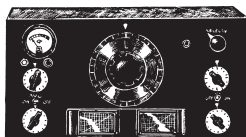


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By Jim Hanlon, W8KGI

The editor has described several AC/DC receivers in recent "Communications Receiver" columns, and this has inspired me to review yet one more, the 1941 Echophone EC-1. This little radio is significant because it is the original prototype that evolved into the Hallcrafters S-38 series after WWII.

According to Raymond Moore in his book, *Communications Receivers, The Vacuum Tube Era*, Echophone started in Southern California in the early 1920s, where the company owned broadcast stations and built receivers. They moved to Waukegan, Illinois in 1930, where the firm manufactured 1000 sets a day. Echophone

later moved to a plant at 2611 Indiana Avenue in Chicago. By the mid '30s, however, they fell prey to the depression, going out of business in 1936. Bill Halligan of Hallcrafters acquired both the Indiana Avenue plant and the valuable RCA manufacturing licenses from Echophone in August 1936, at which point the Echophone name temporarily disappeared.

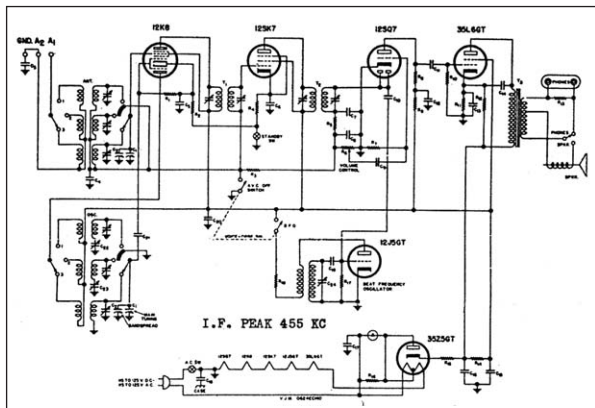
When World War II started in Europe in 1939, the materials and components needed to build communications receivers for the civilian market became scarce. In 1941 the Hallicrafters team introduced a trio of receivers that would be both easier to produce under these circumstances and lower in price than their regular product line. They all covered the 545 Kc to 30 Mc tuning range in just three bandswitched ranges, and they all had series filament strings and transformerless ac/dc power supplies.

But Hallcrafters did not want to associate their good name with products that the public was likely to regard as cheap, low quality radios, so they resurrected the Echophone name for these sets. They even used the side-door address of the Echophone/Hallcrafters plant, 201 East 26th

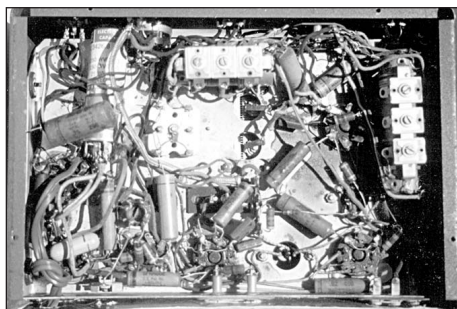
Street, in the Echophone ads.

At the top of the line was the eight-tube EC-3, featuring one RF, two IFs, a crystal filter, a noise limiter, and calibrated amateur bandsread. It was electrically similar to the \$69.50 Hallicrafters SX-24, but it sold for only \$49.95. The EC-2 had seven tubes: one RF and only one IF with no crystal filter, a noise limiter, and calibrated amateur bandsread. It was similar to the \$49.50 Hallicrafters Model S-20R, with a selling price of \$29.95.

The little EC-1 had just six tubes: a 12K8 converter, 12SK7 IF, 12SQ7 detector, AVC, and first audio stage, 35L6 audio



Schematic of the Echophone EC-1. We apologize for the poor quality. This copy is a little sharper than the author's, but details are still not readable.



Front and under-chassis views of the restored receiver.

output, 35Z5 rectifier, and a 12J5 bfo. It was similar to the \$29.50 Hallicrafters S-19R, but it began by selling for only \$19.95, “the greatest value ever offered in a Communications Receiver,” according to its debut ad in *QST* for February 1941. The Echophone ads mentioned only the EC-1 after October, and its price had bounced up in several steps to \$28.50 by the time my EC-1 manual was printed in 1943.

I recently acquired my first EC-1 through a friend at work. He knew that I liked old radios, and he had another friend with an old “Echophone Commercial” radio for sale that I offered \$20 for, sight unseen. It turned out to be all there except for the squarish, plastic dial cover that had been broken off sometime in the past six decades.

About that time I discovered another EC-1 on eBay, this one with an intact dial cover but missing its metal top plate and speaker and its cardboard back. I bought it, thinking I would make the two partial radios into one whole one. But when the second one arrived I found that the cabinet paint, a brownish-gray crackle, did not match between the two receivers and that I couldn’t remove the dial cover without breaking it, so I finally wound up restoring both radios.

As you can see from its schematic diagram, the EC-1 is the archetypical “All-American Five” 5-tube superhet with an additional sixth tube for a bfo. It has the same electrical line-up as the original S-38 except for its converter, a 12K8 instead of a 12SA7. It even has the same style of tuning capacitor as the S-38, with a single-plate bandspread rotor mounted on the frame of the main tuning capacitor for each of the local oscillator and mixer sections.

By the way, you will notice that the schematic has no component values or identification numbers printed on it. The manual does contain a list of component values, but as Peter, The Manual Man, who supplied it said, the service man had to be just a little bit clairvoyant to figure out what

the parts are supposed to be.

Fortunately all of the original parts were still in place in both of my receivers and none of them were unreadable, so I was able to fill in the puzzle without any real trouble. The only things I needed to replace in both receivers to get them running were the power supply filter capacitors, both bandspread dial cords, one paper bypass capacitor and a couple of resistors, and several tubes.

I made a new top plate with speaker and a cardboard back for the receiver with the good dial cover, and I cut a new dial cover from a flat piece of Plexiglass for the receiver with the good cabinet. (Note: A common failing with these sets is the broken/missing hard rubber or plastic edging for the dial cover. Jim solved this problem neatly by carefully rounding the edges and corners of the replacement, and then masking and painting the black edge directly on the Plexiglass. —Ed.)

Both radios needed new power cords, and I used cut-off extension cords with polarized plugs (with the larger, ground lug connected to the receiver chassis) so that the chassis would always be at AC-ground potential. The chassis in the EC-1 is electrically isolated from the cabinet by four rubber grommet mounts that were still pliable in my radios, but it is bypassed to the cabinet with a 0.25 mfd capacitor; and I do not want to have that capacitor connected between the hot side of the line and my body attached to ground!

To make the box a little safer, I also installed a DPDT switch that I use for turning power on and off, in series with each side of the line cord, just outside the receiver cabinet. Then I shorted the internal power switch on the volume control. That way there is no possibility of the chassis being hot to ground through the filament string when the set is turned off. I am also using the original Hallicrafters knobs that have well-recessed set screws, so that there is no danger of my coming into electrical contact with any of the control shafts.

Alignment was quite straightforward on both
(continued on page 42)

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radios after I figured out where the local oscillator and mixer padder capacitors were. Someone had tightened down all of the screws on the two IF transformers on one set, and as a result it had several IF responses, none at the intended 455 Kc. I finally peaked the transformers at one of the stronger responses and then walked the adjustments up to the correct frequency.

The local oscillator and mixer adjustments were straightforward, and I set them at the top end of the band for correct calibration and best gain, respectively. The local oscillator also has padder capacitors for calibration adjustment at the bottom end of the two lower bands.

Mechanically the EC-1 is small—only 7½" tall, 10½" wide, and 7½" deep. Its cabinet and chassis are made from the same grade of steel as used in its contemporary big brother, the SX-28, and its tube sockets are the same molded plastic. The parts are made by the same manufacturers as those in the SX-28; there are just fewer of them. To lower costs, the three local oscillator coils are all wound side-by-side on a single, sturdy cardboard-tube coil form, as are the three RF input coils. The bfo coil is wound on another cardboard form that is quite a bit thinner.

There is a compression trimmer capacitor, accessible from the back of the set, for adjusting the bfo frequency. And there are also two compression trimmer capacitors built into a single, sturdy, ceramic body to adjust the local oscillator tuning on the two higher-frequency tuning ranges. So while the EC-1 is a bare-bones radio, outside of the cardboard coil forms it was made of pretty substantial stuff. That's probably the reason why my two examples have survived this long.

Echophone ads, especially later in 1941 and

afterwards, pitched the EC-1 as an ideal radio for the U.S. soldier or sailor to take along with him in the service. They featured a diminutive character named Hogarth—today he would be called a "nerd"—who was always coming out on top because of his EC-1. The admiral scrubbed the decks for him and pretty girls on a South Pacific island surrounded him to listen to his EC-1.

Since the EC-1 was one of the few communications receivers that appears to have been actually available after the war started, was low-priced, and was small and thus easily carried in a duffle bag, I would not be surprised if many of them actually did wind up being "entertainment radios" for our troops.

In 1945 revised EC-1A and EC-1B models appeared on the scene. They had a 12SA7 converter instead of the 12K8, and were physically identical, except for the paint job and name, to the Hallicrafters S-41G that came out later in 1945.

On the air, the EC-1 works amazingly well for what it is. I have one of my EC-1s sitting next to a window in my "great room" and attached to a 20-foot antenna strung up to a second-floor porch outside. As a casual receiver for AM shortwave broadcast stations and the gang on 75 meters it does a very passable job, given a few minutes to get warm-up drift out of the way.

All CW signals sound "hummy," about T-7, but at least they are copyable and the bfo is not swamped by strong signals. I can even make out 40-meter SSB signals with a little patient tuning. I think this little radio is still doing just what Bill Halligan intended for it to do when he brought it out in 1941, and that makes me feel good. It is indeed the first of "the radios that amazed the experts." 