OUR 25TH YEAR!

EPARA BEACON

VOL. 5, NUMBER 9 THE OFFICIAL NEWSLETTER OF THE EASTERN PENNSYLVANIA AMATEUR RADIO ASSOCIATION SEPTEMBER 2021

NEXT CLUB MEETING: SEPTEMBER 9TH

Monroe County Public Safety Center, 100 Gypsum Rd Stroudsburg, PA 18360

Welcome to the EPARA Beacon! This newsletter is published monthly and is the official newsletter of the Eastern Pennsylvania Amateur Radio Association. EPARA has served the amateur radio community in the Pocono Mountains for over 25 years. We have been an ARRL affiliated club since 1995. We offer opportunities for learning and the advancement of skills in the radio art for hams and non-hams alike. EPARA supports Monroe County ARES/RACES in their mission of providing emergency communications for served agencies in Monroe County. Feel free to join us at one of our meetings or operating events during the year. The club meets on the second Thursday of every month, at the Monroe County 911 Emergency Control Center. The business meeting starts at 7:30 P.M. Anyone interested is invited to participate in our meetings and activities.

West End Fair 2021!

ZOOM Meeting Info: Meetings begin at 7:30PM!

https://us02web.zoom.us/j/85463346031?pwd=bU1KcVZoaVZiVEUvdjRsUXlNNHZkZz09

Meeting ID: 854 6334 6031 Password: 244632

From The President

September is here and the summer is going by way too fast! This month we will hold our Hamfest. It's been way too long since EPARA did this and its important for all members to help if they can. At our September meeting we will be finalizing plans and give out assignments for the day of the hamfest. I want to Thank Walt W3FNZ for chairing the Hamfest committee. He has done a fantastic job planning this event, it would never have gotten off the ground without all his efforts.

The West End Fair went extremely well, we promoted the hobby and service of amateur radio like pros. Many people stopped by our booth and learned about what hams do and about the roll EPARA and ARES/RACES plays in the community. I want to thank all who donated time to manning our booth, it was a hot and humid week! Next year is the 100th anniversary of the Fair and we hope to run special event stations to commemorate this.

Our membership continues to grow, we added three new members in August so we must be doing something right. I want to welcome our new members and hope the club helps you to learn and grow into better hams. This is the main reason we have EPARA! October brings the PA QSO Party and Jamboree on the air, so we aren't slowing down just yet. Stay tuned for more information on these events.

That's if for now, I hope to see many of you on September 9th at our next meeting. 73 Chris AJ3C

CONTACT INFORMATION

President Chris Saunders AJ3C: aj3c@gmx.com	Vice President Bill Carpenter AB3ME: bill47@ptd.net
Secretary Kevin Forest W3KCF: w3kcf@outlook.com	Treasurer Scott Phelan KC3IAO: kc3iao@hobbyguild.com
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What's INSIDE this ISSUE

EPARA Net list

Monroe county ARES-RACES – Sunday's 8:30 PM, 146.865 MHz, PL -100 Hz

The Monday Night Pimple Hill repeater 8:30 PM (Repeater freq = 447.275 with a - 5MHz offset) DMR TECH Net on TG314273* Time Slot 2

SPARK Information/Swap Net – Tuesday's 8:30 PM, 147.045 MHz, PL 131.8 Hz

The Wednesday Night EPARA Hot Spot DMR Rag Chew net at 8:30 PM, TG 3149822* Time Slot 2 (N3IS Talk Group)

EPARA Tech Net – Friday's 8:30 PM, 147.045 MHz, PL +131.8 Hz

*TG = Talk Group

Announcements
AND UPCOMING EVENTS

EPARA Patches: **Club patches are in! For those that ordered them please step forward to collect them. We also have extra just in case ...**

EPARA Club Dues
Club dues were due January 1st. For those that missed the chance to stay current, there are two (2) methods available to pay to help make this easy for all. Contact Scott KC3IAO via his email: KC3IAO@hobbyguild.com and you can send him a check or pay via PayPal.

EPARA Club Meeting
The next club meeting WILL BE held once again at the Monroe County 911 call center. We will also be holding a zoom meeting from the center for those that wish to join from their homes. This has worked well so far and we will continue the trend.

EPARA Hamfest
The EPARA hamfest is fast approaching. The club will be reaching out to everyone to make the effort and volunteer your time to make this a big success. Please make room in your schedules to be there and help out. This hamfest is our first in many years and the success we build here will make future events that much easier. Plan ahead to be there!

New EPARA hat design under consideration!

Rule #1 of Amateur Radio, it is a hobby, unless you figured out a way to fashion a living out of it.
Rule #2 of Amateur Radio, life is not a hobby and typically carries heavy responsibilities of everything that is not a hobby.
Rule #3 of Amateur Radio, never give up a LIFE event for a Ham event. You may make some great memories at the Ham event, but the guilt you may carry missing a LIFE event can be a terribly heavy millstone.
Rule #4 of Amateur Radio, as technology moves forward, so does Ham Radio - do what makes you happiest, experiment with other elements of Ham Radio as LIFE allows.
Rule #5 of Amateur Radio, it is only Ham Radio, when confused always refer to Rule #1 through #4.

TEST YOUR KNOWLEDGE!

How many levels can an analog-to-digital converter with 8 bit resolution encode?

A. 8
B. 8 multiplied by the gain of the input amplifier
C. 256 divided by the gain of the input amplifier
D. 256

Last month's answer was, D. An opto-isolator is used to transfer electrical signals between two isolated circuits by using light. It's essentially an LED focusing light on a phototransistor. It is primarily used to prevent high voltages from damaging equipment.

What is Digital Mobile Radio (DMR)?

- A European Telecommunications Standards Institute (ETSI) standard first ratified in 2005 and is the standard for "professional mobile radio" (PMR) users. Motorola designed their MotoTrbo line of radios based upon the DMR standards
- Meets 12.5kHz channel spacing and 6.25kHz regulatory equivalency standards
- Two slot Time Division Multiple Access (TDMA)
- 4 level FSK modulation
- Cutting edge Forward Error Correction (FEC)
- Commercial ETSI/TIA specs mean rugged performance and excellent service in RF congested urban environments (no intermod and other RF "hash")
- Equipment interoperability is certified by the DMR Association

DMR
DIGITAL MOBILE RADIO

The EPARA HOT SPOT Wednesday night DMR rag chew is here!

Wednesday evenings at 8:30 PM local, 0:30 UTC!

Tune your DMR radios to Talk Group 3149822 TS2 to join the

N3IS EPARA Hot Spot rag chew DMR net.

Listen to the Tech Net Friday nights on the 147.045 repeater to learn more about joining this net and for upcoming ZOOM meetings announcements to learn more about programing your radios and hot spots!

International Edition

July 1983 $2.49½
Issue #274

Amateur Radio's Technical Journal

EPARA General Membership Meeting Minutes
August 12th *2021*
General Membership Meeting 7:30Pm

Open meeting:

Meeting called to order at 7:30 pm on Aug 12th 2021 by Chris AJ3C
Introductions with call signs
Declaration of Quorum.
Total members attending: 28: 22 members at the 911 Center and 6 members on Zoom. Visitors present: 5.
Total attendees were 33.

Pledge of Allegiance / Moment of silence:

Membership Meeting - Minutes July 8th, 2021:

Secretary - Kevin W3KCF:

Meeting minutes for July 8th, 2021 were posted on the EPARA website. Chris – AJ3C asked members if they had seen and read the minutes from our previous meeting. He then asked if there were any questions or objections to the minutes as they were presented. With no objections, Chris asked for a motion to accept the minutes as presented:

Motion to accept minutes as read: By Brad – KF6FOK 2nd by Bill – AB3ME Motion Passed

Treasurers report:

Scott, KC3IAO stated the opening balance from July 30th 2021 was $2967.21 We had expenses of $200.00 for Annual Liability Insurance. $29.15 for postage stamps sending out Ham Fest fliers, $112.54 for field day expenses (food/gas for generators) and $75.85 for pizza purchased for lunch. We had income from dues collected in the amount of $15 and $10 for a patch that was purchased. In addition, there was an anonymous donation for $30. Interest earned was $ 0.11, leaving a closing balance of $2604.78

Our PayPal account had an opening balance of $463.69 We had no activity, leaving a closing balance of $463.69

Note: There is an additional deposit that needs to go to the bank from last month's meeting. That will show up on next month's statement.

Motion to accept reports by Alex – KD2FTA 2nd by AL – KB3OVB Motion Passed

Correspondence:

None

Reports of officers and committee's:

Bill AB3ME – Program Committee:

Bill stated that we have a presentation scheduled for after the meeting tonight with RuthAnn – W9FBO. She will be showing ham gear and contacts that were held by her father. – Alex – KD2FTA will be doing a presentation the following month on "Slow Scan TV.

Bill then then asked if anyone else was interested in giving a presentation and to please contact him to set things up.

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Charlie KB3JUF – ARES/RACES:

Charlie stated that he had nothing much for the group, other than there is a new Phone Tree out. Once again, he mentioned - "*Stay Prepared*", as he was going to implement a surprise activation to test our readiness for any situation.

Charlie then emphasized that all members get involved and start checking into other ARES Nets to gain experience and see what is going on around the area. He then noted, that Pete – KB3YKJ had past his EC001 test and is now a full- fledged level two ARES Member.

Charlie then mentioned that the Monroe County Office of Emergency Management was offering two classes

ICS-300: Incident Command for Expanding Incident and Supervisors.

ICS-400: Incident Command for IC & General Staff for Complex Incidents.

For further information and to register, contact Brad Harrison 570-992-4113 or email him at bharrison@monroecountypa.gov

** One further note, make sure you're training and task books are up to date and ready to go.

Chris AJ3C -- Instruction and Training:

Chris said there is going to be a DMR Workshop held in September. Tentative dates are either going to be on the 4th or 11th of the month.

PIO: Public Information Officer position is still vacant

Chris AJ3C - Website

Nothing to report

AL, KB3OVB: Membership:

We currently have 57 members with 3 more to be voted on tonight.

Eric N3SWR – Newsletter and Communications:

Eric said there was nothing new to add and Chris thanked him for a job well done.

Sat-Com Group: *Planning for an EME project*

Alex and Bob mentioned that the ARRL was promoting an EME contest in December. Further details to follow.

Old business:

Embroidered Patches:

Chris said there are still patches available for purchase. For those still interested in purchasing patches, the cost of a patch is $10. PayPal is setup, so if you are interested, contact Scott KC3IAO

Tech Net on DMR:

EPARA Tech Net on the KG3I DMR repeater (T 442.275/R 447.275) The net is hosted on Monday nights at 8:30 PM on Talk *Group* 314273 *and is on Time Slot 2, Color Code 0.*

N3IS DMR Talk Group:

EPARA has established a DMR talk group under the club N3IS call sign. The talk group is 3149822 and is

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EPARA GENERAL MEMBERSHIP MEETING AGENDA

Amateur Radio's Technical Journal

accessible via hot-spot only. This group meets Wed nights at 8:30pm for a great time and rag chew.

World Wide Net - DMR

Talk Group 91 - Saturday 11:00am: Alex mentioned there is a *World-Wide Net* on talk group 91 every Saturday. The net begins at 11:00am and gets around to North American for check-ins around 1400

2021 Hamfest:

The EPARA Hamfest will be held on September 26th 2021. Food preparation will be handled by the American Legion cook and Chris talked about the club setting up a stand to handle all the drinks. Job assignments will be talked about further at our next club meeting. A VE session will also be offered at the Ham Fest along with our normally scheduled VE session on Thursday Sept 24th at the 911 center.

The West End Fair:

August 22nd – August 28th we need two people each day from 1500-2100. Net's should be run from the fair grounds. Chris asked for volunteers to work the booth and enough members volunteered to cover all days.

Any Other Old Business:

At this time there was no old business

New business:

PA QSO Party:

The 65th QSO Party will be on October 10th and 11th. EPARA plans to make this a club effort. Bob – W3BMM asked where we would be setting up and what equipment would we be using. TBD

Budget Audit:

Bill – AB3ME is working to set a time to get together with RuthAnn and Ed to conduct the audit. No time has yet been set to meet.

Bill – AB3ME
RuthAnn – W9FBO
Ed -KC3OLD

Votes / New members:

We had three new members voted in tonight. Angel – N2YWL, AL – KC3SCA, Pete – KC3SMF. It was unanimous. EPARA welcomes its newest member.

The 50/50 raffle contained $41.00 and was won by Walt

Adjournment…

Meeting was adjourned at 8:45 pm Motion to close by Pete – KB3YKJ 2nd by Charlie – KB3JUF. Motion Passed

Secretary
Kevin Forrest
W3KCF


ZOOM
MEETING


Eric N3SWR
Chris ww2bsa.org
N3GGT Ron
KD2FTA
Dan KD3CEU
00:07:55
chris AJ3C


Zoom Meeting
Dan KD3CEU
Roy Preuning...
Len KC3OND
John KA2ABV
chris AJ3C
00:11:14
chris AJ3C

To: All EPARA Members and Users of the WA3MDP Repeater System

Re: The 147.045 Repeater Malicious Interference

Over the past few years the 147.045 repeater here in Monroe County has been plagued with an increasing amount of deliberate and malicious interference. While some of this interference has been directed at some specific operators the end results has been a wide area large foot print repeater that get little to no use except for a few regularly scheduled nets.

This is not a problem that is special to just the 147.045 system. Nationwide FM repeaters (and HF bands for the matter) are also being interfered with deliberately and the FCC lacks the manpower and ability to search out the people causing the issues.

The ARRL in conjunction with the FCC reorganized the Volunteer Monitor program a while back to assist in tracking down QRM on all of the amateur bands. While some progress has been made there obviously is a lot more to be done.

A small dedicated group has been tracking the QRM locally by various means for over a year. While some of the sources have been narrowed down it is now time to get the rest of the local ham community involved.

What we are asking people to do is when you listen to the 147.045 repeater also listen to the "input" frequency which is 147.645 (no tone is required). If you should hear any of the malicious and deliberate QRM occurring, do the following:

1) DO NOT ENGAGE IN A CONVERSATION WITH THESE INDIVIDUALS.

2) If you hear farting, cat calls, high pitch cartoon voices, music, etc write down the DATE, TIME, YOUR LOCATION and APPROX STRENGTH OF THE QRM STATION. If you have a beam antenna and can provide a heading that would be great too!

3) Send your listening report to the email address LIDSonzero45@gmail.com.

ALL information will be kept confidential and with this added information we hope to narrow down the locations that have already been identified.

In closing let me assure you that the people looking for the sources of the interference are doing so with the blessing of the repeater owners. It is our desire to see the 147.045 repeater system return to the quality repeater that it used to be many years ago.

Thank you in advance for your cooperation.

VE Testing & Classes

Anyone looking to take an exam is encouraged to contact Chris AJ3C to preregister at least one (1) week in advance of the test date. If you have any questions or to register, Chris can be reached via email AJ3C@GMX.COM. VE sessions are being held the 4th Friday of each month at 6pm at the Monroe County 911 training center. Seating is limited for the time being so we can follow the health guidelines set forth by the county and state.

VE sessions are back - contact Chris AJ3C for further information!

AMATEUR RADIO CLASSES

NEWLY RESURRECTED!

HAMFEST 2021

Sunday, September 26th, 2021 - Opening 8am

ALL NEW LOCATION!

The American Legion Post 346
126 E 5th St, East Stroudsburg, PA 18301

Take exit 309 off I-80, then left on 447 N. - 2 miles to Business rt 209 S. - then 1st left to E. 5th St.

Featuring:

- ✓ Hot & Cold Food
- ✓ Beverages
- ✓ Hourly Giveaways
- ✓ Free Parking

Rain or Shine

- ✓ Handicap Accessible
- ✓ Convenient Restrooms
- ✓ Door Prizes!
- ✓ 50/50 Raffle

- ✓ Sat/Comm Demonstration and Information
- ✓ VE Session will be held at 10AM
- ✓ Grand Prize Drawing is an Alinco DJ-MD5T Hand held DMR Transceiver

Google Maps

Eastern Pennsylvania Amateur Radio Association

For more information please visit the EPARA website at: www.qsl.net/n3is

Talk-in: 147.045MHz PL+131.8 · Phone 570-350-1185 · email: 3w3fnz@gmail.com

VISITOR INFORMATION

ADMISSION: Buyers: $7 · Sellers: $10
Vendors & Sellers: 6:00AM · Buyers: 8:00AM
Tailgate Outside or Table Space Inside our Pavilion
Club Table for Consignments

EPARA Website

ARES/RACES meetings are now being held on the fourth Friday of each month at 7PM. The meetings are once again being held at the 911 call center. These meetings will serve as training sessions covering several aspects of amateur radio emergency communications. We will start with traffic handling and the use of Radiograms and the ICS 213 general message form. Future sessions will cover the use of several ICS forms and the setup and use of digital communication modes including Winlink, Packet Radio, APRS, and the FLDIGI software program. Meeting are open to all, you do not need to be an ARES/RACES team member to attend.

Don't forget to sign up with with ARES Connect if you haven't done so already and if you plan to attend the meeting or check-in to the weekly net remember to register you attendance on the ares connect page. To sign please use this link: https://arrl.volunteerhub.com/lp/epa

Want to Put Your Ham Radio Skills to Good Use? Get Involved in

EmComm!

One of the missions of the Amateur Radio Service is for amateur radio operators to provide public service and emergency communications (EmComm) when needed. We act as a voluntary noncommercial communication service and pitch in to help our communities and first responders.

So, what organizations are out there for community-minded amateur radio operators and what can we do to help?

Join In

One good entry point into public service and emergency communications is to join SkyWarn, a volunteer program run by the National Weather Service (NWS) with more than 290,000 trained severe weather spotters. These volunteers help keep their local communities safe by providing timely and accurate reports of severe weather to the NWS.

Not all of these weather spotters are amateur radio operators, but many are. Amateur radio communications can report severe weather in real time. When severe weather is imminent, SkyWarn spotters are deployed to the areas where severe weather is expected. A net is activated on a local repeater and SkyWarn spotters who are Hams check into that net. The net control advises the spotters when they might expect to see severe weather, and the spotters report conditions such as horizontal winds, large hail, rotating clouds, and even tornadoes.

To become a SkyWarn spotter, you must attend a class that teaches you the basics of severe weather, how to identify potentially severe weather features, and how to report them. The classes are free and typically last about two hours. Check your local NWS website for class schedules.

ARES/RACES/CERT

Another way Hams can become involved in public service and emergency communication is to join an ARES or RACES group. Technically, these are two separate services—the Amateur Radio Emergency Service (ARES) is run by the ARRL, while the Radio Amateur Civil Emergency Service (RACES) is a function of the Federal Emergency Management Agency (FEMA). Amateur radio operators who typically take part in one also take part in the other.

To participate in RACES, you'll need to take some self-study FEMA courses in emergency preparedness and emergency-response protocols. Classes may or may not be required to participate in ARES. These requirements are set by each individual ARES group. To get involved with either ARES or RACES, ask your local club members when they meet. You can also contact the Section Manager or Emergency Coordinator for your ARRL section. To contact them, click here and find the section that you live in.

Amateur radio operators belonging to ARES (and its predecessor, the Amateur Radio Emergency Corps) have responded to local and regional disasters since the 1930s, including the 9/11 attacks, and Hurricane Katrina and Hurricane Michael, among others.

The Community Emergency Response Team (CERT) program trains volunteers—both Hams and non-hams—how to be prepared for disasters that may impact their area. They provide basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. CERT offers a nationwide approach to volunteer training and organization that first responders can rely on during disaster situations, allowing them to focus on more complex tasks.

What Gear Do You Need?

For most local needs, a 5-watt VHF/UHF handheld transceiver is sufficient for utilizing local repeaters to relay messages and report on conditions as they exist. Replacing the radio's stock antenna with a higher gain antenna or connecting it to a magnetic mount on a vehicle will increase range significantly.

Even better is a VHF/UHF mobile radio installed in your vehicle with 25 or more watts output and a good mobile antenna. In the event the repeater loses power, you can talk over a considerably larger area in simplex mode with the extra power and a good mobile antenna.

If you work with an ARES or RACES group, you may be asked to act as a county control station. In this capacity, you'd need both HF and VHF transceivers in a fixed location, such as your house, with a good antenna system and emergency power capabilities like a generator or batteries. This allows you to make contacts within your state and throughout the U.S.

Helping Hams

Ham radio can play a key role in emergency situations. Here are a few examples:

- Ham radio connected firefighters and police departments, Red Cross workers, and other emergency personnel during the 2003 blackout that affected the northeast United States.
- In 2017, fifty amateur radio operators were dispatched to Puerto Rico to provide communications services in the wake of Hurricane Maria.
- Amateur radio operators provided communications in the aftermath of the Boston Marathon bombing when cellphone systems became overloaded.

- During Hurricane Katrina, more than one thousand ARES volunteers assisted in the aftermath and provided communications for the American Red Cross.
- During the devastating Oklahoma tornado outbreak that began in May 1999, amateur radio operators—giving timely ground-truth reports of severe weather—played a critical role in the warning and decision-making processes at the NWS Weather Forecast Office in Norman, Oklahoma.
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Credit: https://www.onallbands.com/want-to-put-your-ham-radio-skills-to-good-use-get-involved-in-emcomm/

Monroe County Office of Emergency Management

100 Gypsum Road
Stroudsburg, PA 18360
EMAIL - mcoem@monroecountypa.gov
570-992-4113 Fax 570-402-7358

FACEBOOK - www.facebook.com/MCPAOEM

ICS-300: Incident Command for Expanding Incident and Supervisors

FSC: 0509

Hours: *24 (Lecture: 11.0hrs / Lab: 13.0hrs)*

Prerequisites: Age 16 and up, ICS – 200, or NIMS ICS for the Fire Service, or NIMS ICS for Emergency Medical Service

Description: This course is designed to provide overall incident management skills rather than tactical expertise. The course will cover the implementation of the incident management process on Type 3 incidents; define a Type 3 incident, and the development of an Incident Action Plan. Determining capabilities to match Incident complexity will be discussed. When and how to add appropriate ICS positions to match the complexity of the incident will be explored. The use of Incident Management Teams will be discussed.

Cost: None

Class Size Limited: 25 Participants

Instructor: Mark Nalesnik

Course Date & Times:

Tuesday Oct. 12th, 2021	*18:00-22:00*
Wednesday Oct. 13th, 2021	*18:00-22:00*
Saturday Oct. 16th, 2021	*08:00-16:00*
Sunday Oct. 17th 2021	*08:00-16:00*

Registration Deadline: *Friday Oct. 8th, 2021*

Course Location:

Monroe County Public Safety Center
100 Gypsum Road

Stroudsburg PA 18360

Contact to register

Brad Harrison

570-992-4113

Or e-mail

bharrison@monroecountypa.gov

Monroe County Office of Emergency Management

100 Gypsum Road
Stroudsburg, PA 18360
EMAIL - mcoem@monroecountypa.gov
570-992-4113 Fax 570-402-7358

FACEBOOK - www.facebook.com/MCPAOEM

ICS-400: Incident Command for IC & General Staff for Complex Incidents

FSC: 0511

Hours: *16.0 (Lecture: 7.5hrs / Lab: 8.5hrs)*

Prerequisites: Age 16 and up, ICS – 300

Description: This course is designed to provide overall incident management skills rather than tactical expertise. This course will discuss how major incidents pose special management challenges. It will explore the circumstances in which an Area Command is established and describes the circumstances in which multi-agency coordination systems are established. This course is designed for senior personnel who are expected to perform in a management capacity in an Area Command or multi-agency coordination system.

Cost: None

Class Size Limited: 25 Participants

Instructor: Mark Nalesnik

Course Date & Times:

Saturday Nov. 20th, 2021 08:00-16:00
Sunday Nov. 21st 2021 08:00-16:00

Registration Deadline: *Friday Nov. 19th, 2021*

Course Location:

Monroe County Public Safety Center
100 Gypsum Road

Stroudsburg PA 18360

Contact to register

Brad Harrison

570-992-4113

Or e-mail

bharrison@monroecountypa.gov

From the Editor

Eric, N3SWR

Hello again to all our members and more!

It's been one heck of a ride this month with getting things finalized for our upcoming hamfest, dealing with tropical storm Fred (him and I are going to have a little talk over the flooding of my basement once again, trust me), making the West End Fair a success, and I'm sure I'm forgetting to list something else here but that's the way it goes… OH YEA… About that coffee I had at the fair… oh never mind :)

I really want to that those that helped and attended the West End Fair! It was nice to get so many pictures in the mail and I've included every one of them in this edition for all to see. Keep up the spirit and the good work for future events so we can include them here for everyone. I'll be taking a bunch of pictures at the hamfest as well since we definitely do need some quality photos to work with when planning future events.

That's it for now so 73 to all!
Eric, N3SWR

"Failure is an option here. If things aren't failing, you aren't innovating enough."
- Elon Musk

Topics of Interest

Have an idea you would like to share with your fellow hams? Interested in one of the new exotic digital modes and would like to get others interested in it too? Found a blog somewhere that you think others would find interesting? Members are encouraged to submit items of interest for publication. Submitted articles (are suggested) to be no more than a page or two in length and may be edited for content and grammar. The EPARA officers and newsletter editor reserve the right to determine which items will be included in The Beacon. The deadline for publication is the 15th of the month. The publication date will be at the end of each month. Copyrights are the property of their respective owners and their use is strictly non-profit/educational and intended to foster the spirit of amateur radio.

If you've taken pictures at an event and would like to submit them for possible inclusion in the newsletter, forward them to the newsletter editor. Please send action shots, if possible. Faces are often preferable over the backs of heads. Many hams may be way too overweight, so please consider using a wide-angled lens.

Disclaimer

The Beacon is not representative of the views or opinions of the whole organization, and such views and opinions expressed herein are of the individual author(s).

Bruce Draper, AA5B, aa5b.corral@gmail.com

Contest Corral

September 2021

Check for updates and a downloadable PDF version online at **www.arrl.org/contest-calendar**.
Refer to the contest websites for full rules, scoring information, operating periods or time limits, and log submission information.

Start - Finish Date-Time		Date-Time		Bands	Contest Name	Mode	Exchange	Sponsor's Website
1	1700	1	2000	144	VHF-UHF FT8 Activity Contest	Dig	4-char grid square	ft8activity.eu/index.php/en
1	2000	1	2100	3.5	UKEICC 80-Meter Contest	Ph	6-char grid square	ukeicc.com/80m-rules.php
1	2300	3	2300	3.5-28	G3ZQS Memorial Straight Key Contest	CW	RST, SPC, name, mbr or power	fistsna.org/operating.html
2	1700	2	2100	28	NRAU 10-Meter Activity Contest	CW Ph Dig	RS(T), 6-char grid square	nrricontest.no
2	1900	2	2100	1.8-50	SKCC Sprint Europe	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
4	0000	4	0359	1.8-28	CWOps CW Open	CW	Serial, name	cwops.org
4	0000	4	2359	3.5-28	Russian RTTY WW Contest	Dig	RST, 2-letter RU oblast or CQ zone	qrz.ru/contest/detail/93
4	0000	5	2359	3.5-28	All Asian DX Contest, Phone	Ph	RS, 2-digit age	www.jarl.org/English
4	0600	4	0800	7, 14	Wake-Up! QRP Sprint	CW	RST, serial, suffix of previous QSO	qrp.ru/contest/wakeup
4	1200	4	1559	1.8-28	CWOps CW Open	CW	Serial, name	cwops.org
4	1300	4	1330	144	Two-Meter Classic Sprint	CW Ph	Serial, 4-char grid square	fwrc.info
4	1300	4	1600	7	AGCW Straight Key Party	CW	RST, serial, class, name, age	alt.agcw.de/index.php/en
4	1300	5	0400	All	Colorado QSO Party	CW Ph Dig	Name, CO county or SPC	ppraa.org/coqp
4	1300	5	1259	1.8-28	IARU Region 1 Field Day, SSB	Ph	RST, serial	darc.de/der-club/referate/conteste
4	1300	5	1300	3.5-28	RSGB SSB Field Day	Ph	RS, serial	www.rsgbcc.org/hf
4	1400	5	1400	145	IARU Region 1 145 MHz Contest	CW Ph Dig	RS(T), serial, 6-char grid	www.iaru-r1.org
4	2000	4	2359	1.8-28	CWOps CW Open	CW	Serial, name	cwops.org
4	2000	5	2000	3.5	PODXS 070 Club Jay Hudak Memorial	Dig	RST, SPC	www.podxs070.com
5	1000	5	1400	144	WAB 144 MHz QRO Phone	Ph	RS, serial, WAB square or country	wab.intermip.net
5	1800	6	0300	All	Tennessee QSO Party	CW Ph Dig	RS(T), TN county or SPC	tnqp.org/rules
6	1900	6	2030	3.5	RSGB 80-Meter Autumn Series, SSB	Ph	RS, serial	www.rsgbcc.org/hf
6	2300	7	0300	1.8-50	MI QRP Labor Day CW Sprint	CW	RST, SPC, mbr or power	www.miqrp.net/contest
7	0100	7	0300	3.5-28	ARS Spartan Sprint	CW	RST, SPC, power	arsqrp.blogspot.com
8	1700	8	2000	432	VHF-UHF FT8 Activity Contest	Dig	4-char grid square	ft8activity.eu/index.php/en
11	0000	11	2359	1.8-VHF	FOC QSO Party	CW	RST, name, mbr (if any)	g4foc.org/qsoparty
11	0000	12	2359	3.5-28	WAE DX Contest, SSB	Ph	RS, serial	darc.de/der-club/referate/conteste
11	0800	12	0600	1.8-28	SARL Field Day Contest	CW Ph Dig	RS(T), # of rigs, cateogry, province	www.sarl.org.za
11	0900	12	1400	7	YB7-DX Contest	Ph	RS, serial	yb7dxc.com/rule
11	1200	12	2359	1.8-50	SKCC Weekend Sprintathon	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
11	1400	11	2200	3.5-28	Ohio State Parks on the Air	Ph	OH park abbreviation or SPC	ospota.org
11	1500	12	0300	3.5-28	Alabama QSO Party	CW Ph	RS(T), AL county or SPC	www.alabamaqsoparty.org
11	1500	12	0959	3.5-28	Russian Cup Digital Contest	Dig	Serial, 4-char grid square	qrz.ru/contest/detail/86.html
11	1800	13	0300	50 and up	ARRL September VHF Contest	CW Ph Dig	4-char grid square	www.arrl.org/september-vhf
12	0000	12	0400	3.5-14	North American Sprint, CW	CW	Other's call, your call, serial, name, SPC	ncjweb.com
13	0000	13	0200	1.8-28	4 States QRP Second Sunday Sprint	CW Ph	RS(T), SPC, mbr or power	www.4sqrp.com
15	1900	15	2030	3.5	RSGB 80-Meter Autumn Series, CW	CW	RST, serial	www.rsgbcc.org/hf
16	0030	16	0230	3.5-14	NAQCC CW Sprint	CW	RST, SPC, mbr or power	naqcc.info
16	1800	16	1959	3.5	BCC QSO Party	CW Ph Dig	RS(T), T-shirt size	bavarian-contest-club.de/contest
17	2100	17	2359	3.5	AGB NEMIGA Contest	CW Ph Dig	RST, serial, mbr (if any)	www.ev5agb.com
18	0000	19	2359	All	Collegiate QSO Party	CW Ph Dig	School name, RS(T), op class	collegiateqsoparty.com
18	0500	19	1100	50-1296	SARL VHF/UHF Digital Contest	Dig	RST, 6-char grid locator	www.sarl.org.za
18	0600	19	2359	10 GHz to light	ARRL 10 GHz and Up Contest	CW Ph Dig	6-char grid	www.arrl.org/10-ghz-up
18	1200	19	1200	3.5-28	Scandinavian Activity Contest, CW	CW	RST, serial	www.sactest.net
18	1400	19	0200	All	Iowa QSO Party	CW Ph Dig	RS(T), IA county or SPC	www.w0yl.com/IAQP
18	1400	19	2000	All	Texas QSO Party	CW Ph Dig	RS(T), TX county or SPC	www.txqp.net
18	1500	18	2100	1.8-28	QRP Afield	CW Ph Dig	RS(T), SPC, power or mbr	newenglandqrp.org
18	1600	18	2300	3.5-144	Wisconsin Parks on the Air	CW Ph	WI park abbreviation or SPC	wipota.com
18	1600	19	0359	3.5-28	New Jersey QSO Party	CW Ph Dig	RS(T), NJ county or SPC	k2td-bcrc.org/njqp/
18	1600	19	2200	All	New Hampshire QSO Party	CW DigPh	RS(T), NH county or SPC	www.w1wqm.org/nhqso
18	1600	19	2359	1.8-144	Washington State Salmon Run	CW Ph Dig	RS(T), WA county or SPC	salmonrun.wwdxc.org
18	1800	18	1959	1.8-50	Feld Hell Sprint	Dig	RST, mbr, SPC, grid	sites.google.com/site/feldhellclub
19	0000	19	0400	3.5-14	North American Sprint, RTTY	Dig	Other's call, your call, serial, name, SPC	ncjweb.com
19	1700	19	2059	3.5-28	BARTG Sprint PSK63 Contest	Dig	Serial	bartg.org.uk/wp
19	2300	20	0100	1.8-28	Run for the Bacon QRP Contest	CW	RST, SPC, mbr or power	qrpcontest.com/pigrun
20	1900	20	2300	144	144 MHz Fall Sprint	CW Ph Dig	4-char grid square	svhfs.org
22	0000	22	0200	1.8-50	SKCC Sprint	CW	RST, SPC, name, mbr or "none"	www.skccgroup.com
23	1900	23	2030	3.5	RSGB 80-Meter Autumn Series, Data	Dig	RST, serial	www.rsgbcc.org/hf
25	0000	26	2359	3.5-28	CQ Worldwide DX Contest, RTTY	Dig	RST, CQ zone (+ state/prov for US/VE)	www.cqwwrtty.com
25	1200	26	1200	1.8-28	Maine QSO Party	CW Ph	RS(T), ME county or SPC	ws1sm.com/MEQP.html
25	1400	25	1800	144, 432	AGCW VHF/UHF Contest	CW	RST, serial, power, 6-char gird	agcw.de/contest/vhf-uhf
25	1400	25	2200	3.5-28	Masonic Lodges on the Air	Ph	Lodge name/number/jurisdiction	cqmorelight.com/rules
27	1900	27	2030	3.5-14	RSGB FT4 Contest Series	Dig	4-char grid square	www.rsgbcc.org/hf
28	1900	28	2300	222	222 MHz Fall Sprint	CW Ph Dig	4-char grid square	svhfs.org
29	2000	29	2100	3.5	UKEICC 80-Meter Contest	CW	6-char grid square	ukeicc.com/80m-rules.php

There are a number of weekly contests not included in the table above. For more info, visit: **www.qrpfoxhunt.org**, **www.ncccsprint.com**, and **www.cwops.org**. All dates refer to UTC and may be different from calendar dates in North America. Contests are not conducted on the 60-, 30-, 17-, or 12-meter bands. Mbr = Membership number. Serial = Sequential number of the contact. SPC = State, Province, DXCC Entity. XE = Mexican state. Listings in blue indicate contests sponsored by ARRL or *NCJ*. The latest time to make a valid contest QSO is the minute listed in the "Finish Time" column. *Data for Contest Corral is maintained on the WA7BNM Contest Calendar at* **www.contestcalendar.com** *and is extracted for publication in QST 2 months prior to the month of the contest. ARRL gratefully acknowledges the support of Bruce Horn, WA7BNM, in providing this service.*

Amateur Radio Special Event Stations!

08/27/2021 | Amateur Radio Software Awards

Aug 27-Sep 5, 0500Z-0459Z, K2A/K2R/K2S, Ames, IA. Amateur Radio Software Award. 14.250 7.185 3.950 7.078. QSL. Amateur Radio Software Awards, Special Event Station, PO Box 126, Ames, IA 50010-0126. Special event stations K2A, K2R, and K2S are operating from Iowa, Colorado and Washington to promote free and open amateur radio software. During the event the 2021 Amateur Radio Software Award recipient Jordan Sherer will be honored for his JS8Call digital communication software. Nominations for the 2022 awards will also be encouraged. Please QSL with S.A.S.E. The Amateur Radio Software Award is an annual international award for the recognition of software projects that enhance amateur radio. The award aims to promote amateur radio software development which adhere to the same spirit as amateur radio itself: innovative, free and open. For more information about the Amateur Radio Software Award or a detailed schedule of the special visit arsaward.com

08/28/2021 | 65th Annual Auburn, Cord, Duesenberg Festival

Aug 28-Sep 8, 0000Z-2359Z, K9A, Auburn, IN. Northeastern Indiana Amateur Radio Association (W9OU). 14.074 7.225 7.074 7.030. Certificate & QSL. K9A C/O Northeastern Indiana ARA, P.O. Box 145, Auburn, IN 46706. www.w9ou.org

08/28/2021 | Buhl Day Celebration

Aug 28-Sep 7, 0800Z-2200Z, W3B, Sharon, PA. Mercer County Amateur Radio Club. 7.185 14.240 145.350. QSL. Mercer County Amateur Radio Club, PO Box 996, Sharon, PA 16146. W3B Special Event Station The Mercer County Amateur Radio Club is celebrating BUHL DAY, the 106th anniversary of Buhl Farm Park, which covers 300 acres in the Shenango Valley. The Park was given to the Shenango Valley community by Frank Buhl, a local industrialist, for the use and recreation enjoyment of the community in Mercer County, PA. A commemorative QSL will be available with a SASE. Send your QSL card to: Mercer County Amateur Radio Club PO Box 996 Sharon, PA 16146 USA www.w3lif.org

09/01/2021 | 130 Year Anniversary of the First K.U.K. Telegraphy Course

Sep 1-Oct 30, 0000Z-2359Z, OE130KUK, Kirchberg am Wagram, AUSTRIA EUROPE. ADL 305 Tulln-Stockerau. 160 through 10 meters, CW SSB FT8. QSL. See website, for, information, AUSTRIA EUROPE. In 1891 a k.u.k cavalry telegraphist course was first established in the "Franz Josef-Casern" in Tulln (Lower Austria). In the following years (up to approx. 1917) infantry companies were also stationed in Tulln to learn telegraphy. That was unique in the imperial-royal monarchy Austria-Hungary. k.u.k stands for kaiserliche und königliche Monarchie Österreich-Ungarn. "k.u.k." was the inofficial abbreviation for the Austro-Hungarian Monarchy. www.qrz.com/db/oe130kuk

09/03/2021 | W4V - HOOAH Deer Hunt for Heroes

Sep 3-Sep 6, 2300Z-2300Z, W4V, Normal, IL. Chicago Suburban Radio Association - W9SW. 14.320 7.260. QSL. Ron Delpiere-Smith -- W4V, 333 E Vermont St, Villa Park, IL 60181-2267. Members of the Chicago Suburban Radio Association will be activating W4V – HOOAH Deer Hunt for Heroes Special Event Station over the 2021 Labor Day Weekend. Through sponsorship, donations and fundraising activities the HOOAH Organization arranges Hunting and Fishing activities for Disabled Veterans. This allows the veteran to participate without any cost to the themselves. The purpose of W4V Special Event is to bring awareness to the opportunities available to our disabled veterans through the HOOAH organization. The W4V activation will be from 2300 UTC September 3, 2021 to 2300 UTC September 5, 2021 (possible on September 6) on 20, 40 & 80 meters More information about HOOAH can be found at: www.HooahDeerHuntforHeroes.com. www.w9sw.com

09/04/2021 | Fly-IN / Cruise-IN

Amateur Radio Special Event Stations!

Sep 4, 1200Z-1900Z, W9EBN, Marion, IN. Grant County Amateur Radio Club. 14.1800 DMR Talk Group 31189 D-Star Ref 24B 146.790- (PL 141.3). Certificate. Grant County Amateur Radio Club - W9EBN, ATTN: Fly-In / Cruise-In, P.O. Box 1786, Marion, IN 46952. Send a 9 inch x 12 inch Self Addressed Stamped Envelope (SASE) to receive a certificate. www.grantarc.org

09/04/2021 | Return to Paradise

Sep 4-Sep 6, 1800Z-1800Z, K7RDG, Sierra Vista, AZ. Cochise Amateur Radio Association. 14.285 7.225 3.890 14.070. Certificate. Cochise ARA, PO Box 1855, Sierra Vista, AZ 85636. Operating Voice, FT8/FT4/JS8Call from the Ghost Town of Paradise,AZ. WWW.K7RDG.ORG

09/04/2021 | Sanders County Fair

Sep 4-Sep 5, 1600Z-2200Z, W7P, Plains, MT. Clark Fork Amateur Radio Club . DMR TG 31300 Brandmeister Network; 50.313 50.323 7.074. QSL. Clark Fork Valley Amateur Radio Club, P.O. Box 1803, Thompson Falls, MT 59873. cfvarc.org

09/05/2021 | 20th Memorial of the 9/11 Attacks

Sep 5-Sep 12, 0000Z-2359Z, K4A, Cordova, AL. Alabama Contest Group. 3.850 7.250 14.250 21.325. QSL. Bob Beaudoin, 970 Mountain View Road, Cordova, AL 35550. CW freq 50 Khz up from the bottom of the band All frequencies +/- QRM Normal FT-8 frequencies www.alabamacontestgroup.org

09/05/2021 | Blue Ridge Bonanza

Sep 5, 1300Z-2100Z, W4CA, Roanoke, VA. Roanoke Valley Amateur Radio Club. 14.265 7.265. QSL. Roanoke Valley ARC, P.O. Box 2002, Roanoke, VA 24009. Multiple stations/frequencies on 20 and 40 meters. Contact as many stations along the Blue Ridge Parkway during the event. Commemorating the beginning of construction of the Parkway in September, 1935. A 469 mile scenic road running along the spine of the Blue Ridge Mountains through Virginia and North Carolina. https://blueridgebonanza.info

09/06/2021 | Tommy Thevenow Day

Sep 6, 1700Z-2259Z, W9EFU, Madison, IN. Clifty Amateur Radio Society. 28.347 14.247 7.247. Certificate. Jerry Barnes, 601 Spring Street, Madison, IN 47250. Calling CQ TT. Electronic Certificate upon confirmed QSO. Contact Jerry KA9PIJ@arrl.org. Thomas Joseph Thevenow (September 6, 1903 – July 29, 1957) born in Madison Indiana, was an American professional baseball shortstop. He played in Major League Baseball (MLB) from 1924 to 1938 for the St. Louis Cardinals, Philadelphia Phillies, Pittsburgh Pirates, Cincinnati Reds, and Boston Bees. Thevenow epitomized the good-fielding / weak-hitting shortstops that prevailed in the era, ending his career with a fielding percentage of .947, but a batting average of .247 while hitting only two home runs in his 15-year career. He hit two home runs in 1926, both inside-the-park home runs, and then never hit another home run in his next 12 seasons, setting a major league record of 3,347 consecutive at bats without a home run. wjbarnes@cinergymetro.net or https://w9efu.wordpress.com

09/09/2021 | September 11th 20th Anniversary Never Forget

Sep 9-Sep 13, 1600Z-0200Z, N7F, Albany, OR. American Legion Post 10 Amateur Radio Club. 14.250; 20 & 40 meters SSB, PSK-31, CW. QSL. N7F Never Forget, c/o American Legion Post 10, 1215 Pacific Blvd. SE, Albany, OR 97321. QSL with SASE. Club members may operate from home. info@n7ala.org or https://www.n7ala.org

09/10/2021 | In remembrance of the 20th anniversary of the attack on the World Trade Center in New York City

Sep 10-Sep 13, 0000Z-0003Z, WA2NYC, Staten Island, NY. Wireless Association of New York City. 28.450 21.350 14.340 7.238. QSL. Wireless Association of New York City, 233 Wolverine Street, Staten Island, NY 10306. We remember the over twenty nine hundred souls that were lost on that day. D-STAR Reflector XLX020B will be monitored at the top of the hour wa2nyc@yahoo.com

09/11/2021 | Burnsville Fire Muster

Amateur Radio Special Event Stations!

Sep 11, 1600Z-2100Z, W0BU, Burnsville, MN. Twin Cities Repeater Club (TCRC). 3.850 7.225 14.250 21.325. Certificate. TCRC , 4202 153rd Street West, Rosemount, MN 55068. Celebrating the 40th anniversary of the event, which the TCRC has regularly participated in. Weather permitting, we will be operating on solar power! Information: info@tcrc.org. www.tcrc.org

09/11/2021 | Flight 93 20th Anniversary

Sep 11, 1200Z-2359Z, N3M, Stoystown, PA. Somerset County Amateur Radio Club and Nittany Amateur Radio Club. General portion of 20 and 40 meter phone bands. QSL. N3M c/o Nittany Amateur Radio Club, PO Box 614, State College, PA 16801. Operating from the Flight 93 National Memorial, commemorating the passengers and crew of Flight 93 whose heroic actions on 9/11/2001 prevented a planned terrorist attack on the US Capitol. www.qrz.com/db/n3m

09/11/2021 | National POW MIA Recognition Day

Sep 11-Sep 19, 0000Z-2359Z, K4MIA, Loxahatchee, FL. PBSEC. 28.400 18.150 14.265 7.195. QSL. Michael Bald, 6758 Hall Blvd, Loxahatchee, FL 33470. Observance of National POW MIA Recognition Day are held across this country on the third Friday in September each year. This year it will be on September 17. This will be the 13th year the special event station has been activated. The day was established to honor our prisoners of war and those who are still missing in action. There will be sister stations K4MIA/1, K4MIA/5 K4MIA/7 and K4MIA/8 in operation. Days listed above are primary operational days and modes will operate SSB, CW, FT8 and Satellite operation. Throughout the month of Sept., K4MIA will hopefully try EME, Microwave and other less used digital modes. See QRZ for additional information and a copy of this year's QSL card. Because of the volume of requests, you MUST SEND SASE to get a returned QSL. Please take time to remember our POW's and MIA's as well as their families. www.qrz.com/db/k4mia

09/11/2021 | Remembering Loretta Ensor W9UA 30 years after her passing on 7 September 1991.

Sep 11, 1500Z-2100Z, W0ERH/KS0KS, Olathe, KS. Santa Fe Trail Amateur Radio Club and Johnson County Radio Amateur Radio Club. 7.045MHZ 7.250MHZ 14.045MHZ 14.250MHZ. QSL. KS0KS, Santa Fe Trail Amateur Radio Club, PO Box 3144, Olathe, KS 66063. W0ERH/KS0KS, Olathe, KS. Santa Fe Trail Amateur Radio Club/Johnson County Amateur Radio Club. 7.045 7.250 14.045 14.250. We will be operating under Loretta Ensor's call sign W9UA. QSL. KS0KS, Santa Fe Trail Amateur Radio Club, PO Box 3144, Olathe, KS 66063. Also working 30 Meters (10.12mhz) as conditions change. We will be spotting as well. www.w0erh.org and www.sftarc.org www.sftarc.org

09/11/2021 | Route 66 On The Air

Sep 11-Sep 19, 0001Z-2359Z, W6JBT, San Bernardino, CA. Citrus Belt Amateur Radio Club. 3.866 7.266 14.266 28.466. Certificate & QSL. Citrus Belt Amateur Radio Club, PO Box 3788, San Bernardino, CA 92413. Come join the fun celebrating the road that built America. Opened in 1926, US Route 66 was the first major improved highway to link the West Coast with the nation's heartland; it once served as the backdrop for a popular TV show and has been the subject of songs and stories. There will be 21 stations — two of them "rovers" — operating in or around the major cities along Route 66 from Santa Monica, California to Chicago, Illinois. They will use 1 × 1 W6-prefix special event call signs. www.w6jbt.org

09/11/2021 | USS Midway Museum Ship Special Event: USS Midway Commisioning

Sep 11, 1600Z-2300Z, NI6IW, San Diego, CA. USS Midway (CV-41) Museum Ship. 14.320 7.250 PSK and CW on various HF bands DSTAR on various reflectors. QSL. USS Midway Museum Ship COMEDTRA, 910 N Harbor Drive, San Diego, CA 92101. Please check spotting networks to find us on HF. Consult www.dstarusers.org to find our call sign NI6IW and Reporting Note to see what reflector we're using. Note: Typical QSL turn-around time is 4

Amateur Radio Special Event Stations!

to 6 weeks after receiving request with SASE. www.qrz.com/db/ni6iw

09/17/2021 | Clay County Pioneer Day

Sep 17-Sep 18, 1700Z-0459Z, KF5DFD, Henrietta, TX. Clay County Amateur Radio Club. 7.255 14.255 . QSL. Brent Boydston, 103 N. Crockett St., Henrietta, TX 76365. The inaugural gathering of old-time residents of Clay County was called for August 19, 1932, at 3 p.m. by a group of local club women. The Clay County Pioneer Association was organized at this meeting. Committees were appointed to formulate it's Constitution and By-Laws, and to arrange for its First Reunion October 28, 1932. Today it is a big home-coming for the entire area and a real live Rodeo. Hats are not optional! Check in to the event and learn more about the interesting history of Clay County Texas. Keep an eye on the Clay County Skywarn FB page (www.facebook.com/groups/skywarn.clay.county) for more information about event. Bonus dates, times and hours may be added!. www.facebook.com/groups/skywarn.clay.county

09/17/2021 | WBZ AM 1030 100th Anniversary

Sep 17-Sep 19, 1300Z-2359Z, W1W/W1B/W1Z, Billerica, MA. Billerica Amateur Radio Society (B.A.R.S.) and Hampden County Radio Association (HCRA). 18.150 14.250 7.275 3.950. Certificate & QSL. Douglas A Bruce, 67 John Street, Reading, MA 01867-2701. https://nediv.arrl.org/wbz100

09/18/2021 | 75th Anniversary Moses Scout Reservation

Sep 18, 1300Z-1900Z, W1M, Russell, MA. Western Mass Council BSA. 14.250 7.250. QSL. Tom Barker, WA1HRH, 329 Faraway Road, Whitefield, NH 03598. special qsl via eqsl and sase via usps.

09/18/2021 | 80th Anniversary of the Launch of the USS Massachusetts

Sep 18, 1000Z-1600Z, NE1PL, Fall River, MA. USTNR. 14.258. QSL. Rick Emord, 135 Wareham st, Middleboro, MA 02346. We will be on 20 and 40 meters at least, spotted on the cluster, phone for sure, digital and cw are possible. contact kb1tee or n1umj for details/info/questions. www.ne1pl.org

09/18/2021 | Harvey House on the Air

Sep 18, 1400Z-2100Z, W0EBB, Leavenworth, KS. Pilot Knob Amateur Radio Club. 28.380 21.380 14.280 7.260. Certificate & QSL. Charles Jackson, 717 Mt. Calvary Rd, Lansing, KS 66043. n0cs@arrl.net

09/18/2021 | International Talk Like A Pirate Day

Sep 18-Sep 19, 1300Z-2200Z, K9P, Danville, IN. Hendricks County Amateur Radio Society. 14.262 7.212 3.812. QSL. Tom Hansen, 410 W US Highway 40, Clayton, IN 46118-9307. Fun event, talk like a pirate. Know yer port (QTH) and yer ship's name.

09/18/2021 | Titan Missle Museum

Sep 18, 1600Z-2020Z, KT7RC, Tucson, AZ. Tortolita Radio Club. CW: 7.040, 14.040 SSB: 7.200, 14.250 FT-8: 7.074, 18.100. Certificate. Request, certificate at, contact@tortolita-rc.com.. No paper QSL's. Request certificate at contact@tortolita-rc.com. https://tortolita-rc.com

09/20/2021 | Wyatt Earp Fest

Sep 20-Sep 25, 0100Z-0100Z, W0E, Lamar, MO. Kilowatt Amateur Radio Club. 14.250. QSL. Kilowatt ARC (K0KWC), 700 Hagny St., Lamar, MO 64759. kilowattarc@hotmail.com

09/24/2021 | Speculator Applefest

Sep 24-Sep 26, 1200Z-1200Z, W2H, Speculator, NY. Hamilton County Radio Club. 3958 mhz 7230 mhz 3531 mhz 7031 mhz. QSL. Peter Weaver, NYS Rt 8, Lake Pleasant, NY 12108. www.hamcoarc.org

09/25/2021 | Covered Bridge Special Event

Sep 25, 1200Z-2200Z, K1SV, Arlington, VT. Southern Vermont Amateur Radio Club. 146.520 28.333 14.318 7.245. Certificate & QSL. Alden Jones, IV, 222 Northside Dr., Bennington, VT 05201. www.sovarc.org

09/25/2021 | LCARA - Somernites Cruise September

Amateur Radio Special Event Stations!

Sep 25, 1200Z-1800Z, K4S, Somerset, KY. Lake Cumberland Amateur Radio Association. 14.210 14.220 14.230 14.240. QSL. Wanda Munsey, 600 W. Hwy 837, Nancy, KY 42544. lcara.net

09/25/2021 | Masonic Lodges on the Air (CQ More Light)

Sep 25, 1400Z-2200Z, K1I, Reisterstown, MD. Ionic Lodge #145. 3.825 7.200 14.250 21.300. Certificate & QSL. Mark Rauen , C/O Ionic Lodge #145, 85 Main Street , Reisterstown, MD 21136. Promoting public awareness of ham radio and Freemasonry with fraternal greetings among Hams, Freemasons and Masonic Lodges around the world. www.gemeny.com/AA3NM/CQ-MoreLight.html

09/25/2021 | Net Operator Recognition Event

Sep 25, 1600Z-2200Z, W4YK, Hendersonville, NC. Blue Ridge Amateur Radio Club. 14.238 MHz. QSL. David Day, 11 Mountain Spring Dr, Hendersonville, NC 28739. This event is to recognize and thank those individuals who have served as net operators for their local amateur radio clubs. radioclub.org

09/25/2021 | North America's Most Westerly Contiguous Highway Point

Sep 25-Sep 26, 1900Z-1900Z, KL7HOM, Anchor Point, AK. South Peninsula Amateur Radio Club. 14.249 18.149 7.249 14.049. QSL. Thomas Kerns, 1189 Cook Way, Homer, AK 99603. https://www.qrz.com/db/KL7HOM

09/25/2021 | Peshtigo Fire 150th Anniversary

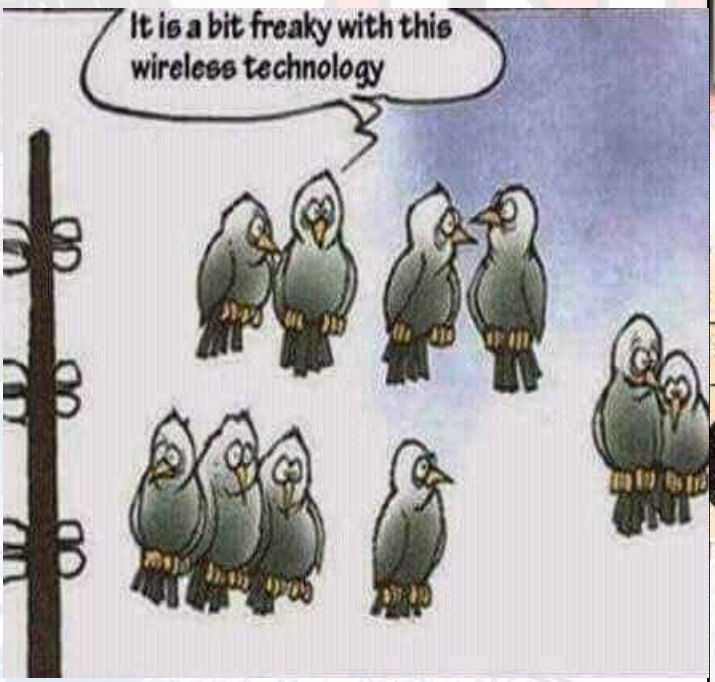
Sep 25, 1200Z-2100Z, K9P, Peshtigo, WI. Marinette & Menominee Amateur Radio Club. 14.305 14.055 7.285 7.080 . Certificate. Arden D. Nelson, 329 Brown Ave., Peshtigo, WI 54157. www.w8pif.com

09/25/2021 | SENRC 85th Anniversary

Sep 25-Sep 26, 1521Z-1519Z, N0N, Lincoln, NE. Southeast Nebraska Amateur Radio Club. 7.180 14.230. Certificate & QSL. Charles Bennett, PO Box 67181, Lincoln, NE 68506. senebrradioclub@gmail.com or https://www.facebook.com/SENRC

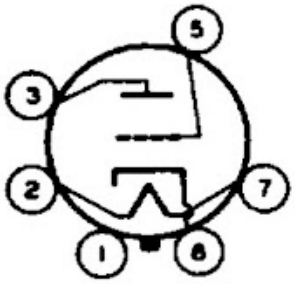
09/25/2021 | VOA Bethany Station 77th Anniversary

Sep 25-Sep 26, 1600Z-2100Z, WC8VOA, West Chester, OH. West Chester Amateur Radio Association. 14.268 7.268. Certificate & QSL. West Chester ARA - QSL Manager, P.O. Box 913, West Chester, OH 45071. QSL Direct or via the bureau, please look at our QSL policy on our website or QRZ. An electronic certificate will be available for download after the event is over, it might take up to 24 hours after the event to get your certificate. Details will be posted on our website: www.wc8voa.org



6J5 Medium Mu Triode

Today we will have a close look at an indirectly heated medium mu triode, the metal type 6J5 and it's glass equivalents 6J5G and 6J5GT. The electrical characteristics of the 6J5 are identical to the ubiquitous 6SN7. It only contains a single triode instead of two as in the 6SN7. The 6SN7 is very popular among amplifier builders and also found it's way into many commercial designs. There are good reasons for it's popularity. It is very linear and has a decently low plate resistance making it suitable as driver in power amps. Pretty much everybody who builds amplifiers at some point used or considered the 6SN7. Hence it got quite costly. Therefor it is surprising that the electrically identical 6J5 seems not to be very popular and is still available at low prices.



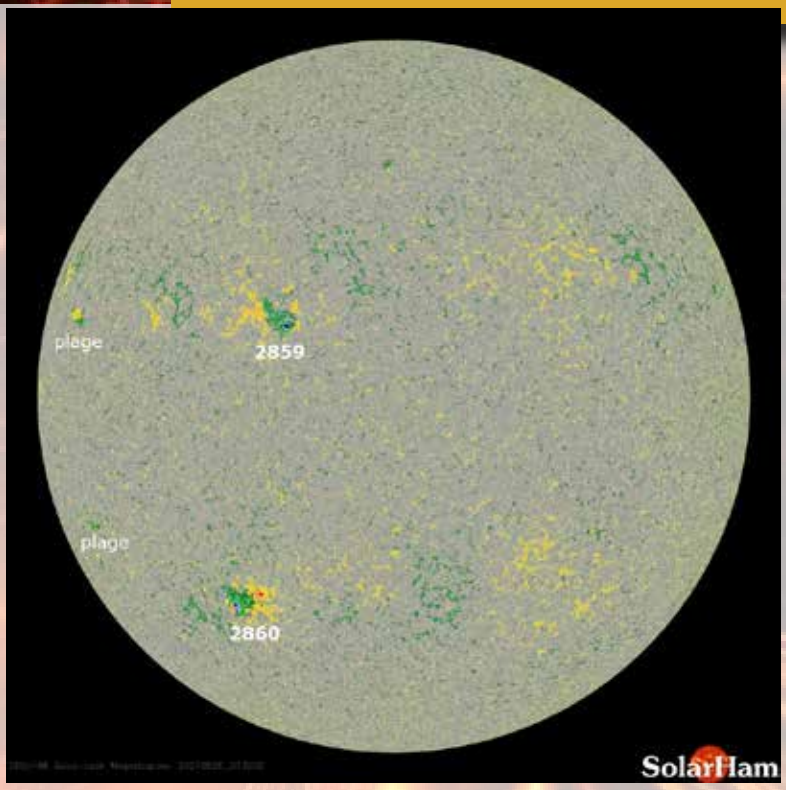
The 6J5 uses an octal base. The pinout is pictured on the left. It has an amplification factor of 20 which classifies it as medium mu triode. The plate resistance is about 7kOhm which makes this tube usable with transformer coupling. Of course it is equally well usable LC or RC coupled or as a cathode follower. It is very often used in the famous and once popular SRPP and mu-follower circuits. The complete datasheet can be found here. Although it is a very nice tube, I rarely find it to match my needs. As a driver tube in a power amp it has just too little gain for a 2 stage design. Using two of them cascaded (or two halves of a 6SN7) provides way too much gain. That's why I prefer tubes like 6N7 as drivers for small output tubes. For large output tubes like 300B or even 211 where the 6N7 has too high of a drive impedance, the 6J5 is not much better either. While still ok for a 300B maybe, I would not consider it for the large transmitting tubes.

A fine tube, which deserves more use! That's why I will be using it in a stand alone phono preamplifier, which is based on the phono section of my Octal preamplifier. It will replace the 6N7 in that circuit for getting a lower output impedance to make that phono section usable stand alone.

There is another good use for the 6J5. In power amps which use both halves of the 6N7 paralleled, a 6J5 can be used without modifications.

Credit:
https://vinylsavor.blogspot.com/2013/03/tube-of-month-6j5.html

Tad Cook, K7RA, Seattle, reports: Solar activity continues to increase. In last week's bulletin ARLP027 average daily sunspot number was 34.7. This week it jumped to 55.6. Average daily solar flux increased from 86.9 to 88.9.



Despite solar flare activity pushing a sudden ionospheric disturbance and a dramatic HF radio blackout (on July 3), the average daily planetary A index for the week was only 5.7, down from 6.1 last week. The average middle latitude A index was also 6.1 last week, and it was 6.3 this week.

The July 3 flare was an X1.5-class event, the biggest since September 2017 and the only X-Class solar flare since then. It got readers wondering what was up.

Highlights of Solar and Geomagnetic Activity
16 - 22 August 2021

Solar activity was low. Multiple C-class events were observed from Region 2859 (N19, L=140, class/area, Cao/140 on 22 Aug) including the largest, a C3 flare at 20/1557 UTC. No Earth-directed CMEs were observed in available imagery. No proton events were observed at geosynchronous orbit. The greater than 2 MeV electron flux at geosynchronous orbit reached moderate levels throughout the reporting period. Geomagnetic field activity ranged from quiet to unsettled levels due to CH HSS influence.

Forecast of Solar and Geomagnetic Activity
23 August - 18 September 2021

Solar activity is expected to be very low with a chance for C-class flare activity.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 27-30 Aug, with moderate levels throughout the remainder of the outlook period.

Geomagnetic field activity is expected to reach active levels on 25-26 Aug and 03 Sep, unsettled levels on 23-26 Aug and 02-03, 11-12 Sep due to recurrent CH HSS activity. Quiet levels are expected throughout the remainder of the outlook period.

Come by the West End Fair this week and visit EPARA!

Here are Ruth Ann W9FBO and our club Pres, Chris AJ3C "watching the shack." For anyone new to the hobby or interesting in getting started, come by during the fair at the Everet Building & we'll steer you in the right direction.


HAM
www.arrl.org


EPARA
WHEN ALL ELSE FAILS...
AMATEUR RADIO


Eastern Pennsylvania Amateur Radio Association
EPARA
In Search Of Amateur Radio Excellence
WHEN ALL ELSE FAILS...


WEST END FAIR
1920


ARRL
amateur radio


VHF / UHF "GO KIT"


Eastern Pennsylvania Amateur Radio Association
EPARA
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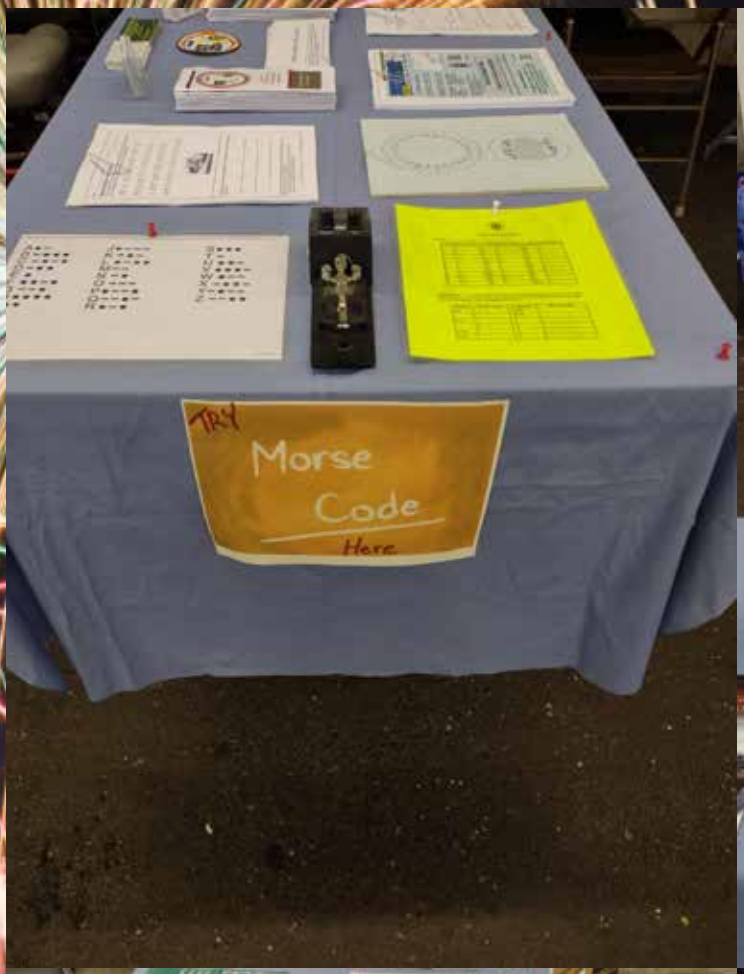
AMATEUR RADIO EMERGENCY COMMUNICATIONS
WHEN ALL ELSE FAILS...
AMATEUR RADIO
AMATEUR RADIO EMERGENCY SERES


WEST END FAIR
1920


TRY
Morse
Code
Here


HAM RADIO IS... THE GAME
HAM RADIO IS... READY
HAM RADIO IS... DISCOVERY
HAM RADIO IS... ADVENTURE
HAM RADIO IS... OUT OF THIS WORLD
HAM RADIO IS... FRIENDSHIP
Wireless Engagement with Amateur Radio
Amateur Radio Emergency Service


ARRL AFFILIATED CLUB
ARRL


Morse Code Decoder Ring

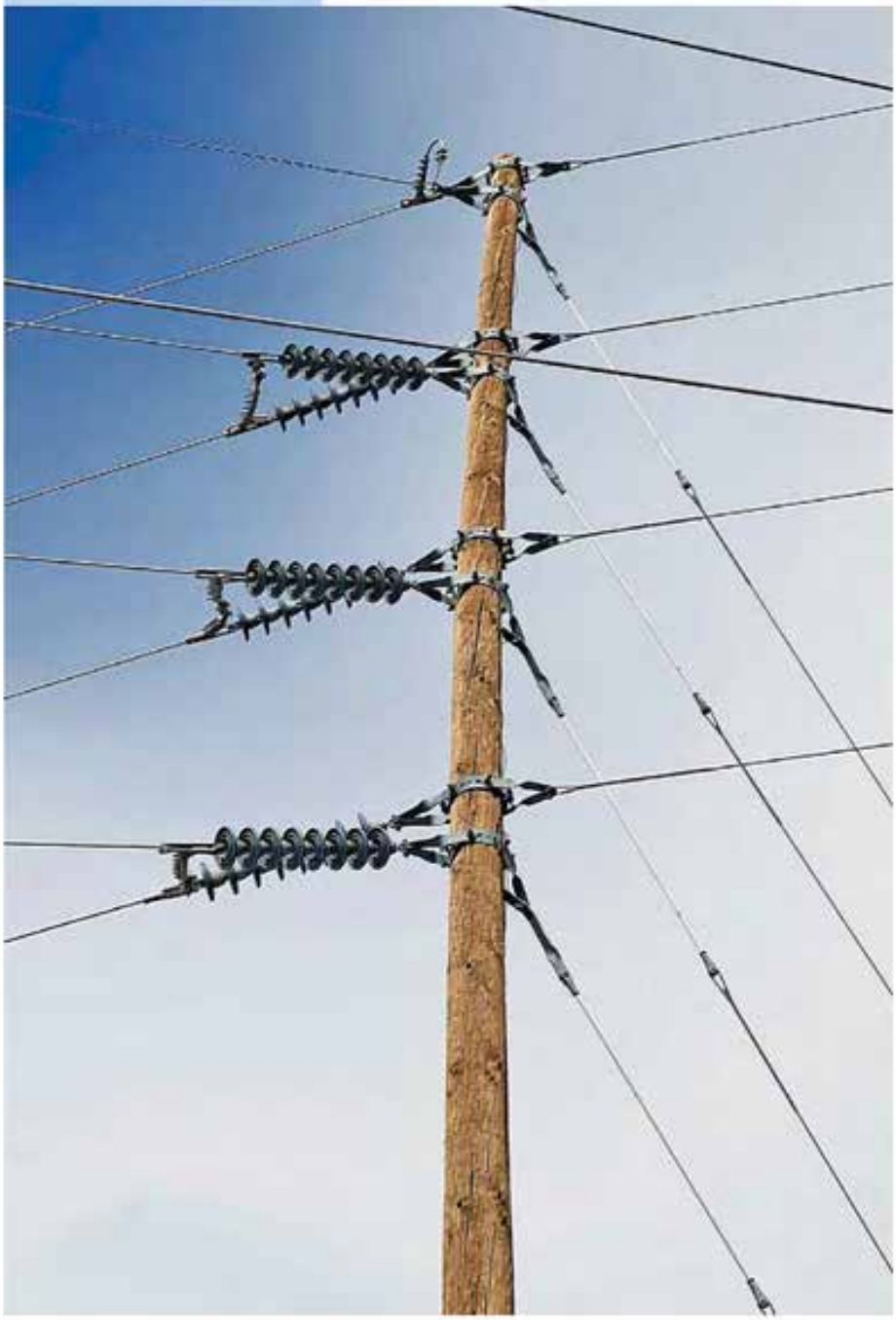
WEST END FAIR 1920


AMATEUR
RADIO


AMATEUR
RADIO

A case study on identifying, locating, and eliminating radio frequency interference (RFI) caused by 60 Hz power lines.

Eliminating Radio Frequency Interference from Power Lines



Richard Kiefer, KØDK

I had a 60 Hz power line noise, which severely limited my ability to hear weak signals on the 20-meter HF ham band. The troublesome noise was S-7 to S-9 in a 6 kHz AM bandwidth on 20 meters. Weak DX stations were diffcult to hear.

With the help of several hams and Xcel Energy (our electric utility company), I searched a large urban area at Boulder, Colorado, and found the noise source to be sparking ungrounded hardware on a 115 kV transmission line attached to a wooden pole (see the lead photo) 4.4 miles from my station, and at 600 feet above my antenna. It took 2 years of persistence, hard work, and cooperation of many individuals, but the RFI noise was eventually eliminated.

Identifying RFI's Audio Signature

Listen using the SSB or AM detector of your HF receiver. I prefer the AM detector and 6 kHz bandwidth of my Icom IC-7700 transceiver. Turn off all noise blanking and noise reduction as well as the AGC if possible.

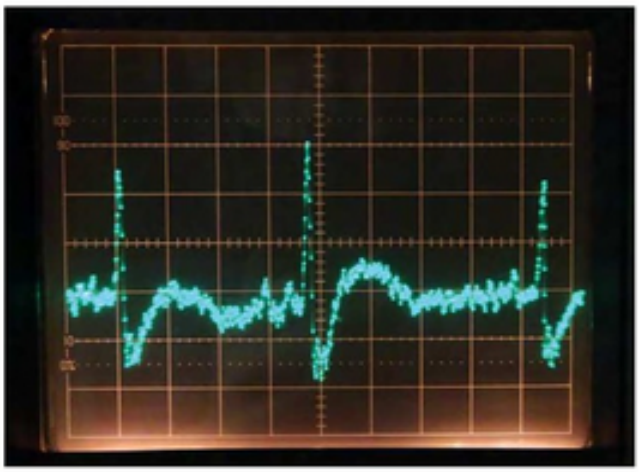


Figure 1 — The oscilloscope display of the power line noise signature at the audio output of IC-7700 receiver, 2 ms/div.

Figure 2 — The Icom IC-7700 receiver power line noise S-8 reading, and spectrum display, using the AM detector, with a 6 kHz bandwidth.

Forming a good mental impression of the noise makes it easier to identify in the field. In my case, the noise had the characteristic crackle of power line noise created by ungrounded or loose hardware on an electric power pole. Characteristically, the noise was intermittent, and often stopped with wet weather and lower temperatures. See **www.arrl.org/qst-in-depth** for additional details.

A positive identifier was the audio signature seen on an oscilloscope (see Figure 1) at the receiver audio output (see Figure 2) and on the Icom IC-7700 receiver spectrum display, using the AM detector, with 6 kHz bandwidth. See also Figure A on the *QST* in Depth web page.

With the scope synced to the power line frequency of 60 Hz, the noise exhibited pulses at a steady 120 Hz rate, indicating that the source of the RFI is the 60 Hz power system. The timing and duty cycle of RFI always provides a clue as to the source. The manual[1] for the Radar Engineers model 243 RFI Locator instrument describes how power line-induced arcing is created.

Determining the Distance

Use a directional antenna at the frequency of the interference to get a bearing on the location, then estimate the distance by its signal strength. Observations with my stacked Yagi antennas indicated that the noise source was far away.

With a directional antenna, you should be able to determine an accurate search vector to within a few degrees if you are careful.

Lacking a directional antenna, you must travel outward from your location in several directions in a vehicle equipped with a short whip antenna. It is best to try to correlate any intermittent characteristics of the noise. Once you get close to the RFI source, you can use a higher-frequency receiver (see Figure 3 and Figures B and C on the *QST* in Depth web page) and very directional antennas to pinpoint the noise.

You can also triangulate to the noise location by using a directional HF antenna from another ham's location. Make sure that you are both hearing the same noise source at the same time. We also eventually triangulated from a third location to pinpoint a peak in noise on a 115 kV transmission line, but that was not the problem. Be careful when listening to what you think is the same RFI source from different locations. See the sidebar, "Signature of the Noise."

Locating the Noise Source

Once you have determined a direction for the search, listen on the HF frequency of interference and travel out in the direction of the noise. When you are close, you can start to walk around with a higher-frequency receiver and directional antenna. We also used receivers at 318 MHz (see Figure B on the *QST* in Depth web page) and 150 MHz (see Figure 3) with

[1]Radar Engineers model 243 RFI Locator manual, battery-powered broadband receiver; **ked-wireless.com/RK_Documents/Radar_Engineers_243_RFI_Locator_Manual_03.18.19.pdf**.

Signature of the Noise

It is extremely important to correlate any intermittent characteristics of the noise. Your search may find many noisy poles, only one of which correlates with your RFI. Don't ask the power company to investigate the many noisy poles that do not correlate with your noise signature. This is time consuming and costly for the power companies, and it can be met with resistance. Narrow the search to the actual correlated noise source. — *Ed.*

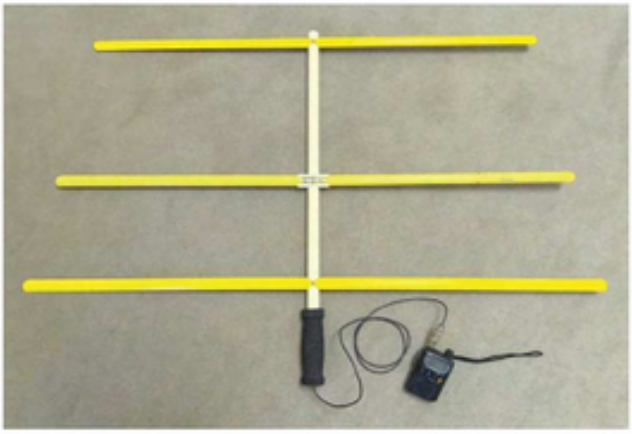


Figure 3 — The RFI receiver system for 150 MHz, using a tape measure-type antenna and an Icom IC-IQ7A receiver.

handheld Yagi antennas. We also verified with an ultrasonic acoustic dish receiver to spot specific insulators and hardware.

Check for coincidence by listening to both ends of the path simultaneously; listen to your home receiver over a cell phone. If both have the same audio characteristics, and are coincident in time, you have located the RFI.

In my case, the problem pole was screaming loudly at 150 and 300 MHz, and with the acoustic receiver, we could hear it from 600 feet away. The wood transmission pole (see the lead photo) had sparking hardware that was audible at 50 feet away.

It is very useful to have a signature for your own interference which can be used for comparison in the field. We used the Radar Engineers model 243 RFI Locator (see Figure A on the *QST* in Depth web page) with a reference signature recorded from my antenna. We found and bypassed many noise sources with similar signatures that were not an exact signature match.

Approaching Partners

The best way to resolve a power line caused RFI problem is to work jointly with your local power company to locate the noise source, and then convince them to fix it. If you try to find the problem yourself, then suggest where they might look, the power company can quickly verify your findings and will be more likely to fix the problem. In my case, it took 2 years, even with the full cooperation of the power company, to find and correct the problem.

It is important to note that a transmission line carries very high voltage — typically 115 to 345 kV — over long distances, and it terminates only in substations. A distribution line originates at a substation and usually carries less than 10 kV and supplies neighborhoods. Most ham RFI problems are caused by hardware on the poles of neighborhood distribution lines.

A Case Study

In early 2018, a strong power line noise appeared on the 20-meter band on a bearing of 240 degrees from my antenna. It was loud but intermittent. I probed around with my 318 MHz EMI finder (Figure B on the *QST* in Depth page) and located some noisy poles within a mile of my antenna. I called Jeremy Matzek, the Services and RFI Investigator for Xcel Energy, and he found some additional possibilities.

Fixing False Leads

After Xcel's line crews had quieted the hardware on several noisy poles (see the *QST* in Depth web page) to no effect, Jeremy and I were both a little frustrated. Clues came in by noticing that the noise was always about two S-units stronger on my upper Yagi antenna at 100 feet compared to the lower Yagi at 55 feet. This indicated that the noise source was farther away than we were searching.

I was also able to hear the same noise at the ham shack of Joe Woods, AD0I, who is located 1.5 miles to my west, but almost in line with my bearing to the RFI. I verified that Joe was hearing the same noise by listening to my receiver and his simultaneously over the phone. So, with his antenna pointed in the same direction as mine, it became apparent that the noise was farther away than 1.5 miles.

Because the noise was only S-3 on Joe's Icom IC-7300 with his three-element Yagi at 50 feet, the noise appeared to be much farther west than we thought.

Better Techniques

Knowing that the noise was farther away than the area in which we had been looking, we started to search the residential neighborhoods of north Boulder at over 2 miles from my antenna.

We started to use the Radar Engineers model 243 RFI Locator with a signature taken from my antenna. We eventually found a 115 kV transmission line on metal towers on the west side of Boulder at about 3.5 miles from my antenna, and it emitted noise with the same signature. The strength of the RFI peaked at two of the towers on the line, so we focused investigations there. At the towers we had strong noise at 14 MHz with the correct signature using the model 243, but very little noise at 300 MHz. We could also hear sparking in the ultrasonic dish when pointed at connecting hardware and insulators on the towers. We also triangulated to these towers from the ham location of Max Greenlee, KD0GF, where the noise was 20 dB over S-9. We thought that hearing the noise at 14 MHz, with the correct signature, and with triangulation, was justification to replace some hardware and insulators on the two metal towers. But that was just one of the false leads we fixed.

Finding and Fixing the RFI Source

We had good evidence that the problem was somewhere on the 115 kV transmission line because of the matching signature. We also observed that when it snowed or rained, the noise at my receiver and on the transmission line both went away. The line is about 4 miles long, about half in the city and half in the mountains, with a substation at each end. The noise source could be anywhere along the line or at either of the two substations. We also knew that the amplitude of the noise would rise and fall at regular intervals as you travel along the transmission line due to 14.2 MHz standing waves. Though, in this case, we could not drive the full length of the line because it goes over the top of Sanitas Mountain.

Figure 4 — A well-equipped lineman ready to climb the power pole with spikes.

Eventually, Jeremy found a wooden pole (see the lead photo) with very noisy hardware on the other side of Sanitas Mountain in Sunshine Canyon. From 600 feet away, on the canyon floor, we could hear the noise loudly with our acoustic dish, and at 150 and 300 MHz. With binoculars, we could see a ground

Lessons Learned

Consider the lessons we learned.

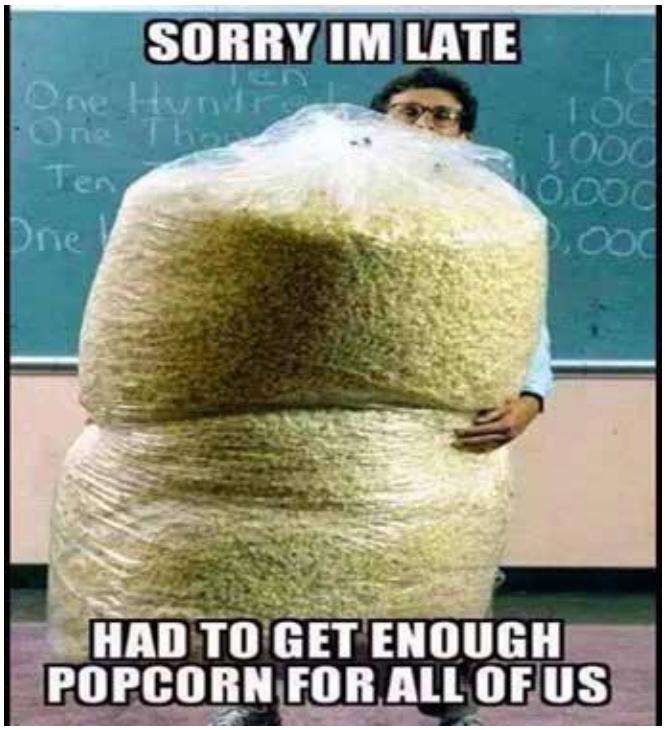
- Figure out if your noise is caused by the 60 Hz power line to determine if you need to get the power company involved. Be aware that if the power company determines their equipment is not the problem, you are on your own.
- Most power line RFI is created by loose or ungrounded hardware on wood poles.
- Insulators are usually not the problem, unless you can see damage with binoculars.
- In most cases, you will be able to hear the broad RF noise spectrum produced by hardware sparking at VHF or UHF frequencies. If you cannot hear the noise loudly at 300 MHz, you are probably at the wrong spot.
- The hardware of metal towers is usually not the problem. Even though we could hear noise at 14 MHz, and acoustic noise on the metal tower insulators in west Boulder, we could not hear much noise at 300 MHz.
- Use instrumentation in the field that can listen on the ham band of interference.
- Have instrumentation that can display a noise signature to make a positive identification.
- Use acoustic location to confirm and pinpoint the exact pole and hardware.
- Use the aiming sight on an ultrasonic dish to pinpoint specific metal brackets and insulators. The acoustic dish is much more directional than a five-element 318 MHz handheld Yagi.
- Getting time coincidence by listening simultaneously in the field and at home can be crucial in getting a positive identification on a noise source.
- Use triangulation on the band of interest from another ham's location to point a directional antenna at the same RFI source.
- Be prepared to spend a lot time finding the problem.
- Use the right equipment; guesswork leads to wasted time.
- The higher your antenna, the farther away the noise can be.
- The weather can be a factor; it can make the noise intermittent. Variable weather conditions can also be helpful in correlating your noise with noise in the field.
- First, try to find the problem yourself, to the limit of your ability. Then get the power company involved.

wire on the side of the pole that was broken in two places. We hiked to the pole through snowdrifts in January 2020. We could hear sparking noise by ear from 50 feet away. Loose, ungrounded hardware was sparking loudly. We could easily pinpoint all pieces of sparking hardware on the pole using the optical sight on the acoustic dish.

A short video (available at **ked-wireless.com/RK_Documents/noisy_transmission_pole_crackling-2.MOV**) shows the noisy power pole. You can clearly hear the sparking that was causing the RFI.

Xcel Energy Fixes the Hardware

A few weeks later, three Xcel Energy line crew members (see Figure 4) were air lifted by helicopter to the hillside location of the pole to fix the problem by splicing the ground wire, reconnecting the hardware, and tightening the bolts on all metal hardware. As soon as the transmission line was energized, the RFI had been fixed with no more noise on 20 meters.



"The 50s - to those who remember and to others who missed a great era." – *Thanks to Rick from PA:*

Long ago and far away, in a land that time forgot,
Before the days of Dylan, or the dawn of Camelot.

There lived a race of innocents, and they were you and me,
For Ike was in the White House in that land where we were born,
Where navels were for oranges, and Peyton Place was porn.

We longed for love and romance, and waited for our Prince,
Eddie Fisher married Liz, and no one's seen him since.
We danced to 'Little Darlin,' and sang to 'Stagger Lee'
And cried for Buddy Holly in the Land That Made Me, Me.

Only girls wore earrings then, and 3 was one too many,
And only boys wore flat-top cuts, except for Jean McKinney.

And only in our wildest dreams did we expect to see,
A boy named George with Lipstick, in the Land That Made Me, Me.

We fell for Frankie Avalon, Annette was oh, so nice,
And when they made a movie, they never made it twice...
We didn't have a Star Trek Five, or Psycho Two and Three,
Or Rocky-Rambo Twenty in the Land That Made Me, Me.

Miss Kitty had a heart of gold, and Chester had a limp,
And Reagan was a Democrat whose co-star was a chimp.
We had a Mr. Wizard, but not a Mr. T,
And Oprah couldn't talk yet, in the Land That Made Me, Me.

We had our share of heroes, we never thought they'd go,
At least not Bobby Darin, or Marilyn Monroe.
For youth was still eternal, and life was yet to be,
And Elvis was forever in the Land That Made Me, Me.

We'd never seen the rock band that was Grateful to be Dead,
And Airplanes weren't named Jefferson, and Zeppelins were not Led.

And Beatles lived in gardens then, and Monkeys lived in trees,
Madonna was Mary in the Land That Made Me, Me.

We'd never heard of microwaves, or telephones in cars,
And babies might be bottle-fed, but they were not grown in jars.
And pumping iron got wrinkles out, and 'gay' meant fancy-free,
And dorms were never co-ed in the Land That Made Me, Me.

We hadn't seen enough of jets to talk about the lag,

And microchips were what was left at the bottom of the bag.
And hardware was a box of nails, and bytes came from a flea,
And rocket ships were fiction in the Land That Made Me, Me.

T-Birds came with portholes, and side shows came with freaks,
And bathing suits came big enough to cover both your cheeks.
And Coke came just in bottles, and skirts below the knee,
And Castro came to power near the Land That Made Me, Me.

We had no Crest with Fluoride, we had no Hill Street Blues,
We had no patterned pantyhose or Lipton herbal tea
Or prime-time ads for those dysfunctions in the Land That Made Me, Me.

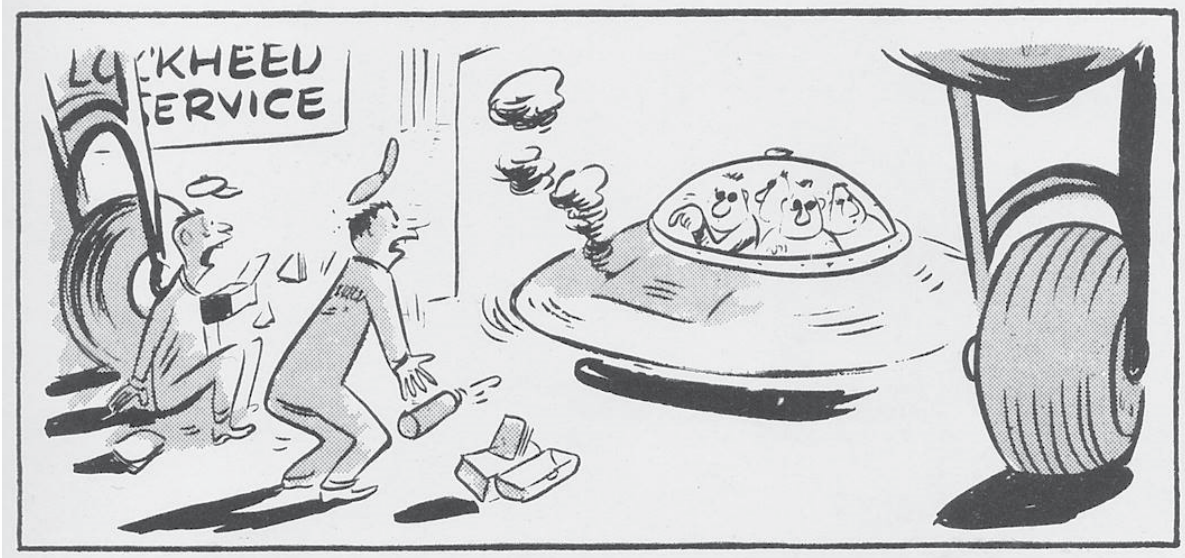
There were no golden arches, no Perrier to chill,
And fish were not called Wanda, and cats were not called Bill,
And middle-aged was 35 and old was forty-three,
And ancient were our parents in the Land That Made Me, Me.

But all things have a season, or so we've heard them say,
And now instead of Maybelline we swear by Retin-A.
They send us invitations to join AARP,
We've come a long way, baby, from the Land That Made Me, Me.

So now we face a brave new world in slightly larger jeans,
And wonder why they're using smaller print in magazines.
And we tell our children's children of the way it used to be,
Long ago and far away in the Land That Made Me, Me.

If you didn't grow up in the fifties,
You missed the greatest time in history.

Hope you enjoyed this read as much as I did.



Lockheed Aircraft Service, Burbank, maintained and overhauled a staggering number of aircraft of every conceivable type.

Slow Scan Television for HAM Radio- de KD2FTA

Slow scan TV or SSTV is not a new thing in HAM radio operations, but with the ISS transmitting images 2 to 3 times a year on 2 meters, it has gotten my attention. SSTV is not like watching regular cable TV or anything that remotely approaches live broadcasts. It is however a way to transmit images on the HF and VHF/UHF bands.

What makes it attractive to HAMs is that using your 100 watt HF radio or even a VHF/UHF radio capable of transmitting 60 watts you can get some decent images sent over the airwaves.

This past August the Russian module transmitted a series of 12 SSTV images as a test from the ISS using their call sign RS0ISS. Here were two images I was able to receive from my backyard during a relatively high angle ISS pass. Both images were acquired using my 2 meter FTM-3100 Yaesu 2 meter radio on 145.800 MHz with no error correction for Doppler shift.

Both of these images were capture on August 7th and 8th respectfully and are image 9 and 10 in a series of 12 images transmitted back to earth during those 2 days.

RS0ISS usually transmits test signals like these periodically and generally the Russians don't provide much information ahead of time that they're going to do SSTV until a week or so before the event. Unlike the Christmas and New Year transmissions which are meant to be inspirational for the season, these transmissions are all about Russian achievements in space, and the Moscow Aeronautical Institute's work.

To get started with HAM SSTV, you'll need the MMSSTV software application. That can be easily downloaded from: https://hamsoft.ca/pages/mmsstv.php

There are several tutorials on YouTube, and of course you can seek out Elmers like me in the club to get you started. There are a few other club members who can assist as well. Once you have the software

downloaded depending on your license privileges and the radio you want to use, you can operate in the HF bands or on VHF/UHF. **SSTV is not digital, its analogue AM or FM.**

The basic MMSSTV screen set up looks similar to the image shown below.

As addictive as FT8, once you start doing SSTV HAM radio you'll quickly wonder where the time has gone! Generally most HAMs don't have an amplifier for their equipement, but the images I'm showing here were all taken using a barefoot HF operation using an end fed antenna. Frquencies for SSTV are avalaible on all the bands , but generally you'll find a very frendly group of HAMs ready to do a QSO with you on the weekends on 20 meters.

Here's a link to an interesting web site for HAM SSTV: https://www.amateur-radio-wiki.net/sstv-frequencies/

Frequncies generally used for SSTV:

70 cm: (FM) 430.950 MHz SSB SSTV Call Freq.

1.25 meters: (FM) 223.850 MHz 1.25m Band SSTV Call Freq.

2 meters: (FM) 145.500 MHz 2m Band SSTV Call Freq.

145.600 MHz 2m Band SSTV Call Freq.

144.550 MHz SSB SSTV Call Freq.

6 meters: (FM) 50.680 MHz 6m Band SSTV Call Freq.

50.950 MHz SSB SSTV Call Freq.

10 meters: (USB) 28.680 MHz 10m Band SSTV Call Freq.

11 meters: (USB) 27.700 MHz France, Australia, 27.420 MHz Australia, 27.235 MHz Northern Ireland

12 meters: (USB) Every day 24.975 MHz

15 meters: (USB) 21.340 MHz 15m Band SSTV Call Freq.

17 meters: (USB) None

20 meters: (USB) 14.230 MHz 20m Band SSTV Call Freq.

14.233 MHz 20m Band SSTV Call Freq.

14.240 kHz Europe SSTV Call Freq.

30 meters: (USB) 10.132 MHz – Use narrow mode MP73N

40 meters: **(LSB)**

7.033 MHz 40m Band SSTV Call freq.

7.171 MHz 40m Band SSTV Call Freq.

7171 kHz Europe DIGITAL SSTV Call Freq.

7040 kHz Europe SSTV Call Freq. (7043)

80 meters: **(LSB)**

3845 kHz 80m Band SSTV Call Freq.

3730 kHz Europe Call Freq.

3733 kHz Europe DIGITAL SSTV Call Freq.

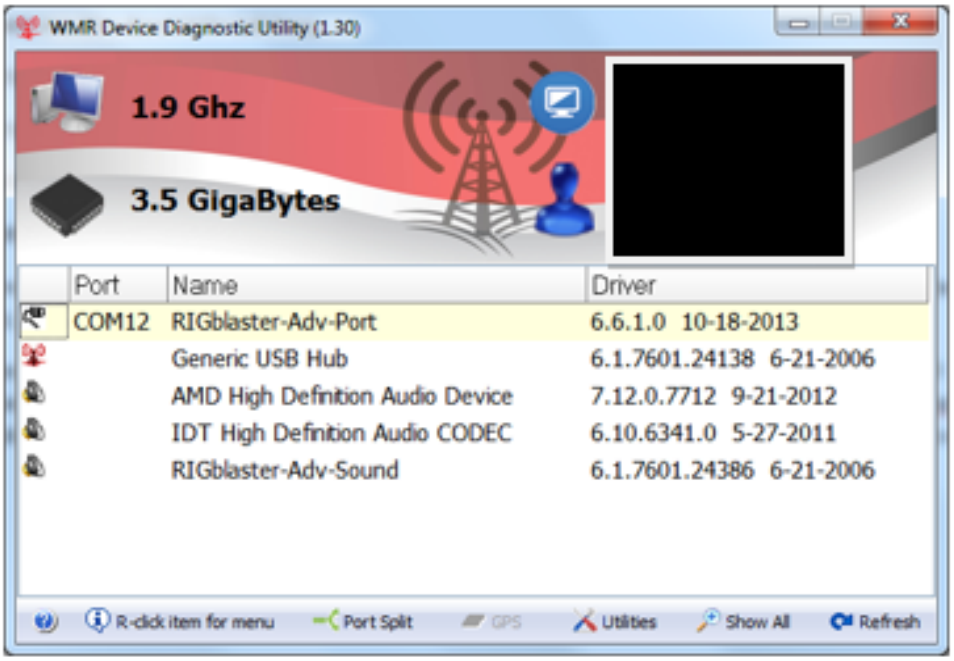
160 meters: **(LSB)**

1890 KHz 160m Band SSTV Call Freq.

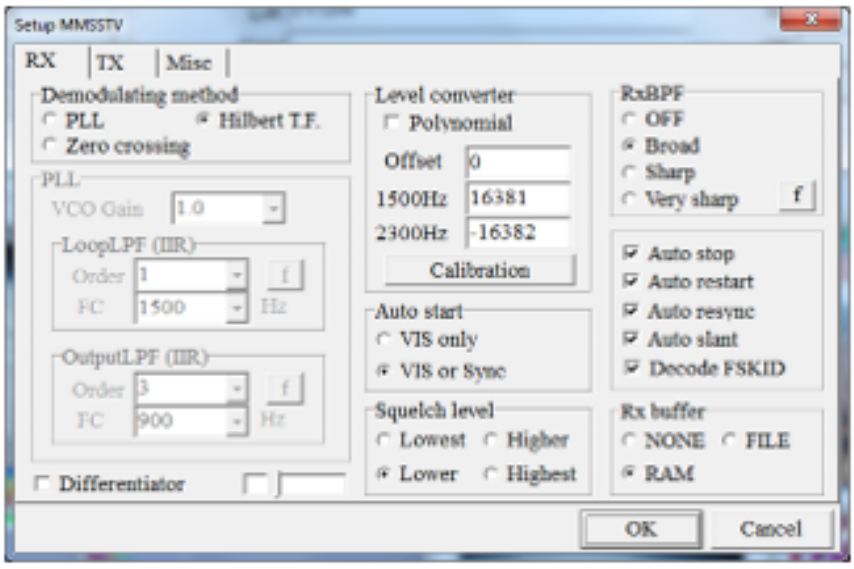
Once more I'll emphasis that **SSTV is not digital, hence the lower side band allocation** below 30 meters, 40, 80, and 160 meters.

Besides the MMSSTV V1.13A software you'll need a laptop or PC running Windows 7 or higher. You'll need a radio to laptop interface, and there are a few of those available to choose from. I use a Rigblaster Advantage for my FT450D Yaesu HF radio, but Signal Link is another brand to consider. You'll need to set up you radio interface and then set up the soundcards on your pc to work or interface with your radio.

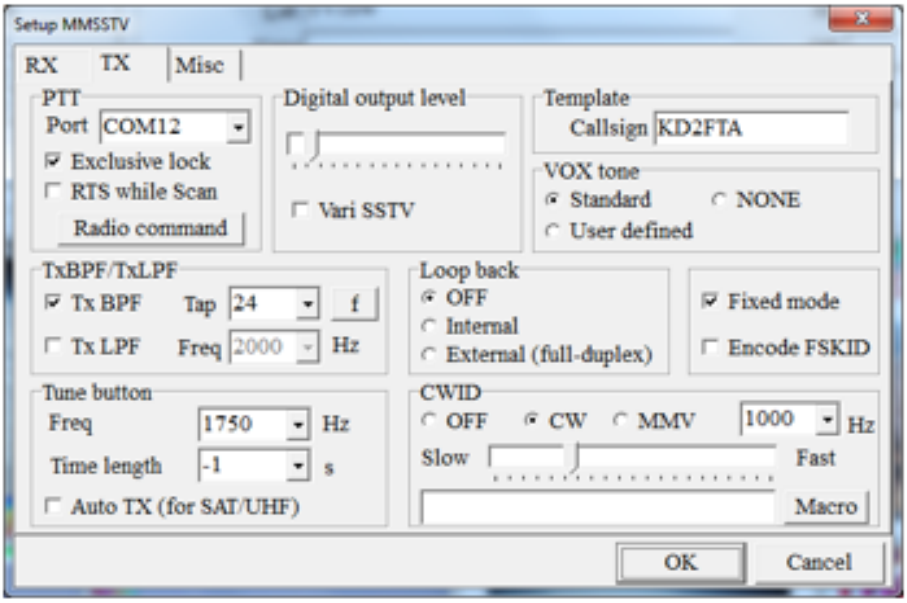
West Mountain radio provided me with software to take care of that, which allowed me to configure my Rigblaster to access my pc's ports to operate the radio in a push to talk configuration.



A few more items to consider are the MMSSTV settings for TX, RX, and Misc tabs on the software. These are accessed through the main menu under Setup MMSSTV. It's best to reach out to an Elmer who's done this before if you have difficulty. Below is the RX set up screen shot.

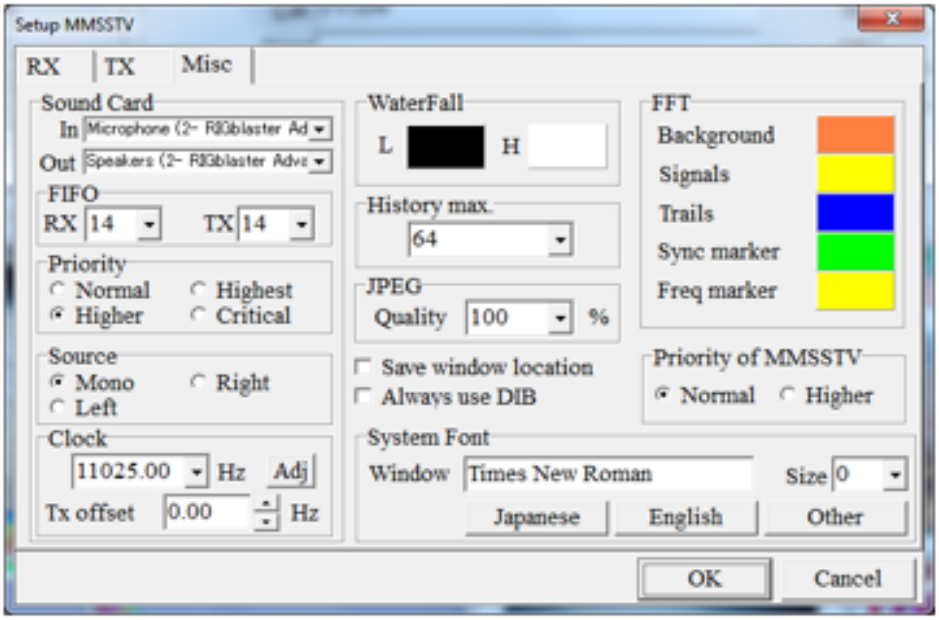


Next is the transmit (TX) tab. Note the digital audio output is set fairly low on my setting. That's to keep the soundcard from being oversaturated and quitting on me during a transmission. This setting will determine if the AGC on your radio kicks on, which you don't want to happen.



My RigBlaster port is Com 12, but that might be different for your laptop. Vox tone is set to standard, and TxBPF (Bit per Frame) is set to 24, but can be higher. My tone which you hear at the begining of the broadcast is set to 1750 Hz but you can change that melonious sound if you wish. I do a CW identification at the end of my transmissions.

Finally the Misc. tab settings shown below. Make sure you select the right in and out soundcard setting!

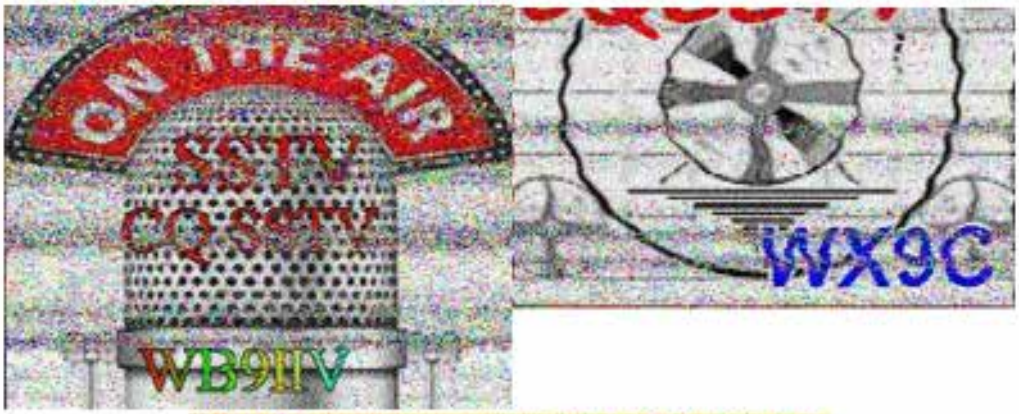


These are prelimianry settings to get you ready to receive and transmit but are not all inclusive of other items that you'll want to attend to as you start you SSTV adventures. **Like I said seek out an Elmer!** Once you get started, you'll be able to navigate through the software and the program. So what can you expect!?

These are just the prelimianries, and you'll need to set up some pictures and have CQ, signal report, and a 73 image set up like I have here.

These are basic CQ, Signal Report and 73 images I pulled together and saved as templates for transmission purposes. I have many others. And you'll want to do the same because a variety of images will be something you'll want to offer to other HAMs. Ultimately these become the QSO cards that will

hang on you wall, or have as contact reference for QRZ, or other logging software. What do other images look like on the HF bands? These were all received at different times of the day on 20 meters as an example.



The image quality depends like all else on band conditions and the power used. All of these were received using my end fed antenna, although I'm sure with a dedicated beam the images would be much clearer.

Sometimes during the course of the QSO, the band improves and you start to get some really decent images like these.

I hope this article sparks an interest in those who still wonder about going for their general ticket, and those who have one , getting involved in yet another wonderful aspect of HAM raadio!

73 de KD2FTA

All-Band Doublet

L. B. Cebik - W4RNL

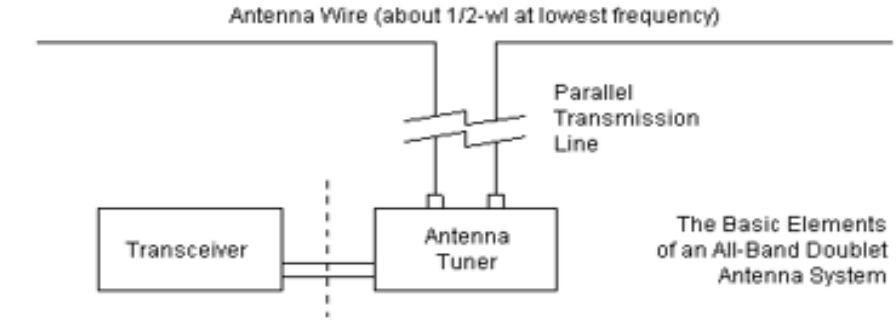
The all-band doublet horizontal wire antenna has a history almost as long as amateur radio itself. Despite all the words and diagrams in handbooks over the years, newcomers still send me questions about the antenna. I have collected the questions and boiled them down to 10, all of which have many variations. The goal in tackling these frequently asked questions is to help newer hams erect a successful antenna system.

1. What is an all-band doublet?

The all-band doublet is actually an antenna system and not just an antenna alone.

Fig. 1 shows the basic elements of the system. The horizontal center-fed wire forms the antenna proper, which accounts for the radiation of transmitted energy and the reception of incoming energy. The parallel transmission line transfers the energy from the antenna to the antenna tuner (or antenna-tuning unit, the ATU) or vice versa. We insert the tuner because the impedance that shows up at its terminals will vary widely from one band to another. So we need a way of matching the impedance at the tuner terminals to the standard 50-Ohm input and output impedance of the transceiver.

Fig. 1



The antenna wire itself can have many lengths, but should be about ½ wavelength at the lowest operating frequency.

Table 1 shows common doublet lengths that have appeared in handbooks since the 1930s. It also shows the ham bands covered by the antenna. Note that the 100' wire, while somewhat shorter than ½ wavelength, can be pressed into service on 80 meters, and the 67' wire might be used on 60 meters. However, there are limits that we shall explore as we proceed through the questions.

Table 1. Popular lengths for all-band horizontal wire antennas

Length (feet)	HF Bands Covered
135'	80-10 meters
100'	60-10 meters (80 meters possible)
67'	40-10 meters (60 meters possible)

2. What is the difference between a doublet and a dipole?

This interesting question has 2 answers: none and a lot. Conversationally, the term "dipole" often refers to any antenna that looks like a dipole, that is, a center-fed wire antenna with a feedline going to the shack. In this context, we also tend to call any end-fed antenna a Zepp (although there is a center-fed extended double Zepp) and to refer to any off-center-fed antenna as a Windom (although the original Windom had only a single feed wire).

In more precise terms, the coax-fed dipole that we sometimes set up for single-band use is a more complex antenna than its appearance suggests. It is actually a center-fed resonant ½ wavelength dipole. The center-feedpoint is obvious from the position of the feedline. It is resonant since the feedpoint impedance is (almost) purely resistive, with little or no reactance. The length is electrically ½ wavelength, which for any real wire or tubular element turns out to be shorter than a physical half wavelength.

Finally, it is a dipole because, as **Fig. 2** shows, the charge is minimum at the center feedpoint and maximum at the element ends. As a result, the current is maximum at the center and minimum at the wire ends. The dipole undergoes only one transition in charge and in current from the center to the wire end.

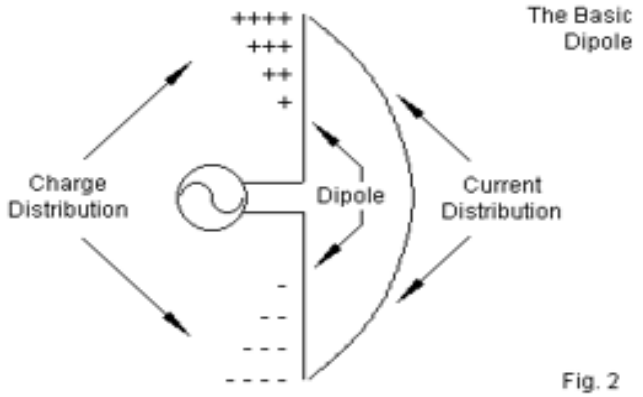


Fig. 2

When we use the antenna on many bands, it becomes electrically longer, because the length of a wave grows shorter with rising frequency. Hence, the charge and current patterns do not satisfy the dipole conditions above the lowest band or two.

Fig. 3 shows the current distribution along a 135' wire at 80 meters and at 10 meters. Since the current does not follow the dipole pattern, the charge density is also different from a dipole. In this case, there are many transitions and the current is not maximum at the center feedpoint.

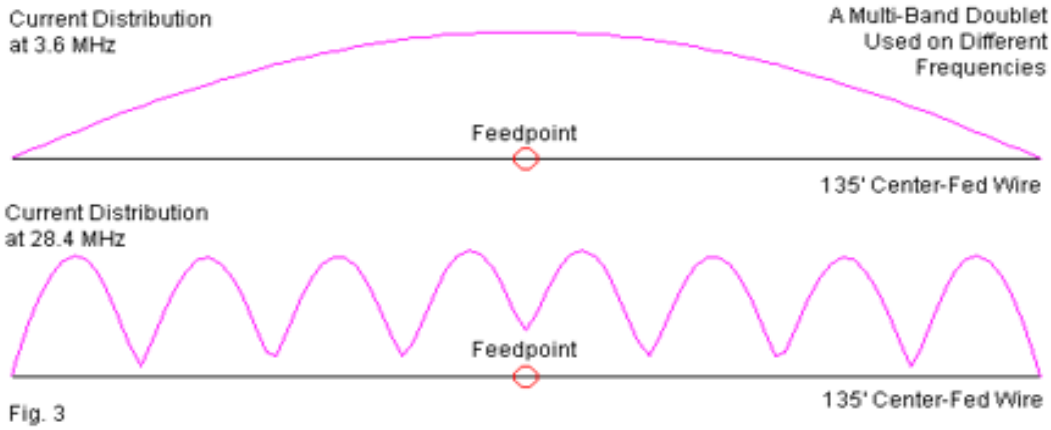


Fig. 3

The term doublet is more generic and less fully descriptive than others. However, it also has a history. In the 1930s, it served as a label for a center fed wire with a special feed system. Later, the antenna was renamed the delta feed and the term doublet became a generic term for center-fed antennas of any length. Hence, our antenna is an all-band doublet.

3. Do I need to measure the wire for precise resonance on the lowest band?

In a word, no. When we set up a resonant monoband dipole, we want it to achieve resonance or the lowest possible SWR with our coax cable feedline. However, the all-band doublet antenna system uses (normally) high impedance parallel transmission line.

Small variations in antenna wire length will make no difference to doublet performance or to our ability to match the impedance at the shack end of the feedline. We sometimes see radiation patterns for a Yagi antenna change shape as we move from one end of an amateur band to the other. However, the patterns produced by the all band doublet change very slowly with frequency.

For example, if we only have room for 125' of wire, then it will do very well and yield the same results as a 135' wire on the lower HF bands. On the upper HF bands, we might see some change in the feedpoint impedances between the two wire lengths, but they normally will not be severe and certainly not large enough for us to abandon the antenna. The recommended lengths in **Table 1** are ballpark figures, not precise lengths.

4. Why do I need parallel transmission line? Why not just coax? Or coax with a 4:1 balun?

To get our hands on this question, let's consider only one of the possible doublet lengths: 135'. For this version of the doublet, we can look at the numbers in **Table 2**. The second column lists the approximate feedpoint impedances for each HF amateur band. These numbers will vary with the exact length of the wire and the height above ground. However, the approximations will serve well for our demonstration.

Table 2. Line losses with coax and parallel feedlines for a 135' doublet

Frequency	Approximate	100' RG-8X		100' 450-Ω Window Line	
MHz	Impedance (Ω)	SWR	Loss (dB)	SWR	Loss (dB)
3.55	74 + j1	1.4	0.6	5.5	0.1
5.368	425 + j1100	69	7.7	9.0	0.2
7.1	5150 - j1900	116	11.3	14.5	0.5
10.125	90 - j310	6.1	6.1	7.2	0.3
14.1	3780 + j540	77	11.0	9.5	0.4
18.118	125 + j15	2.5	1.9	3.2	0.2
21.1	2450 + j1200	61	10.8	7.5	0.5
24.95	125 - j170	7.5	4.1	3.9	0.3
28.1	1610 + j1200	50	10.8	6.3	0.4

Suppose that we connect a typical coaxial cable to the feedpoint and use 100' of the line to reach the shack. RG-8X is popular these days because it is light and easy to handle. How much energy will we lose if we use this cable as a feedline? We can arrive at some answers by using a program like TLW. This highly useful software, written by Dean Straw, N6BV, accompanies *The ARRL Antenna Book*, which is a worthy long-term investment for any ham.

In the table, columns 3 and 4 show the 50-Ohm SWR for each of the impedances and the total cable losses. Notice how many of the loss entries exceed 10 dB. With a 10-dB loss, only 1/10 of the energy at one end of the line is available for use at the other end of the line. The reduction applies whether we are transmitting or receiving.

The last 2 columns show the SWR for a 450-Ohm parallel transmission line. The type specified uses a vinyl coating with windows along the way. The

vinyl coating is simply a good way to keep the wires evenly spaced, but it does introduce losses that are slightly greater than open or true ladder line (bare wire with periodic spacers). Note that even with the highest SWR levels, losses do not exceed 0.5 dB or a little over 10% of the power, even with 100' of the line.

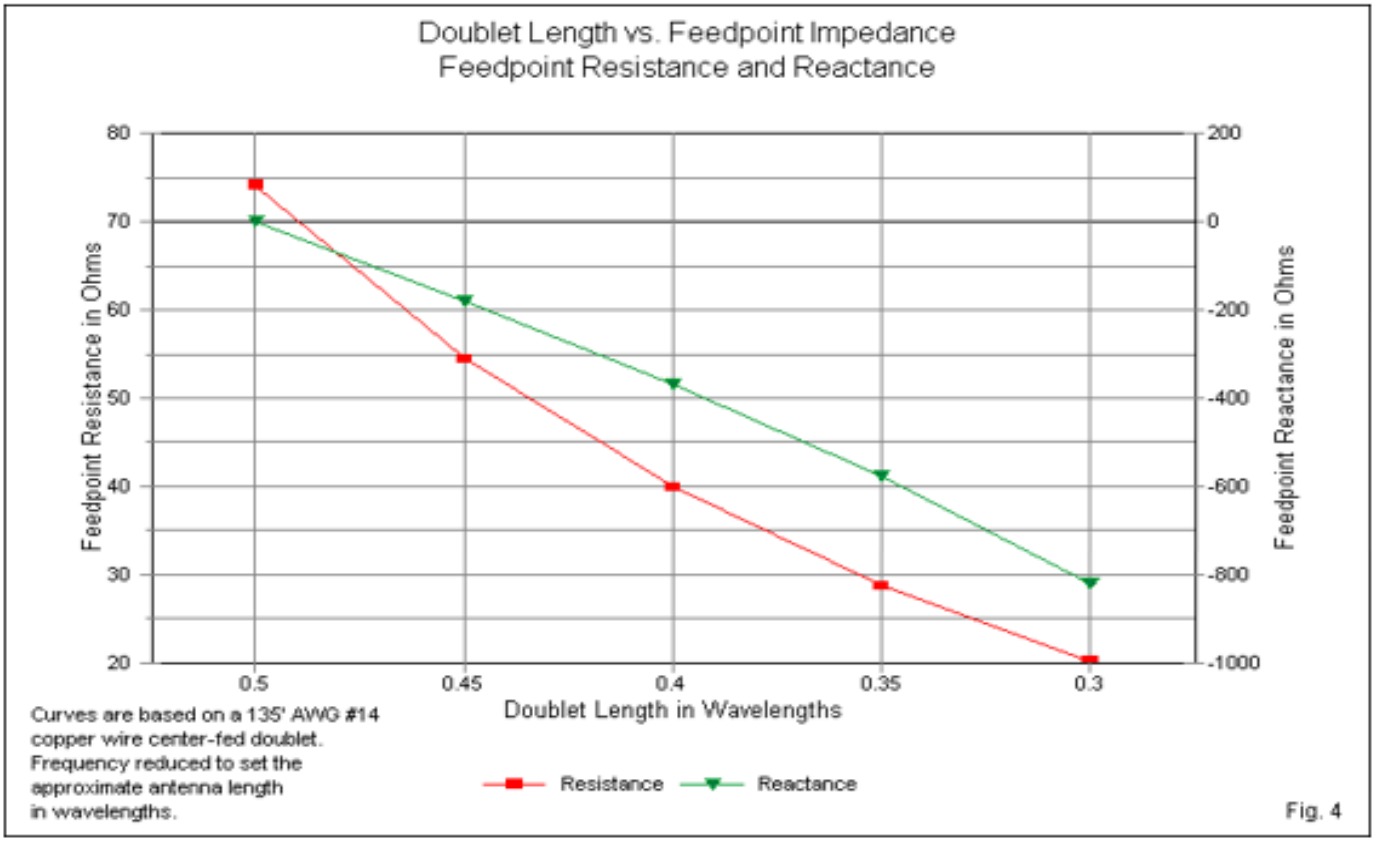


Fig. 4

Parallel lines do have limits however. Remember that we recommended ½ wavelength at the lowest frequency as the shortest antenna wire length. We also suggested that we might press shorter wires into service, but we did not say how much shorter.

Let's see what happens below 80 meters as we shorten the wire from a ½-wavelength starting point. **Fig. 4** shows the approximate resistance and reactance. Although the curves appear to track each other, remember that the downward path of reactance actually represents increasing capacitive reactance. As we shorten the doublet or lower the frequency, the feedpoint resistance decreases steadily, while the capacitive reactance increases steadily. The result will be a very high 450-Ohm SWR on the parallel line. It will rise to the point where even the seemingly low-loss line shows significant power losses along the way.

As a practical matter, try to keep the antenna at least 3/8 wavelength or longer at the lowest frequency used if you cannot manage ½ wavelength. Remember that you can always zigzag the wire legs or let the ends droop downward (but always with their ends out of human reach) in order to lengthen the wire to the full ½ wavelength at the lowest frequency.

5. What's the most important factor in setting up an all-band doublet? Or, we put up a low-band doublet for Field Day about 10-15' off the ground. We did not make many contacts? What was wrong?

The question's second form gives us the answer to the general question. With an all-band doublet, there is no substitute for height. However, hams must work with real conditions and not ideals.

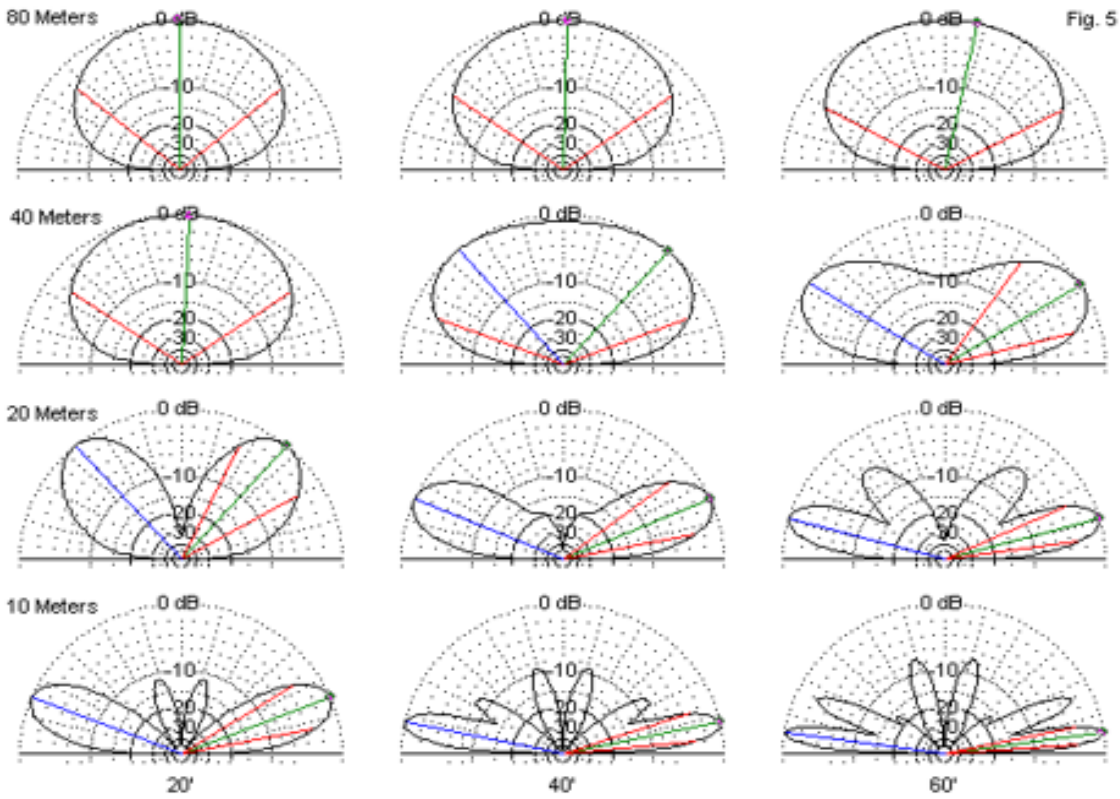
Let's continue to use the 135' doublet as our antenna and see what happens at various antenna heights that hams actually use. 20' is a typical Field Day height for wire antennas due to the difficulty of erecting and sustaining higher supports. 40' is a nice round number for a backyard doublet supported by mature trees. 60' is out of reach for amateurs unless they have a tower or two supporting rotatable beams. Now look at **Table 3**. It lists for each sample operating frequency the height above ground as a fraction of a wavelength.

Table 3. Doublet height in feet and as a fraction of a wavelength

Frequency	Height as a Fraction of a Wavelength		
MHz	20'	40'	60'
3.55	0.07	0.15	0.22
5.368	0.11	0.22	0.33
7.1	0.14	0.29	0.43
10.125	0.21	0.41	0.62
14.1	0.29	0.57	0.86
18.118	0.37	0.74	1.11
21.1	0.43	0.86	1.29
24.95	0.51	1.01	1.52
28.1	0.57	1.14	1.71

The height above ground when measured in terms of a wavelength is the most important factor that determines the elevation angle of a horizontal antenna's radiation. Remember that the radiation angle is also the angle of reception sensitivity. **Fig. 5** provides a catalog of typical elevation patterns for the doublet. Each pattern uses the headings for maximum gain as a basis. The missing bands would show elevation angles of maximum radiation that are part way between the bands in the illustration.

ANTENNA ARCHIVES #38



Selected Elevation Patterns: 135' Doublet on 80, 40, 20, and 10 Meters
(Pattern taken along the line of maximum gain.)

Note that at 80 meters, all three heights are so low that we detect very little elevation pattern difference. The pattern begins to change significantly as we raise the antenna to 60' when operating on 40 meters. The 20-meter pattern becomes very usable for low-angle skip radiation when we raise the wire to 40', a little bit more than ½ wavelength. 20' is a little over ½ wavelength on 10 meters, and so we obtain reasonable basic performance on that band.

These notes and graphics cannot change your backyard or field conditions. However, they do provide food for thought. For example, if you really want to operate on 80 and 40 meters, but cannot get the horizontal antenna high enough as a fraction of a wavelength, then you may wish to consider alternative antennas. You might achieve better performance on the lowest HF bands with a different wire antenna, such as the inverted-L.

6. I carefully set up my 135' doublet to be broadside to Europe. However, on 15 and 10 meters, signals are much stronger to Africa than to Europe. Is it propagation?

Table 5. Modeled Performance Data for a 135' Doublet at 40' Above Average Ground

Frequency MHz	Maximum Gain dBi	TO Angle degrees	Main Lobe Bearings degrees*
3.55	6.28	88	0/180
5.368	6.80	77	0/180
7.1	7.44	49	0/180
10.125	8.05	34	0/180
14.1	9.02	23	36/143/216/323
18.118	9.22	17	60/120/240/300
21.1	9.75	16	48/132/228/312
24.95	9.31	13	66/113/246/293
28.1	10.62	12	55/125/235/305

Note: 0° and 180° are broadside to the wire.

3. When the wire is close to n or to n.5 wavelengths, the strongest lobes will be those farthest from broadside to the wire, that is, closest to in line with the wire.

Table 5 provides the modeled performance data of the 135' doublet at a height of 40' above ground. **Fig. 6** translates those numbers into a gallery of azimuth patterns. The virtual antenna runs up and down on the graph page. Because the take-off (TO) angle (or the elevation angle of maximum radiation) is so high for 80 through 40 meters, the azimuth patterns use an arbitrary elevation angle of 45°. All other patterns use the actual TO angle.

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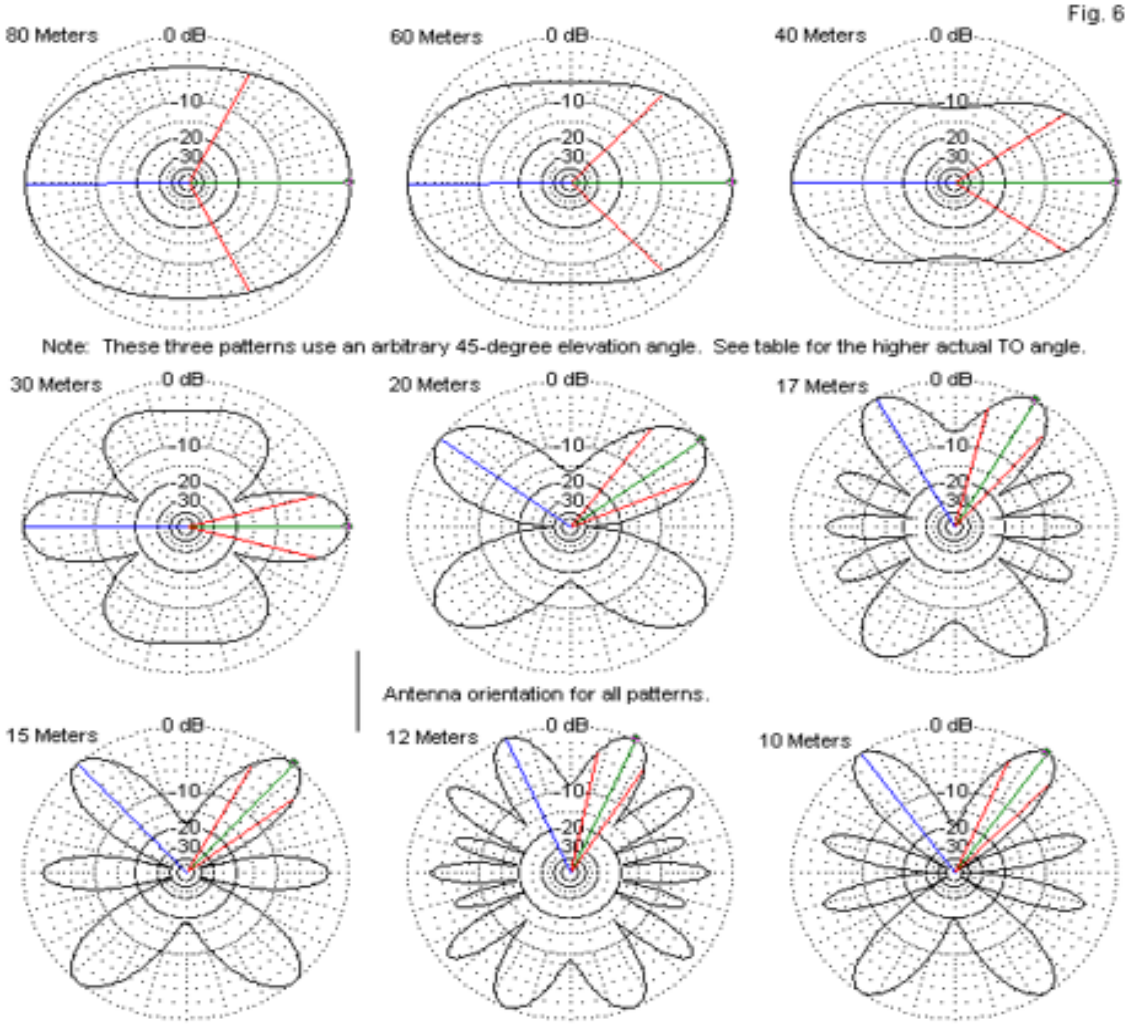
Fig. 6



Note: These three patterns use an arbitrary 45-degree elevation angle. See table for the higher actual TO angle.

135' Doublet Azimuth Patterns with Antenna 40' Above Average Ground
Patterns for 80-40 meters at 45 degrees elevation. All other bands at TO angle.

Except for 30 meters, where the null between the inner lobes is hard to detect, all of the patterns clearly exhibit the number of lobes calculated in **Table 4**. Since all of the lengths are close to either a full wavelength or the half-wavelength mark between full wavelengths, the strongest lobes are those nearest to being in line with the wire. When the wire is close to n.25 or n.75 wavelengths, other lobes may dominate.

Note that when the length is n.5 wavelengths, the large number of lobes in the pattern forces the strongest lobes to be closer to in line with the wire than for the next whole number of wavelengths. Hence, the angle of the lobes away from broadside is greater on 17 meters than on 15 meters--and greater on 12 meters than on 10 meters. Also note that the larger the number of lobes in a pattern, the narrower the beamwidth of each lobe.

If we had chosen a 67' doublet, the antenna would be ½ wavelengths on 40 meters, 1 wavelength on 20 meters, and 2 wavelengths on 10 meters. Since the azimuth lobes are functions of the wire length in wavelengths, we would obtain different lobe patterns than for the 135' wire. In fact, the 67' wire pattern on 40 would resemble the 135' pattern on 80, and the 67' 10-meter pattern would look very much like the 135' 20-meter pattern.

How you orient a center-fed doublet depends on understanding both the elevation and the azimuth patterns for the wire. The azimuth patterns show where your signal is likely to go, while the elevation patterns tell you whether the energy is likely to fall within the skip zone. Orient the doublet so that the pattern for the most used band (or bands) covers your most desired target(s) with a strong, low-angle lobe.

So far, we have concentrated on the wire or antenna-proper portion of the all-band doublet antenna system. We briefly explored the main reason for needing to use parallel transmission lines to connect the antenna to the antenna tuner. Hams who are used to using coax often ask a number of other questions about parallel feedlines.

7. Can I run the parallel feeders in a PVC tube underground or under my house?

This question is actually a confession by the newcomer that he or she knows how to handle coaxial cable, but not parallel feedline. In a coaxial cable, the energy fields exist between the outer surface of the inner or center conductor and the inner surface of the outer conductor, also called the braid. Hence, if the cable has an outer jacket that can handle soil, burying it does not affect its use or operation. As well, we can run the cable near to other wires without significant difficulty.

Parallel feedline is also called open-wire transmission line, and for good reason. Regardless of whether the wires have insulation, they are open in the sense of having fields that are not confined by the structure. Although the main portion of the field is between the two wires, it also extends around the pair of wires for a considerable distance--up to a few times the spacing between the wires. Nearby conductive and semi-conductive materials can disturb the balance between the lines and cause them to radiate--a job we want the antenna proper to do. As well, we may lose some energy to those objects.

So, in a nutshell, the answer to the question is no. Do not run the transmission lines close to or within the ground, even if you give them the double insulation of a conduit.

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Commercially available lines come in 3 general types, each with a different characteristic impedance, construction, velocity factor (VF), and loss value. 300-Ohm transmitting twinlead, sometimes flat and sometimes tubular, has a VF of about 0.80 and a loss of about 0.17 dB per 100' at 3.5 MHz. Remember that line losses increase with frequency. 450-Ohm window line, a form of flat twinlead with cutouts to minimize the vinyl between the wires, has a velocity factor of about 0.91 and a 0.07-dB loss per 100' at 3.5 MHz, half the loss of 300-Ohm line. 600-Ohm open-wire ladder line typically has a velocity factor of about 0.92 or higher and a loss of only about 0.03 dB per 100' at 3.5 MHz. There are also commercially available ladder lines in the 400-500 Ohm range, and their VF and loss values would resemble those of the 600-Ohm line. Of the 3 types, 450-Ohm window line is perhaps the most popular for all-band doublets.

Parallel feedline has a few simple rules for effective placement to maximize energy transfer from the tuner to the antenna proper. Keep line runs as straight and in the clear as possible. Straight, clear runs are as important indoors as outdoors. Straight is self-evident. Wherever possible, keep direction changes shallow. Never let the line fold back upon itself or roll it in a coil. Clear means as far from other objects as possible, and in no case less than several times the line spacing away from anything.

Of course, we must bring the line indoors. We can use a short through-wall PVC pipe, perhaps with caps that have slots to keep the line centered. Or we can use a wood or plastic plate with feed-through insulators. The difference in spacing and bolt size on the board relative to the line is not important: it may create a small impedance bump but will minimize losses.

Outdoor supports can be of two general types: rings or clamps. We can suspend non-conductive rings (slices of PVC or similar) from limbs and posts to support the line on its way to the antenna. As well, we can create non-conductive guides or clamps that extend outward from tree trunks, posts, or walls to route the transmission line. Be sure to use enough supports.

At the junction with the antenna, use a strain-relief fixture. A simple insulator may keep the line from being pulled by the antenna wire. However, over a relative short time, the feedline wires will flex back and forth until they break. A fixture that minimizes the flexing at the junction itself will make the connections much more durable.

8. Will the feedpoint impedance in the tables appear at the antenna tuner terminals?

If the feedline is precisely a multiple of an electrical half-wavelength, then the feedpoint impedance will reappear at the far end of the line. The other condition that would allow the feedpoint impedance to reappear is an exact match between the feedpoint impedance and the characteristic impedance of the cable. With 450-Ohm line, **Table 2** makes it clear that this condition will not exist.

When the characteristic impedance of the line does not match the feedpoint impedance, the line becomes a continuous impedance transformer and shows a different impedance at each step between the feedpoint and each half-wavelength or 180° point along the line.

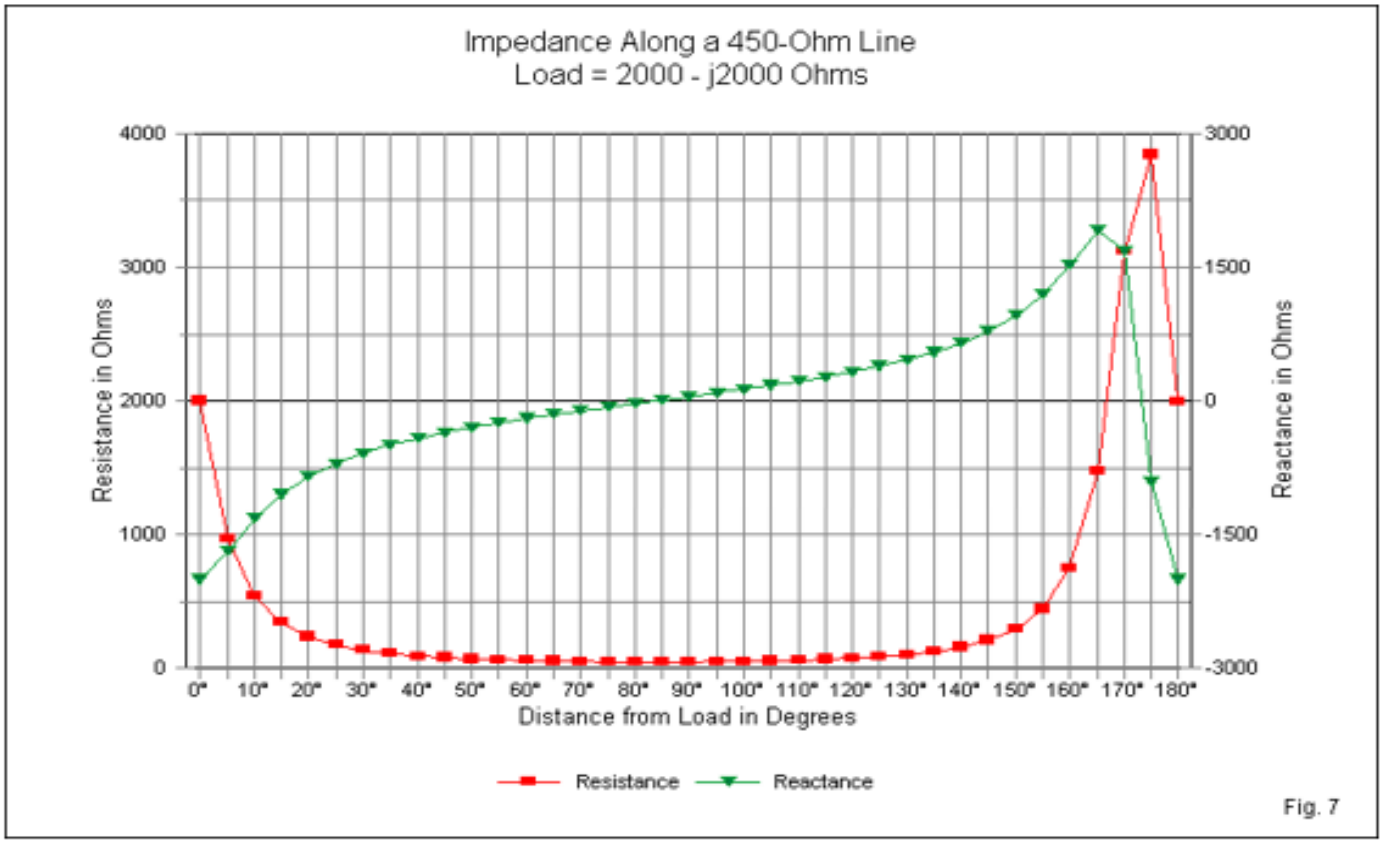


Fig. 7 shows one example of the transformation and applies to 450-Ohm transmission line and a feedpoint impedance of 2000 - j2000 Ohms. This impedance is similar to some values in **Table 2**.

If the reactance had been inductive instead of capacitive, we would see similar curves, but the peaks would appear at 10-15° position along the line, where 0° is the antenna feedpoint and 180° is a half-wavelength down the line. Note the very low resistance and the relatively low reactance that appear over much of the line's length. For this reason, placing a 4:1 balun in the line may be a

assist in finding and visualizing the data. Earlier, I mentioned the N6BV program, TLW. You can obtain similar graphs on it. In addition, the graphs will show the effects of line losses.

The graphs show an electrical half wavelength of line. The physical length of such a line will vary with the operating frequency. Hence, it is very difficult (although not impossible) to design a feedline system so that on each band we end up with just about the same impedance at the shack entry. Most amateurs let the antenna tuner do the work of transforming whatever impedance appears at the terminals to the transceiver's required 50 Ohms.

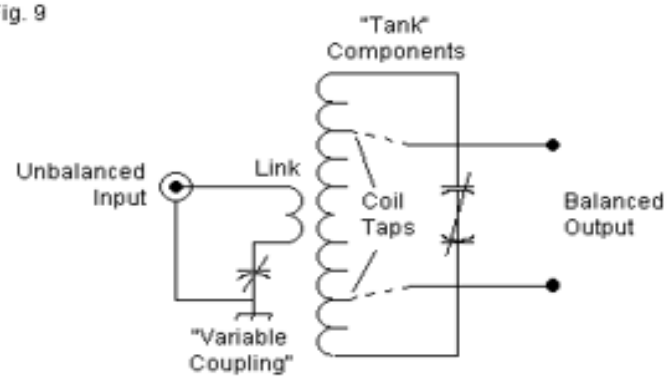
9. What kind of antenna tuner is best for an all-band doublet?

The best type of antenna tuner is one with a configuration that naturally has an unbalanced or single-ended input--to accept the transceiver's coaxial cable--and a balanced output.

From the earliest days of amateur radio, a common tuner meeting these conditions has been the link-coupled tuner. **Fig. 9** provides a simplified schematic diagram of one version of this tuner. It received its name because the input side used a small coil or link that is inductively coupled to the tank or parallel tuned circuit on the output side.

The most effective forms of this tuner used additional components on the output side to compensate for the reactance at the terminals. Taps at every turn (or at least at every other turn) of the tank coil allowed the user to find a setting that came closest to providing a good match and maximum power transfer at the same time. The link might also have switched taps with the later addition of the so-called variable coupling series capacitor. In fact, the series capacitor compensates for remnant reactance on the input side, allowing a purely resistive input impedance. Johnson Matchboxes, with simplified tank tapping, a fixed link, and no series input-side capacitor, became famous and still appear at hamfests.

Fig. 9

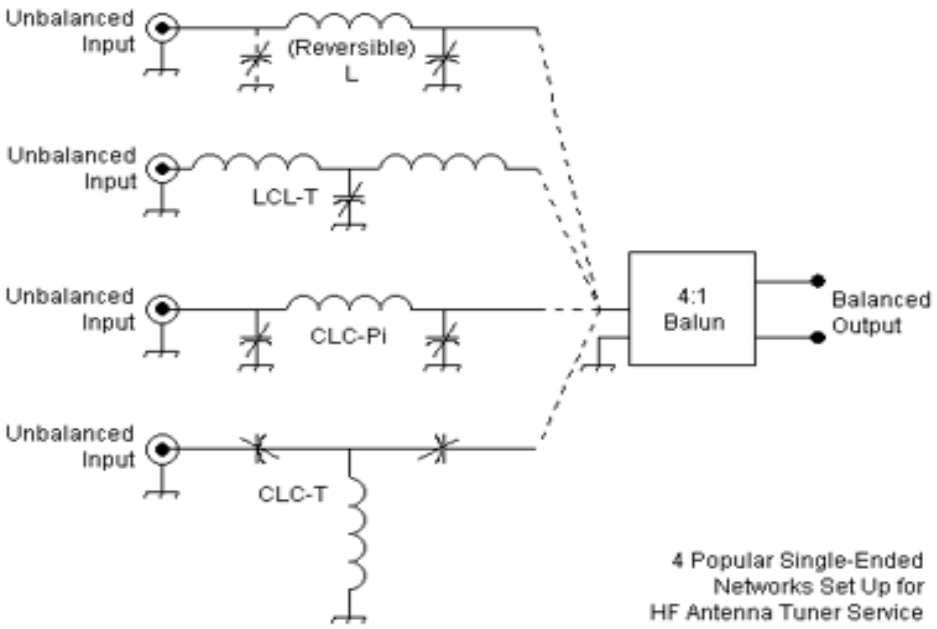


One Version of a Libk-Coupled HF Antenna Tuner

From the late 1960s onward, the single-ended network came to rule the commercial manufacture of antenna tuners. **Fig. 10** shows 4 popular configurations, with the CLC-T being the most common. It was perhaps the cheapest to produce in a period of rapidly rising component costs. It would also handle a very wide range of impedances at the output terminals.

However, the CLC-T was a high-pass filter network and hence provided little harmonic suppression for older rigs. Like all of the single-ended configurations, it required a balun on the output to allow for balanced lines. The standard version of the balun used a 4:1 impedance ratio either though a misunderstanding of the impedances likely to be present at the terminals or because such baluns were cheaper to make than 1:1 baluns. The baluns were transmission-line transformers that are most efficient when the reactance is very low. Most balanced lines, however, did not meet this condition. The average operator did not have multiple tuners to compare and so remained unaware that on some bands with some tuners, efficient power transfer might not occur.

Fig. 10

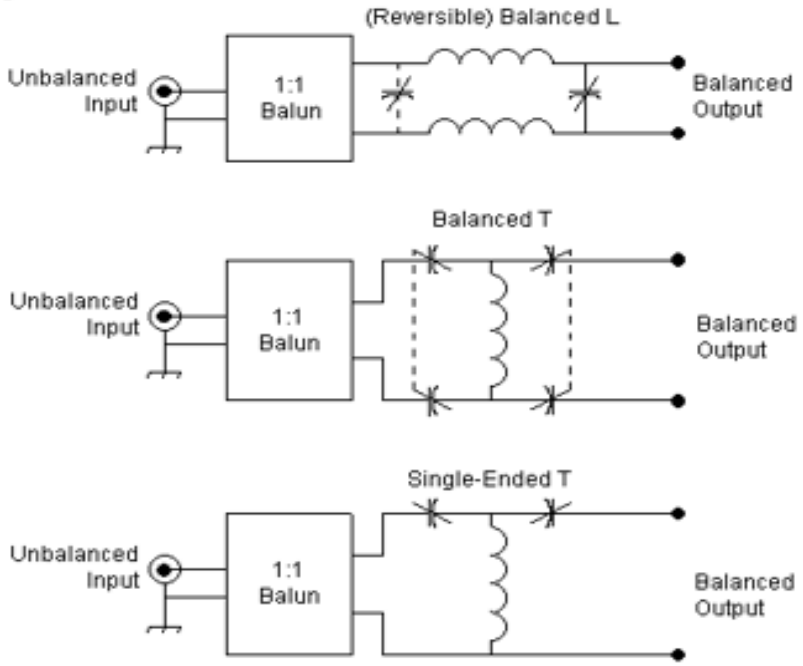


4 Popular Single-Ended Networks Set Up for HF Antenna Tuner Service

In recent years, interest in antennas that require parallel transmission lines has surged, spurring the development of new inherently balanced tuners. **Fig. 11** shows three varieties that are either on the market or in handbooks.

The single-ended CLC-T network is usable with special precautions not to ground any component except the transceiver side of the 1:1 input balun that is common to all of the tuner designs. One commercial tuner uses a balanced CLC-T network, but the most common balanced network tuner on the market is the reversible-L circuit. Versions exist for high power use. However, as the operating frequency increases, the range of impedances that the reversible-L will match with standard components grows more limited.

Fig. 11



3 Popular Networks Used for Balanced HF Antenna Tuners

If you will buy a tuner with an all-band doublet in mind, then one of the balanced network tuners may be the best bet. However, if you already have a tuner--even a single-ended network with a 4:1 balun on the output side--you might as well try it out.

Since none of the tuners comes with a relative output indicator, you will have to estimate efficiency on each band indirectly.

If you obtain a good match following the maker's suggestions for the best component settings, check the temperature of the balun after (not during) operation. If the balun is warm to the touch, it likely is converting some part of your transmitted energy into heat. In general, the broader the tuning, the lower the tuner losses, although there are exceptions to this rule of thumb. In a tuner designed for all of the HF ham bands, tuning will naturally become sharper with rising frequency.

If you cannot obtain a match on a given band, then try inserting a length of transmission line, preferably outdoors. Using knife switches, relays, or a simple manual changeover, add a few feet of line between the line ends of a break that you intentionally make in the feeders.

Form the insertion into a single large loop to avoid unwanted self-coupling, and use standard precautions to prevent coupling to other objects. Since the

transmission line is a continuous impedance transformer, the new values of resistance and reactance at the tuner terminals may fall within the tuner's range.

Because every tuner has a limit to the range of resistance-reactance combinations that it will handle, the potential need for a revision in the total feedline length may apply to all antenna tuner designs.

10. My all-band doublet is 50' high and uses open-wire feeders. It works well, but I get a lot of RF interference at home, and my rig sometimes locks up in transmit on CW. How can I overcome these problems?

Unwanted coupling into home electronics and into the rig itself has almost as many causes as there are errors that we may make in installing parallel feedlines.

The first step is to ensure that all station equipment is well grounded to an earth ground as close to the rig as may be feasible. The second step is to consider rearranging the station so that you position the antenna tuner at the place where the feedline enters the building or shack. Well-grounded coax braid is less likely to couple RF energy to other lines and objects than open-wire transmission line.

The third step is to check the routing of the transmission line as it approaches the entry point. Ideally, the line should approach the entry perpendicular to the wall or window. If the line runs vertically down a wall, it may couple energy into various power, telephone, or computer lines. Some of these lines may use shielded cable, but unless that cable is also well grounded, it may carry RF energy to sensitive devices with equally poor grounds.

Sensitive devices, including control inputs for the rig, do not require very much energy to show signs of interference. If all else fails, you can try the system shown in **Fig. 12**.

At the building or shack entry, install a 1:1 choke of ferrite beads, following the designs of W2DU. The choke acts as a balun, converting the balanced line to the unbalanced coax. From the coax connector shell, run a very short earth-ground line. Ideally, the choke should go outdoors, but modern building construction may require immediate indoor installation at the entry point. Between the choke and a single-ended network tuner, run less than 20' of the largest, lowest-loss coax that you can obtain.

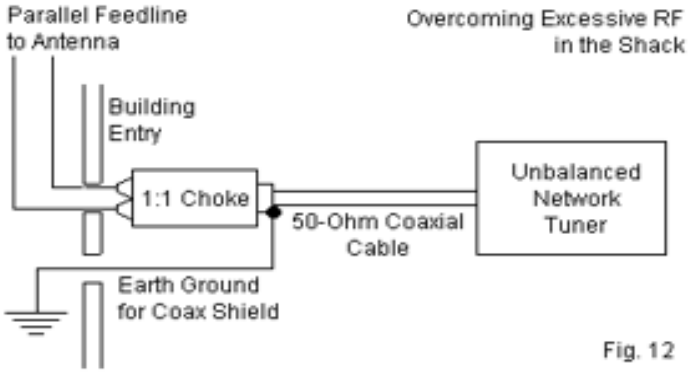


Fig. 12

The system shown will generally eliminate most unwanted RF energy transfers if the feeders have not already coupled into house wiring due to improper dress. It bypasses the 4:1 balun in the tuner, avoiding that loss source. However, the system has losses of its own.

The 1:1 choke will show losses with high impedances having significant reactive components. The coax will also show some loss. However, if the length is 20', the line losses will usually be fairly small. For example, at 30 MHz, 20' of RG-213 will show a 1.1-dB loss with a 10:1 SWR. A shorter run, lower frequency, or lower SWR will result in lower coax losses.

There are also cables with even lower losses. Do not use thin cables like RG-58 for this run, regardless of the operating power level. This system is not ideal, but simply a measure of last resort for very tough cases of RF interference. Before employing this or other radical systems, you should first use the earlier guidelines to optimize the feeder and tuner installation.

These notes do not answer every question that we can ask about the all-band doublet. However, I hope the 10 common questions that we have tackled give you a good start for reasoning out answers for yourself.

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For more information please visit: Carpenterwoodworksusa.com

EQUIPMENT FOR SALE BY AB3ME

These items were purchased by myself for field day 2018 and have not been used since. Have been kept in weatherproof storage cases with desiccant since. I have kept the removed pluck foam for all weatherproof cases.

Additional items for sale:

1. 1 each Dentron Super Tuner, 1000 watt, w/ balun, wire or coax feeds 5 star eham rating..... Price = $175.00 see pic,excellent condition.

2. 1 each Dentron Junior Tuner, 300 watt, w/balun, wire or coax feeds 4.9 star eham rating..... Price = $125.00 see pic, excellent condition.

MEMBERSHIP APPLICATION

E P A R A

Eastern Pennsylvania Amateur Radio Association

Address: PO Box 521, Sciota, PA 18354

Email: N3IS@qsl.net

Website: www.qsl.net/n3is

Date: _____

Name: _____ **Callsign** _____

License: Novice Technician General Advanced Extra

Address: _____

City: _____ **State**: _____ **Zip**: _____

Home Phone: _____

Cell Phone: _____

Email: _____

* **Note**: We do not publicize your phone or email information.

ARRL Member: _____ **Skywarn Spotter**: _____ **ARES/RACES Member**: _____ **VE**: _____

Interests:

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Building Antennas _____ Electronic Repairs _____ Elmering _____ Kit Building _____ EmComm: ____

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How did you get interested in Ham Radio?

_____

Please list any relevant qualifications or assets you have or are willing to share/contribute to the club.

Use reverse side if needed:

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Sponsored or Reviewed by: _____ **Callsign**: _____

Membership Rates,

Membership: **$20.00** per year Spouse: **$10.00** per year
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