

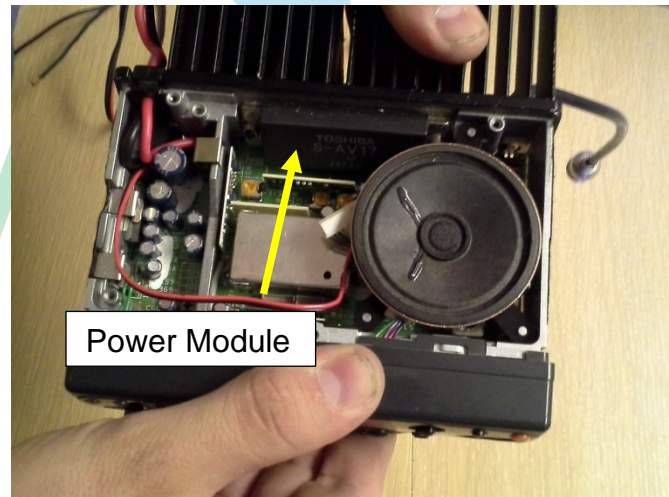
At the Repair Bench – Kenwood TM-241A - December 2022

Every now and then, a repair comes along that is both easy and difficult at the same time. This month's repair case history is one of those occasions. This is the story of a simple – and not so simple – repair of a Kenwood TM-241A fifty-watt 2-meter mobile transceiver.

The radio came to me with the complaint of being inoperative on transmit, which was easily verified with a simple output test into my Bird 43 directional wattmeter and a dummy load. The Bird 43 showed zero output power from the radio. During this test, however, I also noted that the unit failed to maintain its last-used settings, which told me that there was a second problem with the radio, and therefore the need for some deeper troubleshooting.

Armed with a TM-241A service manual and schematic, I set out to isolate the output power problem first. It took only a few minutes with an oscilloscope to determine that the signal was present at the input of the final amplifier, but that there was no output from that amplifier stage. A quick check of the power supply voltages to the final amp IC (Kenwood calls this the *power module*) showed that the operating voltages were correct, meaning that the IC was most likely a failed device. A quick online search showed that the power module, a Toshiba S-AV17, was available from many sources, including East Coast Transistor, an authorized Kenwood parts distributor. In the interest of sticking with original factory replacement parts, I ordered the IC from ECT and waited for it to come in.

Before ordering the IC, I went ahead and checked out the most likely cause of the radio failing to store any settings – a failed memory “keep-alive” battery. Kenwood did not make it very easy to replace this battery, which is a CR2032 coin cell with an insulating outer ring and welded tabs for connection to the printed circuit board. When installed, this coin cell is sandwiched between two insulators, one of which is double-sided adhesive foam which is used to affix the coin cell to the PCB.

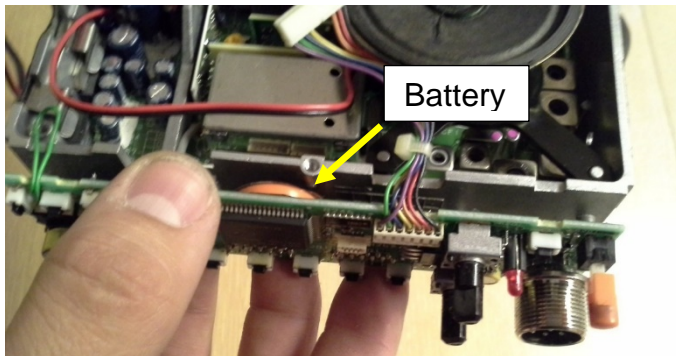


Accessing the battery is the not-so-easy part and involves removal of the front bezel of the radio, followed by the removal of a metal structural cover, and finally the front panel display unit printed circuit board. At this point, the battery voltage can be measured easily. When measured in-circuit, the coin cell showed a voltage of only 0.36 volts. With the battery basically “dead”, it was necessary to continue the disassembly. To do so, the main front panel PCB is removed from the chassis to allow access to the coin cell, which is mounted between this PCB and the main chassis. Care must be taken when desoldering the coin cell so as not to overheat and damage the PCB.

An important point is to be certain to use JIS screwdrivers for this job, especially for the tiny screws that secure the metal front structure to the main chassis. It is *extremely* easy to strip the heads of these screws if the wrong screwdriver is used. Polarity alignment of the coin cell is aided by indications on the PCB referring to the + and – terminal connect points.

I ordered the coin cell from East Coast Transistor in the same order as the power module, and then I sat back and waited for the parts to come in. Delivery took eight business days. The parts arrived well-

packaged and in good condition, though they had to travel via ground transportation due to the fact that the coin cell is a lithium battery and thus falls under certain transportation restrictions.



Installation of the coin cell and reassembly of the front panel was basically a reversal of the disassembly process. I noted that the control pushbutton extenders have a tendency to fall out when reassembling the unit. Apart from that hiccup, it is a straightforward process.

Installation of the power module, on the other hand, required removal of the main PCB from the radio chassis. I had elected *not* to remove this board until the new parts arrived, primarily so that the removal procedure would be fresh in my mind when it came to reassembly time.

I had taken several photographs prior to disassembly, which is a standard practice for me. This provides a reference for reassembly. In this case, it helped me to resolve a puzzle in that there is one plug with seven wires for which I could not seem to find the connect point. For several minutes, I struggled with trying to remember disconnecting the plug, but I simply did not remember unplugging it. Finally, by referring back to my photos, I realized that this is a plug that goes nowhere. It was simply hanging free underneath the loudspeaker behind the front panel. The other end of this harness is a seven-wire plug that connects to the front panel PCB.

Removing the PCB is not complex at all, and replacement of the power module on the PCB requires the normal care about excessive heat. Be aware that there are two mounting tabs on the S-AV17, which are secured to the rear of the chassis via machine screws, thus providing heat sinking for the IC. When reinstalling the PCB with the new power module, be sure to coat the rear surface of the IC with silicone thermal transfer grease for best heat transfer to the chassis. Again, be sure to use a JIS screwdriver for this task as well.

After reassembly was completed, it was time to test the operation of the repaired unit. The first thing that I checked was the ability of the radio to “remember” the last used settings. This was no problem; all worked as expected. Next up was the power output test. When tested with my faithful Bird 43 into a dummy load, the radio showed an output of >47 watts into a dummy load.

While the customer had made no mention of the settings memory issue, I would not have considered the radio to have been repaired completely if the battery had not been replaced. Had the customer squawked about the additional and not requested repair expense, I would probably have attempted to work out a parts/labor split with the customer for that specific part of the repair bill. As it turned out, the customer was satisfied with the overall repair and its cost as presented.

The moral of the story here is that there is often more to repair than just what the customer reports. A thorough repair tech will go the extra mile, though it is usually best to discuss any additional repairs with the radio’s owner before proceeding with those additional repair items.

See you next month...