Operation of Wireless Microphones and Wireless Multichannel Audio Systems (WMAS) - Technical Rules

Table of Contents

1. Background & Purpose

Wireless microphones and Wireless Multichannel Audio Systems (WMAS) are widely used for programme making and special events (PMSE), including broadcasting, theatrical productions, live performances, conferences, and other professional audio applications.

In 2023, the Spectrum Management Authority (SMA) of Jamaica introduced an interim measure, to address the volume of queries received regarding Programme Making and Special Events (PMSE) devices, particularly wireless microphones, pending the development of a comprehensive regulatory framework.

At the World Radiocommunication Conference 2023 (WRC-23), based on Cabinet's Decision No. 5/23, Footnote 5.308A of the ITU Radio Regulations was amended to include Jamaica among the administrations identifying the frequency band **614–698 MHz** for International Mobile Telecommunications (IMT), which meant a repurposing of the band.

The repurposing of the band is intended to modernise the use of radio spectrum, promote more efficient technologies, and align Jamaica's spectrum management regime with international decisions and best practices.

---

2. Regulatory Changes (Including 600 MHz Reallocation)

In implementing the IMT designation, spectrum previously allocated to broadcast television services operating on UHF TV Channels 38 to 51 (614–698 MHz) will no longer be available for Broadcasting services. The impact of the repurposing on the operation of wireless microphones and WMAS are as follows:

- The frequency ranges **617–652 MHz** and **663–698 MHz** are no longer available for wireless microphone or PMSE use.
- Wireless microphone users must discontinue operation in these frequencies.
- Affected users are required to migrate to other authorised frequency bands, including TV channels 2–36 or other approved non-broadcast bands.

Limited portions of the 600 MHz band remain available for wireless microphone use in the **guard band** and **duplex gap**, subject to specific licensing, power, and bandwidth conditions.

---

3. Approved Frequency Bands

Wireless microphones and WMAS are permitted to operate in a range of frequency bands, subject to licensing status and compliance with technical limits. These bands include:

- **VHF TV bands**: 54–72 MHz, 76–88 MHz, and 174–216 MHz (TV Channels 2–13)
- **UHF TV band**: 470–608 MHz (TV Channels 14–36)
- **600 MHz guard band and duplex gap**:
    - 614–616 MHz (guard band – licence-exempt)
    - 653–657 MHz (duplex gap – licensed)
    - 657–663 MHz (duplex gap – licence-exempt)
- **Other authorised non-broadcast bands**, including portions of:
    - 902–928 MHz
    - 941.5–944 MHz
    - 944–952 MHz
    - 952.85–956.25 MHz
    - 956.45–959.85 MHz
    - 1435–1525 MHz
    - 1920–1930 MHz
    - 6875–6900 MHz
    - 7100–7125 MHz

Operation in each band is subject to the power and bandwidth limits set out below.

---

4. Technical Requirements (Power & Bandwidth)

To minimise harmful interference and ensure efficient spectrum use, wireless microphones and WMAS must operate within defined technical limits.

5. Power Limits

Power limits vary by frequency band and licensing status. In general:

- Licence-exempt operation in the TV bands is subject to low power limits, with allowances dependent on occupied bandwidth.
- Licence-exempt operation in the 600 MHz guard band and duplex gap is subject to lower maximum power levels.

- Individually licensed users may operate at higher power levels in specific bands, as authorised by the SMA.

6. Bandwidth Limits

- Traditional narrowband wireless microphone systems are limited to a **maximum bandwidth of 200 kHz** when operating in the TV bands, 600 MHz guard band, and duplex gap.
- WMAS are permitted to operate with wider bandwidths in authorised bands, subject to compliance with applicable technical standards and spectral efficiency requirements.

To improve readability, the operational limits are consolidated below.

---

7. Master Frequency Reference Table

Frequency Band (MHz)	Status (Licensed / Exempt)	Maximum Power Limit	Maximum Bandwidth
54–88	Exempt / Licensed	Up to 50–100 mW (exempt); 50 mW (licensed)	Up to 6 MHz (WMAS); 200 kHz (traditional)
174–216	Exempt / Licensed	Up to 50–100 mW (exempt); 50 mW (licensed)	Up to 6 MHz (WMAS); 200 kHz (traditional)
470–608	Exempt / Licensed	Up to 50–100 mW (exempt); 250 mW (licensed)	Up to 6 MHz (WMAS); 200 kHz (traditional)
614–616	Exempt	20 mW	2 MHz
653–657	Licensed	20 mW	4 MHz
657–663	Exempt	20 mW	6 MHz
902–928	Exempt (non-WMAS)	Up to 4 W (conducted limits apply)	0.5 MHz
1920–1930	Exempt	Very low power	< 2.5 MHz
1435–1525	Licensed	250 mW	Up to 20 MHz
6875–7125	Licensed	Up to 1 W	Up to 25 MHz

Note: Exact operating conditions remain subject to SMA authorisation and compliance with applicable standards.

8. Licensing Rules

Wireless microphones may be operated on either a **licence-exempt** or **individually licensed** basis.

Licence-exempt use is available to the public, provided that equipment is type-approved and operated strictly within the prescribed technical limits.

Individually licensed operation is available to qualifying entities, including:

- Licensed FM and television broadcasters
- Broadcast networks and cable television system operators
- Venue owners and operators
- Professional audio companies that regularly deploy large numbers of wireless microphones for major events

Licensed users are authorised to operate only within the frequency bands and technical parameters specified in their licences. Applications are managed through the SMA's online E-Licensing portal.

9. Compliance

All users, whether licensed or licence-exempt, are required to:

- Use equipment that is type-approved for operation in Jamaica
- Operate only within authorised frequency bands
- Comply with applicable power and bandwidth limits
- Avoid causing harmful interference to other spectrum users

Devices like wireless microphones—including wireless intercoms, in-ear monitors, instrument links, and cueing systems—are subject to the same regulatory requirements.

10. Reporting Interference

Authorised and licensed spectrum users experiencing harmful interference may submit a Interference Complaint via the Spectrum Management Authority's platform E-Licencing.

The SMA will investigate reported cases and take appropriate regulatory action where necessary.

11. Key Takeaways

- WMAS technology is now authorised for both licensed and licence-exempt use, offering improved spectral efficiency.
- Most of the 600 MHz band is no longer available for wireless microphone operations due to its reallocation for IMT.
- Multiple alternative frequency bands remain available for wireless audio use.
- Strict power and bandwidth limits apply to protect other services and ensure efficient spectrum use.
- Licensing provides access to additional spectrum and higher power levels for qualifying users.

---

12. Review Cycle

The SMA will continue to monitor spectrum usage and review this framework as necessary to reflect international developments, technological advancements, and national spectrum priorities. Stakeholders are encouraged to periodically review SMA publications and ensure their equipment and operations remain compliant.

Annex A – Technical Standards and Operational Notes

- WMAS systems must comply with **ETSI EN 300 422-1 V2.2.1 (2021-11)**.
- WMAS systems must support a minimum spectral efficiency of at least three audio channels per MHz.
- Emissions must be contained within ±2.5 times the maximum transmission bandwidth.
- Actual occupied bandwidth must remain between 70% and 100% of the manufacturer-declared bandwidth.
- WMAS operation is not permitted in the 902–928 MHz band.