The Transition to Digital TV

On February 17, 2009 all full-power broadcast television stations in the United States will stop broadcasting analog and begin broadcasting only Digital TV signals. The FCC’s Digital TV Transition Web page has more information on this transition, including an FAQ Page.

The new DTV channel allocations will remain 6 MHz wide, the same as the present analog TV signals. However, instead of each channel slot carrying an analog NTSC television signal (visual carrier, color subcarrier, & aural carrier), the channel slot will carry an 8-VSB digitally modulated signal. The 6 MHz-wide channel slots themselves won’t change, just what is carried in them! So, Ch. 2 will still be 54-60 MHz, Ch. 3 will be 60-66 MHz, and so forth up to channel 51. The existing UHF TV channels 52-69 will be reallocated to other uses.

The designation “8-VSB” refers to 8-level vestigial sideband modulation. This is similar to 64-QAM, which means 64-state quadrature amplitude modulation (the 64 “states” are 64 combinations of signal phase and amplitude values that represent the 64 different transmitted symbols). In the case of 8-VSB, the “8” refers to the eight-level baseband DTV signal that amplitude modulates an IF signal. With 8-VSB or 64-QAM digital modulation, the RF signal looks somewhat like a 6 MHz-wide pile of noise or “haystack.” One physical difference between 8-VSB and 64-QAM that one would see on a spectrum analyzer is the presence of a pilot carrier on the left end of the 8-VSB signal’s “haystack.” For more info about 8-VSB modulation, see What Exactly Is 8-VSB Anyway?

by David Sparano.