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Wireless Jungle: Taking The Stealth Approach

Inside the legalities of wireless system use

By Gary Stanfill

Is your entertainment wireless system use legal?

Sure about that?

There's a good chance that it isn't and you might not even know. Thanks to widespread misinformation and confusion, many wireless users are unknowingly breaking the rules. And what you don't know can hurt you - or at least your wallet.

The rules established by the FCC (Federal Communications Commission) are quite specific: in the U.S., unless you're a broadcaster and have a wireless license, or unless you operate on the eight 169 MHz to 171 MHz "traveling" frequencies and have a different kind of license, you're technically illegal. Period, end of story.

Contrary to urban legends and eager salesmen, manufacturers cannot automatically license their systems. Further, the government does care, a system is never too low in power to be illegal, it really can cause interference and there really is good reason to be concerned.

In addition, just because wireless equipment is widely sold does not mean that it can automatically be used legally. This might seem strange, but the FCC rules place all the responsibility on the user and none on the manufacturer or dealer. (Your taxpayer dollars at work!)

OUT OF LUCK?

Unfortunately, the FCC will only issue wireless licenses for television channel frequencies to broadcasters, TV/film producers, and other similar types of organizations. No one else can be licensed, and without a license operation is technically illegal, which pretty much leaves the average wireless user out of luck.

As a result, only roughly 25,000 wireless licenses have actually been issued in the U.S. even though there are probably 300,000 to 400,000 systems in use, at least occasionally.

So clearly there are an awful lot of wireless systems being used without licenses. The FCC is aware of this but doesn't have the resources or the inclination to routinely pursue violators and only rarely takes action against unlicensed users.

Unless, that is, unlicensed wireless operation causes interference to public safety agencies, licensed wireless users or the TV-viewing public. In such cases, and when the interference has serious consequences, the FCC can move surprisingly quickly to deal rather firmly with offenders. They have the authority to levy stiff fines ("forfeitures"), which can range up to $10,000 and above per offense, and they can even confiscate equipment. However, this isn't often done unless the offender is uncooperative or the equipment being used is illegal.

The FCC generally regards the use of non-approved or illegally modified wireless equipment as being a more serious offense than simple unlicensed operation. Don't even consider using such gear, especially if it has been modified for higher power, has been moved to an illegal frequency band, or the approval requirement has simply been ignored. For such equipment, stiff fines are nearly automatic if you are caught.

Go here to search TV stations at any location...

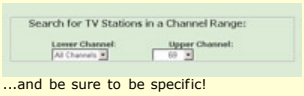
STAYING OUT OF TROUBLE

In most cases, the FCC's first action will be to require that unlicensed equipment be turned off to eliminate the interference. If the user is cooperative and promptly shuts down, it will usually end there unless there is a history of problems or the equipment itself is illegal. So if confronted by FCC officials, don't argue, don't delay and don't be nasty or unfriendly. Outright refusal to shut down or causing further serious interference will likely get you into trouble. Expensive trouble, perhaps even the kind requiring a lawyer and bail money.

The situation is somewhat similar if you're approached by police or fire personnel, broadcasters or other licensed users and you don't take prompt action to eliminate interference. In addition, all reports of TV interference should be taken seriously. Be proactive and solve the problem before the FCC has to get involved. The goal should be to "fly under the radar" and avoid attracting unwanted attention.

Single complaints involving only wireless users are not usually pursued. In fact, when they are, the person making the complaint is often investigated first. So there is little to gain and much to lose by making a complaint about someone else. Remember also that entertainment wireless systems users, even properly licensed ones, have the lowest priority and must by law shut down if requested to do so by any other legal user of the frequencies.

Unfortunately, as the DTV (digital television) conversion continues, the number of open TV channels will shrink dramatically (see Wireless Jungle, March 2003 issue). As more and more wireless users are crowded into fewer and fewer channels, it is inevitable that interference will become more common. The congestion may also tempt some wireless users to take a few more chances than in the past.



...and be sure to be specific!

Some of the upper UHF TV channels are also being turned over for public safety use. This will considerably increase the possibility that wireless will interfere with police and fire radios, and once again, it is the responsibility of the wireless user to stop interfering.

This may be very annoying, especially for long-time owners/users of wireless systems, but it doesn't change the facts.

To help avoid interference, FCC rules require that a wireless not be used within 70 miles (113 km) of a transmitter on the same channel. This will be harder and harder to observe as the number of available channels continues to shrink. A common-sense approach is to reduce the distance if there are mountains or other obstacles in the way, the TV transmitter is low power or the TV antenna points the power in another direction, as is often done.

WATCH THAT DTV!

Another approach is to determine if a particular station can produce a usable picture on a good TV set. If the picture is so bad that no one is likely to be watching, there is little chance of complaints. Be careful of DTV stations, however, because even strong DTV transmitters may not be detected by analog TV sets. For these, you will have to do your homework. Don't take chances with DTV - anyone who has just spent a few thousand dollars on a new DTV set is going to be particularly unhappy if they can't get a picture.

Some wireless users operate on "slot" frequencies within channels where the transmitters are relatively distant. These are frequencies in areas of an analog TV channel where there is little transmitted energy. This usually allows such channels to be safely used for wireless. However, the reverse is not true. A wireless transmitter can greatly affect the picture on a nearby TV set. Therefore, using "slot" frequencies can be risky, especially if there are nearby residences.

Unfortunately, the "right" approach is going to take some homework. The place to start is the on-line FCC Television Database, located at www.fcc.gov/mb/video/tvq.html. This web site allows search of all TV stations within a specified radius of a given location. The "detailed" version is generally quite lengthy but offers full information, including operating status, exact distance and transmitter power.


Be nice, or you might get a visit from the FCC's version of Sgt. Joe Friday.

The listing also shows stations that have construction permits or have pending approvals. Whether or not you consider these depends upon how long you expect your wireless systems to be used at a given location. Also listed are TV translators (re-transmit sites) and low power stations. The 70-mile rule doesn't generally apply to these, but the rules regarding interference do.

It can be a significant amount of work to plow through the database output to make low risk frequency choices, especially the first time you do it. Perhaps you will want to adopt a risk management approach and use a different approach for a one-night event than for longer-term use. However, before you conclude that it's not worth the effort, consider the risk. If you cause critical interference to the local police department radio system or blank out a favorite TV show for an entire neighborhood, you might get a visit sooner than you think.

An increasingly popular approach to frequency selection is scanning receivers that go through their operating frequency range and pick "good" frequencies. In addition to not being all that reliable in selecting interference-free wireless frequencies, these units do not consider interference to other systems. That is, they will quite likely select frequencies that will interfere with TV stations, public safety radio and other wireless systems. Their use does not eliminate your responsibility not to interfere with other legitimate users of the frequencies.

The best approach is to be a "stealth" wireless user, whether you are licensed or unlicensed. Don't attract unnecessary attention and don't push the envelope. If you're busted, play nice. Unless there are equipment violations or you've done something really dumb, you'll probably just be asked to shut down and stop interfering. Do so immediately. If not, a little problem can quickly become a big (and expensive) one.

Gary Stanfill has more than 30 years experience in audio, RF technology, communications and wireless systems. He served as president and general manager of Vega and is now principle consultant for Colmar Systems, based in Southern California. Gary can be reached at ***gjstanfill@earthlink.net***

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