

# SPECTRUM ACCESS

## ESN Gateways 1910–1915 MHz

### LICENCE

Office of Communications (Ofcom)  
Wireless Telegraphy Act 2006

Licence number: [xx]  
Date of issue: [xx]  
Date of commencement: [xx]  
Fee Payment date: [xx]  
Payment interval: Annual from [xx]

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

[XXX - Licensee's name]  
(Company registration number [XXX])  
("the Licensee")  
[XXX – address of licensee's registered office]

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 come into force from the date of commencement until [DATE] unless revoked by Ofcom or surrendered by the Licensee.

### Licence Variation and Revocation

3. Pursuant to schedule 1 paragraph 8 of the Act, Ofcom may not revoke this Licence under schedule 1 paragraph 6 of the Act except:

- a) at the request of, or with the consent of, the Licensee;
- b) if there has been a breach of any of the conditions of this Licence;

- c) 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<sup>1</sup>;
  - d) in accordance with schedule 1, paragraph 8(5) of the Act;
  - e) if it appears to Ofcom to be necessary or expedient to revoke the Licence for the purposes 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;
  - f) for reasons related to the management of the radio spectrum, provided that in such case the power to revoke may only be exercised after at least five years' notice is given in writing); or
  - g) if the Licensee ceases to hold a contract to provide ESN Gateways to the UK Government.
4. Where Ofcom exercises its power to revoke or vary the Licence in accordance with schedule 1 paragraph 6 of the Act, the Licensee shall be notified in writing or by a general notice. Any general notices will be posted on the Ofcom [website](#).

## Transfer

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

## Changes to Licensee Details

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6. The Licensee must give immediate notice to Ofcom in writing of any changes to the Licensee's name and/or address from that recorded on the Licence.

## Fees

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7. The Licensee shall each year pay to Ofcom the relevant fee(s) as provided in section 12 of the Act and the regulations made thereunder:
- a) on or before date of issue of the licence; and
  - b) on or before the fee-payment date shown on the Licence for subsequent payments or such other date or dates as shall be notified in writing to the Licensee in accordance with those regulations and any relevant terms, provisions and limitations of the Licence.

## Radio Equipment Use

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8. The Licensee must 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

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

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

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.

9. The Licensee must ensure that the Radio Equipment is operated in compliance with the terms of this Licence and is used only by persons who have been authorised in writing by the Licensee to do so and that such persons are made aware of, and of the requirement to comply with, the terms of this Licence.
10. The Licensee must ensure that all Radio Equipment is established, installed, modified and used only in accordance with the provisions specified in Schedule 1 of this Licence.

## Access and Inspection

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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 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

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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 a term 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

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14. Subject to the requirements of any coordination procedures notified to the Licensee pursuant to the Schedules to this Licence and paragraph 15 below, the Licensee is authorised to establish, install and use the Radio Equipment in Great Britain.

15. The areas excluded from this licence are the territorial sea and any inland waters adjacent to the territorial sea, but in the case of streams, rivers or other watercourses which form part of such inland waters they are only excluded where such stream, river or watercourse is more than 2km wide.

## Interpretation

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16. In this Licence:

- a) the “Act” means the Wireless Telegraphy Act 2006;
- b) “ESN” means the Emergency Services Network, which is a network to provide secure voice, data and video services for the emergency services in Great Britain over a commercial mobile network;
- c) “ESN Gateways” means the provision of vehicle-mounted base transceiver stations designed to extend the coverage of the ESN into areas where coverage is insufficient;
- d) “Great Britain” means England, Scotland and Wales”;
- e) 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;
- f) the expression “undue interference” shall have the meaning given by section 115 of the Act;
- g) the expressions “wireless telegraphy station” and “wireless telegraphy apparatus” shall have the meanings given by section 117 of the Act;
- h) 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
- i) 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: [xxx]

Licence category: Spectrum Access ESN Gateways 1910–1915 MHz

## Description of Radio Equipment

1. References in this schedule to the Radio Equipment are references to any base transceiver stations forming part of the network (as defined in paragraph 2 below) established, installed and/or used under this schedule.

## Purpose of the Radio Equipment

2. The Radio Equipment shall form part of a radio telecommunications network in which ESN Gateways communicate by radio with ESN gateway terminal equipment to provide a telecommunications service for use by the emergency services.

## Interface Requirements for the Radio Equipment

3. Use of the Radio Equipment shall be in accordance with the following Interface Requirements:  
**[PLACEHOLDER: For the Interface Requirement (IR) that will apply to this licence].**

## Special conditions relating to the Radio Equipment

4. Radio Equipment established under this schedule is:
  - a) only to be used as a temporary base station for occasional use in connection with user stations used by the emergency services; and
  - b) not to be used when it is in motion if mounted on a vehicle.
5. Subject to paragraph 6 of this schedule, during the period that this Licence remains in force, unless consent has otherwise been given by Ofcom, the Licensee shall compile and maintain accurate written records of the following details relating to the Radio Equipment:
  - a) the number of ESN Gateways; and
  - b) a record of the vehicles upon which ESN Gateways are installed,and the Licensee must produce these records if requested by any person authorised by Ofcom.
6. The Licensee shall submit to Ofcom copies of the records detailed in paragraph 5 above at such intervals as Ofcom may notify the Licensees.
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. Prior to 4 April 2029, the Licensee shall operate on a non-interference, non-protection basis. For the avoidance of doubt, this means that the Licensee must not cause undue interference to other authorised uses of the 1910-1915 MHz radio spectrum and that no claim of protection can be made if interference is received from another authorised device or service in the 1910-1915 MHz radio spectrum.

## Coordination

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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.

## International cross-border co-ordination

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10. 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.

## Permitted Frequency Blocks

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

Permitted Frequency Blocks
1910-1915 MHz

## Maximum power within the Permitted Frequency Blocks

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12. Subject to any more restrictive limitations imposed by the coordination requirements notified by Ofcom in accordance with paragraphs 9 and 10 of this schedule, the power transmitted in the Permitted Frequency Blocks shall not exceed:

Radio Equipment	Maximum mean power
Base Station	37 dBm/5 MHz EIRP
Terminal station	23 dBm/5 MHz TRP

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## Maximum power outside the Permitted Frequency Blocks

13. The maximum mean EIRP emanating from the Radio Equipment transmissions at any frequency outside the Permitted Frequency Blocks, but within the frequency ranges listed in the following table, shall not exceed the least restrictive of the requirements in the following table:

Frequency Range (MHz)	Maximum mean EIRP (dBm/5MHz)
1880–1900	-41
1900–1905	-41
1905–1910	-8
1915–1920	-8
1920–1980	-41

## Frame structure

14. The Licensee must ensure that transmissions from the Radio Equipment must have either:
- A TD-LTE frame structure compatible with LTE TDD configuration 0, 1 or 2 as shown in Figure 1. 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; or
  - A 5G-NR frame structure as shown in Figure 2. Timeslots (or subframes) must be allocated to Downlink (D) or Uplink (U) transmissions as indicated or may be left with no transmissions; or
  - A 5G-NR frame structure equivalent to one of the LTE TDD configurations shown in Figure 1, with downlink and uplink transmission periods conforming with the downlink (D) and uplink (U) timings given.
15. The Licensee must ensure that the special subframes (S) have the applicable structure as indicated in Figure 1 or Figure 2. For the avoidance of doubt, a special subframe structure is compatible where there are no uplink transmissions within the downlink pilot timeslot (DwPTS) or guard period (GP) and no downlink transmissions within the uplink pilot timeslot (UpPTS) or guard period (GP).
16. The Licensee must ensure that timeslots (or subframes) must have a duration of 0.5 or 1 millisecond as indicated.
17. The Licensee must ensure that frames start at a common reference time so that all licensees' frames are aligned and transmissions synchronised.

Figure 1. TD-LTE Frame Structures

LTE Configuration <sup>3</sup>	Subframe number (1ms subframes)									
	0	1	2	3	4	5	6	7	8	9
0	D	S	U	U	U	D	S	U	U	U
1	D	S	U	U	D	D	S	U	D	D
2	D	S	U	D	D	D	S	U	D	D
	With special subframe: S = 9:3:2 (DwPTS: Guard Period : UpPTS)									

Figure 2. 5G-NR Frame Structures

5G-NR configuration <sup>4</sup>	Subframes
15kHz SCS (1ms subframes)	D S <sub>a</sub> U S <sub>b</sub> U D S <sub>a</sub> U S <sub>b</sub> U
30kHz SCS (0.5ms subframes)	D D D S <sub>1</sub> U U D S <sub>2</sub> U U D D D S <sub>1</sub> U U D S <sub>2</sub> U U
	With special subframes: S <sub>a</sub> = 10:2:2 (Downlink : Guard Period : Uplink) S <sub>b</sub> = 12:2:0 S <sub>1</sub> = 6:4:4 S <sub>2</sub> = 10:4:0

## Interpretation of terms in this schedule

18. In this schedule:

- a) "5G-NR" means 5G New Radio and refers to the air interface that has been developed by 3GPP for fifth generation (5G) mobile radio networks. This air interface defines how 5G base stations and user devices both transmit and receive radio signals using spectrum;
- b) "dBm" means the power level in decibels (logarithmic scale) referenced against 1 milliwatt (i.e. a value of 0 dBm is 1 milliwatt);
- c) "Downlink" means transmissions from a base station or repeater to a terminal station (handset);

<sup>3</sup> As defined in 3GPP TS 36.211 (Table 4.2-2)

<sup>4</sup> as defined in ECC Recommendation (23)01 (Annex 5)

- d) "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);
- e) "ESN" means the Emergency Services Network, which is a network to provide secure voice, data and video services for the emergency services in Great Britain over a commercial mobile network;
- f) "ESN gateways" means vehicle-mounted base transceiver stations designed to extend the coverage of the ESN into areas where coverage is insufficient;
- g) "Great Britain" means England, Scotland and Wales;
- h) "IR" means a United Kingdom Radio Interface Requirement notified 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;
- i) "Permitted Frequency Blocks" has the meaning given to it in paragraph 11 of this schedule;
- j) "SCS" means Sub-carrier Spacing
- k) "TDD" (Time Division Duplex) means the application of time-division multiplexing to separate uplink and downlink signals;
- l) "TRP" means the total radiated power. This is the integral of the power transmitted in different directions over the entire radiation sphere;
- m) "TD-LTE" means the TDD variant of LTE (Long Term Evolution or 4G technology);
- n) the expression "undue interference" shall have the meaning given by section 115 of the Act;
- o) "Uplink" means transmissions from a terminal station to a base station.
- p) the expressions "wireless telegraphy station" and "wireless telegraphy apparatus" shall have the meanings given by section 117 of the Act;