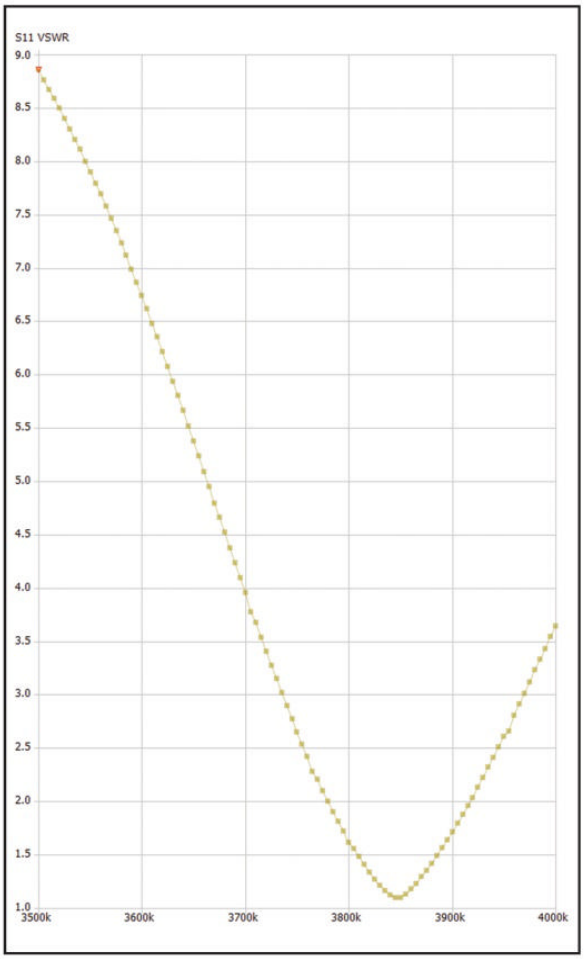

Figure 6.

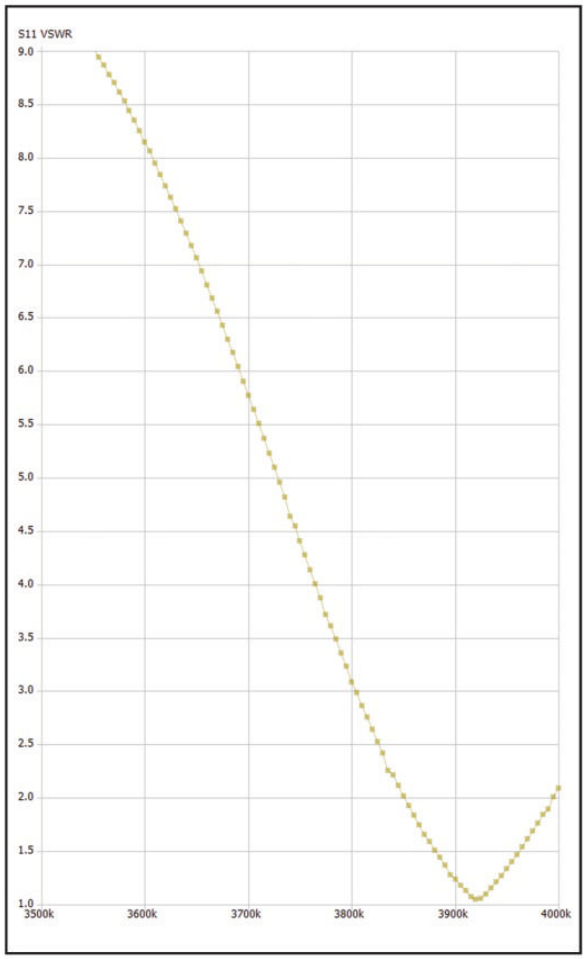

Figure 7.

nections to the SO-239 connector secure the balun fairly well. The balanced secondary of the balun connects to the toroid inductor loading elements in the main part of the electrical box with two #12 stranded copper insulated wires of about 6 inches in length. Those wires fold up into the lid beside the balun when the center box is closed and are guided into safe positions as it is closed to avoid contact with other parts in the box.

The PCB from Far Circuits contains an area for three relays on one side of the center and a similar area on the other side. One side of the PCB plus a small center area is cut off and discarded, leaving the area of the PCB for relays 1 to 3. The signal trace between output 3 and output 2 was cut with a Dremel® tool. The PCB grounds inactive relay outputs using the normally-closed relay connections, but that is not appropriate for this application, so those PCB connections to ground were removed by drilling out those holes with a 7/32-inch drill bit. Photo B shows the prepared PCB.

The three relays are Zettler AZ755s, and are also available from Far Circuits. Small eyelets are provided to place around each pin connecting to the relay contact prior to soldering to provide a good connection for the RC current.

In the first step, the three relays are mounted on the PCB; three small coil bypass surface mount caps, also provided by Far Circuits, are soldered to the PCB; and four hookup wires for the three relay coils plus ground with lengths of about 6 inches each are soldered to the PCB with the other ends unattached. This assembly is then turned upside down and attached to the center of the electrical box with epoxy on the relay tops with the four wires facing away from box lid hinges.

Next, a 4-connection terminal strip is attached with epoxy as shown in Photo A, and the four wires from the three relay coils plus ground are connected to one side of the terminal strip. The control cable connects later to the terminal strip.

The third step is to prepare the three toroid inductors. The inductors are 19, 12 and 8 turns of #14 enameled copper wire wound on T200-2 cores, providing calculated inductances of 4.33, 1.73 and 0.77 µH, not including pigtails, stray inductance and stray capacitance. Those factors increase the achieved circuit inductances, and EZNEC simulations of the antenna with three loading inductors to tune the antenna as desired produces values of 5.3, 2.7 and 1.4 µH.

The inductors are prepared with 6-inch pigtails. About 3/4-inch of enamel is stripped from the end of each pigtail. Also, 3/4-inch sections in the center of four pigtails are stripped to attach the two inputs from the balun and the two outputs to the wires which exit the center box to attach to the antenna elements. See Photo A and the schematic in Figure 9. The