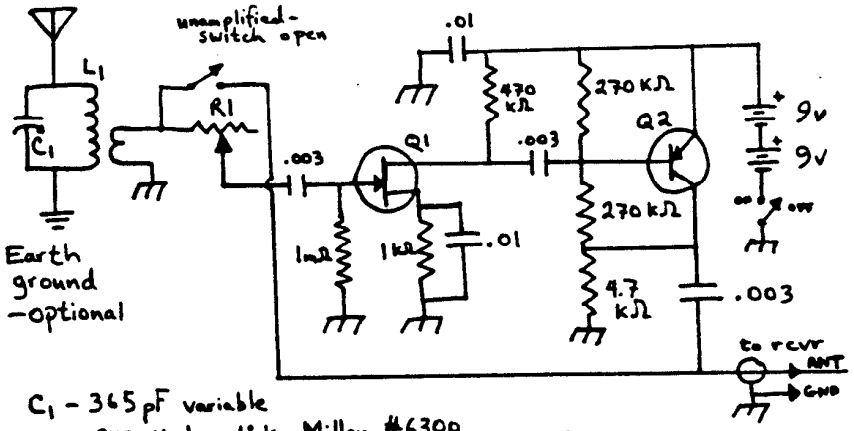
Brian Sherwood has submitted a circuit which amplifies as well as peaks a signal from a longwire. Please remember that most communications receivers don't need preamplification on BCB (unless your longwire is very short), so try Brian's longwire tuner without amplification first.




$C_1$ - 365 pF variable

$L_1$ - 240 μH loopstick, Miller #6300 secondary — 6-12 turns #20 or #22 wire closewound on loopstick

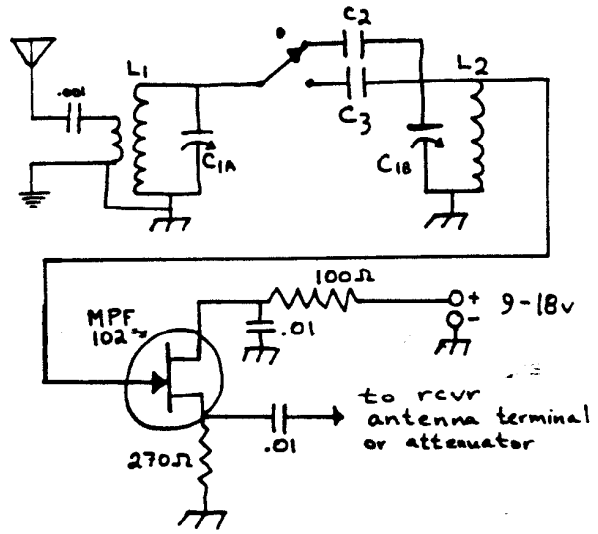
$R_1$ - 1 kΩ potentiometer (gain - not a great deal of variation)

$Q_1$ — HEP 802 or equivalent

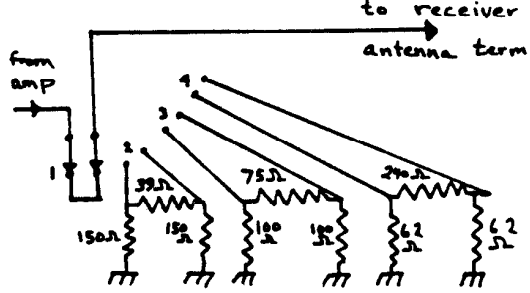
$Q_2$ — HEP 51 or equivalent

The circuit is a little unorthodox with its impedance mismatch between $L_1$ and the gate of the FET, but this helps to keep amplification down and more easily allows switching between the straight antenna tuner and the amplifier.

The next tuner-amplifier is probably more expensive to build, but does provide a bit more selectivity. Again, try the unamplified longwire tuner first. If there are still problems with spurious signals after using the tuner, aligning the receiver and so on, perhaps this tuner-amp will help. Basically, it's a two-resonator RF filter with a source-follower FET amplifier to make up for the filter's loss. I added a switchable attenuator for mine, because I didn't need all the gain that the amplifier offers. Here's the circuit:




THE OPTIONAL ATTENUATOR:




Position 1 gives no attenuation, positions 2,3, and 4 are very roughly -6dB, -10dB, and -20dB respectively.

The wiring of the attenuator and the FET amplifier are reasonably straightforward, but the filter is a little tricky. First of all--parts availability. I used two Miller A-320-A shielded BCB RF coils for $L_1$ and $L_2$, and a two gang 365 pF variable for $C_1$ A & B. Both came out of my junk box. The Miller coils are still available from either JW Miller, 19070 Reyes Ave., Compton, CA 90224 or G.R. Whitehouse, 11 Newbury Dr. Amherst, NH 030319, but at (arghh!) $6.10 each. The much cheaper Miller #6300 loopstick could probably be used as long as you could find shielded boxes for them, and could wind about 10 turns over $L_1$ for the antenna coupling. Maybe the twin-gang capacitor could come out of an old radio; the only supplier I know of is Ambit International in England, who have cheap shielded BCB RF coils as well. If you're experimentally inclined, write me and I'll send more details about these British parts.

Assuming that you've got the necessary parts, there's still the matter of building the filter. As can be seen from the schematic, $L_1$ should be shielded from $L_2$, as you want coupling between them only through $C_2$,$C_3$ or stray capacitance. For high BCB frequencies, you should get optimum coupling by using short leads, shielded coils and no direct connection between the tuned circuits; stray capacitance will couple them quite nicely. This will give you reasonable selectivity from 1200-1600 kHz (re-peaking needed every 10 kHz) without such a large loss that the FET amp can't make it up. Unfortunately, at 550 kHz, there is a great deal of loss, and you will get a faint, noisy, albeit selective signal. So it's necessary to switch in additional coupling capacitance for the low & middle parts of the BCB. The value of these capacitances will depend upon your coils, variable capacitor, wiring etc. The best bet is to use "gimmick" capacitors, i.e. two insulated wires twisted together for a few turns, and adjust the number of turns for best selectivity without undue loss of signal. $C_2$ was a gimmick of one turn for 700-1200 kHz and $C_3$ was a gimmick of 4 turns for 540-700 kHz in my model but could be different for yours.

There may also be difficulty in getting the filter to "track" over the entire BCB without doing some chopping and changing at either end of the filter. If you're interested in this circuit and run into problems, write me and I'll try to help you past the pitfalls. There's a good treatment of RF filter design in the ARRL Electronics Data Book if you're interested in going further with a circuit like this one.