



*“In most cases, it was found that at DTV power levels of -68 dBm or higher, the WSDs would indicate that the (adjacent) wireless microphone channel was occupied when no microphone signal was present...”*

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## A sensible whitespace device wouldn't turn off its neighbors every time it operates.

Parties on both sides of the TV whitespace debate have suggested that the fact that whitespace devices (WSDs) mistakenly sense wireless microphones on the channels above and below a DTV signals is actually a good thing. They believe that this technical limitation of sensing technology can be exploited to stop the WSDs from operating in situations where their out of band emissions are likely to interfere with a television attempting to display the DTV signal. These people have failed to consider that the out of band emissions from most modern modulation schemes look very similar to those created by DTV. As a result, a sensing based approach to wireless microphone avoidance is likely to create a situation in which WSDs will disable other WSDs operating on neighbouring channels.

This table shows the maximum distance at which one WSD could be sensed as a wireless microphone by another “whitespace” device operating on an adjacent channel. (assuming the WSD had a mask that was as strict as ATSC)

		Transmit power		100mW		40mW		4W	
TV CH	2	55 MHz	10.9 km	1.37 km	6.9 km	68.8 km	8.6 km		
	14	121 MHz	5 km	356 m	3.13 km	31.3 km	3.96 km		
	57	420 MHz	1.4 km	180 m	901 m	9 km	1.14 km		
802.	11g/n	2450 MHz	244 m	31 m	155 m	1.5 km	194 m		
	11y	3675 MHz	163 m	20 m	103 m	1 km	128 m		
	11a/n	5850 MHz	102 m	13 m	65 m	647 m	81 m		

Line of sight

Line of sight + outside wall (-18 dBm)

### Notes:

- For most full power DTV stations, the line of sight propagation distance would extend to the transmitter's horizon.
- The “wall” attenuates all channels equally. If one believes the Whitespace Coalition's assertions that the TV bands are able to pass through walls much better than WiFi, the indoor numbers get worse.
- The distance it takes WiFi band signals to fade to -68dBm is given for a comparison.