



OfW 85: Guidance Notes for an Application for a Point to Point Fixed Link Licence

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Section 1

How to fill in your licence application

1.1 Introduction

This document provides guidance to help you fill in your OfW 85 application form. It is particularly intended for applicants who are less familiar with this licence process and for those completing their initial application using the OfW 85 paper application form.

The OfW 85 application form is only available in an “rtf” format on the web. It may be printed out, completed, and then sent to the address given at the end of these notes, or completed electronically and emailed to us.

Help is available from Ofcom Spectrum Licensing during office hours on 020 7981 3131. All information sheets can be found on the Ofcom website www.ofcom.org.uk. From time to time the OfW 85 and the information within supporting material may change, for example due to policy changes. Therefore, please ensure that you are using the latest release.

The OfW 85 form can be used for any Point to Point Fixed Link (also known as ‘Fixed Terrestrial (Point-To-Point) Link’, ‘Fixed Link’, or ‘Fixed Terrestrial Link’) application that is to be deployed in geographical areas administered by Ofcom.

1.2 Your Responsibility

Useful in the design of your system is the Technical Frequency Assignment Criteria document OfW446 which can be found at:

<http://licensing.ofcom.org.uk/radiocommunication-licences/fixed-terrestrial-links/guidance-for-licensees/tech-info/tfacs/>

You also need to ensure that the system(s) comply with the licensing conditions stated in UK Interface Requirement 2000 (UK IR2000) which can be found at:

<http://licensing.ofcom.org.uk/radiocommunication-licences/fixed-terrestrial-links/guidance-for-licensees/tech-info/ir/>

Please fill in OfW85 legibly, completely and accurately. Any missing information may require us to return the form back to you. You can use OfW85 to submit a single link application. For multiple link applications it may be better to use our electronic batch process. Please follow carefully the advice provided both in the OfW85 form and in these guidance notes. If you are unfamiliar with the batch process and conditions then the best approach is to contact us first.

Your initial application requires the payment to clear so that the licence can be issued. A request for payment will be issued prior to release of the licence. After clearing we will be in a position to process subsequent applications and issue your licence documentation. Remember, no matter who applies on your behalf you are still legally responsible for all actions carried out on your radio system.

1.3 Our Responsibility

We aim to meet our published KPIs stated in OfW85 which start when we receive a correctly completed application. In cases of uncertainty or missing information we may decide to contact you to resolve any points of detail or simply return the application.

When we are satisfied that all the correct details have been provided we will acknowledge this to the address stated in question B2

1.4 Point to Point Fixed Link Spectrum

Users can only obtain access to the spectrum through a licence, with the exception of when the spectrum is exempt from needing a licence.

1.5 Conditions regarding use of the licence

Your licence will be issued subject to the following requirements. Please read them carefully:

- The licence supersedes all licences and schedules previously issued for the radio service.
- The operation of a radio service other than in accordance with the terms and conditions of the licence is an offence.
- The licence is valid until the payment interval on the licence, and thereafter so long as the licensee continues to pay the licence fee to Ofcom on or before the payment interval.
- All changes to the radio service must first be made known to and, if agreed, authorised by Ofcom
- The licensee must ensure that any new person operating the stations observes the conditions of the licence.
- Ofcom may at any time revoke the licence or vary the licence conditions, within the existing Terms and Conditions, providing an explanation of the reason(s) for this action. In such circumstances, the licensee will be informed either through a notice in writing sent to the licensee **or** a general notice given by public broadcast.
- Ofcom reserves the right to change at any time the frequencies assigned for the licensee's use.
- The station(s) and the licence shall be available for inspection at all reasonable times (or when an urgent situation occurs at any time) by a person acting under the authority of Ofcom.
- The stations may be closed down at any time on the request of a person acting under the authority of Ofcom.
- Ofcom reserves the right to assign frequencies specified in the licence schedule to additional licensees.
- The stations shall transmit and receive only on the frequencies specified in the licence schedule.

1.6 Ofcom treatment of variation of contact details

Ofcom will accommodate all contact changes to an existing licence, liaising with customers as and when required. These changes are referred to as a licence 'variation' and will affect Section B of the OfW 85 only.

Licence variations concern changes to contact details changes, for example, permitting the licensee to:

- Make simple changes because of individual's circumstances such as address, telephone number(s) etc;
- Indicate company account and technical personnel changes;
- Changes to company details etc.

1.7 Variation of technical details

If technically feasible Ofcom will accommodate all technical variations to an existing licence, liaising with customers as and when required. These changes are referred to as 'technical variations' and will affect Section B (for identifying your licence number) and Sections C to F as appropriate for technical changes. Technical variations concern changes, for example, permitting freedom to:

- Deploy new radio equipment operating in a different bandwidth and using a different modulation scheme to that previously deployed on the existing link;
- Deploy new antennas associated with different gains and performance to that deployed on the existing link;
- Adjust antenna positioning;
- Change frequency band;
- Adjust polarisation etc.

General advice before answering questions

2.1 Before Starting

When completing an OfW you may find it useful to have access to the following information:

- **UK Radio Interface Requirements 2000 (UK IR2000):** Point to point radio relay systems operating in fixed service frequency bands administered by Ofcom.
- **Technical Frequency Assignment Criteria (OfW 446)**
- **Spectrum Trading Guides**

All are available from the licensing section of our website at www.ofcom.org.uk

These guidance notes should help you to answer the relevant questions. If you have any doubts about answering the question in the OfW85 form then please contact Spectrum Licensing before submitting your application: (see page 12 of this document for more details).

2.2 How to fill in the form

You are required to complete the OfW85 by entering all relevant information in the appropriate fields. Please write legibly and in black ink. When options are provided then please place an X against the relevant choice.

We suggest you start by answering Section A sequentially through the sections to Section G answering all relevant questions.

Section A

OfW 85 Section A: Purpose of Application

Section A.1: Please put an X in the Appropriate Box

You have six options to choose from:

- Apply for a new link licence;
- Surrender of an existing licence;
- Variation of contact details;
- Variation of technical details;
- Technical variation enquiry;
- Surrender an existing link licence;

Administrative variations do not require technical consideration or re-assignment and these are therefore more straightforward for Ofcom to deal with. Option 3 should be chosen to indicate a change in customer details. Further advice is given in Section 1.6 above.

Technical changes to a link should be indicated using Option 5 and typically this requires a re-assignment to be completed. Further details are given in Section 1.7 above. Under spectrum trading there is now a requirement to provide information to those intending to trade. Therefore Option 6 is provided for this purpose.

Section A.2: Licences are issued and charged for the prescribed interval of 12 months unless you declare they are for temporary co-ordinated use where the licence will be issued and charged one-twelfth of the annual fee multiplied by the number of complete calendar months stated here

Any licence application required for less than 1 year will be considered as a short-term licence as long as this is your first application for this link. You should enter the number of complete months of use for this question. Fees are calculated on the basis of one-twelfth of the annual fee multiplied by the number of complete calendar months. Fees are calculated in accordance with the formula set out in Part 1 of Schedule 3 of the Wireless Telegraphy (Licence Charges) Regulations. You should always ensure you use the current Regulations.

Section A.3: If you already hold a licence do you wish to harmonise the payment interval?

If so please state the payment interval of your existing link licences. This option permits you to harmonise the payment interval with an existing licence should you require.

Section B

OfW 85 Section B: Contact Details

Section B.1: If you already hold a point to point licence please enter your Organisational Identification Number and go to section C

You will find this printed on one of your existing link licences. However, if there have been any changes to the contact details previously provided, or you have not provided a contact for Windfarm matters please provide this information in Section B.

Section B.2: To whom is the licence to be issued?

Legally 'a person' may be an individual operating a business from one of their own premises or two or more people acting together as a Partnership, Company or an Incorporated Association. The WT Act licence must state the full name of the specific person, company or organisation so that the licence is quite clear. A list of legal entities is provided and you should choose one from the list.

If the status of your organisation is not listed then you should specify this against 'Other legal entity'. You are also required to enter all appropriate contact details here. It is a legal requirement that the original licence must be sent to the licence contact. This is the only address we will use to send you your licence and accompanying schedules.

Company Registration Number: Having a registration number is very much dependent on your legal status. You should check whether your legal entity requires you to do so. If so, please enter this into the box provided.

Section B.3: Should the licensee, at B.2 also be contacted for account matters?

Tick 'Yes' and go to question B.3.2. or 'No' and go to question B.3.1. to provide details for account queries in the text spaces provided for name, address, town, postcode, telephone, fax and e-mail.

Section B.3.2: Are you a third party contractor installing on behalf of the licensee?

If you are a third party contractor or handling agent you should tick 'Yes', otherwise 'No'.

Section B.4: Who should be contacted for technical matters?

If a contact given in question B.2 or B.3 is the same for technical details then you should select the appropriate option, and go to section C. If not, you should provide these details under question B.4.1, including names, address, town, postcode, telephone, fax, email etc.

Section B.5: Who should be contacted for windfarm matters?

If a contact given in question B.2 or B.4 is the same for windfarm details then you should select the appropriate option, and go to Section C. If not, you should provide these details under question B.5.1, including name, address, town, postcode, telephone, fax, email etc.

Section C

OfW 85 Section C: Common Technical Characteristics

Section C.1: For a new application, please enter your own unique customer link reference

This question is mandatory for a new application but should be ignored if you are submitting either an amendment or cancellation. In which case, you should proceed to question C.2.

For a new application, please fill in your own reference that uniquely identifies your system. You can use any combination of up to 10 alpha/numeric characters. Please note that we will consider any characters such as '*' and '/' as a valid part of the Customer System Reference.

Section C.2: If this is a technical variation of an existing licensed link, please quote your existing Licence Number for this link

When technically varying a link you should enter your licence number for this link in the space provided.

Section C.2.1: If surrendering an existing licensed link, please quote your Licence Number for this link and go to Section G

When surrendering a licensed link it is assumed that you are an existing customer. You should enter the licence number of this link in the space provided.

Section C.3: What frequency band do you prefer?

You should tick the appropriate frequency band from the options provided.

Section C.4: If appropriate, please specify the tuning range of the equipment

This is an optional question which allows you to provide any equipment carrier tuning range for us to consider. This frequency range may be the equipment frequency range and must be specified between lower and upper frequency limits.

For duplex operation you should specify the 'go' band limits. We will assume that the 'return' band limits are matched according with the appropriate duplex arrangements. Similarly if you specify the 'return' band limits the same guidance applies.

The Ofcom Technical Frequency Assignment Criteria (TFAC) will provide the relevant formulae for calculating all transmit frequencies and duplex arrangements.

If you specify a carrier tuning range in MHz, Ofcom will attempt to assign the frequency (channel) in this range. If your assignment is unsuccessful then we will automatically assign you the nearest available channel. You can accept, vary, or surrender this at a later stage in the licence process. The 'go' band channel assignment will be associated with an equivalent channel assignment in the 'return' band segment.

Section C.5: Please state your preferred polarisation

You need to select one of the options from 'Vertical', 'Horizontal' or 'Co-Channel Dual Polar'.

Section D

OfW 85 Section D: Link Details

Section D.1: Please state the required service availability level between 99.9% and 99.999%

You need to specify the required service availability level which determines the receiver median signal level (receiver sensitivity level plus fade margin) and ultimately your assigned transmit power. The Effective Isotropically Radiated Power (EIRP) is determined in dBW using:

EIRP = Rx Median signal level + Rx station feeder losses – Rx antenna gain + median path loss

Tick the appropriate box for 99.9%, 99.95%, 99.99%, 99.995%, 99.999% or within the permissible range state your preferred value.

Section D.2: Please state the estimated length of the radio path

You should enter the length of the path in kilometres. We check that this is consistent with the site national grid references entered in E.2.

Section E

OfW 85 Section E: Site Details

Section E.1: Is this a one way link?

You are required to tick one of the options.

Section E.2: Please provide the link locations

This question permits you to enter the location details in various formats, which are:

- National Grid Reference;
- Latitude/Longitude

The extended grid reference is an extension of the National Grid Reference (NGR) and is preferred by some applicants. Effectively this extends the Easting and Northing for sites outside the usual National Grid range and this is offered to customers, who are already

familiar with this extended grid system. We will be pleased to assist customers should they wish to know more about the applicability of this reference system.

The NGR format is in three parts:

- Part A is a two letter, 100 km, site square identifier for mainland UK, or one letter for Northern Ireland, which identifies the specific grid square in the National Grid reference system;
- Part B is for Easting;
- Part C is for Northing.

The preferred location precision for all frequency bands is one metre (i.e. five figure Easting and five Figure Northing). You should always enter the numerical Easting and Northing information starting from left to right entering 0s for unused spaces.

Alternatively, you can specify the location in Latitude/Longitude format. You are required to enter the Latitude and Longitude in a separate series of boxes which use degrees, minutes, and seconds. Remember when entering the longitude to also select E(ast) or W(est).

Section E.3: Please give the site name and address

For onshore sites, please enter the scanner site name details in the spaces provided for name, address, town, county and postcode. You should attempt to provide as much detail as possible. Where sites have been used before please provide us with the existing site name.

We understand that sometimes providing postcode information is difficult, particularly for rural locations. If so, please attempt to provide us with at least the first half of the post code.

Section E.4: Please confirm the height of the antenna in metres above ground level (or mean sea level if offshore)

For onshore sites, please provide the antenna height above ground level (AGL). For offshore sites, please provide the antenna height above mean sea level.

Section E.5: If there are two new sites then please confirm which site should transmit in the upper half of the frequency channel plan, cross one option only

Transmit high/low checking has been incorporated into the Ofcom general online Wireless Telegraphy Register (WTR) which can be found at:

<http://spectruminfo.ofcom.org.uk/spectrumInfo/licences>

You will be required to enter frequency range, location and search radius. The register will return a list of licences with sites and their high/low transmit status.

You are expected to check any sites against the online register before submitting your application. For existing sites, from which licensed links are transmitting, Ofcom will maintain the established high/low transmit status for these sites. For new sites, where no high/low status is provided from the register, please state which site you would like to transmit high.

Section F

OfW 85 Section F: System Details

Section F.1: Please provide the Equipment Reference Code from the Ofcom website which can be found under the licensing section

The Equipment Reference Codes on the website show previously licensed equipment. It should in no way be considered as an endorsed list of preferred manufacturers, equipment options or a complete list of all available fixed link equipment. It is provided on the basis to simplify the licensing process.

The spreadsheet is periodically downloaded from our spectrum management system. The parameters provided are as highlighted in single quotes below. These read from left to right in the spreadsheet:

- Frequency '**Band**' (GHz);
- '**Description**' which is usually the manufacturer;
- '**Model number**' of the equipment;
- Unique equipment reference '**Code**';
- '**Bit rate**' usually shown with channel spacing (e.g. 155/28 for a 155 Mbit/s in 28 MHz system etc.);
- '**Active**' status either '**Y**' or '**N**'. '**N**' signifies that the equipment is old or not in production and we usually will not assign this equipment;
- '**R&TTE Notified**' signifying that the equipment has been successfully notified under the current R&TTE Directive by '**Y**' or approval was under the old national type approval regime using UK national MPT regulations by '**N**'.

When making your application it is the code (item 4) which is required. The application form prefixes this code with 'E' for clarity. You should ensure that when entering this code that you enter the information accurately from left to right, taking notice of any code separators '/' and any other special characters. If you are unable to find the relevant Equipment Reference Code on the website then you should contact us directly before sending your application to us.

As examples, two valid entries for 38 GHz 155 Mbit/s in 28 MHz examples are:

- 38/DT/0/43/DM for ALTIUM 38 GHZ STM-1; and
- 38/DT/2/91/NE for PASOLINK PLUS 38 GHz.

If the equipment code is not available from the website then either complete question F.1.1 or contact us directly before making your application.

If the Equipment Reference Code is not known, please specify the Equipment Manufacturer, the ETSI spectral efficiency class, the equipment model number, bit rate, bandwidth and modulation level and type.

If you cannot find the code for the equipment the above information will help us to process your application quicker and make any necessary enquires to ensure that the equipment has been correctly notified, and if so, update the Equipment Reference Number spreadsheet for future applications.

Occasionally manufacturers change their name from time to time and sometimes this confuses the identification of equipment. So we can uniquely identify the correct piece of equipment we also like you to specify the minimum equivalent PDH/SDH (bit rate), ETSI spectral efficiency class, bandwidth and modulation with level. Then we can be certain we have the correct equipment details.

Section F.2: Please provide the Antenna Reference Code from the Ofcom website which can be found under the licensing section

The Antenna Reference Codes on the website show previously licensed antenna equipment. It also should in no way be considered as an endorsed list of preferred manufacturers, antenna options or a complete list of all available antennas on the market. Again it is provided on the basis to simplify the licensing process.

The spreadsheet is periodically downloaded from our spectrum management system. The parameters provided are as highlighted in single quotes below. These read from left to right in the spreadsheet:

- Frequency '**Band**' (GHz);
- '**Description**' which is usually the manufacturer;
- '**Model**' number of the antenna;
- Unique equipment reference '**Type**';
- '**Antenna Description**' usually a free text field with additional information e.g. full absorber, side ear absorber, no absorber etc;
- '**Performance**' status either 'H', 'S', or 'O' respectively for high performance, standard performance or other performance;
- '**Size**' signifying antenna diameter in metres, for example 0.3, 0.6 etc;
- '**Gain**' signifying bore sight gain in dBi, for example 38 and 43 etc;
- '**Beam Width**' specifying the half-power 3dB beam width in degrees, for example 1 or 2.

When making your application it is the type (item 4) which is required. The application form prefixes the type code with 'A' for antenna clarity. You should ensure that when entering this code that you enter the information accurately from left to right, taking notice of the code separators '/'s' and any other special characters. If you are unable to find the relevant Antenna Reference Code on the website then you should contact us directly before sending your application to us.

As examples, two valid entries for high performance 38 GHz antennas are:

- A/38/H/97/10/AA for 0.3 metre parabolic;

- A/38/H/91/6/FM for 0.2 metre lens horn.

If the antenna code is not available from the web site then either contact us directly before making your application or if possible use question F.2.1 to specify the antenna manufacturer, ETSI spectral efficiency class, antenna model number and the antenna maximum (boresight) gain.

If you cannot find the code for the antenna then you should specify the above information to help us process your application quicker and make any necessary enquiries to ensure that the equipment has been correctly notified, and if so, update the Antenna Reference Number list. In addition, occasionally manufacturers change their name from time to time and sometimes confuse the identification of equipment.

Also for new antenna's you may be asked to provide the radiation pattern envelope (RPE), please have this available to enable the addition of the new antenna onto our database.

Section F.3: Please state the feeder losses

You are required to provide the value of the feeder loss in dB. This value should be rounded to the nearest dB. The loss may be 0dB as in the case of an integrated transceiver with parabolic antenna operating above 25 GHz or the equipment might be connected by a run of waveguide with typically 2dB feeder loss.

At lower frequencies we normally expect a value much greater than 0dB for feeder losses connecting the terminal indoor and outdoor units. In exceptional conditions this might exceed 15dB to 20dB where the units are connected by waveguide or coaxial cable.

Section F.4: Please state any other losses

You are required to provide the value of any other system losses such as branching or hot standby losses in dB. This value should be rounded to the nearest dB. Acceptable losses on a band-by-band basis are stated in our published Technical Frequency Assignment Criteria. We use this criterion to judge whether your requirements are reasonable. Ofcom does not generally permit the use of frequency diversity for standby purposes nor does it encourage the use of N+1 systems.

Section F.5: Feeder losses greater than 10 dB and other losses greater than 4dB need to be justified. If the losses in question F.4 and or F.5 exceed these limits, please provide justification below

This question provides boxes to justify any untypical feeder or other loss arrangements. We retain the right to challenge or refuse any losses which seem unreasonable. Generally, acceptable feeder losses are no more than 10 dB and combined other losses no more than 4 dB. We require justification for values greater than these limits and will consider these on a case-by-case basis. Descriptions of excessive losses are required for both sites.

Section F.6: Does the system including antennas meet the licensing requirements of UK Interface Requirement 2000 (UK IR2000)?

For this question please tick 'Yes' or 'No' as appropriate. It is the responsibility of the applicant to ensure that the equipment meets the essential requirements of the R&TTE Directive and is licensable.

Section G

OfW 85 Section G: Declaration

Following the granting of any licence the licensee has 28 days in which to raise any objections to the conditions contained therein. The applicant completing the application should provide his or her name in capital letters and enter the date of the application in the following format dd/mm/yyyy

It is helpful from an evidential point of view if the applicant signs the declaration to acknowledge their obligation to state the truth. Applicants who submit forms electronically will be deemed to have acknowledged this declaration in the act of making this electronic submission.

If you have not received acknowledgement of your application within five working days you should contact Spectrum Licensing:

Spectrum Licensing
Ofcom
Riverside House
Southwark Bridge Road
London SE1 9HA

Telephone: 020 7981 3131 or 0300 123 1000

Facsimile: 020 7981 3235

Email: spectrum.licensing@ofcom.org.uk