

Guide To **Radio Spectrum**

for the Birmingham 2022 Commonwealth Games



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Radio Spectrum and Birmingham 2022

The Birmingham 2022 Commonwealth Games will be held in venues across Birmingham and the West Midlands, from 28 July until 8 August 2022 and will be a region-wide celebration of the power of art and culture to bring people together and make connections across the UK and Commonwealth.

Ofcom is the UK statutory regulator for communications. That includes regulating the use of the airwaves that are used for wireless communications such as mobile telephones, as well as programme making, television and radio. We protect and manage the airwaves providing functions including issuing licences and investigating interference.

Wireless services and radio spectrum will play an important role in facilitating these events and keeping participants and spectators safe. Many thousands of wireless devices will be employed by the media and other users of spectrum; from walkie-talkies used by event organisers to TV cameras broadcasting to a global audience, the demand on radio spectrum – a scarce resource – will be extremely high.

Using Wireless Devices / Radio Frequencies

Planning and co-ordination of all wireless devices is essential if users are to be able to operate effectively at and around the Birmingham 2022 Commonwealth Games without interference.

Special arrangements have been put in place to cope with the extremely high demand for spectrum, including a dedicated licensing, test and tagging service for Games Family spectrum users such as rights-holding broadcasters and other media. This service is coordinated by Ofcom.

All spectrum users, including Games Family, in possession of an existing Wireless Telegraphy Act (WT Act) licence that would normally allow them

to operate from Birmingham under normal circumstances, must also apply for a Birmingham 2022 Spectrum licence (the Games Licence) should they wish to operate at Birmingham 2022 venues.

Your equipment must be tested and tagged before operating in a venue, or prior to setting up at broadcast locations.

It is a criminal offence to use radio apparatus in the UK without a valid WT Act licence or licence Exemption.

This Booklet

The purpose of this booklet is to tell you what you need to know if you, or your contractor, plan to operate radio equipment at the Games.

Licensing and operating arrangements differ for Games Family members and Non-Games Family members. (See further details in page 5).

This booklet features information for both:

- **Games Family - page 5**
- **Non-Games Family - page 9**

Make sure you read the following:

- **Operational checks - page 12**
- **Birmingham 2022 terms and conditions - page 13**

Am I in the Games Family?

The term Games Family refers to the broad group of accredited personnel who help deliver or work at the Games. They are:

- Commonwealth Games Federation (CGF)
- Commonwealth Games Partnerships (CGFP)
- Commonwealth Games Associations (CGAs)
- Commonwealth Games Organising Committee (OC)
- International Federations (IFs)
- Rights Holding Broadcasters (RHBs)
- Other Accredited Media (Press and Photographers)
- Commonwealth Games Contractors for the OC such as the Host Broadcaster, Ceremonies Production, Sports Presentation and Technology Suppliers
- Commonwealth Games Sponsors
- Delivery Partners such as Department of Digital, Culture, Media and Sport (DCMS), Birmingham City Council (BCC), the West Midlands Combined Authority (WMCA), Transport for West Midlands (TfWM), and West Midlands Police (WMP).

If you are still unsure about whether you are part of the Games Family please contact birmingham2022@ofcom.org.uk.



Games Family Members

You will require a Games Licence to operate radio equipment in all Birmingham 2022 venues, for the Opening and Closing Ceremonies, in the International Broadcast Centre and Commonwealth Games Villages.

You must obtain a Games Licence should you wish to use any wireless devices or radio, including: wireless microphones, in-ear monitors (IFB), wireless cameras, Satellite News Gathering (SNG) uplinks, mobile microwave or fixed links, and talkback (intercom) radio. Please note this is not an exhaustive list so please check with birmingham2022@ofcom.org.uk if you wish to use any wireless device or radio that is not listed above.

Even if you already have an existing WT Act licence (which authorises your use of wireless devices or radios in Birmingham) you must also apply for a Games Licence to operate at Birmingham 2022 venues. For a full list of venues please see <https://www.birmingham2022.com/venues/>.

You will also need permission for the use of licence- exempt equipment (see page 6).

Games Family members will not be required to pay a licence fee for their Games licence. Failure to obtain a licence also risks causing interference to other spectrum users.

All radio equipment must go through Ofcom's Testing and Tagging process (see page 7) before operating at a venue, or prior to setting up at broadcast locations.

This even applies to existing venue-based wireless systems (i.e. one with an existing WT Act licence or other valid authorisation).

You will not be allowed to bring your wireless equipment into the venues unless you have a Games licence and appropriate tag (see below).

If you haven't yet applied for a licence

There is high demand for spectrum. Licences can only be obtained by contacting the Ofcom Spectrum Team. To apply for a licence please email birmingham2022@ofcom.org.uk. Early applications are encouraged due to limited availability of radio resources within and around Games venues.

There are two main application windows for Games licence requests, depending on type of requirement and priority.

Applications commence from 01/07/2021.

Deadline 1 → 01/12/2021:

Early Licence Applications (Rights holders given + non-standard requests)

Deadline 2 → 15/03/2022:

Licence Applications (Non rights holders and standard requests)

Late applications for licences will only be processed once the previous deadline orders have been assigned. Late applicants should be aware that if there is no availability in the most popular bands, they may not receive their preferred frequencies.

If you or your suppliers, partners or contractors identify a need to use wireless radio equipment within Games venues or simply have an enquiry, please don't hesitate to contact the Ofcom Spectrum Team at birmingham2022@ofcom.org.uk.

For awareness, Birmingham 2022 can potentially offer a radio rental solution for land mobile radio (walkie-talkies) at Games venues. This may be a better option than bringing your own equipment, if this option is of interest, request via birmingham2022@ofcom.org.uk.

If you have already applied for a licence

If your application was successful, a timeline of when to expect your allocated frequencies will

be outlined in an acceptance email. Every effort will be made to ensure that you receive the

frequencies that you requested by 1st April 2022, but you will have 2 weeks after notification to contact the Ofcom if you feel that the allocation doesn't meet your requirements.

Late applications will be processed once the pre-deadline orders have been assigned. You will also

be sent instructions with your licence on how to arrange testing and collect your validation tags.

It is essential to keep your licence documentation with you when at the Games and you must program this frequency into your equipment prior to arriving at venues.

I already have a WT Act licence issued to me by Ofcom. Can I use this at the Games?

Even if you already have an existing WT Act licence for any venue, you will still need to apply for a Games Licence and have your equipment tested and tagged. This is to ensure all radio

use in venues is planned and coordinated, even equipment authorised under an existing licence. For further details contact Ofcom Spectrum Team, birmingham2022@ofcom.org.uk.

Using Licence exempt equipment at the Games

We strongly advise against the use of these types of systems, especially for Games critical services operating at UHF and WiFi, as the use of licence-exempt equipment within Games venues may suffer from interference from other users on the same frequency.

To use equipment which would normally operate on a licence-exempt basis within Games venues

you must still register them with the Ofcom Spectrum Team by emailing birmingham2022@ofcom.org.uk as they will be subject to the Test & Tag policy.

Ofcom reserves the right to ask you to cease using licence exempt equipment with immediate effect, to the extent that they cause any undue interference at the Games.

What about private WiFi applications?

We strongly advise against the use of these types of systems. The OC will provide WiFi within Games Venues, this may be a better option than bringing

your own equipment.

If you have a particular need for private WiFi



then apply to Ofcom Spectrum Team by emailing birmingham2022@ofcom.org.uk explaining why this is required, and the OC will review.

Ofcom reserves the right to ask you to cease using

private WiFi applications with immediate effect, to the extent that they cause any undue interference at the Games.

Out and about with radio microphones and cameras

If you plan to use wireless microphones or wireless cameras around Birmingham over the duration of the Games (for example, as part of an Electronic News Gathering), we recommend that in addition to obtaining the correct radio licence,

you should take practical measures to deal with the likely high levels of spectrum congestion in popular locations by, for example, ensuring that you have a wired microphone alternative.

How much does it cost to obtain a Games licence?

There is no fee.

When do I not need a licence?

You don't need a licence to use some types of approved short-range devices in the UK, provided they operate in specific frequency bands and below specified power levels. Examples of typical licence-exempt wireless devices include: Bluetooth headsets, WiFi enabled smart phones,

tablets and computers, remote alarm and key fobs, and wireless headphones.

If in doubt, please don't hesitate to contact the Ofcom Spectrum Team via birmingham2022@ofcom.org.uk.

What do I do when I get to Birmingham?

Once you have a Games Licence you must arrange to get your equipment tested and tagged by making an appointment with Ofcom at testandtagB2022@ofcom.org.uk.

Ofcom will provide a test and tag service within venue from 17th July 2022 at the following locations on a bookable basis:

- NEC,
- UAC

The Athlete Villages will also operate as a test and tag centre, but will only be operational whilst the Games are in progress.

The process involves a set of bench tests to ensure that the equipment complies with the technical specification set out in your radio licence. This is necessary to limit the possibility that your equipment will cause or suffer interference to/ from other services.

Once testing is complete your equipment will be issued with a tag that indicates that the equipment is permitted to operate inside a Birmingham 2022 venue. It is in your best

interests to arrange an appointment at your earliest convenience. If you have a fixed installation we may also need to arrange a site visit.

Reminder: you must also go through the testing and tagging process in order to be permitted to use licence-exempt equipment within Games venues.

If you do not have the correct tag you will not be permitted to bring your radio equipment into venues during the Games.

What do I need to do before I switch on my radio equipment for use during the Birmingham 2022 Commonwealth Games ?

To avoid interference, your radio equipment/ installation needs to be to the approved engineering standards and operate correctly. Important information is included in this booklet that you should read carefully prior to switching

on your equipment, which relates to operating your radio equipment within Birmingham 2022 venues. Please refer to the Operational Checklist on page 12 of this booklet.

What do I do if I have a problem?

If you have any questions about your radio spectrum allocation or any general spectrum issue please contact the Ofcom Spectrum Team by emailing birmingham2022@ofcom.org.uk.

If you receive radio interference at a venue during the Games you should report this immediately to

the OC Technology Service Desk.

It will be important to provide the location, the type of interference (noise, audible voice, and language type if known), the impact and whether it is intermittent or constant interference.

Useful Contacts

Ofcom Spectrum Team:
birmingham2022@ofcom.org.uk

Ofcom Test and Tag:
testandtagB2022@ofcom.org.uk



Non-Games Family Members

Any non-Games family members must ensure they obtain a WT Act licence should they wish to use any wireless devices or radio equipment at broadcast locations around or within Games venues.

This includes any wireless microphones, in-ear monitors, wireless cameras, talkback radio (intercom), microwave links and SNG uplinks. Please note this is not an exhaustive list so please check with birmingham2022@ofcom.org.uk if you

have any queries.

You will not be able to bring your wireless equipment into or around venues unless you have the correct licence and tag.

How do I obtain a licence?

All non-Games Family members should request an application form by sending an email to

birmingham2022@ofcom.org.uk.

When do I not need a licence?

You don't need a licence to use some types of approved short-range devices in the UK, provided they operate in specific frequency bands and below specified power levels. Examples of typical licence-exempt wireless devices include: Bluetooth headsets, WiFi enabled smart phones,

tablets and computers, remote alarm and key fobs, and wireless headphones.

If in doubt, please don't hesitate to contact Ofcom via birmingham2022@ofcom.org.uk.

How much will a licence cost?

Fees vary according to equipment type, frequency, power and duration of use. You can find full details of fees on our [website](#).

- Typical fee for Wireless Microphones and In-Ear Monitors - £8.50 per frequency per 48hrs
- Typical fee for Wireless Camera - £56 per 48hrs
- Typical fee for Duplex Talk Back - £17 per duplex frequencies per 48hrs
- Licences issued through Ofcom are subject to a minimum charge of £28
- Typical fee for Private Business Radio licences - £100 per year

Using Licence exempt equipment at Games?

We strongly advise against the use of these types of systems as they may suffer from interference from other users on the same frequency.

In order to use your radio equipment that would normally operate on the licence exempt spectrum and you wish to use it within a venue then you will be required to register it with Ofcom by emailing birmingham2022@ofcom.org.uk as they will need to be tested and tagged, see page 13.

Ofcom reserves the right to ask you to cease using licence exempt equipment with immediate effect, to the extent that they cause any undue interference at the Games.

What do I do if I have a problem?

If you have any questions about your radio spectrum allocation or any general spectrum issue please contact the Ofcom Spectrum Team by emailing birmingham2022@ofcom.org.uk.

If you receive radio interference at a venue during the Games you should report this immediately

to the OC Technology Service Desk. It will be important to provide the location, the type of interference (noise, audible voice, and language type if known) and whether it is intermittent or constant interference.

What do I need to do before I switch my radio equipment on for use?

Once you have your licence and tag, to avoid interference your radio equipment/installation needs to be to the approved engineering standards and operate within relevant technical standards.

Important information is included in this booklet which relates to operating your radio equipment and an Operational Checklist on page 12 that you should read carefully prior to switching on your equipment.

Useful Contacts

Ofcom PMSE
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Email: pmse@ofcom.com
Tel: +44 (0)20 7981 3803
Fax: +44 (0)20 7981 3235

Out of hours: +44 (0)7866 423619
Website: <https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/pmse>.



Notes

Operational Checklist

Best practice in the use of wireless radio equipment to avoid interference

This checklist aims to help users to get best use of the available spectrum for the Birmingham 2022 Games and for other day-to-day programme making and special event purposes.

Please read this section carefully before operating your radio equipment.

- Obtain the correct licence and tag**
You must have obtained the correct licence to operate.
- Ensure equipment is correctly set to the exact frequencies as licensed**
Use of the wrong or offset frequencies is a common cause of interference reports. It is important that users check that the correct frequencies are being used.
- Ensure paired frequencies are correctly configured**
For duplex operation it is especially important that any base station equipment is configured as specified in the licence documentation. Use of the frequencies in reverse can cause widespread interference. It is important that users check that the correct frequencies are being used for base and mobile units, as some bands in the UK are in reverse.
- Operate within power limits**
Use of a higher power than has been licensed is likely to cause interference.
- Ensure that your equipment does not exceed your licensed power**
UK radio licences are specified in terms of radiated, not terminal, power. Please ensure that you take into account any gain from devices such as antennas, and please only use the transmit power you need as this allows more people to share spectrum more effectively.
- Use antenna isolators fitted to transmitters for talkback, cue, IFB and camera control**
Base transmitters are required to suppress the generation of unwanted spurious emissions in the harsh environment of a congested PMSE venue. Typically, each transmitter will need to be fitted with an antenna isolator (or 'circulator') to meet this performance requirement.
- Use antenna head-amps only where passive antennas are not suitable**
The use of additional wide-bandwidth amplification raises the receiver's vulnerability to other signals such as television broadcasts and other nearby users. In many cases, performance of a typical wireless microphone system is likely to be better without additional amplification.
- Use high quality screened cable between head units and receiver**
Some wireless camera systems are known to be vulnerable to interference from talkback and other non-PMSE UHF systems that break through into the cable link. High quality screened cables can prevent this from occurring.
- Use filters**
The use of filters on the receiver side will help with reducing and sometimes removing unwanted noise. Please ensure that you are filtering the received signals on wireless cameras and wireless microphones.
- Use CTCSS/DCS codes**
The use of CTCSS and DCS codes on your voice communication will help greatly in reducing the unwanted audio noise on your handheld radio/walkie talkie and will therefore increase the quality of the audio communication.
- Check connectors and batteries**
It is important to ensure that the antenna is correctly affixed to the equipment and that it has no loose connections. Failure to do this may result in poor or ineffective operation. It is also important to ensure that your equipment is fully charged prior to operation.
- Ensure receiver antennas are spaced away from transmitter antennas**
Close location of transmitter and receiver antennas increases the receiver's vulnerability to interference. Vertical separation is preferable, but horizontal separation of antennas helps where this is not practical.

Terms and conditions for use of wireless equipment at Birmingham 2022 venues

In addition to the legal requirement to operate within the Terms and Conditions of your Wireless Telegraphy Act Licence (issued by Ofcom), Birmingham 2022 requires that you comply with the following set of conditions to operate Radio Equipment within Birmingham 2022 venues.

1. All users of wireless radio equipment must comply with the Wireless Telegraphy (WT) Act conditions set out in Schedule 1 of your licence (unless licence-exempt), and the terms and conditions of this document. Breach of these conditions will invalidate the permission to use the radio equipment within Birmingham 2022 venues.
2. All wireless devices must have successfully passed a two-part process before being used at the Games:
 - 2.1. You must obtain a WT Act licence or, in the case of licence exempt devices, you must have registered the devices with Birmingham 2022. It is important to keep relevant documentation with you when at the Games.
 - 2.2. Your Radio Equipment is tested and tagged by Ofcom prior to use. If either of these conditions are not met, you will not be permitted to use the relevant Radio Equipment within venues.
3. A Birmingham 2022 spectrum licence tag (the 'tag') will be provided by Ofcom for wireless devices that have successfully passed the two-part process as set out in Condition 2. The tag must remain visible on the device throughout the licence period but should be removed thereafter. It is a Birmingham 2022 requirement that, unless an exception has been expressly agreed between your organisation and Birmingham 2022 your device(s) are clean of commercial branding. A tag may be used to cover or obscure branding on a device, provided the tag is applied neatly. The tag should never be applied alongside any branding.
4. Permission to deploy private hubs/ access points and private WiFi services in Birmingham 2022 venues must be obtained from Birmingham 2022. Where permission is granted, use of these devices will be on a non-interference, non-protected basis.
5. Mobile phones, smart phones, electronic key fobs, tablet computers, or wireless Bluetooth headsets are not subject to these terms and conditions.
6. If you fail to programme your radio equipment to the correct frequency as detailed in the licence it will not be authorised for use.
7. All radio equipment entering a Birmingham 2022 venue must be presented for inspection during the security screening process. Any radio equipment that does not carry the correct tag will not be allowed to enter the venue.
8. Compliance checks on radio equipment will be carried out routinely by Ofcom.
9. You are requested to report other users' untagged radio equipment to the Venue Technology Manager because there is a risk that these devices may cause interference to your equipment or the equipment of other users.
10. Action may be taken if unlicensed or untagged radio equipment is used in Birmingham 2022 venues or if radio equipment is used which breaches the licence conditions, and/or the Birmingham 2022 terms and conditions of this document.
11. Users of radio equipment must comply with the decisions made by Birmingham 2022 or Ofcom. Failure to do so may result in your equipment being removed from the venue

Ofcom

making communications work
for everyone

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