



Latest FCC Rulings on “White Spaces”  
700MHz Spectrum Re-allocation  
Lectrosonics Position Paper  
December 1, 2008

The long anticipated ruling by the FCC has finally come regarding the potential introduction and use of “White Space Devices” (WSD) in the UHF spectrum. In their ruling, the FCC has allowed the development and ultimately the deployment of unlicensed consumer devices to occupy the same UHF spectrum that TV broadcasts and wireless microphones currently use. The concern has been that the use of such devices will completely wipe out all wireless microphone systems within the UHF band. These fears are largely unfounded – however there are still some concerns for our types of users within this area of the spectrum. The good news is that the FCC, through the process of repeated appeals on the part of several wireless microphone manufacturers and industry organizations, have now included language about the importance of protecting wireless microphone users.

Here are the main points of what the FCC has included in their Report and Order adopted on November 4<sup>th</sup> and released on November 14<sup>th</sup> of this year:

- The FCC is providing for both fixed (installed) and personal/portable devices to operate in the TV white spaces on an unlicensed basis.
- All devices, except personal/portable devices operating in client mode, must include geo-location (GPS) capability and Internet access to a database of protected radio services and the locations and channels that may be used by the WSD at each location. The unlicensed devices must first access the database to obtain a list of the permitted channels before operating.
- The database will be established and administered by a third party, or parties, to be selected through a public notice process to solicit interested parties (this will take time).
- Fixed devices may operate at up to 4W EIRP (effective radiated power) on any channel between 2 and 51, except channels 3, 4 and 37, and subject to a number of other conditions such as a restriction against co-channel operation or operation adjacent TV channels pending consideration of further information that may be submitted into the record in this proceeding.
- Personal portable devices may operate at up to 100mW (limited to 40mW on adjacent channels) on any unoccupied channel between 21 and 51, except channel 37.
- Fixed and personal/portable devices must also have a capability to sense TV broadcasting and wireless microphone signals as a further means to minimize potential interference. However, for TV broadcasting the database will be the controlling mechanism.
- **Wireless microphones will be protected in a variety of ways.** The locations where wireless microphones are used, such as entertainment venues and for sporting events, can be registered in the database and will be protected as for other services. In addition, channels from 2 – 20 will be restricted to fixed devices,

and we anticipate that many of these channels will remain available for wireless microphones that operate on an itinerant basis. In addition, in 13 major markets where certain channels between 14 and 20 are used for land mobile operations, the FCC will leave 2 channels between 21 and 51 free of new unlicensed devices and therefore available for wireless microphones. Finally, as noted above, the FCC has required that devices also include the ability to listen to the airwaves to sense wireless microphones as an additional measure of protection for these devices.

- All white space devices are subject to equipment certification by the FCC Laboratory. The Laboratory will request samples of the devices for testing to ensure that they meet all the pertinent requirements.
- The FCC will permit applications for certification of devices that do not include the geo-location and database access capabilities, and instead rely on spectrum sensing to avoid causing harmful interference, subject to a much more rigorous set of tests by the Laboratory in a process that will be open to the public. These tests will include both laboratory and field tests to fully ensure that such devices meet a “Proof of Performance” standard that they will not cause harmful interference.
- The Commission will act promptly to remove any equipment found to be causing harmful interference from the market and will require the responsible parties to take appropriate actions to remedy any interference that may occur.

Lectrosonics has always maintained that to a large degree, the solution to the ever-increasingly noisy RF spectrum is to use receivers with good filtering and robust front-end designs, and transmitters with enough power to provide a strong signal at the receiver therefore overcoming the noise. We have repeatedly demonstrated that a useable signal can be achieved even in the midst of a strong DTV broadcast, if the transmitter and receiver are in close enough proximity. Indeed, with a ***well-designed FM wireless mic system***, only 3-4dB of signal-to-noise is required for a useable signal.

Our 400 Series systems, including the UCR401, UCR411A, SR, R400A and Venue receivers and SM Series, UM400A, UM450, LMA and UH400A transmitters meet these requirements. And since all of our transmitters have isolated RF outputs, intermodulation (IM) products are greatly reduced compared to products from other manufacturers. Thus, having greater RF power in the transmitter is simply a benefit, regardless of the application. As always, properly designed antenna systems are important for optimizing the reliability of your system, and Lectrosonics stands ready to provide you with information and assistance in designing such systems.

Keep in mind that despite the ruling above by the FCC, it will be most likely at least a year if not more before any WSDs are on the market. The technical requirements put forth above are fairly strict, and the creation and population of a database for channel management will take time. If your wireless microphone systems are currently on channels between 470 and 698MHz, we suggest a “wait and see” approach before replacing them. You may not end up needing to replace them at all.

#### 700 MHz Re-allocation

The second, actually older and better understood situation for our users involves the sell-off and re-allocation of the 700MHz band (from 698-806MHz). This sale has already

been completed and as of February 17, 2009, all prior users of this band of spectrum (including TV broadcasters, wireless microphone users, etc.) are required to vacate. Due to this, Lectrosonics has put in place a program to ease the cost of preparing for this change.

Please see the separate price list for block changes and replacement costs for the main products in our line. We can offer block changes for any models still in production. For models that are out of production but were purchased new within the last five (5) years from authorized dealers and registered with us, we have special prices on replacement products from our current line. While neither of these options may seem inexpensive, we have included current list and "street" prices for these same products for comparison. As you can see, it is far less expensive to re-block or replace older products when compared to simply purchasing new replacements.

If you have any questions about the information above, our policies, or anything else we can do to help you ease through these transitions, please get in contact with us. We're here to help you and we remain confident that our products in particular are well suited to use now and in the future.

Sincerely,

A handwritten signature in black ink that reads "J. Gordon Moore". The signature is written in a cursive style with a large, stylized initial "J".

Gordon Moore