

“LOW BAND” CB’ing

HAVE YOU CONSIDERED THE POSSIBILITIES OF LEGAL HOBBY CB ON THE “LOW BAND”?

by ROGER ZARUBA, NORTHERN 2503, KAI1467

For some time now we “micro-hams” (that’s the “in” name for Part 15 hobbyists) have been relying on the 27 mc/s Citizens Band for all of our communications. Yet one morning recently I was loafing through my copy of the FCC’s Part 15 and came upon a most interesting thing.

Hidden away in the rules is “Rule 15.203,” which has probably gone unnoticed by many micro-hams. The rule states that Part 15 stations may operate with voice or CW in the entire 160 through 190 kc/s frequency band. This is a “low frequency” band, below the standard broadcasting band, and even below the frequencies used by aeronautical and marine radio beacon stations. Actually, the frequencies here are almost barren—there isn’t anybody there to cause interference to Part 15 micro-ham operations, and we, in turn, can’t be accused of jamming anyone else’s communications (as we have heard on the 27 mc/s band).

The rules stipulate the following limitations on P-15 stations operating “low band:” RF input power can be 1 watt (that’s 10 times the power permitted P-15 stations on 27 mc/s) and the antenna (including transmission line) may be *as long as 50 feet!* And you are permitted to use a loading coil which can make the effective and *electrical* length of the antenna far longer than 50 feet! Another portion of the rule states that any modulation products of “low band” stations which might stray from the band edges shall be suppressed 20 DB below the unmodulated carrier.

The FCC even gives you the option to *forget*

about the 1-watt/50-foot antenna maximum so long as the radiation does not exceed a limit which computes to 14 microvolts-per-meter at 1000 feet (this is for a 170 kc/s transmitter). Of course, you would have to have a lot of complicated laboratory test gear to keep tabs on the transmitter to see that it did not exceed this level. In all probability, the level is the same as that of the 1-watt station with a 50 foot antenna.

Now, while 10 times the power and antenna length of a 27 mc/s P-15 station may sound, at first, like the answer to a maiden’s prayer, there are things to consider which do not come to bear on 27 mc/s. For instance, a 5 foot P-15 antenna (with a loading coil) can become the 9 feet necessary for a quarter wavelength antenna on 27 mc/s (the wavelength at 11 meters is 36 feet) without much grief. For 170 kc/s operation, a 50 foot antenna (even with a BIG loading coil) will be a far cry from efficient because a full wavelength at 170 kc/s (1740 meters) is 5,700 feet. A quarter wavelength antenna would have to be about 1400 feet long. Another thing to consider is that you generally have to run more power to “get out” on the lower frequencies, as compared to 27 mc/s. A 250 watt broadcasting station on 1600 kc/s doesn’t have very much more of a coverage radius than many 5 w. CB stations—and 170 kc/s makes the job even harder. The combination of the low power and short, inefficient antenna spells out the fact that coverage won’t be equal to a P-15 station on 27 mc/s.

But *coverage* and great DX isn’t the only thing

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for a micro-ham to consider. After all, a local neighborhood net can be a lot of fun and afford you a lot of chance to experiment with building simple equipment to operate on "low band." A CW station on "low band" can give you a lot of coverage.

Speaking of equipment, you could modify a regular broadcast receiver and have good results. A transmitter can be constructed from scrap broadcast set parts in a few hours. Many military surplus receivers cover this band, too.

Another possibility for operation on "low band" would be to modify one of the many low cost "wireless intercoms" which are sold at every electronics emporium. These wireless intercoms are nothing more than 185 kc/s radio transceivers operating under Part 15. Instead of an antenna, the RF power is inductively coupled back into the intercom's power cable and from there into the power lines. To change one of these units to a set with an antenna and kill the power line feature all you would have to do would be to string up an antenna and take the inductive coupling off the power cable, changing it to the antenna. With a loading coil wrapped around an oatmeal container you could get some nice coverage.

There are definitely many possibilities for "low band" P-15'ing. If you're interested, contact me at 448 Union Avenue, Rutherford, N. J.

See you on "low band!"

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THE P-15 "LOW BANDER" RIG

THE LAFAYETTE PA-405 FOR P-15 LOW BAND USE

by ROBERT McAIRES, KIC7608



The Lafayette PA-405 (Catalogue No. 99-G-4544) is a "Deluxe Wireless Intercom," but in the eyes of any good dyed in the wool P-15'er it is a P-15 "low band" (185 kc/s) transceiver which can be had for \$16.75, or two for \$32.50.

Conversion of the unit from wireless intercom to transceiver isn't really a conversion at all, it still gives you the use of the unit for its original purpose and you don't have to do any digging, chopping, or otherwise mutilating of the unit.

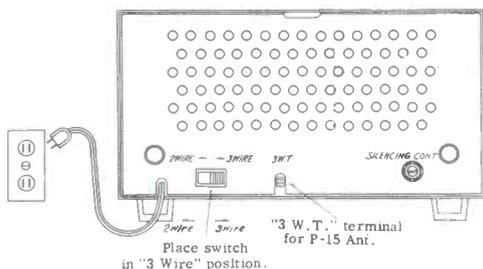
First let us see how the intercom is able to perform through the powerlines in your home. The RF is taken from the set's 50C5 tube, run through a transformer and then to a .05 capacitor which couples the RF into the PA-405's power cable. The manufacturer realized that "wireless" transmission through the electrical systems of two different buildings is sometimes not possible (the sets won't work between houses which take their power via different power company transformers) and has provided you with the alternative of being able to switch the RF from the power cable and run it via a wire to the metal screw which holds the face plate onto your 115 volt AC wall receptacle. This then permits you to feed the RF into the grounded electrical framework of your house with the hope that the other unit in your system will be close enough to receive the signal or will possibly have a common ground connection (via water pipe, etc.)

somewhere along the line. The wire to the wall receptacle screw from the PA-405 is taken from a screw terminal on the rear of the unit. The screw terminal is marked "3 W.T." All that is necessary to get the PA-405 operating as a 185 kc/s radio transceiver for P-15 is to connect a suitable *legal* antenna. By *legal* antenna, we mean one that is not longer than 50 feet, because this is the maximum limit permitted by the FCC. A method had to be devised to get the best performance from this rather stiff regulation. The slide switch on the rear deck of the PA-405 should be in the "3 wire" position.

It was decided to use a loading coil in parallel with a capacitor to get the antenna to resonate on 185 kc/s, since trying to feed a 185 kc/s signal directly into a 50-foot hunk of wire would be a rather miserable effort.

We decided that the best bet for a loading coil would be a commercially made unit (although one could be easily "scramble wound" on a cardboard oatmeal container with several hundred feet of wire). The unit selected was the Miller type X-5495A long wave antenna coil, a "hi-Q" unshielded permeability tuned job with an adjustable core. The coil is Lafayette stock number 34-G-8706 and sells for \$1.62. Across this

Rear of Cabinet



S9 Magazine certifies that this low power transmitting device can be expected to comply with the requirements of Paragraph 15.205 of the FCC regulations under the following conditions: (A) When this device is assembled and/or adjusted in accordance with the diagrams and instructions published by this magazine, using components of the exact specifications described. (B) When in use for the purpose and in the manner indicated in the instructions. (C) When operated on a frequency between 160 kc/s and 190 kc/s and using an antenna limited to a length of not more than 50 feet. (D) When using not more than 1 watt input to the final radio stage. S9 Magazine, Port Washington, N. Y. Dated October 15, 1964

I hereby certify that I have assembled and adjusted this device in strict accordance with the above.

Owner's signature.

Date:

In order to operate legally on low band P-15 with the Lafayette PA-405 wireless intercom, it will be necessary for you to sign this certification and affix it to the set.

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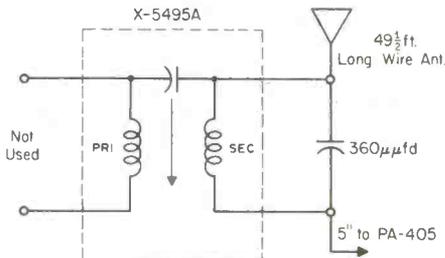
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coil in parallel hookup we used a 360 uufd mica capacitor (Lafayette 30-G-3541, 53¢). The wire for the rest of the antenna: anything you have kicking around the shack which is of sufficient length.

The antenna tuning device was connected about 5 inches from the back of the PA-405, and added about an inch to the overall antenna length—this leaves 49 feet 6 inches left for you to string out of the window, 50 feet physically but considerably longer (and in resonance) *electrically!* The antenna may be peaked up by means of the tuning slug in the coil, which can be adjusted with a screwdriver. Any receiver which covers 185 kc/s (such as another PA-405) may be used to determine when you have the slug tuned for maximum signal output).

Speaking of the coil, you are interested only in the secondary windings of the coil, the primary windings are not used. A substitute coil for the Miller X-5495A is the Meissner 14-1407. Any 360 (or 390) uufd mica capacitor may be substituted for the one we used at our installation.

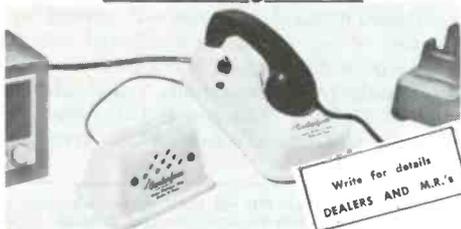
Don't expect to work stations in Timbuktoo with this rig, it will give you some interesting local contacts however (if you get together with other local P-15'ers and establish a net, that is). If there are persons in your area who are using the PA-405's as wireless intercoms and complain that you P-15 operations are causing interference, you can move off frequency (but still stay within the band) by slightly adjusting the oscillator coil at the bottom of the unit. Naturally, since all PA-405's are factory set at the same frequency, all of the stations in your net will have to similarly change their frequencies.

Editor's note: Check the frequency of your wireless intercom, some units operate as high as 200 kc/s, which is out of the P-15 band. In such instances, the oscillator coil will have to be adjusted to bring the unit to below 190 kc/s—we would suggest to at least 185 kc/s to keep modulation sidebands within the band edge. This 15 kc/s (or less) shift in operating frequency should be easily accomplished. In addition, some wireless intercoms may run more than the legal 1 watt input. Check this as it may be necessary to put a resistor in the B+ supply to bring the power within the proper limit.

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