

## **PUBLIC WIRELESS NETWORK LICENCE**

This Licence document replaces the version of the Licence issued by the Office of Communications (Ofcom) on 08 August 2019 to Vodafone Limited.

Licence no. **0249664**  
Date of issue: **10 March 2020**  
Fee payment date: **31 October** (annually)

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

**Vodafone Limited**  
(Company registration number 1471587)  
("the Licensee")  
**Vodafone House**  
**The Connection**  
**Newbury**  
**Berkshire**  
**RG14 2FN**

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 or vary 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 or vary 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>;

---

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

- (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.
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 must give prior notice to Ofcom in writing of any change in the details of the name and/or address recorded in paragraph 1 of this Licence.

### **Fees**

7. 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 shall be notified in writing to the Licensee.

### **Radio Equipment Use**

8. The Licensee shall ensure that the Radio Equipment is established, installed and used only in accordance with the provisions specified in schedule 1 of this Licence. Any proposal to amend any detail specified in schedule 1 of this Licence must be agreed with Ofcom in advance and implemented only after this Licence has been varied or reissued accordingly.
9. The Licensee must 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**

10. The Licensee shall permit a 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.

---

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

## **Modification, Restriction and Closedown**

11. A 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 causing or contributing to undue interference to the use of other authorised radio equipment.
12. Ofcom may require the Radio Equipment to be modified or restricted in use, or temporarily or permanently 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 exercise this power by a written notice served on the Licensee or by a general notice applicable to holders of this class of Licence.

## **Geographical Boundaries**

13. Subject to the requirements of any coordination procedures notified to the Licensee pursuant to paragraphs 5 and 6 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's 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**

14. 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 forms 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: **0249664**

Licence Category: **Public Wireless Network**

This schedule forms part of licence no **0249664**, issued to **Vodafone Limited**, the Licensee on **10 March 2020**, and describes the Radio Equipment covered by the Licence and the purpose for which the Radio Equipment may be used.

### Description of Radio Equipment Licensed

1. In this Licence, the Radio Equipment means the base transceiver stations or repeater stations forming part of the Network (as defined in paragraph 2 below).

### Purpose of the Radio Equipment

2. The Radio Equipment shall form part of a radio telecommunications network ("the Network"), in which User Stations which meet the appropriate technical performance requirements as set out in the relevant Wireless Telegraphy (Exemption) Regulations made by Ofcom communicate by radio with the Radio Equipment to provide a telecommunications service.

### Interface Requirements for the Radio Equipment

3. Use of the Radio Equipment shall be in accordance with the following Interface Requirements:

IR 2014 – Public Wireless Networks; and/or  
IR 2019 – Third Generation Mobile; and/or  
IR 2087 – 900 / 1800 MHz LTE and WiMAX;

or for equipment placed on the market before 8 April 2000, is required to be type approved in accordance with a recognised technical performance standard relating to the service licensed.

### Special Conditions relating to the Operation of the Radio Equipment

4. (a) Subject to paragraph 4(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 100 metre resolution;
  - iii) antenna height (above ground level) and type, and boresight east of true north (if applicable); and
  - iv) radio frequencies which the Radio Equipment uses;

and the Licensee must produce these above records if requested by a person authorised by Ofcom;

- (b) The conditions relating to the keeping of records contained in sub-paragraphs 4(a)i), 4(a)ii) and 4(a)iii), 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 (a) above at such intervals as Ofcom shall notify to the Licensee.

### **Co-ordination at Frequency and Geographical Boundaries and Compliance with Other Procedures Relating to Interference**

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

### **International Cross-Border Coordination**

- 6. 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.

### **Voice Coverage Obligation**

- 7. The Licensee shall maintain an electronic communications network that is capable of providing mobile voice telecommunications services to an area covering at least 90% of the geographic landmass of the United Kingdom at at least one of the minimum signal strengths set out in Table 1 of this condition. For the avoidance of doubt the Licensee shall be permitted to meet the obligation set out in this condition using any frequencies and technologies available to the Licensee.

**Table 1**

<b>Technology and Band</b>	<b>Minimum Signal Threshold</b>
GSM 900	-93 dBm
GSM 1800	-93 dBm
UMTS 2100	-103 dBm
LTE 800	-115 dBm

### **Assessment of compliance with the Voice Coverage Obligation**

- 8. Ofcom will assess the Licensee's compliance with the Voice Coverage Obligation by reference to the document "*Voice Coverage Obligation Notice of Compliance Methodology*" published by Ofcom.

## 2020 Coverage Obligations

### 9.

#### Definitions

- (1) For the purposes of interpreting conditions 9.(2)-(8) below, these terms shall have the following meaning:
- (a) **“2019 Baseline Coverage Level”** means the Licensee’s coverage footprint of the Required Service as measured by the Licensee’s predictive model on the basis of their September 2019 data as submitted to Ofcom in October 2019;
  - (b) **“2020 Baseline Coverage Footprint”** means the Licensee’s coverage footprint of the Required Service as submitted to Ofcom in January 2020 on the basis of: (i) the data submitted to Ofcom in September 2019 for the Connected Nations 2019 report and (ii) the Licensee’s forward-looking predictions for any additional site which is expected to be on-air by 30 June 2020, excluding any site which is not on-air by 30 June 2021;
  - (c) **“Available”**, for the purposes of condition 9.(4)(a), has the meaning given in the Grant Agreement;
  - (d) **“EAS Site”** means: (i) any of the 292 extended area service sites that the Home Office is intending to build to improve coverage in remote areas and (ii) any alternative or additional extended area service site which is publicly funded in the same way whose location is specified by Government by 31 March 2024, excluding any such site the deployment of which would materially duplicate the coverage from any site in Total Not Spots for which land has already been acquired by the Licensee;
  - (e) **“Full Coverage Area”** means a geographical area within the UK falling within all the MNOs’ 2020 Baseline Coverage Footprints;
  - (f) **“Grant Agreement”** means the funding agreement entered into by Government and the SRN Entity in March 2020;
  - (g) **“Initial Coverage Deadline”** means 30 June 2024;
  - (h) **“MNO”** (Mobile Network Operator) means each of EE Limited,<sup>3</sup> Hutchison 3G UK Limited,<sup>4</sup> Telefónica UK Limited<sup>5</sup> and Vodafone Limited<sup>6</sup> (collectively, the **“MNOs”**);
  - (i) **“Partial Not Spot”** means a geographical area within the UK falling within at least one, but not all, the MNOs’ 2020 Baseline Coverage Footprints;
  - (j) **“Required Service”** means an electronic communications network that provides with a confidence level of more than 95% a mobile telecommunications service to users (i) with a sustained downlink speed of not less than 2 megabits per second, and (ii) on which 90 second voice calls can be made without interruption. This is equivalent to providing an outdoor LTE telecommunications service at a predicted mean signal strength of at least -105dBm;

---

<sup>3</sup> **EE Limited**, registered in England under company number 02382161. Registered office address: Trident Place, Mosquito Way, Hatfield, Hertfordshire, AL10 9BW.

<sup>4</sup> **Hutchison 3G UK Limited**, registered in England under company number 03885486. Registered office address: Star House, 20 Grenfell Road, Maidenhead, Berkshire, SL6 1EH.

<sup>5</sup> **Telefónica UK Limited**, registered in England under company number 01743099. Registered office address: 260 Bath Road, Slough, Berkshire, SL1 4DX.

<sup>6</sup> **Vodafone Limited**, registered in England under company number 01471587. Registered office address: Vodafone House, The Connection, Newbury, Berkshire, RG14 2FN.

- (k) **“Road”** means all motorway, A-road, B-road, minor (non-numbered) roads and local roads excluding restricted access, private roads and cul-de-sacs;
- (l) **“Subsequent Coverage Deadline”** means, in relation to each obligation that falls due on such deadline, 30 June 2026, unless:
  - (i) a State aid approval is required from the relevant authority for such obligation and granted after 30 June 2020, in which case the deadline shall be extended by the number of days included within the period running from 30 June 2020 until the State aid approval is received (including both days);
  - (ii) a legal challenge against a State aid approval delays the date when the relevant funding is either available or claimed under the SRN Programme, in which case the deadline shall be extended by the number of days included within the period running from the date of the legal challenge until the end of such delay; or
  - (iii) Government suspends funding in response to a legal challenge, in which case the deadline shall be extended by the number of days included within such suspension;
- (m) **“SRN Entity”** means the joint venture set up by the MNOs to run the SRN Programme;
- (n) **“SRN Programme”** means the programme agreed between the MNOs and Government in March 2020 to improve mobile coverage in rural areas;
- (o) **“Total Not Spot”** means geographical areas within the UK falling outside all the MNOs’ 2020 Baseline Coverage Footprints.

*88% coverage*

- (2) By the Initial Coverage Deadline the Licensee shall provide, and thereafter maintain, the Required Service to an area covering at least:
  - (a) 88% of the geographic landmass of the United Kingdom;
  - (b) 92% of the geographic landmass of England;
  - (c) 93% of the geographic landmass of Northern Ireland;
  - (d) 76% of the geographic landmass of Scotland; and
  - (e) 82% of the geographic landmass of Wales.

In meeting these obligations, the Licensee shall ensure that:

- (i) any additional coverage relative to the 2020 Baseline Coverage Footprint is either:
  - (A) provided in Partial Not Spots;
  - (B) gained by deploying on sites located in Partial Not Spots; or
  - (C) gained by deploying on sites located in a Full Coverage Area, provided that any such coverage which is added in Total Not Spots does not exceed 0.3% of the geographic landmass of the United Kingdom; and
- (ii) any additional coverage which is provided in Total Not Spots does not limit the Licensee’s ability to meet condition 9.(4)(b)(ii) below.

*90% coverage*

- (3) By the Subsequent Coverage Deadline the Licensee shall provide, and thereafter maintain, the Required Service to an area covering at least:
- (a) 90% of the geographic landmass of the United Kingdom;
  - (b) 92% of the geographic landmass of England;
  - (c) 93% of the geographic landmass of Northern Ireland;
  - (d) 85% of the geographic landmass of Scotland;
  - (e) 85% of the geographic landmass of Wales;
  - (f) 90,000 premises in the United Kingdom which do not fall within the Licensee's 2019 Baseline Coverage Level. Premises which are built after September 2019 will not count towards satisfaction of this requirement; and
  - (g) 8,500 kilometres of Roads in the United Kingdom which do not fall within the Licensee's 2019 Baseline Coverage Level. Roads which are built after September 2019 will not count towards satisfaction of this requirement.

*Coverage from the Extended Area Service Sites and in Total Not Spots*

- (4) In meeting the obligations set out in condition 9.(3)(a), the Licensee shall ensure that any coverage required to meet such condition which is incremental to the 88% geographic coverage to be met under condition 9.(2)(a):
- (a) includes, as far as possible, coverage from the EAS Sites in so far as these sites are made Available by the Home Office no later than one year before the Subsequent Coverage Deadline and continue to be made Available to the Licensee for the duration of this condition; and
  - (b) the remaining additional coverage:
    - (i) is provided in areas that are Total Not Spots and are not provided with the Required Service from either sites located within the 2020 Baseline Coverage Footprint or the EAS Sites, as far as possible by deploying on any other publicly funded sites; and
    - (ii) includes, in any case, at least 1 percentage points in such areas.

*Proportionate reduction*

- (5) The obligations set out in conditions 9.(3)(a)-(e) and 9.(4) will be removed or proportionately reduced if the conditions described in the document "2020 Coverage Obligations - Notice of compliance verification methodology" published by Ofcom in March 2020 are met.

*Duration*

- (6) The obligations set out in conditions 9.(3) and 9.(4) will remain in force for 14 years from the Subsequent Coverage Deadline.



### *Technology neutrality*

- (7) For the avoidance of doubt, the Licensee is permitted to meet the obligations set out in this Licence using any frequencies and technologies available to the Licensee.

### *Assessment of compliance with the 2020 coverage obligations*

- (8) Ofcom will assess the Licensee's compliance with the obligations set out in conditions 9.(2) to 9.(4) after the date at which each obligation is due to have been met by reference to the document "2020 Coverage obligations - Notice of compliance verification methodology" notified by Ofcom to the Licensee in March 2020. In addition to verifying compliance when these obligations fall due, Ofcom may repeat this assessment from time to time to ensure continued compliance.

## **Permitted Frequency Blocks**

10. The Radio Equipment may only transmit on downlink frequencies within the following frequency bands (the Permitted Frequency Blocks):

<b>Downlink frequencies</b>	<b>Uplink frequencies</b>
<b>925.1 – 930.1 MHz</b>	<b>880.1 – 885.1 MHz</b>
<b>935.1 – 947.5 MHz</b>	<b>890.1 – 902.5 MHz</b>
<b>1810.9 – 1816.7 MHz</b>	<b>1715.9 – 1721.7 MHz</b>

## **Radio Frequency Carrier Spacing**

11. In the absence of bilateral or multilateral agreements which have been notified to Ofcom specifying alternative arrangements between the licensee and the licensee(s) of neighbouring networks the licensee must ensure that in respect of the frequencies set out at paragraph 6 of this schedule:
- (a) the centre frequency of any of their GSM carriers is 100 kHz or more inside any edge of their permitted frequency blocks; and
  - (b) the centre frequency of any of their UMTS carriers is 2.7 MHz or more inside any edge of their permitted frequency blocks where a neighbouring licensee has deployed a GSM carrier or carriers (including GSM-R) in the immediately adjacent spectrum; and
  - (c) the centre frequency of any of their UMTS carriers is 2.5 MHz or more inside any other edge of their permitted frequency blocks;
  - (d) the channel edge of any of their LTE carriers is 200 kHz or more inside any edge of their permitted frequency blocks where a neighbouring licensee has deployed a GSM carrier or carriers (including GSM-R) in the immediately adjacent spectrum; and
  - (e) the channel edge of any of their LTE carriers does not extend beyond their permitted frequency blocks;
  - (f) the channel edge of any of their WiMAX carriers is 200 kHz or more inside any edge of their permitted frequency blocks where a neighbouring licensee has deployed a GSM carrier or carriers (including GSM-R) in the immediately adjacent spectrum; and
  - (g) the channel edge of any of their WiMAX carriers does not extend beyond their permitted frequency blocks.

## ITU Class of Emission

12.	For GSM:	271KG7W
	For UMTS:	5M00D7W
	For 1.4 MHz LTE:	1M40D7W
	For 3 MHz LTE:	3M00D7W
	For 5 MHz LTE:	5M00D7W
	For 10 MHz LTE:	10M0D7W
	For 15 MHz LTE:	15M0D7W
	For 20 MHz LTE:	20M0D7W
	For 5 MHz WiMAX:	5M00D7W
	For 10 MHz WiMAX:	10M0D7W

## Maximum Permissible Downlink Transmit Power

13. The power transmitted (in e.i.r.p.) in any direction on the downlink frequencies of the Permitted Frequency Blocks by the Radio Equipment shall not exceed:

Technology	900 MHz spectrum	1800 MHz spectrum
for GSM	62 dBm per carrier	62 dBm per carrier
for UMTS	65 dBm per carrier	65 dBm per carrier
for LTE	65 dBm per 5 MHz	65 dBm per 5 MHz
for WiMAX	65 dBm per 5 MHz	65 dBm per 5 MHz

## Interpretation

14. In this Schedule:
- “900 MHz spectrum” means frequencies in the range 880 MHz to 915 MHz paired with 925 MHz to 960 MHz;
  - “1800 MHz spectrum” means frequencies in the range 1710 MHz to 1781.7 MHz paired with 1805 MHz to 1876.7 MHz;
  - “dBm” means the power level in decibels (logarithmic scale) referenced against 1 milliwatt (i.e. a value of 0 dBm is 1 milliwatt);
  - “e.i.r.p.” means the effective 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);
  - “A femtocell” means Radio Equipment transmitting on the downlink frequencies, which operates at a power not exceeding 24 dBm e.i.r.p. per carrier which may be established by customers of the Network but which is or will be used only by and under the control of the Network, following the establishment of a telecommunications link between the femtocell and the Network;
  - “GSM system” means an electronic communications network that complies with GSM standards, as published by ETSI, in particular EN 301 502 and EN 301 511 and “GSM” means pertaining to such a network or its Radio Equipment;
  - “GSM-R” means the variant of GSM for railways as specified in IR 2064;

- (h) "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;
- (i) "ITU" means the International Telecommunication Union, and "Class of Emission" shall have the meaning as defined in the ITU Radio Regulations Appendix 1;
- (j) "LTE system" means an electronic communications network that complies with the LTE standards as published by ETSI, in particular EN 301 908-1, EN 301 908-13, EN 301 908-14, EN 301 908-15 and EN 301 908-11 and "LTE" means pertaining to such a network or its Radio Equipment;
- (k) "Permitted Frequency Blocks" has the same meaning given to it in paragraph 6 of this schedule;
- (l) "User Station" means any vehicle mounted or hands portable mobile station designed for mobile use and/ or any station designed or adapted to be established and used from static locations which meet the appropriate technical performance requirements as set out in the Wireless Telegraphy (Exemption) Regulations and either complies with the appropriate Interface Regulation listed in paragraph 3, or for equipment placed on the market before 8 April 2000, is type approved in accordance with a recognised technical standard relating to the service licensed;
- (m) A "smart/intelligent low power repeater" means a repeater which operates with power not exceeding 24 dBm e.i.r.p. 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 Licensee's Base Receive frequencies when actively carrying a call (voice, video or data) or signalling from serviced handsets;
- (n) "UMTS system" means an electronic communications network that complies with the UMTS standards as published by ETSI, in particular EN 301 908-2, EN 301 908-3 and EN 301 908-11 and "UMTS" means pertaining to such a network or its Radio Equipment; and
- (o) "WiMAX system" means an electronic communications network that complies with the WiMAX standards as published by ETSI, in particular EN 301 908-1, EN 301 908-21 and EN 301 908-22 and "WiMAX" means pertaining to such a network or its Radio Equipment.