



Between a Rock and a White Space

Impact of the Re-allocation of Local Radio Frequency (RF) Spectrum

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On November 4, 2008 there were two elections. The one that was anticipated for months, with world-wide ramifications, and one that was far less publicized. While this other election didn't impact healthcare, foreign relations, the price of crude oil or education, its decision will impact everyone in the U.S. regardless of party affiliation.

On November 4, 2008, the Federal Communications Commission (FCC) voted 5-0 approving rules for unlicensed devices to use the soon-to-be-available portion of the spectrum that sits between broadcast TV channels. This 300MHz to 400MHz of unused spectrum known as "white spaces" is considered prime real estate for wireless broadband services. White spaces are part of the overall frequency spectrum which was allocated for television transmission, but never licensed or assigned to local broadcasters; hence, they are blank spaces between the channels. By the way, signals in this frequency range can travel long distances and penetrate walls, similarly to over the air television transmissions. Refer to the last section for background information: *Additional Information on White Space*

In addition to creating new business opportunities in a demanding market, the FCC's decision will be of great benefit to consumers and business users of cell phones and mobile devices, by providing the ability to deliver rich-media content anywhere, anytime. However, the decision was made, despite protests from a wide range of organizations, including: News Corp., Walt Disney (ABC, ESPN), CBS, General Electric's NBC, Major League Baseball, NASCAR, NAB, RTNDA, NCTA and even Dolly Parton. Why? There is concern that further testing should be conducted to understand the full impact the wireless services will have on other applications and services. These and other organizations believe it prudent to delay the decision.

To use an old term, let's "rewind" back to May 2008, when the FCC auctioned off portions of the frequency spectrum that will become available as a result of its mandated digital transmission migration. This is the spectrum that will be vacated when the local television stations shut off their analog transmitters on February 17, 2009. The FCC made \$20 billion dollars from this one auction, in a few hours. Obviously there is money in "air," as auctions for this and other spectrums are conducted.

To put this in perspective, Verizon Wireless placed the winning bid of \$4.75 billion for the "C block" of the 700Mhz spectrum. Along with other sections of the spectrum, Verizon's total investment in "air" is just under \$10 billion dollars. AT&T didn't go empty-handed, walking away with 227 regional licenses that compliment other acquisitions. The 700MHz band is the perfect fit for a wireless broadband network, more specifically Verizon and AT&T's upcoming 4G networks. No better timing than now.... just as we are all getting used to the 3G networks!

So, when did Enliten enter the cell phone business? Quite honestly, we were NEVER NOT in it! Enliten is in the business of helping with the delivery of content in the enterprise space,

regardless if the delivery is via the web, intranets, videoconferencing, satellite, or to a media-rich phone or mobile device. Like it or not, as a media or communications manager, you are in it as well! In fact, the weight of these FCC actions will impact our industry on two fronts.

Impact on Wireless Microphones

First of all, the allocation of this spectrum is the airspace where many wireless microphone systems operate. To this point, they have done so with little interference (other than from other nearby wireless microphones). If your organization has wireless systems in the 700Mhz range, evaluate the situation and consider eliminating them from inventory. If new systems have been purchased in the last few years, you may be okay. None-the-less, this is a good time to become familiar with the frequencies in which your wireless mics operate. It is anticipated that services provided by the winners of auctioned spectrum will enter the respective markets at various times following February 18, 2009. In many cases, it is anticipated that these services will impede the use and reliability of existing systems, and possibly rendering them useless. Systems in large metropolitan areas are likely to experience the impact sooner than the less populated or rural areas. Be assured, the interference IS coming.

The second front relates to the new frontier of wireless devices that will be born as a result of this decision. If you have seen the video quality of the iPhone on a 3G network, just think of the possibilities when delivered on an open architecture 4G network. This is a strong indicator that the days of content being delivered on hard media are coming to an end.

Winners & Losers

The winners from the FCC's action include many, such as those who are a) in rural areas where distance limits the availability of DSL (wireless broadband will now be available), b) the wireless microphone manufacturers (who sell new systems), c) the providers of mobile services, d) the manufacturers of mobile, wireless, personal devices, e) content providers, and of course f) the consumers who will embrace this next generation of mobile devices.

On the flip side, the losers include the owners of the soon-to-be legacy wireless microphone systems, many of the owners of local television stations, and viewers in rural and/or densely populated areas where the local providers are unable to pay for the technology upgrade.

While many organizations use only a few channels at a time, think of an operator in the New York theater district who uses 50+ wireless mic systems (plus wireless intercom), 6-7 days a week, and in close proximity of a number of other users just like them. From our perspective, the playground has gotten no bigger, however, many more have been allowed to play! In fact, we have been very active in helping organizations address their wireless situations, including new systems while: upgrading video production facilities to digital and high def; replacements and/or upgrades for auditoriums and conference rooms; and replacements for theater environments.

The FCC mandate to go digital will cost companies in the local broadcast industry billions of dollars. The local stations were required to replace transmission systems, and in many cases, build-out additional tower infrastructure to accommodate the digital transmission migration. Unfortunately, there will be no additional revenue source to off-set the cost. For those local broadcasters who stopped their "money-burn" at standard definition (SD) digital and not high definition (HD), the jury is out to see if they will benefit. Keep in mind that the February deadline only mandates the broadcasters go digital, not HD! With viewership of broadcast

television in a downward spiral overall, the additional investment may not provide a winning return on investment.

Impact on Hard Media & Display Systems

In closing, here are a few thoughts and perspectives to consider. Before placing your next order of DVD blanks, hold that thought. Just as the VHS tape gave way to DVD, the DVD will give way to wireless transmission and solid state storage on pocket-sized devices.

Display systems are also changing: new systems are bigger and smaller! For instance, I was recently in the Miami airport where one passenger was watching a game on the large plasma display, while his companion was watching a movie on her iPhone. By the way, keep in mind that there is more processing power in the most-basic cell phone, than NASA used to land manned-crafts on the moon!

The next time you are in an electronic retail store, look around. The screens at the front of the store (phones) are likely to be smaller and more powerful, while the screens at the rear of the store (Plasma, DLP, LCD) are larger and more robust. Many are those who are going with both bigger AND smaller simultaneously.

I believe it was Will Rogers who professed to buy land since they wouldn't be making any more of it. Let's all do that, since it looks as though we've been beaten to the punch in selling the air.

Additional Information on White Space

A wealth of information on frequency allocation can be found by Googling: frequency spectrum. Following are a few links which may be of interest/value.

Detailed listing: FCC ONLINE TABLE OF FREQUENCY ALLOCATIONS
www.fcc.gov/oet/spectrum/table/fcctable.pdf

National Telecommunications and Information Administration (NTIA)
U.S. Frequency Allocation Chart (October 2003)
www.ntia.doc.gov/osmhome/allochrt.pdf

As a key player in the industry, Shure provides an extensive amount of information on the transition to Digital Television (DTV) and the impact it will have on radio frequency (RF) spectrum.

White Space Overview
www.shure.com/ProAudio/PressRoom/WhiteSpaces/us_pro_pr_whitespacespage

“White Space” Information
www.shure.com/ProAudio/PressRoom/WhiteSpaces/index.htm