MARC Beacon

Volume 10, Issue 12 **The Morongo Basin Amateur Radio Club Newsletter** **DECEMBER 2021**

Hello radio operators!

A big congratulations to the following elected 2022 MARC officers and board members. I am honored to be your MARC president for another year.

MARC Officers

President: Rob Cloutier WO4ROB
Vice President: Keith Board N6GKB
Secretary: Paul Edwards AA6SM
Treasurer: Glenn Miller N6GIW

MARC Board Members

Repeater Trustee: Glenn Miller N6GIW
Board Member 1: Judy Cloutier KK6NWG
Board Member 2: Larry Mollica AD6G

A big thank you to Glenn N6GIW for auctioning off radio equipment, and Andy KR6GAX for giving a presentation on portable meals during the last meeting.

At 1800 Monday 6 December, we will have our holiday meeting that will include a free meal to all paying MARC members, and a white elephant gift exchange. For more information, please contact Judy KK6NWG.

Please schedule time to check in on the 7 PM Tuesday net, and if you can, please join us on the "Cawfee Tawk" net every morning at 10 AM.

Take care of yourself and enjoy each day. If you're not having fun, then you're doing something wrong.

Rob Cloutier
WO4ROB
Joshua tree
Club President
(760)401-6666
rob_cloutier@hotmail.com

Nets

Amateur Radio Emergency Service (ARES)
Mon @ 1915
Morongo Basin Amateur Radio Club (MARC)
Tue @ 1900
MARC Daily informal Kawfee Talk
1000-1100 DAILY

Social Media,

Club web page: http://www.w6ba.net

Facebook:
https://www.facebook.com/MorongoBasinAmateurRadioClub

Club Meeting

Every 3rd Thursday of the month at 6 PM. At the church of the Nazarene in Yucca Valley at 56248 Buena Vista Dr

Linked Repeaters

Yucca Valley, W6BA
146.790 MHz (- shift = 146.190 MHz) 136.5 Hz PL/CTCSS

Twentynine Palms, W6BA
147.060 MHz (+ shift = 147.660 MHz) 136.5 Hz PL/CTCSS

Landers, WB6CDF
447.580 MHz (- shift = 442.580 MHz) 173.8 Hz PL/CTCSS

OTHER AREA REPEATERS

IRLP Node KD6DIQ 145.770 pl 67.0
ONYX Peak N6LXX 446.880 (–) pl 110.9
San Jacinto TRAM one 145.480 (-) pl 107.2
Snow Peak 445.160 (-) pl 67.0

ALLSTAR NODE on the mesa 147.705 pl 146.2
ALLSTAR NODE in Y.V. 446.120 pl 131.8
29 PALMS rptr linked to KELLER peak
448.580 pl 146.2

WEATHER UNDERGROUND

The weather station on Paxton Hill at the W6BA repeater site is working great. It will show accurate wind speed and direction measurements for the top of the mountain .

https://www.wunderground.com/personal-weather-station/dashboard?ID=KCAYUCCA57

Glenn N6GIW

KEN HENDRICKSON, W6BZY

Some helpful you tube videos from Ken W6BZY about Linux and raspberry Pi.

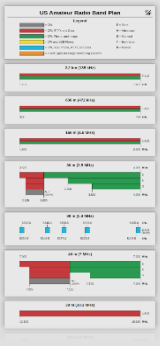
Search W6BZY on YouTube.

US Amateur Radio Band Chart

http://ham.band

- Easy to remember link
- Easy to use on desktop or mobile
- Light-mode/Dark-mode switchable
- Familiar layout

Send feature requests to Aaron@KM6IAU.net



OUR CLUB MEETING!!!!

IN THE MONTH OF DECEMBER, OUR LOCAL CLUB MEETING WILL BE :

6:00 P.M. DECEMBER 6TH

At Church of the Nazarene in Yucca Valley at 56248 Buena Vista Dr.

NEW CLUB FACEBOOK GROUP FOR THE MARC CLUB

I have created a Facebook "Group" for the Club. We currently have a FB "Page" which only allows Admins and Moderators to post directly on the Posts section.

Here is the link to the new "Group" - so if you are on Facebook, please click on this link and LIKE our new Group.

https://www.facebook.com/groups/577155023327981

The new Group will be must more user friendly. Feedback is most welcome. Thanks, Judy, N6JLL

(THANK YOU JUDY, KEITH N6GKB)

OUR CLUB LINKED REPEATER SYSTEM

Many of you may have noticed the new double tone before the courtesy tone on the repeater.

It is a way for the repeater group to monitor the links from Landers and 29 palms.

So because of the work that was done to the system to fix the long going LOW modulation output in 29 palms, which is now fixed. Ineed everyone to PLEASE note when talking on the system from any one of the 3 links please give it A SECOND BEFORE TALKING! Otherwise, your first word will not come through. So please give a second before talking to keep the quick keying from getting you.

Marc Christmas Party and White Elephant!!

Hello all we are planning another club meeting/party.

IT WILL NOT BE ON THE 3rd THURSDAY AS USUAL.

Because of the holidays it will be held on the 6th of December. Please listen to the nets or the Kafee Tawk to hear the latest.

So start digging through the ham shack and wrap up a present to participate in the white elephant or make or purchase an item make sure to bring it wrapped.

Parks On The Air had another record breaking month!

October was another fantastic month for the Parks on the Air program. There were over 1,600 hams heading out portable and made over 320,000 qso's. This month Vance also explains how to log the 2fer and 3fer parks. My goal for November will be to activate 5 parks in one UTC 24hr period.

Radio in the Park

BATTLESHIP IOWA

With authorization from the US Navy's 3rd Fleet Spectrum Manager, the Battleship *Iowa* Amateur Radio Association (BIARA) Inc. and the *Iowa*'s Innovation and Engineering Team will activate the ship's legacy Navy NEPM call sign on December 7, 2021, 1600 - 2359 UTC, to commemorate Pearl Harbor Day. NEPM will transmit on 14,781.5 kHz USB and listen on 14,343 kHz USB. QSLs will be available for a self-addressed, stamped envelope.

Dayton Hamvention Expects to be A Live Event in 2022

Dayton Hamvention® organizers are planning to mount the first in-person show in 2022, following 2 years of COVID-related cancellations. The event is set for May 20 – 22 at the Greene County Fairgrounds and Expo Center in Xenia, Ohio. Last January, Hamvention organizers from the sponsoring Dayton Amateur Radio Association (DARA) announced they were calling off the 2021 event after considerable planning was already under way. The Hamvention Executive Committee cited lagging COVID-19 vaccine distribution in the US and the emergence of a more communicable form of the virus.

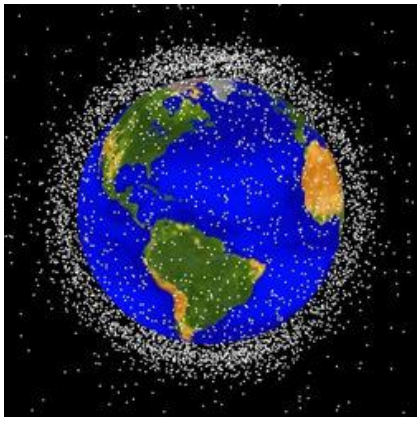
Southgate Amateur Radio News quotes Hamvention General Chairman Rick Allnutt, WS8G, as saying that Hamvention committees "*have been meeting, and volunteers are committed to making up for the time lost to pandemic cancellations*." The Hamvention website is already accepting bookings from vendors and inside exhibitors, and individual visitors can already buy tickets, which Allnutt said, "are all printed and ready to go."

Nominations for the 2022 Hamvention Awards opened on November 1. Hamvention seeks "the best of the best" nominees for its Technical Achievement, Special Achievement, Amateur of the Year, and Club of the Year awards. Nominations close on February 15, 2022. Submit nomination forms via email or USPS to Hamvention Awards Committee, Box 964, Dayton, OH 45401-0964

Contest University (CTU) will take place on May 19 in conjunction with the annual Hamvention Super Suite activities, which will be moving to the Hope Hotel in Dayton. In addition to CTU, these activities will include the Top Band Dinner, the Contest Dinner, and the KC DX Club's CW-copying competition, among other possible events.

Russia's Destruction of an Orbiting Satellite Raises Space Debris Concerns

Russia tested an anti-satellite weapon on November 15, destroying Kosmos 1408, one of its own old and now-defunct satellites. Launched in 1982, Kosmos 1408 was some 300 miles above Earth. Its destruction generated a debris field in low-Earth orbit that prompted the seven International Space Station crew members, including one Russian cosmonaut, to take cover in their crew capsules for several hours, in case they had to abandon the station.



The proliferation of spacecraft in Earth orbit has greatly increased the possibility of collision with space debris. [Photo courtesy of NASA]

"The [ISS] is passing through or near the cloud every 90 minutes, but the need to shelter for only the second and third passes of the event was based on a risk assessment made by the debris office and ballistics specialists at NASA's Johnson Space Center in Houston," NASA Chief Bill Nelson explained. Occupants of the Chinese space station are reported to have taken similar action.

The incident also has generated criticism from many corners, as well as a grave discussion on the possible impact of any future such tests, by Russia or anyone else.

The danger of damage to the ISS or an orbiting satellite aside, tracking a debris field that could include thousands of pieces, in order to head off collisions, is a concern all its own. Very small debris in space is essentially impossible to track reliably, if at all. The incident also comes at a time when the number of spacecraft orbiting Earth continues to grow.

AMSAT President Robert Bankston, KE4AL, said that Russia's action will pose a threat to all activities in low Earth orbit for years to come, placing satellites and human spaceflight missions at risk.

AMSAT President Robert Bankston, KE4AL.

"Space is already crowded, but now there are at least 1,500 trackable fragments and, possibly, hundreds of thousands of smaller yet still-threatening pieces of debris in low-Earth orbit," Bankston said. "While space stations have the capability to move out of the way, with sufficient notice, most satellites in low-Earth orbit, including those designed, built, launched, and operated by AMSAT, do not. As such, they face greater risk of catastrophic destruction or degraded mission functionality, if struck by fragments from Russia's destruction of Kosmos-1408."

Bankston said AMSAT is closely monitoring the situation and hoping for the best.

Nelson echoed Secretary of State Antony Blinken in expressing his own outrage at Russia's action. "Their actions are reckless and dangerous threatening as well the Chinese space station and the taikonauts on board," he said.

FCC Commissioner Nathan Simington condemned the incident as "irresponsible" and noting that orbital debris fields pose a threat to hopes for the peaceful use of space and "make the work of using space complicated and difficult," he said in a statement. "No one owns space," Simington said. "And no one should intentionally make it more difficult to use."

The FCC has made it clear that orbital debris rules apply to amateur satellites, in general requiring submission of an orbital debris mitigation plan with each license application.

AREx Says Artemis 2 Proposal Process was Instructive

Last November, NASA called for proposal submissions to document the story of the Artemis 2 mission to the moon. Amateur Radio Exploration (AREx), a joint initiative of Amateur Radio on the International Space Station (ARISS) and AMSAT, submitted its plan to fly hardware and cameras on the lunar mission. Although NASA did not select the AREx proposal, ARISS-USA Executive Director Frank Bauer, KA3HDO, found a silver lining in the whole process. Bauer said the AREx team "learned a great deal in the development of the proposal" and was able to significantly refine its lunar payload design into a concept that can now meet Lunar Gateway payload requirements.

When NASA next returns astronauts to the moon, National Geographic cameras will document the historic space mission, in order to share it with the public. On October 29, NASA announced its selection of the exploration-focused media company to assist in telling the story of Artemis 2. Like Apollo 8, Artemis 2 will be the first planned human spaceflight mission in more than 50 years to orbit the moon and return to Earth.

"*This time, we are bringing partners and technologies that will create additional opportunities for the world to share in the experience along with our astronauts*," said Kathy Lueders, NASA Associate Administrator for the Space Operations Mission Directorate.

Through its proposal entitled, "*The Excitement and Inspiration of Artemis Journeys to a Worldwide Audience through Interactive Amateur Radio Experiences*," AREx wanted to evolve its design to make sure it meets all known NASA Gateway requirements, "*which, at the beginning of the proposal development, we were not meeting*," Bauer said. He said its revised payload design concept will position the AREx team to respond to future lunar opportunity requests, as well as to communicate its readiness to fly as a payload on the Lunar Gateway mission.


ARISS-USA Executive Director Frank Bauer, KA3HDO.

Bauer said AREx went into the proposal process knowing there was a high probability that an organization like *National Geographic* might propose. "*But you can never be sure*," he said, adding that AREx also did not want to miss any lunar opportunity.

"*What we did learn was that we could develop a hardware concept that can meet the volume, mass, and power requirements of Gateway, and that we could develop an antenna scheme that would not require an antenna-pointing system and still have some decent gain toward Earth.*"

NASA's Lunar Gateway will be an orbiting lunar outpost that will provide vital support for a long-term human return to the lunar surface, as well as a staging point for deep-space exploration. It is a critical component of NASA's Artemis program.

"On behalf of the AREx team, my thanks to all who supported the maturation of our lunar design and the development and submission of the proposal," Bauer said. -- *Thanks to ARISS-USA Executive Director Frank Bauer, KA3HDO, via* AMSAT News Service

Our Local repeater, Stuff you may need to know.

By Larry Mollica AD6G

Remember; pause before you talk!

When using the Morongo Basin linked repeater system (W6BA Yucca Valley, WB6CDF Landers, W6BA Twentynine Palms), please keep in mind that because of inherent delays in the hardware, it takes maybe a second or a little more for the transmitters to come up from one end of the system to the other. That doesn't seem like much, but if you're in the habit of speaking immediately as you key down on that PTT, your first two or three words will probably not make it to the far end.

Now that the link system audio has been improved, happily people are starting to use it more often, and already this clipping of the first few words of transmissions is being heard on various QSOs, probably mine included. If someone tells you that you are "**quick keying**", this is shorthand for "**you spoke to soon and I missed the first few words**". Just take a pause after you "squeeze the pickle", enough to think "one one-thousand" or what-have-you for delay of about one to two seconds, and all will be fine. Feel free to remind me when I do it!

The technical story in brief; when you key up at one end of the system (Yucca Valley or 29 Palms), each site brings up the next site in succession. A large part of the delay involved has to do with the fact that CTCSS (tone squelch) decoders take a certain amount of time to detect tone. When you transmit at one end of the system, the tone decoders in, at minimum, three different receivers have to detect tone in succession before the far end repeater transmitter comes on the air. Make that FOUR receivers that have to detect tone, if the receiving station at the far end is using tone squelch instead of carrier squelch on his or her radio. And there's even MORE delay if the receiving party is using an HT and the battery saver timer is active. All these delays are additive, so even though each delay may be a mere 100 to 200 milliseconds in length, combined they make for a noticeable delay.

Larry Mollica
AD6G (née WA6FSJ)

Notes on the Morongo Basin Linked Repeater System Tune-up

I thought I'd try to briefly, well, kinda briefly, okay not that briefly, answer a few questions that might be in folks' minds about the work that's been done, and being done on the repeater system. Probably most club members are well familiar that for a long time, the audio over the linking system between Yucca Valley, Landers, and Twentynine Palms repeaters has been let's say, somewhat less than optimum. On October 19th we completed what I'll call "phase one" of improving the audio across the system.

As to "what was wrong?"…

Essentially the main problems had to do with audio levels being low on link radios at Paxton and 29 Palms, and the repeater level was low at Landers. A repeater system and it's links should operate at what's known as "unity gain". This bit of lingo simply put, means that whatever the input signal level to a device or system of devices, it comes out the other end at the exact same level. Needless to say, the system was pretty far from functioning at unity gain. The audio losses at each site were additive. For example, audio from the repeater receiver at Yucca Valley would loose a bit of level going out on the link transmitter. From there it would go to Landers, and loose a bit more level though the repeater there. Finally it would arrive at 29 Palms and lose a bit more in that link receiver. Adding to all this, at one point in the chain there was a receiver that was not set up to apply "de-emphais" to the received audio. Briefly, de-emphasis is a function that complements the "pre-emphais" of audio at the transmitter end. Lacking de-emphasis caused the low end of the audio spectrum to be reduced, and the higher frequencies to be boosted. The end result was, audio passing though the link system sounded abnormally "tinny", in addition to it's low volume.

Fixes applied…

The entire linked repeater system comprises three repeater controllers, six Motorola radios and one Vertex repeater. Each site was checked for repeater and link levels, by injecting signals with calibrated modulation levels into each receiver and checking the modulation levels on each transmitter at the site from each of those sources. The receiver that needed it had the de-emphais circuit applied. Then level adjustments were made to the repeater controllers at each site to bring repeater and link levels as close as possible to unity gain.

Now we come to; "How come this took so long to happen?"

Chris and I had been for quite some time trying to pull this together. We figured we both had to be there, because as far as I know, Chris and I are the only club members with access to the needed test gear, specifically, communications analyzers. We needed not only two communications analyzers on hand, we also needed Chris' laptop with the programing interface and software for Motorola radios, something I did not have and was not up to speed on. For the longest time, he and I had been trying to coordinate a

couple of days to take this job on, but we never could swing it. While I'm retired and have lots of time, Chris, that scoundrel, works for a living. Every time we set a date he had free, something important would come up in Chris' business and we'd have to put it off again. (I guess some people don't like starving, go figure.)

Anyway, finally we arranged for me to borrow Chris's gear while he was on vacation and do two of the sites without him. I was getting familiar with the Motorola radios by this time and figured I could take them on. Chris and I did get to Landers before he left town, as he is the only one with access to that site. We did the work there in about half a day. A few days later Glenn and I went to both Paxton Hill and Twentynine Palms and got those done (for now) in the better part of the day.

Photo: Glenn N6GIW at 29 Palms site, Oct 19. Communications analyzers at lower right.

All done now, right? ...Nope!

While the audio has improved a lot, we were short on a few things . The repeat level at 29 Palms is a little bit low, owing to running out of gain on the controller input from the receiver. A simple circuit board modification described in the controller manual should fix this right up but we did not feel it was important enough to do right away, especially since it's pretty close now and we still needed to address the following…

The larger problem remaining is that four of the Motorola radios used as transmitters or receiver/transmitters, do not modulate fully. They currently will modulate to roughly 70% of where they should be, then the modulation limiter kicks in prematurely. I'm investigating a fix for this, and should come up with something pretty soon. I know what you're going to say; "It sounds fine now, why mess with it?"

Yes, you can adjust your volume control to a comfortable level and it will probably sound pretty good in town. The hidden problem is that as modulation level goes down, so does signal-to-noise ratio. It'll sound pretty good when you are in a prime coverage area, but when you get out to weak signal land, the lower S/N ratio cuts down on the useful range of the repeaters. Messing about with your volume knob will not change the S/N ratio, only correcting the transmitter modulation will do that. Note that this is not exactly the same problem as when the unity gain was out of whack. The system now is close to unity gain at low to mid modulation levels, it just limits at a lower peak level than it should. This is not a cumulative effect like before, when gain settings were off; modulation is the same all the way through the system, so it's no where near as nasty a problem.

The plan now, more or less is; come up with the modulation fix for the Motorola radios, then revisit the sites, apply that fix, and tidy up the other smaller problems we've made note of. Hopefully that "phase two" will happen pretty soon.

Sorry I know this runs on for quite a bit, but believe it or not this is the SHORT version of the notes I made on the system. If you're intensely curious, or just want to work on your insomnia, drop me a line and I'll forward the long version to you. :)

What the Heck is a "Communications Analyzer"?

In a previous article (Notes on the Morongo Basin Linked Repeater System Audio Fixes) I mentioned that the work required two communications analyzers.

One of the toughest aspects of getting audio levels right on any repeater system, no matter how large or small, is that it takes some specialized test equipment to do the job. The job requires being able to generate an RF signal into a receiver with modulation of a calibrated level, and at the same time be able to receive the RF signal coming from a transmitter and precisely measure it's modulation level. There are a few different ways to do this. You can for example, use a certain type of RF signal generator, along with an FM modulation meter and an assortment of other gear. But the best way is with a piece of test gear known as, when I was a lad, a "service monitor", but these days is called a "communications analyzer". I guess the name change made someone in marketing happy. Anyway, these are boxes that are usually about the size of a small-to-medium suitcase. Mine weighs 30 pounds, and that's after I took out the 8-pound battery I didn't need.

These things are more or less the Swiss Army Knife of communications industry techs. Some of the functions this gear provides in one box are:

- RF signal generator with calibrated RF level control
- Calibrated audio test tone modulation of signal generator
- CTCSS and DPL tone generator
- RF receiver & monitor speaker
- Calibrated modulation meter
- Measures RF frequency error and generates RF, both referenced to a high quality frequency standard
- Oscilloscope (both for checking modulation or external input)
- Dummy load with wattmeter
- Usually includes a spectrum analyzer, sometimes a tracking generator
- A whole bunch of other stuff

Photo: Communications analyzers in use at 29 Palms site

On a lot of models, you can even plug in a microphone and they will function as a low power transceiver. Some, like Chris', are full-duplex capable, meaning they can generate a test signal while at the same time receiving another signal and measuring it's characteristics. While non-duplex models like mine are fine for working on two-way radios, full duplex analyzers are exactly what's needed for working on repeaters. Well, most repeaters as you'll see.

Seeing as how these things were bloody expensive new (mine was a good surplus deal), as you might imagine there aren't a lot of them in the hands of club members. As far as I know, Chris WB6CDF and myself are the only club members that own or have access to communications analyzers. But wait, there's more! Chris' analyzer can do full duplex, but there's a catch; it will only do full-duplex within a certain frequency range.

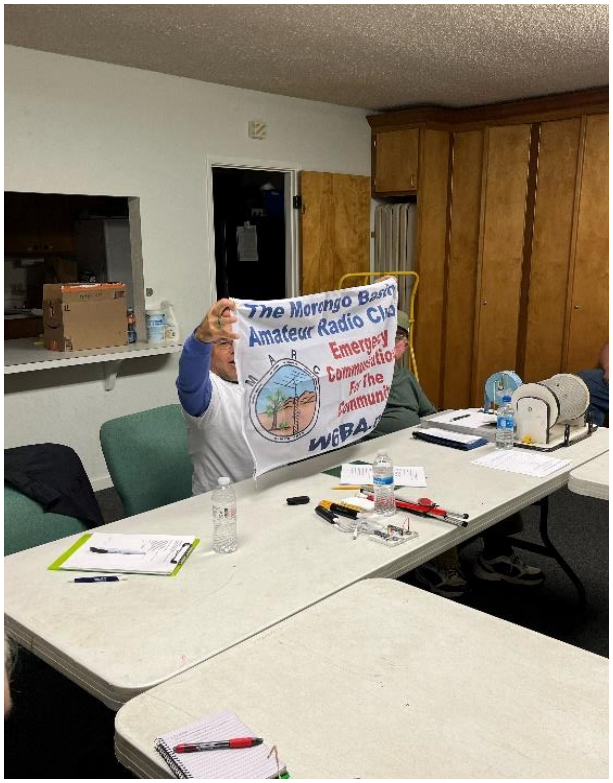
Because of the cross band nature of the MARC link system, by itself it was not capable of setting levels between a link radio and repeater. Instead we had to do this old school; using two analyzers on site at the same time in order to do the measurements required on the linked repeater system. This is one of the the reasons Chris and I were hung up so long trying to coordinate a couple of days to get to work on the system's audio problems, we figured we both needed to be there. But finally we came to another arrangement and made some progress.

Needless to say; having means to make measurements and generate test signals is indispensable when working on radio gear. I would be more than happy to assist any local amateurs who are working on an FM project that, for example, needs modulation set. This could be adjusting for correct transmit and receive levels on a network node (Allstar, IRLP, Echolink, etc), or a packet/APRS TNC, etc. Yes, you can try to do this by ear, and many do, but that's nearly impossible to get precisely right. If you've ever listened to a big ham radio voice network system, you know that you'll hear audio levels that are all over the place. You might have to crank up your volume for one station, only to have the next station blast you out of your chair. Getting modulation right is the cure for stuff like that. Unfortunately a lot of folks don't have access to the test equipment needed to do it. Anyway, drop me a line if you want to set modulation, check receiver sensitivity, what have you. I have the gear and I have the time.

Larry Mollica, AD6G

My Pride and Joy, Larry.

Our November Club Meeting



We had a great attendance of 21 people, Also, had a great auction of equipment that will go towards the club's finances.

We had a presentation of how to make your own packs of survival foods by Andy, KR6GAX.

Also Rob, W04ROB presented the club with a club flag that we will be able to use during club events.

eHam.net
ham radio on the net

What is eHam.net?

It is a community site designed and operated by and run for active Amateur Radio operators (hams).

Also, an excellent place to read reviews on any type of amateur radio equipment.

Check it out at:
https://www.eham.net/site/page?view=about

For reviews go to:
https://www.eham.net/reviews

Locate the HAMs around you. It's easy.

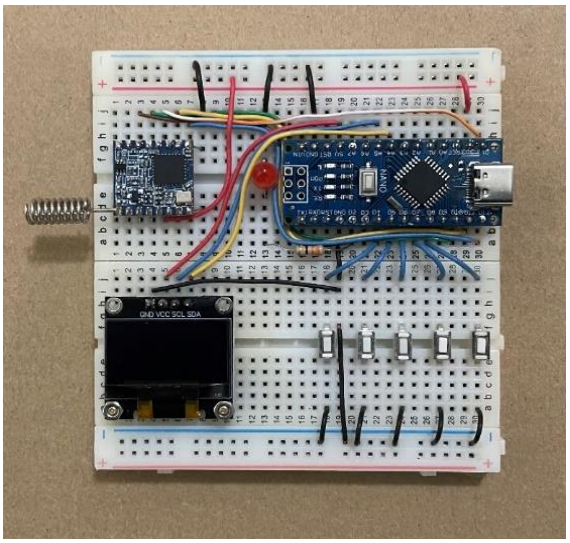
https://haminfo.tetranz.com/

Use the link above and have fun

LoRa

LoRa is a Long Range, Low Power, 27 kbps wireless protocol developed by the Cycleo company in Grenoble, France in 2009, and acquired by Semtech in 2012, the founding member of the LoRa Alliance.

I am currently creating a "LoRa Texter" using 5 buttons and an Arduino NANO that will transmit and receive 10 character text messages up to 6 miles away using a very tiny 915 MHz transceiver. My project will not use Bluetooth, WiFi, Cell Phone or internet services. I will give a presentation when it's completed.



DECEMBER 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
				ARES Meeting begin !! 6:00 pm		
5	6	7	8	9	10	11
	CLUB/XMAS PARTY 6PM ARES Net 7:15 pm	MARC Net 7:00 pm NCS LARRY				
12	13	14	15	16	17	18
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS GLENN		CLUB MEETING IS ON THE 6TH		
19	20	21	22	23	24	25
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS ROB				
26	27	28	29	30	31	
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS FRED				
				KAFEE TAWK 10AM DAILY CLUB REPEATER		