September 2023 **Volume 09-2023**

Nacogdoches Amateur Radio Club

2023 CLUB OFFICERS

Pres: Aaron Baker – KI5FIQ

Vice Pres: Mark Phillips – KI5POH

Sec/Treas: Army Curtis - AE5P

Visit our web site at

https://w5nac.com/

MISSION STATEMENT

The Mission of the Nacogdoches Amateur Radio Club is to support and promote Amateur Radio by public service, offering training to unlicensed interested parties and licensed Amateurs, mutual support of other Amateurs, engaging events that promote Amateur radio to the general public and other Amateur radio operators, and continuing fellowship by regularly scheduled organized meetings and events and having fun.

AUGUST MINUTES

The August business meeting of the Nacogdoches Amateur Radio Club (NARC) was held July 26, on the club's 146.84 repeater. The three club officers checked in, as well as six additional club members.

Army AE5P reported on the new ARRL Club Commission program to encourage club members to renew their ARRL memberships. Army will have the necessary forms at the next meeting.

Net closed at 8:10 p.m.

The regular August meeting of the Nacogdoches Amateur Radio Club was held as scheduled on August 2nd at the City/County EOC with 13 members and 1 guest. **Vice-President Mark KI5POH** opened the meeting at 7:00 p.m. Introductions were made by all present. Minutes of the previous meetings were approved as published. Treasurer's report was not available.

Program: **Tim KE5PQJ** presented a most interesting program on Artificial Intelligence (AI). Look for a followup article in this newsletter.

Meeting closed at 2015.

FROM THE PRESIDENT

Phew, it's the end of the month which means now that things are hopefully starting to settle down in the land of classroom support at SFA. August was jam packed with installations and trying to (mostly) get classes ready to go for this past Monday, and while we are still battling some hurdles with the new fine arts building, the rest of campus started off mostly okay. Hope all had a good August and hope y'all have a good September. In theory we're supposed to see some cooler weather. Hope it does soon, definitely want to go out and get some POTA in soon 😊

73, Aaron KI5FIQ

Baker.barisax@gmail.com

FROM THE VP CHAIR

This summer weather has been brutal! Hopefully, the extremely hot weather is done for the year.

September's club meeting, on September 6th (7pm), program will be discussing the upcoming Fox Hunt, reviewing the Fox and knowing how to hunt for it. The next Fox Hunt will be Saturday, September 16th, starting at 10am. Instructions for the Fox frequency will be announced on the 84 repeater (146.840) at 10am on the 16th. Be sure to RSVP to Wolfie (KI5MHB), KI5MHB@outlook.com, if you plan on hunting. We always have a great time hunting.

I hope to see you all at the September meeting.

73, Mark KI5POH

KI5POH21@gmail.com

NOTES FROM OUR EC

There are not many days left in August and I need to get cracking. August continued the July trend, hot, dangerously hot.

We finally received a bit of rain. I don't know how much rain fell around the area. The mill recorded 0.5 inches which broke a 49 day dry spell.

On the hurricane front: Aug 2023 won't join a few other Augusts without a hurricane. We now have Hurricanes Franklin and Idalia. Franklin is staying in the Atlantic and Idalia is lining up on the western coast of Florida. The projected path of these 2 storms looks interesting. And a last note for the 2023 Hurricane Season. NOAA has updated the outlook: 14-21 named storms, 6-11 of those could become hurricanes and 2-5 could become major storms. There you have it, subject to change without warning.

Preparedness:
How well prepared are you for the rest of the hurricane season? Can you deploy to a shelter, hold down a shift at the EOC, or assist at your Church? What are your sheltering or evacuation plans should the weather require? How many routes or destinations do you have planned to get to family or friends or to a safe place outside the area? Even with the temperatures cooling some, be mindful of the heat, your own hydration and those around you.

Running out of ideas and getting a bit tired, so time to wrap this up. Thanks to all of our Net controllers and all of you who check in.

73 all, see you on the Nets.

John KC5MIB

VE TESTING

We had one person for the August VE test session. Please welcome and congratulate Aaron Amador, now KJ5CIQ, who passed his Technician exam. Aaron in the Longview area.

We do want to remind everyone that we offer in-person testing for all classes of Amateur Radio licenses on the third Wednesday of every month.

Many thanks to VE's, **Mike AA5HH, Mike W5NXK, Ralph N6RH, Robert KD5FEE,** and **Army AE5P**.

For the latest information always check the club website at:

https://w5nac.com/ve-testing/

73 de AE5P.

email: ae5p@arrl.net

TWO METER CLUB NETS

Please join us each week for the two-meter nets sponsored by NARC. All stations are welcome to check into the nets.

Each **MONDAY** is the **NARC ARES/RACES** net, at 8:00 p.m. on the club's 146.84 repeater (PL 141.3).

Second, on **THURSDAY** evenings at 8:00 p.m. is the **Deep East Texas Skywarn Emergency Weather Net** on the 147.32 repeater (PL 141.3).

Please join us for one or both.

HAMLIST

Are you on Hamlist? Check it out and join at:
https://w5nac.com/about/email-reflectors/

NEXT MEETING

The monthly business meeting is held on the Club's 146.84 repeater, 8:00 p.m. on the Wednesday before our normal scheduled meeting which is always the first Wednesday of the month.

The next regular NARC meeting will be Wednesday September 6th at the Nacogdoches City/County EOC. Meeting begins at 7:00; doors open at 6:30. Come early for socializing before the meeting. After a very short business meeting, Wolfie KI5MHB will present a program on Fox Hunting.

Hope to see ya'll there.

A NEW USE FOR AI

The following was originally sent to Scott Armstrong AA5AM who forwarded it (again) via NTMS. Very interesting use for AI.

From: **Chris Smart** <ve3rwj@winsystem.org>
Date: Wed, Aug 23, 2023 at 5:19 PM
Subject: [222Activity] USE AI TO REMOVE NOISE IN ALMOST REAL TIME!
To: <222activity@groups.io>

This is a very interesting project. Feed it SSB, CW, or FM audio from your rig, and get back a much cleaner copy in under a third of a second!

The FM model isn't so great yet, but that will improve as we feed it more recordings to train it.

https://ournetplace.com/rm-noise/

Chris

UPCOMING EVENTS OF NOTE

Mark your calendars for the following events coming up in the next few months. Full information on these events and much more can be found at https://www.contestcalendar.com//contestcal.html

ARRL September VHF Contest

Sept 9 – 11, 2023
http://www.arrl.org/september-vhf

NARC FOX HUNT

Sept 16, 2023
10 a.m. – 12 noon

TEXAS QSO PARTY

Sept 16 – 17, 2023
http://www.txqp.net/

CQ WWDX RTTY

Sept 23 – 24, 2023
http://www.cqwwrtty.com/

CQ WWDX SSB

Oct 28 – 29, 2023
http://www.cqww.com/rules.htm

Check out the many contests listed on the Contest Calendar link shown here. There are many State QSO parties and 'Parks-On-The-Air' events that may be just right for you. Check 'em out.

FCC RF Exposure Assessment Requirements

Jim Edmondson, N5JGE

I am a little late in writing on this topic as new FCC requirements for amateur radio operators to perform station evaluations for RF exposure went into full effect in May of this year. The rules were adopted in May 2021 with a 2-year transition period for stations operating under the exemptions included in the old rules. Ed Hare wrote an article detailing the process for determining if your station was exempt from a detailed assessment (see Table 1 in QST Article 2021). Stations not under exemption or stations which made changes to operating frequencies, power level, antenna type, antenna location, etc. are subject to assessment before transmitting with such changes. The Hare article described an early version of the ARRL RF Exposure Calculator. A more recent article which describes the most recent ARRL calculator ARRL RF Calculator appeared in the May 2023 issue of QST by Greg Lapin, N9GL (see Figure 1 in QST Article 2023). In the rest of this article, I will summarize information from the referenced articles and give an example using the ARRL RF Calculator.

It is important to note that the new FCC rules did not change the RF exposure limits, the rules simply made all licensed radio services subject to the assessment rules. Previously, the amateur radio service was categorically excluded from certain aspects of the exposure rules. The easiest way to assess your station is to use an online calculator. These calculate power density, electric field strength and magnetic field strength to provide a minimum distance from the antenna where people can approach. Two numbers are provided, one for "controlled" environments and another for "uncontrolled" environments. Controlled environments typically apply to the amateur's family who are aware of the location of antennas and potential dangers of RF exposure. (The FCC has not defined what constitutes training for family members in these regards.) Uncontrolled environments are those where people are not aware of the potential for exposure. For example, if your antenna is close to a neighbor's property or home and they have not been advised of the potential. The cases are differentiated by exposure time. If the neighbor is unaware, they may tend to stay in proximity to the antenna longer.

The online calculators are typically conservative so if you pass with those calculations, you are most likely operating safely. In addition, you should make conservative assumptions with regard to power levels, operating frequencies, duty cycle, etc. Again, if those calculations give acceptable results, you are probably well

within RF exposure guidelines. If these calculations indicate a potential problem, then you can "sharpen your pencil" by incorporating feedline losses, actual duty cycles, etc. to more accurately reflect power at the antenna and how you operate. For example, you may only use your amplifier for SSB which is a relatively low duty cycle mode, so if you evaluated using 100% duty cycle and full amplifier power, this may be too conservative. Just be sure that your revised assumptions match how you actually operate. Other options are to model your specific antenna installation (for example including nearby conductors) for more accurate near-field electric and magnetic field strengths or performing actual field-strength measurements. These options require a level of specialist knowledge or expensive, calibrated test equipment and are usually not necessary.

Currently, I have three antennas: an 80M sky-loop, an 80M EFHW and a 6M – 20M hexbeam. I will use the hexbeam to illustrate use of the ARRL RF Calculator. Since the RF exposure limits are more stringent at higher frequencies, I chose 100W on 6M for the initial evaluation. My current amplifier only goes operates up to 10M, so I also need to do an evaluation for that band at higher power. The first screenshot below shows the 6M 100W results. I chose a 100% duty cycle for continuous transmission. This is an absolute worst-case scenario and the minimum distance is 8.3-feet for a controlled environment. Since the hexbeam is 16-feet above the ground and 10-feet from the house, a person cannot come within 8.3-feet unless they were on a ladder under the antenna. This could only become an uncontrolled environment (18.6-feet minimum distance) is if someone came onto my property without my knowledge while I was operating since the antenna is hundreds of feet from my property boundaries. It is not near where visitors would park or come to the door. The A/C repairman working on the compressor may be at risk and I would not operate if he was working on the compressor.

This calculator should not be used for antennas that are less than 20 cm (8 in) from a person.

View detailed instructions for each parameter. (opens in new tab/window)

Parameters

- Power at Antenna: (Need help with this?) 100 (watts)
- Mode duty cycle:
  Carrier Always On, i.e., for Tuning Up (duty cycle=100%)
- Transmit duty cycle: (time transmitting)
  You transmit for 5 minutes then receive for 0 minutes (and repeat).
- Antenna Gain (dBi): (Need help with this?) 5
- Operating Frequency (MHz): 54

☑ Include Effects of Ground Reflections

If you would like to receive future announcements of any FCC news related to RF-exposure or the requirements for amateurs to evaluate their stations, you may **optionally** provide an email address.

Email Address: (optional)	
Comments: (optional)	

Calculate

This calculator should not be used for antennas that are less than 20 cm (8 in) from a person.

Results for a controlled environment:

Maximum Allowed Power Density (mW/cm^2): 1.0000
Minimum Compliance Distance (feet): 8.3272
Minimum Compliance Distance (meters): 2.5381

For an uncontrolled environment:

Maximum Allowed Power Density (mW/cm^2): 0.2000
Minimum Compliance Distance (feet): 18.6202
Minimum Compliance Distance (meters): 5.6754

Print Results

At 10M and below, I can use my amplifier which produces up to 700W for SSB / CW or 500W for continuous duty modes. Calculations for 10M will over-estimate the minimum distances for the lower bands, so these results will cover all other bands of the hexbeam. Using the SSB parameters in the screenshot below, the minimum distance for a controlled environment has increased to 12.6-feet. Given the height of the hexbeam above the ground, a 6-foot-tall person should keep more than 7.7-feet from the base of the mast (using some triangle geometry calculations).

Repeating the calculations using 500W, 100% duty cycle and 1 minute transmit / 1 minute receive (digital scenario); the minimum distance increases slightly to 13.0-feet. Informing my family to stay more than 10-feet away from the periphery of the hexbeam at all times will protect them from excessive RF exposure.

This calculator should not be used for antennas that are less than 20 cm (8 in) from a person.

View detailed instructions for each parameter. (opens in new tab/window)

Parameters

- Power at Antenna: (Need help with this?) 700 (watts)
- Mode duty cycle:
  Conversational SSB, heavy speech processing (duty cycle=50%)
- Transmit duty cycle: (time transmitting)
  You transmit for 2 minutes then receive for 2 minutes (and repeat).
- Antenna Gain (dBi): (Need help with this?) 5
- Operating Frequency (MHz): 29.7

☑ Include Effects of Ground Reflections

If you would like to receive future announcements of any FCC news related to RF-exposure or the requirements for amateurs to evaluate their stations, you may **optionally** provide an email address.

Email Address: (optional)	
Comments: (optional)	

Calculate

This calculator should not be used for antennas that are less than 20 cm (8 in) from a person.

Results for a controlled environment:

Maximum Allowed Power Density (mW/cm^2): 1.0203
Minimum Compliance Distance (feet): 12.5928
Minimum Compliance Distance (meters): 3.8383

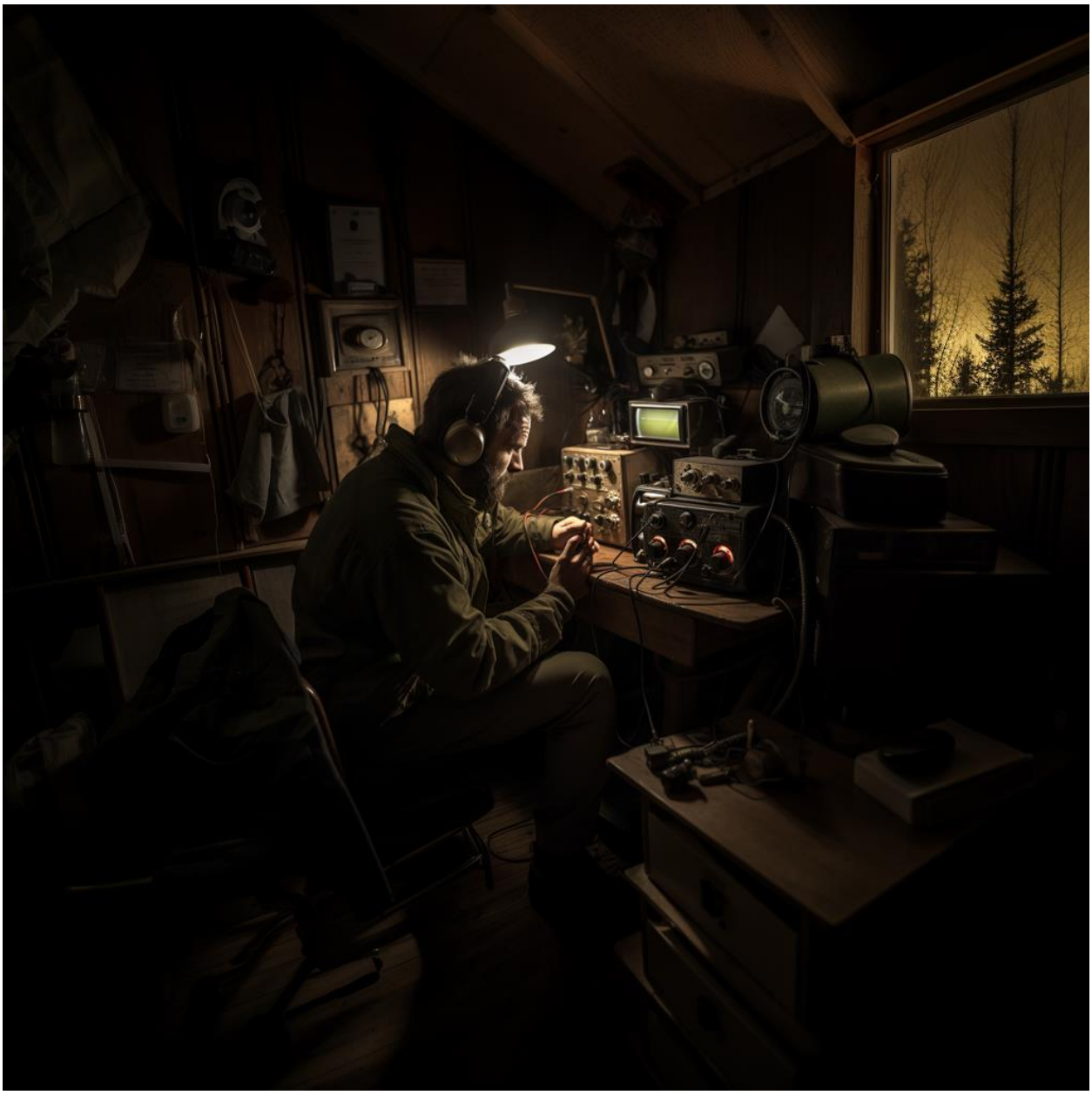
For an uncontrolled environment:

Maximum Allowed Power Density (mW/cm^2): 0.2041
Minimum Compliance Distance (feet): 25.1857
Minimum Compliance Distance (meters): 7.6766

Print Results

It's that simple to do the calculations and links in the calculator form provide helpful information on antenna gain, etc. to help you do the calculations more accurately.

There are no filing requirements, so it is recommended to do calculations for all of your antennas and operating modes, print out the results (on paper or as a pdf file) and retain them in case of any future questions. It would also be a good idea to document any communications with your family or other affected people. Any changes to your station such as new antennas, moving antennas, purchasing an amplifier or a more powerful amplifier, using new modes, etc. necessitate another round of calculations to make sure you are still in compliance or take appropriate mitigation measures.



Using ChatGPT and Midjourney: A Brief Tutorial

By Tim Leonard KE5PQJ

In recent years, Large Language Models (LLM) like OpenAI's ChatGPT have revolutionized the landscape of artificial intelligence. LLMs, built on vast datasets, aim to predict the next word in a sequence, enabling them to generate coherent and contextually relevant text based on given prompts. Their adaptability and capability to understand and generate human-like text make them invaluable tools for various tasks ranging from conversational agents to content generation.

Getting Started with ChatGPT:
To begin using ChatGPT, you'll first need to access openai.com and make an account. Using ChatGPT is straightforward:
- Input a prompt or question into the designated input field.
- The model processes this input and returns a generated response that aligns with the context of your prompt.
- You can then follow up with additional questions or prompts, or fine-tune the responses based on your needs.
- ChatGPT can remember your conversation history.
- Try asking it to write code in your favorite coding language.
- Ask it to design antennas for you.

Hint: I find it useful to tell ChatGPT first what its abilities are. For Example: You are an American ham radio operator who has read every book on antenna theory. You are very good at designing improvised antennas for almost any occasion and band.

Diving into Midjourney:
Midjourney, though not as widely recognized as ChatGPT, serves its unique functions as an AI generative art engine. You can sign up here, but understand there is a small fee to make an account www.midjourney.com

- Familiarize yourself with its interface and functionalities, which might differ based on how you are using it via web or Discord.
- Put in a prompt and watch it render whatever you can imagine.
- Prompts are the real power here. The better your prompts the better your output images. Use this guide to get started https://geekflare.com/midjourney-prompts

Combining the Power of Both:
While ChatGPT is primarily a conversational AI, integrating it with tools like Midjourney (or others) can amplify its utility. If you pay for ChatGPT you get access to plugins which will allow you to import PDFs and code blocks, or write imaging prompts like a pro. You are truly limited only by your imagination. If you get stuck, there are thousands of tutorials on YouTube.

In conclusion, while LLMs like ChatGPT have shifted the paradigm of AI communication, integrating them with other platforms, such as Midjourney, can open new avenues for innovation and efficiency. As always, it's crucial to stay updated

with the latest features and developments in these tools to leverage their full potential.