



Radio Interference in Airport Vehicles

At airports where a number of radio frequencies are in use, interference among different radios is a common problem. Receivers tuned to one channel may hear transmitters on other channels (or be desensitized or otherwise affected by them). For vehicular radios, interference may be severe at some locations on the airport, but not present at other locations. A radio may be nearly useless when close to the antenna of a strong transmitter. ATIS and commercial F.M. transmitters are particularly troublesome because they broadcast continuously.

Furthermore, some vehicles contain several radios. A combination often present is an a.m. vhf radio for aviation ground control and an F.M. radio at approx. 150 or 450 MHz for public service or security communications. Their antennas are necessarily all within 5-10 feet of each other. The F.M. transmitters often have relatively high power and induce extremely strong radio frequency signal voltages into the antenna of the aircraft radio.

Vehicular radios are also more likely to have interference from engine ignition, alternators, rotating beacon motors, etc., compared to base stations whose antennas are usually further removed from interference sources.

All radio receivers are susceptible to interference; the best (and often most expensive) may withstand stronger interfering signals before communications are impaired. Stronger signals result from higher power transmitters and closer antennas. More sensitive receivers are more susceptible to interference of all kinds. Often the interference is squelchable at the receiver. A desensitized receiver will respond less to noise, and can squelch higher noise levels.

When other transmitters on the airport interfere with a mobile receiver, possible solutions include the following: (1) desensitize the receiver—may be acceptable as long as communications remain satisfactory at important points around the airport (2) special tuning of receiver rf amplifiers (requires test equipment; should be done by Avionics shop) and (3) add a filter at the receiver's input. Filters can be costly and their selection requires identifying the frequencies and magnitudes of interfering signals.

When a vehicle contains 150 and/or 450 MHz F.M. transmitters, one solution to interference is to "mute" (momentarily disconnect via a relay) all speakers whenever transmitting on any radio. Such a method is always used in aircraft with more than one radio, and the installation can be made by any experienced Avionics shop. Often the interference is due to spurious radio frequency *noise* generated by the F.M. *transmitter*. A filter can be inserted between the transmitter and its antenna to eliminate this kind of interference.

For interference from vehicular noise, first make sure the interfering equipment is operating properly. Older tractors or tugs without shielded ignition wires may require that shielding be added. For rotating beacons, motor brushes must be clean and in good condition. If replacing brushes does not stop beacon noise, a power lead filter must be added directly at the beacon.