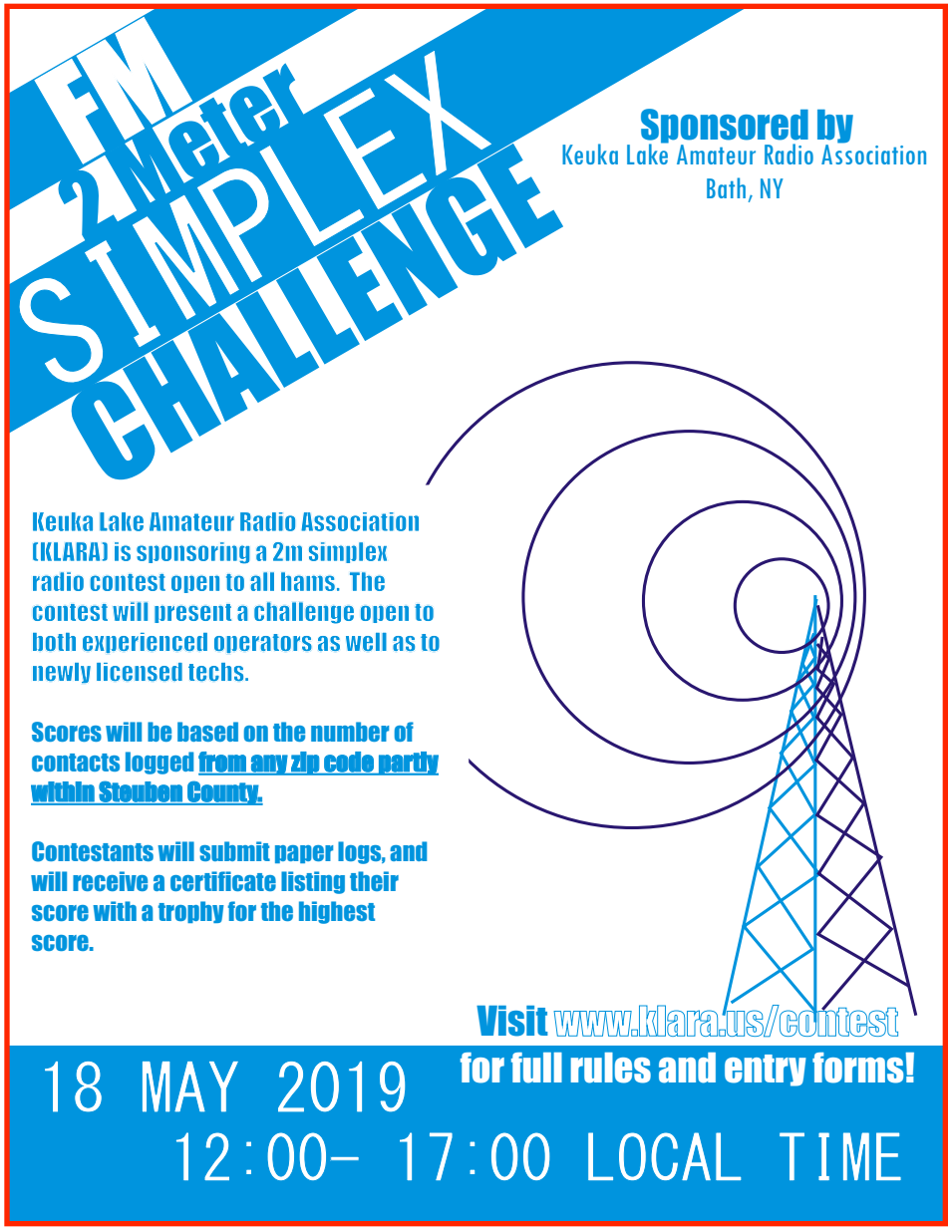
THE KLARION

Quarterly Newsletter of the Keuka Lake Amateur Radio Association

Second Quarter 2019

Spring to Summer Edition



Attend our next KLARA meeting on May 8 and get all your questions about the 2 Meter FM Simplex Challenge answered. Can't make the meeting - click the link below and join in via live streaming.

https://www.youtube.com/channel/UC7ZtuOYSjRHiXIfIEJZELyA

Also, www.klara.us has rules and entry forms

Major KLARA Events

May 8
KLARA Monthly Meeting
Program: KLARA 2 Meter FM Simplex Challenge

May 18 NEW FOR 2019
KLARA 2 Meter FM Simplex Challenge

June 12
KLARA Monthly Meeting
Program: Field Day

June 15
Annual Picnic at Kanakedia Park

June 22-23
ARRL Field Day with setup on June 21

July TBD
Annual Red House Picnic

July 21
Wine Country Classic Boat Regatta

August 12-17
KLARA Booth at Steuben County Fair

August 16-17
KLARA Hamfest

October 6
Wineglass Marathon

October 12
Annual End of the Season Picnic at Kanakedia Park

December TBD
Annual Christmas Dinner

Talk with us on-the-air using our linked repeater system:
Bath, NY 145.190- 110.9
Arkport, NY 147.045+ 110.9
Jasper, NY 147.330+ 110.9

Visit us on the web:
www.klara.us

Congratulations
New Hams and Upgraded Licenses at KLARA/ARRL Testing Sessions

Winter Hamfest Big Flats , NY American Legion
February 23, 2019

Gary Dewey KD2PYB upgraded to General
Jason G. Root KJ4IHW upgraded to Extra
John D. Havens KD2QND upgraded to General
Renaldo Rodriguez KC3HNH upgraded to General

Keshequa High School Nunda, NY
March 5,2019

Merissa Huffman KD2RPN Technician
Jacob A. Elliott KD2RPO Technician
Jacob L. Gibson KD2RPM Technician

VFW Bath, NY March 30, 2019

Reiner R. Dieg N2PEZ upgraded to Extra
Jeffrey S. Davis KD2RUY Technician
James T. Caneen W2JTC upgraded to Extra
Brian R. Wilson KD2RUX Technician

New Hams in Bold
KLARA Members in Red

Not too soon to start advertising and planning YOUR participation in our HAMFEST

12th Annual
Keuka Lake Amateur Radio Association

HAMFEST

Saturday, August 17, 2019 Howard, NY

Just off I-86 at Exit 35
follow signs to the Howard Community Center

Special instructions for GPS users:
Some GPS systems will recognize 7481 Hopkins Rd., Howard, NY.
Since Howard, NY does not have a post office or ZIP Code,
some GPS systems will require 7481 Hopkins Rd., Avoca, NY 14809.
Or use coordinates 42.3618,-77.510.

Talk-In on the KLARA Repeater System
145.190 – Bath, NY
147.045 + Arkport, NY
147.330 + Cameron, NY
PL 110.9

Admission and Breakfast
$5.00 admission includes one outdoor flea market space or one indoor table space. Also available is a full breakfast with eggs and pancakes.
Never ending coffee!

Hamfest Schedule
7:00 Vendor Admission
7:30 Open to the Public
8:00 Breakfast Begins
8:30 1st Door Prize Drawing
9:00 2nd Door Prize Drawing
9:30 3rd Door Prize Drawing
10:00 4th Door Prize Drawing
10:00 VE Testing
10:30 5th Door Prize Drawing
11:00 50-50 Drawing and More Door Prizes
Must be present to win prizes

Friday Night Camping
Join us for free on-site overnight camping.
Self contained camping units only.
No electric. No water.
Yes, an enjoyable evening with very friendly hams.
Campers Must RSVP keukalakeara@gmail.com

KLARA/ARRL Testing
10:00am - a perfect time to get your Ham Radio License or upgrade to General or Extra

Visit us on Facebook:
Keuka Lake Amateur Radio Association
Visit us on the web:
klara.us
Contact us at:
keukalakeara@gmail.com

Winter Field Day 2019
KLARA's Very Successful First-Time Entry

Winter Field Day (WFD) was held January 26-27 in the heated and comfortable Steuben County Training Center. KLARA members Joel Fiske (KC2VAW) and Gary Stratton (KC2YTD) activated club station N2AAR. Other members stopped in for a little social and on-air time.

N2AAR operated in class 2I (2 stations operating simultaneously from an Indoor location away from home with portable/temporary antennas) in ARRL section WNY (Western New York).

The phone station (SSB) made 26 contacts while the digital station made 67 contacts. Both stations used 80, 40, and 20 meters. 36 states and 2 Canadian provinces were logged. Another first for KLARA - W3FJP software running on laptop computers was used for logging. No more paper logs!

A few WFD stats:

Five stations in the WNY section participated in the indoor class. KLARA placed third.

KLARA was first in WNY digital QSO's and second in phone.

In overall WNY scoring, the two stations placing above KLARA made many CW contacts. Perhaps next year KLARA can attempt CW.

KLARA member Rick Torrey(W2RMT) participated as a class 1H (home) WNY entry. He led the way in digital with 50 contacts. Way to go Rick!

WFD 2020 is scheduled for January 26 & 27 next winter. Can't think of a better activity for a cold WNY weekend!

The KLARA/ARRL VE Team has scheduled license exams at the Civil Defense Training Center in Bath, NY at 10:00am on the following dates:

May 25
July 27
August 17 (at our Annual Hamfest in Howard, NY)
September 14 (3:00pm Technician License Only)

Show Us Your Shack

For this issue of the *KLARION* newsletter Jim Caneen, W2JTC, graciously agreed to share his shack with us.

Jim passed his Novice exam in 1976 and was issued callsign WN2FKD. At that time, all perspective hams had to pass a 5 word-per-minute code test. Exam papers were mailed by the FCC to a general class (or higher) ham to administer the code and written tests. Ray Wells, WB2ENQ, gave the exam to Jim and got him started in his ham career. His novice station was an old Collins A3 receiver and a Johnson Valiant transmitter. Novices were only allowed to operate CW (Morse Code).

In 1977 Jim passed his General written exam and a 13WPM code test. His new callsign was WA2FKD and he acquired a Yaesu FT-101E transceiver.

During 2018 Jim changed his callsign to W2JTC. He recently passed his Amateur Extra exam at a KLARA/ARRL test session. He is active on HF SSB.

Jim's vintage FT-101E and antenna tuner from his early General class ham days. The FT-101 was recently repaired by KLARA member Pat Sheedy, W2DHB. Still works great!

Icom 7300 transceiver and Yaesu rotor controller

Very nice installation of wires into the shack. Two coax lines (off center fed dipole and hex beam), rotator control cable, and a 1″ tinned flexible braid for grounding all station equipment. All wires are run through surface mount conduit and a box. The wires exit his house through a PVC sleeve. At that point, the braid is bonded to a 2″ copper strap going to the lightning arrestors and ground rods.

2″ wide copper grounding strap bonded to a copper plate and ground rod. Attached to the plate are two lightning surge arrestors. One arrestor for each antenna coax feed line.

Rotator control line surge arrestor mounted in a water proof box bonded to a ground rod.

Roof mounted rotor turns the mast and antenna. No tower needed!

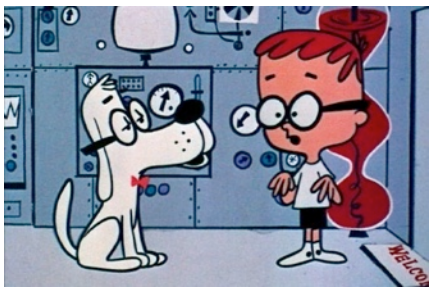
20, 17,15,12,10, and 6 meter hex beam

Two sets of guy wires attach to bushings allowing the mast to rotate.

The Venerable VTVM

by KLARA Member Patrick Thrush, AE1PT

Alright Sherman, it's time to join Mr. Peabody and "Set the Wayback Machine" for 1970. We have arrived in an average sized Midwestern town



where we will visit two electronics operations—one a television repair shop and the other a ham radio shack. Observe closely, for we are looking for something very useful that can be brought forward to today's shack workbench.

Remember that these are still the days of the vacuum tube—solid state is becoming more common in-home entertainment applications, but for the ham much of his or her radio equipment is still firmly based on "hollow state" devices. In both the TV shop and the shack, there is one piece of equipment that holds a position of prominence at the front of the bench—the vacuum tube volt meter, or VTVM.

An RCA Senior VoltOhmyst holds court at the TV shop, while a Heathkit IM18 built by the amateur presides in the shack. While these two meters look quite different in shape, the surprise is that they have essentially the same circuit inside. In fact, the VTVM has changed little in its design since it was first introduced in 1916.

Having identified our historic prize, we move forward to the present time and examine what a VTVM can do for us today. After all, are not our modern digital (DMM) and analog (VOM) multimeters much more accurate and versatile? As we will discover there are many things that one can accomplish with a VTVM that simply cannot be done reliably or with the same degree or responsiveness as with more modern equipment.

The first task of course is to get one of these handy instruments into our possession. A quick way to find anything is to check eBay. A search of completed auctions reveals that several different brands and models can be had ranging from $10-50 in price, with $25 the average cost. Other sources can be hams that are not using these anymore, estate sales, and hamfests.

Make sure that the meter you are considering has its probes, powers on, and preferably has a manual. Quite a few brands are available. A short list of the most common include RCA/VIZ, B&K, Knight, Heathkit, Eico, HP, Simpson, Triplett, and others. Test equipment manufacturers frequently offered several kinds of accessory probes to round out the capabilities of the VTVM—very similar to those found for oscilloscopes.

These included high voltage, RF voltage, demodulator, and even specialty probes for temperature and the pH of solutions. Due to the universal design of many VTVM's, these probes will often work across brands and models. Note that older VTVM's produced prior to the 1960s lack two important features. First, they do not measure resistance—scales only reflect voltages and decibels.

Second, in the early 1960s a 1.5 volt scale was added to improve accuracy when measuring smaller voltages (even a .5 volt scale in some cases). A few models of older VTVM such as the Hewlett Packard 400 series actually had a vacuum tube in the probe itself. Another limitation is that the test leads were usually an integral part of the unit—hardwired to the circuitry through the front panel and not interchangeable. While these meters can be made fully functional for today's bench, it is recommended that a more recent and versatile vintage such as the RCA/VIZ WV-98 series be selected.

Now that we have a VTVM on the bench, the real question becomes what can we do with it that our DMM or analog VOM is not capable of? To answer this question let's first look at how the VTVM

works. Essentially, the VTVM uses a dual triode vacuum tube (usually a 12AU7) in a balanced bridge circuit to amplify incoming voltages. This sort of design provides several useful functions. A diagram detailing the most common VTVM circuitry is shown at the end of this article (RCAWV98C).

The first is that a very high impedance (approximately 10 MΩ) is shown to the circuit under test. This provides a high degree of isolation between the metering circuit and the test circuit—resulting in a very low "load" placed into the tested circuit. Such a configuration is very convenient in low power, coupling, amplifier, and resonant circuits as it does not change the operational characteristics of the circuit. This characteristic is shared by many quality digital meters.

A high degree of amplification in the metering circuit also means that very high resistances up to 1000 MΩ can be measured. This is useful in determining dielectric resistance, leakage of capacitors, transmission line characteristics, and isolation leakage. The amplification factor is also beneficial when measuring small audio or IF voltages, giving one a true indication of the performance of the circuit under test.

A unique ability that a VTVM has that a DMM or VOM does not is to read AC voltages in both RMS (root-mean-square) and PP (peak-to-peak) values. The common DMM/VOM averages the AC sine wave and delivers an RMS approximation of the voltage. By using PP voltage measurement, more complex sine waves and other waveforms can be accurately measured—the added benefit being that the PP measurement coincides with how an oscilloscope measures voltage. Combining the VTVM with a scope delivers waveform observation that shares the same measurement standard.

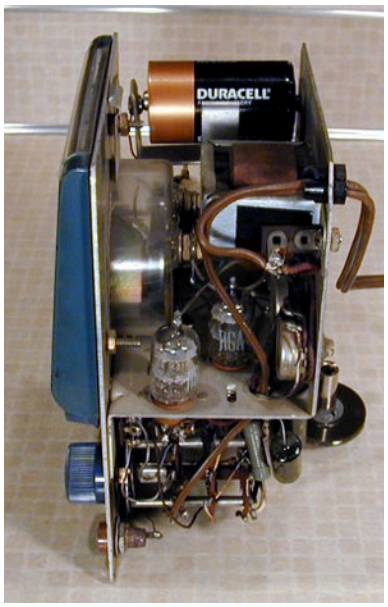
The voltage measurement of complex sine patterns or other forms such as square or sawtooth is best accomplished with the VTVM. In situations where there are likely to be rapid variances and transient spikes present in the signal, the VTVM shines with its rapid response and ability to correctly decipher the correct voltages at hand. This instrument is also relatively immune to false indications due to interference and strong electromagnetic fields.

It is also much easier to determine the minimum and maximum changes in a circuit by following the meter needle than trying to make sense of a wandering digital display. This alone eases any receiver alignment process.

Here are a few of the better uses of your VTVM:

- Measuring coupling and other capacitor leakage
- Troubleshooting audio circuits
- Measuring voltages in tuned and resonant circuits
- Determining reactance and inductance of components
- Alignment of tuned circuits
- Measurement of potential 1500 V and above (with proper probe)
- Direct measurement of high frequency voltages
- Ability to measure DC in the presence of AC voltages

As might be expected with any older test equipment, your "new" VTVM will likely need a little servicing before it can serve reliably on your bench. All paper-based capacitors over time will become leaky—and require replacement. Depending upon the age of your unit it may be wise to simply replace the coupling and any electrolytic capacitors that may be present in the circuit.



Rotary control switches and adjustable potentiometers become dirty through oxidation and atmospheric contamination. These should be cleaned with a quality spray-on cleaner/lubricant or an application of a solution such as DeoxIT. This applies to calibration trimmers as well—a thorough cleaning and recalibration as given in the instruction manual is recommended. This should be done every several years—and is solid practice for all your older test equipment.

Interestingly, quite a few VTVM's used a battery to supply the resistance measurement voltage. A first check of the interior of the meter will look at replacing this battery and repairing any damage done by leakage of an old cell. Some enterprising technicians have tapped into the tube filament voltage to feed a circuit that provides a stable 1.5-volt DC supply—thus eliminating the need for a battery. Once the dominant instrument in any electronics shop, the venerable VTVM still has a valuable place on the radio amateur's bench.

Although it has been many years since the majority of VTVM's were made, a wealth of resource material is still available to the bench technician and hobbyist. A quick search of Amazon.com turned up nearly 20 unique used books detailing meter operation and a variety of troubleshooting techniques.

The most complete reference for these meters is "The VTVM" by Rhys Samuel. Originally published in the mid1950s, copies in hard and soft cover are still available at a reasonable price. As noted, it is important to have a manual for your VTVM. If one did not come with your meter, multiple online resources exist that will provide you with one—as well as servicing and operational tips. There are even several YouTube videos that detail the rehabilitation and calibration of common VTVM units.

Here is a list of a resources for the new VTVM user:

Books

101 Ways To Use Your VOM and VTVM
Robert G. Middleton, 1959

Troubleshooting With The VOM and VTVM
Robert G. Middleton, 1962.

Troubleshooting With The VOM and VTVM
Robert G. Middleton, 1962.

Know Your VOM-VTVM
Joseph A. Risse, 1963.

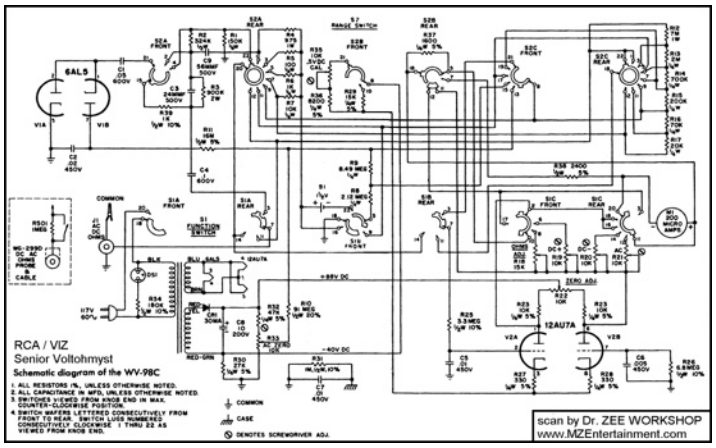
The VOM-VTVM Handbook
Joseph A. Risse, 1972.

On The Web

BAMA Manuals & Schematics
http://bama.edebris.com/manuals/

VTVM Restoration, Alignment, and why you should own one
https://www.youtube.com/watch?v=GR3rR7tc30Y

An Idiots Guide to VTVMs
http://tone-lizard.com/vtvms/



Schematic diagram of RCA Senior Voltohmyst

KLARA member Patrick Thrush, AE1PT, holds an Amateur Extra License and is a long-time Volunteer Examiner. He is an excellent technician and has an interest in restoring and using vintage and classic "boat anchor"amateur radio equipment.

My Early Planning for the 2 Meter Simplex Challenge

by KLARA member Harold Scharmberg, N2FMS

I began by reading the rules. I decided on participating as a rover station because of the 2 x multiplier and that my home QTH has a big hill between my antenna and Steuben County. Not good! Next was an internet search for zip code maps of Steuben County. I found some with roads and road names on them. Just want to make sure I'm in the correct zip code area. Then had to look at topographic maps to find high elevations. Next the Steuben County highway map was used to make sure I can get there. I have now started to plan my route that will begin in the 14437 zip code on a hilltop about five miles from my house.

I will use my handheld for communications through the KLARA repeater system. My home "base station" (an Icom 2300 mobile radio) on the tailgate of my truck will be used for contest QSO's. A homemade ground plane antenna will be supported on a a few sections of portable mast clamped onto my truck. A deep cycle battery will supply 12V and should easily last the five hours.

I'm looking forward to an enjoyable afternoon!