



Q5er – The Official Newsletter of the Skyview Radio Society

Hams Build, Modify, and Adapt

While we occasionally Buy and Use, we always seem to look for ways to customize.



June 1, 2022

-
- Fishing at the Library
-
-
- QRP Tuning Attenuator
-
-
- Swap & Shop Coming
-

The Sunspots Are Here !!!

Time to exercise the 10-12-15-17-20 meter bands

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2022 is Skyview's 62nd Anniversary !!



The Skyview Radio Society Clubhouse is the “Every Tuesday Place” . . .

Something is going on at ‘the joint’ each and every Tuesday evening, from about 1900 hours to whenever.

See the general schedule of Tuesday events on the Skyview Web Page: <http://www.skyviewradio.net>

For the latest up-to-date plan, check the Groups.io Reflector at : <https://groups.io/g/K3MJW>

Directions are on: <http://www.skyviewradio.net>

Guests are always welcome !!

From the Editor

This issue is brought to you by NM3A and WC3O

Dan and Bob are both very frequent contributors to this newsletter. Both keep very busy building, modifying, adapting,, and customizing tings.

Sharing is Caring. Dan and Bob both do a great job of sharing. There is something to be learned from each of their articles.

Use the Skyview Facilities At Your Own Risk.

Follow <https://groups.io/g/K3MJW> for updates.

Jody - K3JZD

Remember: The number of people older than you never increases., it only decreases

From the Treasurer

We have adequate funding at this time.

No Skyview Swap & Shop Flier for me to publish at this time . But you can go ahead mark August 27th and August 28th on your calendar now.

- August 27th will be the Setup, which usually occurs from 0900 until to around 1400 .
- The August 28th Swap & Shop work details start as early as 0600 and continue until 1400. Teardown and store runs from 1400 to about 1600.
- Contact John - WA3KFS if you would like to assist in some way. Maybe let him know on the Thursday night net.

Jody - K3JZD

Ham Radio is a Contact Sport

Congratulations go out to Wayne - W3WN for his Second Place USA finish in his class in the 2021 ARRL International EME Contest. It was no small task to put together an EME station capable of achieving that score. See the photos on the Skyview Facebook page.

Skyview Radio Society is recognized by the Internal Revenue Service as a charitable non-profit organization under Section 501(c)(3) of the IRS Code. Donations to Skyview are tax deductible to the extent permitted by law.

Here is another issue. Mainly because of the submitted articles and photos.

Not saying it is the last one that I will publish. But it could be Jody - K3JZD

I am so clever that sometimes I don't understand a single word of what I am saying - Oscar Wilde

May Business Meeting Minutes

de Don - WA3HGW

Skyview Radio Society

Monthly Business Meeting – May 3, 2022

Call to Order: 7:35 PM by President Scott Gliebe, AC3GB.

Attending – 17 members: WA3HGW, K3STL, KC3PXQ, K3JAS, WQ3Q, N3WMC, AC3IE, W3UY, W3IU, NJ3R, KG4JBB, WC3O, K3FAZ, WA3KFS, AG3I, K3RAW and AC3GB. Attendance was down most likely due to the severe weather and tornado watches.

Prior Meeting Minutes: The minutes of the April 5, 2022 meeting were distributed for member review. A motion to accept the minutes as presented was made by N3WMC and seconded by K3JAS. The motion passed without objection.

Treasurer's Report: Treasurer Jody, K3JZD, was not in attendance, but forwarded his report to Scott, AC3GB. The financial report as of 30 April 2022 is attached. Scott reviewed the financial report with the members. A motion to accept the Treasurer's Report as presented was made by KC3PXQ and seconded by W3IU. The motion passed without objection.

Membership Report: Tom, AB3GY, was not in attendance, but forwarded his report to Scott, AC3GB. There are no new member applications this month. Membership now stands at 145, including silent keys KA3HPM and KB3KHR. There are still 11 inactive members who have not renewed for 2022. A motion to accept the Membership Report as presented was made by KC4JBB and seconded by WQ3Q. The motion passed without objection.

Radio Officer Report: The rotor on the 40 meter beam is bad. WC3O has a temporary replacement ready to install when weather permits. A previous plan was to purchase aluminum tubing needed to construct a new vertical 10 meter antenna for use as Breezeshooters net control and general 10 meter operations. The replacement antenna was to be constructed duplicating the Hy-Gain SPT-500 "Super Penetrator" vertical, which has long been out of stock. WC3O reported that antenna is now back in stock and was ordered from DX Engineering. It is due to arrive on May 4. As with the 40 meter antenna rotor, it will be installed when weather permits. The receive only antennas are working well and will be modified so the power to the remote pre-amps is controlled by the radio. Presently the pre-amps are powered continuously. All other radios and antennas are working well.

Kitchen Report: The kitchen fund balance is \$273. Kitchen supplies are good.

VE Report: The next VE session is May 14. This is a week

earlier because the Dayton Hamvention falls on the normal VE session weekend. We had one new Technician in the April VE session. We presently have no one signed up for the May session.

Newsletter: The April issue of the *Q5er* is out. Jody is looking for newsletter submissions by May 15 for the June issue.

Facilities: No report this month. A recommendation was made to purchase some additional folding chairs for the meeting room to replace several that have broken or worn out.

Building Committee: The Building Committee will meet in May to start formulating the revised expansion plan. This will be done in several phases, with Phase 1 to address updating the existing building to meet current building code requirements.

Calendar of Events:

May 6 & 7 – Star party at Wagman Observatory.

May 20 to 22 – Dayton Hamvention à The long-awaited return!

May 27 & 28 – CQ WPX CW contest.

June 4 & 5 – Breezeshooters Hamfest? Conflicting reports received on if it has been canceled or is still on.

June 18 – Rachel Carson Trail Challenge.

June 25 & 26 – ARRL Field Day.

July 1 to 7 – 13 Colonies special event. July 3 is Skyview operating from Superstation K3LR.

July 12 – Ice cream social at the clubhouse.

August 6 – Rescheduled DX Engineering & K3LR trip.

August 23 – Corn roast at the clubhouse.

August 29 – Skyview Swap-n-Shop.

Old Business:

K3JAS purchased the ARRL books to donate to libraries in memory of our recent Silent Keys, KA3HPM and KB3KHR.

CPR "hands Only" classes were held at the clubhouse on April 19. It was reported to have been successful.

Rich, WQ3Q, thanked all who participated in the N3P special event operation for pancreatic cancer research. The event went well, with over 700 contacts and much money raised for pancreatic cancer research.

ENCOM discussions will be held on Monday May 9 over Zoom. This is a follow on to previous ENCOM meetings.

New Business: A presentation about ham radio is scheduled for June 16 at the Allegheny Valley Library in Natrona Heights. The purpose is to introduce ham radio to members of the community, especially young people. This is a non-technical talk discussing how we became interested in radio and all the different things Hams find interesting and exciting.

The raffle tickets for the Begali key have arrived. This year the prize is a Begali Magnetic Classic.

Elmer Night: The May presentation will be “Stories from Dayton”. There’s a million of em!

Net Report: April net check-ins are 42, 39, 35, and 27 for an average of 36.

50/50 Drawing: The total collected was \$29. The winner of \$14.50 was Marty, AG3I. Marty donated the proceeds to the club treasury.

Meeting Adjourned: A motion to adjourn was made by KA3PXQ and seconded by K3JAS. The motion passed without objection. The meeting was adjourned at 8:22 PM.

Respectfully Submitted,

Don Stewart – WA3HGW
Secretary; Skyview Radio Society, Inc.



Status Report: *Regarding the multi-year effort to create a larger indoor space for Skyview meetings and social events, here’s an except on that subject taken from the April 5 2022 Business Meeting Minutes*

Building Committee: The BOD met regarding the verbal proposal for a “garage” from MW Construction. They asked for a firm written quote for the board. We received a quote on March 9 with the price of \$xx,xxx [redacted]. The BOD met in the evening of March 9 to discuss the proposal. After questions and discussions with each board member present a ballot was provided to each board member to vote on acceptance of the contract. The vote was 1 Yes and 11 No votes. After the vote there were additional discussion on a direction to proceed. The consensus was to add additional space to the existing building, smaller than the proposed garage in a way that is compliant with building codes.

Fishing at Carnegie Library

de Paul – AC3IE

On 23APR22, Paul - AC3IE represented Skyview at the grand opening of the Carnegie PA Carnegie Library Park, which is a newly developed community green space..

It was a day for various organizations to introduce themselves to the public who turned out for the event. So it was a good opportunity to showcase amateur radio and fish for prospects. Paul provided these photos and commentary:

Steel City, the local ARC, had three setups there:



Art was demonstrating Morse Code with some old and new equipment including a vintage 1920 transmitter and receiver and the Montgomery Ward catalog that advertised it.



QCWA had their banner up



Christine and two others had a table and rig on 40 meters



Bob was running on 20 meters with his GoBox. I worked him from my FT818 in my car by connecting it to a dummy load and holding it out the window. We were probably less than 500 feet apart but it still took several tries to get my call across.



A boy (or girl) and his (or her) Motorola speaker

de Bob – WC3O

I can't tell you how many Motorola speakers I've bought over the years. Many. If you have a mobile radio in your car or even your house you've likely found that the speaker in the radio is a bit anemic. There is always a speaker jack on the back of the radio. Have you used it?

If you look at your favorite ham radio equipment supplier catalogue or web site you will find that most mobile ham radios have an option of a external mobile speaker available. You'll also notice that the cost is typically \$50 or more!

Enter the Motorola speaker:

Most know that Motorola is the largest supplier or police, fire, ems and commercial communications equipment. Literally millions of Moto radio have been installed in anything you could ever imagine. MANY of those radios used external speakers.

Ask Bob Heil if there is a science to how we humans hear. Yes,

there is. It is important that equipment that we use is optimized for our hearing requirements. Motorola speakers are just that.

They have a perfect response for radio communications. Also, they don't vibrate, resonate or do anything else that takes away from their sound. You can turn them up LOUD and they sound great.

Here is the beauty of a Motorola speaker. While they were very expensive when new, they did make millions of them. Over time old systems were replaced with new systems and the radio installers are left with PILES of these great speakers. They are presented with either tossing these speakers into the trash or often trying to sell them at a hamfests and such.

Since there are so many of these on the market, the price goes way down. That's great news for us! I would never pay more than \$5 for a Motorola speaker because I will likely see another one in the next hamfest isle. I've obtained these speakers from FREE to up to \$5. Never more. \$5.00 or \$50.00. Hmmm, which one do I want.

Keep in mind the \$5.00 speaker will likely sound better than the \$50.00 speaker. That's what we call a "no-brainer".

Motorola was also an early player in the cell phone business. They made MANY of the early "mobile" cell phones



permanently installed in cars. They always included a small speaker that was often mounted up under the dashboard. These smaller speaker also rock!

Since these Motorola speakers were so good, other manufactured made cases that look exactly like the original Motorola speaker

design. They don't say Motorola on them. Don't buy them. They may look the same, but they do not work the same.

Sometimes you find these moto speakers with their mounting bracket. That's icing on the cake! If it does not come with the bracket, don't fret. Buy it anyways. Some times you find these speakers with the cord cut. Don't fret. Either tack on some wire or replace the wire completely. Four screws and the case splits in two. Replace the wire.

Sometimes I find these speakers covered in mud! Don't fret. A wet rag and some wiping, do you know what you find underneath? A Motorola speaker! If you split the case you might find that the speaker is not the correct impedance. Don't fret. Who gives a damn! Just plug it in and it will work!

Not as common, but Motorola also made amplified speakers. If you turn one of these speakers up they'll hear it in the next county! WOW they get loud. These would work well with a hand-held radio.

Moto is not the only high quality manufacturer that made good commercial external speakers. You'll also see GE, Ericson, Kenwood, RCA and others. In my opinion none of these sound as good as the Motorola version. They do however sound good.

In my truck I have a Kenwood radio that can receive two frequencies at the same time. The radio has two external speaker jacks, one for the left receiver and one for the right. On the left receiver I have a small (Cell phone type) moto speaker in the front, hidden behind the radio head unit. On the right receiver I have a full size Moto speaker tossed (not mounted) in the back of the truck. They both sound GREAT.

So there you have it. If you want MUCH better sound out of your mobile radio this is the ticket.

Next hamfest keep an keen eye out. You'll never look back.

Remember: \$5.00 - No more !!

Your Radio Officer
Bob, WC30



The cost of going to the Dayton Hamvention ??



QDX Digital Transceiver Power Supply

de Dan – NM3A

Earlier this year, Paul, AC3IE, gave a great demonstration of his QDX transceiver that he built earlier. It is a fantastic 5 watt rig that uses direct frequency synthesis to allow for FT8, FT4 or even RTTY operation on 4 ham bands: 80, 40, 30 and 20 meters. In fact, it can do any digital mode that has only transmits a single tone at a time, with the exception of PSK and CW. PSK requires phase shift keying, which may be possible, but current firmware does not ensure proper phase shift.

Technically, CW could be done, but there is no envelope shaping, so significant key clicks would occur and therefore it would be out of FCC specs. Future versions of this great little rig may have these limitations lifted.

The radio is perfect for portable digital operations. The only connections necessary are the antenna, power and USB to the computer. No audio cables, no interface and no fiddling with audio levels and drive to an SSB transmitter.

Due to the direct synthesis, set up of WSJT-X, JS8-Call or FLDigi are a breeze as you simply set the audio output levels at maximum. No need to worry about over driving the rig and causing distortion. My own setup for portable operations only adds an antenna tuner to the above.

The QDX can be built for use with either a 12 volt power supply or a 9 volt power supply. Either way, it will provide about 5 watts out. If it is wired for a 12 volt power supply, one could use it with a 13.8 volt power supply. That would provide about 6 watts out. However that would put an extra strain on the finals.

If I wired it for 9 volts, I would need a separate 9 volt shack power supply or would be limited to using a 9 volt portable operation battery. The QDX uses a common 5.1/2.1 mm coaxial barrel socket for the power input. In my world, that size socket is only used for 12 (or 13.8) volts. I was concerned that if I wired my QDX for 9 volts, one day I might make a mistake and accidentally apply 12 (or 13.8) volts into the rig.

So I devised a way to allow for more flexible power to the QDX without risking failure to the rig.

I decided to build the rig for 9 volt operation and build into the rig a 9 volt regulator so that I could use anywhere from 12-20 volts to power it.

Voltages less than 12 simply lower the input voltage to the rig, so lower voltage batteries could be used, albeit at the expense of a lower power output. The lower limit would be 9 volts input. Below that the QDX's 5 volt regulator output would begin to sag.

Here is how I did it:

I wired a 3 amp diode from the power jack to provide reverse polarity protection. This went to the input of a 1.5 amp 7809 voltage regulator.



The regulator was then bolted to the inside of the QDX case top with some heat transfer paste. This provided a heatsink for the 7809 to allow for comfortable 1 amp draw.



A 3 conductor 0.1" female socket was used to connect the 7809 to the board. This allows for easy disconnect when servicing the rig.

Input and output capacitors were integrated onto the socket. Fortunately, there is plenty of room inside the small rig for the regulator.

Infrared thermometer readings of the case stay below 105 F (40 C) even with prolonged FT8 use. This should allow for long life of the unit.

Dan - NM3A



The modified QDX

Radio Room 12VDC Distribution System Change

de Bob – WC3O

In the Skyview radio room we have a DC power distribution system utilizing Anderson PowerPoles. At each of the operating positions there is a small PowerPole distribution fixture allowing up to 7 PowerPole connection points. These fixtures have served us well for many years.



One small issue with these particular 7 point connection fixtures is that they had no provisions for a fuse. When they were installed long ago, we added an inline fuse holder on the power input to the fixture. The fuse holders accommodate a standard ATO type automotive fuse. This has been no problem over the years, but if by some chance you do blow a fuse, that fixture (And everything that is connected to it) is dead until the fuse is replaced.

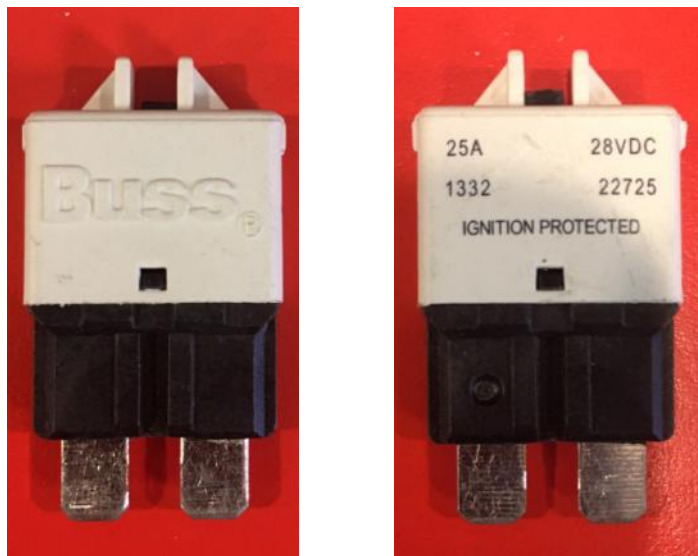
We do have spare fuses at the clubhouse, but you need to know where they are stored. If you blow a fuse during

an important operation, who wants to be thrashing around looking for the correct replacement fuse?

Last week we replaced the fuses with manual reset circuit breakers. These little circuit breakers plug directly into the standard ATO type fuse holder. I found these circuit breakers on Ebay for \$9.00 each. These are manufactured by BUSS or Bussman, a well respected brand.

While we, as hams, are always looking for ways to save a buck - fuses and circuit breakers should not be one of them. I've heard many stories about (shall we say) "imported" fuses allowing current flow well above their rating. That can be a bad thing.

Always replace fuses with name brand parts such as BUSS. Purchase spare fuses BEFORE you need them and know where they are kept. Have them in your stock of stuff. It's a good thing...



These little circuit breakers would also be a great idea for equipment in your EMCOMM go-kit, POTA or SOTA kits. You may thank me big-time someday for this tip.

So hopefully you will never need to, but if you do simply reset the circuit breaker that gets popped and operate like you stole it.

Your Radio Officer

de WC3O

QRP Rig 3dB Attenuator

de Dan – NM3A

If you've built QRP rigs, you will know that many of them do not have high VSWR/reflected power protection. Some are so low power that they do not need protection, but many are not. The popular QCX and QDX transceivers from QRP Labs do *not* have protection. The problem with this is that SWR higher than about 2:1 or 3:1 can provide voltages or currents that exceed the final transistor ratings. So, accidental transmission into an open or shorted circuit can ruin the finals. Even antennas that are not tuned closely to 50 ohms can be a problem.

Another issue is radios that lower power to the finals with high SWR or reflected power. This can make out-board tuners very difficult to tune, or even impossible in the case of some automatic tuners.

Phil Salas, AD5X, had this problem trying to use an auto tuned loop antenna with a Xiegu G90. The power out would go up and down with the external tuner operation. This confused the tuner and made it very difficult to work. Other radios of any power may also power 'hunt' with high SWR or reflected power. In Phil's article in June 2021 **QST**, he showed a simple 3 dB attenuator that can both protect the finals and prevent power 'hunting' when tuning an antenna.

In my case, I wanted to use the Elecraft T1 QRP (20W) auto tuner with my QRP rigs. This is an excellent tuner that generally tunes within a second or two. However, auto tuners constantly switch inductors and capacitors in and out of the circuit. Even with the best algorithms, there may be open circuit conditions for fractions of a second. Also, while trying for the best match, the tuners often cycle through very bad matches with very high SWRs. This can damage the finals of an unprotected rig.

Damage can happen in either of two ways. If the circuit has very low impedance, such as a short circuit, there may be a very high current flowing in the circuit. Transistors can only tolerate this for a short time until too much heat builds up at the junction and it fails. If this is a very short event this is usually tolerable.

The second way is with very high impedance, such as an open circuit or an end fed half wave antenna. In this case the issue is high voltage. This is even more dangerous as

any voltage over the maximum rated voltage for the device may cause it to fail instantly! My BS170 finals in my QCX and QDXs are only rated to 60 volts. This is not a problem at 50 ohms where the RMS voltage is less than 20, but at 5000 ohms (easily conceivable during tuning) this voltage may be up to 160 volts RMS at the 5 watt rated output. Peak voltages may be as high as 225 volts!

At a 3:1 SWR, the voltages may be as high as 28 volts with peaks to 40 volts. This is well within the rating of the BS170 MOSFETs.

These problems were not a big issue with tube type radios as they were able to tolerate this abuse with little problem. However, semiconductors are less forgiving and modern radios are almost all solid state. So, most commercially available radios cut power to the finals during tuning to minimize this problem. One hundred watt radios often cut back to 20 watts or less during tuning to minimize stress on the finals. In addition, there are circuits that fold back drive to the finals when high reflected power is noted, thereby protecting the radio.

This 3 dB transmit attenuator is a good solution for me to have the ease of using the Elecraft T1 without having to be concerned about over stressing my finals. The circuit is a simple one with a T network resistive bridge.

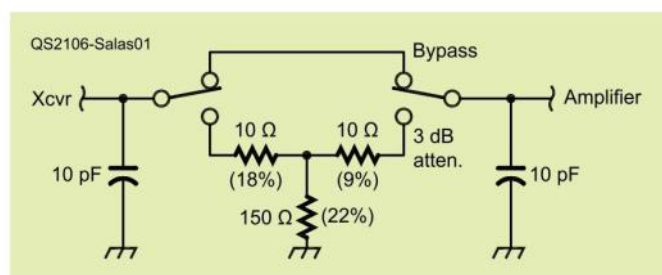


Figure 1 — The in-line 3 dB attenuator schematic. The numbers in parentheses are the percentages of transmit power dissipated in the resistors.

This can be easily switched in and out of circuit to allow for tuning and then straight through to the tuner and antenna. High power non-inductive resistors are used and a simple slide switch to insert or bypass the attenuator. I used 30 watt resistors mounted in a simple PCB case and point to point (ugly) wiring. A couple of small capacitors help offset the inductive effects of the wiring.

I did not have a small case to put the circuit in, so I built one by soldering together 1 ½" by 2" pieces of double sided PCB with 1 ½" square end pieces. BNC bulkhead female connectors were mounted on either end and the switch mounted on a face. The resistors were mounted on an adjacent face inside the box. This provided a bit of a heat sink to keep the resistors cool. Flattened copper wires were drilled and soldered to the box to allow for screws to attach the cover. Figures 2 and 3 show the inside and final products. It may not be pretty, but it's very functional.

and an adequate heatsink, it should tolerate at least 120 watts. I used 200 volt capacitors, but higher power units should have higher voltage capacitors.

Phil's analysis showed about 3 1/4 dB loss from 160 to 6 meters and SWR maximum of 3:1 across the same spectrum. The SWR in bypass was less than 1.09:1 across the same range. My testing showed similar results for the 80, 40, 30 and 20 meter ham bands, which is my intended use.

Dan - NM3A



Figure 2

The resistors themselves can dissipate about 10% of their rated power (3 watts with a 30 watt resistor) without a heatsink. I estimate that the small heatsink of the PCB should increase their power tolerance somewhat—maybe to 20%. Figure 1 also shows the percentage of power dissipated by each resistor. As the largest amount dissipated is less than 25% of the applied power, this should allow this configuration to work with about 25 watts maximum. During short bursts of use, it may even tolerate higher loads.

If you wanted to use this for a higher power radio, a cast aluminum box with an external heatsink should allow for full rated power to the resistors. With 30 watt resistors

Figure 3



N1MM+ Contest Logging Software—Part II

de Cooky – WC3O

In this, our second article about N1MM logging software we will talk about the first and most important window, the log entry window.

But first some comments about N1MM documentation. N1MM's documentation isn't good, it is OUTSTANDING. Far better than any other logging program that I have found. Always look first at the docs on the N1MM web site for the most complete information about any aspect of the software. Secondly, there are videos on the [N1MM Web Site](#) that do a fantastic job of describing setup and features. I highly recommend that you watch these.

Next - You can read my words all day long. You can go to the N1MM web site and read. But the ONLY way that YOU will learn how to use this is to personally download, install and play with the program. It's FREE. You have nothing to lose. Use it at home during some small contests such as state QSO parties. You will never learn how to do this unless YOU use it.

It is far better to learn during a time that is not so important as a major contest. Use it. Seriously. I'm kind of kicking myself for saying that I'd write about this software. There is SO MUCH to it! None of it is hard, you just need to play with it to learn it. I'm taking the time to write about all of this, if any of this interests you please do me a favor and give it a try.

The log entry window:

This is where you do all feature setup, not to mention where all logging operations occur. There's A LOT to go over.

BUT FIRST:

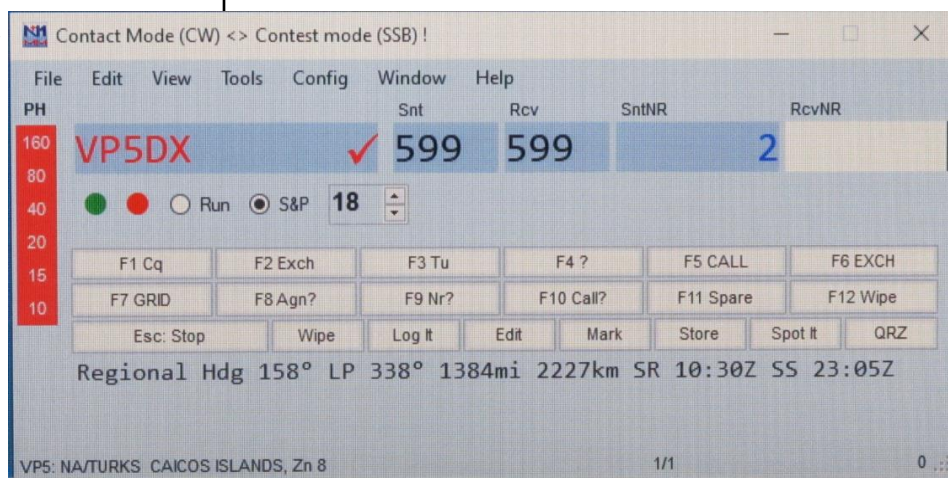
When first setting up this software, N1MM needs to know who YOU are, WHERE you are located, as well as some other personal station information. When you first set up N1MM, the install program will guide you through this. Sooner or later though you may need to

make changes in your personal data. Here is where it is located:

Go to the [Config] menu. Then Select [Change Your Station Data] (Second from the top).

You will likely rarely need to change this, but at the club we operate as K3MJW, W3GH, K2M and more. It is on this page that I need to change the station callsign. If you should ever use your computer for a club Field Day, this is where you would go to make the change from your callsign to the club callsign.

So - Looking at the log entry window itself:

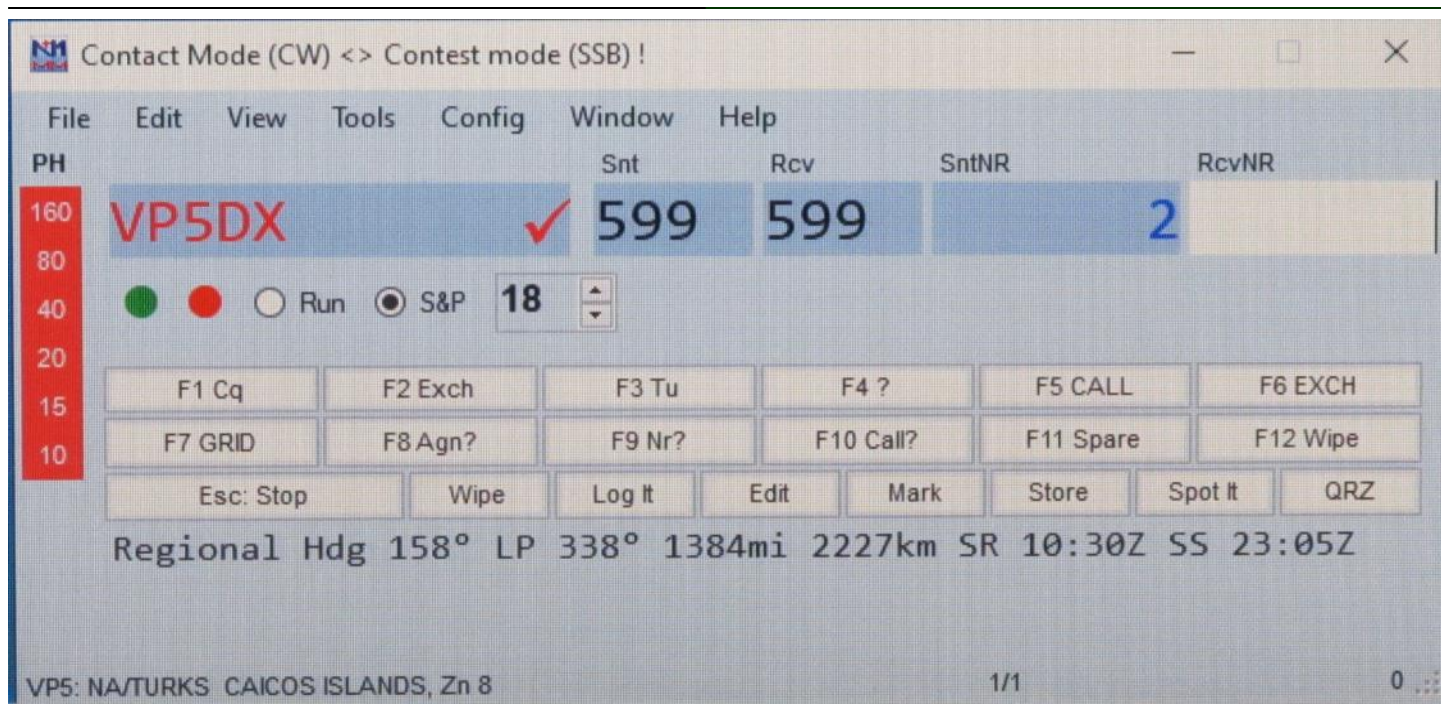


There are input fields. First on the left is where you enter the callsign of the station you are about to work.

The next two fields are the signal report. In case you don't know, in contesting EVERYONE is either 59 or 599! Unless you want to be beaten with a stick, everyone is 59 (for phone contests) or 599 for CW and most other modes such as RTTY. Don't ask questions. You are 59 or 599 and that's it. Got it?

The next entry fields are the exchange. These entries will vary depending on what the specific exchange is for the given contest. It might be a serial number, name, shoe size, whatever. When you set up the software for a given contest, the logging software will know what the correct exchange will be. (We'll go over setting up a contest later)

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The best way to go from one entry field to another is NOT the TAB button, but the SPACE bar. Using the spacebar, you go from the callsign field directly to the exchange field/s. It skips over the 59 or 599 signal reports because, well, everyone is 59 or 599! If you use the TAB button you need to press it three times, or hit the spacebar once. Also, if you are using auto-fill (We'll go over that later) the information will only populate when you use the spacebar. Use the spacebar damnit!

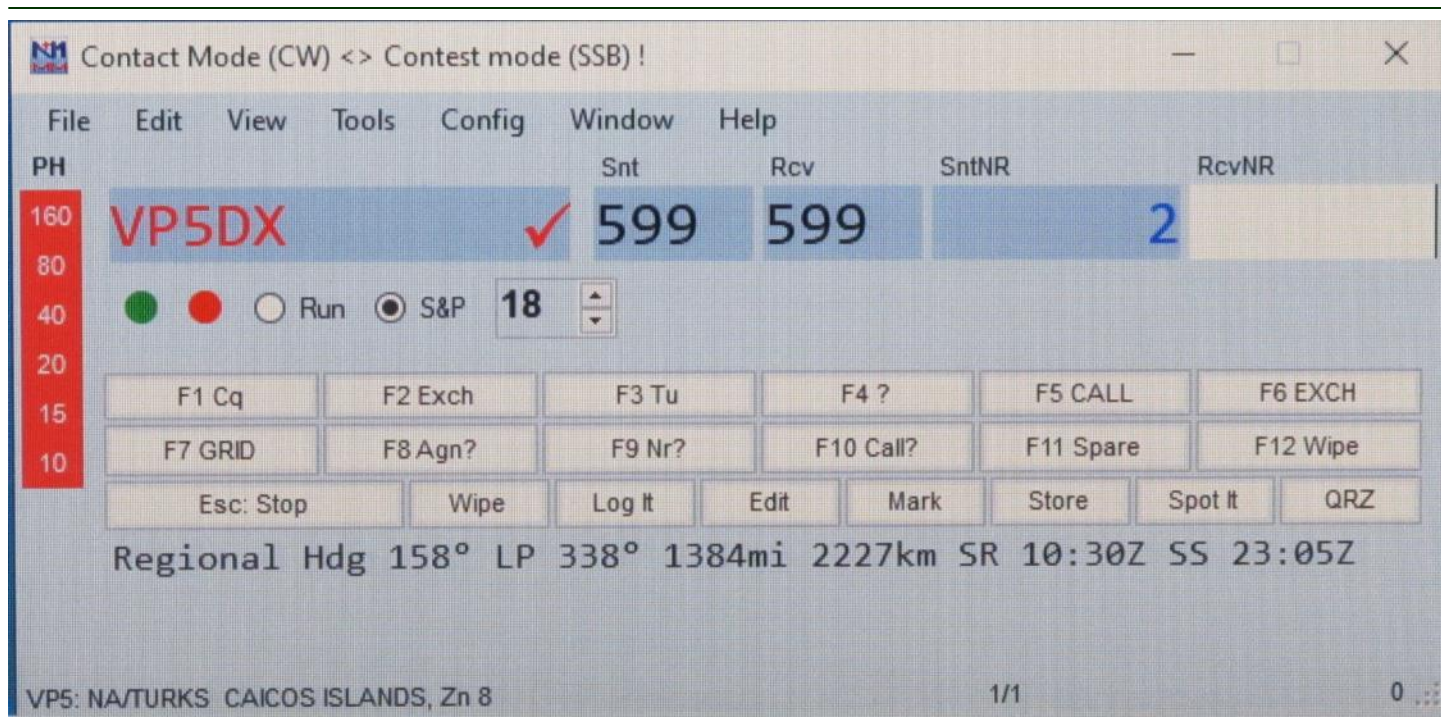
Under the entry fields you will see two clickable points marked Run and S&P. In contesting terms if you are calling CQ on a frequency you are said to be "running" the frequency. If you are tuning around and working stations as you find them, you are said to be "searching and pouncing", or S&P. There are contesting terms that you'll see many times.

The reason those clickable points are there is because some folks use separate "macros" for run or S&P. Clicking on these points will switch between your Run and S&P macros. Me, I don't do separate macros for run and S&P. I find that the 12 F-keys are all I need. Others like separate macros. To each his own.

Also, to help understand what all is going on with the software as you use it let's look at what the software knows:

- The software knows what frequency you are on (It's connected to your radio)
- The software knows what mode your radio is in
- The software knows if you are tuning around or staying on one frequency
- The software knows that the F1 key is the CQ key (You are running)
- The software knows who you have worked and on what band you've worked them
- The software knows who you have NOT worked
- The software knows what state, sections or countries that you've worked and what you have not worked
- The software knows the callsigns of known contesters (Super Check Partial - More on that later)
- The software knows what callsigns have been reported on the DX cluster, if they might be mults (multipliers) for you and on what bands
- The software knows how many contacts you've made in the last given period of time (Your rate - More on that later)
- The software knows what multipliers are possibly available to you on your current band and other bands that you are NOT currently on via the DX cluster

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- If you are a networked multi operator station (as we operate at the club) the software knows all of these things for all of the other stations on the network!

There are likely other aspects that I am not remembering while I'm typing.

So why did I write all of that? It goes back to those Run and S&P buttons. If you hit [F1] the software knows you are calling CQ and thus, it automatically switches to your 'Run' macros. If you tune around the software sees your frequency changing and automatically switches to your [S&P] macros!

To the left of the Run button there are red and green dots. The red dot lets you know if the software thinks that it is transmitting. If the software thinks it is transmitting, but your radio is not transmitting, then you must have something incorrect in your settings. Not sure about the green dot.

If you are in CW mode to the right of the S&P button there is an indicator showing your CW sending speed.

Vertically along the left pane of the window is a list of the frequency bands known as the band panel. 10, 15, 20, 40... You can click on the bands to change your radio to that band. (There's an option to enable/disable that) It also shows the multiplier status of that contact

on your current band, AND mult status on the other contest bands. If you are operating in a multi mode contest (CW SSB digital) there will be three displays of the bands, one for each mode.

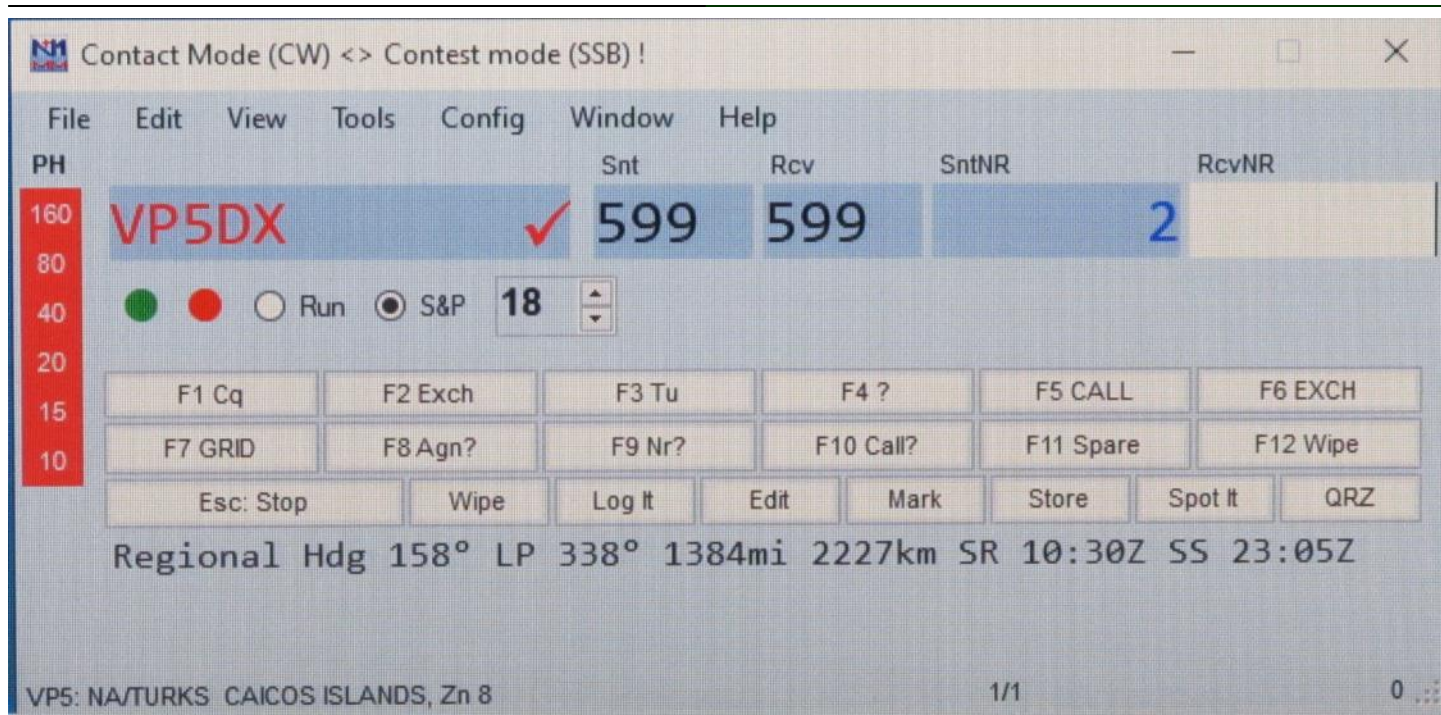
Below are your 12 [Fx] macro buttons. These are very powerful. Macros can be plain text messages to be sent or CAT (Computer Aided Tuning) commands to send to your radio. In CW a [F1] macro line can generate the CW for "CQ TEST W3GH". If you are operating a phone contest you can trigger voice memories via CAT commands.

On my Yaesu I can trigger the contents of my #1 voice memory by using the command {CAT1ASCPB0!} in my [F1] macro. Now when I hit [F1] my radio calls "CQ contest", or whatever I have recorded into that voice memory in my radio. If I hit [ESC] it stops.

In a N1MM macro, anything within the { } brackets is considered a command. So if I write {MYCALL} the program knows to transmit whatever my callsign is (I uses the callsign that is setup in the Station Data page—That's why I wrote a paragraph about managing the station data page first)

Again, there are some very powerful things that you can do with these macros. N1MM documents these very well. There are many commands that I have no idea

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what they do or why I would need them! Everything including CAT commands for any given radio are very well documented. There is MUCH more to talk about with macros. We'll stop right here for now. You can edit your macros by right-clicking while your cursor is over top of the macro buttons.

Almost all aspects of this contest logging software is designed around the operator never having to move their hands from the keyboard. In addition to the keyboard [Fx] buttons, there are also keyboard shortcuts such as ALT-W which will "Wipe" (or clear) the contents of the logging window.

But N1MM also allows you to use the mouse to click on any of these buttons. Below the 12 [Fx] macro buttons is a row of mouse clickable buttons which can be used to do some common things :

Moving from the left to right, we have [ESC-Stop]. This stops a transmission. Same as pressing the [Esc] button.

Then [Wipe]. This clears the contents of the logging window. Same as pressing ALT-W. Also in N1MM the [F12] macro is generally used to Wipe.

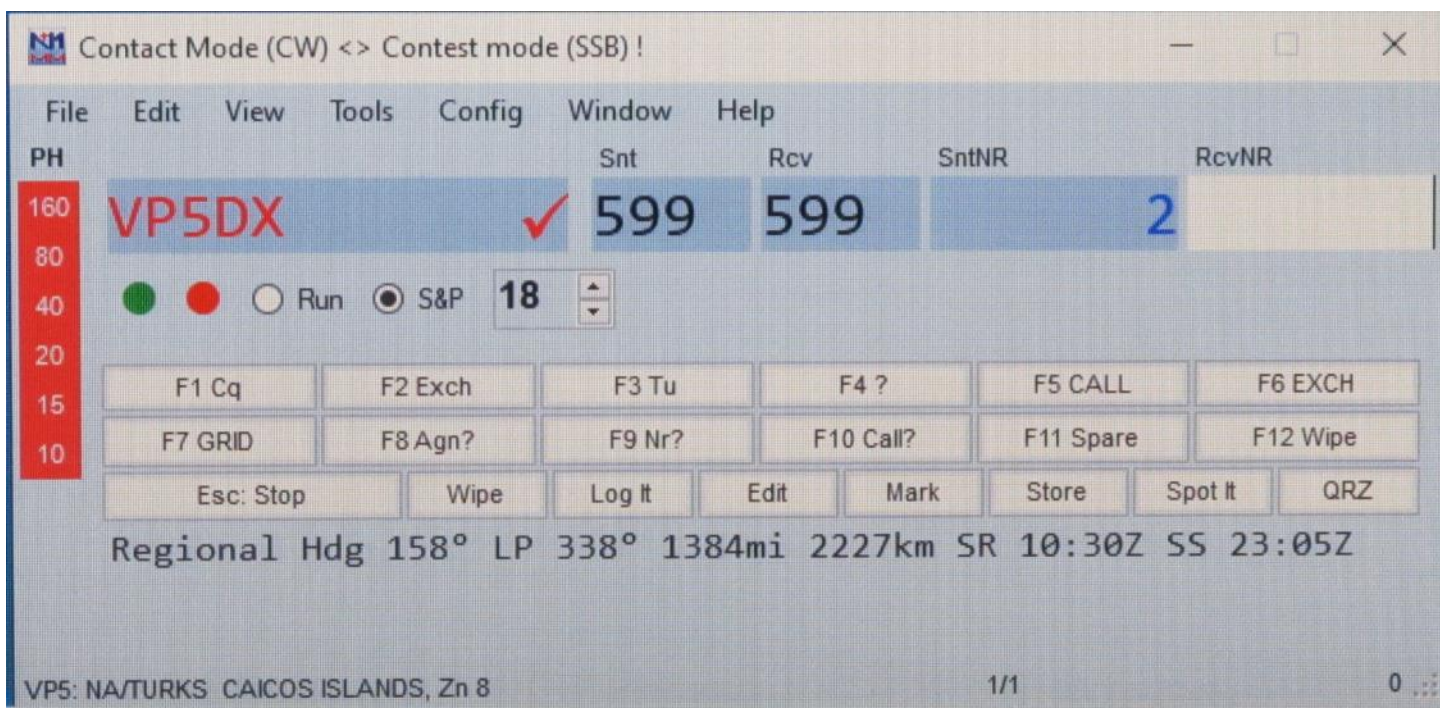
Then [Log it]. This is the same as hitting the [ENTER] key. It logs the info in the logging window into the log.

Next is [Edit]. If you want to edit your last contact you can click here.

Next is [Mark] If you hear a station that you want to work but can't get through, you can "Mark" their callsign on the band map (We will cover the band map window later) Then you can click on that callsign on the band map later and maybe work them then. ALSO, if you are working S&P and you come across a Dupe (A station that you've already worked) you can "Mark" them on the bandmap so whenever you tune across them again later on you will know who it is rather than waiting for them to ID. This saves a lot of time.

Next is [Store]. Store is like Mark. I'm not sure what the difference is. But you get the idea, it puts the currently entered callsign on the band map so you can go back later and work them.

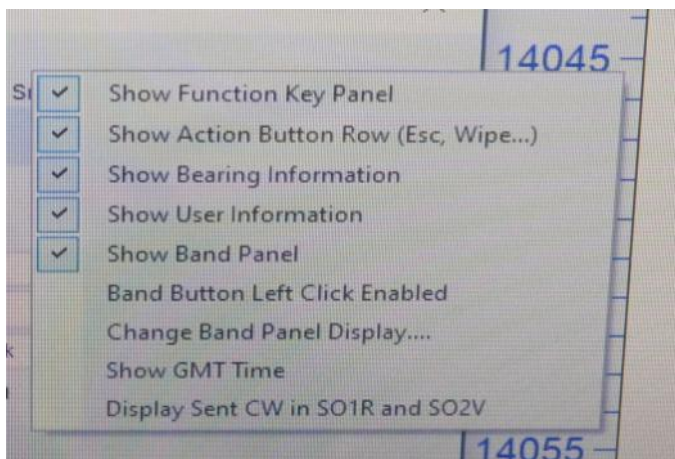
Next is [Spot it]. If you want others to know where a station is, when clicking [Spot it], N1MM will put the currently entered station's callsign out to the DX Cluster so others will know that the station is there. It might be a rare DX station or your old buddy Pete. Either way it will put their callsign out on the DX cluster for others to see. (BTW we often spot ourselves during a special event operation such as K2M, but it is against the rules to spot yourself in a contest)



Next is [QRZ]. Clicking on [QRZ] will open QRZ.com and look up the callsign currently in the logging window!

Below those buttons you will find important information such as beam heading for the station in the logging window. Long path beam heading. How many miles and kilometers to the station you are working. Sunrise and sunset times for the station you are working. Finally you will see the continent, country and zone this station is in. LOTS of important info!

If you right-click on the logging window you will find options that you can show or hide such as GMT time.



FURTHERMORE!

If you spin your mouse wheel while your cursor is over the logging window you tune your radio up or down in frequency! So let's say you double-clicked on a station that was spotted on the cluster. The radio is tuned to that frequency and that callsign is automatically entered into the logging window. Let's say they are slightly off frequency. Rather than reaching for the VFO knob on your radio to better tune them in, simply scroll the mouse and tune them in!

GEEEEZ

I told you there was a lot to go over. This will likely be the longest of the articles. Next we will go over the menus across the top of the log entry window.

Until then - If you have any interest in this at all PLEASE install N1MM and have at it. After you get the hang of it, you will love it. I guarantee it. If you have questions feel free to email me. Now I'm going to go rest my fingers.

de WC30

Mobile High Frequency Rig Installation

de Dan – NM3A

I have wanted to have an HF mobile rig in my van for quite a while. So I finally figured out how to mount an HF antenna and rig. Here's some documentation of what I did in my third generation 2010 Honda Odyssey.

Antenna and Mount

For VHF and UHF, roof mounting is ideal and very reasonable. I found a convenient, accessible location to drill a hole for an NMO mount. It's above a headliner light, so it is easily accessible. Normally, I use a short (~18"), very flexible, unity gain dual band antenna here. It can handle low obstructions without damage. For trips, I change this out for a taller dual band antenna that has some gain.



Ideal antenna placement is in the center of the roof so there is maximum ground plane in all directions. This also gives maximum height and avoids interaction of the body with the antenna with subsequent tuning issues

and pattern obstruction. Unfortunately, for HF, this means an inordinately tall antenna structure with maximum wind load at highway speeds. A tall whip it may even contact bridge structures! It certainly prevents housing the vehicle in any normal sized garage.

In addition, any mobile ground plane is too small to be complete except at VHF and above. Even 10 meters is unlikely to have a full ground plane, although it may come close. So at HF a lot of mobile ground plane consists of capacitive coupling to real earth ground under the vehicle. This will vary with terrain from very poor coupling in rocky areas to good in a salt marsh.

I accepted that any HF antenna will be a compromise for a lot of issues and I came up with a list of factors to be covered for my installation.

- Antenna must fit in my normal sized garage or must be easily removable
- Must be well grounded to vehicle body
- Must be very sturdy to minimize damage
- Must be attached to vehicle to minimize body damage during any antenna damage

Clearly, you can see some major compromises. So, for me:

- Antenna effectiveness is not maximized
- Roof or magnetic mounting is out
- Trunk lip mount or other sheet metal mount is out
- Detuning effect from vehicle body will likely be significant

I decided on a modified hitch receiver mount. I frequently tow a camping trailer and I wanted to not have this compete with the antenna, so a secondary 2" hitch tube was purchased and welded to the left side of the hitch receiver so it protruded about six inches beyond the left corner of the bumper. An MFJ 2822 antenna hitch mount holds the antenna. Originally designed to simply use a hitch pin; I modified it to have a permanently attached 5/8" nut on the inside. A 5/8" x 2" bolt with a lock washer is used to attach the 2822. This keeps

the mount from rattling and may provide some electrical connection, although I do not depend on this for RF grounding.



A recent minor incident broke the 3/8"-24 'gumdrop' antenna mount, but this was easily replaceable and no other significant damage occurred. Improved grounding and waterproofing was installed during the repair.

Antenna Coverage and Matching

Ideally, a wide range antenna tuner with a single external antenna would be ideal. Another option is a remotely tuneable external antenna, but these are large, heavy and expensive. My option choice was multiple single band antennas ('hamsticks') that can be easily swapped to cover amateur frequencies. The lower frequency bands are all very much compromise antennas with low efficiencies. I decided that 160 meter mobile was out of the question and that 80 meter probably would not be a major player either. WARC bands may be useful, but 40, 20, 15, and 10 meters are the real money bands.

After deciding on the Yaesu FT-857D, I purchased an FC-40 wide range antenna tuner which is specifically matched to the 857 and to a 102" whip. This combination is touted by Yaesu to cover 7 to 30 MHz. Unfortunately, the reality was not up to the hype. The tuner failed to find matches on most frequencies and proved very poor at good reception for any frequency. In addition, engine ignition noise was very objectionable with the tuner installed. The combination may work for a large vehicle where the tuner can be mounted externally close to the antenna base.

So, I purchased a set of used hamsticks covering all bands 80 through 10 meters. After tuning each one, these work reasonably well. For 10 meters, I use the 102" whip as it performs better than the 10 meter hamstick. The whip can be velcro-ed to the roof rack so the van can be driven into the garage with no difficulty. For most mobile use, the whip or the hamsticks can be tethered to the roof rack to keep them reasonably vertical while at highway speeds.

This has proven to be a good antenna system. The main drawback is the need to physically change antennas to change bands. The 40 and 80 meter bands also cannot be covered completely with a single tune setting. So, I have a separate 40 meter hamsticks for the SSB and CW (useful for parked operation) portions and only depend on covering the upper part of 75 meters with the ham-

stick. The hamsticks can be easily removed to enter garage, and normally I keep the 102" whip attached as it is easily bent down and velcro-ed to roof rack to enter the garage.

Grounding

An effective RF antenna ground is imperative. So I did not count on the bolt to hitch receiver as an adequate ground to the van body. Also, the hitch receiver is merely bolted in place and no special attention was paid to grounding when it was installed 10 years ago. It is a good DC ground for low currents at least; for RF it would be questionable.

This van is a unibody construction, so all fixed body panels and frame members are welded together. This means that grounding between body panels is excellent. Doors and hatch door are grounded to the body with cables integral to the vehicle wiring. There is also grounding with the metal latches holding each door closed as well as through the hinges. This is an adequate DC ground for low currents and appears to be reasonable for RF in my case.

I attached a good ground to a rear frame member and ran a heavy gauge wire to the MFJ 2822 mount. While a wide, flat strap would be ideal, I used #12 gauge stranded wire for the ground wire. This attaches directly to the antenna mount rather than to the hitch receiver.

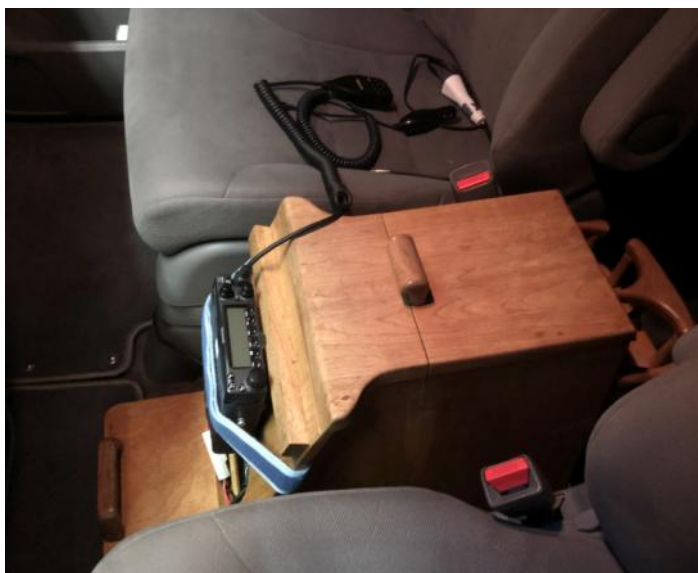
Ideally, any other metal parts should be strapped to the body at frequent intervals. The only part on my van in this category is the exhaust system. The engine and transmission are well grounded and all other panels and the fuel tank are plastic, so do not need any special attention. So far I have not modified the exhaust system as the current mobile radio system with its DSP seems to work okay without those mods.

Mounting in the van

I designed my van console about 30 years ago. A cabinet maker friend constructed it and it is now serving its fourth vehicle. Remote mounted control heads for HF radios were rare, so it was designed to securely hold a small radio at the proper angle. A Kenwood TS-120S was the first radio. In this vehicle, a Kenwood TM-732a was placed on the front of the console with the control head attached to the radio.



Later, an FT-857D was used in a similar fashion. A wooden bar on the front of the console held the tilt bail or rubber feet and a heavy duty hook and loop strap kept the radio secure on the console. Many different radios can fit onto the console in this way.



In addition, an easily accessible storage console and cup holders are integrated. Underneath, a large compartment holds accessories such as an antenna tuner, power distribution block, secondary battery, tools or miscella-

neous items. Power, antenna coax, and control cables are easily routed through the console and hidden neatly. A fiberglass pole and bungee cords secure it to the vehicle to keep it secured in the event of hard braking or even an accident.



My current IC-7100 is designed as a separate radio with a permanently remote mounted control head. Icom sells a couple of mounts for the head, but I made a custom mount out of bent mending braces from the local hardware store. The head has a 1/4" x 20 threaded (camera type) mount on the bottom. This bolts the head to the bracket. A hook and loop strap and the wooden bar secure and stabilize the head to the console.





The IC-7100's main radio was mounted on a custom wooden platform under the front passenger seat.^{vii} It was secured to the platform with hook and loop strap. This elevates the radio off the carpet to allow for good air circulation for cooling. The platform itself is secured to the seat frame with cable ties.



Cable Routing

Power for a 100 watt radio requires heavy wires. Vehicles generally do not have this available in the cabin. So direct wiring from the battery is usually necessary. I ran 12 gauge (#10 or #8 would be even better) wire, with 30 amp fuses in both positive and negative leads near the battery connection. A convenient place through the fire-wall was a large grommet that carried the mechanical cable from the shift lever to the transmission. The power cables were fished under the carpet to the console area. A 5 outlet PowerPole distribution block in the console storage area, fused at appropriate amperages, powers the radio and accessories.

Antenna cables are routed behind the headliner (V/UHF), behind plastic side panels and under carpet to the console area. The HF antenna coax leaves the van body through a preexisting rubber grommet in a rear storage area. Cables from the radio body simply go through the console to the control head. All the cables are both protected and hidden from view.

Radio

There are a myriad of mobile options for VHF and UHF FM radios. At HF, options are limited. While you could mount a full size radio such as the IC-730, IC-7300, TS-480, or the Elecraft K3, they are bulky and you would have a hard time fitting them in many vehicles. In addition, most of them do not have remote mount control heads, so the entire radio needs to be placed where it can be reached. Besides, many shack HF radios do not have 2 meter or 70 centimeter capabilities, which most of us want in our vehicles.

I considered a few different radios. Yaesu makes the FT-817 and 818 which are QRP rigs meant for portable use. They would fit easily and have VHF and UHF capabilities, but are only 5 watts. For a mobile rig, that is marginal, so I wanted a full 100 watt rig. Icom makes the IC-7000 and IC-7100 for mobile use. But the consensus from many I spoke with was the Yaesu FT-857D, FT-891D or the FT-991D would be the best rigs. All have remote mountable control heads. The 857 and 991 also cover VHF and UHF. A used 857D for a good price won the toss and was installed in my van. Because of my unique console, remote

head mounting was not necessary.

The 857D worked okay for me, but it's menu systems (there are three) are very cumbersome and there are few buttons on the face to help with the menus. Memorizing the menus works for some and the remote control mic can help, but I needed a cheat sheet regularly. The display is small, and barely adequate. The 857's DSP did a good job of minimizing ignition and other noise. But the coup de gras for me was a glitch in the operating system that limited audio output severely, making mobile operations impossible. The audio problem eventually was solved by resetting the processor, but by that time I was looking for a new radio.

Icom's IC-7100 has VHF and UHF capabilities and a remote control head of reasonable size. It does not have an integral antenna tuner; but with the hamstick antennas, this was not a big issue. It has numerous buttons that minimize the need to go through a menu for every function and the menus are straight forward. I eventually traded the 857D and FC-40 antenna tuner for the IC-7100. My concerns about display readability and how to mount it were unfounded. The touch screen, physical and soft menu buttons make operating the unit a breeze. The DSP functions are even better than the 857D and like the 857D, the VHF and UHF sections have SSB and CW mode capabilities, not just FM.

I am still considering adding a wide range antenna tuner such as the LDG Z-100A, which is made to work seamlessly with many Icoms, including the IC-7100. For now, the rig with the whip or hamsticks is just fine. And after my poor experience with the Yaesu FC-40, I need to do a lot of testing before adding another antenna tuner.

Other issues

The IC-7100 is sensitive to low voltages. On starting my vehicle, it routinely rebooted itself. While I have a good, new vehicle battery and cables with secure, low DC resistance connections, the voltage routinely drops to 10.5 Volts with cranking. This is low enough to cause the IC-7100 to reboot. Interestingly, my Kenwood TM-732A and the Yaesu FT-857D did not mind this voltage drop, even though it is well outside of the 13.8 V +/- 15% margin usually given for transceiver power requirements. Solution for this was to add a West Mountain Radio

PWRGate and a 7 Ah gel cell PbA battery in the consol. This instantly changes to the gel cell when the vehicle voltage drops below the gel cell voltage. It also keeps the gel cell charged with an internal charging circuit, so an added benefit is an easily available, always charged battery for portable operations.

The rig is easily used from the driver's seat when moving or stationary. Repeater use is fine, but tuning around the HF bands is a little much while driving. Operation from passenger seat is fine, though. Portable or stationary mobile operations with this setup works well with an added steering wheel mounted 'desk'



I find I can have room for my CW paddles, notes, and a log book on the desk. POTA operations have worked well from here. It is especially nice when it is too cold, too windy or raining outside! However, when the weather is nice, a full size antenna in a tree beats the hamsticks.

Everyone has different priorities and vehicle preferences, but the basics of HF mobile operations are available for anyone. I hope this encourages some of you to join the HF mobile force. Check out how other hams have implemented HF in their vehicles. There are a number of BreezeShooters that check-in mobile regularly. Ask them or your friendly Skyview ham and you'll get many more ideas.

73, Dan, NM3A

Welcome New Members !!

Welcome the following Skyview Radio Society Members who have joined us since publishing the April 2022 newsletter:

KC3RPE - Jessica Ashbaucher - Bradford Woods

Remember that something is going on up at 'the joint' every Tuesday. Sign up for the K3MJW Groups.io Reflector to get the latest news and event announcements by email.

If you are a reader who is interested in becoming a Skyview member, then go to:

<http://www.skyviewradio.net/> for information.

If you are a reader who is not yet a ham, and you are interested in becoming a ham, , then go to:

<http://www.skyviewradio.net/> for information.

This Box is Empty

Skyview Radio Society Roster as of 31 MAY 22

NM3A	K3HSE	G4 NFS	K3 STL
N3AFS	KB3HXP	KB3NSH	KC3 STS
KB3APD	AC3HZ	AJ3 O	KC3 STV
NA0B	AG3I	WC3 O	KB3 SVJ
WI8B	AC3IE	KC3OCA	KC3 TEX
N3BAH	KC3IIO	KC3OCB	WV8 TG
W3BUW	W3IU	KC3OCC	N3 TIN
KF3C	K3JAS	K3 OGN	W3 TLN
KC3CBQ	KG4JBB	N3 OIF	N3 TTE
K2CI	N3JLR	KB3OMB	AG3 U
K3CLT	KA3JOU	KB3ORO	NS3 U
K3DCG	ND9JR	NK3P	N3 UIW
KC2EGL	K3JZD	K3 PC	W3 UY
KC3EJC	KC3KEI	KC3PEM	KX3 V
AB3ER	WA3KFS	KC3PIM	K3 VRU
N3ERW	KB3KHR [SK]	K2 PMD	N3 VXT
K3ES	AC0KK	KE3PO	W3 VYK
KB3EYY	K3KR	KC3PSQ	N3 WAV
AC3EZ	W4KV	KC3PXQ	K3 WM
WB3FAE	KC3KXZ	NU3Q	N3 WMC
K3FAZ	WE3L	WQ3 Q	K3 WWP
KC3FEI	WA3LCY	KC3QAA	N3 XF
K3FH	KC3LHW	KC3QIR	KB3 YJQ
K3FKI	W3LID	KC3QWF	W3 YNI
KC3FWD	WB3LJQ	NJ3R	W3 YNX
AC3GB	KB3LND	K3 RAW	K3 ZAU
N2GBR	K3LR	K3 RMB	W3 ZVX
AC3GE	KC3LRT	KC3RPE	
KC3GPM	AB3LS	KC3RPP	
K3GT	KC3LZH	W3 RRK	
AB3GY	N2MA	I2 RTF	
KC3GZW	KC3MBM	KD3RVR	
NC3H	N3MHZ	KQ3S	
NY9H	KC3MIQ	K3 SBE	
WB3HFP	K3MJ	KC3SDJ	
WA3HGW	K3MRN	KC3SKX	
KB3HPC	N3MRU	KC3SNZ	
KA3HPM [SK]	KS3N	KB3SOU	

Notes: Only Call Signs are being published. Refer to QRZ.COM for more information. (Unable to publish those without Call Signs.)



Kul - Links

Jody - K3JZD

There is lots of stuff out on the Internet... Some of it can brighten your day. Some of it can educate you.

I can't really copy and past it all in here. But, I can point you at some of it

None this Month

I'll consider any Kul - Links that you find.
Email then to me at: K3JZD AT ARRL DOT NET
They might just end up in the next issue

Previous Issues

Previous Issues of the Q5er are available at
<http://www.nelis.net>

Next Newsletter will be **August 1, 2022**
Closing Date For Submissions : **July 15, 2022**
K3JZD AT ARRL DOT NET

Become Well Known Publish in the Q5er

The Q5er goes to other clubs and is available to all on our web site.

Submissions to : **K3JZD AT ARRL DOT NET**

>>>>> **WARNING** <<<<<<

An Alarm System has been installed up at the joint. Do Not go in there on your own until you learn how to disarm and rearm it.

**** Skyview VE Testing ****

For Testing Dates, See :

<http://www.arrl.org/find-an-amateur-radio-license-exam-session>

Time: Usually 8:15 AM

Location: Skyview Clubhouse Meeting Room
2335 Turkey Ridge Rd
New Kensington PA 15068-1936

Contact: William C. Dillen
(724) 882-9612

Email: bdillen@comcast.net

Please E-Mail or call to register!!!

While walk-ins are accepted, the exam session may be cancelled if no candidates are scheduled.



Q5er Editor & Publisher: Jody Nelis - K3JZD

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I just got my ham radio license, now what do I do?

That's Easy

Come up to the Skyview Clubhouse on any Tuesday and ask !!!

And See : <https://tinyurl.com/y79tqsr8>

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Is this how your dining room looks ??

Send in pictures of your Ham Shack