

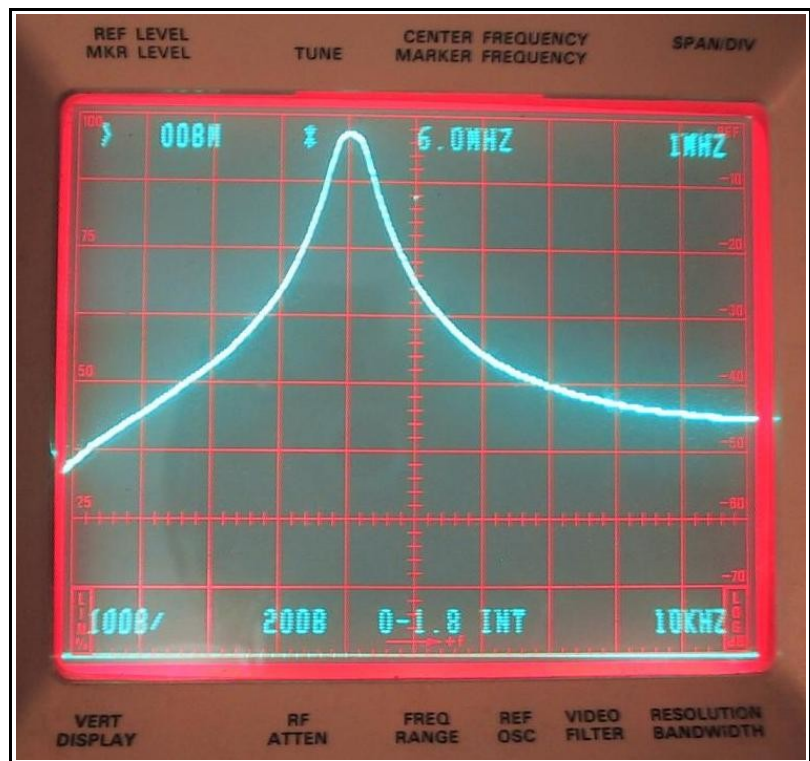
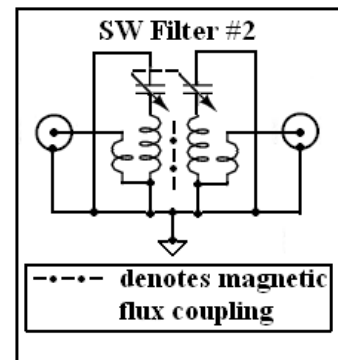
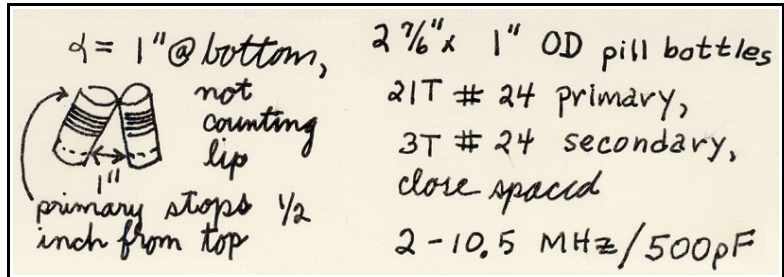
SW Filter #2

Dallas Lankford, 2/16/2007

This filter is like MW Filter #3 in [The Dallas Files](#), and so the description here will be brief. I originally developed these filters to entertain myself. But then the MW filters turned out to have potential applications as filters for beverage antennas to reduce intermodulation modulation distortion due to the high signal levels produced by beverages and broadband front ends of modern

receivers. More recently, and somewhat to my surprise, I discovered that they can be used as part of a virtually linear intermodulation distortion measurement system with higher system output intercepts than any other such system. This, in turn, has permitted accurate measurement of the input intercepts my new active whip and dipole antennas; see "Complementary Push-Pull Output Active Whip And Dipole Antennas" in [The Dallas Files](#).

The SW filter here tunes about 2 – 10.5 MHz, has high side stop band of about 45 dB, low side stop band in excess of 50 dB, insertion loss of about 1.5 dB at mid band, and extremely high intercepts (as yet unmeasured... a 3rd filter will be needed for that). At right is a photo of a sweep of SW Filter #2 using a Tek 495P spectrum analyzer. Some construction information is given in the box above. The geometric configuration of the coils must be adhered to, otherwise performance will not be duplicated because of the magnetic flux coupling used in the filter. Yes, the inclination of the coils seems strange, but that was necessary to maintain good shape factor and insertion loss when I moved the secondaries from inside the coils, as they originally were, like MW Filter #3, to the primary coils forms, at the bottoms of the primaries, to reduce the required number of coil forms from four to two. Below is a photo of SW Filter #2. Two sections of a triple section 500 pF air variable capacitor were used. The coil forms are standard pill bottles, drilled with miniature bits (#69 wire gauge, I think), mounted on copper strips (easy to bend to the required angles). If you look closely you will see that the top end of each primary wraps around the top end of the other primary and then passes to the air variable capacitor lug where it is



soldered. I found that this decreased insertion loss slightly and improved shape factor slightly.

