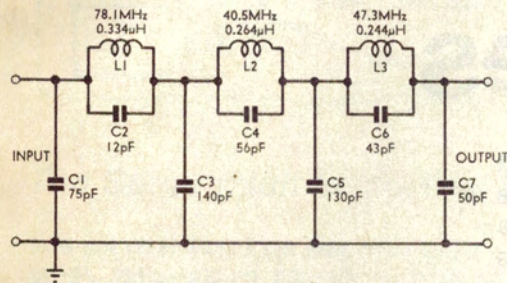


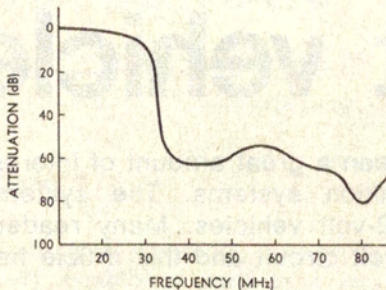
CIRCUIT & DESIGN IDEAS

Easily Adjusted Low-Pass Filter



Of course, not all TVI is the fault of the receivers. There is still an obligation on the part of the amateur to keep harmonic and spurious radiation down, and that usually calls for low-pass filters. While the traditional types, as given in the handbooks, are usually quite effective when correctly set up, they are not always easy to align and check without test equipment. A design which did not perhaps receive sufficient attention at the time it was published ("An Effective Low-Pass Filter", by

Glenn R. Walsh, WB6HRM, "QST" January, 1966) is the one shown here. The author claimed that this type of filter, based on the insertion-loss concept rather than the more usual image parameter type offered several advantages: (1) it uses two less coils for equivalent stop-band attenuation; (2) it provides relative freedom in the selection of frequencies of maximum attenuation; and (3) it is easy to tune using only a grid-dip meter. His suggested filter has a 30MHz cut off with



tuned circuits at 78.1, 40.5 and 47.3MHz resulting in the attenuation curve reproduced herewith. Maximum VSWR introduced by the filter was given as 1.3:1 at 29.7MHz.

To achieve this performance, the usual filter construction precautions must be taken. Coils were made from 14 gauge enamelled copper wire formed on a 1/2in diameter mandrel: L1 8 turns; L2, L3 6 turns. When the coils have been formed, the capacitors C2, C4 and C6 are soldered across them and initially tuned to resonance by adjusting the turns spacing until a GDO indicates resonance at the appropriate frequencies. The coil/capacitor assemblies are mounted in the chassis (individually) and again checked for resonance. Finally, the shunt capacitors (C1, C3, C5, C7) are soldered into the filter. The WB6HRM unit was housed in a 5in x 3in x 2in aluminium box, with aluminium shields providing isolation between the three filter sections. Attention was drawn to the need to secure each shield at eight points to ensure good isolation, and he also used angle brackets to reduce leakage from the enclosure, with paint removed from the edges of the cover to ensure good metallic contact between overlapping flanges when the unit is assembled. WB6HRM pointed out that these precautions are important in preventing harmonic currents from reaching the outside surface of the housing and so by-passing the filter.

(From "Radio Communication")