

Q. *What is happening to TV signals and standard TV sets on February 17, 2009? (Several inquiries)*

A. February 17, 2009, is the cutoff date set by the FCC for conventional, analog TV broadcasts in the traditional channels 2-69 VHF/UHF spectrum. While off-air television transmissions will continue there, they will be digital and unreceivable on your present TV set unless it's digitally-equipped.

If you don't want to upgrade to a new TV set, you can get a \$40 federal rebate on purchasing a digital-to-analog converter so you can continue to watch VHF/UHF local TV stations on your present set (call 888-DTV-2009). Only VHF/UHF broadcasts are affected, not satellite or cable. Thus, as of February 17, 2009, if you are watching local TV channels 2-69 on an older TV attached to a conventional antenna, your reception will go "poof."

Q. *What frequency ranges are occupied by the new Digital TV channels? Will stations now carrying digital and analog on two channels keep a second digital channel? (John Demmitt, Somerset, PA)*

A. The new DTV channels are simply re-assigned spectrum taken from the present analog TV channels 2-69. DTV multiplexes several different programs simultaneously; you choose a "major" (conventional) channel number, then a specific program sub-channel, as in 2-1, 2-2, 2-3, etc. up to -99. Data channels are numbered -100 to -199.

An excellent FCC primer on DTV may be found at: www.dtv.gov/consumercorner.html, and *MT* has also covered the topic in past feature articles and several columns, most recently in the *June Beginners Corner*.

Q. *I often listen to two-way voice communications between the TV frequencies on my AM/FM/TV-sound portable radios. With digital TV replacing analog TV sound in the 700 MHz range, what will I hear there? (Ben-Nye, Westbury, NY)*

A. Not much. Digital TV sound is not receivable on conventional analog receivers or scanners, and the newly-allocated public safety services in the 700 MHz range will be using digital audio as well. Your only hope is to get a scanner with P-25 demodulation capability; this will be the dominant public safety mode to ensure interoperability among licensees.

Q. *Early, tube-type radios of the 1930s and '40s often had shortwave bands, with police communications just above the AM broadcast band. Was listening very popular then? (J.J.O., NC)*

A. With no FM, TV, scanners or other alternatives back then, many listeners would attach a long wire aerial to the screw terminal on the back of their sets to hear worldwide broadcasts. I can still remember listening on my Philco cathedral to police calls in the 1.7 MHz spectrum as well as to shortwave broadcasting.

The allure of hearing utility communications was no more pervasive then than it is now, but more folks listened to foreign broadcasts like the BBC. Of course, we do this daily now with computers and television.

Q. *I am presently using two indoor shortwave antennas and am plagued by electrical noise. Will a preselector help? (Paul Weiss, Phoenixville, PA)*

A. Not likely. Since electrical interference is broadband, the noise is actually on your desired frequency (as well as others) and needs to be minimized by other means, such as switching to an outdoor antenna away from power lines, using a phase-type noise filter like the MFJ-1026, or a DSP noise filter like the MFJ-784B.

Q. *Is there a general formula for determining the listening distance for a scanner? (Dave Carter, Centuria, IL)*

A. Yes, but it's approximate because of the many factors that limit range, such as frequency, weather, terrain, cable losses, obstructions, tower height, transmitter power, antenna locations, antenna gain, and receiver sensitivity.

The *visual* horizon in miles between two antennas (or from your eyes to the horizon line) is found by taking the square root of $(1.35 \times A)$, where A is the combined height in feet of the two antennas (or the height of your eyes above the ground). Since radio waves bend somewhat toward the earth, the actual radio range is considerably greater than this calculation shows.

Where an outdoor, omnidirectional receiving antenna and low-loss cable are used, terrain is reasonably flat, and the transmitter operates at 100 watts or so, your scanner should be able to hear mobiles 15-25 miles away, and base stations 50-75 miles away. Adding a directional beam can increase this to 75-100 miles.

Q. *How did early radio networks share the programming when telephone lines had poor quality? (J.J.O., NC)*

A. During the 1920s, networking became the rage and it was, indeed, done over telephone lines. If this was impractical, stations could re-broadcast received signals from another station, or delay the program by playing phonograph recordings (16" celluloid-coated aluminum discs played at 78 RPM).

Q. *While listening to air traffic in the 118-137 MHz band, I occasionally hear reference to a "squawk frequency"; what is that and what is it used for? (George Santulli, Washington, D.C.)*

A. "Squawk" is simply the reference to activating a radar-frequency transponder that will distinguish a particular aircraft on a busy radar screen. If the aircraft pilot responds to "Squawk 7441," that simply means he will press that series of numerals which will identify which blip is his on the tower radar screen. It can also notify the Collision Avoidance System on other aircraft.

Q. *Since birds can sit on a power line without getting electrocuted, can humans do the same? (Mark Burns, Terre Haute, IN)*

A. Theoretically, yes, at least on the secondary, lower-voltage, distribution lines, and making good contact with the wire to prevent arcing. For current to flow, there must be a voltage difference in a closed circuit. Someone sitting on a power line doesn't complete an electrical path. But don't try it!

We've all seen the picture of a woman sitting on a metal chair connected to one pole of a high-voltage Tesla coil, her hair stretched out like a giant broom, each strand repelling the other because they are of the same polarity. She is unharmed because she doesn't complete an electric circuit, and only minor currents are present in the ionized air around her.

Questions or tips sent to Ask Bob, c/o MT are printed in this column as space permits. Mail your questions along with a self-addressed stamped envelope in care of MT, or e-mail to bobgrove@monitoringtimes.com. (Please include your name and address.)