Office of Communications (Ofcom)
Wireless Telegraphy Act 2006

PUBLIC WIRELESS NETWORK LICENCE

This Licence replaces the Licence issued by the Office of Communications (Ofcom), number 0249666 on ~~30 January~~ 23 March 2015, to EE Limited.

Licence no. **0249666**

Date of issue: ~~**23 March**~~ **xx Month 2015**

Fee payment date: **28 February** (annually)

1. Ofcom grants this licence to

EE Limited
("the Licensee")
Trident Place
Mosquito Way
Hatfield
Hertfordshire
AL10 9BW

to establish, install and use radio transmitting and receiving stations and/or radio apparatus as described in the ~~schedule~~Schedule(s) (hereinafter together called "the Radio Equipment") subject to the terms, set out below.

Licence Term

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

Licence Variation and Revocation

3. Pursuant to Schedule 1 paragraph ~~(~~8~~)~~ of the Wireless Telegraphy Act 2006 ("the 2006 Act"), Ofcom may not revoke or vary this Licence under Schedule 1 paragraph ~~(~~6~~)~~ of the 2006 Act save at the request or with the consent of the Licensee except:

(a) in accordance with clause 6 of this Licence;

(b) in accordance with Schedule 1 paragraph 8(5) of the 2006 Act;

(c) for reasons related to the management of the radio spectrum, provided that in such case the power to revoke may only be exercised after five years' notice is given in writing and after Ofcom has considered any pertinent factors;

(d) if, in connection with the transfer or proposed transfer of rights and obligations arising by virtue of the Licence, there has been a breach of any provision of Regulations made by Ofcom under the powers conferred by section 30(1) and (3) of the Act;[1]

(e) if there has been a breach of any of the terms of this Licence or the ~~schedule~~Schedule(s) hereto.

[1] These are regulations on spectrum trading.

Changes

4. 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.[2]

5. The Licensee must give prior or immediate 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

6. The Licensee shall pay Ofcom the relevant fee as provided in section 12 of the 2006 Act and the Regulations made thereunder on or before the fee payment date shown above each year, or on or before such dates as shall be notified in writing to the Licensee, failing which Ofcom may revoke this Licence.

Radio Equipment Use

7. The Licensee must ensure that the Radio Equipment is constructed and used only in accordance with the provisions specified in the Schedules ~~Schedule 1~~ of this Licence. Any proposal to amend any detail specified in the Schedules ~~Schedule 1~~ of this Licence must be agreed with Ofcom in advance and implemented only after this Licence has been varied or reissued accordingly.

8. The Licensee must ensure that the Radio Equipment is operated in compliance with the terms of this Licence and is used only by persons who have been authorised in writing by the Licensee to do so and that such persons are made aware of, and of the requirement to comply with, the terms of this Licence.

Access and Inspection

9. The Licensee shall permit a person authorised by Ofcom:

(a) to have access to the Radio Equipment; and

(b) to inspect this Licence and 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

10. 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.

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

11. Ofcom may in the event of a national or local state of emergency being declared 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 Ofcom may specify. Ofcom shall exercise this power by a written notice served on the Licensee or by a general notice applicable to holders of this class of Licence.

Geographical Boundaries

12. This Licence does not authorise the establishment and use of the Radio Equipment on the Isle of Man or any of the Channel Islands.

Interpretation

13. In this Licence:

(a) the establishment, installation and use of the Radio Equipment shall be interpreted as establishment and use of stations and installation and use of apparatus for wireless telegraphy as specified in section 8(1) of the 2006 Act;

(b) the expression " interference" shall have the same meaning that it has under the 2006 Act (Section 115);

(c) the expression "inspect" includes examine and test;

(d) the ~~schedule forms~~ Schedules form part of this Licence together with any subsequent schedule(s) which Ofcom may issue as a variation to this Licence at a later date; 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: **0249666**

Licence Category: **Public Wireless Network**

This ~~schedule~~ Schedule forms part of licence no **0249666**, issued to **EE Limited**, the Licensee on ~~**23 March**~~ **xx Month 2015**, and describes the Radio Equipment covered by ~~the Licence~~ this Schedule and the purpose for which ~~the~~ that Radio Equipment may be used.

Description of Radio Equipment Licensed

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

Purpose of the Radio Equipment

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

Approved Standards for the Radio Equipment

3. The Radio Equipment covered by this Licence shall comply with the appropriate Interface Requirement (IR 2014 – Public Wireless Networks and/or IR 2019 – Third Generation Mobile and/or IR 2087 - 900 / 1800 MHz LTE and WiMAX) or, for equipment placed on the market before 8 April 2000, is required to be type approved in accordance with a recognised technical performance standard relating to the service licensed.

Special Conditions relating to the Operation of the Radio Equipment

4.

(a) During the period that this Licence remains in force and for 6 months thereafter, the Licensee shall compile and maintain accurate written records of:

(i) The following details relating to the Radio Equipment:

a) postal address;

b) National Grid Reference, (to 100 Metres resolution);

c) antenna height (AGL) and type;

d) radio frequencies in operation;

(ii) a statement of the number of subscribing customers using the Network;

and the Licensee must produce the above records when a person authorised by Ofcom requires him to do so;

(b) In respect of femtocell equipment and smart/intelligent low power repeater equipment, the conditions relating to the keeping of records contained in sub-paragraphs 4(a)(i)(a), 4(a)(i)(b) and 4(a)(i)(c), shall not apply;

(c) The Licensee shall inform Ofcom of the address of the premises at which this Licence and the information detailed at sub-paragraph (a) above shall be kept;

(d) The Licensee must submit to Ofcom copies of the records detailed in sub-paragraph (a) above at such intervals as Ofcom shall notify to the Licensee;

(e) The Licensee shall, upon request, supply Ofcom or any person authorised on their behalf with the name and address of any subscribing customers to the Network, or require its agents to provide such information on its behalf.

Technical Performance Requirements

5. The Radio Equipment shall be operated in compliance with such co-ordination and sharing procedures as may be considered necessary and notified to the Licensee by Ofcom.

The Licensee must ensure that the Radio Equipment performs in accordance with the following technical performance requirements.

Coverage Obligation

6. The Licensee shall by no later than 31 December 2017 provide and thereafter maintain an electronic communications network that is capable of providing mobile voice telecommunications services to an area covering at least 90% of the geographic landmass of the United Kingdom at at least one of the minimum signal strengths set out in Table 1 of this condition. For the avoidance of doubt the Licensee shall be permitted to meet the obligation set out in this condition using any frequencies and technologies available to the Licensee.

Table 1

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 Coverage Obligation

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

Frequencies of Operation

8. The Radio Equipment may operate on any of the following frequency bands:

Base Transmit / Mobile Receive	Base Receive / Mobile Transmit
1831.7 – 1876.7 MHz	**1736.7 – 1781.7** MHz
and, until 30 September 2015:	
1826.7 – 1831.7 MHz	**1731.7 – 1736.7** MHz

RF Carrier Spacing

9. In the absence of bilateral or multilateral agreements which have been notified to Ofcom specifying alternative arrangements between the licensee and the licensee(s) of neighbouring networks the licensee must ensure that in respect of the frequencies set out at paragraph 6 of this ~~schedule~~Schedule:

- the centre frequency of any of their GSM carriers is 100 kHz or more inside any edge of their permitted frequency bands;
- the centre frequency of any of their UMTS carriers is 2.7 MHz or more inside any edge of their permitted frequency bands where a neighbouring licensee has deployed a GSM carrier or carriers (including GSM-R) in the immediately adjacent spectrum;
- the centre frequency of any of their UMTS carriers is 2.5 MHz or more inside any other edge of their permitted frequency bands;
- the channel edge of any of their LTE channels is 200 kHz or more inside any edge of their permitted frequency bands where a neighbouring licensee has deployed a GSM carrier or carriers (including GSM-R) in the immediately adjacent spectrum;
- the channel edge of any of their LTE channels does not extend beyond their permitted frequency bands;
- the channel edge of any of their WiMAX channels is 200 kHz or more inside any edge of their permitted frequency bands where a neighbouring licensee has deployed a GSM carrier or carriers (including GSM-R) in the immediately adjacent spectrum; and
- the channel edge of any of their WiMAX channels does not extend beyond their permitted frequency bands.

ITU Class of Emission

10.

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

Maximum Permissible e.i.r.p.

11. The maximum e.i.r.p. is:

for GSM	62 dBm per carrier;
for UMTS	65 dBm per carrier;
for LTE	65 dBm per 5 MHz;
for WiMAX	65 dBm per 5 MHz.

Interpretation

12. In this Schedule:

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

(b) “e.i.r.p.” means the ~~effective~~ equivalent isotropically radiated power. This is the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain);

(c) "IR" means a United Kingdom Radio Interface Requirement published by Ofcom in accordance with Article 4.1 of Directive 1995/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment (RTTE) and the mutual recognition of their conformity;

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

(e) "RF" means Radio Frequency;

(f) "User Station" means any vehicle mounted or hands portable mobile station designed for mobile use and/ or any station designed or adapted to be established and used from static locations which meet the appropriate technical performance requirements as set out in the Wireless Telegraphy (Exemption) Regulations and either complies with the appropriate Interface Regulation listed in paragraph 3, or for equipment placed on the market before 8 April 2000, is type approved in accordance with a recognised technical standard relating to the service licensed;

(g) "A femtocell" is a base station of the Network which operates at a power not exceeding 24 dBm e.i.r.p. per carrier which may be established by customers of the Network but which is or will be used only by and under the control of the Network, following the establishment of a telecommunications link between the femtocell and the Network;

(h) A "smart/intelligent low power repeater" is a repeater of the Network which operates with power not exceeding 24 dBm e.i.r.p. per carrier, which may be established by customers of the Network who have written agreements with the Licensee and:

- The Licensee has ultimate control of the repeater, i.e. each individual repeater can be disabled remotely by the Licensee;
- The repeater operates only on the Licensee's frequencies and with their valid Public Land Mobile Network Identifier;
- Must not cause undue interference to other spectrum users; and
- The repeater only transmits on the Licensee's Base Receive frequencies when actively carrying a call (voice, video or data) or signalling from serviced handsets;

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

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

(k) "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;

(l) "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; and

(m) "WiMAX system" means an electronic communications network that complies with the WiMAX standards as published by ETSI, in particular EN 301 908-1, EN 301 908-21 and EN 301 908-22 and "WiMAX" means pertaining to such a network or its Radio Equipment.

[New draft] SCHEDULE 2 TO LICENCE NUMBER: **0249666**

Schedule date: **xx Month 2016**

Licence Category: **Public Wireless Network:**
(backhaul of 1900 MHz Emergency Services Gateway equipment)

Description of Radio Equipment Licensed

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

2. Radio Equipment that is established, installed and/or used under this Schedule must only be used for the purpose of providing backhaul for temporary occasional use base stations which are established and/or installed in the 1899.9 – 1909.9 MHz band (in accordance with Schedule 3 to Licence number: **0207128**) for use in connection with user stations used by the emergency services ("Emergency Services Gateway equipment").

Interface Requirements for the Radio Equipment

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

   IR XXXX – [Backhaul for Emergency Services Gateway equipment].

Co-ordination at Frequency and Geographical Boundaries

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

International Cross-Border Coordination

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.

Permitted Frequency Block

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

Downlink frequencies	**Uplink frequencies**
1831.7 – 1876.7 MHz	**1736.7 – 1781.7** MHz

Maximum power within the Permitted Frequency Blocks

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

   (a) Downlink frequencies

Frequency Block	**Maximum mean power**
1831.7 – 1876.7 MHz	As set out in paragraph 11 of schedule 1 to this licence

(b) Uplink frequencies

Frequency Block	Maximum mean power
1736.7 – 1781.7 MHz	31 dBm e.i.r.p.

Note 1: Power control must be applied to minimise interference to adjacent channels.

Note 2: No transmissions are permitted when the Radio Equipment is in motion.

Maximum Power outside the Permitted Frequency Blocks

8. For transmissions on the uplink frequencies, the e.i.r.p. emanating from the Radio Equipment transmissions at any frequency outside the Permitted Frequency Blocks shall not exceed the following;

Frequency range	Maximum mean e.i.r.p.				Measurement bandwidth
	5 MHz channels	10 MHz channels	15 MHz channels	20 MHz channels	
±0-1 MHz from block edge	-15 dBm	-18 dBm	-20 dBm	-21 dBm	30 kHz
±1-2.5 MHz from block edge	-10 dBm	-10 dBm	-10 dBm	-10 dBm	1 MHz
±2.5-2.8 MHz from block edge	-10 dBm	-10 dBm	-10 dBm	-10 dBm	1 MHz
± 2.8-5 MHz from block edge	-10 dBm	-10 dBm	-10 dBm	-10 dBm	1 MHz
± 5-6 MHz from block edge	-13 dBm	-13 dBm	-13 dBm	-13 dBm	1 MHz
± 6-10 MHz from block edge	-25 dBm	-13 dBm	-13 dBm	-13 dBm	1 MHz
± 10-15 MHz from block edge	-	-25 dBm	-13 dBm	-13 dBm	1 MHz
± 15-20 MHz from block edge	-	-	-25 dBm	-13 dBm	1 MHz
± 20-25 MHz from block edge	-	-	-	-25 dBm	1 MHz

Interpretation

9. In this Schedule:

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

b. “block edge” means, in relation to the Permitted Frequency Block, the lowest or highest frequency in that Permitted Frequency Block;

c. “downlink” means transmissions from a base station to Emergency Services Gateway equipment;

d. “e.i.r.p.” 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);

e. “Emergency Services Gateway equipment” means Radio Equipment which may be established under this Schedule, as described in paragraph 2;

f. "IR" means a United Kingdom Radio Interface Requirement published by Ofcom in accordance with Article 4.1 of Directive 1995/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment (RTTE) and the mutual recognition of their conformity;

g. “maximum mean power” is the maximum mean e.i.r.p. radiated in any direction from the Radio Equipment for any transmitted carrier and determined irrespective of the number of antennas. Power for this limit is

defined as the mean modulated carrier power time averaged over any suitable time period in which the transmitter is continuously transmitting at its maximum operational power level;

h. "measurement bandwidth" means the size of an individual spectrum segment within the specified frequency range that is used to measure compliance with the specified power limit;

i. "Permitted Frequency Blocks" has the same meaning given to it in paragraph 7 of this Schedule; and

j. "uplink" means transmissions from Emergency Services Gateway equipment to a base station.