

Ofcom Licensing Procedure Manual for the Mobile Services and Wireless Broadband

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The purpose of the manual Section A / Chapter 1

This manual is to provide details on the Ofcom licensing procedures relating to **Mobile Services and Wireless Broadband** and the categories of licences, they cover. The areas covered by the **Mobile & Broadband Team** (MBT) are:

- Public Mobile Operator licences for Cellular Radiotelephones (2G and 3G);
- Fixed Wireless Access (FWA); and
- Public Wireless Network licences for Isle of Man and Channel Islands (All Types).

This manual is available from:

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Alternatively, the manual is available on the Ofcom website at:
<http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/broadband/procedures/manual.pdf>

Introduction

The public wireless sector makes a significant contribution to the UK economy, representing the most dynamic sector of the radiocommunications market.

Perhaps the most outstanding feature of spectrum use over the last ten years has been the increase in demand for mobile and broadband services. Although market growth, measured in number of subscribers, will inevitably level out, we estimate that there will be a continuing growth in demand for mobile and broadband spectrum, as users increasingly seek the additional functionality that higher bandwidth applications can provide.

A priority for the MBT will therefore be the provision and regulation of spectrum for public mobile services.

The Role of MBT

Section A / Chapter 2

MBT manages the WT Act licences for companies providing commercial cellular (2G and 3G) and fixed wireless access radio-based services to third parties.

MBT's mission is to promote and facilitate the successful development of public cellular (2G and 3G) and fixed wireless access network services. The team participates in relevant technical and regulatory fora charged with developing spectrum allocations, technical standardisation, sharing and compatibility studies and associated regulatory and licensing policy work.

The primary functions of the teams that make up MBT are;

- To develop a coherent policy and strategy for the management of spectrum designated for mobile and broadband / fixed wide area use. The scope of the work encompasses promotion of light touch regulation, development of the technical and regulatory aspects required for trading regulation, development of internal policy, strategy and discussion papers for consideration by senior Ofcom management directly or through the committees, e.g. Policy Executive and Board, drafting for the Ofcom Strategic plan.
- The planning and award of spectrum set aside for the mobile and broadband wireless services, taking into account engineering design, regulatory and economic factors (including convergence and refarming), with a view to obtaining technical and economic use.
- To represent Ofcom and UK mobile and wireless broadband interests in appropriate international groups in conformity with the priorities defined by the International Activities Review.
- To consider market demand for wireless broadband, technology trends, service evolution and other relevant factors to provide timely advice and expert input to assist in the formulation of Ofcom policy.
- The development of customer management tools;
- To develop and negotiate international co-ordination agreements e.g. UMTS and multilateral agreements; and
- To maintain links with stakeholders having an interest in mobile services and wireless broadband.

- The Wireless Broadband team has policy and technical responsibilities for spectrum that may be used for providing broadband. The team is involved in Ofcom's introduction of economic methods of spectrum management, including spectrum awards and the assessment of requests for spectrum trading and liberalisation.
- As a part of this work it undertakes technical studies of co-existence issues and the definition of spectrum rights. Maintaining links with key stakeholders engaged in the delivery of broadband by wireless is an important part of its role, particularly links with licensees operating fixed wireless access systems and others with an interest in the release of further spectrum onto the market.
- The team participates in international work on issues relating to spectrum for broadband, currently taking the UK lead in the CEPT group seeking to identify harmonised spectrum allocations for WiMAX technology, which is used for the delivery of fixed and mobile broadband.
- Colleagues in Ofcom's Innovation and Business Planning Team are responsible for wireless broadband systems operating in licence exempt and light licensed bands (2.4 GHz and 5 GHz).

Additional topics

Section A / Chapter 3

The Licensing Policy manual for the Mobile Services and Wireless Broadband should be read in conjunction with the **Ofcom Licensing Policy Manual**, available on the Ofcom website <http://www.ofcom.org.uk/> which notably includes the following topics:

Licence variations (amendments)

Additional schedules

Takeovers

Revocation of licences

Licence exemption

How the accounts process works

Enforcement

Frequency planning and licensing (and placing radio equipment on the UK market)

Complaints procedure

Auctions / Comparative Selection

The above manual is available from the:

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

Email: contact@ofcom.org.uk
Telephone: 0845 456 3000 or 020 7981 3040
Fax: 0845 456 3333

Licensing for Public Wireless Networks Section A / Chapter 4

Ofcom manages the radio spectrum and assigns Wireless Telegraphy Act licences. MBT are specifically responsible for the licensing of Public Wireless Networks. These licences are awarded through a public consultation process and by using either comparative selection or, auction award methods. For further details on these procedures, please refer to the relevant parts of the [Ofcom Licensing Policy Manual](#).

The following licences are subject to administered incentive pricing and remain in force until revoked by Ofcom or surrendered by the licensee:

- Public Mobile Operator licences for 2G Cellular and 3.6 GHz (UK);
- Public Wireless Network licences for 2G and 3G Cellular in the Channel Islands and the Isle of Man.

The following licences remain in force for 15 years:

- Fixed Wireless Access licences at 28 GHz, 3.4 GHz, 3.6 GHz, and 4.2 GHz in the Channel Islands and Isle of Man.

Two categories of licences have been awarded via auctions for the UK **mainland** and remain in force until a specified date (unless revoked or surrendered at an earlier date):

- Public Mobile Operator licences for 3G Cellular; and
- Fixed Wireless Access licences at 3.4 GHz & 28 GHz.

Details of the auctions and the corresponding Information Memoranda are available via the Ofcom website on the RA legacy website. <http://www.ofcom.org.uk/>

Twelve licences were issued by Ofcom for concurrent access to a single spectrum block in the 1800 MHz range.

As specified in the Wireless Telegraphy (Limitation of Number of Spectrum Access Licences) Order 2006, <http://www.opsi.gov.uk/si/si2006/20061809.htm> to date, the following categories of licences are no longer available for new applicants (other than when offered by an award process):

- Public Mobile Operator for Cellular Radiotelephones (2G and 3G); and
- Fixed Wireless Access.

Cellular telephony Section B / Chapter 5

What is a mobile phone?

A mobile phone is a wireless telephone that is connected to a public phone network. Four UK operators are licensed to operate the second generation digital technology known as Global System for Mobile Communications (GSM): Orange, O2, T-Mobile, and Vodafone. Five UK operators are licensed to operate the third generation digital technology known as Universal Mobile Telephone Service (UMTS): Orange, O2, T-Mobile, Vodafone and 3 (Hutchison 3G UK Limited). In addition virtual operators may offer branded services (such as Virgin Mobile) that are carried via one of the licensed networks.

GSM (2G)

GSM was developed to improve the quality and the flexibility of mobile phone services and to standardise the technology needed to allow mobile phones to make and receive calls when the user is travelling abroad. GSM has evolved to offer many advanced technical features that are used to support a wide portfolio of services. The key advantages that GSM has over the previous analogue services are better speech quality, confidentiality, built-in PIN (Personal Identity Number), security, international roaming, Short Message Service “texting” and data services.

2G frequencies

The following frequencies are currently licensed in the UK for GSM cellular telephony:

880-915 MHz mobile to base	}	GSM 900 frequency bands
925-960 MHz base to mobile and		
1710-1781.5 MHz mobile to base	}	GSM 1800 frequency bands
1805-1876.5 MHz base to mobile		

The UK operators have given their agreement to publication of the frequency plans used by their systems. These may be found at <http://www.ero.dk/gsm> .

UMTS (3G)

Universal Mobile Telecommunications Service (UMTS) is the Third Generation (3G) of mobile telecommunications. 3G will bring mobile networks significantly closer to the capabilities of fixed networks, providing mobile users with full interactive multimedia capabilities at data rates up to 2 Mbits/s, in addition to conventional voice, fax and data services. Improvements in coding and data compression technology will provide better speech quality and more reliable data transmission.

Third Generation mobile systems will take personal communications for the mobile user into the Information Society of the 21st century. Considerable work has been going on in a number of international standard authorities and with industry over recent years on the development of Third Generation mobile communications standards and the identification of appropriate spectrum.

UMTS Services

These systems deliver multimedia services (voice, video or data) to people on a global basis and provide them with access to new innovative services. A clear goal of Third Generation systems is to offer mobile personalised multimedia communications to the mass market regardless of location, network or terminal. These feature prominently and include facilities such as:

- High speed Internet and Intranet access and electronic mail;
- Video telephony and conferencing;
- On-line financial services and shopping;
- Entertainment services, e.g. audio on demand, video games;
- Direct instant access to home or office IT systems, regardless of location; and
- Access to news, weather and other content-based services.

3G frequencies

The following frequencies are currently licensed for third generation public cellular telephony:

1900–1920 MHz Time Division Duplex
1900 –1980 MHz Mobile to Base
2110–2170 MHz Base to Mobile

Interface Requirements for cellular radiotelephones

The Radio Equipment and Telecommunications Terminal Equipment Directive 99/5/EC (R&TTE Directive) was implemented in the United Kingdom (UK) on the 8 April 2000 by The Radio Equipment and Telecommunications Terminal Equipment Regulations 2000, Statutory Instrument (SI) SI730. In accordance with Articles 4.1 and 7.2 of Directive 1999/5/EC, UK Radio Interface Requirements contain the requirements for the licensing and use of public cellular radiotelephone systems.

UK Radio Licence Interface Requirement 2014 for Public Cellular

Radiotelephone Services

UK Radio Interface Requirement 2019 for Third Generation Mobile

UK Interface requirements can be found Ofcom website <http://www.ofcom.org.uk/>

Gateways

For information regarding the use of GSM Gateways please see Ofcom website:
http://www.ofcom.org.uk/consult/condocs/gsm_gateways/

Cellphone Jammers

We have become increasingly aware of devices being marketed around the world able to block mobile phone calls. The equipment transmits radio signals which prevent communications between cellular handsets and cellular base stations.

Jammers are devices which are intended to prevent radio equipment from receiving and transmitting the signals relevant to their function. Use of such devices therefore constitutes the specific offence of causing deliberate interference. Many radio applications can be the target of such devices, the most common targets are mobile phones. By transmitting signals on the frequencies at which GSM and UMTS operations are conducted, mobile phone jammers make it impossible for a handset located within their range of action to make or receive calls and messages.

Often targeted for use in such areas as theatres, cinemas, examination halls and libraries where the use of mobile phones can prove annoying, Jammers are likely to affect wider areas and other frequencies than those they are intended for. They can also result in the disruption of emergency and rescue radio services in the public area.

It is illegal to install or use these devices in the UK. Use of these devices would constitute an offence contrary to Section 8 of the Wireless Telegraphy 2006 Act. Any outlets marketing such devices in the UK may be prosecuted for inciting the public to commit offences.

The cellular operators are licensed to provide a mobile telephone service throughout the UK. Cellular phones are used for a variety of business and public applications and cellular customers expect to be able to make and receive telephone calls within the coverage areas provided by the operators. This is why Ofcom has to take appropriate enforcement action against the misuse of such devices and why the penalties that may be imposed by the courts for unlawful use can be heavy.

Further details and guidelines on enforcement please see the Ofcom website.
<http://www.ofcom.org.uk/radiocomms/ifi/enforcement/jammers/>

Cellular Accessories

Most accessories sold for cellphones have either a wireless (such as Bluetooth®) or physical (socket) connection to the phone and as such are perfectly acceptable.

However, any accessories such as “twinkling antennas” – popular some years back – that modify the construction or operation of the phone may give rise to unwanted radio effects and may be illegal. If in doubt, contact the handset manufacturer or host network for advice.

Antitheft devices

The band 888-889MHz has been used in the UK for low power antitheft alarms (shopping tags). Devices operating in that band were allowed on a licence exempt basis when approved to MPT 1353 - Anti-theft devices. Since 1 January 2004 the use of anti-theft devices in this band is no longer permitted in the UK. Ofcom will take enforcement action should any antitheft devices be found operating in the frequency band 888-889 MHz.

Antitheft devices can still operate in the frequency band 868-870MHz [as described in the Radiocommunications Agency information sheet under the **Annex A** section] and section 11 **Services to be withdrawn** – Further information on antitheft devices please see the Ofcom website. <http://www.ofcom.org.uk/>

International Borders

When a phone is brought into a neighbour country the radio signals from the home network will fade and the phone will lock onto a new network in the neighbour country. Sometimes the signals from the UK operators are weak even on the UK side of the border and the coverage from a foreign operator is strong. In this situation the mobile phone may roam or lock on to the signals from the operator in the neighbour country even though the phone is still in the UK. The chance of this happening is minimised by formal memoranda between countries so that the signal levels near the border are maintained at a moderate level.

Territorial waters

The Wireless Telegraphy Act licences of the UK public cellular operators are valid in UK territorial waters. The UK operators may build and operate base stations within UK territorial Waters subject to meeting the signal level limits agreed with neighbour countries.

Wireless Broadband Section C / Chapter 6

What is Fixed Wireless Access?

Telecommunication links to homes and businesses in the UK have traditionally been by fixed copper wire. Fixed Wireless Access (FWA), is the use of radio to provide an alternative to the so called 'last mile' connectivity between the subscriber and the fixed telecommunications network. Wireless access systems provide an opportunity to increase competition in the telecommunication market and provide more choice and innovation to consumers. Fixed Wireless Access removes the need to 'fly' wire across country or dig up roads to provide fixed telecommunication links.

The Government has facilitated the introduction of FWA systems in the UK by providing a number of bands for these systems.

Frequency bands

Licences for use of FWA in the UK and Channel Islands and Isle of Man have been granted in the following bands:

- 3.4GHz;
- 3.6-4.2GHz;
- 28GHz.

Interface Requirement

The Interface Requirement relevant to FWA is [IRs 2015 and 2043](#) see http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/

Licence fees

Section D / Chapter 7

The level of licence fees for those public wireless network licences that are subject to (AIP) Administered Incentive Pricing under the Wireless Telegraphy Act are set out in the Wireless Telegraphy (Licence Charges) Regulations.2005. <http://www.opsi.gov.uk/si/si2005/20051378.htm>

Annual licence fees are not applicable for the licences awarded by auction.

Further information on the determination of licence fees can also be found in the Spectrum pricing section of this manual and in the **Ofcom Licensing Policy Manual** on the Ofcom website at http://www.ofcom.org.uk/radiocomms/ifi/licensing_policy_manual_2/

Spectrum pricing

Section D/ Chapter 8

The Wireless Telegraphy Act 1998 introduced important changes to spectrum management legislation. It provided Ofcom with important additional tools to manage the spectrum more effectively and to promote its optimal utilisation.

The 1998 Act introduced new ways of setting licence fees for radio spectrum. Previously, fees were linked to the costs of issuing licences. This gave little or no incentive to use spectrum efficiently and was unfair to smaller businesses that paid far more pro rata on a cost recovery basis than large users of the spectrum, such as mobile telecommunications operators. The 1998 Act provides for licence fees to be set by regulation (administrative pricing) or by auction to reflect spectrum management objectives.

As a means of deriving equitable fees, Spectrum Tariff Units were evolved for the mobile bands. Each gives a value for spectrum as a raw material from which individual product values can then be calculated.

In March 2003 the Radiocommunications Agency (RA) published its Spectrum Pricing sixth-year consultation document which outlined the RA's proposals for the continued implementation of administrative spectrum pricing and proposed changes to take effect from July/August 2003. These proposals were part of an ongoing programme to introduce spectrum pricing principles to all sectors of radio use.

It is proposed that the fees for Public Mobile Operators remain stable for the near future. This is so that Ofcom can evaluate the spectrum pricing process, decide what further action needs to be taken, and reassess the market value of the spectrum in light of (for example) future auctions, the convergence of technology, the development of new services, spectrum refarming and spectrum availability.

Full details on Ofcom's 2006 consultation on Spectrum Pricing Policy can be found at: <http://www.ofcom.org.uk/consult/condocs/pricing06/>

Spectrum Trading

Section D / Chapter 9

As from December 2004 Ofcom is introducing trading in the FWA bands 3.4, 3.6 and 28 GHz (except in the Channel Islands / IoM).

Spectrum trading is the transfer of rights and associated obligations arising by virtue of a Wireless Telegraphy Act licence. Associated obligations are those obligations that are necessarily and properly associated with a right, for example a limitation not to operate outside prescribed power levels.

Ofcom believes that spectrum trading will help to optimise the use of the finite spectrum resource for the benefit of UK consumers and citizens. It may, for example, enable spectrum users to amalgamate new spectrum with existing spectrum to expand the range or level of services they offer. Alternatively, it may allow users to partition spectrum enabling them to sell spectrum rights they do not need to another party that will use them more efficiently.

In addition, some types of change of geographical area and frequency segmentation do not involve significant risk of interference and will be allowed through spectrum trading as a partial transfer.

For more information on spectrum trading please refer to the Ofcom website <http://www.ofcom.org.uk/radiocomms/ifi/trading/>

Liberalisation

Section D / Chapter 10

Traditionally, wireless telegraphy licences have specified the use to which spectrum can be put and the means by which that spectrum can be exploited, including details of the service that can be offered and the technology that can be deployed. Spectrum liberalisation allows the reduction or removal of these restrictions. Ofcom may implement liberalisation in response to requests from licensees for changes to licences to reduce or remove restrictions. It may also change existing licences generically to make them less usage and technology specific. Spectrum trading and liberalisation are distinct, though complementary, developments, but it is anticipated that liberalisation will provide an additional impetus for spectrum trading and generate additional benefits.

Ofcom generally believes that it is desirable to give spectrum users as much freedom as possible to adopt new technologies and offer new services. Spectrum trading combined with liberalisation will, over time, enable the market to decide how much spectrum should be allocated to different uses and maximise the economic value of the spectrum. It will also provide an environment of faster access to spectrum and foster a more entrepreneurial approach to developing spectrum-based products and services.

A key consideration in liberalisation is the extent to which licensees can expect to be protected from harmful interference. MBT would not expect to agree to the removal of a restriction where the change would result in the lowering of spectrum quality of neighbouring licensees below a benchmark level unless all potentially affected parties are in agreement. There will be no guarantee for users that interference will fall within these levels in practice, but Ofcom will continue to investigate and resolve interference complaints.

For more information on liberalisation and full details of Ofcom's proposals for liberalisation please refer to the Ofcom website
<http://www.ofcom.org.uk/radiocomms/ifi/trading/>

Licence variation

Ofcom intends its procedures to be as straightforward and as light-touch as possible but recognises that allowing liberalisation to take place without appropriate controls has the potential to lead to increases in harmful interference. MBT will aim to deal expeditiously with all requests for licence variation but it should be noted that the licence variation process may involve technical and other checks that are not required in evaluating requests for partial transfer under the Trading Regulations.

Licence variation process for FWA.

1. Licensees will have to apply to MBT if they wish to alter the terms of their FWA licence, including a partition of their rights and obligations in a way not allowed as a partial transfer. The licensee should first seek confirmation from Ofcom as to whether or not the proposed change requires an amendment to the existing terms of their current licence.

2. Requests for a variation will be considered in accordance with Schedule 1 (7) of the Wireless Telegraphy Act 2006 using a process based upon existing procedures for licence variation but amended to accommodate the new flexibilities proposed in this document. Where a licence variation is required, the licensee should submit a request for a licence variation to MBT that includes the following details: name and address; licence number; nature of the variation and any other relevant information. The nature of information required may vary and MBT may also require the applicant to produce a technical assessment demonstrating that the spectrum quality of other licensees will not be reduced below their benchmark level.

3. Ofcom will then assess the application for licence variation in accordance with its statutory duties and other legal requirements and against its published criteria relating to the licence class and will consider the evidence provided by the licensee. In particular:

- MBT will need to be satisfied that the proposed change will not reduce third parties' spectrum quality below its benchmark level, or if it will, that they have consented to the change;
- MBT may notify neighbouring licensees (co-channel users, adjacent channel users or co-located users), and in some cases other parties who may be affected by the proposed change, who will have an opportunity to make representations to Ofcom;
- MBT will ensure that the proposed change conforms to national site clearance requirements and to international co-ordination agreements and treaty obligations;
- there may be occasions where MBT refuses a request for variation on public policy grounds or to comply with a direction from the Secretary of State;
- where necessary, MBT may request further modelling, field monitoring or propagation studies to provide evidence to support its decision-making process.

4. MBT will aim to give its decision in writing to the licensee within 15 days of receipt of the variation request where it grants consent for a variation to a FWA licence. It will make the licence variation and provide revised licence documentation to the licensee. Where consent is not granted for a variation to a FWA licence, MBT will make clear the grounds on which it has withheld permission, so that the licensee has the opportunity to modify its plans and make an alternative application or appeal to the Competition Appeals Tribunal. In addition, it is proposed that licence holders will have an opportunity to make representations to Ofcom regarding its decision to withhold consent.

Disclaimer
Section E / Chapter 11

This document is designed to provide details of the Ofcom licensing procedures relating to the Mobile and Broadband Team. However, it should not be taken as giving exact policy in relation to this sector as revisions to this document will be done periodically or when there is a substantive need to update the document. This document can therefore only be accurate at the time of writing and should in any event be read in conjunction with the [Ofcom Licensing Policy Manual](#). Furthermore, it is only based and is not a substitute for the actual legislation. If you are in doubt about how the legislation applies to you, further information may be obtained by contacting Ofcom.

Therefore Ofcom accepts no responsibility or liability to the accuracy or completeness of the information contained in this document.

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