

## SUMMARY OF THE 2010 “WHITE SPACES” ORDER

On September 23, 2010, the FCC issued a Second Memorandum Opinion and Order finalizing rules that make the “white spaces” in the TV bands – unoccupied channels between over-the-air TV stations – available for use by unlicensed broadband wireless devices such as next-generation smartphones, computers, and other consumer and commercial products. The 2010 Order mandates the operating rules and technical specifications for both Fixed and Portable TV Band devices, and finalizes some legal and technical issues that remained unresolved since the previous November 2008 Order.

### Wireless Microphones Remain Legal Throughout TV Bands

The White Spaces Order does not alter the ability of wireless microphones, in-ear monitors, intercom systems, and related equipment to operate in the TV bands. Wireless microphone users may continue to operate, with or without a license, on any VHF or UHF TV channel (2-51, except 37) that is not assigned to a local TV station or Public Safety agency.

### Avoiding Interference In The Future

The 2010 Order establishes a set of operating protocols that create safe havens for wireless microphone users who may encounter interference in the future. The majority of wireless microphone users (who typically use fewer than 20 wireless systems) will be able to operate in designated TV channels that are off-limits to TV Band Devices, thus eliminating the potential for interference. Expanded protection for large events will be provided through a geo-location database. Together these protection schemes will enable both small and large users of wireless microphones to operate without interference from new TV Band Devices.

### Reserved Channels Around 37

The 2010 Order stipulates that two TV channels in each market will be reserved for wireless microphone use. These will be the first channel above and the first channel below TV channel 37 that are not occupied by a local TV station. If unoccupied channels are not available both above and below channel 37, the first two channels nearest to channel 37 will be reserved. Because occupied TV channels vary by market, the reserved channels will vary by market also. The channel map in a particular city might look like this:

	36	37	38	39	40	
	Reserved for Wireless Mics	Radio Astronomy	TV	TV	Reserved for Wireless Mics	

*The first channels above and below TV channel 37 that are not occupied by a TV station will be reserved for wireless microphone operation.*

Because one TV channel can accommodate up to 8 wireless microphones (depending on model), the two reserved channels will allow users to operate up to 16 wireless microphones with no threat from interference from TV Band Devices.

### Clear Channels Adjacent To TV Stations (14-20)

Additional TV channels between 14 and 20 will also be off-limits to TV Band Devices due to the technical restrictions that govern their operation. Portable TV Band Devices are not permitted to

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transmit on TV channels 14-20, and Fixed TV Band Devices are not permitted to transmit on the channels immediately adjacent to the TV channels used by local TV stations or Public Safety agencies. These adjacent channels in the 14-20 range are also effectively reserved for wireless microphone use without risk of interference from TV Band Devices. A sample channel map for a typical city where one TV channel is assigned for Public Safety communications is shown below.

14	15	16	17	18	19	20
Public Safety	Reserved for Wireless Mics	Wireless Mics or Fixed TVBD's	Wireless Mics or Fixed TVBD's	Reserved for Wireless Mics	TV	Reserved for Wireless Mics

*TV channels between 14 and 20 adjacent to TV stations/Public Safety are reserved for wireless mic operation.*

### Geo-Location Database Protects Large Events

Large-scale wireless mic users will be able to achieve expanded protection for specific events through the geo-location database prescribed by the FCC in 2008. The 2010 Order requires that every TV Band Device must receive (either directly or through another device) a list from the database of available TV channels at its location before transmitting. Both licensed and unlicensed wireless microphone users will be able to register the date, time, location, and duration of an event and the TV channels used by their wireless systems in the database. Portable TV Band Devices will be prevented from transmitting on those TV channels when they are within a 400-meter "exclusion zone" around that location; Fixed TV Band Devices are subject to a larger 1-kilometer exclusion zone.

Venues must request database registration at least 30 days in advance, and must certify that at least 6 wireless microphones are operating in each of the reserved TV channels available at that location. The FCC will make requests for database registration public and will provide an opportunity for public comment or objections. In January 2011, the FCC announced a series of mandatory workshops for companies who applied to be database administrators.

### Spectrum Sensing No Longer Required

The 2008 Order stipulated that all TV Band Devices must include "spectrum sensing" technology that would enable them to detect and avoid TV stations as well as wireless microphones that are not registered in the database. The 2010 Order removes the spectrum sensing requirement, concluding that this technology would add cost and complexity to TV Band Devices and would be redundant to the protection provided by the geo-location database. Portable devices that rely on sensing only (without database access) will still be permitted, but will be limited to 50 milliwatts of transmit power and will be required to pass stringent laboratory and field tests to prove that they will not interfere with incumbent users.

### No Changes To Wireless Microphone Licensing

Wireless microphone licenses are currently available to broadcasters, television and motion picture production companies, and cable TV networks. In January 2010, the FCC asked for comments regarding to what extent license eligibility should be expanded. The 2010 White Spaces Order does not address this issue, and given the extensive protections for unlicensed wireless microphone users mandated in this Order, it is unclear what importance the Commission will attach to the matter of license eligibility going forward.

### What Happens Next

Before TV Band Devices enter the market, the database administrators must be selected; database access and registration procedures must be developed, and new devices must be submitted to the FCC for approval. The Commission is still considering potential changes to the spectrum (including the TV bands) in connection with the National Broadband Plan which raise complex legislative, regulatory, and technical issues that may take years to resolve.