

## **SPECTRUM ACCESS 800 MHz LICENCE**

This Licence replaces the Licence issued by the Office of Communications (Ofcom) on 01 March 2013 to Telefónica UK Limited.

Licence no: **0943537**

Date of issue: **23 March 2015**

Fee payment date  
(from 1 March 2033) **01 March (annually)**

1. The Office of Communications (Ofcom) grants this wireless telegraphy licence ("the Licence") to

**Telefónica UK Limited**  
(Company registration number 1743099)  
("the Licensee")  
**260 Bath Road**  
**Slough**  
**Berkshire**  
**SL1 4DX**

to establish, install and use wireless telegraphy stations and/or wireless telegraphy apparatus as described in the Schedules to this Licence (together "the Radio Equipment") subject to the terms set out below.

### **Licence Term**

2. This Licence shall continue in force until revoked by Ofcom or surrendered by the Licensee.

### **Licence Variation and Revocation**

3. Pursuant to Schedule 1 paragraph 8 of the Wireless Telegraphy Act 2006 ("the Act"), Ofcom may not revoke this Licence under schedule 1 paragraph 6 of the Act except:
  - (a) at the request, or with the consent, of the Licensee;
  - (b) if there has been a breach of any of the terms of this Licence;
  - (c) in accordance with schedule 1 paragraph 8(5) of the Act;
  - (d) if it appears to Ofcom to be necessary or expedient to revoke the Licence for the purpose of complying with a direction by the Secretary of State given to Ofcom under section 5 of the Act or section 5 of the Communications Act 2003;

- (e) if, in connection with the transfer or proposed transfer of rights and obligations arising by virtue of the Licence, there has been a breach of any provision of regulations made by Ofcom under the powers conferred by section 30(1) and 30(3) of the Act<sup>1</sup>;
  - (f) for reasons related to the management of the radio spectrum, provided that in such a case the power to revoke may only be exercised after at least five years' notice is given in writing (such notice not to be given before 1 March 2028);
  - (g) if the Licensee has been found to the reasonable satisfaction of Ofcom to have been involved in any act, or omission of any act, constituting a breach of the Wireless Telegraphy (Licence Award) Regulations 2012 (“the Regulations”).
4. Ofcom may only revoke or vary this Licence by notification in writing to the Licensee and in accordance with schedule 1 paragraphs 6, 6A and 7 of the Act.

### **Transfer**

5. This Licence may not be transferred. The transfer of rights and obligations arising by virtue of this Licence may however be authorised in accordance with regulations made by Ofcom under powers conferred by section 30 of the Act<sup>2</sup>.

### **Changes to Licensee details**

6. The Licensee shall give prior notice to Ofcom in writing of any changes to the Licensee's name and/or address as recorded in paragraph 1 of this Licence.

### **Fees**

7. In accordance with the Regulations, the sum payable in respect of this Licence is £550,000,000.
8. From 1 March 2033, the Licensee shall each year pay to Ofcom the relevant fee(s) as provided in section 12 of the Act and the regulations made thereunder on or before the fee payment date shown above, or on or before such dates as are notified in writing to the Licensee.
9. The Licensee shall also pay interest to Ofcom on any amount which is due to Ofcom under the terms of this Licence or provided for in any regulations made by Ofcom under sections 12 and 13(2) of the Act from the date such amount falls due until the date of payment, calculated with reference to the Bank of England base rate from time to time. In accordance with section 15 of the Act any such amount and any such interest is recoverable by Ofcom.

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<sup>1</sup> These are regulations on spectrum trading.

<sup>2</sup> See Ofcom's website for the latest position on spectrum trading and the types of trade which are permitted.

10. If the Licence is surrendered, revoked or varied, no refund, whether in whole or in part, of any amount which is due under the terms of this Licence, payable in accordance with the Regulations, or provided for in any regulations made by Ofcom under sections 12 and 13(2) of the Act will be made, except at the absolute discretion of Ofcom.

### **Radio Equipment Use**

11. The Licensee shall ensure that the Radio Equipment is established, installed and used only in accordance with the provisions specified in the Schedule 1 to this Licence. Any proposal to amend any detail specified in Schedules 1 to this Licence must be agreed with Ofcom in advance and implemented only after this Licence has been varied or reissued accordingly.
12. The Licensee shall ensure that the Radio Equipment is operated in compliance with the terms of this Licence and is used only by persons who have been authorised in writing by the Licensee to do so and that such persons are made aware of, and of the requirement to comply with, the terms of this Licence.

### **Access and Inspection**

13. The Licensee shall permit any person authorised by Ofcom:
  - (a) to have access to the Radio Equipment; and
  - (b) to inspect this Licence and to inspect, examine and test the Radio Equipment,at any and all reasonable times or, when in the opinion of that person an urgent situation exists, at any time, to ensure the Radio Equipment is being used in accordance with the terms of this Licence.

### **Modification, Restriction and Closedown**

14. Any person authorised by Ofcom may require the Radio Equipment or any part thereof, to be modified or restricted in use, or temporarily or permanently closed down immediately if in the opinion of the person authorised by Ofcom:
  - (a) a breach of this Licence has occurred; and/or
  - (b) the use of the Radio Equipment is, or may be, causing or contributing to undue interference to the use of other authorised radio equipment.
15. Ofcom may require any of the Radio Equipment to be modified or restricted in use, or temporarily closed down either immediately or on the expiry of such period as may be specified in the event of a national or local state of emergency being declared. Ofcom may only exercise this power after a written notice has been served on the Licensee or a general notice applicable to holders of a named class of licence has been published.

## **Geographical Boundaries**

16. Subject to the requirements of any coordination procedures notified to the Licensee pursuant to paragraph 4 of Schedule 1 to this Licence, the Licensee is authorised to establish, install and use the Radio Equipment in the United Kingdom. For the avoidance of doubt, the United Kingdom includes the United Kingdom territorial sea (measured in accordance with section 1 of the Territorial Sea Act 1987) and does not include the Channel Islands or the Isle of Man.

## **Interpretation**

17. In this Licence:
- (a) the establishment, installation and use of the Radio Equipment shall be interpreted as establishment and use of wireless telegraphy stations and installation and use of wireless telegraphy apparatus for wireless telegraphy as specified in section 8(1) of the Act;
  - (b) the expression “interference” shall have the meaning given by section 115 of the Act;
  - (c) the expressions “wireless telegraphy station” and “wireless telegraphy apparatus” shall have the meanings given by section 117 of the Act;
  - (d) the Schedule(s) form part of this Licence together with any subsequent Schedule(s) which Ofcom may issue as a variation to this Licence; and
  - (e) the Interpretation Act 1978 shall apply to the Licence as it applies to an Act of Parliament.

**Issued by Ofcom**

**Office of Communications**

**SCHEDULE 1 TO LICENCE NUMBER: 0943537**

**Schedule Date: 23 March 2015**

**Licence category: Spectrum Access Licence (790 – 862 MHz)**

**Description of Radio Equipment**

1. References in this Schedule to the Radio Equipment are references to any wireless telegraphy station or wireless telegraphy apparatus that is established, installed and/or used under this Schedule'

**Interface Requirements for the Radio Equipment**

2. Use of the Radio Equipment shall be in accordance with the following Interface Requirement:

IR 2090: Terrestrial systems capable of providing electronic communications services in the 800 MHz band

**Special conditions relating to the Radio Equipment**

3.
  - a) Subject to paragraph 3(b) of this Schedule, during the period that this Licence remains in force, unless consent has otherwise been given by Ofcom, the Licensee shall compile and maintain accurate written records of the following details relating to the Radio Equipment:
    - i) postal address (including post code);
    - ii) National Grid Reference, to at least 1 metre resolution;
    - iii) antenna height (above ground level), type, and boresight bearing east of true north (if applicable); and
    - iv) radio frequencies which the Radio Equipment uses

and the Licensee must produce these records if requested by any person authorised by Ofcom.

- b) The conditions relating to the keeping of records contained in sub-paragraphs 3(a)(ii) and (iii) of this Schedule shall not apply in respect of femtocell equipment and smart/intelligent low power repeater equipment.
- c) The Licensee shall submit to Ofcom copies of the records detailed in sub-paragraph 3(a) above at such intervals as Ofcom may notify to the Licensee.

- d) The Licensee shall provide to:
- i) Ofcom;
  - ii) the entity established in accordance with paragraphs 2.1 – 2.2 of the “*Notice of DTT interference mitigation procedures required under spectrum access licences for the 800 MHz band*” notified to it by Ofcom in accordance with paragraph 4 of this Schedule; and/or
  - iii) the Oversight Board

in such manner and at such times as they may reasonably require, such documents or other information as they may require for the purposes of taking steps to mitigate interference to users of the electromagnetic spectrum in the 470-790 MHz band, or to make recommendations to Ofcom or Government with respect to such steps being taken.

### **Co-ordination at frequency and geographical boundaries and compliance with other procedures relating to interference**

4. The Licensee shall ensure that the Radio Equipment is operated in compliance with such co-ordination procedures as may be notified to the Licensee by Ofcom from time to time. The Licensee shall also ensure that it complies with any other procedures relating to the mitigation of interference as may be notified to the Licensee by Ofcom from time to time.

### **International cross-border coordination**

5. The Licensee shall ensure that the Radio Equipment is operated in compliance with such cross-border co-ordination and sharing procedures as may be notified to the Licensee by Ofcom from time to time.

### **Coverage Obligation**

- 6.
- a) The Licensee shall by no later than 31 December 2017 provide, and thereafter maintain, an electronic communications network that is capable of providing, with 90% confidence, a mobile telecommunications service with a sustained downlink speed of not less than 2 megabits per second when that network is lightly loaded, to users:
    - i) in an area within which at least:
      - a. 98% of the population of the United Kingdom lives, and
      - b. 95% of the population of each of England, Wales, Scotland and Northern Ireland lives; and
    - ii) at indoor locations that meet the condition specified in paragraph 6(b)(ii) of this Schedule, which are within any residential premises within the area specified in paragraph 6(a)(i) of this Schedule.

- b) For the purposes of paragraph 6(a)(ii) of this Schedule:
- i) the service must be provided using radio equipment which is not situated inside the relevant residential premises; and
  - ii) the condition referred to is that the radio signal propagation loss from the outside of the building to the location inside the building does not exceed:
    - a. 13.2dB for radio signals in the frequency ranges 791MHz – 821MHz and 832MHz – 862MHz;
    - b. 13.7dB for radio signals in the frequency ranges 880MHz – 915MHz and 925MHz – 960MHz;
    - c. 16.5dB for radio signals in the frequency ranges 1710MHz – 1785MHz and 1805MHz – 1880MHz;
    - d. 17.0dB for radio signals in the frequency ranges 1900MHz – 1980MHz and 2110MHz – 2170MHz;
    - e. 17.9dB for radio signals in the frequency range 2500MHz – 2690MHz;
    - f. any other propagation loss notified to the Licensee by Ofcom in respect of radio signals in any other frequency band.

### Assessment of compliance with coverage obligation

7. Ofcom will assess the Licensee's compliance with paragraph 6 of this Schedule by reference to the document "4G Coverage Obligation Compliance Verification Methodology: LTE" published by Ofcom, or such other documents as Ofcom may notify to the Licensee.

### Permitted Frequency Blocks

8. Subject to the emissions permitted under paragraph 10 of this Schedule, the Radio Equipment may only transmit within the following frequency bands (the "Permitted Frequency Blocks"):

Downlink frequencies	Uplink frequencies
811 – 821 MHz	852 – 862 MHz

## Maximum power within the Permitted Frequency Blocks

9. The power transmitted in the Permitted Frequency Blocks shall not exceed:

a) Downlink Frequencies

	<b><u>Maximum EIRP</u></b>
Radio Equipment	61dBm/(5 MHz) EIRP*

\* The maximum EIRP relates to the EIRP of a specific piece of Radio Equipment irrespective of the number of transmit antennas.

b) Uplink Frequencies<sup>3</sup>

<b><u>Radio Equipment</u></b>	<b><u>Maximum mean power</u></b>
Fixed or installed Radio Equipment	23dBm EIRP*
Mobile or nomadic Radio Equipment	23dBm TRP*

\* The maximum mean power relates to the EIRP or TRP of a specific piece of Radio Equipment irrespective of the number of transmit antennas.

## Maximum power outside the Permitted Frequency Blocks

10. For transmissions on the downlink frequencies, the EIRP emanating from the Radio Equipment transmissions at any frequency outside the Permitted Frequency Blocks shall not exceed the higher (least stringent) of (a) the baseline requirements and (b) the transition requirements for that frequency.

### Baseline requirements

<b>Frequency range</b>	<b>Maximum mean EIRP</b>	<b>Measurement bandwidth</b>
832 to 862 MHz	-49.5 dBm*	5 MHz

\* The maximum EIRP relates to the EIRP of a specific piece of Radio Equipment irrespective of the number of transmit antennas.

<sup>3</sup> Consumer user equipment will be authorised by means of a licence exemption under section 8 of the Wireless Telegraphy Act 2006



## Baseline requirements

Frequency range	In-block EIRP, P, dBm/(10 MHz)**	Maximum mean EIRP in frequency range	Measurement bandwidth
470 to 790 MHz	$P \geq 59$	0 dBm*	8 MHz
	$36 \leq P < 59$	(P-59) dBm*	8 MHz
	$P < 36$	-23 dBm*	8 MHz

\* The maximum EIRP relates to the EIRP of a specific piece of Radio Equipment irrespective of the number of transmit antennas.

\*\* This is the in-block EIRP measured in a bandwidth of 10MHz.

## Interpretation of terms in this schedule

11. In this Schedule:

- a) “dBm” means the power level in decibels (logarithmic scale) referenced against 1milliwatt (i.e. a value of 0 dBm is 1 milliwatt);
- b) “EIRP” means the equivalent isotropically radiated power. This is the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain);
- c) “femtocell” means Radio Equipment transmitting on the downlink frequencies, which operates at a power not exceeding 24 dBm EIRP per carrier, and which is or will be used only by and under the control of the Licensee, following the establishment of a telecommunications link between the femtocell and a network of the Licensee;
- d) “Fixed or installed” means used or installed at specific fixed points;
- e) “IR” means a United Kingdom Radio Interface Requirement published by Ofcom in accordance with Article 4.1 of Directive 1995/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment (RTTE) and the mutual recognition of their conformity;
- f) “lower block edge” means, in relation to each Permitted Frequency Block, the lowest frequency in that Permitted Frequency Block;
- g) “measurement bandwidth” means the size of an individual spectrum segment within the specified frequency range that is used to measure compliance with the specified power limit;
- h) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;
- i) “Oversight Board” has the meaning given to it in the “*Notice of DTT interference mitigation procedures required under spectrum access licences for the 800 MHz band*” notified to the Licensee under paragraph 4 of this Schedule;

- j) “Permitted Frequency Blocks” has the meaning given to it in paragraph 8 of this Schedule;
- k) “smart/intelligent low power repeater” means a repeater which operates with power not exceeding 24 dBm EIRP per carrier, which may be established by customers of the Licensee who have written agreements with the Licensee and:
- The Licensee has ultimate control of the repeater, i.e. each individual repeater can be disabled remotely by the Licensee;
  - The repeater operates only on the Licensee’s frequencies and with their valid Public Land Mobile Network Identifier;
  - Must not cause undue interference to other spectrum users; and
  - The repeater only transmits on the uplink frequencies when actively carrying a call (voice, video or data) or signalling from serviced handsets;
- l) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere;
- m) “upper block edge” means, in relation to each Permitted Frequency Block, the highest frequency in that Permitted Frequency Block.

**Ofcom**