

## White Spaces FAQ

*Updated November 2008*

### GENERAL

**Q: What are White Spaces?**

A: The white spaces are the channels in between locally-occupied TV channels. These channels are used by wireless microphones, wireless in-ear monitors, wireless production intercom systems, and other professional wireless equipment used by program and event producers, broadcasters, meeting facilities, and houses of worship.

**Q: Have wireless microphones been banned?**

A: No, wireless microphones will continue to be able to use TV channels 2-51.

**Q: What about microphones operating above 700 MHz? Have those wireless microphones been banned?**

A: TV channels 52-69 (the "700 MHz band") have been reallocated to new services and will no longer be used for television broadcasting or wireless microphone operation. The FCC has proposed February 18, 2009, as the transition date for wireless microphones, but a final decision on this matter is still pending.

**Q: Will consumer wireless devices be allowed to operate in the white spaces?**

A: Yes. On November 4, 2008, the FCC approved an order that will allow new devices and services to begin operating in the TV white spaces in February 2009. The full text of the order was published on November 14<sup>th</sup>, and is available [here](#).

**Q: What kinds of new devices will be allowed to use the TV white spaces?**

A: White space devices (referred to as "TV band devices" in the FCC order) could include personal/portable devices such as cell phones and wireless laptop computers, and fixed point-to-point equipment used to deliver wireless broadband internet or other services to homes and businesses.

**Q: When will these white space devices start appearing in stores?**

A: White space devices are allowed to go on sale on February 18, 2009, but in reality, it will probably be much later. First, the FCC will have to determine the test requirements so manufacturers can design their products for compliance. Then the manufacturers must develop products and submit working units to the FCC for certification testing, which can take months. After the testing of each product is completed, the FCC will provide an opportunity for public review and comment on the test report. Based on this scenario, we do not expect devices to go on sale until the end of 2009.

**Q: What provisions has the FCC made to allow wireless microphones to operate without interference from white space devices?**

A: First, the FCC will require all white space devices to use two different methods of interference protection: geolocation with database access, and spectrum sensing. Together, these should provide effective protection against interference by preventing a white space device from transmitting on any TV channel that is being used by a wireless microphone. Second, the FCC has established TV channels in many cities that are 'off-limits' to white space devices, which will allow wireless microphones to operate without risk of interference.

#### PROTECTED CHANNELS

**Q: Which TV channels will be protected for wireless microphones to use?**

A: Fixed white space devices will not be permitted to operate on TV channels that are adjacent to those occupied by a TV broadcast station, and portable white space devices will not be permitted to operate on TV channels 2-20. This means that the TV channels between 14 and 20 that are adjacent to an occupied TV channel will be completely 'off-limits' to white space devices, making them desirable for wireless microphone operation. Because the TV channels occupied by broadcast stations vary in each city, the protected channels will also vary.

**Q: Who else uses TV channels 14-20?**

A: In 13 major metropolitan areas, TV channels 14-20 are shared with Public Safety and some municipal radio systems, reducing the number of available channels. In these 13 cities, the FCC will designate two *additional* channels between 21 and 51 for wireless microphone use. These will be the first open TV channels above and below channel 37.

**Q: What are the 13 major metropolitan areas where selected channels between 14 and 20 are allocated for Public Safety communications?**

A: Boston, Chicago, Cleveland, Dallas, Detroit, Houston, Los Angeles, Miami, New York, Philadelphia, Pittsburgh, San Francisco, and Washington DC. Shure Wireless Workbench software and our online Frequency Finder tool make it easy to identify and avoid these channels.

#### GEO-LOCATION & DATABASE

**Q: What is "geo-location"?**

A: The FCC will require white space devices to incorporate geolocation technology (perhaps similar to GPS), which allows the device to determine its location accurately within 50 meters.

**Q: How will the database work?**

A: The FCC will require white space devices to have the ability to connect to an online database of users of the television band. White space devices will report their location to the database, and then the database will tell them which TV channels they can use at that location. The device must check the database every day, when it is powered on, and whenever its location changes.

**Q: How will the database protect wireless microphones?**

A: The FCC order stipulates that wireless microphone users can register in the database to receive the same protection as TV stations, Public Safety agencies, and other users of wireless devices in the television band. The user would provide contact information, the time and location of the event, and the TV channels used by wireless microphones.

**Q: Is the database available now?**

A: No. The FCC will solicit proposals from organizations that are interested in creating and administering the database. There could be multiple providers, but the FCC will require that the information in all databases is identical.

**Q: Will the database be open to all wireless microphone users?**

A: According to the FCC ruling, "Sites with significant wireless microphone use at well defined times and locations may be registered in the database." We expect that most public and private facilities that use more than a few wireless microphones will be able to obtain protection via the database.

## SPECTRUM SENSING

**Q: What is "spectrum sensing"?**

A: The FCC will require that all white space devices are equipped with spectrum sensing, which is the ability to detect and avoid other wireless signals nearby. This includes TV stations, Public Safety agencies, wireless microphones, medical telemetry devices, and other users. Spectrum sensing will be used as a secondary means of avoiding interference, especially with users who are not registered in the database.

**Q: Will spectrum sensing really work?**

A: In the FCC's extensive lab and field testing, spectrum sensing devices sometimes failed to detect wireless microphones and TV stations, indicating that it is not yet capable of being the primary means of interference protection used by white space devices. With additional development, it is expected that spectrum sensing can be a valuable 'second layer' of protection.

**Q: Will the FCC authorize white space devices that rely exclusively on spectrum sensing?**

A: Manufacturers of white space devices may submit products that rely solely on spectrum sensing to the FCC for testing, but they will have to meet an even more rigorous set of performance standards than devices that use geolocation and the database before they will be approved for sale. Those testing standards have not been developed yet, and the wireless microphone industry and other interested parties will be allowed to participate in that process.