

## Operation of Wireless Microphones

The FCC has made a number of changes to the wireless microphone rules over the years. As a result, some equipment that was previously used by local theaters, churches, schools, conference centers, sports stadiums and other users may no longer be operated and must be replaced.

Wireless microphones and similar devices are designed to tune and operate on certain broadcast frequencies known as "spectrum bands" or "frequency bands." Most wireless microphones currently operate in various unused portions of the broadcast television bands, including both VHF and UHF channels. The wireless mics can be operated on either a licensed basis, for qualifying users, or an unlicensed basis, open to all who use the appropriate equipment. In all cases, users must follow the operational rules applicable for each spectrum band.

### **Wireless Multichannel Audio Systems - more spectrally efficient wireless microphones**

In February 2024, [the FCC adopted rules](#) that permit a new, more spectrally efficient type of wireless microphone called a Wireless Multichannel Audio System (WMAS) to operate in many of the frequency bands where wireless microphones were already permitted to operate. WMAS transmits multiple audio channels over a wide bandwidth channel, whereas conventional wireless microphones transmit a single audio channel over a narrow channel. WMAS is designed for high end professional applications where many wireless microphones are required, such as large theaters, sporting events and conventions. Despite its use of wider bandwidth channels, WMAS technology's improved spectral efficiency will enable larger numbers of wireless microphones to operate over a given amount of spectrum, which can result in less spectrum needed for wireless microphones, thereby increasing opportunities for all microphone users to operate. The FCC allows WMAS to operate on both a licensed and unlicensed basis to ensure that the benefits of this new technology are available to all wireless microphone users. The new WMAS rules do not require existing conventional (non-WMAS) microphones users to make any changes to their devices or operations.

### **Changes to operations on frequencies in the 600 MHz service band**

To meet increasing demand for wireless broadband services nationwide, the FCC auctioned spectrum that had been licensed to broadcast television stations operating on

TV Channels 38-51. The auction results (completed in April 2017) affected the spectrum available for wireless microphone operations on the 600 MHz frequencies that correspond to the auctioned TV channels, specifically the 614-698 MHz frequencies. Most of these 600 MHz frequencies have been repurposed for new 600 MHz service wireless operations (specifically, the 617-652 MHz and 663-698 MHz frequencies) and are no longer available for wireless microphone operations.

## **Available frequencies following the 600 MHz auction**

Many frequencies in the TV bands that had been available for wireless microphone use prior to the auction continue to be available. These include:

- VHF and UHF frequencies on TV channels 2-36, for both licensed and unlicensed use.
- Certain frequencies in the 600 MHz guard band: 614-616 MHz for unlicensed use.
- Certain frequencies in the 600 MHz duplex gap: 653-657 MHz for licensed use and 657-663 MHz for unlicensed use.

Wireless microphones may also use frequencies outside of the TV bands. Unlicensed wireless microphone use is permitted on the 902-928 MHz band, the 1920-1930 MHz band, and on portions of the 2.4 GHz and 5 GHz bands under specified power levels and operational rules specific to each band. Licensed wireless microphone use is permitted on several other spectrum bands, including portions of the 900 MHz band, the 1435-1525 MHz band, and the 6875-7125 MHz band.

## **What specific wireless microphones were affected by the 600 MHz auction?**

To determine whether particular wireless microphones were affected by the auction, operators will need to know the specific frequencies that are used by their microphones. Contacting the manufacturer may be the most effective way to determine whether a particular wireless microphone was affected by the auction and needs to be modified or replaced. Additionally, information on the frequencies used may be provided in the microphone's user manual.

## **Power restrictions for unlicensed microphones**

Unlicensed wireless microphones must not be operated at power levels that exceed 50 milliwatts when operating in the TV bands, and not more than 20 milliwatts when

operating in the 600 MHz guard band or duplex gap. Users are advised to consult their owner's manual or other materials provided by the manufacturer or distributor to determine their wireless microphone's output power.

## **Devices 'similar' to a wireless microphone**

Wireless devices similar to wireless microphones include wireless intercoms, wireless in-ear monitors, wireless audio instrument links and wireless cueing equipment. Operators of these devices are required to follow the same rules as wireless microphone users.

## **Part 74 Licensed operations**

Under FCC rules, certain entities are permitted to obtain a license to operate wireless microphones under specified rules and interference protections. Such entities include licensees of AM, FM or TV stations, broadcast networks and cable-television system operators, and venue owners/operators and professional sound companies that routinely operate 50 or more wireless microphones for events and productions at large venues such as large sports stadiums and arenas, music centers, or major theaters. Licensees under the Commission's Part 74 rules may operate in the spectrum bands identified in their licenses. The changes resulting from the spectrum auction required anyone operating in the spectrum that is now licensed for the 600 MHz service (most of the spectrum that was used for TV channels 38-51) to cease operation in those bands and move to other portions of the TV bands (TV channels 2-36) or to other spectrum bands authorized for wireless microphone use.

## **Reporting interference**

Failure to comply with FCC rules by unlawfully operating wireless microphones or devices in the 600 MHz spectrum band may result in fines or additional criminal penalties.

Public safety licensees may contact the FCC Operations Center 24 hours a day, seven days a week, at (202) 418-1122, or [FCCOperationCenter@fcc.gov](mailto:FCCOperationCenter@fcc.gov) to report interference. They may also contact the FCC's Public Safety Support Center at <https://www.fcc.gov/general/public-safety-support-center>.

Consumers may report interference with devices operating on licensed spectrum by filing a complaint with the FCC.



## Filing a complaint

You have multiple options for filing a complaint with the FCC:

- File a complaint online at <https://consumercomplaints.fcc.gov>
- By phone: 1-888-CALL-FCC (1-888-225-5322); ASL: 1-844-432-2275
- By mail (please include your name, address, contact information and as much detail about your complaint as possible):

Federal Communications Commission  
Consumer and Governmental Affairs Bureau  
Consumer Inquiries and Complaints Division  
45 L Street NE  
Washington, DC 20554

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