Office of Communications (Ofcom)
Wireless Telegraphy Act 2006

PUBLIC WIRELESS NETWORK LICENCE

This licence will replace licence 0249664 issued by the Office of Communications (Ofcom) on 28 July 2025 to Vodafone Ltd[1].

Licence no. **1388560/3**

Date of issue: **10 April 2026**

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)
Vodafone House
The Connection
Newbury
Berkshire
RG14 2FN
("Vodafone")

and

Hutchison 3G UK Limited
(Company registration number 03885486)
450 Longwater Avenue
Green Park
Reading
Berkshire
RG2 6GF

(hereafter "the Licensees"), 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 Licensees.

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 Licensees;

[1] This Licence reflects the terms and conditions issued to Vodafone Ltd under licence number 0249664 which was concurrently traded to Vodafone Limited and Hutchison 3G UK Ltd under Trading Register Number TNR-2025-06-013 on 4 June 2025.

(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 of the Act[2];

(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 Licensees 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.[3]

Changes to Licensee details

6. The Licensees 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 Licensees 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 Licensees.

Radio Equipment Use

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

9. The Licensees 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 Licensees to do so and that such persons are made aware of, and of the requirement to comply with, the terms of this Licence.

10. The Licensees must ensure that all Radio Equipment is established, installed, modified and used only in accordance with the provisions specified in schedule 3 (EMF Licence Condition) of this Licence.

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[2] These are regulations on spectrum trading.
[3] See Ofcom's website for the latest position on spectrum trading and the types of trade which are permitted.

Access and Inspection

11. The Licensees 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.

Modification, Restriction and Closedown

12. 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.

13. 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 Licensees or by a general notice applicable to holders of this class of Licence.

Geographical Boundaries

14. Subject to the requirements of any coordination procedures notified to the Licensees under the schedules to this Licence, the Licensees are 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

15. 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 schedules 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: 1388560/3

Licence Category: **Public Wireless Network 900 MHz**

Description of Radio Equipment Licensed

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 Requirements:

IR 2014 – Public Wireless Networks; and/or
IR 2109 – Terrestrial systems capable of providing electronic communications services in the 900 MHz and 1800 MHz bands;

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

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 Licensees 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 10 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;

v) Transmitted power expressed in dBm / 200 kHz EIRP for GSM base stations;

vi) Transmitted power expressed in dBm / 200 kHz EIRP per antenna for base stations for narrowband terrestrial ECS; and

vii) Transmitted power expressed in dBm / 5 MHz EIRP per antenna for base stations for broadband terrestrial ECS;

and the Licensees 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 3(a)i), 3(a)ii) and 3(a)iii), shall not apply in respect of femtocell equipment and smart/intelligent low power repeater equipment;

(c) The Licensees shall submit to Ofcom copies of the records detailed in sub-paragraph 3(a) above at such intervals as Ofcom shall notify to the Licensees.

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

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

International Cross-Border Coordination

5. The Licensees 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 Licensees by Ofcom from time to time.

Voice Coverage Obligation

6. The Licensees 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 least one of the minimum signal strengths set out in Table 1 of this condition. For the avoidance of doubt the Licensees shall be permitted to meet the obligation set out in this condition using any frequencies and technologies available to the Licensees.

Table 1

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

Assessment of compliance with the Voice Coverage Obligation

7. Ofcom will assess the Licensees' compliance with the Voice Coverage Obligation by reference to the document "*Voice Coverage Obligation Notice of Compliance Methodology*" published by Ofcom.

2020 Coverage Obligations

8.

Definitions

(1) For the purposes of interpreting conditions 8.(2)-(8) below, these terms shall have the following meaning:

(a) "**2019 Baseline Coverage Level**" means Vodafone's coverage footprint of the Required Service as measured by its predictive model on the basis of its September 2019 data as submitted to Ofcom in October 2019;

(b) "**2020 Baseline Coverage Footprint**" means the Licensees' 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 Licensees' 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 8.(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 Licensees;

(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 as amended on 1 March 2021, again in 2022 and again on 15 February 2024 and again on 25 July 2025;

(g) "**Initial Coverage Deadline**" means 30 June 2024;

(h) "**MNO**" (Mobile Network Operator) means each of EE Limited,[4] Hutchison 3G UK Limited,[5] Telefónica UK Limited[6] and Vodafone[7] (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;

(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, 31 January 2027, unless Government suspends funding in response to a "Suspension Event" (as defined in the Grant Agreement), in which case the deadline shall be extended by the number of days included within such suspension;

(m) "SRN Compliance Methodology Notice" means the document entitled "2020 coverage obligations - Notice of compliance verification methodology" published by Ofcom in March 2020 and subsequently updated;

(n) **"SRN Entity"** means the joint venture set up by the MNOs to run the SRN Programme;

(o) "**SRN Programme**" means the programme agreed between the MNOs and Government in March 2020 to improve mobile coverage in rural areas; and

(p) "**Total Not Spot**" means geographical areas within the UK falling outside all the MNOs' 2020 Baseline Coverage Footprints.

For the purposes of interpreting conditions 8.(2)-(8) below, the "**Required Service**" means the service, as defined in condition 8.(1)(j) above, provided by **Vodafone**.

88% coverage

[4] **EE Limited**, registered in England under company number 02382161. Registered office address: One Braham Street, London, E1 8EE.
[5] **Hutchison 3G UK Limited**, registered in England under company number 03885486. Registered office address: 450 Longwater Avenue, Green Park, Reading, Berkshire RG2 6GF.
[6] **Telefónica UK Limited**, registered in England under company number 01743099. Registered office address: 500 Brook Drive, Reading, RG2 6UU..
[7] **Vodafone Limited**, registered in England under company number 01471587. Registered office address: Vodafone House, The Connection, Newbury, Berkshire, RG14 2FN.

(2) By the Initial Coverage Deadline the Licensees 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 Licensees 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;

(ii) any additional coverage which is provided in Total Not Spots does not limit the Licensees' ability to meet condition 8.(4)(b)(ii) below; and

(iii) any additional coverage is not gained by deploying on any site for which the Licensees are publicly funded (either in part or in whole) under the Grant Agreement.

89.2% coverage

(3) By the Subsequent Coverage Deadline the Licensees shall provide, and thereafter maintain, the Required Service to an area covering at least:

(a) 89.2% 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) 81% 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 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 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 8.(3)(a), the Licensees shall ensure that any coverage required to meet such condition which is incremental to the 88% geographic coverage to be met under condition 8.(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 Vodafone for the duration of this condition; and

(b) the remaining coverage (i.e. incremental to the 88% and EAS coverage):

(i) is provided in areas that are Total Not Spots and are not provided with the Required Service from the EAS Sites, by deploying as far as possible on sites which are publicly funded (either in part or in whole) under the Grant Agreement; and

(ii) includes, in any case, at least 1 percentage point in such areas.

Proportionate reduction

(5) The obligations set out in conditions 8.(3)(a)-(e) and 8.(4) will be removed or proportionately reduced if the conditions described in the SRN Compliance Methodology are met. Any such proportionate reduction will be considered and applied in accordance with paragraphs 4.26-4.38 of the SRN Compliance Methodology Notice

Duration

(6) The obligations set out in conditions 8.(3) and 8.(4) will remain in force for 14 years from the Subsequent Coverage Deadline.

Technology neutrality

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

Assessment of compliance with the 2020 coverage obligations

(8) Ofcom will assess the Licensees' compliance with the obligations set out in conditions 8.(2) to 8.(4) after the date at which each obligation is due to have been met by reference to the SRN Compliance Methodology Notice. In addition to verifying compliance when these obligations fall due, Ofcom may repeat this assessment from time to time to ensure continued compliance.

Network Obligations

8A

Definitions

(1) For the purposes of interpreting Conditions 8A(2) below, the following terms shall have the following meanings:

(a) "**2G network**" means an electronic communications network that complies with GSM standards, as published by ETSI, in particular EN 301 502, EN 301 511 and EN 301 908-18 (also a "**GSM System**").

(b) "**3UK**" means Hutchison 3G UK Limited.

(c) "**3UK Network"** means the mobile telecommunications network of 3UK.

(d) "**Annual Progress Report**" means a report containing the information specified in Condition 8A(5).

(e) "**Completion Date**" means the date of completion of the Merger.

(f) "**First Measurement Date**" means the date three years from the Completion Date.

(g) "**High Configuration Site**" means a radio site that is configured to deploy the frequency bands set out in the row titled High Configuration Site in the Spectrum Configuration Target Table.

(h) "**Low Configuration Site**" means a radio site that is configured to deploy the frequency bands set out in the row titled Low Configuration Site in the Spectrum Configuration Target Table.

(i) "**MergeCo Network**" means MergeCo's Upgraded Network and those parts of the VUK Network and of the 3UK Network that are not, or not yet, part of MergeCo's Upgraded Network.

(j) "**MergeCo's Upgraded Network**" means the mobile telecommunications network of MergeCo, created from the integration of the standalone site grids of VUK and of 3UK into a single radio site grid and which is to be upgraded to the required spectrum configuration over an eight-year period following the Completion Date.

(k) "**Merger**" means the anticipated joint venture between the UK telecommunication businesses of Vodafone and CK Hutchison, specifically concerning Vodafone Limited and Hutchison 3G UK Limited.

(l) "**Mid Configuration Site**" means a radio site that is configured to deploy the frequency bands set out in the row titled Mid Configuration Site in the Spectrum Configuration Target Table.

(m) "**Minor Updates**" has the meaning set out in Condition 8A.

(n) **Network Commitment Area 1**" means the areas designated by Ofcom as 'urban for the purposes of Condition 8A subject to any minor variations as determined by Ofcom from time to time. This comprises the areas designated as 'Locale Groups A-E' in the 2011 Classification for Output Areas that were used in the UK 2011 census subject to any minor variations as determined by Ofcom from time to time, where Locale Groups A-E are defined in accordance with the methodology set out in the methodology document titled "Locale Classification", produced by Bluewave Geographics (available here), and where the Output Areas of England, Wales and Scotland can be imported as British National Grid (CRS:27700) projections and where Northern Ireland is reprojected from the Irish National Grid (CRS:29902) onto the British National Grid.

(o) **Network Commitment Area 2**" means the areas designated by Ofcom as 'rural' for the purposes of Condition 8A subject to any minor variations as determined by Ofcom from time to time. This comprises the areas designated as 'Locale Groups F-G' in the 2011 Classification for Output Areas that were used in the UK 2011 census subject to any minor variations as determined by Ofcom from time to time, where Locale Groups F-G are defined in accordance with the methodology set out in the methodology document titled "Locale Classification", produced by Bluewave Geographics (available here), and where the Output Areas of England, Wales and Scotland can be imported as British National Grid (CRS:27700) projections and where Northern Ireland is reprojected from the Irish National Grid (CRS:29902) onto the British National Grid.

(p) "**Network Commitment Areas**" means "Network Commitment Area 1" and "Network Commitment Area 2".

(q) "**Network Commitment Site Targets**" means the respective target numbers of sites set out in the Site Targets Table for each of Year 3, Year 5 and Year 8 and in Conditions 8A(2) to (4)

(r) "**Reporting Year**" means the period of one year from the date of the Completion Date and each subsequent year from the anniversary of the Completion Date in 2026 to 2032.

(s) "**Second Measurement Date**" means the date five years from the Completion Date.

(t) "**Site Targets Table**" means the table set out at Appendix 1.

(u) "**Spectrum Configuration Target Table**" means the table set out at Appendix 2.

(v) "**Spectrum Configuration Targets**" means the frequency bands and total spectrum deployed, set out in the Spectrum Configuration Target Table, for each of the High Configuration Sites, Mid Configuration Sites and Low Configuration Sites, respectively.

(w) "**Third Measurement Date**" means the date eight years from the Completion Date.

(x) "**VUK**" means Vodafone Limited.

(y) "**VUK Network**" means the mobile telecommunications network of VUK.

(z) "**Year 3 Total Target**" means the number of sites set out in the row labelled "Y3" of the Site Targets Table under the column labelled "Total Cumulative".

(aa) "**Year 5 Total Target**" means the number of sites set out in the row labelled "Y5" of the Site Targets Table under the column labelled "Total Cumulative".

(bb) "**Year 8 Total Target**" means the number of sites set out in the row labelled "Y8" of the Site Targets Table under the column labelled "Total Cumulative".

The Year 3 Targets

(2) By the First Measurement Date, the Licensee shall ensure that:

(a) MergeCo's Upgraded Network shall comprise no fewer sites than the Year 3 Total Target number of sites, including the target numbers of sites set out in the columns titled "Network Commitment Area 1 Total" and "Network Commitment Area 2 Total" in the row labelled "Y3" in the Site Targets Table, subject to Condition 8A(6);

(b) MergeCo's Upgraded Network shall comprise no fewer sites than the specified numbers of High Configuration Sites, Mid Configuration Sites, and Low Configuration Sites in each Network Commitment Area, set out in the row labelled "Y3" in the Site Targets Table; and

(c) the Spectrum Configuration Targets are met in respect of each of the sites which comprise MergeCo's Upgraded Network, subject to Condition 8A(8).

The Year 5 Targets

(3) By the Second Measurement Date, the Licensee shall ensure that:

(a) MergeCo's Upgraded Network shall comprise no fewer sites than the Year 5 Total Target number of sites, including the target numbers of sites set out in the columns titled "Network Commitment Area 1 Total" and "Network Commitment Area 2 Total" in the row labelled "Y5" in the Site Targets Table, subject to Condition 8A(6);

(b) MergeCo's Upgraded Network shall comprise no fewer sites than the specified numbers of High Configuration Sites, Mid Configuration Sites, and Low Configuration Sites in each Network Commitment Area, set out in the row labelled "Y5" in the Site Targets Table; and

(c) the Spectrum Configuration Targets are met in respect of each of the sites which comprise MergeCo's Upgraded Network, subject to Condition 8A(8).

The Year 8 Total Commitment

(4) By the Third Measurement Date, the Licensee shall ensure that:

(a) MergeCo's Upgraded Network shall comprise no fewer sites than the Year 8 Total Target number of sites, including the target numbers of sites set out in the columns titled "Network Commitment Area 1 Total" and "Network Commitment Area 2 Total" in the row labelled "Y8" in the Site Targets Table, meeting or exceeding the specified number of High Configuration Sites, Mid Configuration Sites, and Low Configuration Sites in each Network Commitment Area, subject to Condition 8A(6); and

(b) the Spectrum Configuration Targets are met in respect of each of the sites which comprise MergeCo's Upgraded Network, subject to Condition 8A(8).

Reporting Obligations

(5) Within 20 Working Days of each anniversary of the Completion Date, up to and including the Third Measurement Date (or such time as the CMA and Ofcom deem appropriate if MergeCo has not satisfied the Network Commitment Site Targets by the Third Measurement Date), the Licensee shall provide an Annual Progress Report to Ofcom. The Annual Progress Report shall contain:

(a) The total number of sites comprising MergeCo's Upgraded Network at the end of that Reporting Year;

(b) The number of sites in each of the Network Commitment Areas and the number of High Configuration Sites, Mid Configuration Sites, and Low Configuration Sites in each Network Commitment Area;

(c) The location of those sites;

(d) The number of sectors per site; and

(e) The spectrum holdings, bandwidth, antenna height, transmit power, and technology deployed on each sector.

Technical Specifications for Network Sites

(6) For a site to be capable of contributing to the Network Commitment Site Targets:

(a) the relevant spectrum frequency bands, as set out in the Spectrum Configuration Target Table, must be deployed on a minimum of one sector on the site;

(b) the radio site shall comply with the local electromagnetic fields ("**EMF**") exposure limits;

(c) if the site is used for 5G transmission, it shall consist of macrocells that meet the Wide-Area BS class definition in 3GPP TS 38.104 v18.6.0 (2024-06), or any other definition agreed between the Licensee and Ofcom;

(d) if the site is used for 4G transmission, it shall consist of macrocells that meet the

Wide-Area BS class definition in 3GPP TS 36.104 v18.5.0, or any other definition agreed between the Licensee and Ofcom; and

(e) The Licensee shall deploy each of the 700 MHz, 800 MHz, 900 MHz and 1,400 MHz spectrum bands on the site, in accordance with Appendix 1, subject to Condition 8A**Error! Reference source not found.**.

Technological Developments

(7) In the event of satellite technological developments, Ofcom may, in consultation with the CMA, make Minor Updates to the Network Commitment Spectrum Configuration Targets as it reasonably considers necessary.

(a) For the purposes of this condition 8A(7) **Minor Updates** means any changes to the Network Commitment Spectrum Configuration Targets that MergeCo demonstrates would not result in a material adverse change to the network quality MergeCo would otherwise achieve in the absence of the Minor Update.

900 MHz band

(8) Notwithstanding Condition 8A(6)(e), the Licensee may deploy a subset of 900 MHz spectrum frequencies, subject to a minimum deployment of 2x10MHz of 4G and/or 5G spectrum, on
(a) sites where Vodafone Limited provides, or has provided in the last three months, 2G coverage using 900 MHz spectrum; and
(b) associated sites that would otherwise cause undue interference to, or receive undue interference from, those sites in 8A(8)(a) in 900 MHz spectrum.

Assessment of Compliance

(9) The Licensee's will ensure compliance with the obligations set out in conditions 8A(2)-(4) at the end of the First Measurement Date, the Second Measurement Date and the Third Measurement Date.

Spectrum Configuration Target Table

Spectrum Configuration Target Table		
Target configuration	**Frequency bands (MHz)**	**Total spectrum deployed on each site for 4G and 5G use**
High Configuration Site	3,500	**414.8**
	2,600	
	2,100	
	1,800	
	1,400	
	900	
	800	
	700	
Mid Configuration Site	2,600	**214.8**
	2,100	
	1,800	
	1,400	
	900	
	800	
	700	
Low Configuration Site	1,400	**94.8**
	900	
	800	
	700	

Site Targets Table

FY	Network Commitment Area 1 (Urban)				Network Commitment Area 2 (Rural)				Total Cumulative
	High Configuration Sites	Mid Configuration Sites	Low Configuration Sites	Network Commitment Area 1 Total	High Configuration Sites	Mid Configuration Sites	Low Configuration Sites	Network Commitment Area 2 Total	
FY28 (Y3)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
FY30 (Y5)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
FY33 (Y8)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Permitted Frequency Blocks

9. Subject to any emission requirements in this schedule, the Radio Equipment may only transmit within the following frequency bands (the Permitted Frequency Blocks):

Downlink frequencies	Uplink frequencies
925.1 – 942.5 MHz	**880.1 – 897.5** MHz

Radio Frequency Carrier Spacing

10. In the absence of bilateral or multilateral agreements which have been notified to Ofcom specifying alternative arrangements between the licensees and the licensee(s) of neighbouring networks the licensees must ensure that in respect of the frequencies set out at paragraph 9 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;

(b) the channel edge of any of their narrowband terrestrial ECS carriers is 200 kHz or more inside any edge of their permitted frequency blocks;

(c) the channel edge of any of their wideband terrestrial ECS 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

(d) the channel edge of any of their wideband terrestrial ECS carriers does not extend beyond their permitted frequency blocks.

ITU Class of Emission

11. For GSM: 271KG7W

Maximum Permissible Downlink Transmit Power

12. Subject to any more restrictive limitations imposed by the coordination requirements notified by Ofcom in accordance with paragraphs 4 and 5 of this schedule, the power transmitted in any direction in the Permitted Frequency Blocks by the Radio Equipment shall not exceed:

(a) Downlink Frequencies

Radio Equipment	**Maximum mean power**
GSM base station	62 dBm EIRP per carrier
non-AAS base station[a] – narrowband terrestrial ECS	62 dBm / 200 kHz EIRP per antenna
non-AAS base station[a] – broadband terrestrial ECS	65 dBm / 5 MHz EIRP per antenna

[a] For femtocell base stations, power control must be applied to minimise interference to adjacent channels.

(b) Uplink Frequencies[8]

Radio Equipment	**Maximum mean power**
GSM terminal station	33 dBm TRP
Terrestrial ECS mobile or nomadic terminal station[b][c]	25 dBm TRP
Terrestrial ECS fixed or installed terminal station[b][c]	25 dBm TRP

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

[c] It is recognised that a possible tolerance of up to +2 dB is included in this value, to take account of operation under extreme environmental conditions and production spread. This value does not include test tolerance.

Maximum power outside the Permitted Frequency Blocks

13. For transmissions on the downlink frequencies, the EIRP emanating from the Radio Equipment transmissions at any frequency outside the Permitted Frequency Blocks, but within 915-970 MHz and 1795-1890 MHz, shall not exceed the higher (least stringent) of (a) the baseline requirements and (b) the block specific requirements for that frequency.

(a) Baseline Requirements

Frequency Range	**Non-AAS mean EIRP limit per antenna**
915-970 MHz	3 dBm / MHz

(b) Block-specific requirements

Frequency range	**Non-AAS mean EIRP limit per antenna**
-10 to -5 MHz from lower block edge	12 dBm / 5 MHz

[8] Consumer user equipment will be authorised by means of a licence exemption under section 8 of the Wireless Telegraphy Act 2006

-5 to -1 MHz from lower block edge	5 dBm / MHz
-1 to -0.2 MHz from lower block edge	13.8 dBm / 0.8 MHz
-0.2 to 0 MHz from lower block edge	32.4 dBm / 0.2 MHz
0 to +0.2 MHz from upper block edge	32.4 dBm / 0.2 MHz
+0.2 to +1 MHz from upper block edge	13.8 dBm / 0.8 MHz
+1 to +5 MHz from upper block edge	5 dBm / MHz
+5 to +10 MHz from upper block edge	12 dBm / 5 MHz

Interpretation

14. In this schedule:

(a) "AAS" means active antenna system. An AAS is a base station and antenna system where the amplitude and / or phase between antenna elements is continually adjusted resulting in an antenna pattern that varies in response to short term changes in the radio environment. This is not intended to include long term beam shaping such as fixed electrical down tilt. In AAS base stations the antenna system is integrated as part of the base station system or product;

(b) "Broadband terrestrial ECS" means a system that operates in channel bandwidths greater than 200 kHz;

(c) "dBm" means the power level in decibels (logarithmic scale) referenced against 1 miliwatt (i.e. a value of 0 dBm is 1 milliwatt);

(d) "Downlink" means transmissions from a base station or repeater to a terminal station (handset);

(e) "ECS" means Electronics Communication System;

(f) "EIRP" 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);

(g) "A femtocell" means Radio Equipment transmitting on the downlink frequencies, which operates at a power not exceeding 24 dBm EIRP 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;

(h) "Fixed or installed" means used or installed at specific fixed points;

(i) "GSM system" means an electronic communications network that complies with GSM standards, as published by ETSI, in particular EN 301 502, EN 301 511 and EN 301 908-18 and "GSM" means pertaining to such a network or its Radio Equipment;

(j) "GSM-R" means the variant of GSM for railways as specified in IR 2064;

(k) "IR" means a United Kingdom Radio Interface Requirement published by Ofcom in accordance with the Radio Equipment Regulations 2017, as amended by the Product Safety and Metrology etc. (Amendment etc.) (EU Exit) Regulations 2019;

(l) "ITU" means the International Telecommunication Union, and "Class of Emission" shall have the meaning as defined in the ITU Radio Regulations Appendix 1;

(m) “Lower block edge” means, in relation to the Permitted Frequency Block, the lowest frequency in that Permitted Frequency Block;

(n) “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;

(o) “Mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;

(p) “Narrowband terrestrial ECS” means a system that operates in channel bandwidths of 200 kHz, excluding GSM;

(q) “non-AAS” means a piece of Radio Equipment which is not an AAS;

(r) “per antenna” means per radiating unit/component (irrespective of the number of radiating elements that make up that unit/component);

(s) “per cell” means per specific piece of Radio Equipment. For a multi-sector base station, per cell refers to each one of the individual sectors irrespective of the number of transmit antennas;

(t) “Permitted Frequency Blocks” has the same meaning given to it in paragraph 9 of this schedule;

(u) A “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 Licensees who have written agreements with the Licensees and:

- The Licensees have ultimate control of the repeater, i.e. each individual repeater can be disabled remotely by the Licensees;
- The repeater operates only on the Licensees’ 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 Licensees’ Base Receive frequencies when actively carrying a call (voice, video or data) or signalling from serviced handsets;

(v) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere;

(w) “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;

(x) “Uplink” means transmissions from a terminal station (handset) or repeater to a base station;

(y) "Upper block edge" means, in relation to the Permitted Frequency Block, the highest frequency in that Permitted Frequency Block.

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SCHEDULE 2 TO LICENCE NUMBER: 1388560/3

Licence Category: **Public Wireless Network 1800 MHz**

Description of Radio Equipment Licensed

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 Requirements:

IR 2014 – Public Wireless Networks; and/or
IR 2109 – Terrestrial systems capable of providing electronic communications services in the 900 MHz and 1800 MHz bands;

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

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 Licensees 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 10 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;

v) Transmitted power expressed in dBm / 200 kHz EIRP for GSM base stations;

vi) Transmitted power expressed in dBm / 200 kHz EIRP per antenna for base stations for narrowband terrestrial ECS;

vii) Transmitted power expressed in dBm / 5 MHz EIRP per antenna for base stations for broadband terrestrial ECS; and

viii) Transmitted power expressed in dBm / 5 MHz TRP per cell for AAS base stations,

and the Licensees 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 3(a)i), 3(a)ii) and 3(a)iii), shall not apply in respect of femtocell equipment and smart/intelligent low power repeater equipment;

(c) The Licensees shall submit to Ofcom copies of the records detailed in sub-paragraph 3(a) above at such intervals as Ofcom shall notify to the Licensees.

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

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

International Cross-Border Coordination

5. The Licensees 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 Licensees by Ofcom from time to time.

Permitted Frequency Blocks

6. Subject to any emission requirements in this schedule, the Radio Equipment may only transmit within the following frequency bands (the Permitted Frequency Blocks):

Downlink frequencies	Uplink frequencies
1810.9 – 1816.7 MHz	**1715.9 – 1721.7** MHz

Radio Frequency Carrier Spacing

7. In the absence of bilateral or multilateral agreements which have been notified to Ofcom specifying alternative arrangements between the licensees and the licensee(s) of neighbouring networks the licensees 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;

(b) the channel edge of any of their narrowband terrestrial ECS carriers is 200 kHz or more inside any edge of their permitted frequency blocks;

(c) the channel edge of any of their wideband terrestrial ECS 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 in the immediately adjacent spectrum; and

(d) the channel edge of any of their wideband terrestrial ECS carriers does not extend beyond their permitted frequency blocks.

ITU Class of Emission

8. For GSM: 271KG7W

Maximum Permissible Downlink Transmit Power

9. Subject to any more restrictive limitations imposed by the coordination requirements notified by Ofcom in accordance with paragraphs 4 and 5 of this schedule, the power transmitted in any direction in the Permitted Frequency Blocks by the Radio Equipment shall not exceed:

(a) Downlink Frequencies

Radio Equipment	**Maximum mean power**
GSM base station	62 dBm EIRP per carrier
non-AAS base station[a] – narrowband terrestrial ECS	62 dBm / 200 kHz EIRP per antenna
non-AAS base station[a] – broadband terrestrial ECS	65 dBm / 5 MHz EIRP per antenna
AAS base station[a] – broadband terrestrial ECS	50 dBm / 5 MHz TRP per cell

[a] For femtocell base stations, power control must be applied to minimise interference to adjacent channels.

(b) Uplink Frequencies[9]

Radio Equipment	**Maximum mean power**
GSM terminal station	30 dBm TRP
Terrestrial ECS mobile or nomadic terminal station[b][c]	25 dBm TRP
Terrestrial ECS fixed or installed terminal station[b][c]	25 dBm TRP

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

[c] It is recognised that a possible tolerance of up to +2 dB is included in this value, to take account of operation under extreme environmental conditions and production spread. This value does not include test tolerance.

[9] Consumer user equipment will be authorised by means of a licence exemption under section 8 of the Wireless Telegraphy Act 2006

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, but within 1795-1890 MHz, shall not exceed the higher (least stringent) of (a) the baseline requirements and (b) the block specific requirements for that frequency.

(b) Baseline Requirements

Frequency Range	**Non-AAS mean EIRP limit per antenna**	**AAS mean TRP limit per cell**
1795-1890 MHz	3 dBm / MHz	−6 dBm / MHz

(c) Block-specific requirements

Frequency range	**Non-AAS mean EIRP limit per antenna**	**AAS mean TRP limit per cell**
-10 to -5 MHz from lower block edge	12 dBm / 5 MHz	3 dBm / 5 MHz
-5 to -1 MHz from lower block edge	5 dBm / MHz	−4 dBm / MHz
-1 to -0.2 MHz from lower block edge	13.8 dBm / 0.8 MHz	4.7 dBm / 0.8 MHz
-0.2 to 0 MHz from lower block edge	32.4 dBm / 0.2 MHz	17.4 dBm / 0.2 MHz
0 to +0.2 MHz from upper block edge	32.4 dBm / 0.2 MHz	17.4 dBm / 0.2 MHz
+0.2 to +1 MHz from upper block edge	13.8 dBm / 0.8 MHz	4.7 dBm / 0.8 MHz
+1 to +5 MHz from upper block edge	5 dBm / MHz	−4 dBm / MHz
+5 to +10 MHz from upper block edge	12 dBm / 5 MHz	3 dBm / 5 MHz

Interpretation

11. In this schedule:

(a) “AAS” means active antenna system. An AAS is a base station and antenna system where the amplitude and / or phase between antenna elements is continually adjusted resulting in an antenna pattern that varies in response to short term changes in the radio environment. This is not intended to include long term beam shaping such as fixed electrical down tilt. In AAS base stations the antenna system is integrated as part of the base station system or product;

(b) “Broadband terrestrial ECS” means a system that operates in channel bandwidths greater than 200 kHz;

(c) “dBm” means the power level in decibels (logarithmic scale) referenced against 1 miliwatt (i.e. a value of 0 dBm is 1 milliwatt);

(d) “Downlink” means transmissions from a base station or repeater to a terminal station (handset);

(e) “ECS” means Electronics Communication System;

(f) “EIRP” 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);

(g) “A femtocell” means Radio Equipment transmitting on the downlink frequencies, which operates at a power not exceeding 24 dBm EIRP 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;

(h) “Fixed or installed” means used or installed at specific fixed points;

(i) “GSM system” means an electronic communications network that complies with GSM standards, as published by ETSI, in particular EN 301 502, EN 301 511 and EN 301 908-18 and “GSM” means pertaining to such a network or its Radio Equipment;

(j) "IR" means a United Kingdom Radio Interface Requirement published by Ofcom in accordance with the Radio Equipment Regulations 2017, as amended by the Product Safety and Metrology etc. (Amendment etc.) (EU Exit) Regulations 2019;

(k) "ITU" means the International Telecommunication Union, and "Class of Emission" shall have the meaning as defined in the ITU Radio Regulations Appendix 1;

(l) “Lower block edge” means, in relation to the Permitted Frequency Block, the lowest frequency in that Permitted Frequency Block;

(m) “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;

(n) “Mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;

(o) “Narrowband terrestrial ECS” means a system that operates in channel bandwidths of 200 kHz, excluding GSM;

(p) “non-AAS” means a piece of Radio Equipment which is not an AAS;

(q) “per antenna” means per radiating unit/component (irrespective of the number of radiating elements that make up that unit/component);

(r) “per cell” means per specific piece of Radio Equipment. For a multi-sector base station, per cell refers to each one of the individual sectors irrespective of the number of transmit antennas;

(s) “Permitted Frequency Blocks” has the same meaning given to it in paragraph 6 of this schedule;

(t) A “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 Licensees who have written agreements with the Licensees and:

- The Licensees have ultimate control of the repeater, i.e. each individual repeater can be disabled remotely by the Licensees;
- The repeater operates only on the Licensees’ 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 Licensees’ Base Receive frequencies when actively carrying a call (voice, video or data) or signalling from serviced handsets;

(u) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere;

(v) “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

(w) “Uplink” means transmissions from a terminal station (handset) or repeater to a base station;

(x) “Upper block edge” means, in relation to the Permitted Frequency Block, the highest frequency in that Permitted Frequency Block.

SCHEDULE 3 TO LICENCE NUMBER: 1388560/3

EMF Licence Condition

Licence category: **Public Wireless Network**

Sites which are not shared with another licensee

1. The Licensees shall only establish, install, modify or use Relevant Radio Equipment if the total electromagnetic field exposure levels produced by the Licensees' On-Site Radio Equipment do not exceed the basic restrictions[10] in the relevant tables for general public exposure identified in the ICNIRP Guidelines[11] in any area where a member of the general public is or can be expected to be present when transmissions are taking place.

Sites which are shared with another licensee

2. In the case of a shared site where the Shared Site Exemption applies to the Licensees, the Licensees shall comply with paragraph 1 above.

3. In the case of a shared site where the Shared Site Exemption does not apply to the Licensees, the Licensees shall only establish, install, modify or use the Relevant Radio Equipment if:

   (a) the total electromagnetic field exposure levels produced by the Licensees' On-Site Radio Equipment, together with

   (b) the total electromagnetic field exposure levels produced by all other wireless telegraphy stations and wireless telegraphy apparatus operated by another licensee on the same site for which the Licensees can reasonably assume that a Shared Site Exemption does not apply,

   do not exceed the basic restrictions[12] in the relevant tables for general public exposure identified in the ICNIRP Guidelines[13] in any area where a member of the general public is or can be expected to be present when transmissions are taking place.

Emergency Situations

4. The obligations in paragraphs 1, 2 and 3 above will not apply if the Relevant Radio Equipment is being used for the purpose of seeking emergency assistance or

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[10] Compliance with the reference levels for general public exposure identified in the ICNIRP Guidelines will ensure compliance with the basic restrictions.
[11] The relevant tables for general public exposure are identified in Ofcom's "Guidance on EMF Compliance and Enforcement".
[12] Compliance with the reference levels for general public exposure identified in the ICNIRP Guidelines will ensure compliance with the basic restrictions.
[13] The relevant tables for general public exposure are identified in Ofcom's "Guidance on EMF Compliance and Enforcement".

reporting and responding to an emergency situation (in the vicinity of that situation) including for search and rescue activities and maritime emergency communications[14].

Relationship with authorised transmission levels

5. The Licensees shall comply with paragraphs 1, 2 and 3 above notwithstanding the maximum transmission levels authorised in the Licence.

Records

6. The Licensees shall keep, or shall procure that a third party shall keep, and shall make available to Ofcom on request, records (including the type of records identified in Ofcom's "Guidance on EMF Compliance and Enforcement") that demonstrate how it has complied with paragraphs 1, 2 and 3 above when Relevant Radio Equipment is established, installed, modified or used.

Ofcom's "Guidance on EMF Compliance and Enforcement"

7. When evaluating its compliance with paragraphs 1, 2 and 3 above, the Licensees shall take into account Ofcom's "Guidance on EMF Compliance and Enforcement" that is in force at the relevant time.

Interpretation

8. In this schedule:

(a) **"dBi"** means the ratio in dB (decibel) when comparing the gain of the antenna to the gain of an isotropic antenna. An isotropic antenna is a theoretical antenna which radiates power uniformly in all directions;

(b) **"EIRP"** means equivalent isotropically radiated power which is the product of the power supplied to an antenna and the absolute or isotropic antenna gain in a given direction relative to an isotropic antenna;

(c) **"ERP"** means effective radiated power which is the product of the power supplied to an antenna and its gain in a given direction relative to a half-wave dipole;

(d) "**general public**" means any person who is not: (a) the Licensee, owner, operator or installer of the Relevant Radio Equipment; or (b) acting under a contract of employment or otherwise acting for purposes connected with their trade, business or profession or the performance by them of a public function;[15]

(e) **"ICNIRP Guidelines"** means the version of the Guidelines published by the International Commission on Non-Ionizing Radiation Protection for limiting

[14] Further information on emergency situations in set out in Ofcom's "Guidance on EMF Compliance and Enforcement".

[15] There is pre-existing health and safety legislation which already requires employers to protect workers from exposure to electromagnetic fields ("EMF") including the following legislation specifically relating to EMF (as amended from time to time): The Control of Electromagnetic Fields at Work Regulations 2016, The Control of Electromagnetic Fields at Work Regulations (Northern Ireland) 2016 and The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Electromagnetic Fields) Regulations 2016.

exposure to electromagnetic fields which are identified in Ofcom's "Guidance on EMF Compliance and Enforcement" that is in force at the relevant time.[16]

(f) **"Licensees' On-Site Radio Equipment"** means the Relevant Radio Equipment and any other wireless telegraphy station(s) and wireless telegraphy apparatus on the same site which transmits at powers higher than 10 Watts EIRP or 6.1 Watts ERP.[17]

(g) **"Relevant Radio Equipment"** means all the Radio Equipment that is authorised by this Licence to transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP.

(h) **"Shared Site Exemption"** means any of the following three situations apply on a shared site in relation to the Licensees' or another licensee's wireless telegraphy station(s) or wireless telegraphy apparatus that is authorised to transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP:

- The first situation is that all of the licensees' wireless telegraphy station(s) or wireless telegraphy apparatus on a shared site do not transmit at a combined total radiated power in any particular direction[18] that is higher than 100 Watts EIRP or 61 Watts ERP;[19]
- The second situation is that the total electromagnetic field exposure levels produced by the licensees' wireless telegraphy station(s) or wireless telegraphy apparatus in any area where a member of the general public is or can be expected to be present when transmissions are taking place is no more than 5% of the basic restrictions or 5% of the reference levels in the relevant tables for general public exposure identified in the ICNIRP Guidelines;[20]
- The third situation is where the licensees' wireless telegraphy station or wireless telegraphy apparatus has an antenna gain that is equal to or higher than 29 dBi and has a fixed beam;

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[16] Ofcom's "Guidance on EMF Compliance and Enforcement" will initially require the Licensees to comply with the ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz), published in: Health Physics 74(4):494-522, dated April 1998 and available at: https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf ("1998 Guidelines") or the ICNIRP Guidelines for limiting exposure to electromagnetic fields (100 KHz to 300 GHz), published in: Health Physics 118(5): 483–524; 2020 and available at: https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf ("2020 Guidelines"). However, once work on the relevant standards explaining the methodology for assessing compliance with the 2020 Guidelines has progressed sufficiently, Ofcom will publish a public consultation on updating its "Guidance on EMF Compliance and Enforcement" to explain that going forward Ofcom will be requiring the Licensees to comply with the 2020 Guidelines only. Following this public consultation, Ofcom will publish an updated version of Ofcom's "Guidance on EMF Compliance and Enforcement" on its website. Ofcom will follow the same process for any subsequent versions of the ICNIRP Guidelines.

[17] 10 Watts EIRP is equivalent to 6.1 Watts ERP. In linear units EIRP (W) = 1.64 x ERP (W); in decibels EIRP (dB) = ERP (dB) + 2.15. Ofcom's "Guidance on EMF Compliance and Enforcement" explains how the Licensees can determine if wireless telegraphy station(s) or wireless telegraphy apparatus "transmits at powers higher than 10 Watts EIRP or 6.1 Watts ERP".

[18] For the purpose of this situation, the combined total radiated power is a simple sum of the radiated powers (in EIRP or ERP) of all of the licensees' wireless telegraphy station(s) or wireless telegraphy apparatus on the shared site that transmits signals covering the same or overlapping areas.

[19] 100 Watts EIRP is equivalent to 61 Watts ERP.

[20] The relevant tables for general public exposure are identified in Ofcom's "Guidance on EMF Compliance and Enforcement".

(i) **"shared site"** means a site that is shared by the Licensees and at least one other licensee for the purposes of establishing, installing, modifying or using wireless telegraphy stations or wireless telegraphy apparatus;

(j) **"site"** means a physical structure, building, vehicle or moving platform;

(k) **"wireless telegraphy apparatus"** has the meaning given to it in section 117 of the Wireless Telegraphy Act 2006; and

(l) **"wireless telegraphy station"** has the meaning given to it in section 117 of the Wireless Telegraphy Act 2006.

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SCHEDULE 4 TO LICENCE NUMBER: 1388560/3

Direct to Device Licence Conditions

Licence category: **Public Wireless Network (D2D Services)**

Description of D2D Services

(1) References in this schedule to D2D services are references to wireless communications services provided by an undertaking operating a mobile satellite system to enable terrestrial users of electronic communications to send and receive radio signals directly to and from a space station.

Special conditions relating to the operation of D2D Services

(2) The Licensees shall ensure that the provision of D2D services shall not cause or contribute to harmful interference to any wireless telegraphy.

(3) Prior to providing the D2D services, the Licensees shall procure (by contractual provision) that the undertaking operating the mobile satellite system complies with the provisions set out in paragraphs 6 – 12. The Licensees shall not provide D2D services unless such contractual provisions are and remain in force.

(4) During the period that this schedule remains in force, unless consent has otherwise been given by Ofcom, the Licensees shall compile and maintain accurate written records of the following details relating to the D2D services:

a) A coverage map of service in the UK, showing the predicted PFD (power flux density) on the ground for the best-serving beam, at a resolution of 100m x 100m pixels;
b) A coverage map of service in the UK, showing the predicted aggregate PFD (power flux density) on the ground from all beams over the UK, at a resolution of 100m x 100m pixels;
c) A map of unwanted transmissions outside of service areas in the UK, showing the predicted aggregate PFD (power flux density) on the ground from all beams over the UK, at a resolution of 100m x 100m pixels and at a distance of up to 100km from the boundary of each service area and any other areas specified by Ofcom from time to time;
d) The out of block and out of band spectrum masks associated with each beam; and
e) Confirming that there are no pixels within the service area for which the best serving satellite is less than 10 degrees elevation relative to the ground,

and the Licensees must produce these records if requested by any person authorised by Ofcom. Where information in paragraph 4 changes, a date-stamped historic record must be maintained.

(5) The Licensees shall also compile and maintain accurate written records demonstrating how they have complied with any coordination procedures as set out in paragraphs 8 – 12, including any coordination calculations.

Permitted Frequency Blocks

(6) The D2D services shall be provided in the following frequencies only:

Downlink frequencies	Uplink frequencies
925.1 – 930.1 MHz	880.1 – 885.1 MHz

7. Co-ordination at Frequency and Geographical Boundaries and Compliance with Other Procedures Relating to Interference Mitigation

a. The D2D services shall operate on a non-interference, non-protection basis. For the avoidance of doubt, this means that the D2D services must not cause undue interference to other authorised uses of radio spectrum and that no claim of protection can be made if interference is received from another authorised device or service.

8. The D2D services shall be operated in compliance with such co-ordination and sharing procedures as may be notified to the Licensees by Ofcom from time to time.

9. When providing the D2D services the aggregate transmitted power from all the space stations, measured at the surface of the earth shall not exceed -119 dBW/MHz/m^2 when transmitted at any frequency outside of the range set out in the table at paragraph 6.

10. No space station that is used to provide D2D services shall transmit to a location within the geographical scope of the Licence from an angle of elevation below 10 degrees.

International Cross-Border Coordination

11. The D2D services shall be operated in compliance with such cross-border co-ordination and sharing procedures as may be notified to the Licensees by Ofcom from time to time.

12. When providing the D2D services the aggregate transmitted power from all the space stations, measured at the surface of the earth shall not exceed -119 dBW/MHz/m^2 at any frequency at the border, or coastline, of neighbouring countries and territories (including the Isle of Man and the Channel Islands).

Interpretation

13. In this schedule:
    a. “associated facilities” and “electronic communications network” have the meaning given to them by Section 32 of the Communications Act 2003;
    b. “mobile satellite system” means an electronic communications network and associated facilities which is capable of providing radio-communications services between a mobile earth station and one of more space station; and
    c. “undertaking” means any natural or legal person (or other entity) engaged in economic activity, regardless of its legal status and the way it is financed.

Ofcom