TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

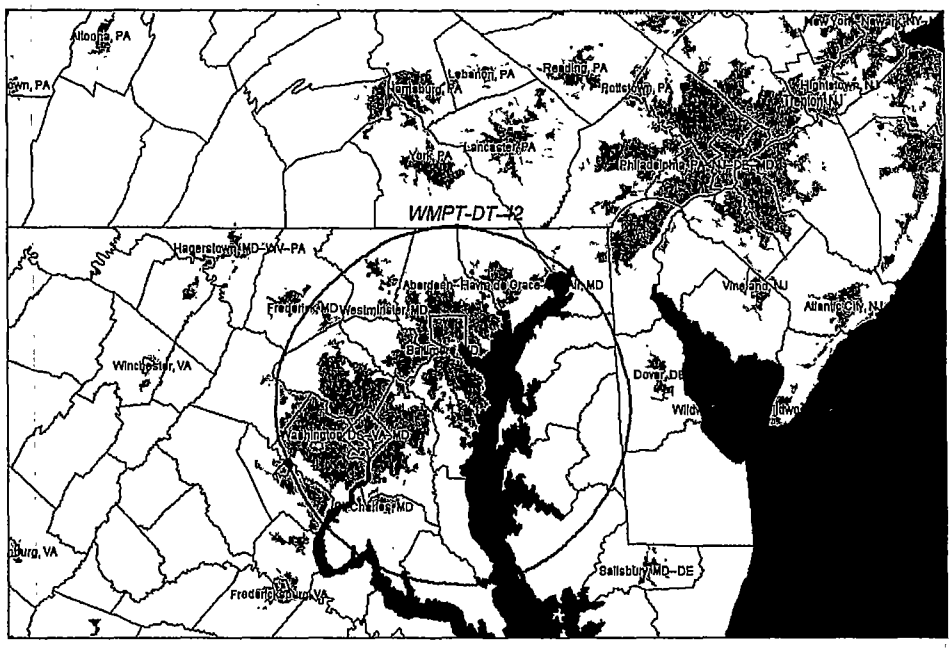

Figure D-185. Channel 42: WMPT-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

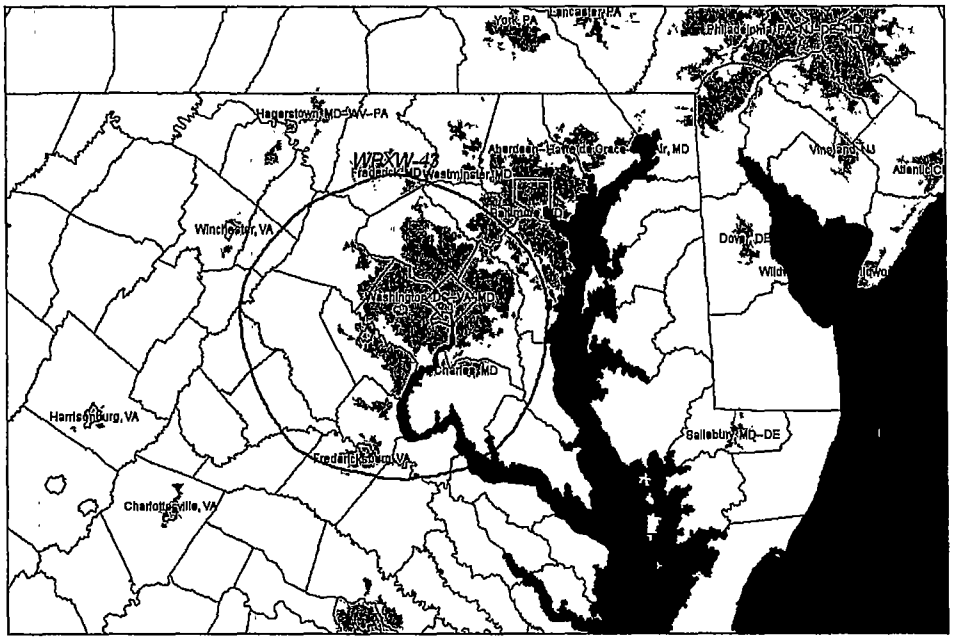

Figure D-186. Channel 43: WPXW-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

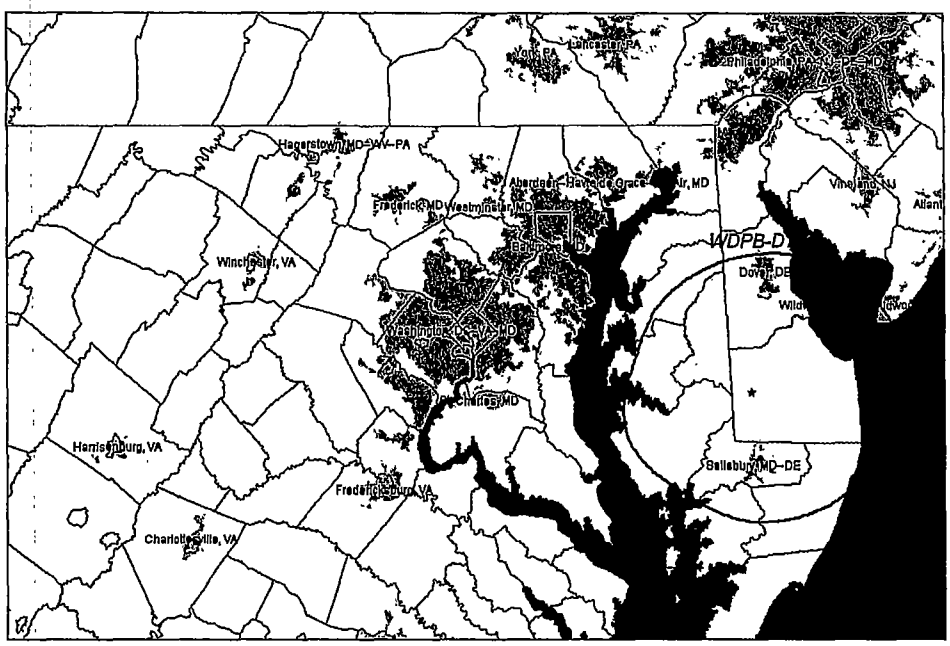

Figure D-187. Channel 44: WDPB-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

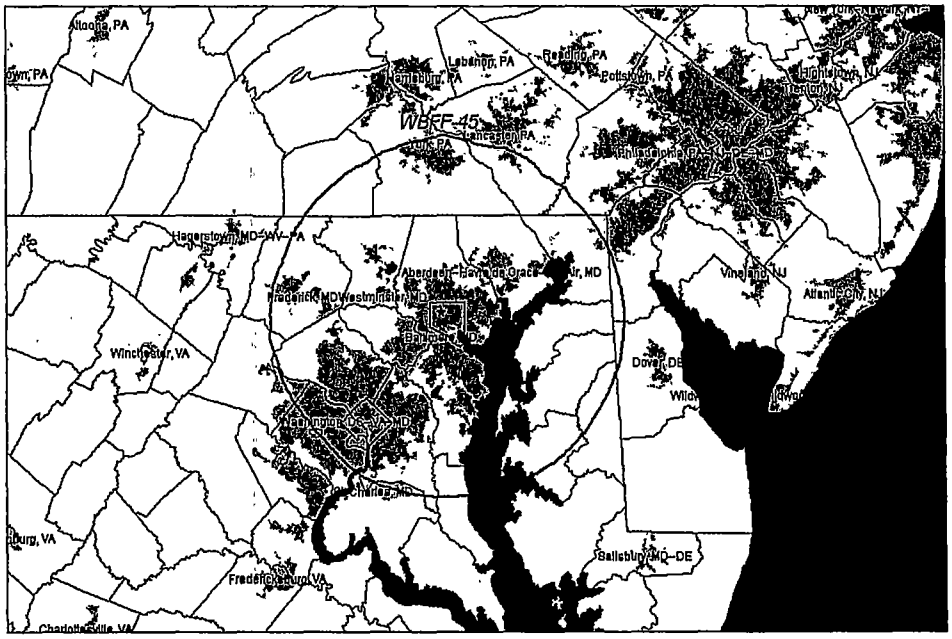

Figure D-188. Channel 45: WBFF-TV

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

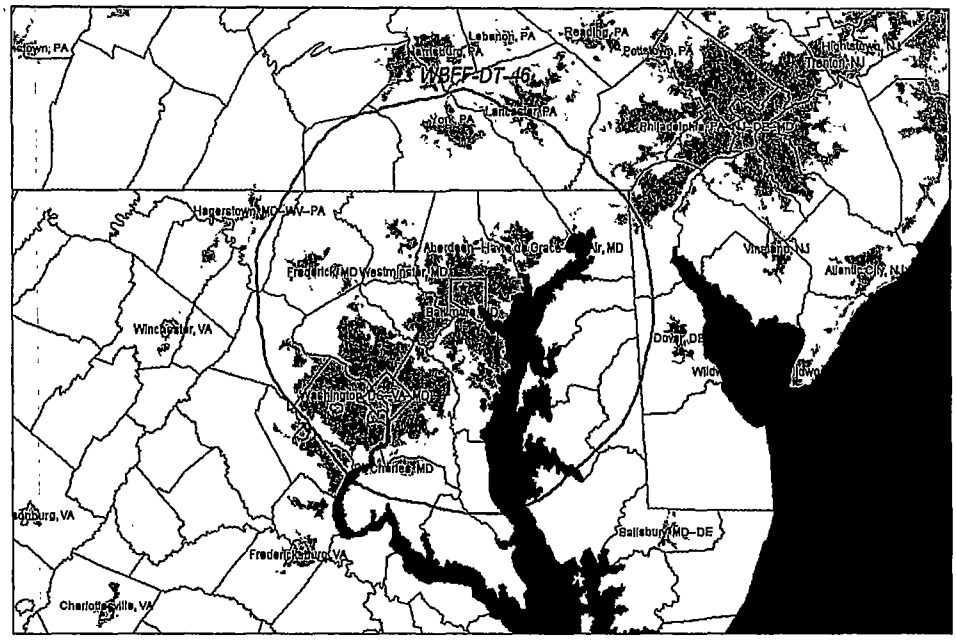

Figure D-189. Channel 46: WBFF-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

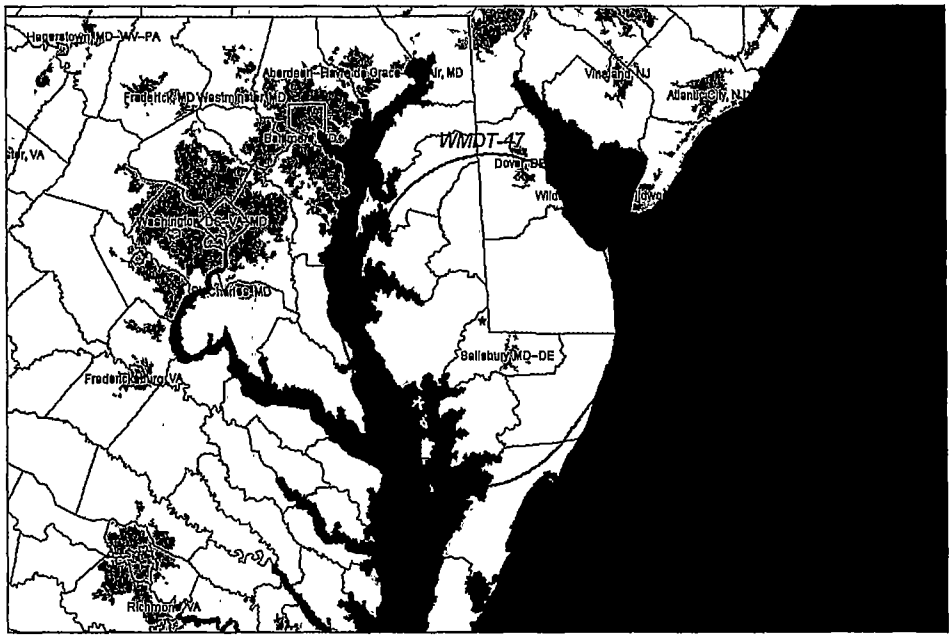

Figure D-190. Channel 47: WMDT-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

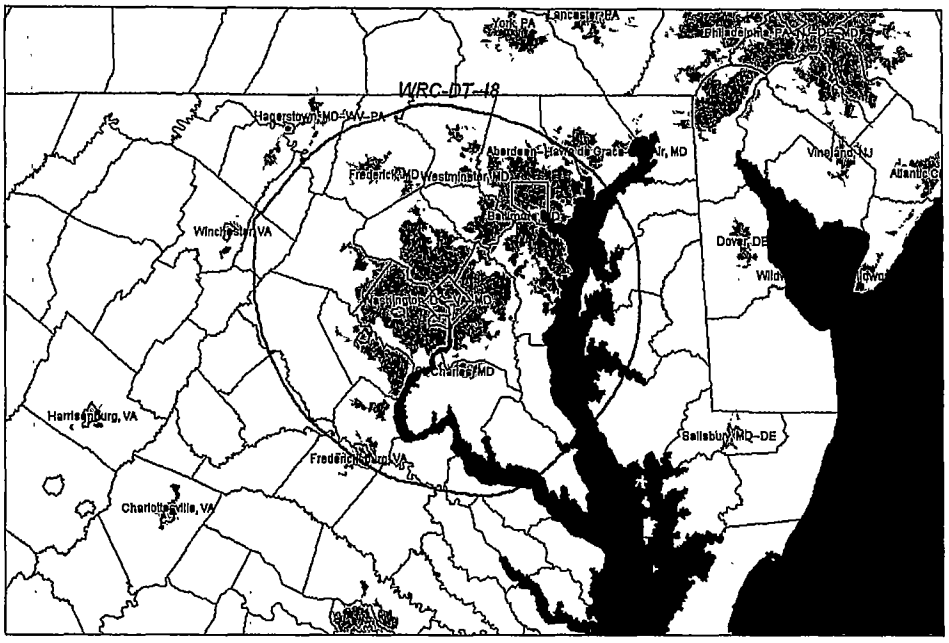

Figure D-191. Channel 48: WRC-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = LP-DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

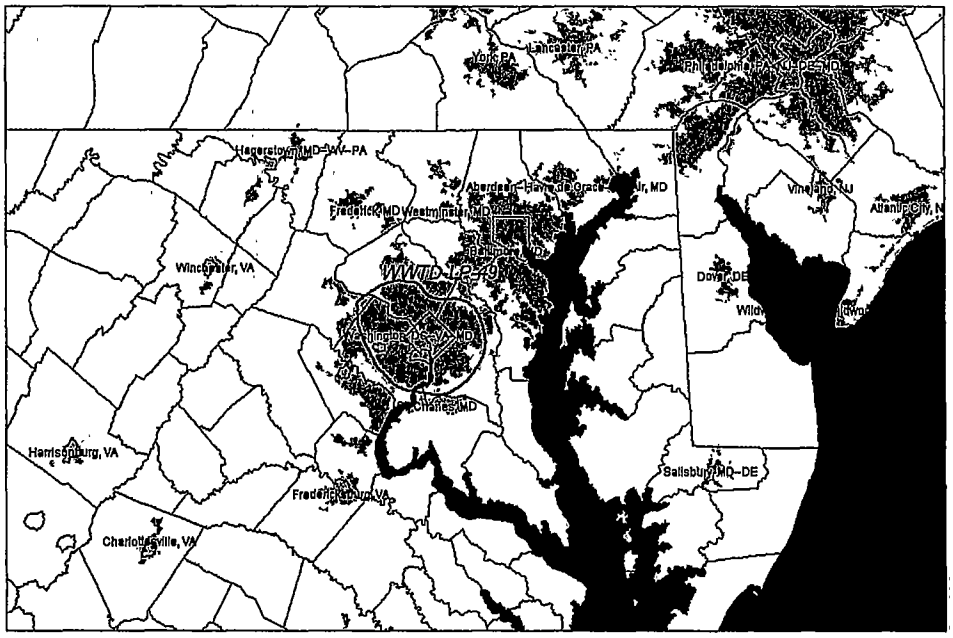

Figure D-192. Channel 49: WWTD-LP.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

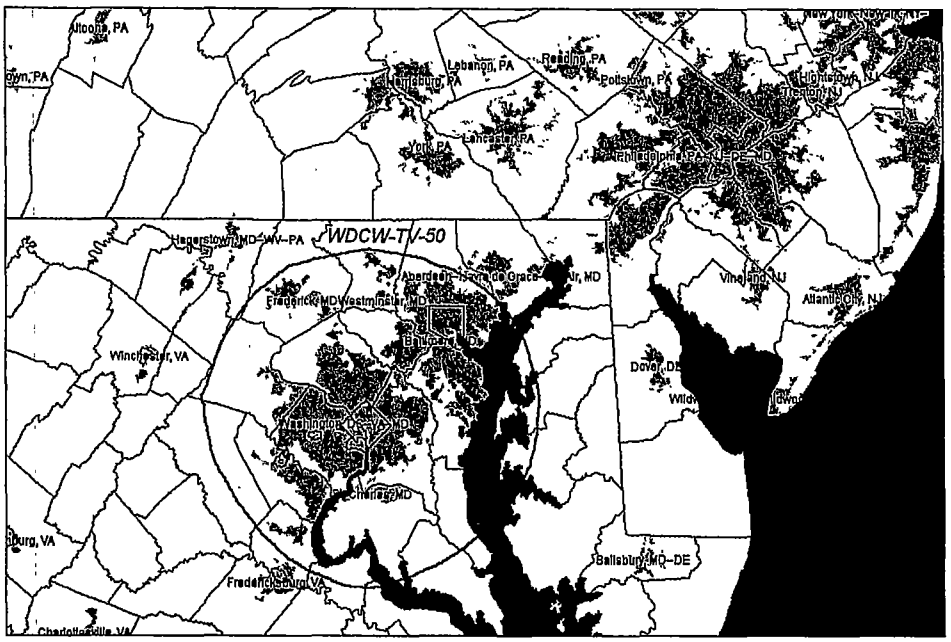

Figure D-193. Channel 50: WDCW-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

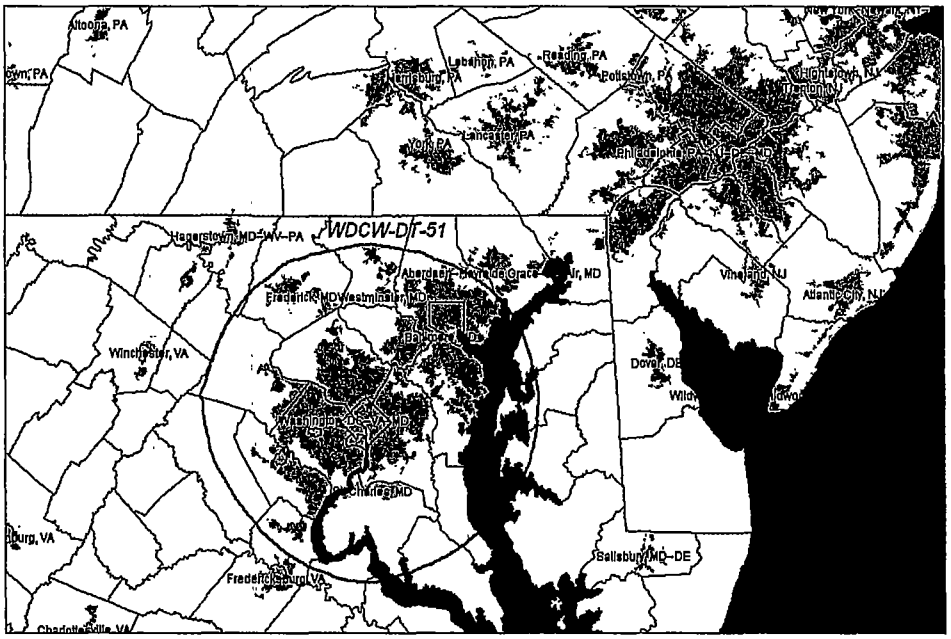

Figure D-194. Channel 51: WDCW-DT.

D.6 Service Contours Relative To Test Sites 7-9

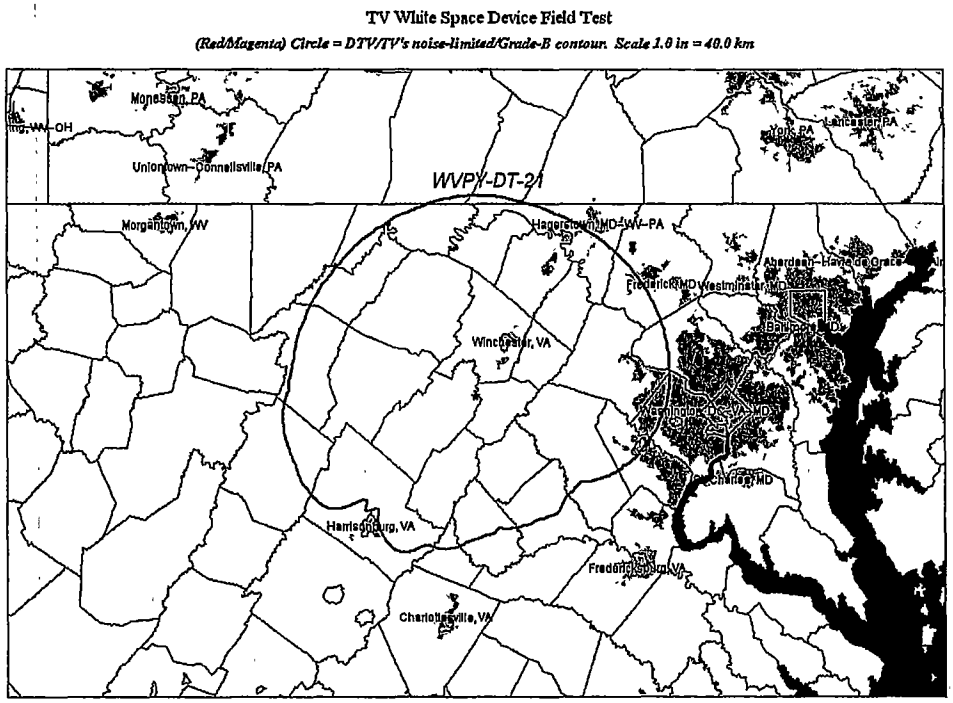

Figure D-195. Channel 21: WVPY-DT.

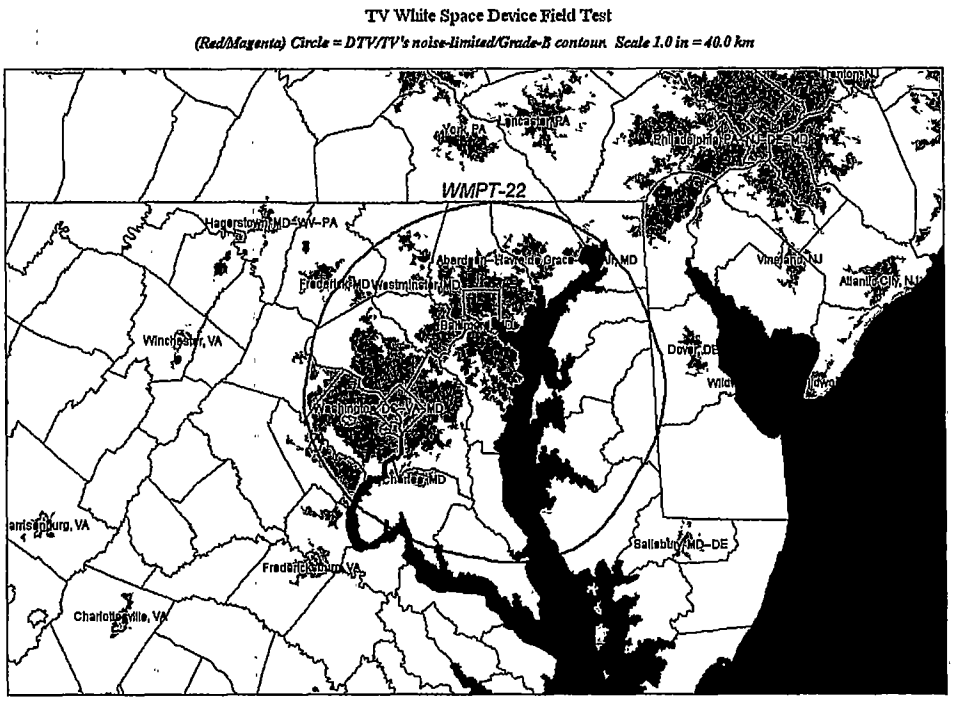

Figure D-196. Channel 22: WMPT-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = LP-DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

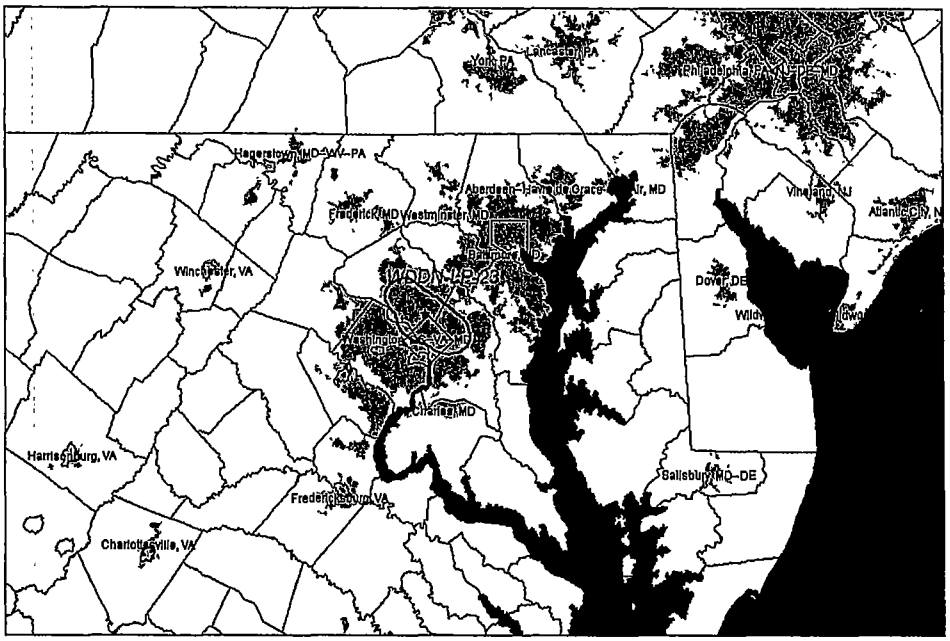

Figure D-197. Channel 23: WDDN-LP.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

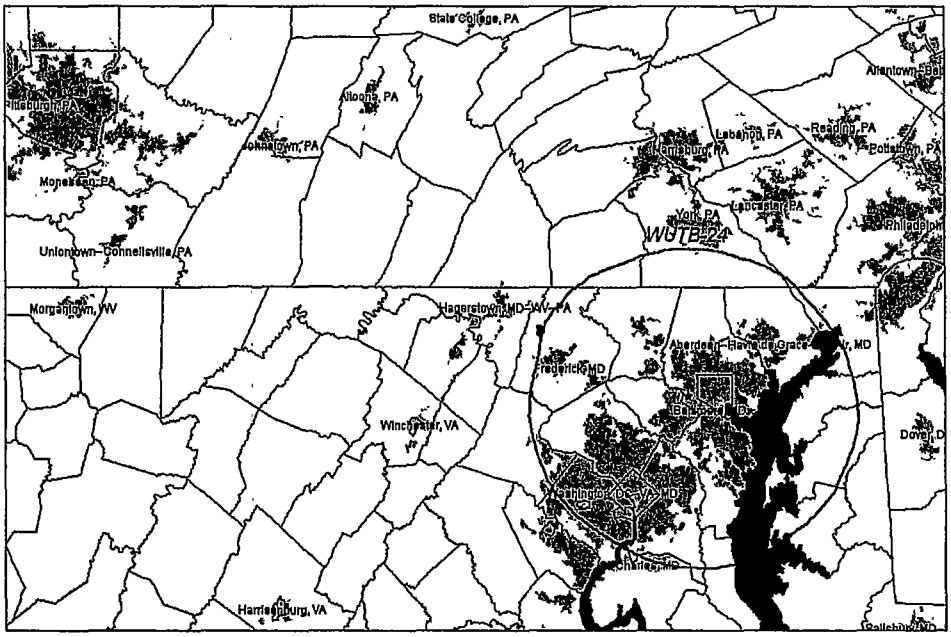

Figure D-198. Channel 24: WUTB-TV

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

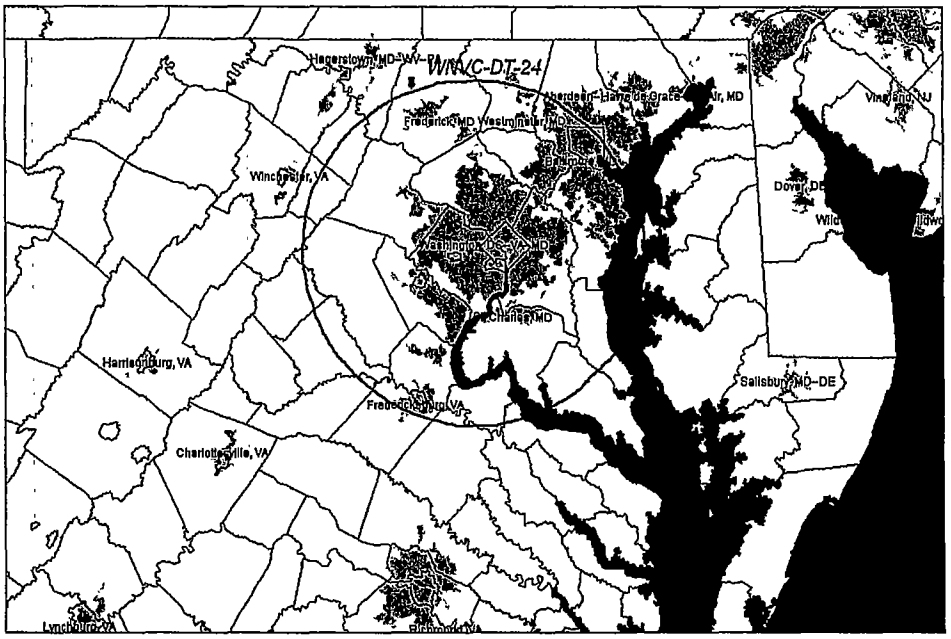

Figure D-199. Channel 24: WNVC-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

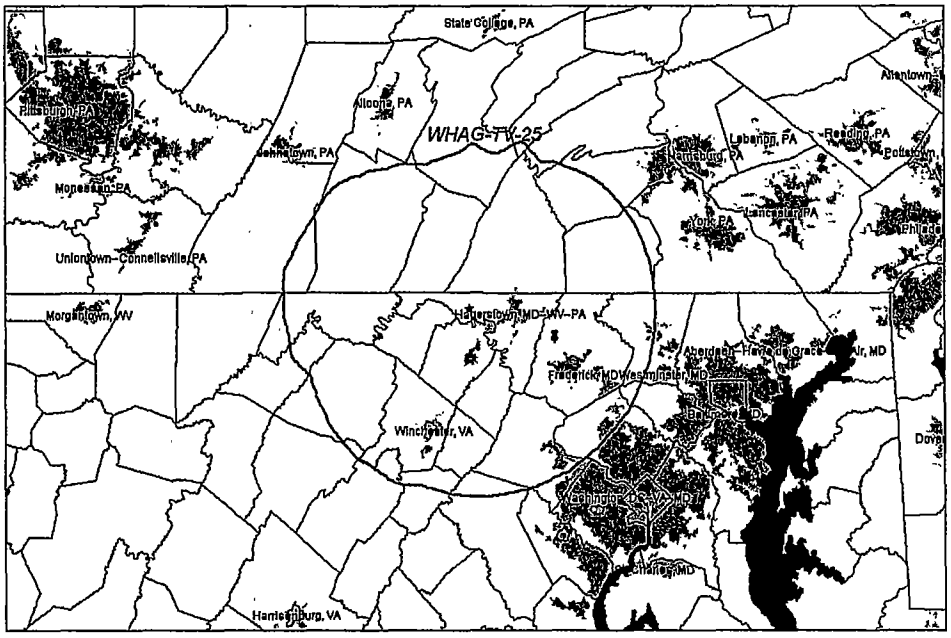

Figure D-200. Channel 25: WHAG-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

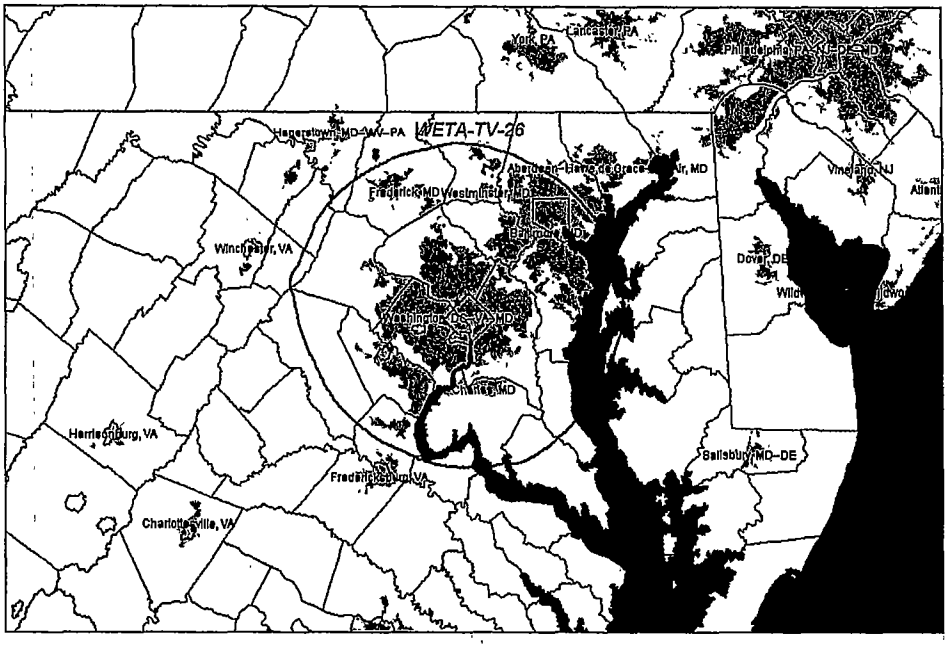

Figure D-201. Channel 26: WETA-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

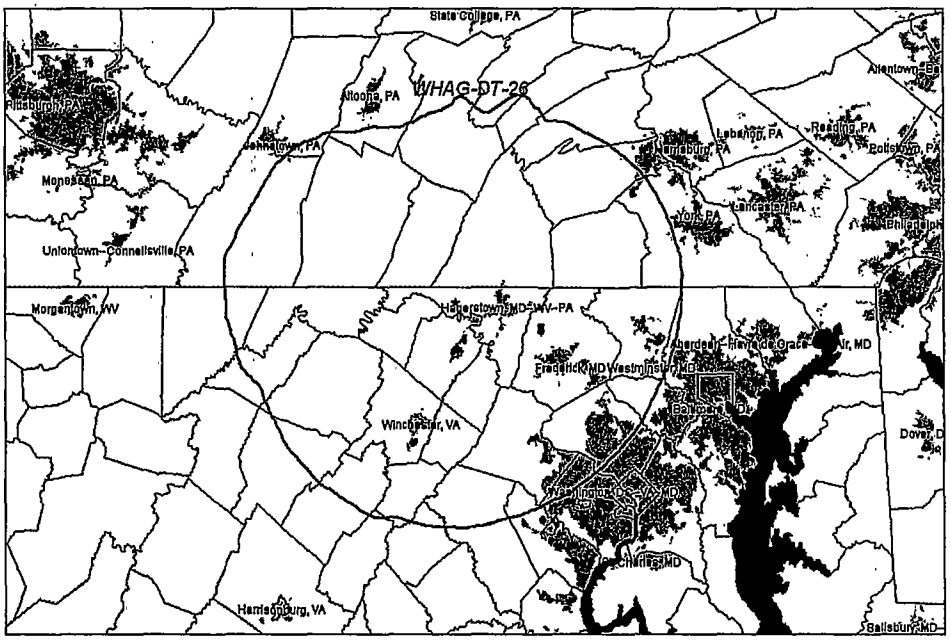

Figure D-202. Channel 26: WHAG-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

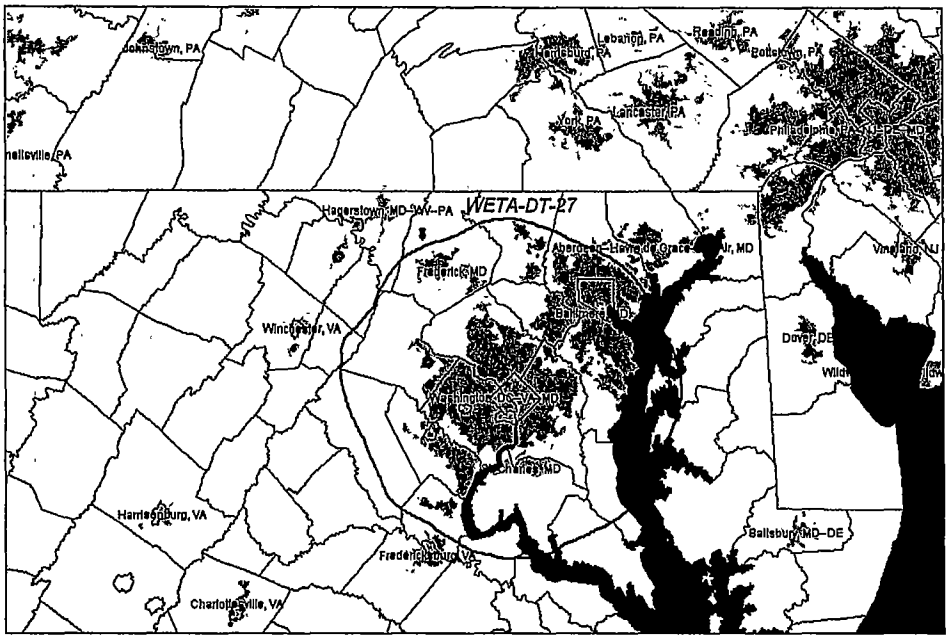

Figure D-203. Channel 27: WETA-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

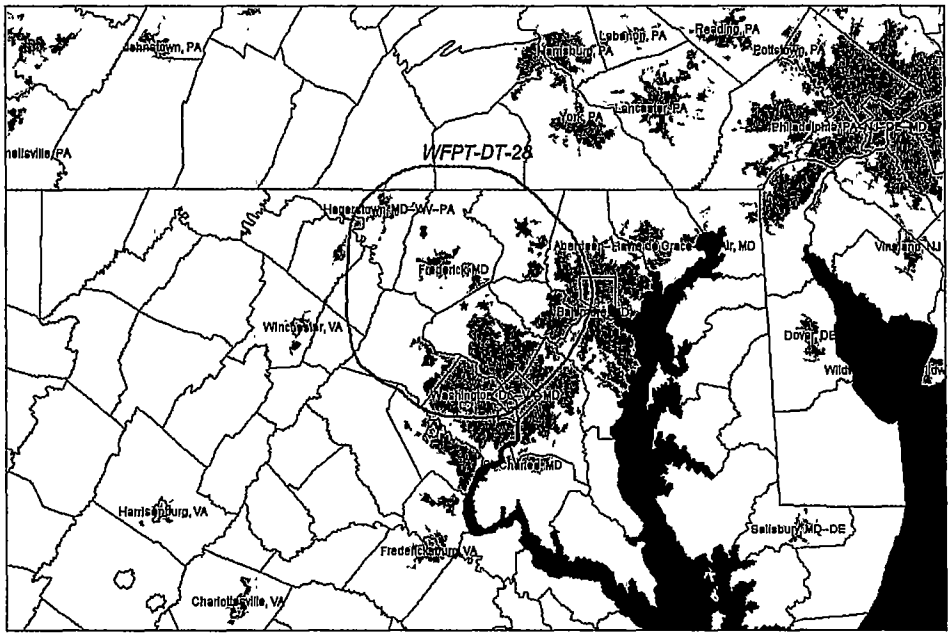

Figure D-204. Channel 28: WFPT-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

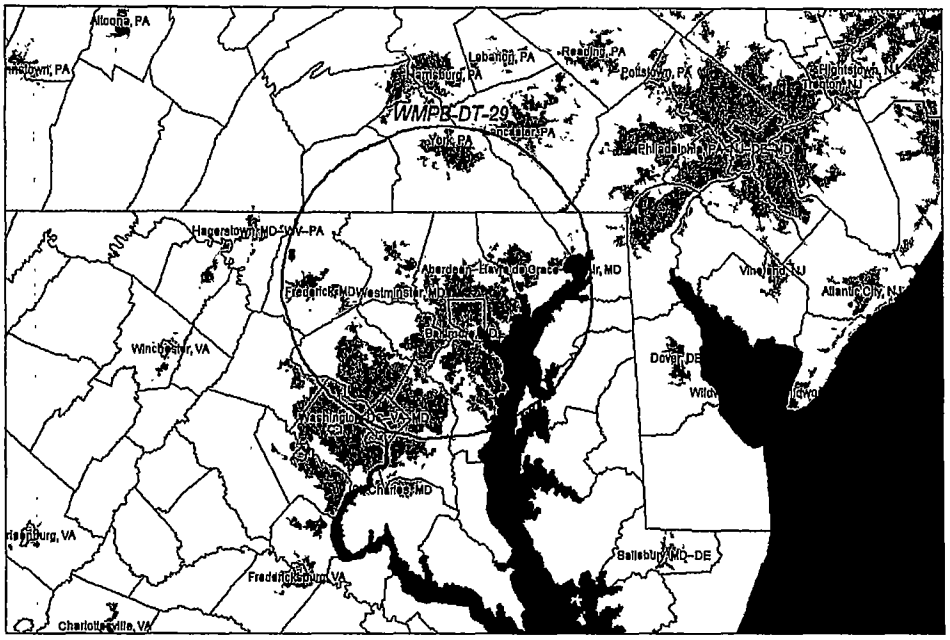

Figure D-205. Channel 29: WMPB-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

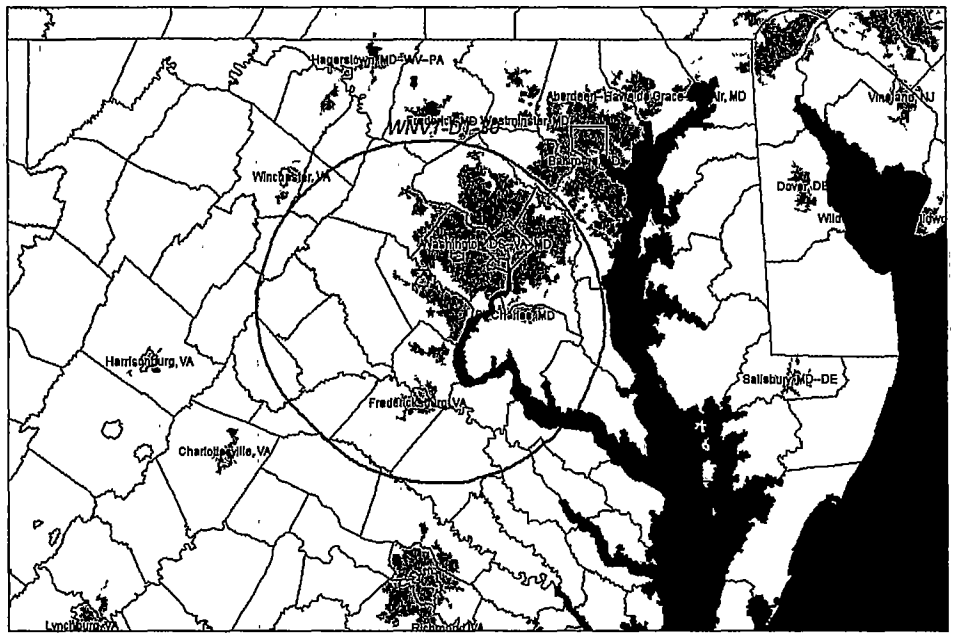

Figure D-206. Channel 30: WNVT-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

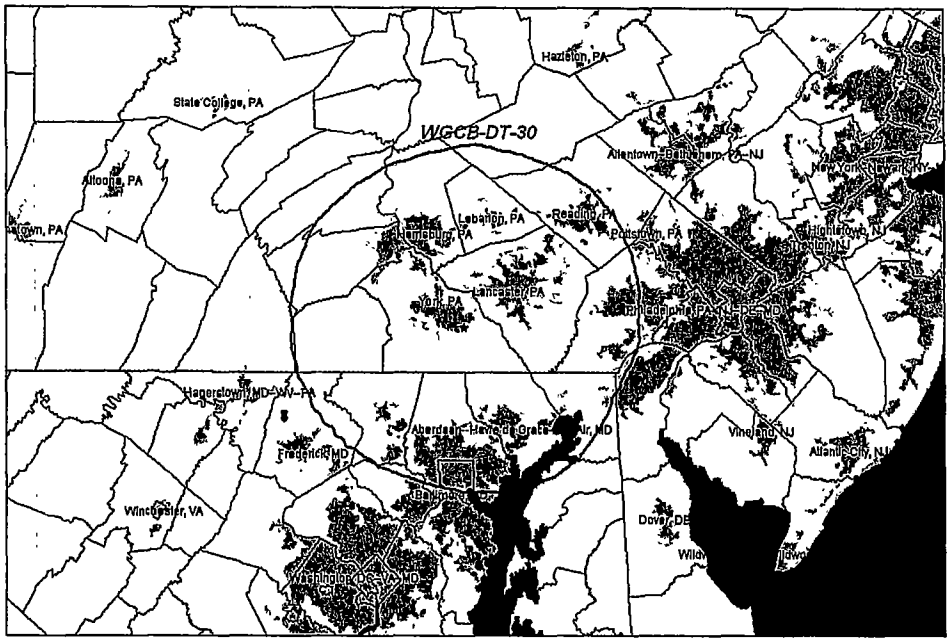

Figure D-207. Channel 30: WGCB-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

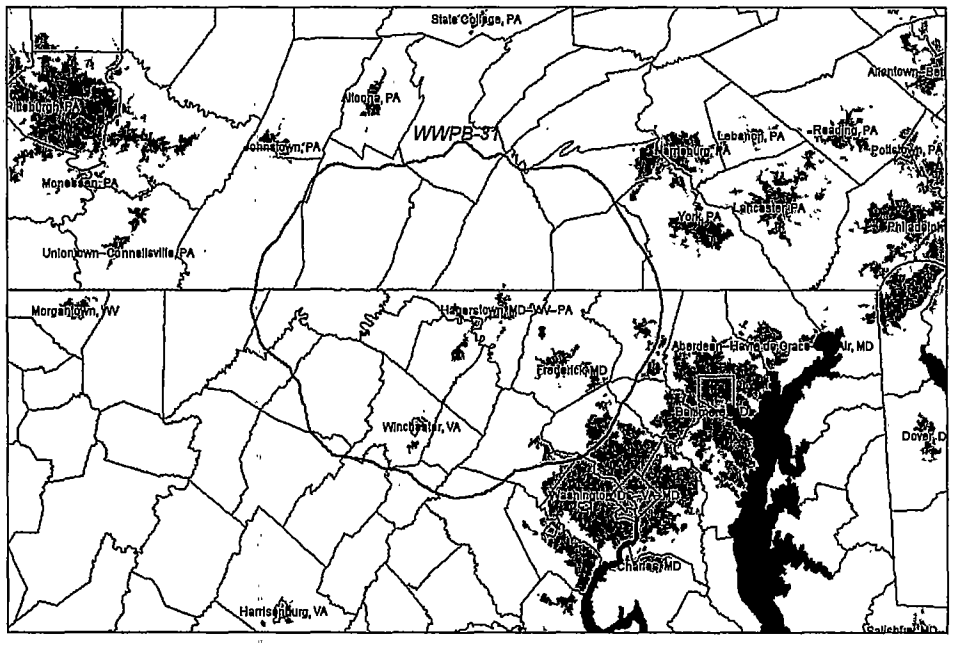

Figure D-208. Channel 31: WWPB-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

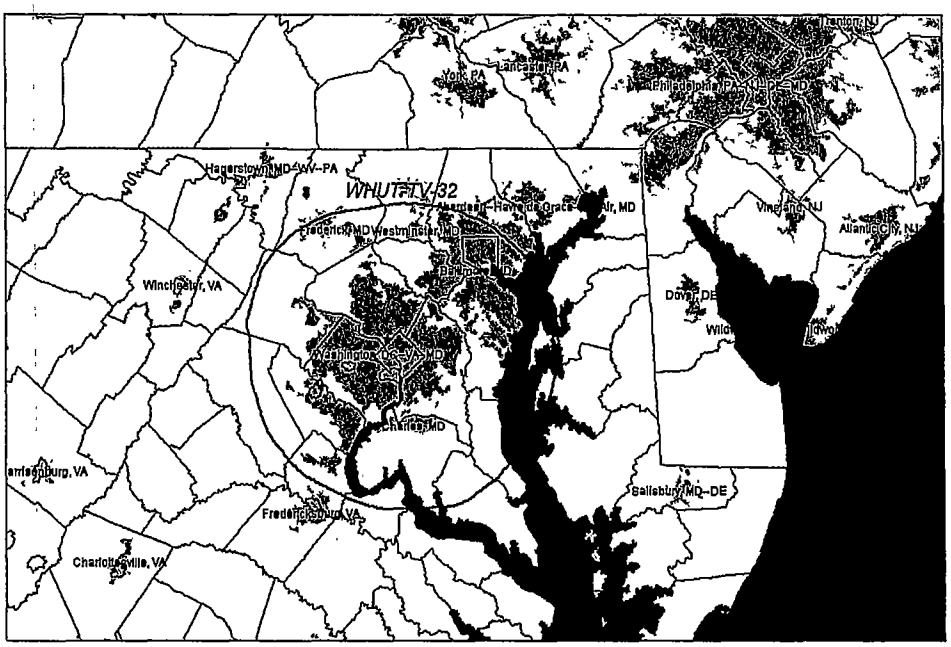

Figure D-209. Channel 32: WHUT-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

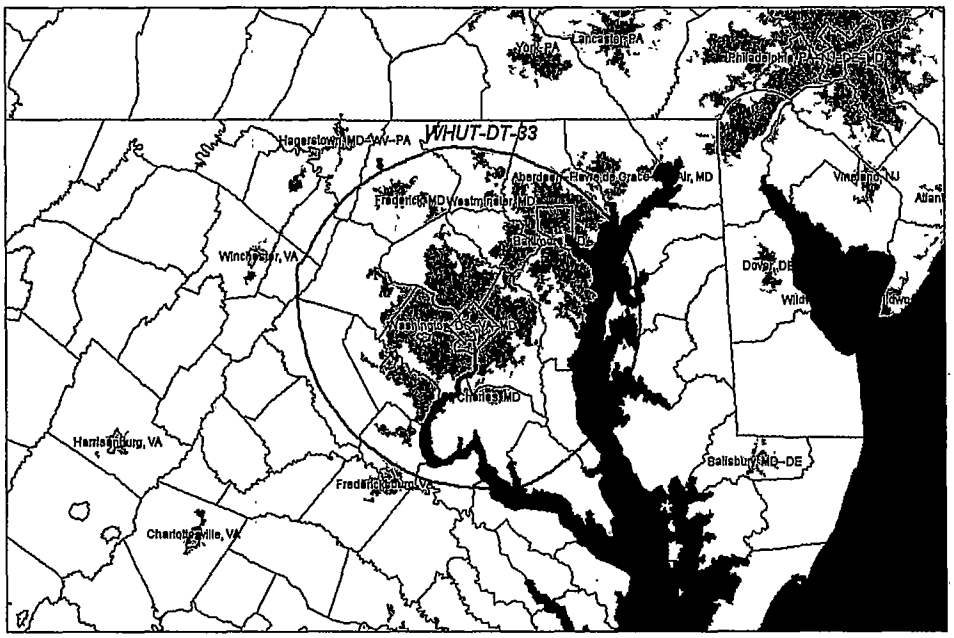

Figure D-210. Channel 33: WHUT-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

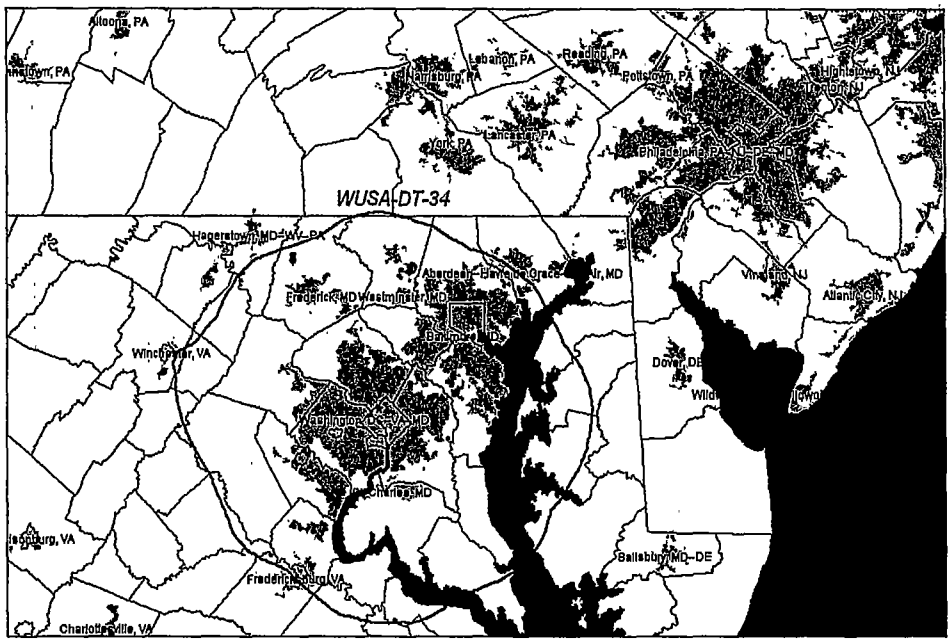

Figure D-211. Channel 34: WUSA-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

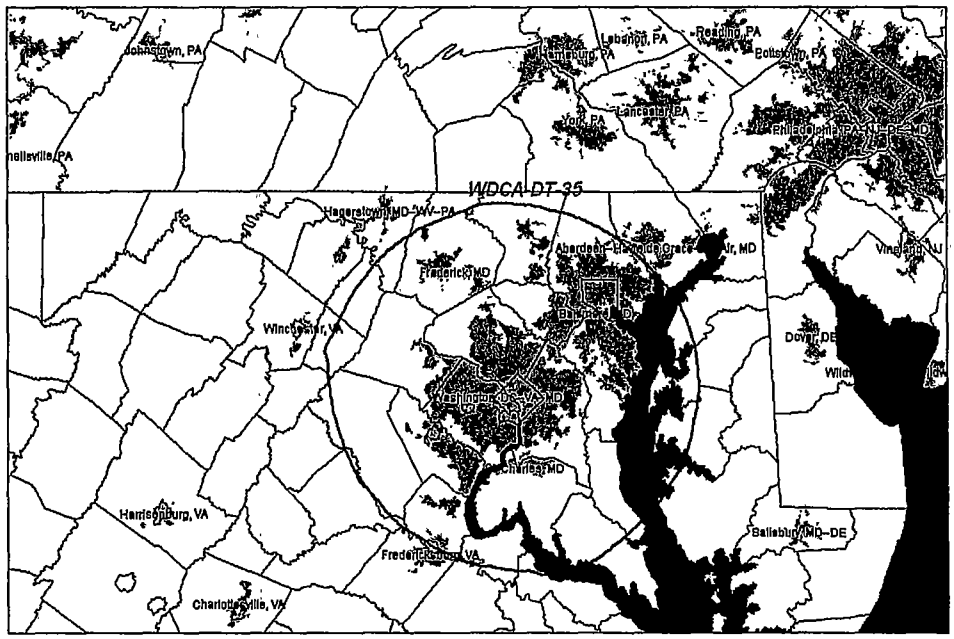

Figure D-212. Channel 35: WDCA-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

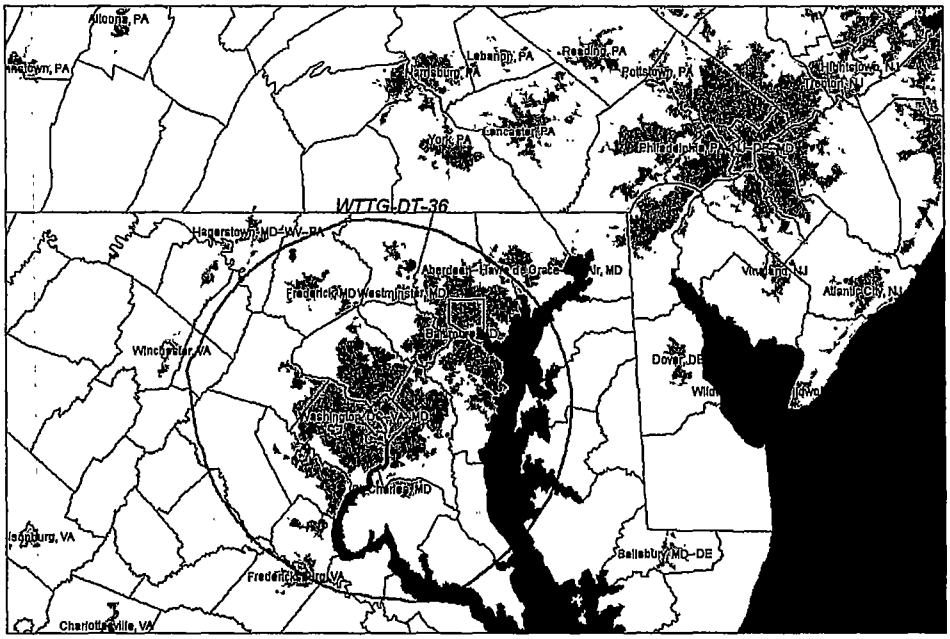

Figure D-213. Channel 36: WTTG-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

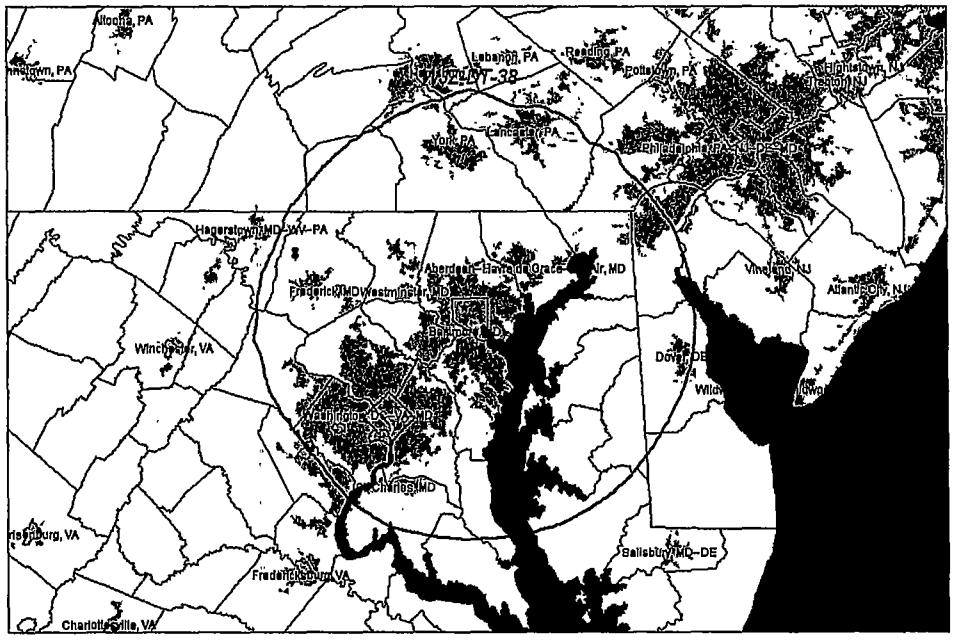

Figure D-214. Channel 38: WJZ-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

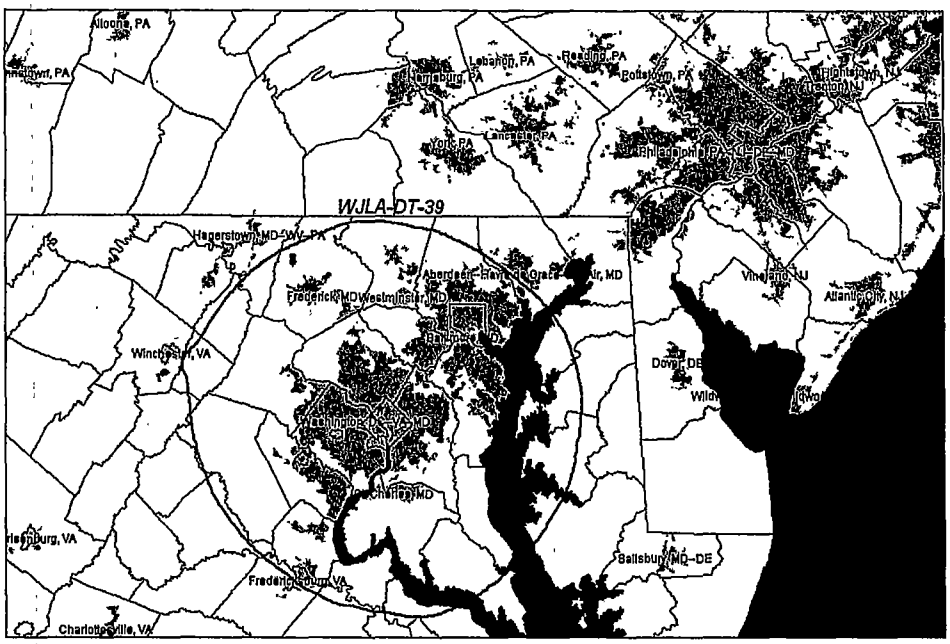

Figure D-215. Channel 39: WJLA-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

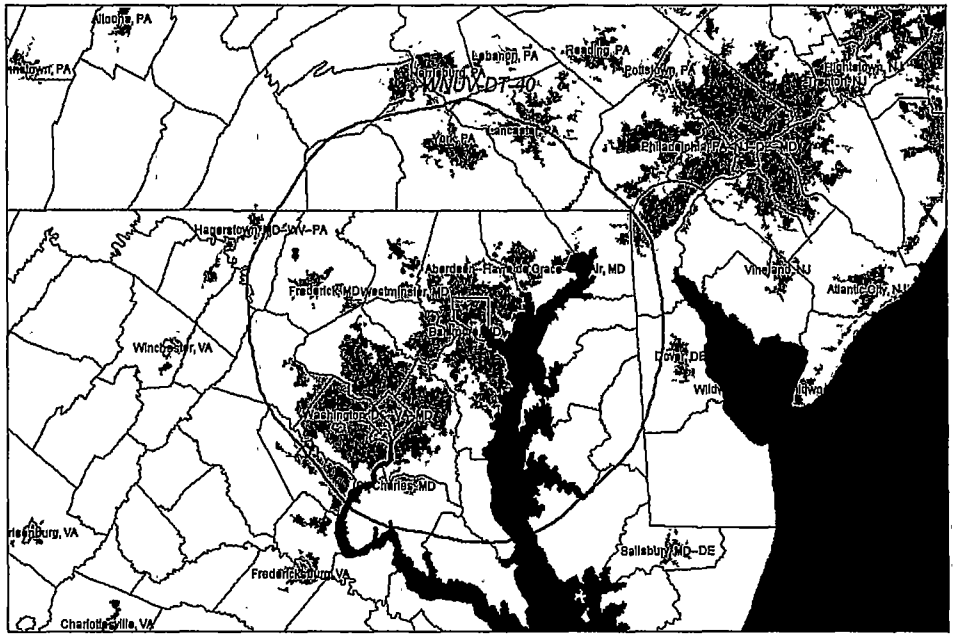

Figure D-216. Channel 40: WNUV-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

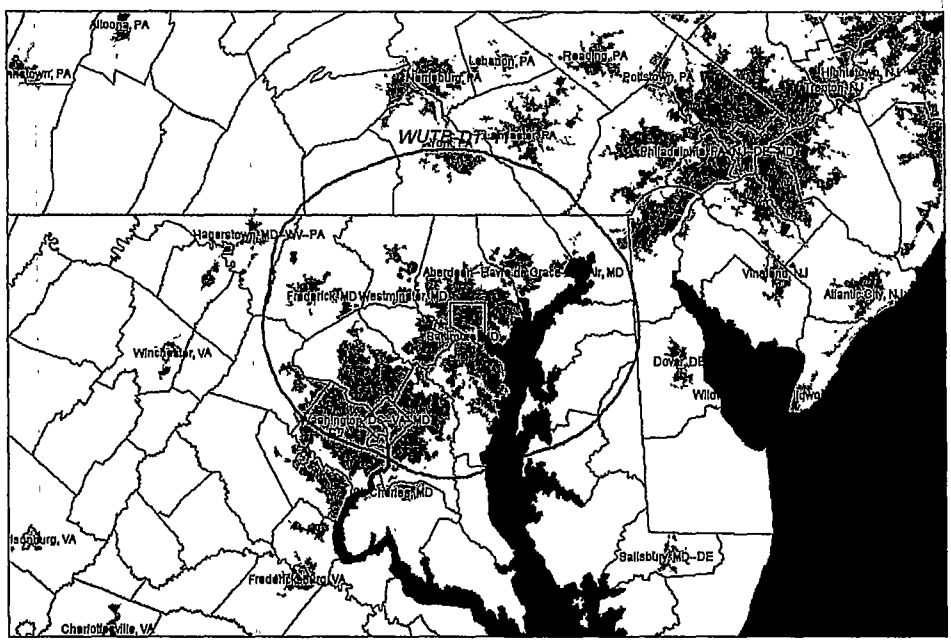

Figure D-217. Channel 41: WUTB-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

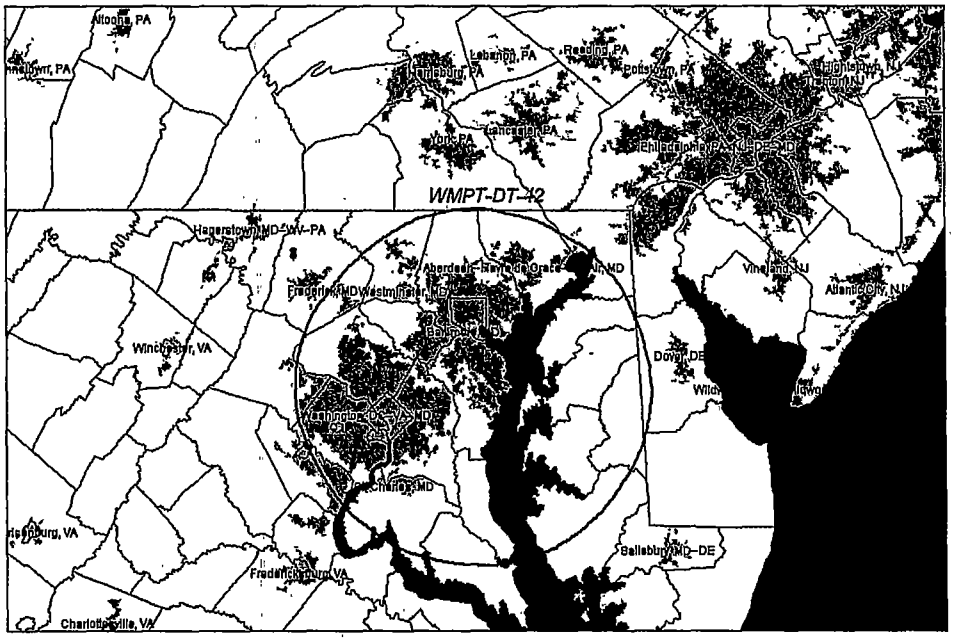

Figure D-218. Channel 42: WMPT-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

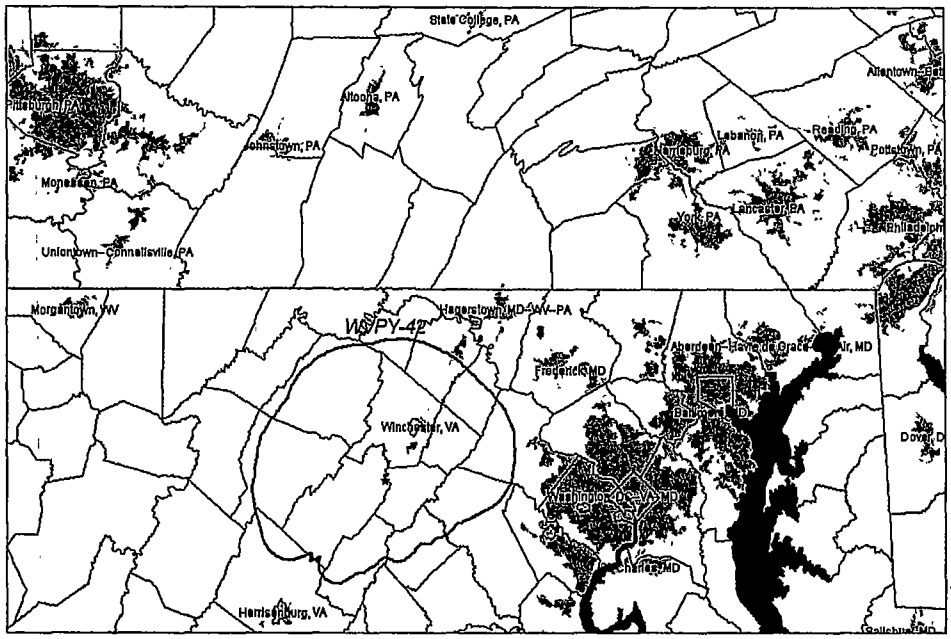

Figure D-219. Channel 42: WVPY-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

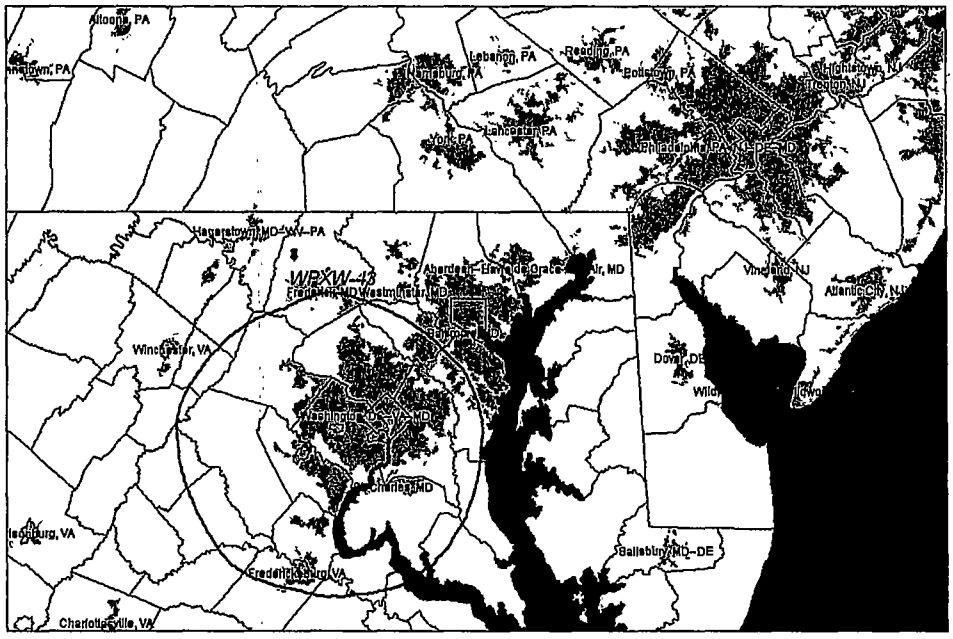

Figure D-220. Channel 43: WPXW-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

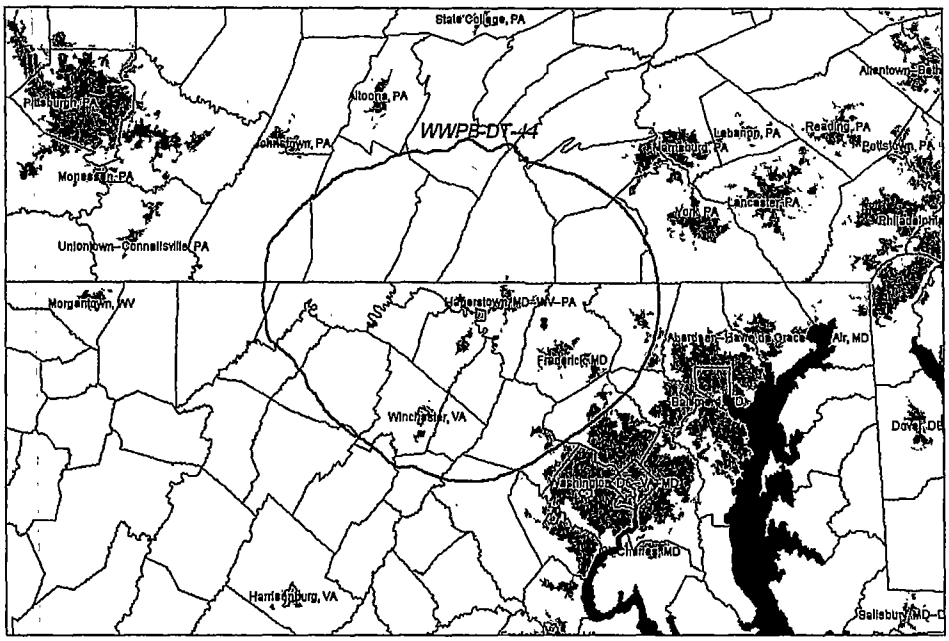

Figure D-221. Channel 44: WWPB-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

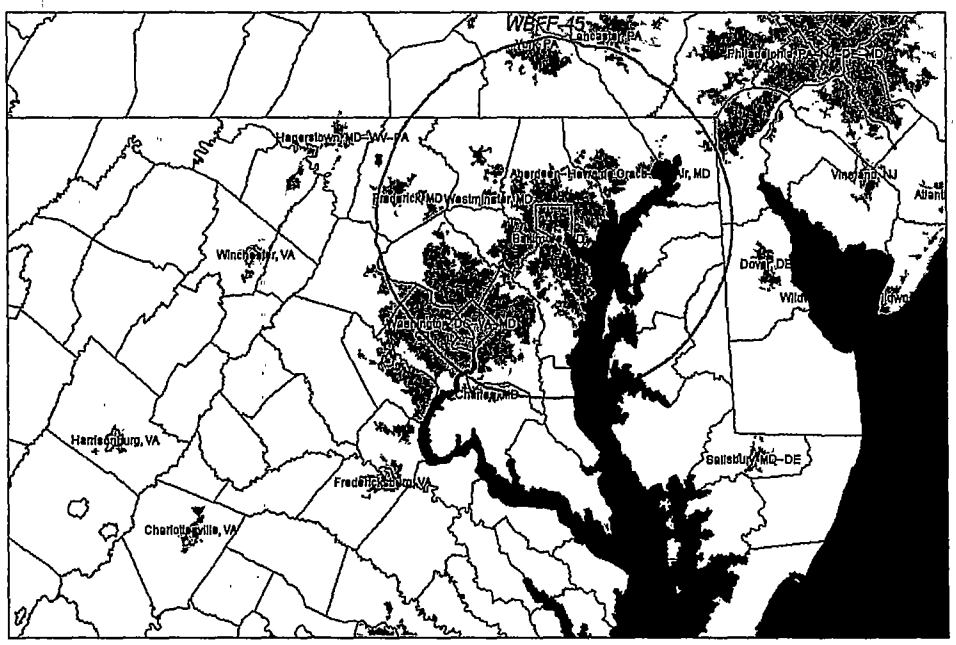

Figure D-222. Channel 45: WBFF-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

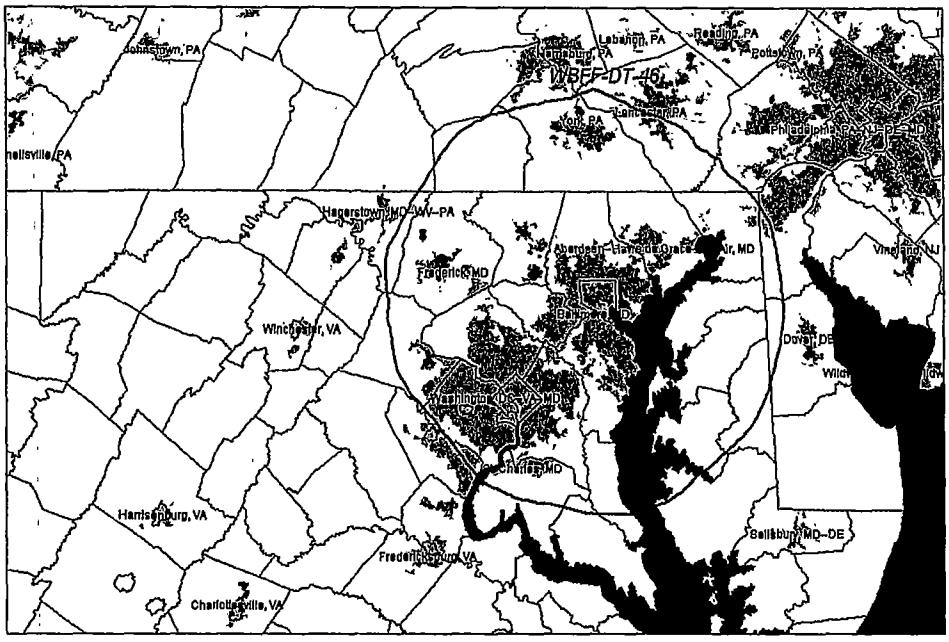

Figure D-223. Channel 46: WBFF-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = LP-DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

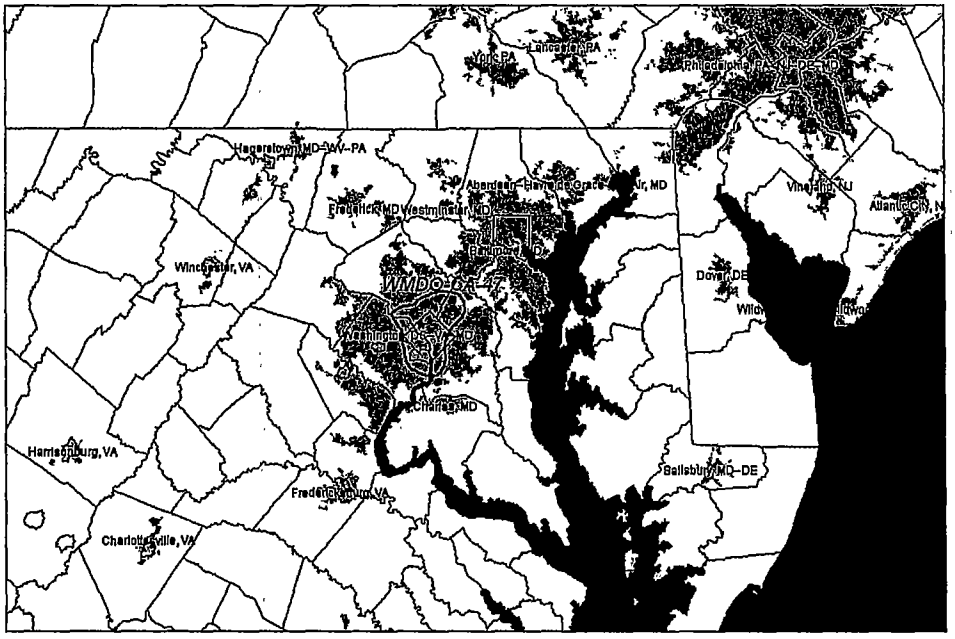

Figure D-224. Channel 47: WMDO-CA.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

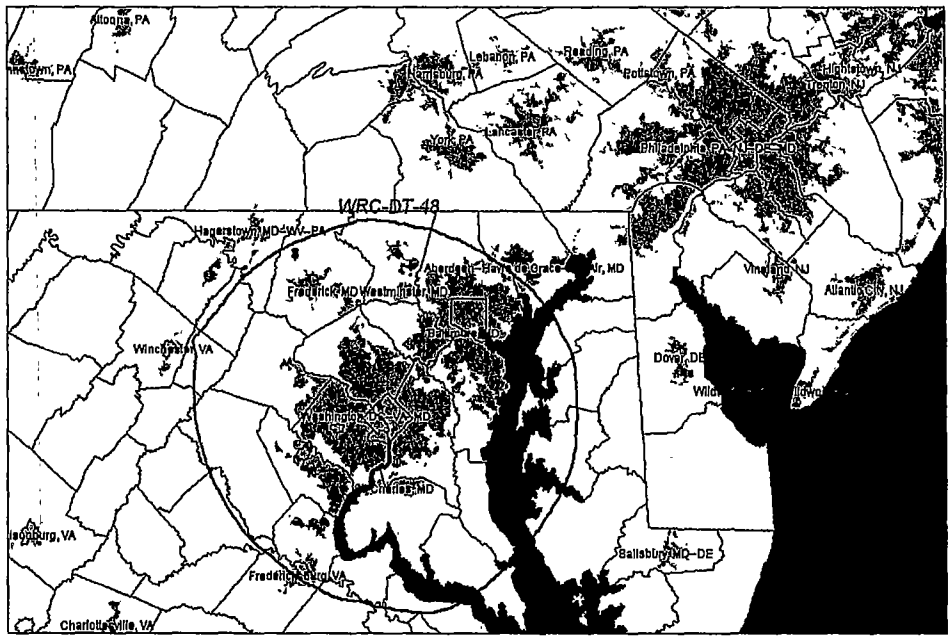

Figure D-225. Channel 48: WRC-DT.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

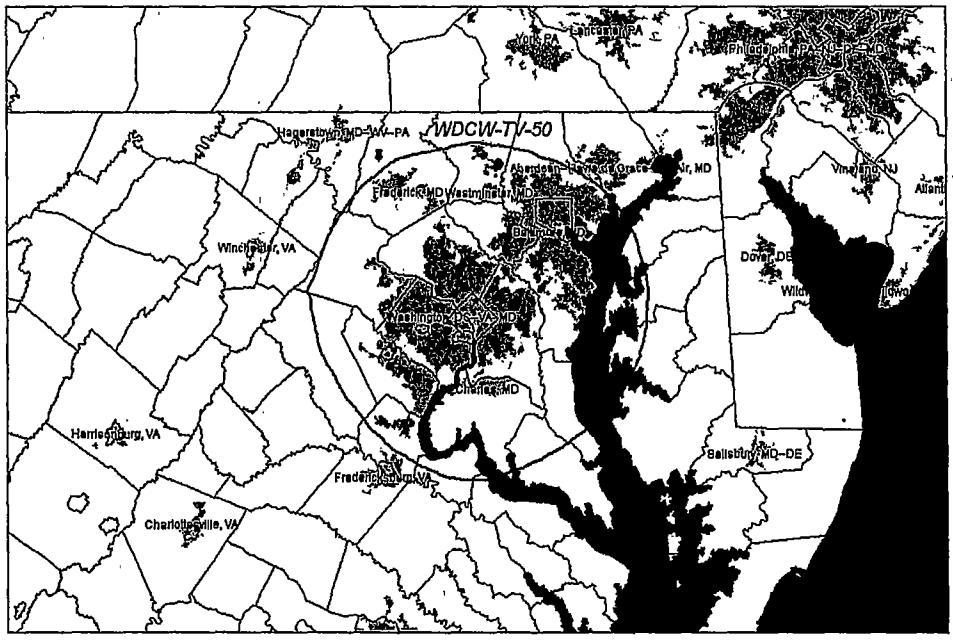

Figure D-226. Channel 49: WDCW-TV.

TV White Space Device Field Test

(Red/Magenta) Circle = DTV/TV's noise-limited/Grade-B contour. Scale 1.0 in = 40.0 km

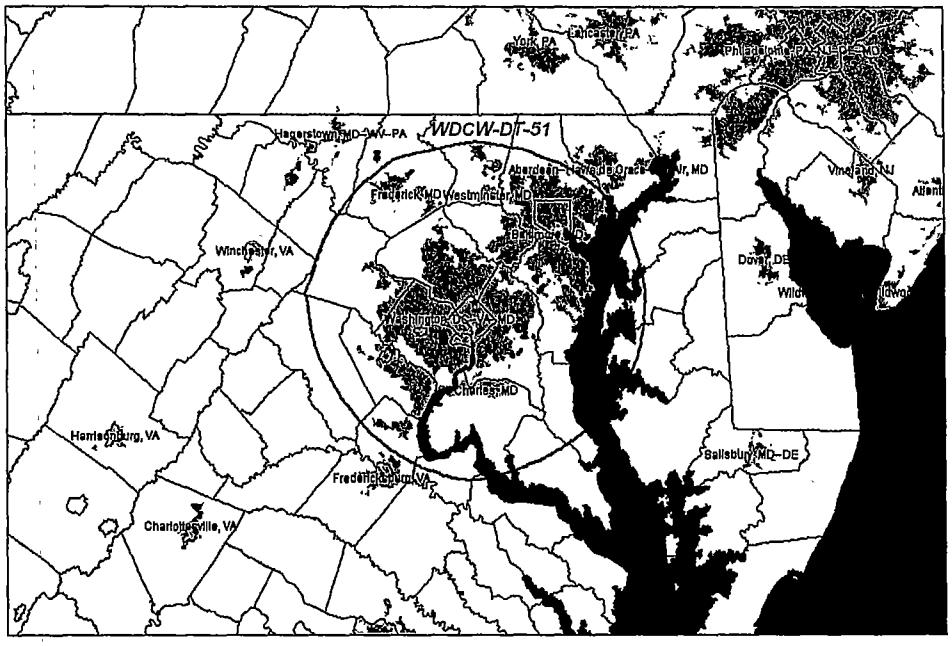

Figure D-227. Channel 51: WDCW-DT.

Appendix E
Measured Spectrum at the FedEx Field
Washington, DC

The following figures show the spectrum from TV channels 21 to 51, as observed at Fedex Field on a spectrum analyzer with a ground plane vertical antenna having a gain of approximately 0 dBi. The ESPN microphones are shown in red. The other frequency labels indicate NFL microphones, spectral components of NTSC or DTV television stations, or signals of unknown origin.

Figures E-1 to E-14 show the spectrum on the home team sideline of the playing field, Figures E-15 to E-28 show the spectrum at the "Tailgate" area, Figures E-29 to E-42 show the spectrum on the upper deck, and Figures E-43 to E-56 show the spectrum in the press box. The ESPN microphones were turned on and off at each location.

Although the NFL was not expected to begin setting up and testing their microphones until 5:00 PM, when making spectrum measurements on the upper deck starting at about 3:00 PM, many new signals other than ESPN microphones appeared as shown in Figures E-29 to E-42. It was assumed that these were the NFL microphones for which the frequencies were unknown. Therefore, only the ESPN microphones were identified by frequency labels in Figure E-43 to E-56, which show the spectrum with the ESPN microphones turned on.

Figures E-57 to E-63 show the spectrum in the press box at about 6:20 PM, less than one hour before the start of the game, and after the ESPN microphones had been turned off permanently. Except for amplitude, the spectrum is virtually the same as the spectrum observed earlier in the day with the ESPN microphones turned off, as shown in Figures E-43 to E-56. Figures E-64 to E-70 show the spectrum during the first quarter of the game.

When analyzing the data, be aware that the indicated frequency on the spectrum analyzer is only an approximate value, and that there was a time delay of as much as one and one half hours between measurements taken with the microphones off and on at a given location.

The ESPN wireless microphones were operated on the following frequencies: 513.05, 525.3, 548.350, 576.2, 584.8, 594.5, 646.85, 653.15, 659.65, 670.15, and 682.3 MHz.

E.1 RF Spectrum Plots measured on the Field

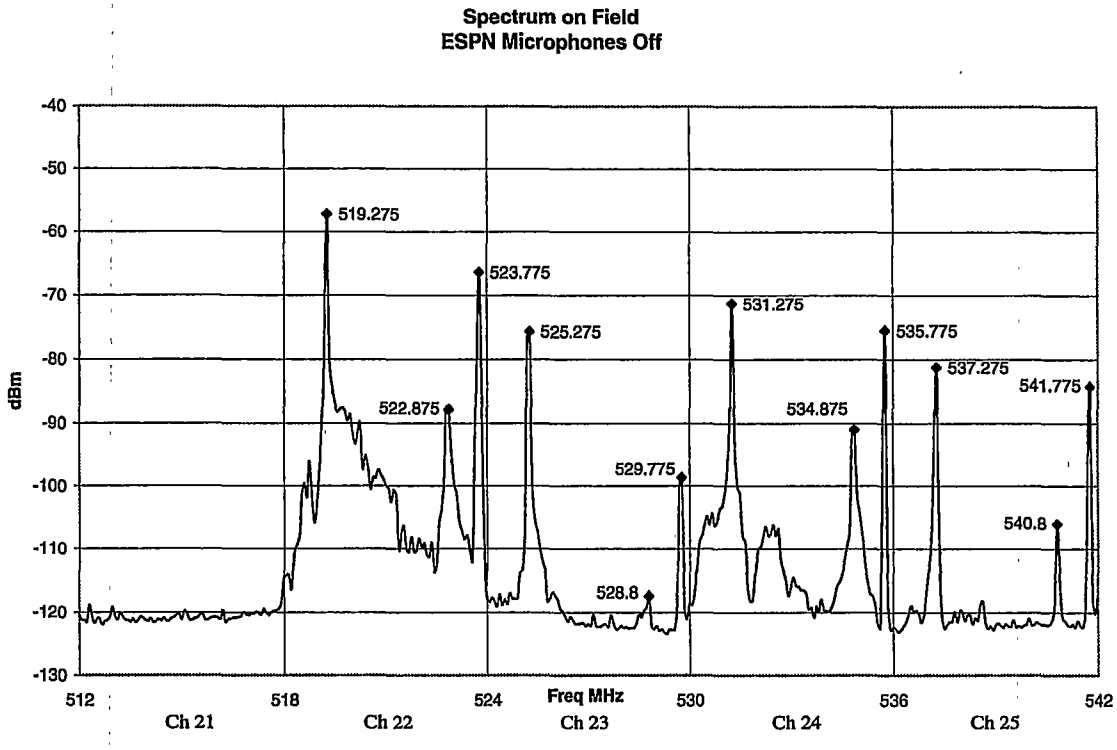

Figure E-1

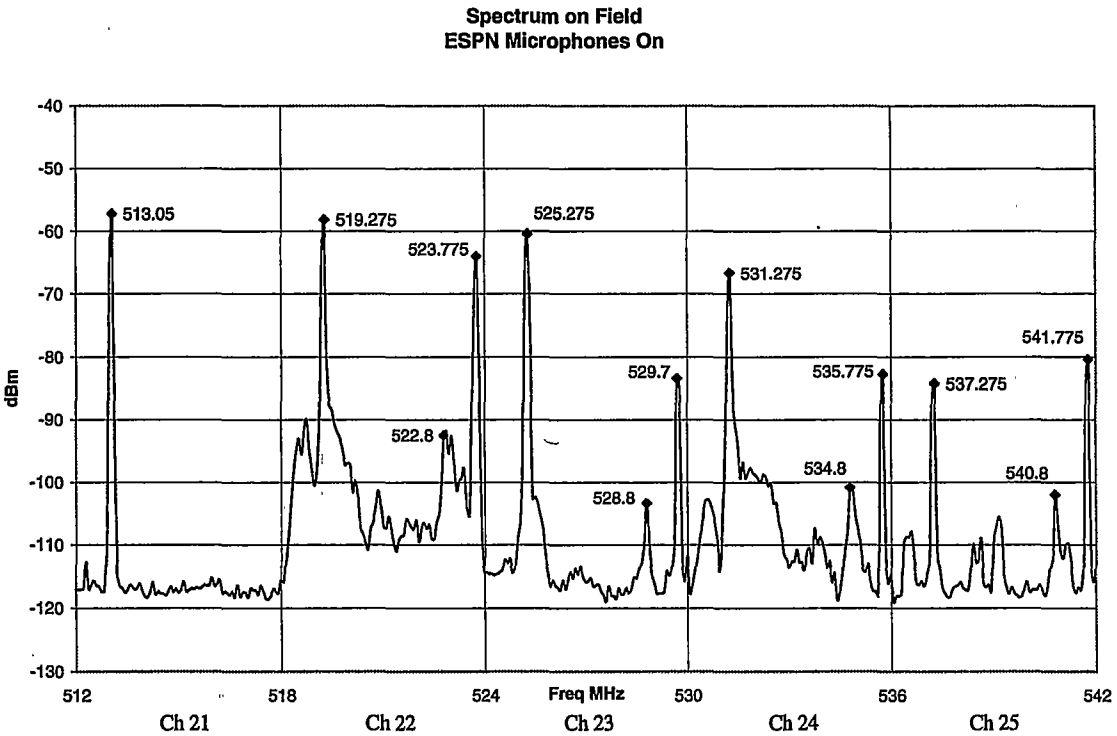

Figure E-2

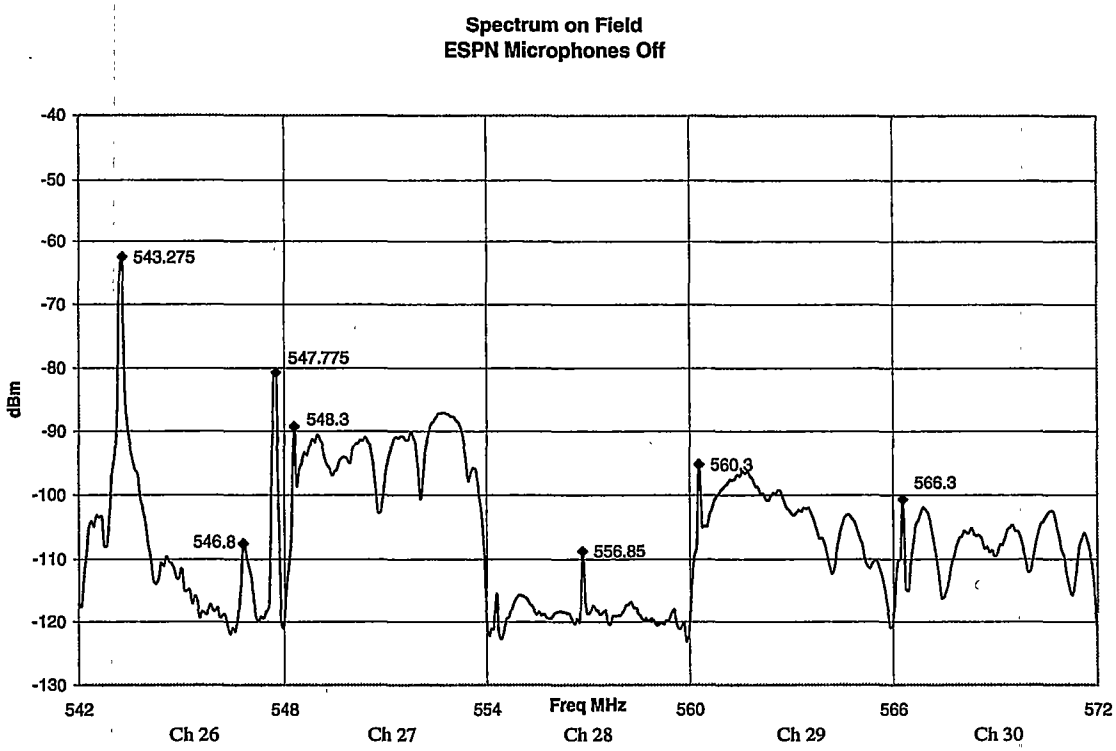

Figure E-3

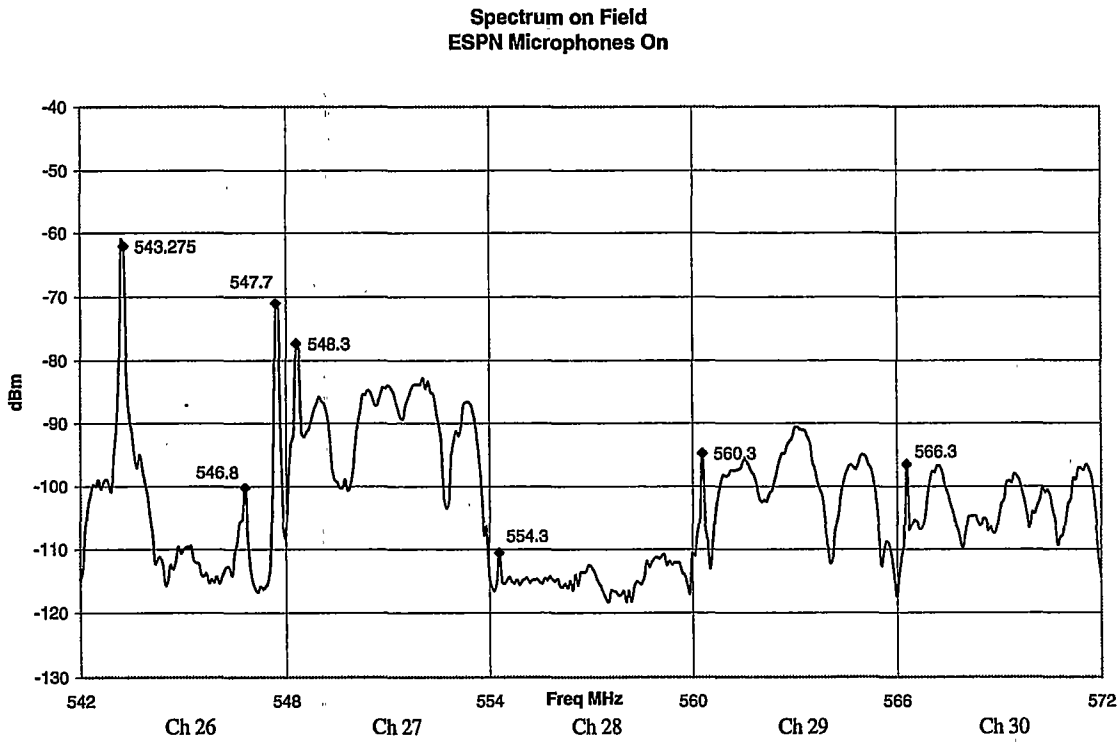

Figure E-4