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U.S. Digital Television Transition Issues: Both Good and Bad

Gary Breed
Editorial Director



My first fifteen years working in high frequency technology were in the broadcast industry, so the current transition to digital television (DTV) here in the U.S. is more than a casual curiosity for me. As a technical type, I've gotten lots of questions from family and friends, and have heard a number of pertinent stories about their experiences.

Before going into any technical discussion, I need to express my opinion on the television ads that were produced by national organizations to help explain and promote the change.

They are terrible! Your opinion may be different, but many of my acquaintances have said these ads only added to the confusion.

They obviously were done by some big-time ad agency that didn't really understand the technical explanations of DTV, or maybe tried to be too slick and avoided a simple, clear explanation. On the plus side, they have been run regularly, so the general public is at least aware of the situation and needs to find out more. Kudos go to PBS, who used their "Ask This Old House" experts to provide the best short explanation I've seen. Some local stations did a good job with their own presentations, too.

Now, on to the actual transition. I've had a digital TV for two years and appreciate the improved picture quality. Although I use rabbit ears, there is a clear line-of-sight path from the towers that all local broadcasters use. I get a fine signal on all local broadcast channels. Like me, the vast majority of people with good analog TV reception will also get good DTV reception, but a significant number will be disappointed until they solve some problems with their installations.

The most problematic issues arise with viewers who already have marginal analog TV reception, with ghosts and grainy pictures. Unfortunately, marginal DTV signals are not "partially viewable" like analog TV. It doesn't fade out, it just stops working. DTV helps somewhat with ghosts when the signals are strong, but there will be city dwellers whose rabbit ears simply receive too many strong reflections in addition to the main signal. Distant viewers will also have problems if the signal levels are marginal, even without any ghosting.

The solution for these people is a proper antenna. City dwellers may need a small outdoor antenna, located where it has a clear view to the DTV

transmitting tower, or will experience fewer multipath reflections. Fringe area viewers may need a better, higher antenna that delivers more signal to the DTV receiver. In some cases, a new feedline, and perhaps a preamplifier located at the antenna, will solve the problem.

In a real sense, this situation is no different than the “old days” of the 1950s when TV was becoming popular and TV sets did not have very sensitive circuitry. Most houses had a TV antenna on the roof, or a tower by the side of the house to hold the antenna even higher. For customers who want to receive DTV directly from the station’s tower, that type of installation may become common once again.

The more problematic group of disappointed consumers are those whose reception is marginal because of local terrain that pre-

vents them from having a direct line-of-sight to the tower. A new antenna may improve the situation, but there will be many cases where there is no way to locate it to “see” the station.

The best solution costs money—subscribing to cable or satellite service. However, if there are large areas with reception problems, it is possible that local stations may consider translators to relay signals into areas of poor coverage.

Changing Frequencies

DTV coverage problems are exacerbated in many markets because of the change in operating frequencies. For example, analog Channel 3 is 60-66 MHz, but my local “Channel 3” DTV signal is actually on UHF Channel 50. Signal propagation is radically different from low VHF to 700 MHz!

One of the results of the DTV changeover is that these low VHF frequencies are available for other services. The “slightly over the horizon” propagation of the former low TV channels will afford better coverage, which may be used for an expanded public safety and homeland security communications system. Some frequencies will be auctioned (at big \$\$\$) for commercial services. New services will likely be allowed between the new DTV channels, since DTV is more tolerant to some types of interference.

A big change like DTV is exciting and daunting at the same time, with a few problems yet to be solved. Overall, DTV is a big step up in viewing quality for the consumer, and with its “bonus” channels, new services will be offered by forward-looking broadcasters.