

CCRadio Tune-UP

Gerry Thomas

I've been reading with interest over the past many months the complaints of some DXers regarding the CCRadio. Reports of worse than expected sensitivity, mediocre selectivity, poor strong signal handling, images of strong locals on adjacent channels, etc. have all shown up in the DX press. Every time I read one of these complaints, I think to myself, "Unless Sangean and C.Crane have made some circuit changes, that guy's radio is out of whack." I've had my CCRadio for going on two years now and, as it turns out, the CCRadio does need "tweaking" from time to time.

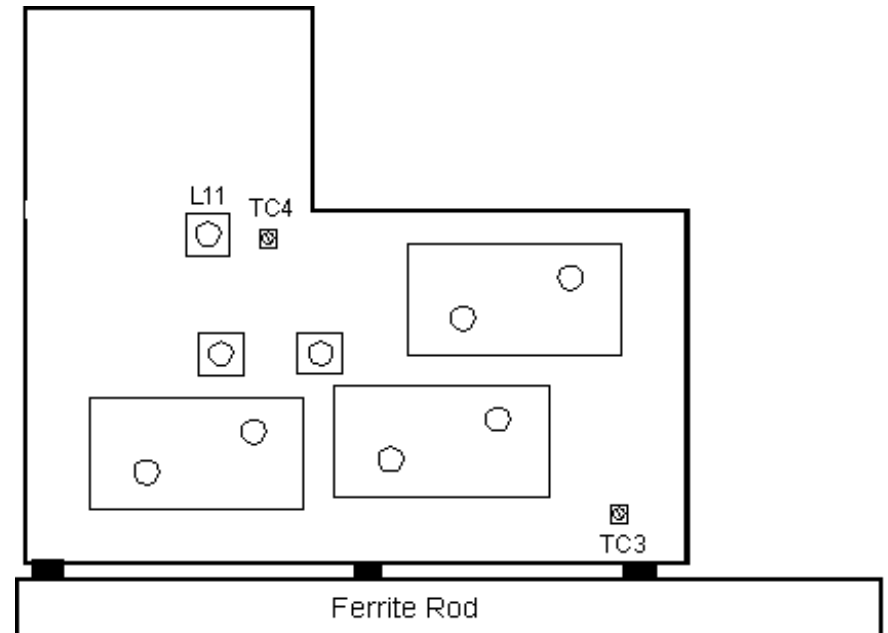
The critical adjustment components in the CCRadio aren't cemented in place with wax or Lock-tite so either through rough handling (during ownership or shipping), or perhaps just over time, there are a couple of adjustments that need to be made every so often. So after the last time I dropped the radio (that "handle" needs some work!), I decided to take some notes on what has become a relatively routine maintenance procedure I follow to keep my CCRadio operating in top form.

As it turns out, the CCRadio is quite easy to get back into alignment; much easier than earlier technology radios that required oscillator tracking adjustments and multi-stage IF tweaking. In fact, there is only one RF adjustment to make and two IF adjustments. All you'll need to do the tune-up is a Phillips head screw driver (to remove the cabinet and PCB screws) and an alignment tool (an insulated-handle jewelers flat-blade screwdriver will do).

The Tune-up

1. **Remove back of cabinet ---** Six screws (four on the corners and one each in the battery compartment and handle crease). With the radio face-down and the base towards you, carefully lift the back and rotate the top towards you, being careful not to rip out the wires attached to the back....there should be just enough slack so that you can lay the back down.
2. **Unscrew main circuit board ---** You should now be looking down into the guts of the radio. Locate the two screws holding down the main board (the one nearest you) and remove the screws.
3. **Remove the volume control knob ---** Pull straight off the knob that controls the volume.
4. **Lift out main circuit board ---** Carefully lift the main circuit board up and out of the cabinet (don't forget about the volume control shaft!) gently rotating the top of the board towards you. There are a slew of wires attached to the board, but you'll find that you can get the board component-side up with a little care.

What you should now be looking at is something like the following illustration:



5. **Locate TC3, TC4, and L11 (they are labeled on the PCB) ---** Trimmer capacitor 3 (TC3) tweaks the RF input section, and trimmer capacitor 4 (TC4) and inductor 11 (L11) centers and “shapes” the IF passband (at least that’s what they appear to do; I don’t have a schematic).
6. **Plug AC cord into AC jack ---** Be careful not to mess around the AC side of the radio. That is, stay away from the jack and the transformer circuitry...you know why.
7. **Turn on the radio and tune to a weak to medium strength station on the low end of the band and let the radio warm up for about 10 minutes.**
8. **Peak TC3 ---** Using your alignment tool or insulated mini-screwdriver, slowly rotate TC3 back and forth a few degrees listening for an increase in signal strength. Set TC3 to the point of greatest signal strength. Repeat the process on a high-end station to verify setting. You’re now done with the RF tune-up.
9. **Center the IF passband ---** Tune back to a weak to medium strength station below about 600 kHz and first adjust L11 for maximum signal, then adjust TC4 for maximum signal. (L11 and TC4 (along with a varactor diode) tune the IF stage and they interact so you have to go back and forth between them; you might want to mark or make a mental note of the original settings so that you can always return to them if you screw up.) Both of these adjustments are MINOR (<45 degrees). If your radio is working at all, you shouldn’t have to adjust these components more than 20-30 degrees---don’t over-adjust. Repeat the procedure on a station above 1500 kHz. Re-check the low-end station. Repeat the process until you get the best signal on both ends of the band (actually, where on the band you adjust shouldn’t matter; this just gives you two spots to tweak and some compromise is generally required). Note that you will hear a “darkening” of the signal as you move the IF passband across the stations’ center frequency...this is good, you want “dark and strong.”

10. **Check for passband symmetry** --- With the settings for TC4 and L11 you arrived at in Step 9, check a number of stations throughout the band for passband symmetry. Do this by tuning to the (center) frequency of a station, rotate the tuning knob 1 kHz above and below the center frequency listening for a slight "brightening" (a faint "hiss") as you tune a kHz or two above and below the station's true frequency (the station's center frequency should be the least bright). Ideally, this "brightening" should be about the same on either side of the center frequency. Further verify passband symmetry by continuing to tune away from the station's frequency until you lose intelligibility; it should be about the same distance (in frequency; about 5 kHz or less, depending on signal strength) above and below the station's center frequency. If you are real lucky, things will be fine and you'll be finished. I generally have to go back and forth between Steps 9 and 10 until I get the passband as close to perfect as I can. With a single-tuned LC circuit, you will never have perfect symmetry but do the best you can.

11. **Re-install the main circuit board (don't forget about the volume control shaft).**

12. **Re-assemble cabinet.**

Note: When you re-check your work the next day (or after a cold start-up), realize that it takes a few minutes for the circuit to warm up...don't panic (or swear) if the passband isn't perfect on start-up.

There you have it. After I perform the preceding tune-up, my CCRadio is really a world-class performer. I generally do the tune-up twice a year (more often when I drop it, hi) and it always comes back a great performer. My benchmark for when to perform the tune-up is a check on channels next to my super-pest, WRNE-980, a 10 kW'er directly across the bay from me that puts a S-9+50 dB signal into my Drake R-8. In the daytime, when my CCRadio needs a tune-up, I can't DX closer than 30 kHz away from 980. After a tune-up, 960 and 1000 kHz are easy and 970 and 990 kHz are audible between the rap songs. The CCRadio is a hot little radio (yeah, a bit overpriced) that is great for domestic DX; split frequency performance would benefit greatly by a narrow filter option. If your CCRadio isn't as hot as you feel it should be, try the preceding tune-up, you might be surprised.

One other tip --- If your display starts acting up and the reset button won't fix it completely, remove all power to the radio for a day or two and try the reset again. This has always worked for me.

Questions are welcomed at either:

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73...GT

CC Radio Display Fix

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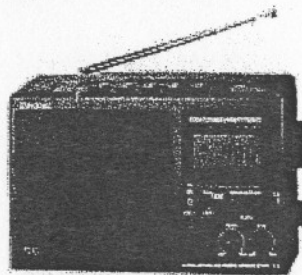
1781

I've had the CCRadio for two years now and have been very pleased with its performance. It sees several hours of use every day in my shop as I listen to a down-state sports radio station and has served me without fail. However, about six months ago I noticed that some of the segments on the display began disappearing or appearing where they didn't belong. At first, I was able to correct the problem by removing all power to the radio for a day or two, then pressing the reset button on the bottom of the cabinet. As time passed, however, the "power down" time required for this technique to work began increasing to the point whereby even a week of down time didn't correct the problem. I contacted the C. Crane Co. and they told me that the problem had to do with a connector being improperly glued on the display circuit board. I tore into the radio and corrected the problem with the procedure detailed in this brief article.

The fix is actually very simple. The hardest part is accessing the display connector which is hidden behind the RF shield on the display board. Nonetheless, I had the fix done in about 15 minutes and it should be within the capabilities of just about any DXer.

What you'll need:

1. Phillips head screwdriver
2. Small wattage soldering iron and solder
3. De-soldering pump, bulb, or wick
4. Duct tape

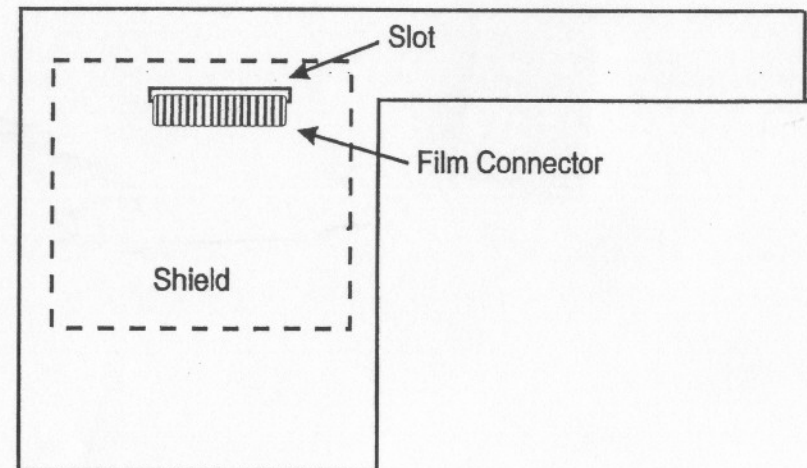


The Fix:

1. Lay the radio face down on a flat, non-scratchy surface and remove the six screws holding the back of the cabinet.
2. Gently rotate the top of the cabinet toward you, being careful not to tug on the wires connected to it. The wires are long enough so that you should be able to get the back of the cabinet out of the way.
3. Looking down into the guts of the radio, locate the two screws holding the nearest circuit board and remove the screws. (Note: Some CCRadios may also have a small value capacitor soldered between a ground point on this circuit board and the speaker; if yours has this capacitor, desolder the capacitor from the circuit board, making a mental note of its solder point so that you can re-solder it upon re-assembly).
4. Remove the volume control knob (it pulls straight off) and gently maneuver the board up and towards you (don't forget about the volume control shaft) being very careful not to

stress any of the connecting wires. There's enough slack in the wires so that you should be able to position this board upright and out of your way.

You should now be looking down into the radio at the display board and it should look something like this:



The most noticeable feature on the display board will be the large metal RF shield. The "film connector" and "slot" are located under this shield.

5. Locate the half-dozen or so solder points on the shield that are affixing it to the circuit board and, with your de-soldering device, remove the solder from all of the tabs.
6. Gently lift and remove the shield from the board.
7. Locate the flexible, multi-conductor connector that runs from the board through a slot in the board to the display in front. It's a clear, acetate-like film with parallel conductors on it that is simply glued to the circuit board. This is the problem child...

To determine where exactly the poor connection is occurring, you might want to connect the AC power cord to the radio and press with your fingers various places on the flexible connector while watching the display. In my case, the problem was on the far right side of the connector.

8. C.Crane recommended using hot glue to hold the connector flat against the board but I was worried about the glue seeping under the connector and acting as an insulator so I just cut a piece of high-quality duct tape to size and used it (in two overlapping layers across the entire width of the flexible connector) to nail the connector flat. If you use a tape, make sure you don't cover the slots that the tabs on the shield fit through.
9. Before starting re-assembly, connect the AC power cord and check the display to verify your fix.
10. Re-install the shield and re-assemble the radio.

There you have it. Your display should now be trouble-free for the foreseeable future. The demise of my display may have been hastened by its life in my non-climate controlled shop...the heat and humidity may have "aged" the glue well beyond its normal lifespan.

Questions or comments are welcomed at: radioplus@pcola.gulf.net