



THE ROUND TABLE

Monthly Newsletter Of The Denver Radio Club

Since 1917

August 2024

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members.

I hope all of you are holding up in the continued HOT weather and not affected by the many wildfires going on along our front range. As I write this letter, the smoke in the air is really significant.

Unfortunately, we are still searching for a program for our August meeting. We have former FCC enforcement officer Riley Hollinsworth, for our September meeting but August is still open. As I have been asking, please inform us if you know of someone who you think would have good program material.

The September meeting will be our annual meeting and elections. Originally we were planning on an in person meeting but for technical reasons, it will be a virtual meeting as we have been doing.

Our DRC Hamfest is coming up fast, Aug 25, 2024 at the Adams County Fairgrounds. PLEASE, if you are planning on having a table to sell your unwanted stuff, get your table and admissions purchased VERY SOON! Early purchases really help the Hamfest Committee with planning for this Big DRC event. Tell your ham friends who may not be a DRC member or anyone not aware of our Hamfest. Do your part to make this a successful event for the club. See the [DRC website](#) for more details and registration forms.

Denver Radio Club Lunch

An informal face-to-face meeting of DRC members will start on the third Wednesday of each month at 11:30 a.m. The location is at the Valley Inn Restaurant, 1997 S Wadsworth Blvd, in Lakewood. This restaurant is on the southern edge of the King Soopers Shopping Center at Jewell and Wadsworth. No reservations are required. If you are interested in meeting and talking about radio, or other topics, don't hesitate in coming by.

Thanks to all of our new members who have recently joined the DRC. Your support is very much appreciated. Please come to meetings and events and stay active. Your name and call will be posted in this edition of the Round Table.

73 for now,

Gerry
W0GV
President



DRC SATURDAY

BY ANONYMOUS, ANON

On Saturday, July 20th, Denver Radio Club held another DRC Saturday event. This was a Parks on the Air (POTA) activation at Barr Lake State Park, US-1209. Several club members and non-club members alike, showed up to activate the park on several bands and modes. One technician, using the club call sign, was able to get on the to make some QSOs. He was surprised that on 15 meters, call sign OE4JHM, a Vienna, Austria station, came back with a 59 signal and was crystal clear. You remember those days when a DX station comes back unexpectedly when you are calling CQ!

While at the park, Brian, KFØAWC, gave a demonstration on using solar for ham usage. He demonstrated several solar panels, charge controllers, and different battery types of equipment. If you weren't there, you missed a great presentation.

Many thanks to Alex, ASØE, for his efforts in coordinating this event.



QUESTION OF THE MONTH

BY BILL RINKER, W6OAV

What are the advantages of HF inverted Vee antennas over HF dipoles?

The answer can be found on page 3 of the December 2010 issue of the Roundtable:
[https://w0tx.org/RoundtableArchive/2010-RoundTables/RT201012\(DEC\).pdf](https://w0tx.org/RoundtableArchive/2010-RoundTables/RT201012(DEC).pdf)

2024 DRC HAMFEST—THIS MONTH

BY BILL WORTHINGTON, KE0YKV

The DRC 2024 Hamfest is scheduled for **Sunday, August 25th** and will be held **at the Adams County Fairgrounds, 9:00 am to 1:00pm**. As the new Hamfest coordinator, I am going to need some help. The most pressing need is to arrange the food and drinks. I also need help with ticket sales, door prize raffle, VE testing, equipment sales, and vendor registration. If anyone can offer some help, I would greatly appreciate it. I can be reached at drcfest@w0tx.org or 720-626-5485.



BEST HEIGHT FOR A VHF/UHF ANTENNA

BY BILL RINKER, W6OAV

Many hams dream of raising or installing their VHF/UHF antennas very high above the ground. Determining the optimal height for installing a VHF/UHF antenna involves weighing the advantages and disadvantages of a tall tower, as well as assessing whether the elevation will provide the desired line-of-sight (LOS) communication with specific locations. Below are outlined various advantages and disadvantages associated with raising an antenna, followed by a procedure to ascertain the most suitable height for achieving the desired LOS coverage.

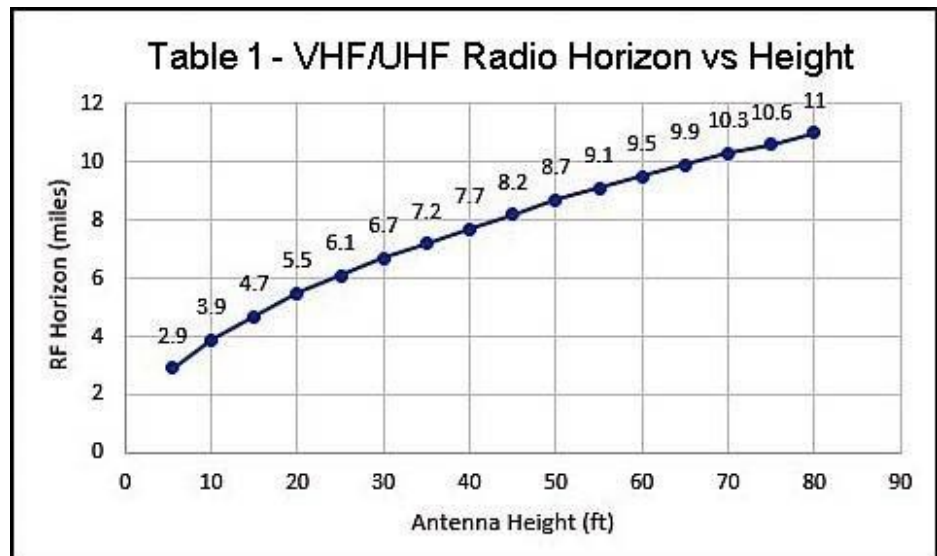
Advantages:

- **Decreased Path Loss:** Elevation lessens ground losses and obstructions, leading to increased signal strength and extended range for communication.
- **Extended Radio Horizon:** Raising the antenna extends the distance to the radio horizon thus maximizing signal strength over long distances. Table 1 shows the typical radio horizon of a VHF/UHF antenna at various heights.
- **Line-of-Sight Communication (LOS):** Raising the antenna improves LOS communication, bypassing ground reflections and maximizing signal strength over long distances.
- **Improved Radiation Pattern:** Positioning the antenna higher provides a stronger low angle directivity and a fuller high angle pattern for high repeaters. (See Figure 1).
- **Reduced Interference:** Elevated antennas are less susceptible to electromagnetic interference from nearby sources like power lines or electrical devices in the home, ensuring clearer communication.

Disadvantages:

- **Cost and Complexity:** Taller structures necessitate robust masts, additional hardware, feeder cost, and potential permits, etc., causing high installation costs and intricate setup.
- **Feeder Loss:** The losses in the feeder become considerable with increased height, and in some instances may be more than the gain resulting from the increased height.
- **Safety Concerns:** Elevated antennas carry inherent safety risks due to lightning strikes, high winds, and potential hazards when performing maintenance on the tower. Rigorous grounding and safety precautions are imperative.
- **Visual Impact:** High antennas can be visually unappealing and disruptive, particularly in residential areas.
- **Limited Benefit at Short Distances:** For local communication within close proximity, the advantages of height elevation might be negligible, not justifying the associated cost and complexity.
- **Regulatory Landscape:** Local regulations and zoning restrictions can limit the maximum permitted antenna height.

If the advantages outweigh the disadvantages for raising or installing a high antenna, it becomes essential to identify the optimal height for achieving the desired LOS coverage.



Procedure to Determine LOS

Refer to the procedure for an easy way to determine LOS which is detailed in the Roundtable at: https://w0tx.org/wp-content/uploads/2024/06/RT_JUN_24.pdf, Page 5.

References

VHF/UHF Line of sight calculator:

<https://hamuniverse.com/lineofsightcalculator.html>

Antenna Height - why it is important, what are the benefits:

<https://www.youtube.com/watch?v=UvfAkcsi9Qg>

What happens when you raise your VHF antenna up?

<https://www.youtube.com/watch?v=-HxQQvKEN0&t=2s>

HF PROPAGATION & SUN ACTIVITY FOR HAM RADIO OPERATORS

PROVIDED BY DICK

I have a friend named Fred, W6BSD in California who loves to write helpful webpages for hams.

He has a wonderful site called [BSDWORLD.ORG](https://bsdworld.org). There are many useful pages to explore there. I frequently refer to the North America CQZone 4 propagation image. Below it are links to overviews which show a snapshot of the actual activity hour-by-hour. If you click on the actual chart, you get an animated view of what's happened in the last 24-hours. This is not a forecast but actual QSO data extracted from PSK reporter and other sources and updated every 15-minutes.

Fred has also written a couple of handy calculators about coaxial cables losses when the load is imperfect and comparison graphs of coaxial cable losses for a multitude of cables.

These calculators can be found at the obscure link at the very bottom of bsdworld.org:
0x9900.com

Specifically they are at:

[Coax Cable Loss and the Impact of Bad SWR - 0x9900Cable comparison tool - 0x9900](https://0x9900.com)

I have also found this video on SWR by W2AEW to be an excellent tutorial on the subject.

[#208: Visualizing RF Standing Waves on Transmission Lines \(youtube.com\)](https://www.youtube.com/watch?v=208)

I thought these links would be useful to other club members - especially newer hams.

TOUR DE CURE

PROVIDED BY KEVIN SCHMIDT, K0KPS

Tour de Cure is the premier cycling fundraising event of the American Diabetes Association® (ADA) that creates a sense of unity and shared purpose in the fight to end diabetes. The event has routes available for all ages and abilities.

DRC has supported this event with radio operators and the event has asked for our support again this year. The problem is that the people that coordinate this event in the past can't participate this year so the club needs someone to volunteer to head up this event and coordinate with American Diabetes Association and help recruit volunteers and help make this a great event. The event will take place on September 7th.

If you are interested this opportunity, please contact Kevin Schmidt at K0KPS@w0tx.org or 303-475-9234.



CHARLES BARTON (BART) WHITEHOUSE – WAØHWP, SILENT KEY

BY GEORGE VINSON, WD0AOA

September 7, 1933 - April 8, 2024

CB (Bart) Whitehouse, WAØHWP, is now a Silent Key. An instructor and professor at both Emily Griffith Technical College and Metropolitan State University of Denver, Bart's lifelong love and passion for teaching included electronics, aviation, avionics, and radio communications. During sabbaticals and summer breaks, he conducted radio wave propagation research from the tundra of the Arctic to the jungles of Brazil. When the first Helium Neon Laser was invented, Bart applied the characteristic Visible Red Beam to demonstrate Wave Diffraction Patterns to his Communications Technology students. During 1989, he and his wife Diane, WAØZOC, participated in the Amelia Earhart Search Expedition providing ship-to-shore radio communication in the South Pacific for The International Group for Historic Aircraft Recovery (TIGHAR).

He was an avid collector of radio equipment – some of which date back to the early days of wireless communications. Bart was a proud member of both the Denver Radio Club and the Radio Club of America. He and his students helped support the DRC Repeater on Mes-taa'êhehe Mountain.

Bart served as volunteer curator at Wings Over the Rockies Museum in Denver for more than 25 years, creating a world-class exhibit of avionics and radio communications equipment.

First licensed in 1963, he was an Elmer to countless amateur radio operators of all ages who enjoyed Bart's enthusiasm and creative style of teaching. His legacy of contributions to radio will be deeply missed.

73 and Godspeed Bart



The DRC needs you!

Please contact W0GV (president@w0tx.org) if you are interested in helping with the open positions.

See the list at the end of the newsletter.

CB (Bart) Whitehouse – WAØHWP
Silent Key Open House / Open Garage Sale
Saturday August 17, 2024 - 9am - 1pm

→ Please check Quebec Romeo Zulu or ULS for the location ←

- or -

Call (404) 314-3059 or (303) 910-0921

Partial list of items:

Amateur Radio

- Kenwood TW-400A FM Dual Bander Mobile
- Kenwood HR-2600 All Mode Mobile 10M Transceivers
- Antennas
- SWR Meters
- MFJ Antenna Bridge
- Dummy Loads
- And More...

Test Equipment, Tools & Miscellaneous

- Oscilloscopes & Stands
- Signal Generators (Function, Pulse, Waveform)
- Frequency Counters
- Multimeters (Analog, Digital)
- Decade Boxes (Capacitor, Resistor, Inductor)
- Ammeters, Voltmeters
- Variacs
- Variable Output Power Supplies
- P.A. Audio Amplifiers
- Soldering Stations
- Coaxial Cable (All sizes)
- Much More...

Media

- Documentaries, Technical, Travel (DVD, VHS)
- Slide Projectors

WEIRD ANTENNAS!

BY BILL RINKER, W6OAV

Hams are often known as experimenters, especially regarding antennas! They will attempt to load up about anything as antennas. VA3OSO has put together 43 videos of hams creating antennas out of such things as metal statues, corn stocks, ladders, dumpsters, etc. The videos are entertaining to watch.

Strange Ham Antennas:

<https://www.youtube.com/playlist?list=PLtqyF9A3xBd5G8nSLjgwp0FKRZxQwpIHG>

POPULAR AMATEUR DIGITAL MODES

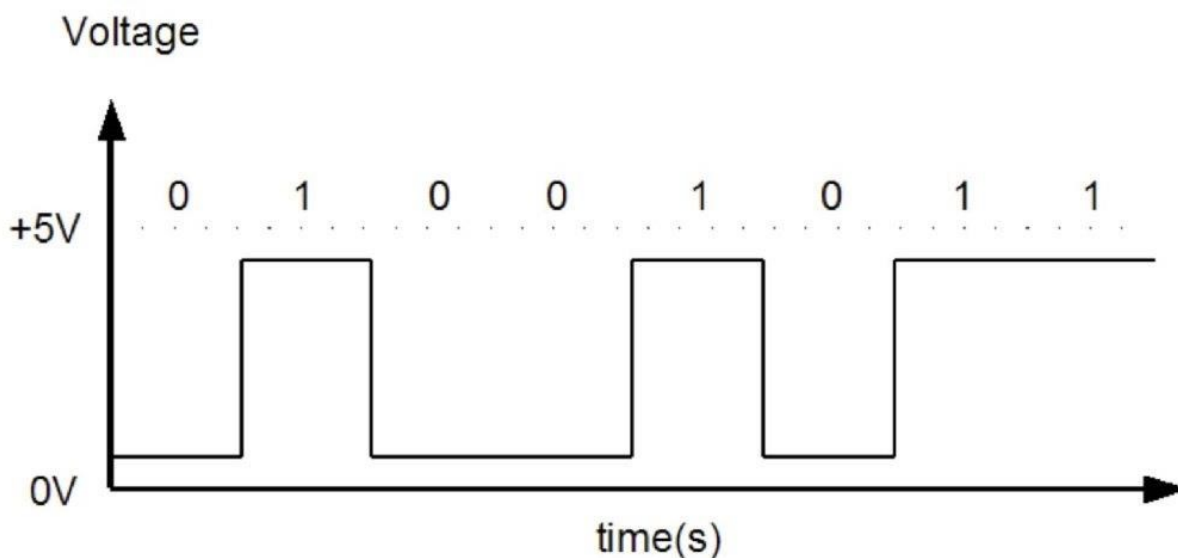
BY BILL RINKER, W6OAV

One area of ham radio that has grown by a significant amount since the introduction of personal computers is the use of digital modes of transmission.

These digital modes provide a very interesting way in which to communicate over ham radio, offering different capabilities and challenges to those presented by the more traditional modes of transmission.

There are many different digital modes used in ham radio, each with its own strengths and weaknesses. Many of the digital modes offer forward error detection (FEC) and error correction by the receiver. FEC is a technique that adds redundant data to the transmitted signal, which the receiver can use to correct errors that occur during transmission.

This article provides overviews of popular ham digital modes and references for in depth information.



Some of the most popular digital modes include:

FT8

FT8 is a digital mode of radio communication that uses frequency shift keying to encode and decode information. It is designed for weak signal communication, meaning that it can work even when the radio signals are very faint or noisy. FT8 is popular among hams who use it to communicate on the high frequency bands with low power and simple antennas. FT8 is not suitable for keyboard to keyboard chats. FT8 can only carry up to 13 text characters per transmission. This means that FT8 can only send very short messages, such as call signs, grid locators, signal reports, and acknowledgments.

FT8 requires a computer, a radio, an audio interface, and a software program to operate. The computer and the radio need to be synchronized to the same time source, such as an online server or a GPS signal. The software program encodes the user's message into audio tones that are sent to the radio's microphone input, and decodes the received audio tones from the radio's speaker output. Each FT8 transmission lasts for 12.64 seconds and can carry up to 13 text characters. The transmissions are arranged in 15-second cycles, with 2.36 seconds of silence between them.

FT8 can decode signals with a signal-to-noise ratio as low as -21 dB in a 2500 Hz bandwidth. This means that FT8 can work even when the signals are barely audible or buried in noise. FT8 has many applications, such as contesting, testing antennas, and scientific research. It is especially useful for long-distance communication on the 6 meter band, which is often affected by poor propagation conditions. FT8 is one of the fastest growing modes of ham radio and has attracted many new users to the hobby.

What is needed?

- An HF or VHF SSB radio
- An audio interface. Some radios have this built in, requiring only a simple USB cord. Otherwise, you will need a sound card interface that connects the computer and the radio without filtering the signal.
- A computer running Windows, Linux or OSX with a sound card that supports 48kHz, 16-bit audio. The computer should have a 1.5GHz or faster processor.
- A software program that supports FT8, such as WSJT-X4. This program will encode and decode the FT8 signals and display them on a waterfall display.
- A means of synchronizing the computer to UTC within 1 second. This can be done by using an internet connection, a GPS signal, or a broadcast time signal from WWV or CHU3. This is important because FT8 uses 15-second cycles for transmission and reception, and the computers need to be aligned to the same time frame.

Overall, FT8 is a very powerful digital mode that is well suited for a variety of ham radio applications. FT8 is a good option to consider for a mode that is efficient, reliable, and easy to use.

<https://www.onallbands.com/ft8-what-is-it-and-how-can-i-get-started/>
<https://site.ieee.org/msn/files/2019/04/FT8-KA9SWE.pdf>

FT8 vs FT4

FT4 is faster and more suitable for radio contesting, while FT8 is more reliable and popular for general use. FT8 can carry up to 13 text characters per transmission, while FT4 can carry up to 22 text characters per transmission. This means that FT4 can send more information than FT8 in a shorter time.

FT8 can decode signals with a signal-to-noise ratio as low as -21 dB in a 2500 Hz bandwidth, while FT4 can decode signals with a signal-to-noise ratio as low as -16 dB in a 2000 Hz bandwidth. This means that FT8 is more sensitive and can work with weaker signals than FT4, but also requires more bandwidth. <https://www.youtube.com/watch?v=ijtYXo-51Xc>

JT65

JT65 is a digital protocol intended for ham radio communication with extremely weak signals. It is optimized for Earth-Moon-Earth (EME) contacts on the VHF bands, and conforms efficiently to the established standards and procedures for such QSOs. JT65 uses 65 tones to encode each character, and frequency shift keying (FSK) to modulate the radio signal. JT65 has three submodes: JT65A, JT65B, and JT65C, with different tone spacings and bandwidths. JT65A is the most popular submode of JT65.

JT65 is very robust and can decode signals much too weak to be heard by ear. It can also work many dB below the noise floor, so it can get through where voice and other digital won't. It does not require a lot of power to make a contact - you can work the world on 10 watts or less. However, JT65 is also very slow and limited in its message content. Each transmission lasts 47.8 seconds and can only contain up to 13 characters. A typical QSO takes about seven minutes and follows a standard format of exchanging callsigns, locators, and signal reports. JT65 is not suitable for keyboard to keyboard communications.

To use JT65, you need to connect your PC to your HF rig using a sound card interface or a terminal node controller (TNC). You also need a software program that supports JT65, such as WSJT-X, JT65-HF, or JHB9HXQ. You also need to synchronize your computer clock with an accurate time source, such as an NTP server or a GPS receiver, because JT65 relies on precise timing for synchronization.

JT65 is one of the more challenging but rewarding modes to try on ham radio. It is especially useful for making contacts over long distances with low power and poor propagation conditions. It is also fun to see where the signals are reaching using online tools such as PSK Reporter.

What is required?

- A computer with a sound card and an accurate clock
- A TNC (Terminal Node Controller) to interface between the HF rig and the computer
- A software program that supports JT65, such as WSJT-X2, JT65-HF3, or JHB9HXQ3

JS8Call is a powerful and versatile digital mode that is well suited for a variety of ham radio applications. It is a good option to consider for a mode that is efficient, reliable, and easy to use.

<https://www.arrl.org/files/file/18JT65.pdf>

<https://www.essexham.co.uk/jt65-basics>

VARA

VARA is a digital mode of radio communication that uses frequency shift keying to encode and decode information. It is designed for weak signal communication, meaning that it can work even when the radio signals are very faint or noisy. VARA protocol comes in two versions: VARA FM and VARA HF, which are optimized for VHF/UHF and HF bands respectively. VARA protocol can achieve high data rates and reliability compared to other digital modes. VARA protocol is compatible with Winlink, a system that allows radio operators to send and receive email messages over the air.

What is needed?

To use VARA protocol, you will need the following requirements:

- A computer running Windows 10/11 with a sound card and an internet connection.
- A radio that supports USB mode and has a 9600 baud or 1200 baud port for audio input and output.
- A sound card interface that connects the computer and the radio without filtering the signal.
- A software program that supports VARA protocol, such as Winlink Express, BPQ32, or RMS Trimode.
- A license for VARA protocol, which can be purchased from the developer for a one-time fee of \$69 (single license) or \$55 (group purchase). The license is valid for the callsign and its 15 suffixes. You can also use VARA protocol for free with limited speed.

VARA is a promising new protocol that has the potential to revolutionize the way we use ham radio. It is a high-speed, reliable, and robust protocol that can be used for a variety of applications.

<https://www.k7yca.org/wp-content/uploads/2021/03/VARA-Rev-9.pdf>

<https://www.masterscommunications.com/products/radio-adapter/dra/vara-primer.html>

<https://www.winlink.org/tags/vara>

<https://rosmodem.wordpress.com/>

PSK31

PSK31 is one of the most common and easy-to-use digital modes as a PSK31 station needs only to consist of an SSB transceiver, and a soundcard equipped PC. PSK31 stands for Phase Shift Keying 31 baud (or 31 bits per second/bps). Unlike RTTY (radio teletype) the characters are formed by changing the phase of the sound wave, not by using different tones.

PSK31 is distinguished by its narrow bandwidth (approximately 60 Hz at -26 dB) and its low data rate (about 50 word-per-minute), which reduce its susceptibility to noise and allow many conversations in the same bandwidth as a single voice channel. PSK31 is intended for live keyboard-to-keyboard conversations and supports various languages and character sets.

What is required?

- SSB transceiver
- Soundcard equipped computer

-
- Software, such as FLDIGI, Digipan or WinPSK (Free)

Overall, PSK31 is a very powerful and versatile digital mode that is well suited for a variety of ham radio applications. PSK31 is a good option to consider for a mode that is efficient, reliable, and easy to use. (Author's note: I confirmed all 50 states running only 5 watts PSK to an all band doublet!).

<http://arrl.org/files/file/Technology/tis/info/pdf/x9907003.pdf>

<https://rsgb.org/main/get-started-in-amateur-radio/operating-your-new-station/psk31-work-the-world-with-low-power/>

MFSK

MFSK is often used in ham radio for digital modes that require high data rates, such as contesting and packet radio. It is also used in some commercial applications, such as telemetry and weather data transmission.

There are many different variations of MFSK, each with its own advantages and disadvantages. Some of the most common MFSK modes include:

- MFSK16: This mode uses 16 frequencies to encode data, which gives it a data rate of 16 bits per symbol.
- MFSK8: This mode uses 8 frequencies to encode data, which gives it a data rate of 8 bits per symbol.
- Olivia MFSK: This mode is designed to be more resistant to noise and interference than other MFSK modes.
- Olivia-HF: This mode is a variant of Olivia MFSK that is optimized for use on the HF bands.

The choice of which MFSK mode to use depends on the specific application. For example, MFSK16 is a good choice for high-data-rate applications, such as contesting, while Olivia MFSK is a good choice for applications where noise and interference are a problem.

What is required?

- A radio that can communicate with a computer via a serial or USB cable, and support CAT control for frequency and mode switching.
- A computer with a sound card and an accurate clock
- A software program that supports MFSK, such as WSJT-X1, Olivia2, or Piccolo3

Overall, MFSK is a powerful and versatile digital modulation technique that is well suited for a variety of applications. MFSK is a good option to consider for a mode that is efficient, reliable, and has good noise immunity.

<http://arrl.org/files/file/Technology/tis/info/pdf/0101033.pdf>

https://en.wikipedia.org/wiki/Olivia_MFSK#Technical_details

<https://www.techopedia.com/definition/14828/multiple-frequency-shift-keying-mfsk>

AX.25

AX.25 is a link layer protocol used for packet radio. It is a standard protocol that is defined by the International Amateur Radio Union (IARU).

AX.25 provides a reliable and efficient way to transmit data over radio. It uses a variety of techniques to ensure the reliability of data transmission, such as error correction and flow control.

AX.25 is normally a connection oriented protocol, which means that a connection must be established between two stations either direct or through a network of remote stations before data can be transmitted. This ensures that the data is delivered in the correct order and that it is not lost. AX.25 can also provide connectionless transmission. The latter means that a station can broadcast to any stations monitoring.

AX.25 is a versatile protocol that can be used for a variety of applications, such as:

- File transfer
- Remote control
- Network access
- Chat
- Digital voice

AX.25 is a popular protocol among hams. It is easy to learn and use, and it is widely supported by ham radio software.

Overall, AX.25 is a powerful and versatile protocol that is well suited for a variety of ham radio applications, especially for keyboard to keyboard chats. AX.25 is a good option to consider for a protocol that is reliable, efficient, and easy to use.

What is required ?

- A software program that supports AX.25, such as Dire Wolf, Soundmodem, or AGWPE (Free)
- A radio that can operate on the HF or VHF bands and use the SSB mode
- A way to interface the radio and the computer, either with a dedicated data port or an external sound card interface

Overall, AX.25 is a powerful and versatile protocol that is well suited for a variety of ham radio applications, especially for keyboard to keyboard chats. AX.25 is a good option to consider for a protocol that is reliable, efficient, and easy to use.

<https://www.tapr.org/pdf/AX25.2.2.pdf>

CW

CW is a traditional mode that uses Morse code to transmit data. CW will normally provide communications when most other communication fail. It is a popular choice for operators who enjoy the challenge of learning and using Morse code.

<https://hackaday.com/2014/11/12/transmitting-data-long-distance-with-morse-code/>

RTTY

RTTY (Radio Teletype) is a digital mode that uses frequency shift keying (FSK) to transmit text over radio. It is a very old mode, dating back to the early days of radio, and it is still popular today among hams.

RTTY works by encoding each character of text into a sequence of two frequencies. The two frequencies are usually 170 Hz apart, with the higher frequency representing a mark (1) and the lower frequency representing a space (0). The sequence of frequencies is then modulated

onto a radio carrier.

The most common RTTY speed is 45.45 baud, which means that each character is transmitted 45.45 times per second. Other speeds are also possible, such as 50 baud and 75 baud.

RTTY is a simple and reliable mode that is easy to learn and use. It is a good choice for keyboard to keyboard chats and text communication, such as sending email or weather reports. It is also a good choice for long distance communication, as it is relatively immune to noise and interference.

Overall, RTTY is a very versatile and reliable digital mode that is well suited for a variety of applications. RTTY is a good option to consider for a mode that is simple, easy to learn, and reliable.

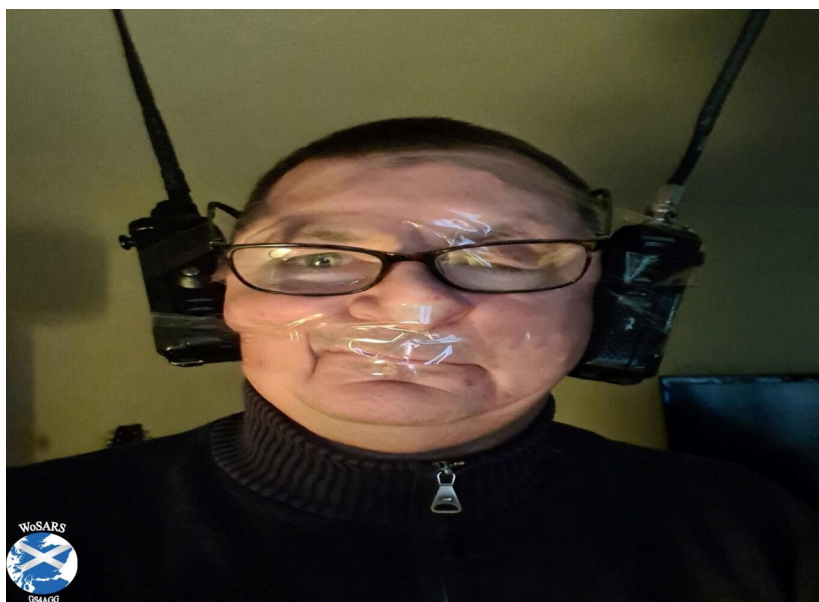
What is required?

- A radio that can operate on the HF bands and use USB mode
- A computer with a sound card and an accurate clock
- A software program that supports RTTY, such as WSJT-X, MMTTY, or HamScope
- A way to interface the radio and the computer, either with a dedicated data port or an external sound card interface

Overall, RTTY is a very versatile and reliable digital mode that is well suited for a variety of applications. RTTY is a good option to consider for a mode that is simple, easy to learn, and reliable. https://en.wikipedia.org/wiki/Radioteletype#Technical_description

The digital protocols discussed above are just a few of the many digital modes that are available to hams. The best digital protocol for you will depend on your specific needs and preferences. If you are looking for a mode that is efficient, reliable, and easy to use, then FT8 or PSK31 are good options to consider. If you are looking for a mode that is optimized for EME communication, then JT65 is a good choice. If you are looking for a mode that is good for text communication, then RTTY is a good option. And if you are looking for a mode that is challenging and rewarding to learn, then CW is a good option.

From this month's "Random Site of the Month", W0SARS—Glasgow. "Doug MM7DCD is sure that his limited exposure to RF has had no effect on him."



DRC's EMERGENCY RESPONSES

In the event of a disaster in the metro area, please monitor our repeaters on 145.490/448.625 (primary) and 449.350 (secondary).

The emergency Net Control Operator will provide information and/or requests to members for assistance.

[W0TX Repeater Directory](#)

Kings Soopers Reward Program—Help the DRC.
kingssoopers.com/i/community/community-rewards
citymarket.com/i/community/community-rewards



RANDOM SITE OF THE MONTH
[West of Scotland ARS](#)



THE ROUND TABLE ARCHIVE AND ARTICLE INDEX

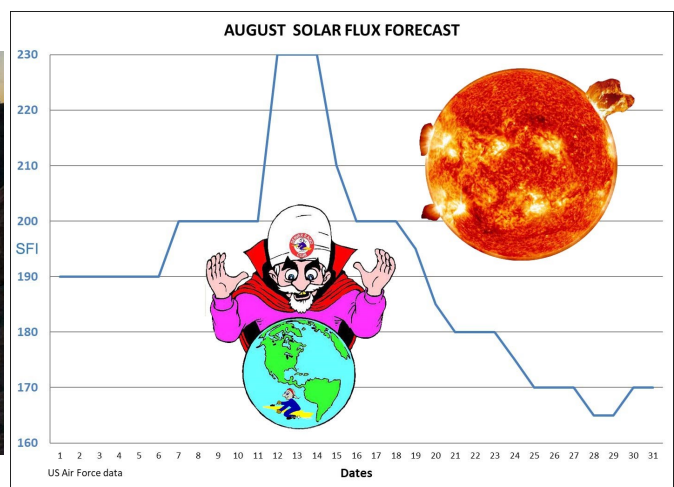
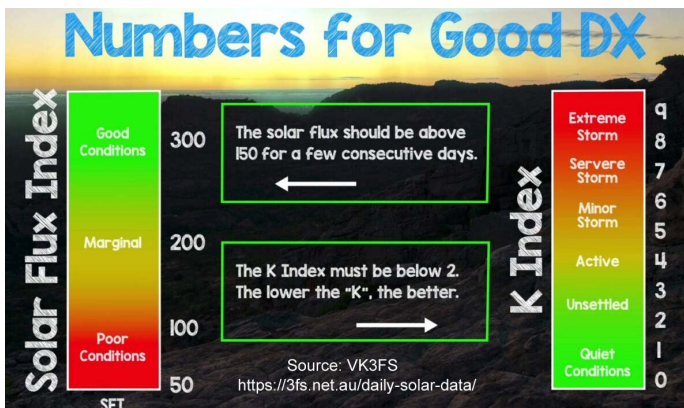
w0tx.org/roundtable

PROPAGATION FORECAST

By Bill Rinker, W6OAV

The charts below show the Solar Flux and "A" indexes for last month and the forecast for this month's Solar Flux index.

Refer to the September 2010 *Round Table* for more complete information on interpreting these charts, which is available at: [http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009\(SEP\).pdf](http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009(SEP).pdf)



UPCOMING EVENTS HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
WCARC Hamfest	8/10/24	First Christian Church	ARRL Listing
BARCfest	10/6/24	Boulder Cty Fairgrounds Exhibit Bldg	Barcfest Info

UPCOMING QSO PARTIES

The following are the Contests not sponsored by the ARRL. Please submit additions for future issues.

State/Province	Start Date	End Date	Sponsor Website	Notes
Maryland-DC	08/10/2024	08/11/2024	Anne Arundel Radio Club	
Hawaii	08/24/2024	08/26/2024	Hawaii QSO Party	
Kansas	08/24/2024	08/25/2024	Kansas QSO Party	
Ohio	08/24/2024	08/25/2024	Ohio QSO Party	
Tennessee	09/01/2024	09/02/2024	Tennessee Contest Group	
Colorado	09/07/2024	09/08/2024	Pikes Peak Radio Amateur Association	
Alabama	09/14/2024	09/15/2024	Alabama QSO Party	
Iowa	09/21/2024	09/22/2024	Story County ARC	
New Hampshire	09/21/2024	09/22/2024	Port City Amateur Radio Club	
New Jersey	09/21/2024	09/22/2024	Burlington County Radio Club	
Texas	09/21/2024	09/22/2024	Texas DX Society	
Washington	09/21/2024	09/22/2024	Western Washington DX Club	
Maine	09/28/2024	09/29/2024	Wireless Society of Southern Maine	
California	10/05/2024	10/06/2024	California QSO Party	
Nevada	10/11/2024	10/13/2024	Sierra Nevada Amateur Radio Society	

Source: qsoparty.eqth.net/index.html See contestcalendar.com/contestcal.html for a larger QSO parties list.

ATTENTION

The DRC Board of Directors meetings are held on the 4th Wednesday of each month via Google Meet and are open to any member. If you wish to attend, please contact a board member prior to the meeting night for specific information.





DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz	Metro Denver Area Coverage
2m	145.490MHz (-) 100Hz PL	Linked to 70cm / 448.625MHz. Primary frequency during emergency net.
2m	147.330MHz (+) 100Hz PL	Local area. Has voting receivers. Does not TX a PL.
2m	147.330MHz (+) 131.8Hz PL	Test mode operation. Send signal reports to Tech Committee.
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	Saint Anthony's. Note: This is a narrow band repeater requiring DCS.
70cm	448.625MHz (-) 100Hz PL	Linked to 2m / 145.490MHz. 1° disaster net freq.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink, node # 4140. Secondary frequency during emergency net.
70cm	449.775 MHz (-)	Yaesu digital, C4FM, Wires-X, DN, VW & Data. No analog FM. W0TX Room 40931.
70cm	446.7875MHz (-)	BrandMeister Repeater: Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804

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AUGUST 2024							<i>DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1	2	3 222 MHz & Up Distance	
4 222 MHz & Up Distance  New Moon	5	6	7 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	8	9	10	
11	12  First Quarter	13	14 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	15	16	17 10 GHz & Up—Round 1	
18 10 GHz & Up—Round 1 Rookie Roundup - RTTY	19  Full Moon	20	21 DRC Lunch 11:30 @ Valley Inn Restaurant, Lakewood. DRC Monthly Online Meeting Elmer 6 PM Meeting 7 PM	22	23	24 EME 2.3 GHz & Up	
25 EME 2.3 GHz & Up DRC Hamfest 9 -1 Adams County Fairgrounds	26  Last Quarter	27	28 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	29	30	31	

See arrl.org/contest-calendar for additional details about contests.

DRC BOARD OF DIRECTORS

President	W0GV	Gerry Villhauer	303-467-0223	president@w0tx.org
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Please Let Us Know

Over the years we occasionally hear from hams who have read the Round Table in other states and countries around the world. We appreciate the comments and we would like to know where you are located. So if you live outside the Front Range or Denver Metro Area and read the newsletter either online, email or hard copy please send a short note via email with your *City, State or City, Country*.

We will publish it at a later date in our new regular feature called Round Table Round World.

To respond to this request send your information to roundtable@w0tx.org.

Subject: I'm located in...

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DRC members - this is your newsletter. Please email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, so if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to roundtable@w0tx.org. The submission deadline is the 25th of the Month. ~ Editor