



March 2018 Newsletter

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President's Comments

Welcome to the Yelm Amateur Radio Group's monthly newsletter for March 2018. The next big event will be the ARES exercise this month and like everything else will depend on the active participation of all of our members. The deployment part will be on March 17 and the main SET will be on March 31. The deployment is in coordination with Lewis and Thurston county ARES groups. There is a conflict with our second meeting for March and this will be discussed by the board before the March 3rd meeting.

On Sunday night, after ARES net, we are moving from 146.55 MHz simplex 440.200 MHz PL: 100 MHz. Everyone is invited and encouraged to join in,

. I hope to see all of you Saturday March 3rd at 9:00 for coffee and conversation followed at 9:30 by our meeting and training.

73's

Richard WBOSRJ

President YARG

Editor's Notes

In this issue you will find a review of the inexpensive Baofeng UV-5R VHF/UHF Handheld Transceiver. Also some information to help you understand SSB, the major HF modulation in use. I hope you enjoy this months newsletter.

As always, I am looking for contributions of material. If you send in material from another source, make sure you include the source so that I can check with them for reprint permissions.

Thanks, and see you on the air.

Chris KB7NMU

Review: Baofeng UV-5R

By Chris KB7NMU

Manufacturer	Baofeng
Model	UV-5R
Price	\$25 to \$35 online
TX	144-148MHz 430-450MHz
RX	65-108MHz (Commercial FM) 136-174MHz 400-480MHz
Modulation	FM Analog (12.5kHz/25kHz)
Power Out	4W/1W
Ant. Connector	Male SMA
Antenna (stock)	Dual Band rubber duck 50 Ohm Female SMA
Battery (stock)	Li-Ion (Model BL-5) 7.4V 1800mAh Runtime: 6 to 8 Hours
Memory	128 channels
Spkr Mic Type	Kenwood (2 pin)
Programming	Software: CHIRP (latest version) Cable: BTECH PC03 FTDI (\$20)
Other	LED Flashlight Voice annunciation

Impressions

The Baofeng UV-5R is an inexpensive Dual Band VHF/UHF handheld amateur transceiver designed primarily for the Chinese market. There are multiple importers of the radio into the US, and some will rebadge the radio as their own brand.

The radio comes with battery, charger base, AC convertor, antenna, belt clip, micro headset/mic, and lanyard. You do have to attach the belt clip with included screws (or leave it off if you won't be using it). I like that the radio comes with a charging base, but the power input is 10VDC. I would have preferred a 13.8VDC input so that I could use my desktop power supply rather than the included wall wart AC convertor.

The included micro headset is pretty much useless. While tests show the microphone to be perfectly adequate, I found the earbud speaker to be inadequate for understanding speech. Basically it is a throw away accessory. You can find higher quality headsets and speaker mics available online. The connector is the standard 2-pin Kenwood design, so there are lots of available accessories that will work.

Since the radio was designed for the Chinese market it has several features that are not considered appropriate or legal for use under FCC part 97 amateur radio rules. It is relatively easy to disable these features using the programming software (things like the CALL feature, 2tone and 5tone paging, radio ID, Alarm, etc.).

Ease of use/programming

The UV-5R does not have a dial for menu or frequency entry, so you have to do everything with the keypad. It has the standard array of buttons (0-9,*,#) plus a MENU key, up and down buttons, and an EXIT button to get out of menu mode. It also has a VFO/MR button to switch between VFO and Memory Recall modes, and A/B button to switch between the two displayed frequencies, a BAND button to switch between 2m and 440, as well as a PTT button, monitor button (which turns on the LED flashlight with a short press) and a CALL button. The CALL button comes by default set to activate the FM broadcast receive feature. You can program it with CHIRP to another function.

The radio does allow for direct frequency entry using the keypad when in VFO mode. It's not too hard to set up everything to work correctly even for repeaters, as

long as you remember the offset direction and shift for the repeater you are working (2m offset is 6kHz, and 440 offset is 5MHz). The radio firmware does not keep track of this for you, so you must do so yourself.

I ran into problems when I tried to program the memories. First, you can only program an empty memory, and mine came preloaded with FRS/GMRS frequencies. So after I figured out how to delete the memory channel, I was able to get easily get a simplex frequency programmed. Programming for repeaters is harder, as first you need to save the receive frequency to the channel, then change to the transmit frequency and save over the same channel again. It is very important to get this sequence correct, and if you mess up, delete the memory and start over. You also have to set the CTCSS tone when programming the transmit frequency. I found this so difficult to get right that I eventually gave up and used CHIRP (available at <https://chirp.danplanet.com/projects/chirp/wiki/Home>) to complete the programming. The big advantage to CHIRP is that it keeps track of the offsets for you when you are entering repeaters and will automatically set the transmit frequency.

While there are many cheap programming cables advertise online for Baofeng radios, I purchased the BTECH programming cable for \$20. One of the advantages of this cable is that it is capable of being used on any radio using the 2-pin Kenwood connector, including actual Kenwood HTs. I found it to be trouble free when using it on my Raspberry Pi to program the radio.

Quirks

The radio has no direct DC power input, so you can't connect it to a power supply or cigarette lighter adaptor. This appears to be a consequence of the design voltage being 7.4V. You can purchase a 12V battery eliminator for around \$10 to \$15. This is basically a battery replacement with a cigarette lighter adaptor connected by a cord. Additional batteries are available at similar prices, but you can also spend a little more and get a higher capacity battery.

The squelch settings are handled via menu by picking a preset level from 0 to 9. The default settings in the UV-5R are pretty useless and you should use programming software to change the squelch levels to something more usable. See

http://www.miklor.com/COM/UV_Squelch.php for a comprehensive discussion of this issue as well as recommended settings. I loaded these settings into my radio and immediately noticed a much more usable squelch function.

Conclusion

Considering how little it costs (\$25) I find it a very capable rig. I've had it about four weeks now, and for day to day use I find it adequate. I have taken to carrying it with me much more often than my much more expensive Yaesu VX-5R, mostly because if it gets damaged or lost, I'm only out \$25 and can easily order another from Amazon.

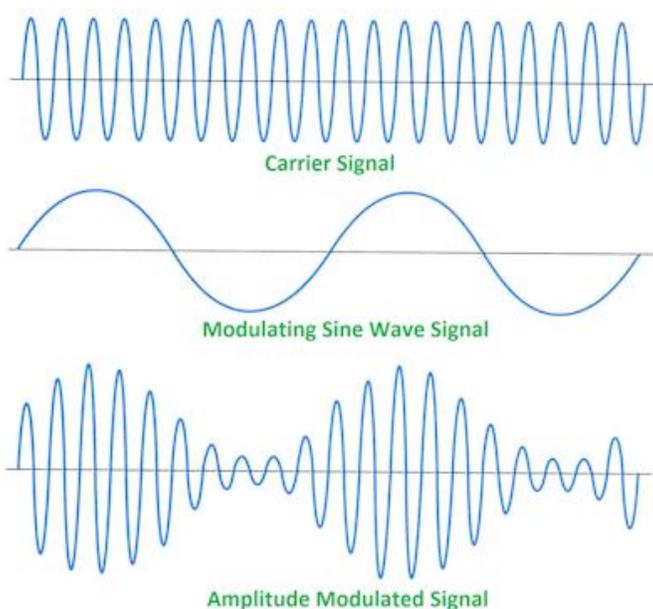
An OM (old man) will pay \$2 for a \$1 item he needs.

An XYL (young lady or wife) will pay \$1 for a \$2 item she doesn't need. – found on HamUniverse

Tech Notes

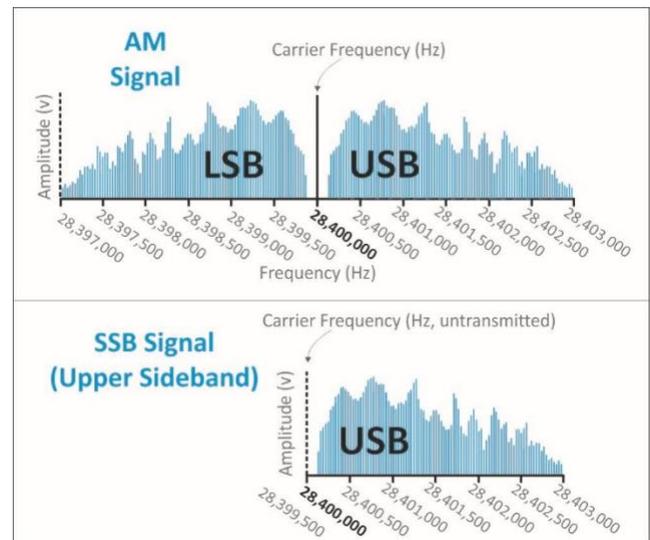
Single Side-Band (SSB)

First there was Continuous Wave (or CW) modulation, which was basically switching the carrier on or off to produce morse code. Then Amplitude Modulation (or AM) arrived which allowed for transmission of voice over the air. One of the interesting characteristics of



AM is that it produces two sidebands which carry the voice information.

If you look closely in the above picture, you can see that the modulated signal is essentially reflected top to bottom. Using this principle most receivers only rectify one side (or sideband) to recreate the original audio signal. Since we only need half the signal to recreate the original audio we can transmit only half the signal as well. This is the basis of Single Side-Band modulation.



In the above diagram we have rotated the axis of the diagram, so now you can more clearly see the “sidebands”. Since we only transmit a single sideband we designate them as Lower Sideband (LSB) and Upper Sideband (USB). Which sideband is used doesn't really matter as far as sending and receiving go, but for accurate audio recreation the sender and receiver must use the **same** sideband.

The convention in Amateur Radio is to use LSB below 30 meters, and USB above 30 meters. 30 meters itself does not allow voice, as it is a digital only band. 60 meters only allows 5 channels of SSB and has specific requirements. So for 2200 meters through 40 meters (excluding 60) you use LSB, and for 20 meters on up (including VHF and UHF) you use USB.

As you can imagine since we are only using half of the signal there are some compromises to audio quality, and since the carrier is missing as well, tuning is of critical importance for recreating an intelligible audio signal.

Weekly Nets

East Thurston County ARES

When: Sunday 7:00PM

Frequency: 146.550MHz Simplex

Purpose: To develop communications skills, familiarize members with proper Net procedures, and to test radios and antennas.

Additional Info: Anyone is welcome to listen in, and we always appreciate visitor check-ins to the net! If you're interested in joining the ARES team feel free to contact Ed Braaten – N7EKB at ed@n7ekb.net.

East Thurston County ARES Roundtable

When: Sunday, after weekly simplex net.

Frequency: 440.200+MHz 100.00Hz Tone

Purpose: General chat among East Thurston County ARES team members.

Additional Info: Anyone is welcome to join. Generally we are on the repeater around 7:15PM, but that can change depending on how long the Net goes.

Calendar of Events

Upcoming Amateur Radio Events

Mike & Key Flea Market

Date: Saturday, March 10, 2018 – 9AM to 3PM

Location: Puyallup Fairgrounds, Puyallup, WA

Cost: \$10 per peson

Event Info: 37th Annual Mike & Key Electronics Show and Flea Market - One of the largest ham radio events in Washington. VE Testing Sessions, Commercial Vendors, and over 300 tables selling radios, computers, and general electronics equipment.

Website: <http://www.mikeandkey.org/flea.php>

Communications Academy

Cost: Early bird - \$27 for one day, \$52 for the weekend.

Normal rate - \$35 for one day, \$65 for the weekend.

Walk-in rate - \$45 for one day, \$75 for the weekend.

Event Info: Communications Academy is two days of training and information on various aspects of emergency communications. Amateur Radio Emergency Services (ARES®); Auxiliary Communications Service (ACS); EOC Support Teams; Radio Amateur Civil Emergency Service (RACES), Civil Air Patrol, Coast Guard Auxiliary, REACT, CERT and anyone interested in emergency communications should attend. Learn, network, and share your experiences with others.

Website: <http://commacademy.org/>



SEA-PAC Hamfest

Date: June 1st – 3rd, 2018

Location: Seaside Convention Center, Seaside, OR

Cost: Pre-registered - \$10 per adult. At the door - \$15 per adult. Workshops & Banquet extra.

Event Info: The Northwest's largest ham convention on the beautiful Pacific Ocean Beach. Commercial Exhibits, Giant Flea Market, Workshops, Seminars, Prizes, VE Testing, and a Banquet. Registration opens February 15th.

Website: <https://www.seapac.org/>

A ham is driving up a steep, narrow mountain road, his antennas flopping in the breeze and flopping into the other lane.

A YL is driving down the same road.

As they pass each other, the YL narrowly missed the antennas and leans out of the window and yells... "PIG!" The ham immediately leans out of his window and replies, "WITCH!!!"

*They each continue on their way, and as the man rounds the next corner, he crashes into a pig in the middle of the road.
If hams would only listen! – found on HamUniverse*

Club Information

Website

<https://yelmamateurradiogroup.org/>

Mailing List

<https://yelmamateurradiogroup.onlinegroups.net/>

Mailing Address

Yelm Amateur Radio Group
PO BOX 40
Yelm, WA 98597
USA

YARG Officers

President	Richard Bowen	WB0SRJ	360-446-0247
Vice- President	Ed Braaten	N7EKB	360-951-3445
Secretary	Doug Harvey	KE7ZTM	360-489-1619
Treasurer	Donna Moris	KG7WRX	360-894-5142

Meetings

1st and 3rd Saturday. Social time 9AM, meeting starts at 9:30AM. Short club meeting followed by educational/informative program.

Valley Heart Assembly of God
11318 Vail Cut Off Rd SE
Rainier, WA 98576