

Troubleshooting VHF Reception

By Antennas Direct, Inc Technical Support

As of the 2009 digital TV transition, approximately 24% of all the full power stations in the United States utilize a VHF channel for their TV broadcasts. All but about three dozen operate on channels 7-13; the remaining few use channels 2-6. Customers often find that receiving VHF stations has become more difficult for several reasons, often more than one at a time.

Many VHF stations transmit at power levels that are a fraction of their UHF competitors. UHF stations are permitted as much as a million watts of power in order to cover a wider area and to better reach hidden areas such as valleys. VHF stations, on the other hand, might transmit with as little as 5,000 watts up to 160,000 watts with output power levels of 15,000 – 30,000 being very common. Customers who are willing to install large rooftop antenna systems usually do well, but those who choose indoor or very compact antennas usually find it difficult to get reliable reception the further they are from their local VHF broadcast towers.

In addition to the common issue of lower power levels, VHF stations often suffer from higher background man-made noise levels that can interfere with reliable reception. Common sources of such electrical interference that interferes with VHF reception, in general, occurs from two primary sources

- 1) FM interference. As it happens, FM stations use frequencies that, for channels 7-13, are at one half the frequencies of those channels. Inside the tuner or any amplifier, such FM signals, if they are sufficiently stronger than the desired VHF channels, can create distortion that causes the VHF channels to be overwhelmed by the distortion. Fortunately, this problem is easy to address by adding an external \$5 FM Filter between the antenna and any amplifier or, if no amplifier, at the input to the TV set.
- 2) Electrical or electronic devices or infrastructure near the receiving antenna. This one is far more difficult to diagnose so that it can be corrected. Common outside contributors may be from power company transformers, faulty insulators, or high-voltage power cables. Common household contributors include lighting products (compact and standard fluorescent lighting, LEDs, dimmers, solar power or other outdoor items), computers, laptops and power supplies, microwaves, solar-powered security or lighting products, plant grow lamps (what's your neighbor growing in their basement?), aquarium heaters, timers, and even TV sets have been found to cause problems.

Troubleshooting electrical interference concerns without expensive test equipment (spectrum analyzer) usually involves looking first for any patterns such as time of day, daylight/nighttime, or when using certain electrical items. If you find that the problem is intermittent and you can set a clock by it, you can bet that it's due to something operating on a timer. If it's day/night sensitive, then it's a light-controlled item.

Generally, if the item causing the interference can be identified, then correcting the interference is easy (replace or relocate the item). However, that may not be feasible for various reasons. In those cases, the only two alternatives are to upgrade the antenna to a more powerful, directional antenna to see if you can deliver a stronger desired VHF signal to your antenna cabling and your tuner or you must work on the location and orientation of the receiving antenna so as to improve the reception of the desired signal and to decrease the reception of the undesired interference.