



President- Keith Mumaw KI5VNL Vice-President- Sharon McEachern- KK5SM Secretary-Sarah Richardson- KI5PZF

Treasurer- James Hunt- KI5DQ Trustee- Dr.Mike Durbin - K5MJJ

# Fannin County Amateur Radio Club K5FRC

Volume 1 Issue 2- February 2024

## FUN STUFF

### FEBRUARY 2024 K5FRC TREASURER'S REPORT

Currently, the club has a balance of \$3,947.98 in its checking account and a balance of \$224.20 in its savings account. Since our last club meeting, the club has had the following deposits and expenditures: A deposit of \$331.50 from dues and Tee-Shirt reimbursements. The club has had 3 expenditures since last month's meeting. They are as follows:

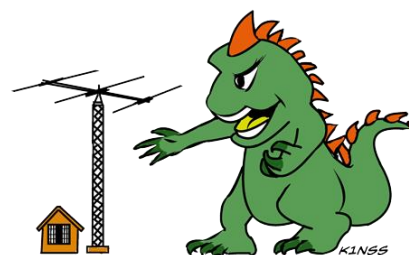
- Club Tee-Shirts of \$327.67
  - WFD chili trophy (x3) of \$42.27.
  - WFD supplies of \$19.04
- I will also send out an updated roster prior to our next meeting to include our new members.

Reminder: If you need to renew your ARRL membership, you can do so through the club and the club will receive a commission from ARRL. I will have the forms at our next meeting.

73's,  
James  
KI5DQ  
Sent from my iPhone

Well, it's that time again! Welcome to 2024!. So, what are your 2024 radio-related resolutions? What radio-related activities are you most looking forward to? What kind of equipment do you want to get on the air?

Drop Mike, K5mjd, a note for the next newsletter and I will post and see what everyone wants for this year.



### K5FRC REPEATERS

**145.470 (100Hz tone; -600Khz offset)  
C4FM or Analog; IRLP 3602;  
ECHOLINK 143903**

Tuesday Night Net 8:00 PM  
442.525 (100HZ TONE; +5.0 Mhz offset)  
C4FM or Analog;  
443.750 (100Hz tone; +5.0Mhz offset)  
C4FM or Analog;  
FCARC meets every third Saturday at  
9:00 AM at the Bois D'Arc Creek  
Cowboy Church  
ZOOM sessions are held every Tuesday  
at 7:00 PM CST before the net on the  
145.470 Mhz repeater. Website:  
[www.k5frc.org](http://www.k5frc.org)

Facebook: [www.facebook.com/K5FRC/](https://www.facebook.com/K5FRC/)  
Mark, KF5KUW is the administrator.  
Website: [www.k5frc.org](http://www.k5frc.org)

# *President's Report*

## January President's Report

Happy New Year to all of the FCARC members and their families. I want to thank you for allowing me to be your new 2024 President and give you my commitment to help our club grow in Ham Radio knowledge and to increase our communities understanding of Ham Radio.

I would like to offer you a glimpse at what my vision for FCARC is for the new year. Every member is an "Owner" in our club, and as such we all have a voice and a responsibility for its' success.

The world of Ham Radio is an exciting opportunity to learn new ideas, new skills and to participate in a hobby, that is really much more than what it appears to be.

During the short time that I have held my license (KI5VNL) I have learned so much, but I still have hundreds of questions why certain things are the way they are, and the club environment is where they can be answered.

Some of the things that we spoke about in our January meeting included:

- Creation of a Team within FCARC that will serve under the Fannin County Emergency Management.
- Creation of a "Net Control Calendar" to cover our Tuesday Net Nights. Every member is encouraged to sign up and act as "Net Control" at some point and is good training should a member be needed to act as "Net Control" in times of emergencies.
- Increasing our Texas R.A.C.E.S. involvement in times of emergencies.
- Bringing and instituting topics of interest such as:
  - I just got my ham license, now what?
  - Repeater maintenance training.
  - Antenna design and construction.
  - The possibility of a "Ladies Net Night" like the Grayson County club does.
  - The possibility of a 2-meter single side band night participation with the "2-meter Sidewinders" groups.
  - The possibility of a 220 MHz net night with the Farmersville club.
  - The possibility of holding a "Ham Fest" open to all clubs and individuals involved in ham radio.
  - Education programs as to why "radio things" work as they do.

I have always felt and approached life with the expectation of learning something about things that interest me and even the possibility of things can be done better.

I look forward to the upcoming year and ask that you help by participating and letting your voice be heard.

Thanks,

Keith Mumaw Jr (KI5VNL)

2024 FCARC President

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## **SECRETARY REPORT**

### Fannin County Amateur Radio Club Minutes for Regular Meeting January 20, 2024

President Mark Hetherington (KF5KUW) called the meeting to order.

Keith Mumaw (KI5VNL) led the invocation.

Mark effected the transfer of presidential duties to Keith,

VP James Hunt (KI5DQ) shared that it has been an honor serving as VP and transferred those duties to Treasurer Sharon McEachern (KK5SM) becomes Vice-President and transfers Treasurer duties to James, Sarah Richardson (KI5PZF) continues as Secretary. Mark will work on RACES and getting paperwork in order for the responsibilities of that position.

Winter Field Day (WFD) – Rebecca Bruner (KI5IOO) picked up the trophies for the Chili Cook-Off, Mike & Jodi have the paper goods, and judges are lined up. WFD designation will NTX 3I for the club, and it is good practice for emergency communications in stressful situations – like weather. Rebecca also moved that the club provide up to \$100 for drinks (water and tea), Paul Ivy (K5IVY) seconded, motions passed.

RACES – to be in RACES there are two things needed. An application and background check and must pass the background check and need to be actively involved. The kit from RACES is in the possession of Brian Brockett, TDEM District 22 District Chief. Keith motioned and Jeff Jones (K5JSJ) Mark and James will get the specs and prices for a RACES compatible go box for the club. Bob Yakel (KG5KKE) and DeeDee Yakel (KI5VfV) will be the CLO for Fannin County RACES, as Mark is District Radio Officer (DRO-22). Sky Warn classes will be at Grayson College for the Basic. There will be two Basic classes and one Advanced class online through the NWS.

Club support for the EMO for the April 8 Eclipse event. James Yost (KA8FRK) shared that the 2017 Eclipse event took about a week to get everything back online. The eclipse will tax the infrastructure. Jeff Peeler (KI5PZE) shared that this is a good test for EMP if it does as they say it will. Jeff J. suggested areas for communications stations to be an “extra set of eyes” across the county, find out who is available to help. Mark H. suggested that we not be driving around. Sharon moved to have a committee to prepare for the Solar Eclipse event, Rebecca seconded. James Y. to chair, Ralf Borgardt (KI5LVS) and James H. to serve on the committee. Motion passed unanimously.

There is a possibility that a youth club could be formed at the Sam Rayburn High School, where member Mark Gibbs (KJ5AMT) is Technology Teacher. There is interest but not sure how many students. Superintendent and HS Principal would need to approve it, and the school board as well. More information about the requirements will need to be gathered.

Note of minutes from the December meeting passed on motion from Sharon, seconded by Mark H. Motion passed unanimously.

Mike Lindsey (KD5UNY) moved to adjourn, Fuzzy Vaughn seconded, motion passed.

Attending members for the regular meeting, 20 January 2024

KI5PZF	Sarah Richardson
KG5KKE	Bob Yakel
KI5VFF	DeeDee Yakel
	Gorden Jebens
K5JSJ	Jeff Jones
K5ILB	Ivan Burton
W5FZY	Fuzzy Vaughn
KI5ION	David Bruner
KI5IOO	Rebecca Bruner
KE5WDF	Roy Riales
KF5KUW	Mark Hetherington
KA8FRK	James Yost
N5OMD	Jim Thomas
K5IVY	Paul Ivy
KI5PZE	Jeff Peeler
KK5SM	Sharon McEachern
KJ5AMT	Mark Gibbs
KI5DQ	James Hunt
KG5NDO	Duncan Berry
KD5UNY	Mike Lindsey
KE5GIB	Jody Lindsey
KI5LVS	Ralf Borgardt
KI5VNL	Keith Mumaw
	Marti Mumaw

## **VICE PRESIDENTS REPORT**

### **FEBRUARY 2024, VICE-PRESIDENT REPORT**



SHARON-KK5SM

I love to research and have been looking for information on the founding of the club. I found this article, and many more, on the club's website. I hope you take the time to read it and my goodness.....how far we have come! I challenge you to learn more about the history of our club on the website.

Please also see the remaining SKYWARN SPOTTER classes below. I look forward to seeing everyone at the club meeting, February 17, 2024.

Ward Wilson, N5ALA  
509 Edgewood  
Corsicana, TX 75110

R. E. Smith, W5FRC  
8500 Lake Dr. Rt. 2  
Bonham, TX 75418  
April 16, 1986

Dear Ward

Am writing to you on behalf of the Fannin County hams to express our appreciation for your cooperation in reducing our interference problem with your repeater up here in Fannin county by reducing your output power to 40 watts.

Prior to that we were hearing your repeater consistantly --- even on our Handhelds with the squelch full on. Our major problem was that our mobile units assigned to some parts of the county during weather nets were not able to copy net control due your signal over-riding ours.

The Fannin county amateur Radio Club is probably one of the poorest clubs in Texas. We are very fortunate to have a repeater on the air and it is only because we had an anonymous donor who gave us the money for the repeater. Then the Veterans Hospital let us put the antenna on top of their building - they even had their maintenance people help us with the base/mounting. And to top it off they let us run the phone patch through their phone system. As a result we have a repeater and phone patch and have no monthly bills to pay! Our club dues would not support the monthly electric and phone bills.

The bad part is that our antenna is only up about 80 feet and this severely limits our coverage however we only wanted to cover our county and "spill" over into the adjacent counties which we are able to do.

Again - many thanks! If and when any of your area hams are up this way I hope you will use the repeater and the phone patch.

Sincerely,

R. E. (Bob) Smith, W5FRC  
E C, Fannin County ARES

## 2024 REMAINING SKYWARN SPOTTER CLASSES

Van Zandt	Monday, February 12th	In Person	6:00 pm	Sarah Norman Library (Canton)
Kaufman	Tuesday, February 13th	In Person	7:00 pm	Kaufman Civic Center
NWS SKYWARN - Basic	Thursday, February 15th	Virtual	7:00 pm	Virtual
Dallas	Saturday, February 17th	In Person	9:00 am	Granville Arts Center (Garland)
Grayson	Tuesday, February 20th	In Person	6:00 pm	Grayson College Center for Workplace Learning Auditorium
McLennan	Wednesday, February 21st	In Person	TBD	TBD
Falls	Thursday, February 22nd	In Person	6:00 pm	Falls County Courthouse
Denton	Saturday, February 24th	In Person	8:00 am	MCL at TWU
NWS SKYWARN - Basic	Monday, February 26th	Virtual	7:00 pm	Virtual
Hopkins	Tuesday, February 27th	In Person	6:00 pm	Sulphur Springs City Hall
NWS SKYWARN - Advanced	Wednesday, February 28th	Virtual	7:00 pm	Virtual
Ellis	Thursday, February 29th	In Person	6:00 pm	Coleman Junior High Fine Arts Center
NWS SKYWARN - Basic	Saturday, March 2nd	Virtual	9:00 AM	Virtual
<b>Fannin</b>	<b>Monday, March 4th</b>	<b>In Person</b>	<b>6:00 pm</b>	<b>AgriLife Extension Bldg (Bonham)</b>
Comanche	Thursday, March 7th	In Person	5:30 pm	Comanche County EOC (Comanche)
Young	Monday, March 18th	In Person	6:00 pm	Graham NCTC Facility
NWS SKYWARN - Advanced	Thursday, March 21st	Virtual	7:00 pm	Virtual

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### **Trustees' report**

**NOW MY USUAL FUN/INFO STUFF**

ANTENNA FUN AND INFO ON HOW TO CALCULATE DIMENSIONS

To calculate the effective length of the antenna, the formula  $\lambda = v / f$  must be used. The Greek lowercase letter lambda ( $\lambda$ ) is used to denote wavelength. The wavelength is calculated by dividing the phase velocity of the wave ( $v$ ) - the speed of light 300,000. **Remember your tech class training?**

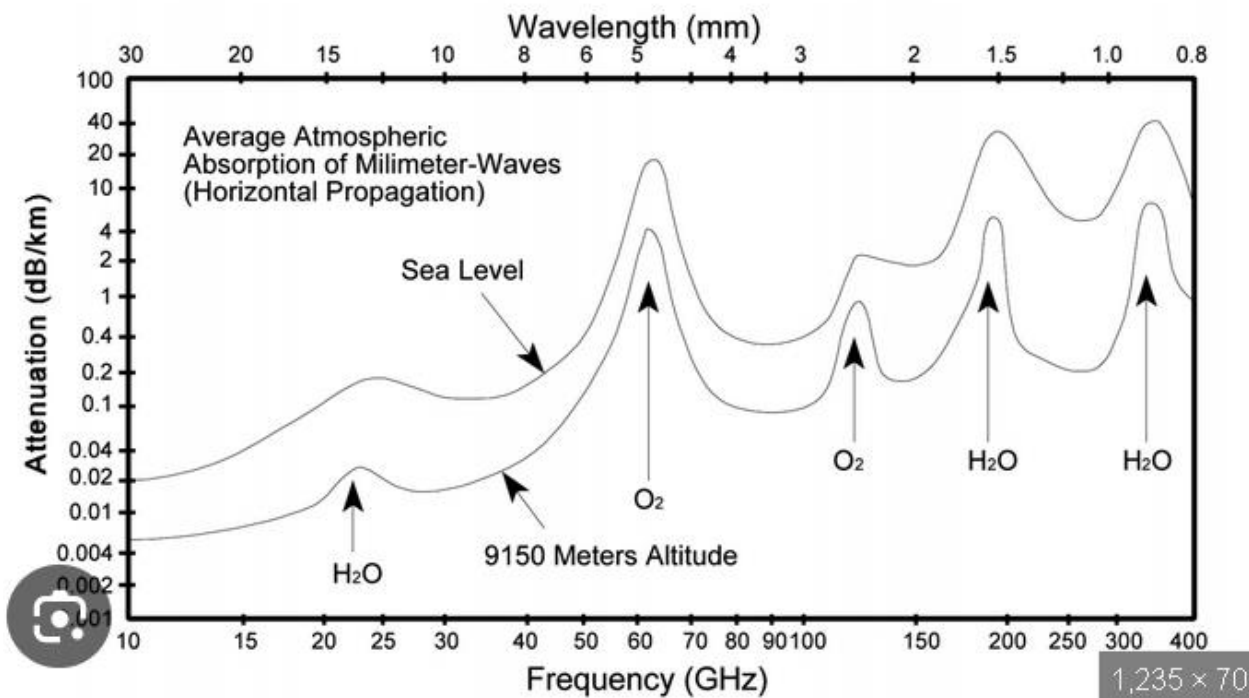
So why you ask 300,000? Well, being a lazy engineer, it is easier to handle than 299792458 m / s. Yes, that is meters per second. So here in the US where most folks haven't adopted the metric system that is 983,571,056.43 feet per second. NOW I have to clarify that is the speed in a vacuum also called free space loss. So, what is the speed in say normal atmosphere, fiber optics cable, or being a ham, coax.

**Since most hams don't use fiber optics cable, let's move on.**

Atmospheric propagation.

The most important atmospheric effects on radio wave propagation are **refraction and reflection**. Refraction can occur in the troposphere or the ionosphere. Tropospheric refraction occurs because the refractive index of the atmosphere decreases as altitude increases, leading to a bending of waves back toward the earth.

As we go higher up in frequency, the earth's atmosphere starts to impact the propagation of RF signals. RF signals travelling in free space are affected by **atmospheric attenuation**. This attenuation in the atmosphere is caused mainly by signal absorption by gasses such as O2 and H2O.



**Coax and antennas which is what you hams are waiting for!!**

Let's look at propagation through coax and wire which we hams tend to use in our everyday activities.

<b>Cable</b>	<b>Propagation Velocity (% of c)</b>
LMR-400	84
LMR-100A	66
RG-11	66
RG-58	65.9

In other words, the speed of a radio signal through RG 58 as an example is 65.9% the speed of light. SINCE IN ANTENNA CALCULATIONS WE USE FREE SPACE SPEED WITH VELOCITY FACTORS NOT NECESSARY!! Now when we calculate phasing stubs, etc. we WILL USE velocity factors. ANOTHER PAPER>>>>

**Formula: for wavelength or frequency in free space or atmosphere is as follows**

$$\text{Frequency} = \frac{C}{\lambda}$$

$$\lambda = \frac{C}{\text{Frequency}}$$

**AN example for calculating a 40-meter dipole would be as follows:**

**40 meters when plugged into the above formulas results in a frequency of 7.4948MHz. Well, that's not good since the frequency is not in a ham band. So, let's calculate using the other formula and 7.25MHz. center of the 40-meter band (Told you hams like to simplify numbers.) We get a wavelength of 41.3506 meters. Dang old metric system again, so converting to feet we get a wavelength 135.665 feet. Since dipole antennas are typically 1/2 wave dipoles the length would be 67.88 feet long fed in the middle.**

Told you we like to round off to make the math easier.

Also, since many things effect the actual length, I like to make my starting point about 2 feet longer and trim as necessary.

ONE OF YOU NOTICED THAT RG 11 IS 75 OHMS!!! GOOD NOW I CAN GET ON MY SOAP BOX ABOUT 75 vs 50 OHM COAX.

When RF engineers think about the impedance of their project's transmission lines, they may automatically assume that these lines all have a nominal impedance of 50 ohms ( $\Omega$ ). That makes sense, as so much of



today's RF design work is based around that value. It's not an arbitrary number; there are good technical reasons for using 50  $\Omega$ .

However, there are also many RF applications where the transmission line impedance has a 75  $\Omega$  value. These are mostly related to video signals and cable TV, which includes the many related functions in this large market, such as building-wide distribution amplifiers. To designers and end-users in these areas, 75  $\Omega$  is the "normal" impedance, while 50  $\Omega$  is the oddball value.

The use of two very different impedances raises some interesting questions. Why are there two standard impedances? Why do they have those particular values? Which is "better," where, and why? Does using one versus the other really matter and, if so, in what specific ways?

The answers to the impedance questions have both historical and technical roots. They begin with the work done by Lloyd Espenscheid and Herman Affel, who developed and analyzed the first coaxial cable in 1929 while working for the legendary Bell Labs. Their goal was to find a transmission medium for propagating a 4 megahertz (MHz) signal (a very wide bandwidth in those early days of long-distance telephony), which was needed to carry about 1000 bandwidth-limited analog voice calls across hundreds of miles. Doing so required a transmission line that could handle both high voltage and high power.

The two researchers analyzed the tradeoffs among key transmission line parameters of attenuation, voltage rating, and power rating (Figure 2).

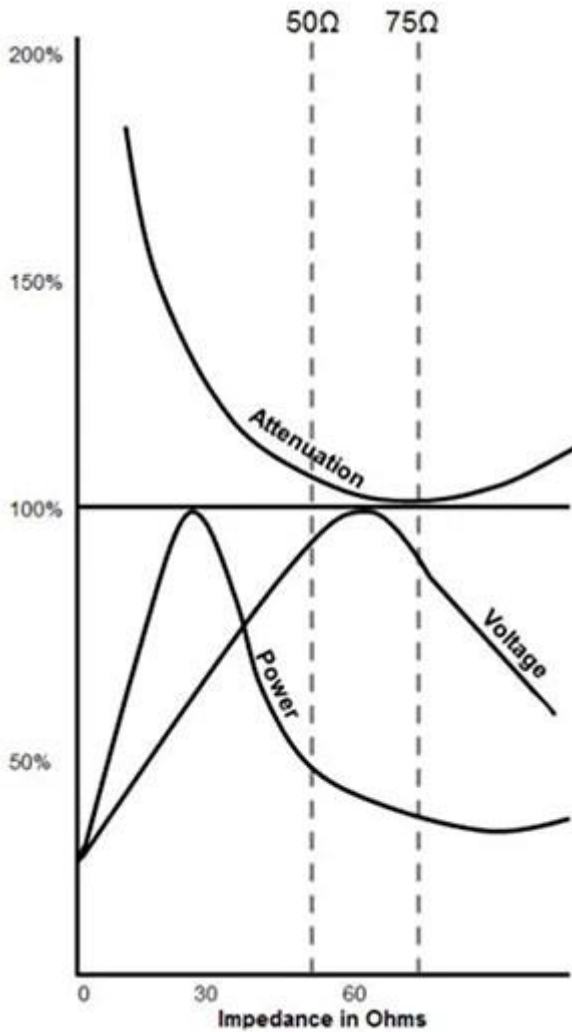


Figure 2: Among the key transmission line parameters are attenuation, voltage rating, and power rating. Each has an optimum value at a different impedance. (Image source: <https://vk8bn.me>)

Their analysis looked at the performance of three characteristics as a function of impedance and they found:

- 1: *Attenuation (loss)* is largely a function of the dielectric in the cable. For the air-filled coaxial cable which they analyzed, the **lowest loss was at about 77 Ω** (it is around 50 Ω for some dielectrics, but such cables did not yet exist).
- 2: The *voltage maximum* is a function of the intensity of the electric field between the coaxial outer conductor and the inner conductor. For coaxial cable supporting RF signals in the TE<sub>10</sub> electromagnetic (EM) field waveguide mode, the e-field has its maximum at around 60 Ω.
- 3: The *power handling capability* is determined by the breakdown field and impedance ( $V^2/Z$ ). For air-filled coaxial cables operating below the TE<sub>11</sub> mode cutoff frequency, the power transfer is at its maximum at around 30 Ω.

As with most engineering decisions, there is no “ideal” impedance value; instead, the “best” choice involves balancing tradeoffs. The 50 Ω value is a good compromise for power and voltage, such as that output by a transmitter. In contrast, for situations where **low attenuation is the primary goal**, such as with low-level signals from an antenna or an analog video link, 75 Ω is a better choice.

Further, there's another reason why 75  $\Omega$  is a desirable impedance. *The "natural" impedance of a standard half-wave dipole antenna at its resonant frequency is 73  $\Omega$ , while the impedance of the widely used folded dipole antenna is 300  $\Omega$ . This means that 75  $\Omega$  is a near-perfect match for the larger dipole, while it also is easy to provide a close match to the folded dipole using a basic 4:1 balun.*

Using different impedances realizes different objectives in a single design and adds another level of complexity. In practice, the difference in loss over a short run of a few centimeters may be negligible. Further, the voltage standing-wave ratio (VSWR) when connecting a 75  $\Omega$  cable to a 50  $\Omega$  one is 1.5:1, which may be an acceptable non-unity value (in many low or medium power situations, a VSWR below 2:1 is considered acceptable).

Hopefully this helps clear the mud. Maybe made muddier!!!

De K5MJD