
Enabling wireless innovation through local licensing

Annexes 6 to 10 - Licences and Interface Requirements

STATEMENT:

Publication Date: 25 July 2019

Contents

Annex

A6. Shared Access Low Power Licence	1
A7. Shared Access Medium Power Licence	14
A8. Shared Access Indoor 26 GHz Licence	27
A9. Local Access Licence	37
A10. Interface Requirements	44

A6. Shared Access Low Power Licence

SHARED ACCESS LOW POWER LICENCE

Licence no: xxxxxx
Date of issue: xx xxxx 201x
Fee payment date: xx xxxx
Payment Interval: 1 Year

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

Company

(Company registration number xxxxxxxx)

("the Licensee")

Add 1

Add 2

Add 3

Email:

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 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) 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 one month’s notice is given in writing.
4. Ofcom may only revoke this Licence by notification in writing to the Licensee and in accordance with schedule 1 paragraphs 6, 6A and 7 of the Act.

Licence variation

5. Ofcom may only vary this Licence by notification in writing to the Licensee and in accordance with schedule 1 paragraphs 6, 6A and 7 of the Act.

Requirement to commence and maintain transmission within 6 months

6. The Licensee must establish, install and use the Radio Equipment to commence regular wireless telegraphy transmissions in accordance with the provisions of this Licence within six months of the date that this Licence is issued, and maintain such transmissions thereafter.

Transfer

7. 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 Act¹.

Changes to Licensee details

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

Fees

9. The Licensee shall 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.
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 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 schedules to this Licence. Any proposal to amend any detail specified in any of the schedules 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

¹ See Ofcom's website for the latest position on spectrum trading and the types of trade which are permitted.

(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 the schedules to this Licence, the Licensee is authorised to establish, install and use of base station equipment in the authorised base station deployment area set out the schedules to this Licence and any terminals connecting to it.

Synchronisation requirement

17. Where synchronisation requirements are set out in Schedule 3 to this Licence, the Licensee must transmit within the transmission limits specified.

18. Where synchronisation requirements have not been specified, in the event that harmful interference arises, the Licensee shall endeavour to discuss and agree with the other licence holder(s) how to coordinate their use. If agreement between licence holders cannot be reached, Ofcom may notify the Licensee to comply with additional technical conditions relating to synchronisation requirements.

19. The Licensee must comply with such technical conditions relating to synchronisation requirement notified to it by Ofcom from time to time.

20. The Licensee accepts that they may need to alter or replace Radio Equipment in order to comply with any conditions notified from time to time.

Future Dynamic Spectrum Approach

21. On 25 July 2019, Ofcom published a statement called *Enabling wireless innovation through local licensing* containing a spectrum management decision to enable shared access to spectrum supporting mobile technology. In that decision, Ofcom stated that it will assess whether it is appropriate to transition towards a Dynamic Spectrum Approach in order to provide users more

access to spectrum by means of automatic database frequency assignment. The Licensee is therefore notified that Ofcom currently intends to vary this Licence in accordance with paragraph 5 from time to time in future, or may re-issue the Licence, to give effect to that decision.

Notification in electronic form

22. The Licensee shall accept notifications and other related documents under this Licence electronically to the designated email address as recorded in paragraph 1 of this Licence. The Licensee must update Ofcom about changes to the designated email address in accordance with paragraph 8.

Interpretation

23. 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: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Low Power

Description of Radio Equipment

1. References in this schedule(s) 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(s).

Interface Requirements for the Radio Equipment

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

IR 2103 Shared Access Low Power

Special conditions relating to the Radio Equipment

3. This Licence authorises the use of the Radio Equipment within the Permitted Frequency Band and the Licensee warrants that the Radio Equipment is capable of transmitting across the Permitted Frequency Band.
4. However, the Licensee is only authorised to transmit on the Permitted Channel Centre Frequency within the Permitted Frequency Band, as set in Schedule 2 to this Licence or as notified to the Licensee by Ofcom from time to time.
5. The Licensee must comply with any change to the Permitted Channel Centre Frequency notified by Ofcom within the timescale indicated in the notification.
6. 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:

For all base stations the:

- I. postal address (including post code); and
- II. Antenna height (above ground level) and type.

For all fixed/installed terminals the:

- I. postal address (including post code);
- II. National Grid Reference (to 1m resolution); and
- III. Antenna height (above ground level), type, and boresight bearing east of true north (if applicable).

For all mobile and nomadic terminals in the 3.8-4.2 GHz band the postal address (including post code) of where it will be used.

7. The Licensee shall submit to Ofcom in such manner and within such period as specified by Ofcom, such other information in relation to the Radio Equipment, or any wireless telegraphy station or wireless telegraphy apparatus which the Licensee is planning to use, as Ofcom may from time to time request. Such information may include, but is not limited to, information in relation to the radio frequency, transmitted power and date of first use for wireless telegraphy stations or wireless telegraphy apparatus to be established, installed or used within such timeframe and in such areas as Ofcom may reasonably request.

Coordination at frequency and geographical boundaries

8. The Licensee shall ensure that the Radio Equipment is operated in compliance with such coordination procedures as may be notified to the Licensee by Ofcom from time to time.

Cooperation between Licensees

9. In addition to complying with the specific transmission terms, conditions and limitations set out in this Licence, the Licensee must liaise and co-operate with other holders of other Shared Access Low/Medium Power licences (if necessary adjusting transmission power and other technical parameters of transmission) in such a way that harmful interference is not caused by one network deployment to that of another Licensee within the band.

Interpretation of terms in this schedule

10. In this schedule:
 - a) “Fixed or installed” means used or installed at specific fixed points.
 - b) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed.
 - c) "IR" means a United Kingdom Radio Interface Requirement notified by Ofcom in accordance with Article 8 of Directive 2014/53/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment (known as the Radio Equipment Directive).
 - d) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points.
 - e) “outdoor” or “outdoors” means anywhere that is not indoor.
 - f) “Permitted Channel Centre Frequency” means the frequency assigned by Ofcom that is the midpoint between the upper and lower channel edge frequencies.
 - g) “Permitted Frequency Band” means the frequency range within which Ofcom will assign the Permitted Channel Centre Frequency.

SCHEDULE 2 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Low Power

Transmitter(s)																			
Authorised Base Station Deployment Area	Area of 50 m radius from the following location NGR [xxx xxx]																		
Deployment location	[Indoor/Indoor & Outdoor] NB. Outdoor antenna systems limited to 10m height above ground Indoors only does not permit the deployment of outdoor base stations and fixed/installed terminal devices.																		
Permitted Frequency Band	[xxx – xxx / xxx – xxx] MHz																		
Permitted Channel Centre Frequency																			
Permitted Channel frequency bandwidth																			
Maximum Antenna Height																			
Maximum power (eirp)/ Maximum power within the Permitted Frequency Channel	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%; padding: 5px;">Radio Equipment</th> <th style="width: 15%; padding: 5px;">Band</th> <th style="width: 70%; padding: 5px;">Maximum power</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Base Station</td> <td style="padding: 5px;">1876.7-1880 MHz</td> <td style="padding: 5px;"> 24 dBm / carrier (up to 3 MHz) EIRP <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%; padding: 5px;">Frequency offset from the lower frequency of the band edge</th> <th style="width: 60%; padding: 5px;">Maximum Mean EIRP density</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">0 to 0.05 MHz</td> <td style="padding: 5px;">-33.6 + 153.3 x Δ_{FL}^* dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.05 to 0.1 MHz</td> <td style="padding: 5px;">-26 + 60 x (Δ_{FL}^* - 0.05) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.1 to 0.2 MHz</td> <td style="padding: 5px;">-23 + 230 x (Δ_{FL}^* - 0.1) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.2 to 3.2 MHz</td> <td style="padding: 5px;">24 dBm / carrier</td> </tr> <tr> <td style="padding: 5px;">3.2 to 3.3 MHz</td> <td style="padding: 5px;">-23 + 230 x (3.3 - Δ_{FL}^*) dBm / kHz</td> </tr> </tbody> </table> </td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">* Note: Δ_{FL} in MHz is the offset from the lower edge of the permitted frequency band at 1876.7 MHz (it has values in the</p>	Radio Equipment	Band	Maximum power	Base Station	1876.7-1880 MHz	24 dBm / carrier (up to 3 MHz) EIRP <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%; padding: 5px;">Frequency offset from the lower frequency of the band edge</th> <th style="width: 60%; padding: 5px;">Maximum Mean EIRP density</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">0 to 0.05 MHz</td> <td style="padding: 5px;">-33.6 + 153.3 x Δ_{FL}^* dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.05 to 0.1 MHz</td> <td style="padding: 5px;">-26 + 60 x (Δ_{FL}^* - 0.05) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.1 to 0.2 MHz</td> <td style="padding: 5px;">-23 + 230 x (Δ_{FL}^* - 0.1) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.2 to 3.2 MHz</td> <td style="padding: 5px;">24 dBm / carrier</td> </tr> <tr> <td style="padding: 5px;">3.2 to 3.3 MHz</td> <td style="padding: 5px;">-23 + 230 x (3.3 - Δ_{FL}^*) dBm / kHz</td> </tr> </tbody> </table>	Frequency offset from the lower frequency of the band edge	Maximum Mean EIRP density	0 to 0.05 MHz	-33.6 + 153.3 x Δ_{FL}^* dBm / kHz	0.05 to 0.1 MHz	-26 + 60 x (Δ_{FL}^* - 0.05) dBm / kHz	0.1 to 0.2 MHz	-23 + 230 x (Δ_{FL}^* - 0.1) dBm / kHz	0.2 to 3.2 MHz	24 dBm / carrier	3.2 to 3.3 MHz	-23 + 230 x (3.3 - Δ_{FL}^*) dBm / kHz
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			range 0 to +0.2 MHz and +3.2 to +3.3MHz)
		2390 – 2400 MHz	24 dBm / carrier (up to 10 MHz) EIRP
		3.8 – 4.2 GHz	24 dBm / carrier for carriers ≤ 20 MHz; or 18 dBm / 5 MHz for carriers > 20 MHz EIRP
	Fixed/ installed terminal station	1781.7-1785 MHz	23 dBm EIRP
		2390 – 2400 MHz	25 dBm EIRP (includes a 2 dB tolerance)
		3.8 – 4.2 GHz	28 dBm EIRP (includes a 2 dB tolerance)
	Mobile or nomadic terminal station	1781.7-1785 MHz	23 dBm TRP
		2390 – 2400 MHz	25 dBm TRP (includes a 2 dB tolerance)
		3.8 – 4.2 GHz	28 dBm TRP (includes a 2 dB tolerance)

Interpretation of terms in this schedule

1. 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), measured during the “on” part of the transmission;
- c) “Fixed or installed” means used or installed at specific fixed points;
- d) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed.
- e) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;
- f) “NGR” means National Grid Reference
- g) “outdoor” or “outdoors” means anywhere that is not indoor;
- h) “Permitted Channel Centre Frequency” means the frequency assigned by Ofcom that is the midpoint between the upper and lower channel edge frequencies.
- i) “Permitted Channel Frequency Bandwidth” means the total amount of spectrum assigned to the channel.

- j) “Permitted Frequency Band” means the frequency range within which Ofcom will assign the Permitted Channel Centre Frequency.
- k) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere, measured during the on part of the transmission.

SCHEDULE 3 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Low Power

Maximum power of Radio Equipment outside the Permitted Frequency Channel

1800 MHz shared band

1. When transmitting, the Licensee must transmit within the limits set out below.

Frequency offset from the lower frequency of the band edge	Maximum mean EIRP density
-6.2 to -3.2 MHz	-55 dBm / kHz
-3.2 to 0 MHz	$-45 + 10 \times (\Delta_{FL}^* + 0.2)/3$ dBm / kHz
Frequency offset from the upper frequency of the band edge	Maximum mean EIRP density
0 to 0.05 MHz	$-23 - 60 \times \Delta_{FH}^*$ dBm / kHz
0.05 to 0.1 MHz	$-26 - 153.3 \times (\Delta_{FH}^* - 0.05)$ dBm / kHz
0.1 to 2.8 MHz	$-45 + 10 \times (\Delta_{FH}^* + 0.2)/3$ dBm / kHz
2.8 to 5.8 MHz	-55 dBm dBm / kHz

- * Note: Δ_{FL} in MHz is the offset from the lower edge of the permitted frequency band at 1876.7 MHz (it has values in the range -3.2 to 0 MHz)
 Δ_{FH} in MHz is the offset from the upper edge of the permitted frequency band at 1880 MHz (it has values in the range 0 to 2.8 MHz)

2300 MHz shared band

2. When transmitting, the Licensee must transmit within the limits set out below:

2385 to 2390 MHz 2400 to 2403 MHz	(PMax – 40) dBm / 5 MHz EIRP per antenna
2300 to 2385 MHz	(PMax – 43) dBm / 5 MHz EIRP per antenna
Above 2403 MHz	-17 dBm / 5 MHz EIRP*

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

The licensee's base stations must transmit within the limits of transmission Frame Structure A, except for indoor base stations. If indoor base stations cause undue interference to other

licensees in the 2390-2400 MHz shared spectrum or to the licensee in the 2350-2390 MHz band, we reserve the right to require the indoor base stations to transmit within the limits of transmission Frame Structure A.

Frame Structure A means

- a. timeslots (or subframes) 0, 2 to 5 and 7 to 9 must be allocated to Downlink (D) or Uplink (U) transmissions as indicated or may be left with no transmissions;
- b. the Licensee must ensure that the special subframe (S) in timeslots 1 and 6 has a structure that is compatible with TD-LTE special subframe configuration 6, also known as 9:3:2;
- c. all timeslots must be 1 millisecond in duration and the frame must start at a common reference time so that frames are aligned with Telefónica and transmissions synchronised; and
- d. TD-LTE frame configuration 2 (3:1) is compatible with this frame structure. Other technologies are permitted provided that the requirements are met.

Frame Structure A

DL/UL ratio	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3:1	D	S	U	D	D	D	S	U	D	D

3.8 – 4.2 GHz

3. When transmitting, the Licensee must transmit within the limits set out below.

-5 to 0 MHz offset from lower channel edge 0 to 5 MHz offset from upper channel edge	(PMax – 40) dBm / 5 MHz EIRP per antenna
-10 to -5 MHz offset from lower channel edge 5 to 10 MHz offset from upper channel edge	(PMax – 43) dBm / 5 MHz EIRP per antenna
< -10 MHz offset from lower channel edge > 10 MHz offset from upper channel edge	(PMax – 43) dBm / 5 MHz EIRP per antenna

4. In addition, the EIRP emanating from the Radio Equipment transmissions at any frequency outside the Permitted Frequency Channel shall not exceed the following additional band edge requirements:

3795 MHz – 3800 MHz 4200 MHz – 4205 MHz	(PMax – 40) dBm / 5 MHz EIRP per antenna
3760 MHz - 3795 MHz 4205 MHz – 4240 MHz	(PMax – 43) dBm / 5 MHz EIRP per antenna
Below 3760 MHz Above 4240 MHz	-2 dBm / 5 MHz EIRP per antenna

Interpretation of terms in this schedule

5. 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) “Downlink” means transmissions from a base station to a terminal station;
- c) “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), measured during the “on” part of the transmission;
- d) “Fixed or installed” means used or installed at specific fixed points;
- e) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed;
- f) “lower channel edge” means, in relation to each Permitted Frequency Channel, the lowest frequency in that Permitted Frequency Channel;
- g) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;
- h) “outdoor” or “outdoors” means anywhere that is not indoor;
- i) “PMax” is the maximum mean power for the base station in question, measured as EIRP per carrier and determined irrespective of the number of antennas;
- j) “TDD” means the application of time-division multiplexing to separate outward and return signals;
- k) “TD-LTE” means the TDD variant of LTE (Long Term Evolution or 4G technology);
- l) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere, measured during the on part of the transmission;
- m) “Uplink” means transmissions from a terminal station to a base station; and
- n) “upper channel edge” means, in relation to each Permitted Frequency Channel, the highest frequency in that Permitted Frequency Channel.

A7. Shared Access Medium Power Licence

Office of Communications (Ofcom)

Wireless Telegraphy Act 2006



SHARED ACCESS MEDIUM POWER LICENCE

Licence no: xxxxxx
Date of issue: xx xxxx 201x
Fee payment date xx xxxx
Payment Interval 1 Year

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(Company registration number xxxxxxxx)

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- (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 the schedules to this Licence, the Licensee is authorised to establish, install and use a base station at the location set out the schedules to this Licence and any terminals connecting to it.

Synchronisation requirement

17. Where synchronisation requirements are set out in Schedule 3 to this Licence, the Licensee must transmit within the transmission limits specified.
18. Where synchronisation requirements have not been specified, in the event that harmful interference arises, the Licensee shall endeavour to discuss and agree with the other licence

holder(s) how to coordinate their use. If agreement between licence holders cannot be reached, Ofcom may notify the Licensee to comply with additional technical conditions relating to synchronisation requirements.

19. The Licensee must comply with such technical conditions relating to synchronisation requirement notified to it by Ofcom from time to time.
20. The Licensee accepts that they may need to alter or replace Radio Equipment in order to comply with any conditions notified from time to time.

Future Dynamic Spectrum Approach

21. On 25 July 2019, Ofcom published a statement called *Enabling wireless innovation through local licensing* containing a spectrum management decision to enable shared access to spectrum supporting mobile technology. In that decision, Ofcom stated that it will assess whether it is appropriate to transition towards a Dynamic Spectrum Approach in order to provide users more access to spectrum by means of automatic database frequency assignment. The Licensee is therefore notified that Ofcom currently intends to vary this Licence in accordance with paragraph 5 from time to time in future, or may re-issue the Licence, to give effect to that decision.

Notification in electronic form

22. The Licensee shall accept notifications and other related documents under this Licence electronically to the designated email address as recorded in paragraph 1 of this Licence. The Licensee must update Ofcom about changes to the designated email address in accordance with paragraph 8.

Interpretation

23. 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

SCHEDULE 1 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Medium Power

Description of Radio Equipment

1. References in this schedule(s) 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(s).

Interface Requirements for the Radio Equipment

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

IR 2104 Shared Access Medium power

Special conditions relating to the Radio Equipment

3. This Licence authorises the use of the Radio Equipment within the Permitted Frequency Band and the Licensee warrants that the Radio Equipment is capable of transmitting across the Permitted Frequency Band.
4. However, the Licensee is only authorised to transmit on the Permitted Channel Centre Frequency within the Permitted Frequency Band, as set in Schedule 2 to this Licence or as notified to the Licensee by Ofcom from time to time.
5. The Licensee must comply with any change to the Permitted Channel Centre Frequency notified by Ofcom within the timescale indicated in the notification.
6. 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:
 - (a) For all fixed/ installed terminals the:
 - I. postal address (including post code);
 - II. National Grid Reference (to 1m resolution); and
 - III. Antenna height (above ground level), type, and boresight bearing east of true north (if applicable); and
 - (b) For all mobile and nomadic terminals in the 3.8-4.2 GHz band the postal address (including post code) of where it will be used.
7. The Licensee shall submit to Ofcom in such manner and within such period as specified by Ofcom, such other information in relation to the Radio Equipment, or any wireless telegraphy station or wireless telegraphy apparatus which the Licensee is planning to use, as

Ofcom may from time to time request. Such information may include, but is not limited to, information in relation to the radio frequency, transmitted power and date of first use for wireless telegraphy stations or wireless telegraphy apparatus to be established, installed or used within such timeframe and in such areas as Ofcom may reasonably request.

Coordination at frequency and geographical boundaries

8. The Licensee shall ensure that the Radio Equipment is operated in compliance with such coordination procedures as may be notified to the Licensee by Ofcom from time to time.

Cooperation between Licensees

9. In addition to complying with the specific transmission terms, conditions and limitations set out in this Licence, the Licensee must liaise and co-operate with other holders of other Shared Access Low/Medium Power licences (if necessary adjusting transmission power and other technical parameters of transmission) in such a way that harmful interference is not caused by one network deployment to that of another Licensee within the band.

Interpretation of terms in this schedule

10. In this schedule:
 - a) “Fixed or installed” means used or installed at specific fixed points.
 - b) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed.
 - c) “IR” means a United Kingdom Radio Interface Requirement notified by Ofcom in accordance with Article 8 of Directive 2014/53/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment (known as the Radio Equipment Directive).
 - d) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points.
 - e) “outdoor” or “outdoors” means anywhere that is not indoor.
 - f) “Permitted Channel Centre Frequency” means the frequency assigned by Ofcom that is the midpoint between the upper and lower channel edge frequencies.
 - g) “Permitted Frequency Band” means the frequency range within which Ofcom will assign the Permitted Channel Centre Frequency.

SCHEDULE 2 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Medium Power

Transmitter(s)																									
Base station location	NGR [xxx xxx]																								
Deployment location	[Indoor only/Indoor or Outdoor] Indoors only does not permit the deployment of outdoor base stations or fixed/installed terminal devices.																								
Permitted Frequency Band	[xxx – xxx / xxx – xxx] MHz																								
Permitted Channel Centre Frequency																									
Permitted Channel frequency bandwidth																									
Antenna Height	1800 MHz shared spectrum and 2300 MHz shared spectrum - outdoor antenna systems limited to 10m height above ground																								
Antenna Gain																									
Maximum power (eirp)/ / Maximum power within the Permitted Frequency Channel	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%; padding: 5px;">Radio Equipment</th> <th style="width: 20%; padding: 5px;">Band</th> <th style="width: 60%; padding: 5px;">Maximum power</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Base Station</td> <td style="padding: 5px;">1876.7-1880 MHz</td> <td style="padding: 5px;">42 dBm / carrier (up to 3 MHz)</td> </tr> <tr> <td></td> <td></td> <td style="padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; padding: 5px;">Frequency offset from the lower frequency of the band edge</th> <th style="width: 50%; padding: 5px;">Maximum Mean EIRP density</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">0 to 0.05 MHz</td> <td style="padding: 5px;">-33.6 + 153.3 x ΔFL^* dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.05 to 0.1 MHz</td> <td style="padding: 5px;">-26 + 60 x (ΔFL^* - 0.05) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.1 to 0.2 MHz</td> <td style="padding: 5px;">-23 + 300 x (ΔFL^* - 0.1) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.2 to 3.2 MHz</td> <td style="padding: 5px;">42 dBm / carrier</td> </tr> <tr> <td style="padding: 5px;">3.2 to 3.3 MHz</td> <td style="padding: 5px;">-23 + 300 x (3.3 - ΔFL^*) dBm / kHz</td> </tr> </tbody> </table> </td> </tr> <tr> <td colspan="3" style="padding: 5px;"> <p><small>* Note: ΔFL in MHz is the offset from the lower edge of the permitted frequency band at 1876.7 MHz (it has values in the range 0 to +0.2 MHz and +3.2 to +3.3MHz)</small></p> </td> </tr> </tbody> </table>	Radio Equipment	Band	Maximum power	Base Station	1876.7-1880 MHz	42 dBm / carrier (up to 3 MHz)			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; padding: 5px;">Frequency offset from the lower frequency of the band edge</th> <th style="width: 50%; padding: 5px;">Maximum Mean EIRP density</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">0 to 0.05 MHz</td> <td style="padding: 5px;">-33.6 + 153.3 x ΔFL^* dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.05 to 0.1 MHz</td> <td style="padding: 5px;">-26 + 60 x (ΔFL^* - 0.05) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.1 to 0.2 MHz</td> <td style="padding: 5px;">-23 + 300 x (ΔFL^* - 0.1) dBm / kHz</td> </tr> <tr> <td style="padding: 5px;">0.2 to 3.2 MHz</td> <td style="padding: 5px;">42 dBm / carrier</td> </tr> <tr> <td style="padding: 5px;">3.2 to 3.3 MHz</td> <td style="padding: 5px;">-23 + 300 x (3.3 - ΔFL^*) dBm / kHz</td> </tr> </tbody> </table>	Frequency offset from the lower frequency of the band edge	Maximum Mean EIRP density	0 to 0.05 MHz	-33.6 + 153.3 x ΔFL^* dBm / kHz	0.05 to 0.1 MHz	-26 + 60 x (ΔFL^* - 0.05) dBm / kHz	0.1 to 0.2 MHz	-23 + 300 x (ΔFL^* - 0.1) dBm / kHz	0.2 to 3.2 MHz	42 dBm / carrier	3.2 to 3.3 MHz	-23 + 300 x (3.3 - ΔFL^*) dBm / kHz	<p><small>* Note: ΔFL in MHz is the offset from the lower edge of the permitted frequency band at 1876.7 MHz (it has values in the range 0 to +0.2 MHz and +3.2 to +3.3MHz)</small></p>		
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		2390 – 2400 MHz	42 dBm / carrier (up to 10 MHz)
		3.8-4.2 GHz	42 dBm / carrier for carriers ≤20 MHz; or 36 dBm/5 MHz for carriers > 20 MHz
	Fixed or installed terminal station	1781.7-1785 MHz	23 dBm EIRP
		2390 – 2400 MHz	25 dBm EIRP (includes a 2 dB tolerance)
		3.8-4.2 GHz	28 dBm TRP and 35 dBm/5 MHz EIRP (includes a 2 dB tolerance)
	Mobile or nomadic terminal station	1781.7-1785 MHz	23 dBm EIRP
		2390 – 2400 MHz	25 dBm EIRP (includes a 2 dB tolerance)
		3.8-4.2 GHz	28 dBm TRP (includes a 2 dB tolerance)

Interpretation of terms in this schedule

1. 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), measured during the “on” part of the transmission;
- c) “Fixed or installed” means used or installed at specific fixed points;
- d) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed.
- e) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;
- f) “NGR” means National Grid Reference
- g) “outdoor” or “outdoors” means anywhere that is not indoor;
- h) “Permitted Channel Centre Frequency” means the frequency assigned by Ofcom that is the midpoint between the upper and lower cutoff frequencies.

Company – Shared Access Medium Power Licence
Company registration number: xxxxxxxx
First issued: xx/xx/xx – Licence Number: xxxxxx – xx/xx/xx

- i) “Permitted Channel Frequency Bandwidth” means the total amount of spectrum assigned to the channel.
- j) “Permitted Frequency Band” means the frequency range within which Ofcom will assign the Permitted Channel Centre Frequency.
- k) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere, measured during the on part of the transmission

SCHEDULE 3 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Medium Power

Maximum power of Radio Equipment outside the Permitted Frequency Channel

1800 MHz shared spectrum

1. When transmitting, the Licensee must transmit within the limits set out below.

Frequency offset from the lower frequency of the band edge	Maximum mean EIRP density
-6.2 to -3.2 MHz	-55 dBm / kHz
-3.2 to 0 MHz	$-45 + 10 \times (\Delta_{FL}^* + 0.2) / 3$ dBm / kHz
Frequency offset from the upper frequency of the band edge	Maximum mean EIRP density
0 to 0.05 MHz	$-23 - 60 \times \Delta_{FH}^*$ dBm / kHz
0.05 to 0.1 MHz	$-26 - 153.3 \times (\Delta_{FH}^* - 0.05)$ dBm / kHz
0.1 to 2.8 MHz	$-45 - 10 \times (\Delta_{FH}^* + 0.2) / 3$ dBm / kHz
2.8 to 5.8 MHz	-55 dBm / kHz

* Note: Δ_{FL} in MHz is the offset from the lower edge of the permitted frequency band at 1876.7 MHz (it has values in the range -3.2 to 0 MHz)

Δ_{FH} in MHz is the offset from the upper edge of the permitted frequency band at 1880 MHz (it has values in the range 0 to 2.8 MHz)

2300 MHz shared spectrum

2. When transmitting, the Licensee must transmit within the limits set out below:

2385 to 2390 MHz 2400 to 2403 MHz	(PMax – 40) dBm / 5 MHz EIRP per antenna
2300 to 2385 MHz	(PMax – 43) dBm / 5 MHz EIRP per antenna
Above 2403 MHz 24 dBm < PMax ≤ 42 dBm	(PMax -41) dBm / 5 MHz EIRP*
PMax ≤ 24 dBm	-17 dBm / 5 MHz EIRP*

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

The licensee’s base stations must transmit within the limits of transmission Frame Structure A.

Frame Structure A means:

timeslots (or subframes) 0, 2 to 5 and 7 to 9 must be allocated to Downlink (D) or Uplink (U) transmissions as indicated or may be left with no transmissions;
the Licensee must ensure that the special subframe (S) in timeslots 1 and 6 has a structure that is compatible with TD-LTE special subframe configuration 6, also known as 9:3:2;
all timeslots must be 1 millisecond in duration and the frame must start at a common reference time so that frames are aligned with Telefónica and transmissions synchronised; and
TD-LTE frame configuration 2 (3:1) is compatible with this frame structure. Other technologies are permitted provided that the requirements are met.

Frame Structure A

DL/UL ratio	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3:1	D	S	U	D	D	D	S	U	D	D

3.8 – 4.2 GHz

- When transmitting, the Licensee must transmit within the limits set out below.

-5 to 0 MHz offset from lower channel edge 0 to 5 MHz offset from upper channel edge	(PMax – 40) dBm / 5 MHz EIRP per antenna
-10 to -5 MHz offset from lower channel edge 5 to 10 MHz offset from upper channel edge	(PMax – 43) dBm / 5 MHz EIRP per antenna
Out of channel baseline power limit (BS) < -10 MHz offset from lower channel edge > 10 MHz offset from upper channel edge	(PMax – 43) dBm / 5 MHz EIRP per antenna

- In addition, the EIRP emanating from the Radio Equipment transmissions at any frequency outside the Permitted Frequency Channel shall not exceed the following additional band edge requirements:

3795 MHz – 3800 MHz 4200 MHz – 4205 MHz	(PMax – 40) dBm / 5 MHz EIRP per antenna
3760 MHz - 3795 MHz 4205 MHz – 4240 MHz	(PMax – 43) dBm / 5 MHz EIRP per antenna
Below 3760 MHz Above 4240 MHz	-2 dBm / 5 MHz EIRP per antenna

Interpretation of terms in this schedule

- 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) “Downlink” means transmissions from a base station to a terminal station;
- c) “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), measured during the “on” part of the transmission;
- d) “Fixed or installed” means used or installed at specific fixed points;
- e) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed;
- f) “lower channel edge” means, in relation to each Permitted Frequency Channel, the lowest frequency in that Permitted Frequency Channel;
- g) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;
- h) “outdoor” or “outdoors” means anywhere that is not indoor;
- i) “PMax” is the maximum mean power for the base station in question, measured as EIRP per carrier and determined irrespective of the number of antennas;
- j) “TDD” means the application of time-division multiplexing to separate outward and return signals;
- k) “TD-LTE” means the TDD variant of LTE (Long Term Evolution or 4G technology);
- l) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere, measured during the on part of the transmission;
- m) “Uplink” means transmissions from a terminal station to a base station; and
- n) “upper channel edge” means, in relation to each Permitted Frequency Channel, the highest frequency in that Permitted Frequency Channel.

A8. Shared Access Indoor 26 GHz Licence

SHARED ACCESS INDOOR 26 GHz LICENCE

Licence no:	xxxxxx
Date of issue:	xx xxxx 201x
Fee payment date	xx xxxx
Payment Interval	1 Year

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

Company

(Company registration number xxxxxxxx)
("the Licensee")

Add 1

Add 2

Add 3

Email:

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 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) 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 one month’s notice is given in writing.
4. Ofcom may only revoke this Licence by notification in writing to the Licensee and in accordance with schedule 1 paragraphs 6, 6A and 7 of the Act.

Licence variation

5. Ofcom may only vary this Licence by notification in writing to the Licensee and in accordance with schedule 1 paragraphs 6, 6A and 7 of the Act.

Requirement to commence and maintain transmission within 6 months

6. The Licensee must establish, install and use the Radio Equipment to commence regular wireless telegraphy transmissions in accordance with the provisions of this Licence within six months of the date that this Licence is issued, and maintain such transmissions thereafter.

Transfer

7. 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 Act³.

Changes to Licensee details

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

Fees

9. The Licensee shall 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.
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 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 schedules to this Licence. Any proposal to amend any detail specified in any of the schedules 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

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

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 the schedules to this Licence, the Licensee is authorised to establish, install and use of base station equipment in the authorised base station deployment area set out the schedules to this Licence and any terminals connecting to it.

Future Dynamic Spectrum Approach

17. On 25 July 2019, Ofcom published a statement called *Enabling wireless innovation through local licensing* containing a spectrum management decision to enable shared access to spectrum supporting mobile technology. In that decision, Ofcom stated that it will assess whether it is appropriate to transition towards a Dynamic Spectrum Approach in order to provide users more access to spectrum by means of automatic database frequency assignment]. The Licensee is therefore notified that Ofcom currently intends to vary this Licence in accordance with paragraph 5 from time to time in future, or may re-issue the Licence, to give effect to that decision.

Notification in electronic form

18. The Licensee shall accept notifications and other related documents under this Licence electronically to the designated email address as recorded in paragraph 1 of this Licence. The Licensee must update Ofcom about changes to the designated email address in accordance with paragraph 8.

Interpretation

Company –Shared Access Indoor 26 GHz Licence
Company registration number: xxxxxxxx
First issued: xx/xx/xx – Licence Number: xxxxxx – xx/xx/xx

19. 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: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Indoor 26 GHz

Description of Radio Equipment

1. References in this schedule(s) 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(s).

Interface Requirements for the Radio Equipment

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

IR 2105 Shared Access 26 GHz Indoor

Special conditions relating to the Radio Equipment

3. This Licence authorises the use of the Radio Equipment within the Permitted Frequency Band and the Licensee warrants that the Radio Equipment is capable of transmitting across the Permitted Frequency Band.
4. However, the Licensee is only authorised to transmit on the Permitted Channel Centre Frequency within the Permitted Frequency Band, as set in Schedule 2 to this Licence or as notified to the Licensee by Ofcom from time to time.
5. The Licensee must comply with any change to the Permitted Channel Centre Frequency notified by Ofcom within the timescale indicated in the notification.
6. 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:

For all base stations the:

- I. postal address (including post code); and
- II. Antenna height (above ground level) and type; and

For all fixed/installed terminals the:

- I. postal address (including post code);
- II. National Grid Reference (to 1m resolution); and
- III. Antenna height (above ground level), type, and boresight bearing east of true north (if applicable).

7. The Licensee shall submit to Ofcom in such manner and within such period as specified by Ofcom, such other information in relation to the Radio Equipment, or any wireless telegraphy station or

wireless telegraphy apparatus which the Licensee is planning to use, as Ofcom may from time to time request. Such information may include, but is not limited to, information in relation to the radio frequency, transmitted power and date of first use for wireless telegraphy stations or wireless telegraphy apparatus to be established, installed or used within such timeframe and in such areas as Ofcom may reasonably request.

8. Is only permitted to be used indoors.

Coordination at frequency and geographical boundaries

9. The Licensee shall ensure that the Radio Equipment is operated in compliance with such coordination procedures as may be notified to the Licensee by Ofcom from time to time.

Cooperation between Licensees

10. In addition to complying with the specific transmission terms, conditions and limitations set out in this Licence, the Licensee must liaise and co-operate with other holders of other Shared Access 26 GHz licences (if necessary adjusting transmission power and other technical parameters of transmission) in such a way that harmful interference is not caused by one network deployment to that of another Licensee within the band.

Interpretation of terms in this schedule

11. In this schedule:

"IR" means a United Kingdom Radio Interface Requirement notified by Ofcom in accordance with Article 8 of Directive 2014/53/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment (known as the Radio Equipment Directive).

"indoor" or "indoors" means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed.

SCHEDULE 2 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Indoor 26 GHz

Transmitter(s)									
Authorised Base Station Deployment Area	Area of 50 m radius from the following location NGR [xxx xxx]								
Deployment location	Indoor use only Deployment or use of outdoor base stations and terminals is not permitted								
Permitted Frequency Band	24.25 to 26.5 GHz								
Permitted Channel Centre Frequency									
Permitted Channel frequency bandwidth									
Maximum transmitter power / Maximum transmitter power within the Permitted Frequency Channel	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Radio Equipment</th> <th style="text-align: center;">Maximum transmitter power</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Base station</td> <td style="text-align: center;">23dBm/200MHz TRP</td> </tr> <tr> <td style="text-align: center;">Mobile or nomadic terminal station</td> <td style="text-align: center;">23dBm TRP</td> </tr> <tr> <td style="text-align: center;">Fixed or installed terminal station</td> <td style="text-align: center;">23dBm TRP</td> </tr> </tbody> </table>	Radio Equipment	Maximum transmitter power	Base station	23dBm/200MHz TRP	Mobile or nomadic terminal station	23dBm TRP	Fixed or installed terminal station	23dBm TRP
Radio Equipment	Maximum transmitter power								
Base station	23dBm/200MHz TRP								
Mobile or nomadic terminal station	23dBm TRP								
Fixed or installed terminal station	23dBm TRP								

Interpretation of terms in this schedule

1. 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) “Fixed or installed” means used or installed at specific fixed points;
 - c) “Indoor” or “indoors” means inside premises which have a ceiling or a roof; and except for any doors, windows or passageways, are wholly enclosed.

- d) “mobile or nomadic” means intended to be used while in motion or during halts at unspecified points;
- e) “NGR” means National Grid Reference
- f) “outdoor” or “outdoors” means anywhere that is not indoor;
- g) “Permitted Channel Centre Frequency” means the frequency assigned by Ofcom that is the midpoint between the upper and lower channel edge frequencies.
- h) “Permitted Channel Frequency Bandwidth” means the total amount of spectrum assigned to the channel.
- i) “Permitted Frequency Band” means the frequency range within which Ofcom will assign the Permitted Channel Centre Frequency.
- j) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere, measured during the on part of the transmission.

SCHEDULE 3 TO LICENCE NUMBER: xxxxxx

Schedule Date: xx xxxx 201x

Licence category: Shared Access Indoor 26 GHz

Maximum power of Radio Equipment outside the Permitted Frequency Channel

26 GHz shared band

1. When transmitting, the Licensee must transmit within the limits set out below.

Frequency offset from the lower and upper frequency of the channel edge	Maximum base station power (TRP)
- Up to 50MHz	12 dBm / 50 MHz
Beyond 50MHz	4 dBm / 50 MHz
Within the frequency band 23.6 – 24 GHz	-42 dBW/200 MHz
	Maximum terminal station power (TRP)
Within the frequency band 23.6 – 24 GHz	-38 dBW/200 MHz

Interpretation of terms in this schedule

2. 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) “lower channel edge” means, in relation to each Permitted Frequency Channel, the lowest frequency in that Permitted Frequency Channel;
 - c) “TRP” means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere, measured during the on part of the transmission; and
 - d) “upper channel edge” means, in relation to each Permitted Frequency Channel, the highest frequency in that Permitted Frequency Channel.

A9. Local Access Licence

SPECTRUM LOCAL ACCESS LICENCE

Licence no: **xxxxxxx**
Date of issue: **xx xxxx 201x**

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

Company

(Company registration number xxxxxxxx)

("the Licensee")

Add 1

Add 2

Add 3

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 [DATE] unless earlier 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) 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 5 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.

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. The Licensee shall 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.
8. 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, 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

9. The Licensee 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 any of the schedules to this Licence must be agreed with Ofcom in advance and implemented only after this Licence has been varied or reissued accordingly.
10. 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

11. 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

12. 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.

13. 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

14. Subject to the requirements of any coordination procedures notified to the Licensee pursuant to the schedules to this Licence, the Licensee is authorised to establish, install and use the Radio Equipment in the authorised service areas set out the schedules to this Licence.

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 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.

SCHEDULE 1 TO LICENCE NUMBER: **xxxxxx**

Schedule Date: **xx xxxx 201x**

Licence category: **Spectrum Local Access**

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 the schedules to this Licence.

Interface Requirements for the Radio Equipment

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

[To be determined by the application]

Special conditions relating to the Radio Equipment

3.
 - a) The Licensee shall submit to Ofcom in such manner and within such period as specified by Ofcom, such other information in relation to the Radio Equipment, or any wireless telegraphy station or wireless telegraphy apparatus which the Licensee is planning to use, as Ofcom may from time to time request. Such information may include, but is not limited to, information in relation to the radio frequency, transmitted power and date of first use for wireless telegraphy stations or wireless telegraphy apparatus to be established, installed or used within such timeframe and in such areas as Ofcom may reasonably request.
 - b) The Licensee shall ensure that any Third Party Participants are made aware of the time limited nature of access to the authorised frequencies.

Co-ordination at frequency and geographical boundaries

4.
 - a) The Licensee shall ensure that the Radio Equipment is operated in compliance with the co-ordination procedures set out in this schedule and any other co-ordination procedures as may be notified to the Licensee by Ofcom from time to time.
 - b) The Radio Equipment will operate on a non-interference basis. For the avoidance of doubt, this means that the licensee must not cause undue interference to other authorised uses of radio spectrum.

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.

Cooperation between Licensees

6. In addition to complying with the specific transmission terms, conditions and limitations set out in this Licence, the Licensee must liaise and co-operate with other holders of licences in the same frequency band(s) (if necessary adjusting transmission power and other technical parameters of transmission) in such a way that harmful interference is not caused by one network deployment to that of another Licensee within the band.

Interpretation of terms in the schedules

7. In the schedules to this Licence:

"IR" means a United Kingdom Radio Interface Requirement notified by Ofcom in accordance with Article 8 of Directive 2014/53/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment (known as the Radio Equipment Directive).

"Third Party Participants" means persons other than the licensee, its employees servants or agents who are provided an electronic communications network or an electronic communications service, using the equipment authorised under the Licence.

SCHEDULE 2 TO LICENCE NUMBER: xxxxxx

Schedule Date: **xx xxxx 201x**

Licence category: **Spectrum Local Access**

[The licence technical provisions will vary dependent on the use that is authorised. The table below is for reference only. Other provisions such as out of block emissions and frame structures may also be included.]

Transmitter(s)	
Authorised Service Area	
Deployment location	
Permitted Frequency Block	[xxx – xxx / xxx – xxx] MHz
Maximum power (eirp)/ / Maximum power within the Permitted Frequency Blocks	
Antenna details (Type, polarisation, gain, height)	

A10. Interface Requirements

A10.1 Ofcom publishes interface requirements on this webpage:

<https://www.ofcom.org.uk/spectrum/information>

A10.2 The draft Interface Requirements for the Shared Access licence can be found here:

- **Draft IR 2103: Shared Access Low Power:**
https://www.ofcom.org.uk/_data/assets/pdf_file/0030/158277/draft-ir-2103-shared-access-low-power.pdf
- **Draft IR 2104: Shared Access Medium Power:**
https://www.ofcom.org.uk/_data/assets/pdf_file/0026/158273/draft-ir-2104-shared-access-medium-power.pdf
- **Draft IR 2105: Shared Access Indoor 26 GHz:**
https://www.ofcom.org.uk/_data/assets/pdf_file/0031/158278/draft-ir-2105-shared-access-26-ghz-indoors.pdf