Flying Pigs QRP Club Internationale's

Flying Circus

January 2010 edition

And now for something completely different… (with apologies to Monty Python)

Ten years gone…

A lot has changed in the last ten years, from tragedy to technical triumphs. Some profound and some ridiculous. When I first got my ticket and had to learn new skills like soldering on coax connectors, it meant either getting help from a local ham or deciphering the black and white pictures in the ARRL Handbook. Now you can go watch a youtube video and actually see someone do it. We have software defined radios and software that will read CW for you and you can send it back with a keyboard. Elecraft came out with a no solder kit radio and Heathkit never rose from the ashes. You can buy China made HT's for $50.00 off of E Bay. You can buy a FT-817 or a Icom 703 from any major ham store and play QRP right out of the box. The DVD has killed off VHS and you can get wine in a box. You can't buy a straight key from Radio Shack anymore (my first one came from there). FDIM is now at Holiday Inn and they are not that antenna friendly, and very important, the Pigs have not been banned from FDIM yet. My record collection is on mp3 now and fits in my pocket, and my kids say I definitely do not look cool when I bang my head to my old Van Halen records. I have a lot more forehead than I used to and all of the shirt manufacturers have conspired to make shirts shorter each year so more of my belly sticks out. When I throw a party these days the neighbors don't bother calling the cops… they know I will be asleep and all will be well again before time for the ten o'clock news. I also found that my politics, religion and thinking keep sliding to the right. One thing is for sure, after seeing some of you at FDIM this last year… I am not the only one who is aging… and not the only one who still hasn't grown up. I hope you enjoy this issue, I will try to get this sucker on a more regular schedule. In the meantime, I will include a few photos showing a few of my recent ham activities… I resolved to go out and do more things outdoors, lots of pictures from park ops…

Building antlers with friends…

Zombie Shuffle party in the park, why not a sprint?
Cuz Zombies don't shuffle!

Playing radio in the park

Local HAM club Christmas Party (that's the Mrs w/ me)

Public Service Work

Park Ops...

Representing with my nice clean Flying Pigs shirt!!!

Mike KD5KXF Editor at large

Ivin Flint W9ILF FP-1256 Wins the QRP Division of the Indiana QSO Party 2009!!! Congratulations!!!

Ivin, that is an amazing shrine to the swine you have there! Way to represent with the official shirt too. We asked Ivin what his secret to success was and he assured us it was good clean living with healthy doses of pork rinds.

Flying Pigs International North Central Tennessee Chapter Activation -from field correspondent John Skaggs

Greetings from North Central Tennessee

You are witnessing history in the making. We have just formed the local chapter of the Flying Pigs International in Clarksville Tennessee. As the trustee of the chapter I am letting everyone know that we are on the air and have had our first meeting and signing of the official license at the Dough-nut Delight on Providence Rd. in Clarksville Tennessee. Our call for the chapter is KJ4NUC for right now. Soon to be changed to a more pig oriented call sign real soon. At the first meeting a ceremonial signing of the license was conducted by myself, KM6NN as trustee, Doc NV4T as Boss HOG, Rob, N4PJX and Lewis, KF4WK.

During the meeting a ceremonial fund raising campaign was conducted and Doc presented the one and last donation of 1 cent.

Now it is off to the Dog Hill District near down town Clarksville. Lewis has brought his K-2 and his Buddy Pole antenna for our first QRP in the field QSO party. We set up the Buddy Pole for 40 meters and used a bench that is located on the walk way that has been built by the City of Clarksville for local citizens to use. The walk way is real nice and makes a great place to operate. Setting up was a breeze and the antenna was up in no time. While Lewis and I set up the antenna, the Doc was hooking up the K-2 and power. With everything set up we were off and running on 40 meters. A quick scan of the band turned up only a few stations calling CQ. First we heard NI3F, Kenneth in Bethesda, MD. He was coming in strong so Doc sent out a call. No luck, so he tried again and still no contact. Doc moved on down the band to 7049 and we heard KB5GXD, Angelo in St. Joseph, MO. He was strong and also calling CQ. Doc set up and when Angelo stopped he jumped on him and called. We waited patiently and no return. Another call but still no contact. Oh well so much for hunt and pounce. So Doc started calling CQ and he called and called and called but no reply.

Next I get on and start calling CQ. I call and call and call and no response. Now Lewis gets a turn. He calls and calls and calls and still no response. Now I an checking out the radio and the antenna but it all is set up FB. So Doc gets back on and he hears KF4YJQ calling CQ. Walter sounds strong so Doc gives him a call. Bingo !!!! our first QSO for the PIGS is in the log. Doc gets a RST of 449 while Walter is a 589 to us. Turns out Walter is in Clarksville and lives not far from my house in the Cumberland Heights area of Clarksville. It starts getting hot so we check one more time for a good signal and not much going on. During the week in the morning is not the most productive for QRP but you never know who is listening. It all is good in QRP country and we reluctantly shut down and start getting ready for the next QRP in the Field.

P.S. The Flying Pigs main web site can be contacted at
www.fpqrp.com
72 for now from KM6NN and the Flying Pigs from North Central Tennessee ...- .- ..


ARRL
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The Best QRP Amp in the World
The DL-QRP-PA
By David White, WN5Y

The Germans are the number one producers of solar cell equipment and panels. Their fine engineering in German cars has been known for decades. However, did you also know that the most influential QRP club in Germany also makes the best QRP amplifier in the world, backed by years of research and 1400+ kit sales?

Rarely mentioned on email reflectors in the United States, this amplifier has been selling like hotcakes in Europe for years. The DL-QRP-PA has replaced the output amplifiers in the NorCal40, the SIERRA, the Index QRP+, and many homebrew rigs with very satisfying results.

The Original PA

The first QRP amplifier released by the DL-QRP Club was a 1-3/8" by 1-3/16" board using SMD parts and two SC1971s in a push pull PA. Designed for the very lowest harmonic levels and absolutely stable with 11V to 15V, the amplifier produced an output level of 9.7 Watts to 7.5 Watts between 1.8MHz and 50MHz with a 200 to 300mV drive level. Gain figure was 37dB +- 1dB.

The designer for this board was Helmut, DL2AVH. One of his experimental results of realizing an excellent QRP amplifier was that miniaturizing of semiconductor power amplifiers was necessary because of the very high currents even in 5 Watt RF amplifiers. Helmut found when he compared a 5 Watt tube PA to a semiconductor PA that any two points in a semiconductor PA have to be 600 times shorter then in a tube PA.

Another result of his experiments was to achieve the lowest harmonic output, with very little additional expenditure; a push-pull design worked the best. Since most Amateur Radio builders do not have commercial test benches, power amplifiers go through a lot of abuse -- mostly from drive overload. An overload to a single ended PA is the equivalent of a harmonic gun. Only a very little increase of harmonics is shown with a push-pull PA.

Another economic benefit is less stringent requirements in the low pass filter. One properly designed filter can be used for two bands, i.e., one for 40/30 meters and one for 20/17 meters -- saving on several toroid cores. The reason is push-pull amplifiers reduce the second harmonic of the fundamental frequency.

A first batch of 100 in 1998 was shipped for testing in kit form and to members of the DL-QRP-AG club. The result was that no one had any problems with the RF output. The PA was installed in nearly all the well-known QRP rigs. Tests of harmonics in a SIERRA were at least 65 dBc below the carrier. This PA had a very successful 7 year run with >1000 kits built all over the world.

Unfortunately, the manufacturer discontinued the 2SC1971 RF transistor and a redesigned PA was necessary. The German engineers at the DL-QRP-AG Club turned adversity into advantage and designed an even better PA for those (the author among them) complaining very loudly that they did not like missing out on an excellent QRP amplifier.

Second Design

German QRP Club Designer Peter, DK1HE used a Mitsubishi 12-Volt 30MHz VMOS Family RDxxHFF transistor for the evolution of the QRP Project PA. This design used 10mW drive for 10-Watt output.

The driver transistor was a RD06HFF and the finals were 2 RD16HFFs. Quiescent current for all three transistors was adjusted for absolute stable working conditions. The RD16HFF is a 15-Watt transistor run at 10-Watts giving a clean output by avoiding overdriving the transistor.

For adequate heat sinking and easy mounting, the transistors were placed in line on the backside of the board for mounting to the side of an enclosure.

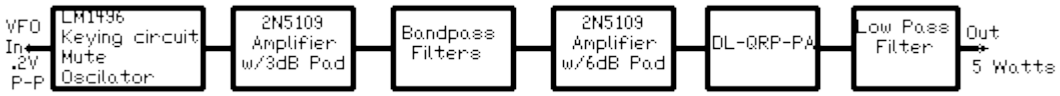
For the best in low harmonic output and stable operation, the same attention as with the original design was paid to miniaturization and a push-pull output. The result was a board that is 2.2” by 1.6”, just a little larger than the original PA.

Peter Zenker, DL2FI, (in email correspondence) noted that over 400 have been sold so far with most of the kits being installed in SDR rigs. Peter wrote, “We are just implementing it in a new allband SDR Transceiver, a special ‘No SMT’ design, which will make the SDR technique available for the older Hams.”

A Broadband Interface for any Receiver

This design was used to convert the author’s Electroluminescent Receiver Kit to a CW transceiver. Additionally, it can be used with any receiver with a stable VFO for CW transceiver operation. Broadband circuits are used with bandpass filters to provide a clean signal for the final PA.

Block Diagram

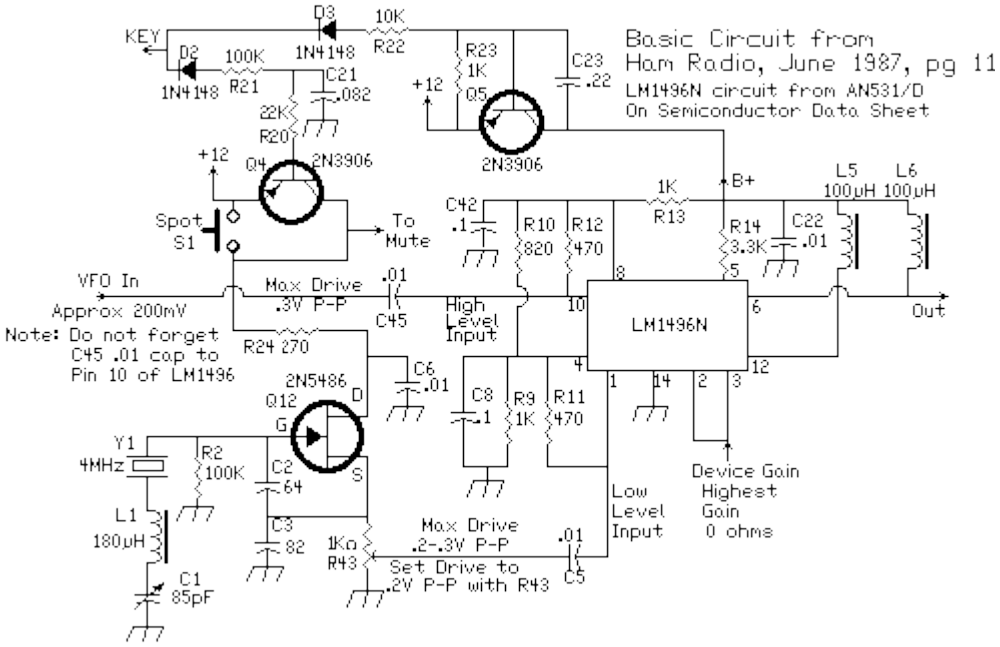


A design for 40 and 30 meters will be presented below. Modifications are very easy to incorporate into the design.

Be sure to include capacitor coupling (.01) between the stages. The inputs and outputs of the LM1496 and the input to the 2N5109 have bias voltages that must be protected for proper operation.

Shielding should be used between the stages. Use shields that are as high as the circuitry enclosed. Keep the LM1496 section as far as possible from the DL-QRP-PA

LM1496 Mixer, Keying Circuit, Mute, Oscillator



A double balanced Gilbert cell mixer, the LM1496N, is used to interface with a receiver. Since drive levels for the mixer are so low (~100mV to 200mV), a very low value capacitor (3.3pf would be a good starting point) can be used in the receiver to pick up the VFO signal. Low coupling capacitance minimizes pulling the dial calibration of the receiver. Cable length also plays a factor in the attenuation of the signal from the receiver. Once you have found a value for the coupling cap for the VFO, keep the same cable length to the LM1496.

The VFO input for this schematic is 14 MHz with a 4 MHz oscillator for operation on 30 meters

and an 11 MHz VFO for operation on 40 meters. The VFOs are switched in the receiver for the two bands when used with the Electroluminescent Receiver.

The frequency of the crystal in the oscillator added to or subtracted from the VFO generates the frequency of the transmit signal. If the receiver is a single conversion superhet, the first oscillator of the receiver might be used. Use the receiver oscillator signal (with a coupling capacitor for .2V P-P drive) in place of the oscillator and input into Pin 1. However, the receiver oscillator may not place the output signal at the right offset for CW operation unless the oscillator is pulled with a switched varactor or capacitor in the oscillator tank circuit.

Crystals can be ordered from ICM (Oklahoma City, OK) or Peterson's crystals at reasonable prices. L1 and C1 can be used to pull the crystal to get the proper offset for CW operation. The 180uH value for L1 was the best value for pulling a 4 MHz crystal.

For stand-alone operation, build the VFO for one-half the frequency you want to use, feed both inputs to the LM1496 and let it double the frequency of the VFO. A low frequency VFO has better stability.

The circuitry at the top of the schematic (Q5) is the shaping circuit for keying the LM1496 and mute voltage for the receiver.

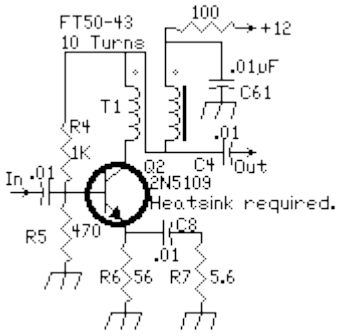
If the oscillator (Q12) is the same frequency as the crystal filter in the receiver, shielding the oscillator will prevent the oscillator signal from getting into the receiver. No problem with chirp or pulling was noticed with this design.

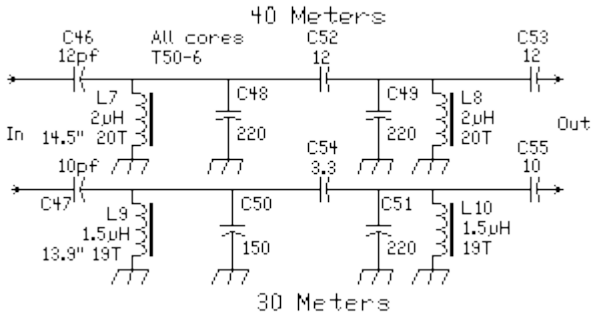
The output of the mute circuit (Q4) is +12 Volts that may need adapting for the receiver mute input. Changing to a NPN (2N3904) transistor and grounding the emitter will give a grounded output. Leave the spot switch connected to +12 Volts.

The broadband output allows any combination of frequencies at the inputs of the LM1496. Make sure you don't have an in-band signal by mathematically running your mixer products to the third product. An example is using a 3.547 MHz crystal with a 10.547 MHz VFO for 40 meters. The 3.547 MHz crystal doubled to 7.094 MHz – right in the middle of the band!

The LM1496 output circuit comes from the AN531/N On Semiconductor datasheet.

Post- Amplifier and Bandpass Filters





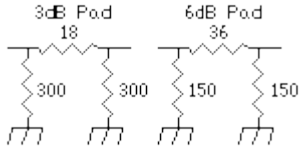
The ubiquitous broadband 2N5109 amplifier is used to amplify the signal from the output of the LM1496 mixer through the filter.

A Pi resistor pad (3 dB is used for 5 Watts) can be inserted between the 2N5109 amplifier and the bandpass filters to modify the gain. The pad also guarantees a 50 ohm input for the filter.

Shown are bandpass filters for 40 and 30 meters. A switching circuit will be needed with multiple filters (not shown).

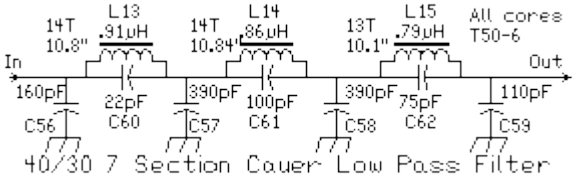
Post Filter Amplifier and DL-QRP-PA

The Post Mixer Amplifier is the same 2N5109 amplifier as above. A Pi resistor pad of 3dB is recommended between the output of this amplifier and the DL-QRP-PA for maximum stability. A pad of 6dB sets the output level of the final PA to 5 Watts with a 12 Volt power supply. The PA's maximum power supple level is 13.8 Volts, which increases output.



A heat sink is mounted on the transistors of the DL-QRP-PA and is surrounded by shielding that is at least as high as the PA. If a top is used, make sure there are plenty of 1/8" holes for circulation of cool air. A top is not always necessary for adequate shielding.

Low Pass Filter



Elsie, free software from Tonne Software, was used to develop this filter. Seven sections were needed to lower the second harmonic of 40 meters down –21dB.

How much the balanced PA cancels out the second harmonic will determine if the second harmonic of 40 meters meets FCC specifications. The harmonic could not be heard in the author's station receiver. The 30 meter second harmonic is down >-60dB. Tests have not been run to verify FCC specifications.

Conclusion

The DL-QRP-PA is an easy kit to build. One afternoon soldering the board, searching through the junk pile for a heatsink, mounting the heatsink and it was ready. During the process of experimenting, the PA was abused a lot and never gave up the smoke. Keep key down periods short.

Ordering the kit from Germany was amazingly smooth. Peter Zenker and company makes ordering the kit with PayPal a no-hassle operation. PayPal makes the necessary currency conversions, you'll get quick response from Peter thanking you for the order, then wait about a week for the kit. Instructions are simple and thorough.

Any feedback or suggestions would be greatly appreciated (wn5y@yahoo.com).

References

Home page of the PA: http://www.qrpproject.biz/UK/qrppa2008.html

Index Labs QRP-PLUS with the original PA, by Larry East, W1HUE
http://www.w1hue.us/Articles/More%20QRP+%20Mods%20Rev0805.htm

The SIERRA with the original PA, by G3GVR
http://homepage.ntlworld.com/david_aldridge/sierra.html

ICM, International Crystal Manufacturing Co, Inc., ham radio and specialty crystals: **http://www.icmfg.com/hamradio.html**

Peterson Crystals, HC6U case: $11.00 plus $3.50 shipping. Email: Jjk51503@aol.com

LM1496 Datasheet AN531/D:
http://www.datasheetcatalog.org/datasheet2/3/07xy537wuakrx12uegrciturg8wy.pdf

Electroluminescent Receiver Kit: http://www.pan-tex.net/usr/r/receivers or http://www.qsl.net/wn5y

2N5109 amp: http://www.hamradio-online.com/1999/jun/w6bky-16.html

Free Elsie Light filter software: http://www.tonnesoftware.com/elsiedownload.html

Greetings from the Newly formed: Flying Pigs QRP International, North Central Tennessee Chapter.

Myself, KM6NN-John (fp #2184) and Lewis, KF4WK (fp #0147) could not wait to get back on the air and make some bacon with our new club call: KJ4NUC

So at our Clarksville Amateur Radio Transmitting Society (C.A.T.S.) regular monthly meeting, it was decided that we needed to make some Bacon from Pilot Rock. For those of you who do not know Pilot Rock is a high spot in our local area near Hopkinsville, KY. It is a gathering spot for many young people to go and hang out and look at the view. The location was once a lookout point for the Forrest Service who maintained a fire tower at that location for many years. The tower was damaged by a severe storm and was torn down for safety reasons.
The plan was to invite anyone who wanted to come along and work QRP CW and SSB if someone desired. The climb to the top of this QRP site is very steep and not many want to take the time to make it to the top.
That said Lewis and I set the time for the afternoon for our search for Bacon.
The trip takes about 45 minutes from our home QTH but it is a nice ride and the time went by fast. Our expectation was high because the KSQP party was going to be going on during our operating time. On arrival at the trail head we saw several vehicles parked and people were coming down the trail. After traffic had passed we loaded up and started off on our climb to the top. Lewis had his KX1, from Elecraft and the Buddy Pole. The whole station was in two small bags. I on the other hand had the backpack with a 12 volt power supply my NS40 transmitter from 4states QRP club and a small folding table to operate from. Not to mention paper, log sheets and assorted direction devices....
After the trip up the hill, with several stops for rest and photos we made it to the top and while I set up the KX1 and table Lewis went to work on the Buddy Pole. The weather was wet the day before we decided to make the trip up the hill, but today the sun was shinning and a light breeze was blowing out of the south. The sun was bright and it seemed to be shinning right on me. Ha.. With the antenna attached I set out to learn how to use the KX1. The rig is a great little radio with more features than most. We started using the internal power from the radio and a quick check told us that we were putting out 1.8 watts. After searching for signals I noticed that we were not getting much on the band. A few adjustments with the Buddy Pole, moving it pointed North/West proved to be a plus and the band started to give up a few more signals. I could hear N4ZMP (Orin) in a QSO with K1GIG (Arline). After they signed I called N4ZMP but he could not hear me.
I heard several QSO's all on the same frequency and my attempts to contact them met with no results. I got a quick lesion in operation of the KX1 by Lewis and after using the filter I was able to tune in the signals a little better. Now to just get them to hear me. After a few more attempts I decided to change out the Buddy Pole for the wire dipole antenna that I carried up the hill. While I set up the antenna Lewis got to work and broke out the external power supply for the KX1. With the external power pack I was able to light up the operating dial and get a whopping 2.8 watts output. Now I can make some Bacon smoke.
I changed my operating location because of the sun moving over the top of the hill leaving me in direct sunlight... way too hot.... so moving to the shade resulted in me sitting on the ground with a large assortment of critters. Lucky I am not so sweet... I could hear many more signals with the dipole and I heard AD0DX (cool call) in QSO with KS0KS (another cool call) KS0KS is a club call for the Santa FE Trail ARC in Olathe, Kansas. They had a great signal and after waiting for them to sign I gave KS0KS a call and BINGO they came back to me with a cool 599. Their signal was a 559 but very clear. Next up I heard KF0XV, Joe calling CQ KSQP so I gave him a call and he came back with a 599. His report was a 559. I was in HOG HEAVEN. Now I could smell the bacon so I heard KI4KGK, Bill from Atlanta GA. calling so I gave him a shout... no good he could not hear me... Next I heard AC0E, James from Garden City Kansas. You guessed it no good either.
I was thinking my bacon was getting burned. I knew my body was as the sun had changed location

again and I was back in the heat. I looked up from operating and saw Lewis with his shirt open and a smile on his face so I knew we were having more fun than anyone should. While we were operating a couple of young lads and their father came up the trail and asked what we were doing. My press information officer Lewis began telling them what was going on and the boys quickly became interested in my operating. As I displayed my skills with the radio one of the boys turned and caught his foot on the coax and away went the KX1 close behind the lad as he walked away. Lucky I was tuning the band as he turned or the KX1 would have been taking a hike down the trail. Oh well just another of those things that can happen with our fun hobby. With two contacts in the log and with the heat on and the signals fading I told Lewis it was time to take the long walk back to the
truck and find some liquid refreshment to cool ourselves. Packing was faster than setting up and we were soon saying so long to Pilot Rock and the fun that just had to be against the law.

72 from John and Lewis
DE: KM6NN and KF4WK saying 72 ... -.-


08/28/2008

What's in your murse?

Our local club has a bit of a fashion movement going on with what we call the "man purse". This male couture accessory was started by Andy Carstarphen WY5V. The official man purse or murse is from a place called Cheaper than Dirt in Fort Worth, Texas. It is labeled as a Bug Out Bag. Andy has been carrying one everywhere with his scanner, HT, and other ham radio necessaries. He brought one to our local ham club Christmas Party gift exchange. It is a Chinese gift exchange where the item can be taken two times and then is "safe". You have probably seen these events... and this item was wildly popular with our members... as was a braille copy of Playboy. Those of us that missed out on the man purse decided to take a road trip to Cheaper than Dirt. By the way, one of the funniest things I heard was N5DBK saying that the items where decidedly not "cheaper than dirt" and then inquiring on the repeater if there had been a recent shortage of third world country manufactured velcro. So long story short, now there are several of us with our man purses and we have had some interesting conversations of whats in your man purse during drive time on the local repeater. Some of the items have made certain individuals bags sound more like "stalker kits" with binoculars, zip ties and duct tape. Some one told this guy if he carried condoms in there he would undoubtedly be going to jail if he got pulled over by the police. Needless to say, hilarity results during some of these conversations. I can get a six pack and a complete qrp park station in mine with room for my HT, a pistol and other necessities for after dark park ops. If you have seen the Capital One commercials with the medieval types demanding "whats in your wallet?" you will have some idea of how we say the question on the repeater. I will try to take a few fashion pictures for you later. You guys better get one, it is going to be bigger than insulated coveralls and those beer helmets. Below you will see the model that I and FP K5TAO are carrying in what undoubtedly will be the fashionista hit of the year... digital cammo.

Number one... the larch. Seriously, this is all I have for this issue folks but if you will send me your articles and pictures I will make you famous. Send your submissions, confessions, extra ham gear and money to kd5kxf@gmail.com

We now return you to your previously scheduled activities.

FPQRP membership is open to all licensed QRP operators who reside within 12,000 nautical miles of Cincinnati, Ohio
You must include a picture of yourself. Membership applications without photos will have a random photo selected for them.

Flying Pigs QRP Club Official Frequencies

Standard QRP CW & SSB calling frequencies	Europe QRP CW & SSB calling frequencies	OTHER QRP CW & SSB calling frequencies	FPqrp Club CW only qsy/net frequencies
1,810/1,910 KHz	**/1,843** KHz		**1,814** KHz
3,560/3,985 KHz	**/3,690** KHz	**Novice 3,710** KHz	**3,564** KHz
7,040/7,285 KHz	**7,030/7,090** KHz	**NorCal 7,112** KHz **Novice 7,110** KHz	**7,044** KHz
10,106 KHz		**QRP-L 10,116** Khz	**10,110** KHz
14,060/14,285 KHz		**FP/PSK/14,071** KHz	**14,062** KHz
18,096/18,130 KHz	**18,085/** KHz		**18,100** KHz
21,060/21,385 KHz	**/21,285** KHz	**Novice 21,110** Khz	**21,064** KHz
24,906/24,950 KHz			**24,910** KHz
27,185/27,185 KHz			**27,185** KHz
28,060/28,385 KHz	**28,360** KHz	**Novice 28,110** KHz	**28,064** KHz

Run For The Bacon

Every third Sunday night of every month at 9 PM Local time in New York City (Eastern Time)
This contest runs for two (2) hours until 11 PM local time in New York City

RULES:
Work CW stations only, once per band on 160-80-40-20-15-10 only **Suggest you work the high freq bands first. Then work your way down to 80 and 160**

Exchange: RST, SPC (State/Province/Country), FP# (non-members send power)
QSO Points: Member = 3 points, DX members = 5 points, non member = 1 point
SPC Multipliers: State/Province/Country total for all bands. The same SPC may be worked on multiple bands for SPC credit.
Fifty (50) members worked Multiplier: Work 50 or more piggies = X 2 multiplier The same piggie may be worked on multiple bands for credit toward this multiplier.
Power: QRP only (qrp defined as 5 watts or less RF transmitter output)
Final Score: (Total QSO points) * (total SPC) * 2 (if 50 or more members worked)
Suggested Frequencies CW: 1812, 3562, 7044, 14062, 21062, 27185, 28062

It's PIGNACIOUS fun!! WIN A CERTIFICATE!

Reporting: **AUTOLOG via the Web** **This is the ONLY WAY to send in your log! (does an auto calculation for you)**

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