio waves, when frequency was much more "natural"6 in his estimation. After all, nobody referred to AC power as 5,000,000-meter waves. The practice of specifying wavelength probably dated back to Hertz (ironically enough, since his name would later be used internationally as the standard unit of frequency), who was experimenting with waves of only a few meters, and to studies of light waves which had frequencies so high as to be "practically impossible" to comprehend, wrote Goldsmith.

But for radio it seemed a big mistake to think in terms of wavelength. It was much easier to speak about "space for transmission" in terms of frequency, since that amount of space depended directly on the frequency of the modulating signal. Thus the frequency at the center of a signal's band of occupied frequencies is the carrier frequency. It then becomes easy to say, for example, a 200-meter CW signal at a speed of 20 WPM is on a carrier frequency of 1,500 kilocycles and occupies a band 10 cycles wide. Similarly, a phone signal occupies a band having a width that is double the maximum desired audio frequency, which, Goldsmith asserted, ranges from roughly 4,400 cycles for speech to 15,000 for "high grade music." The band of wavelengths depends on the wavelength itself, whereas the band of frequencies is the same for a given mode of transmission regardless of the carrier frequency. Using frequency made it much easier to talk about signal occupancy within bands.

This discussion also made clear why spark was on its way out. A spark signal extends out indefinitely from its carrier, getting weaker as you move further from the center. "A well-behaved modern station must have a definite address. It must occupy a certain numbered residence of reasonable width on the Street of Carrier Frequencies, and it may not invade everyone else's home to some extent. And that is exactly what the spark station unfortunately does," and why it must be eliminated, wrote Goldsmith. Having used wavelength for so long, it would be difficult to make the change due to "conventional and sentimental objection" to it, he added. But converting was easy, really—dividing 300 by the wavelength in meters gives the frequency in megahertz. To get the frequency at 200 meters, you divide 300 by 200 which equals 1.5 MHz.

With the arrival of a band and allocations within it, amateurs would have to change both how they produced signals and how they talked about them.

GENESIS Satellites Among Payloads Lost in Launch Failure

The GENESIS-L and GENESIS-N ham radio satellites were among several carrying amateur radio payloads lost following the failure of the Firefly Alpha rocket during its first launch on September 2nd from the Vandenberg Space Force Base in California. An anomaly occurred about two minutes into the mission, causing controllers to destroy the launcher in flight.

The failure was particularly sad news for AMSAT-EA (Spain), as GENESIS-L and GENESIS-N were the first satellites they had built themselves. They were to conduct a series of telecommunications-related experiments.

Also lost in the launch failure were the Serenity, Hiapo, the Cresst Dream Comet, and QUBIK-1 and QUBIK-2 satellites, and Spinnaker-3/Firefly Capsule 1. All were designed to use amateur radio frequencies for telemetry and communications.

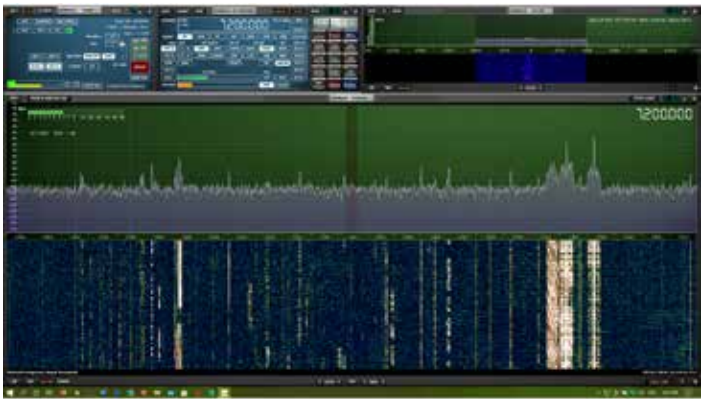
Serenity, a 3U CubeSat, was developed by Teachers in Space (TIS) to provide low-cost opportunities to test educational experiments in space.

Shortwave Radios Keep Up With Tech

There's still lots to listen to, and new ways to do it

By James Careless

Surprise! Shortwave radio as a broadcast medium is holding its own, despite the intrusion of the Internet, transmission cutbacks by major broadcasters such as the BBC World Service and Voice of America and abandonment of the SW bands by other state-owned broadcasters. Meanwhile, the ways in which people listen to SW radio transmissions are evolving, because SW receiver manufacturers are keeping up with the technological times.



An SDR receiver on shortwave showing the signals of broadcasts and amateur radio signals

There is no doubt that the variety of stations on the SW bands has declined, due to the end of the Cold War — the propaganda war of which drove the medium in the 1950s and 1960s — and the emergence of the Internet. Nevertheless, "Even with many stations that are long gone, there is still quite a lot to listen to on the SW radio bands," said Gilles Letourneau, host of the OfficialSWL channel on YouTube (25,600 subscribers) and editor of the CIDX Messenger magazine column "World of Utilities."

"You have stations like Radio Romania, Voice of Turkey, Radio Prague, Radio Slovakia and Radio Tirana, Albania, while WRMI in Miami has popular listener-created programs like Voice of the Report of the Week," he said.

"The big broadcasters are there as well but they don't target North America anymore. Still, I get my share of BBC World Service, Radio France International, Voice of America and Vatican Radio mostly targeting Africa, Middle East and Asia but still listenable here at certain times of day."

Most of the stations that have left shortwave are government-owned or -operated services like Radio Canada International, Channel Africa, Radio Portugal, the Voice of Russia and Radio Australia said Jeff White, WRMI's general manager and chairman of the High Frequency Coordination Conference. But others remain on the air with reduced services, languages or target areas including the VOA, Radio Deutsche Welle (Voice of Germany), Radio France International, Radio Exterior de España and All India Radio.

"Others are operating at near-normal levels, such as Radio Japan, Radio Korea, Radio Romania International, Radio Havana Cuba, the Voice of Turkey, Radio Taiwan International and many more," White continued. "Some stations don't use shortwave transmitters in their own country, but they use overseas relays, including Radio Prague International, Radio Slovakia International, RAE Argentina to the World and Radio Tirana."

Further, many former government-owned shortwave transmitter sites — such as Radio Netherlands in Madagascar and sites formerly operated by the BBC, Radio France International and Deutsche Welle sites —have been privatized and are selling airtime to private religious, commercial and cultural broadcasters.

Technologically speaking, the big trend in SW radio receivers is the ongoing move to software defined radios. SDRs harness the processing power of personal computers to perform the majority of their tuning, visual display and audio reproduction features. All that is added is a piece of plug-in hardware that contains the specific radio receiver hardware, and a connection to an outboard antenna of the user's choice. And, because SDRs leverage the power of users' computers, they can do much more than conventional standalone SW radio receivers, and at a much lower price.

"Software-defined receivers have had a really big impact on the shortwave listening hobby," said Letourneau.

-continued on page 14-

Shortwave... Still Lots to Listen To...

"A $200 SDR can rival a much more expensive tabletop receiver in performance. Add the flexibility of viewing a large bandwidth of frequencies in real time on your computer screen, and it all adds to the experience of listening. You can see where a signal has popped up and just click to listen in."

White agrees. "I think SW SDRs are a major trend that seems to be growing every year. Since most people have personal computers nowadays, it's a more practical option, and at a quite reasonable cost. As well, SDRs have made dozens of remote-control online SDRs possible worldwide, enabling listeners to tune shortwave receivers halfway around the world on their PCs or telephones and hear shortwave stations that they can't normally hear in their own area."

Like standalone shortwave receivers, the shortwave SDR market offers a range of models to choose from at various price points. "These can be something as compact as a USB-based 'radio on a dongle' to a more self-sufficient 'Kiwi WebSDR' that is not only a wideband receiver, but also has a Linux-based backbone processor called the 'Beagle Bone,' which is very similar to the Raspberry Pi," said Colin Newell, editor/creator of the DXer.ca website. "Not only is the Kiwi a 10 kHz to 30 MHz radio, but it is also remotely accessible and controllable on the Internet. There can be as many as eight listeners tuning it remotely, so it is virtually eight radios in one."

Meanwhile, the Perseus line of SDRs can actually capture and record large swathes of the SW radio spectrum at a time. "Much like the VCRs of old, 'spectrum capture' now affords the 'recording' of the entire radio spectrum over time for later listening and uncovering of exotic targets," Newell said. SDRs can also provide active noise canceling to eliminate problems with local noise sources from electronics, and support co-channel canceling to receive a weaker station completely overlapped and buried under another stronger station. The price of entry-level SDRs can also be ridiculously low. For instance, the RTL-SDR Blog 3 "radio on a dongle" is a credible SDR SW receiver and costs $25.

Carl Laufer, owner of the company, says, "The RTL-SDR Blog V3 is one of the cheapest, yet most versatile SDRs on the market. At its core it's an RTL-SDR that has been heavily modified for better performance and to have additional features. One feature is the ability to easily activate in software the 'direct sampling mode,' which allows users to receive SW radio frequencies without the need for an upconverter that would be required by other RTL-SDRs. Granted, the receive performance of direct sampling mode is nowhere near comparable to the high-end, higher-priced SDRs, but it can be a very cheap way to receive SW."

While the SDR trend is definitely changing the way that many people listen to SW radio the complexity of these units for non-technical people, and the fact that they need to be connected to computers, have kept many SW fans tuned to standalone radios. In this area, portable SW radios are enjoying the most popularity, because the computer technology that has made SDRs possible also supports the manufacture of sensitive, precise portable radios at very affordable prices.

"It has never been so inexpensive to get a decent radio that will get most of what you want on the bands," said Letourneau. "The trend is towards DSP-based receivers because they are cheap to build and perform quite well.

Some top-performing tabletop SW receivers are still being made, "but only for the radio geek that can afford them," said Letourneau. "They do offer a slight edge in their options and flexibility, but for most people, shortwave works just fine on an inexpensive portable that is very surprisingly good in sensitivity."

And for those who yearn for the elegant SW tabletops of old? Thanks to the durability of this technology, many older models are still available for purchase.

"The retro market in radio is very big, from used tabletop models like Yaesu, Kenwood, Icom, Drake and used portables from Sony, Panasonic and Grundig," Letourneau told RW. "Old tube receivers are also very in right now, like old Hallicrafters, for example." "Radio sales in general, including SW radios, have seen an uptick in sales since COVID-19," said Marsiglia. "Individuals working and staying at home crave some form of connection more than ever. Turning on a radio is the easiest way to connect with your favorite music, sports, news and so much more."

Shack of the Month

Tim Antonacci. WA2WDX

Tim's shack boasts an impressive amount of gear, including two separate HF stations.

The first uses a Yaesu DX 1200 into an Acom 1010 linear amplifier and a Vectronics 1500 tuner. The system feeds a home brew fan dipole cut for 80-40-20 meters and fed with 450 ohm window line.

His second HF station is on the right and uses a Yaesu DX950 into Ameritron AL-811 upgraded with 572B finals. This is fed into a HyGain SP 500 ground plane antenna.

On the far right, Tim has an analog audio rack for the low bands consisting of Behringer equipment.

Also included in Tim's setup are an AKG large diaphragm condenser mic for the audio rack, and a Heil PR781 dynamic mic when he's on the air DXing.

Tim proudly displays his many contacts on his QSL board

Let Sidebands feature your shack!

Send your photos to W2RBJ@Outlook.com

CALENDAR

October 13, 2021 - 7 pm - Monthly club meeting - in person at Masonic Lodge. Face masks optional for those who are vaccinated.

October 27, 2021 - 7 pm - EGARA Roundtable on 147.270 repeater

October 30th and 31st, 2021 - Pumpkin Patrol

Pro Tip: Magnifiers and Microscopes

If you plan on working with small or surface-mounted components, and you value your eyesight, you should consider purchasing some type of magnifier or low-power microscope. A true stereo microscope is best, but of course it is also more expensive than a simple single-objective type.

The types of cheap microscopes sold as toys for children are useless for electronics work, as are more high-end laboratory microscopes used in medical and biology work. The image quality of toy microscopes is usually rather bad, and both types typically have too high a level of magnification to be really useful.

An industrial microscope for electronics work is designed to provide a decent level of magnification -- between 5X and 10X is typical and some are adjustable -- while still maintaining a relatively wide field of view. You won't be able to look at microbes in pond water with one of these, but you will be able to clearly see the leads on a TQFP144 surface-mount IC package.

The stereo microscope pictured can be acquired for about $100 as a surplus (new overstock) item. You can find similar bargains on eBay or by checking out some of the optical surplus companies found online.

For Sale...

- **Arrow Dual Band Antenna** - Model 146/437-10 with 3 elements on 2 meters and 7 elements on 70 cm. User manual included. Original list price was $158.95. Asking $35

Contact Bill Leue at: wleue1@nycap.rr.com

- **Lightly used VIBROPLEX "Bug" semi-automatic Original "PRESENTATION" Model** with Gold Plated baseplate escutcheon. Beautiful heavily chromed upper parts, bright red finger pieces, jeweled bearings. Lists for $350 plus tax and shipping - you can own this beauty for only $250 plus postage. This dazzling example of Vibroplex engineering will be supplied in a unique hard-shell protective carrying case.

Contact Steve at: svansick@nycap.rr.com

- **IFR-1100S Service Monitor.** With Spectrum Analyzer and Oscilloscope. Tested and Calibrated last year. AM - FM, CTCSS Generator, In very good condition. $900.00 but open to offers.

- **Yaesu FT-2900 Programing Software** by RT **Systems** Cable included. used once. Registered and includes password. $35.00

Contact John at: radiowizz@aol.com

- **Heil mic boom Model SB-2,** asking $ 25.00
- **Battery Eliminator for Wouxun HTs,** asking $ 10.00
- **2m/440 Mag mount antenna Model BCA-300** w/ sma female connector, asking $25.00

Contact Walt at: n2wjr07@gmail.com

Got stuff to sell, swap, or looking to buy?
List it here for FREE!
Email W2RBJ@outlook.com

The East Greenbush Amateur Radio Association

Organized in 1998, by Bert Bruins, N2FPJ, (SK) and Chris Linck, N2NEH, the East Greenbush Amateur Radio Association, an ARRL affiliate, is committed to providing emergency services, educational programs, and operating resources to amateur radio operators and residents of the Capital Region of New York State. The club station is W2EGB. The club also has several VHF and UHF repeaters open to club members and the public.