HELPFUL HINTS

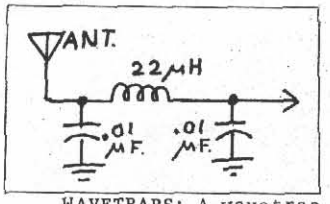
RF INTERFERENCE FILTERS

A common question received here at MT is, "How can I reduce interference from local AM broadcast stations?"

There are actually four basic filters, depending upon the nature of the interference and the frequency bands suffering the indignity of interference.

LOW PASS FILTERS: As the name suggests, a low pass filter is designed to pass low frequencies while attenuating higher frequencies. They are designed around a cutoff frequency, above which the attenuation gets greater as the frequency is increased.

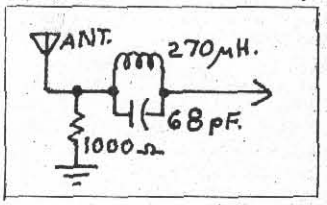
The 500 kHz low pass filter described here works well with VLF receivers (below 500 kHz), rapidly attenuating frequencies higher than that.



WAVETRAPS: A wavetrap is a tuned circuit designed to reduce the transmission of a narrow swath of frequencies. If it is designed to reduce a wide band of frequencies (while permitting frequencies above and below to pass without attenuation), it is called a stopband filter.

The circuit shown here combines both properties in order to attenuate signals throughout the AM broadcast band (540-1600 kHz); it has a nominal midband attenuation of about 40 dB, decreasing to near 16 dB at 160 kHz.

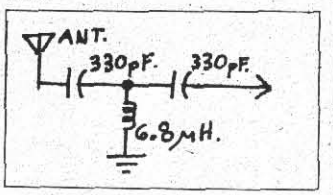
Stopband filters are useful in applications where a particular portion of spectrum, seldom of interest to the listener, is constituting a problem due to strong signals. FM and TV filters are of this variety.



HIGH PASS FILTERS: For shortwave listeners unconcerned with broadcast band or VLF monitoring, the high pass filter is the most commonly used.

Usually designed with a cutoff frequency around 2 MHz, this filter substantially reduces signal levels below that frequency while permitting higher frequencies to pass unobstructed.

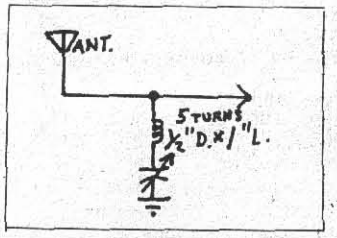
The attenuation of the circuit below is about 16 dB at 1600 kHz and 60 dB at 540 kHz.



TUNABLE NOTCH FILTERS: For custom installations where an individual may have a particular frequency bothering him, the tunable notch filter allows him to tweak a trimmer capacitor while listening to the interference, thus reducing or eliminating it as he passes the correctly-tuned frequency.

The Grove FTR-3 dual-band Scanner Filter is of this variety, designed to improve scanner reception in metropolitan areas where images and intermodulation from strong VHF and UHF signals are rampant.

Shown below is a typical notch filter designed for high band use.



MYSTERY SIGNALS FOIL SECURITY SYSTEMS

Strange goings-on in San Diego recently according to a San Diego Tribune article forwarded to MT by reader J. Borglum.

It seems that electronic security gates in apartment complexes have been jammed by unknown radio signals operating in the 280-340 MHz range, affecting private garage door openers which share that band as well.

Tentative explanations have been suggested: Soviet Navy trawler Gravill Sarychev, circling 15 miles off the coast in international waters; electronic "hackers" attempting to determine the codes used to open the locks; US Navy signals from an air warfare exercise off Miramar Naval Air station.

Sill under investigation by the FCC and other intelligence agenices, the mystery remains unsolved at this writing.

SIGNALS FROM SPACE from p.11

and a full gallon (1000 watts) in the shack on 2 meters.

The first international contact came on Sunday, 4 December, when W5LFL QSO'ed with King Hussein, JY1. His majesty was most cordial and seemed as pleased with the QSO as was W5LFL.

W5LFL tape recorded all of the QSOs as a log. Owen has reviewed the tapes and has identified about 300 callsigns. He believes there may be another 10 or 15% to be culled by someone with "contest ears." During the flight he was bothered by background noise in the Shuttle.

The mission is being viewed quite positively by NASA's senior managers as well. Many of the fence-sitters and nay-sayers are reportedly impressed enough with the present effort to nod affirmatively towards the next opportunity. That could come next year with the flight of Dr. Tony England, W0ORE, scheduled on Spacelab 2, March of 1985.

The radio on board worked quite well and the batteries lasted for slightly more than 4 hours on-the-air-time expended. The antenna worked remarkably well according to Garriott; even when the spacecraft was oriented so that the antenna pointed skyward, ground stations could be copied! Apparently the entire spacecraft acted as an antenna since the F/B ratio of the DDR ring is about 10 db. The antenna was designed by NASA's W5AVI of the Johnson Space Center.

And so W5LFL goes into the history books. And we have seen one of the all-time high-water marks for amateur radio. I hope many of our MT readers had a chance to hear and/or work Dr. Garriott. (Report courtesy of Amateur Satellite Report #68)

* * * * *

The ARRL has released its newest major publication, "Satellite Experimenter Handbook" by Dr. Martin Davidoff, K2UBC. The book is designed to teach the intelligent beginner a great deal about orbits, satellites and the like.

The format of the new book is similar to the ARRL Radio Amateur Handbook. Besides Amateur Radio satellites, the book also addresses weather and TV broadcast satellites. Check your local amateur radio store or write the ARRL, 225 Main Street, Newington, CT 06111 USA for more details. MT Signals from Space will take a good look at this publication soon.

* * * * *

Looking for orbital tracking information for amateur radio satellites? Look no further. Project OSCAR has arrived. The 1984 version will feature accurate predictions for the time and longitude of equatorial crossing (EQX) for the Russian satellites RS-5, 6, 7, 8. For AO-10 the time and position (latitude/longitude) of the satellite subpoint for every apogee during 1984 will be documented.

A minimum donation of $10 is requested for the calendar mailed first class to U.S., Canada, and Mexico. A donation of $12 elsewhere is requested. Mail your order to: Project OSCAR, P.O. Box 1136, Los Altos, CA 94022.

* * * * *

K2ZRO, of OSCARLOCATOR fame, now has a new Satellipse kit available. This device is great for tracking amateur satellites for those who do not have a computer. The price is $10 postpaid. (N.Y. orders, add $0.40). Mail to ZRO Technical Devices, P.O. Box 11, Endicott, NY 13760. The manual tracker works great with the OSCAR calendars just mentioned.

* * * * *

This month's frequency tip is for the Navy's Ocean Surveillance satellite system. These satellites split into 3 objects in orbit and carry interferometers for ocean surveillance. Designations and frequencies are as follows:

SSU-1 1427.230MHz, 1430.2MHz
SSU-2 1427.430MHz, 1432.2MHz
SSU-3 1427.630MHz, 1434.2MHz

MT will present more on these satellites as they become available. If you would like to contribute a frequency tip, please send it to Signals from Space, 1111 N. Carrier Pkwy, B-107, Grand Prairie, Texas 75050.

CALIFORNIA HAMS GET OLYMPIC CALLSIGNS

Largely through the spearheading of one ham, Richard Jay Ward NG60, California amateur radio operators will be permitted to use a commemorative callsign designator during the 1984 Olympics, July 1-August 31.

The special waiver allows the substitution of "23" (for 23rd Olympiad) or "84" (for 1984 Olympics) in place of the normal "6" assigned to California amateurs.

Congratulations, Richard, for demonstrating that it can be done!