

Attic antenna...or not?

Disadvantages of putting the antenna in the attic.

Placing an antenna has at least four distinct drawbacks as compared to a rooftop mounting position:

1. Attenuation loss. Depending on the construction materials in use and the moisture content of the materials, this signal attenuation might be as little as 3 dB (50%) or as much as 20 dB (99%) to 30 dB (99.9%) for metal roofing or attics with radiant barrier. If there is insufficient signal power at the exterior of the attic to penetrate the building's envelope while still having enough remaining signal power and quality to provide reception, then reception will not be possible with the antenna in that attic. In winter, snow covering on a roof will further increase attenuation loss.
2. Increased multipath. The attic enclosure will cause multiple reflections of the signals which, when picked up by the antenna, can cause reception to fail due to inadequate signal quality.
3. Increased clutter loss from surrounding structures including adjacent buildings and trees.
4. Decreased signal power levels at lower elevations. Raising height of an antenna higher in the air usually puts it into a location where signal powers are stronger. If signals are already weak due to distance or terrain, placing the antenna in the attic will often make reception of those weak signals impossible

Advantages of an attic antenna

There are distinct advantages in placing an antenna in an attic, but the advantages must be tempered with reality.

1. Easy access for most people. No step or extension ladders onto the roof are needed, no holes must be drilled into the roof or siding of the home and the antenna can be installed in the dead of winter when outside conditions are unsafe for roof access.
2. Unless the home's roof is blown off in a storm, the antenna, cabling, and connections will last virtually forever since they are not exposed to moisture.
3. No birds to break the antenna, no wind to cause it to become misaimed.
4. You have many options for mounting. There is no requirement for very strong mounts. Plastic pipe, wood dowel rods or small dimension lumber and similar items which are already on hand may be used.

Ten strategies for improving your odds of success with an attic antenna.

1. Set realistic expectations. Don't expect it to work magically just because you want it to work. You may get lucky and it will work great on your first attempt or you may have to work very hard and do some or much experimenting to make it work. It may not work at all.
2. Selecting a larger ("longer range") antenna can help as they have more signal gathering capability (for picking up those weakened signals) and are more directional (focused) which will help reduce multipath. The drawback is that, if the local towers are broadly scattered, the more directional antenna may force you to either use a rotor to aim the antenna or to forgo certain stations whose towers are located in the wrong direction relative to the antenna's aim.
3. Evaluate building materials that are in use for their potential for attenuation loss. A basic shingle over plywood roof and vinyl siding over plywood or OSB are about as transparent to RF signals as one can hope for. On the opposite end of the scale, metal roofing, metal siding, radiant barrier insulation, stucco siding, concrete siding products, and similar materials will usually make reception of signals in the attic somewhere between merely difficult to impossible.
4. Know where the signals are coming from. Use an online tool like www.antennapoint.com to identify the direction(s) that the signals are coming from. Be able to keep your bearings inside the attic so the antenna is facing the needed direction.
5. Know your home's surroundings. Your neighbor's house, the trees outside, and other objects in front of the antenna can make or break reception. Look for a spot that minimizes these external obstructions.
6. Avoid placing the antenna near or behind metal objects which would block or reflect the incoming signals. Metal vents, metal gutters, metal roof flashing, drip edge, fascia and trim, heating and cooling duct work and equipment, and plumbing equipment are all things to avoid whenever possible.
7. Keep the antenna away from electrical items such as motors, solar panels, outdoor LED and CFL lighting, solar-powered security features, and the like as these items can cause electrical interference that disrupts reception.
8. If you are in an area where signals are expected to be of weak to moderate strength, use an appropriately rated amplifier near the antenna to preserve signal power levels. If you are in a strong signal area, avoid the use of any amplifiers as the signals are already strong and an amplifier will not help (and may cause problems).
9. BE PATIENT! You may need to try multiple locations in the attic to find a "sweet spot" where everything plays nice and works. Moving a UHF antenna by as little as 6 or 12 inches can make or break reception when the antenna is installed in an impaired location such as an attic.
10. Be prepared to install the antenna outside and up in the air should the attic location not allow for satisfactory reception.