



BY PAUL RAKO, TECHNICAL EDITOR

White spaces and black hearts

Google co-founder Larry Page is still pushing radio white-space proposals (Reference 1). *White space* refers to the unused television channels in a region, along with the spectrum-guardband buffer between channels. Page makes the absurd claim that small devices, such as his new G1 phone, cannot possibly cause white-space interference. He calls recent tests on white space “rigged” and “despicable” because the testers conducted research on wireless-microphone-interference avoidance while using nearby TV frequencies.

I remember the days when Google’s mantra was “Do no evil.” I suspect that Page, referring to Google’s “Free the Airwaves” publicity campaign, thinks he is doing no evil—perhaps even doing good—by helping the people. I agree that the telecommunications industry has a history of despicable behavior. And, although the industry needs to address the high costs of cell-phone plans and the associated poor quality and lousy service, Page is wrong to call broadcasters despicable for fighting something that almost certainly causes TV interference.

Some analog engineer should explain to Page that the size of a device has nothing to do with interference. A few watts from a cell phone are enough to interfere with the microvolt TV signals your tuner is trying to pick up. The real problem lies with the base stations. Unless the White Spaces Coalition Wireless Innovation Alliance (www.wirelessinnovationalliance.org) proposes to make a device-to-device mesh network, it will need base stations, just as any other cell-radio system needs base stations. And, unless the coalition proposes to put those base stations into satellites, the base stations

will be near a bunch of TV receivers. A lot of neat charts show that radio transmissions occupy only a small slice of guardband, but RF artifacts, including side-lobe and multipath effects—inherent in the real-world transmission of radio waves—will occur with white-space broadcasts, too.

It is madness to propose the introduction of any potentially interfering devices until after the rollout of digital TV next February. My experience is that digital is not all that it is cracked up to be. A plane landing nearby or someone using 802.11 or unlicensed devices seems to cause problems with some digital TV broadcasts. Other digital broadcasters’ signals are so weak that the broadcasts keep dropping out and become unwatchable. Analog transmissions from the same broadcaster may come in “snowy,” but the audio is crystal-clear and you can still watch the broadcast. Like most other things of a digital nature, it is perfect when it works, but let’s wait until we see how delicate these digital-TV transmissions are before we put even more interfering devices into the same frequency bands.

Page may want to consider the so-

cial-class component of all these proposals. Millions of people in the United States cannot afford cable or satellite TV. They won’t be buying a smartphone, and they won’t be using Google to find coffee shops selling lattes with just the right amount of foam. These people are living from paycheck to paycheck, and the one respite they get after a day’s work may be watching free broadcast television. Just because Google and the cell-phone companies have better lobbyists and more money than the broadcasting industry is no reason to abuse these people.

The Federal Communications Commission (www.fcc.gov) has become less concerned about interference and more concerned about money. It has gone from being a technical organization to being a political one. With modern-day fiscal disasters, such as the war in Iraq and the collapse of the housing market, the FCC is under even more pressure to add to the revenue stream. Nevertheless, the industry should put white-space transmissions on hold until we see how badly the digital-TV rollout hurts broadcast television. The cell-phone companies engineered one rip-off of US citizens with digital TV. Let’s not allow the Web-search and computer companies to pull off another one. **EDN**

REFERENCE

1 Whoriskey, Peter, “Update: Google Guy’s Words Get Quick Response,” *The Washington Post*, Sept 24, 2008, http://voices.washingtonpost.com/posttech/2008/09/google_guy_white_spaces_test_r.html?hpid=sectech.

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