Decision to make the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022

Implementing Ofcom's decision to extend the range of static indoor mobile phone repeaters available for people to self-install without a licence

Decision to make the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022 – Welsh overview

STATEMENT:

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Contents

Section

1. Overview 3

2. Background 4

3. Our decision to make the Regulations 8

Annex

A1. Respondents 15

A2. (Unofficial) Copy of Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022 16

1. Overview

This document sets out Ofcom's decision to make new regulations by statutory instrument. These regulations implement Ofcom's decision, published in November 2021 (the "**2021 Repeaters Statement**")[1] to extend the range of mobile phone repeater devices that can be self-installed without a licence.

What we have decided – in brief

This statement confirms that, following consultation on our proposal to make regulations[2], we have decided to proceed with extending the range of licence exempt static indoor mobile phone repeaters that can be self-installed by making new regulations, the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022 (the "**Regulations**").

These **revoke and replace** the licence exemption regulations for mobile phone repeaters made by Ofcom in 2018.[3] We have decided to proceed with making the Regulations following consideration of the four responses to our consultation. Taking account of those responses, and in order to provide greater clarity in some places, we have made some minor amendments to the Regulations on which we consulted. The Regulations were made on 26 May 2022 and will come into force on 16 June 2022.

The Regulations do the following:

- **Extend** the licence exemption criteria to cover devices that operate on the frequencies of more than one mobile operator. In particular, they allow for the use of 'provider-specific' and 'multi-operator' repeaters, provided that they meet certain technical requirements; and
- **Permit** the licence-exempt use of static indoor mobile repeater devices which amplify signals other than those carried on 2G, 3G and 4G networks (including, for example, 5G signals).

By making the Regulations, Ofcom hopes to support the provision of a wider choice of repeater devices to help consumers address their indoor coverage problems.

The overview section in this document is a simplified high-level summary only. The decisions we have taken and our reasoning are set out in the full document.

[1] 2021 Repeaters Statement: Mobile phone repeaters - Ofcom
[2] https://www.ofcom.org.uk/consultations-and-statements/category-3/wireless-telegraphy-mobile-repeater-exemption-regulations-2022
[3] The Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2018. As explained in Section 3, we are moving the rules on in-vehicle repeaters into the Regulations to ensure that the rules on mobile phone repeaters are contained in one place. We are not however modifying the technical requirements applicable to in-vehicle repeaters in anyway.

2. Background

The legislative framework

2.1 As explained below, Ofcom is responsible for authorising the use of the radio spectrum. In doing so, it must act in accordance with section 8 of the Wireless Telegraphy Act 2006 (the "**2006 Act**"), which sets out its specific powers and duties in relation to the licensing (and licence exemption) of wireless telegraphy apparatus. When exercising its spectrum management functions, Ofcom also has a number of more general statutory duties under the Communications Act 2003 (the "**2003 Act**") and 2006 Act.

Ofcom's role in authorising the use of radio spectrum

2.2 In the UK, Ofcom is responsible for authorising use of the radio spectrum. We permit the use of the radio spectrum either by granting wireless telegraphy licences under the 2006 Act or by making regulations exempting the use of particular equipment from the requirement to hold such a licence.

2.3 Under section 8(1) of the 2006 Act, it is unlawful (i.e., a criminal offence) to establish or use a wireless telegraphy station or install or use wireless telegraphy apparatus except under and in accordance with a wireless telegraphy licence granted under the 2006 Act.

2.4 Under section 8(3) of the 2006 Act, Ofcom may make regulations exempting from the licensing requirements under section 8(1) the establishment, installation or use of wireless telegraphy stations or wireless telegraphy apparatus of such classes or description as may be specified in the regulations, either absolutely or subject to such terms, provisions and limitations as may be specified.

2.5 Ofcom may only approve regulations under section 8(3) within the limits set out in section 8(3B). In particular, the latter requires that section 8(3) exemptions must be:

a) objectively justifiable in relation to the wireless telegraphy stations or wireless telegraphy apparatus to which they relate;

b) not such as to discriminate unduly against particular persons or against a particular description of persons;

c) proportionate to what they are intended to achieve; and

d) transparent in relation to what they are intended to achieve.

2.6 Further, under section 8(4) of the 2006 Act, we must make regulations to exempt equipment from the requirement for a licence if its installation or use is not likely to:

a) involve undue interference with wireless telegraphy;

b) have an adverse effect on technical quality of service;

c) lead to inefficient use of the part of the electromagnetic spectrum available for wireless telegraphy;

d) inhibit the development of effective arrangements for the sharing of frequencies;

e) endanger safety of life;

f) prejudice the promotion of social, regional or territorial cohesion; or

g) prejudice the promotion of cultural and linguistic diversity and media pluralism.

2.7 We make exemption regulations by means of a statutory instrument. Before making any such regulations, we are required by section 122(4) of the 2006 Act to give notice of our proposal to do so. Under section 122(5), the notice must state that we propose to make the regulations in question, set out their general effects, specify an address from which a copy of the proposed regulations may be obtained, and specify a time period of at least one month during which any representations with respect to the proposal must be made to us.

Ofcom's wider statutory duties

2.8 Ofcom's principal duties under section 3(1) of the 2003 Act are to further the interests of citizens in relation to communications matters, and to further the interests of consumers in relevant markets, where appropriate by promoting competition. These duties apply when Ofcom is carrying out its spectrum management functions.

2.9 In doing so, we are also required (among other things) to secure the optimal use of spectrum and the availability throughout the United Kingdom of a wide range of electronic communications services.

2.10 We must also have regard to, amongst other things:

a) the desirability of promoting competition in relevant markets;

b) the desirability of encouraging investment and innovation in relevant markets;

c) the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom;

d) the different needs and interests, so far as the use of the electro-magnetic spectrum for wireless telegraphy is concerned, of all persons who may wish to make use of it; and

e) the different interests of persons in the different parts of the United Kingdom; of the different ethnic communities within the United Kingdom; and of persons living in rural and in urban areas.

2.11 In carrying out our spectrum functions, we also have a duty under section 3 of the 2006 Act to have regard in particular to: (i) the extent to which the spectrum is available for use, or further use, for wireless telegraphy; (ii) the demand for use of that spectrum for wireless telegraphy; and (iii) the demand that is likely to arise in future for such use.

2.12 We also have a duty to have regard to the desirability of promoting: (i) the efficient management and use of the spectrum for wireless telegraphy; (ii) the economic and other benefits that may arise from the use of wireless telegraphy; (iii) the development of innovative services; and (iv) competition in the provision of electronic communications services.

Static indoor mobile phone repeaters

2.13 Although mobile coverage is constantly improving, some people still find it difficult to get a consistently good signal, particularly indoors. One potential solution to this problem is to use a mobile phone repeater (sometimes referred to as a signal booster or signal enhancer). These are devices which amplify a good outdoor signal so it can penetrate more effectively indoors.

2.14 In 2018, Ofcom decided to allow people to install and use a limited range of static indoor mobile repeaters ("**single operator repeaters**") to boost the signals of one mobile operator at a time without the need for a licence. It did so by making the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2018 (the "**2018 Regulations**").

2.15 Our decision to make the 2018 Exemption Regulations represented the first time that Ofcom had considered whether mobile phone repeaters, or a subset of them, could be made licence-exempt. In reaching its decision, Ofcom was mindful of the need to avoid the risk of (amongst other things) enabling the use by consumers of mobile phone repeaters which could cause undue interference or be likely to have an adverse effect on technical quality of service.

2.16 Since then, we have been able to see the impact that the 2018 Exemption Regulations have had; both on the market for legitimate mobile phone repeaters and on the use by consumers of unlawful repeaters. We therefore considered whether there are any ways that we can improve our approach to static mobile phone repeaters for indoor use and, in our May 2021 consultation (the "**2021 Repeater Consultation**")[4], we consulted on a set of technical requirements which would extend the range of mobile phone repeater devices that can be self-installed without a licence. Specifically, we consulted on allowing the licence-exempt use of devices that boost the signals of more than one mobile operator at a time – namely "**provider specific**" and "**multi-operator repeaters**".

2.17 In November 2021, we published the 2021 Repeaters Statement which set out our final policy decision on this issue, taking account of responses to our 2021 Repeaters Consultation. Specifically, we decided that it would be appropriate to extend the range of mobile phone repeater devices that can be self-installed without a licence so as to allow the use of provider specific and multi-operator repeaters, provided they met certain technical requirements.

2.18 On 24 March 2022, in order to implement the policy decision made in our 2021 Repeaters Statement, we published the "Notice of proposal to make the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022" (the "**Notice**")[5] in accordance with sections 122(4) and (5) of the 2006 Act.

2.19 The Notice contained a draft of the proposed Regulations (the "**Proposed Regulations**") and invited comments from stakeholders. In the document, we proposed to revoke the 2018 Regulations and replace them with the Proposed Regulations.

[4] Consultation: Mobile Phone Repeaters (ofcom.org.uk)
[5] Consultation: Notice of proposal to make the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022 - Ofcom

2.20 The Notice set out how we intended, by way of the Proposed Regulations, to extend licence exemption authorisations in relation to static indoor mobile repeaters, in particular to provider-specific and multi-operator repeaters. We also set out our intention to make the new regulations technology neutral and, in particular, to allow (on a licence-exempt basis) the use of static indoor mobile repeaters which repeat signals other than 2G, 3G and 4G signals (including, for example, 5G signals). This would make the use of 5G repeaters, for example, licence exempt, provided that they meet the technical requirements in the Regulations (including that they operate on the relevant uplink and downlink frequencies).

2.21 The Notice also included a copy of the Proposed Regulations and gave any person or party who wished to do so until 25 April 2022 to make representations. In particular, we asked the following:

> Do you have any comments on:
>
> a) whether the Proposed Regulations correctly implement our decision in the 2021 Repeaters Statement; and
>
> b) our proposal to make the Proposed Regulations technology-neutral?

2.22 We received four responses to our proposals to make the Proposed Regulations. Following careful consideration of the comments received, we have decided to proceed with making the Proposed Regulations, subject to some minor amendments. These minor amendments, as well as stakeholders' comments on the Notice, are discussed further in Section 3 of this document.

2.23 The general effect of the Regulations was set out in the Notice and is set out again in this statement.

3. Our decision to make the Regulations

Introduction

3.1 In this section, we summarise the comments that we received on the Notice and our consideration of these. We then outline the general effect of the Regulations.

3.2 We received four responses to our Notice to make the Regulations. The full responses are available on the Ofcom website.[6] Following consideration of the responses as outlined below, we have decided to proceed with making the Regulations, as proposed, subject to some minor amendments. These minor amendments are described in paragraph 3.21 (a) to (d) below.

Stakeholder responses to the Notice and Ofcom's response

Stakeholder responses

3.3 BT suggested that draft regulations 10(2) and 14(2) (which set uplink noise power limits for both provider-specific and multi-operator repeaters) should be clarified to "make it clear that the -70dBm/MHz power limit relates to EIRP"[7] and in order to make it consistent with draft Interface Requirement 2102.

3.4 BT also expressed some concern regarding Ofcom's proposal to include repeaters used to amplify 5G signals within the scope of the licence exemption. It stated that it currently uses a non-standalone 5G architecture where a 4G signal is also needed for the 5G service. It noted that, if repeaters are envisaged that only amplify a 5G signal, that would be problematic for its consumers until a 5G-standalone architecture is implemented.

3.5 In relation to draft regulation 9, BT noted that it is phasing out 3G technology but added that it understands that - if 3G signals are not provided by the mobile network operator ("**MNO**") - then the requirement to amplify 2G signals will nevertheless apply.

3.6 Nextivity confirmed that it supports Ofcom's proposal to make the Proposed Regulations technology neutral. However, it commented on the proposed definition of "Oscillation" as set out in draft regulation 7(6)(a). In particular, it expressed concern that the current definition does not take into account the potential for echo-cancellers to be used. It suggested a revised wording to reflect this.

3.7 Freshwave explained that it supports Ofcom's objective of securing the optimal use of spectrum and the availability of a wide range of electronic communications services. However, it expressed its disappointment in our proposal to make the Proposed Regulations. It focussed its response on our overall policy, stating that repeaters, by sharing capacity with an existing MNO cell, could affect the quality of service for other users, but did not specifically address our questions about the drafting of the Proposed

[6] https://www.ofcom.org.uk/consultations-and-statements/category-3/wireless-telegraphy-mobile-repeater-exemption-regulations-2022

[7] Effective Isotropic Radiated Power

Regulations or technology neutrality. In particular, it reiterated some of the points raised in its response to our 2021 Repeater Consultation where it expressed concern at the proposed further loosening of the regulations to allow licence-exempt provider specific and multi-operator repeaters, and at the potential for large repeater systems operating in buildings with close to 1000 desks to cause a detrimental impact on quality of service. It also noted some of the comments made by some MNOs in response to the 2021 Repeater Consultation. Finally, it highlighted Ofcom's recent publication on meeting future demand for mobile data[8] which had discussed densifying networks to meet growing demand for capacity, and it encouraged Ofcom to work constructively with the MNOs to add indoor capacity, rather than enabling increased use of repeaters which, it said, do not.

3.8 An individual respondent was concerned about the health impact of the proposals due to the possible increase of Wi-Fi and non-ionising radiation in the homes of the public, specifically referencing the International Commission on Non-Ionising Radiation Protection (ICNIRP). Whilst they explained that they are not against licensing its use, they suggested that Ofcom should focus on encouraging use of devices within homes which reduce radiation and also consider alternative and safer methods of data links.

Ofcom's response

Comments on Proposed Regulations

3.9 We agree with BT's comment in relation to regulations 10(2) and 14(2) of the Proposed Regulations. In order to provide clarity, we have therefore amended regulations 10(2) and 14(2) to make it clear that, where a repeater has to go into automatic standby, the uplink noise power must not exceed an EIRP of -70dBm/MHz.

3.10 We note BT's comments about 5G repeaters that would only amplify 5G signals. We acknowledge that such repeaters, if they were used by customers of a 5G network implementing a non-standalone 5G architecture, may be problematic for those customers (i.e., they would not provide the benefit expected because the repeater would not also amplify the 4G signal needed for non-standalone 5G operation). However, the Regulations do not require 5G-only mobile repeater devices. Rather, they provide device manufacturers with flexibility (subject to the technical requirements set out therein) to design mobile phone repeaters that amplify 5G and other (2G, 3G or 4G) signals simultaneously. We would expect device manufacturers to reflect the network architecture of MNOs in the UK when selling devices in the UK, and to inform their customers of any potential performance issues due to the use of non-standalone 5G architectures by MNOs. We do not consider it necessary to implement any technical or regulatory constraints within the licence exemption regulations to deal with this issue.

3.11 We also note BT comments about plans to phase out the 3G technology. We will continue to monitor the progress of each technology and any impact on our decision. If appropriate, we would consider revising the Regulations in the future.

[8] https://www.ofcom.org.uk/consultations-and-statements/category-3/discussion-paper-meeting-future-demand-for-mobile-data

3.12 We have carefully reviewed Nextivity's comments and suggestion in relation to our definition of "Oscillation" in the Proposed Regulations and have decided to modify the definition to read as follows: *"a mobile repeater device makes oscillations when the transmissions made by the mobile repeater device are received and subsequently re-amplified by that device, resulting in a fluctuation in the transmit power of that device (either in the frequency band being amplified or in another frequency band)"*.

Overall policy consideration

3.13 We thank Freshwave for its comments regarding our policy around extending the range of licence exempt indoor static mobile repeaters. However, we believe they relate to the substance of the policy that was the subject of our 2021 Repeaters Statement rather than the question of whether the Proposed Regulations give effect to that decision. We consider that we have already addressed Freshwave's comments and concerns in the 2021 Repeaters Statement.[9]

Electro-magnetic fields (EMF) and health concerns

3.14 We have considered the concerns raised by one respondent about radio frequency EMF and the harmful effect that this can have on humans in some cases.

3.15 Ofcom is not a public health body. UK Health and Safety Authority (UKHSA) are responsible for public health matters associated with EMF and we take into account their advice when carrying out our spectrum management functions. UKHSA's main advice is that EMF levels should comply with the internationally agreed levels in the ICNIRP Guidelines.

3.16 In 2020, we therefore published a statement[10] (the "**EMF Statement**") which confirmed our intention to:

a) add a specific condition in wireless telegraphy act licences requiring licensees to comply with the ICNIRP general public limits on EMF exposure. This condition will apply to all licence classes which authorise equipment to transmit at powers higher than 10 Watts EIRP (including, for example, the licences of mobile phone companies); and

b) apply a similar approach for equipment that is exempt from the requirement to have a licence and that is authorised to transmit at powers higher than 10 Watts EIRP, such as certain types of satellite terminals.

3.17 The Proposed Regulations will not allow repeaters to transmit at powers higher than 10 Watts EIRP.

3.18 Further, we note that all radio equipment (including mobile phone repeaters) placed on the market in the UK must comply with the Radio Equipment Regulations 2017. As explained in our 2020 Statement, these regulations include rules which seek to mitigate the risk of EMF exposure and apply to manufacturers, importers and distributors of radio equipment.

[9] Please refer to Ofcom's assessment in Section 3 of 2021 Repeaters Statement: Mobile phone repeaters - Ofcom
[10] Measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF) (ofcom.org.uk)

3.19 Taking account of the above, and consistent with our decision in the 2020 Statement, we do not consider that it would be objectively justified or proportionate to include a requirement in the Regulations regarding EMF exposure.

Additional modifications

3.20 Having reviewed the Proposed Regulations, we have also decided to make some minor changes to ensure that these are as clear as possible and to avoid us making any inadvertent changes to the rules on in-vehicle repeaters. These include the following:

a) we have made minor drafting changes to Regulation 7 (*Anti-oscillation requirements*), including removing the definition of an "anti-oscillation technique" which we consider to no longer be necessary. These changes are not intended to change the substance of the rule on which we consulted.

b) we have made some minor changes to Regulations 10 and 14 (*Automatic standby requirement)* to provide greater legal clarity. In particular, because the rule is intended to apply when the repeater is not serving an 'active connection' between the mobile device and the associated mobile network (not between the mobile repeater and either of these).

c) we have realised that the modifications that we were proposing to the definition of "mobile repeater device" in the Proposed Regulations would have had the effect of inadvertently changing the rules on in-vehicle repeaters (as that definition also applies to in-vehicle repeaters). This was not our intention. As explained in the Notice, we do not intend for the Regulations to modify in any way the rules regarding licence exemption for in-vehicle repeaters (see, in particular, paragraph 4.9 of the Notice). For that reason, we have made clear in Regulation 18 of the Regulations that in-vehicle repeaters can only amplify 2G, 3G and 4G signals, which ensures that the substance of the in-vehicle rules is not being changed.

Ofcom's decision

3.21 Having considered stakeholders' responses, we have decided to make the Regulations largely as proposed, and with the same general effect, but subject to the following changes:

a) making clear that, for the purposes of the automatic standby requirement at Regulations 10 and 14, the uplink noise power should not exceed *"-70 dBm/MHz EIRP*" (emphasis added);

b) making clear that, for the purposes of the anti-oscillation rule at Regulation 7, a mobile repeater device makes oscillations when *"the transmissions made by the mobile repeater device are received and subsequently re-amplified by that device, resulting in a fluctuation in the transmit power of that device (either in the frequency band being amplified or in another frequency band*)";

c) including a new regulation 18(2) to ensure that our change to the definition of mobile repeater devices does not inadvertently modify the rules on licence-exempt in-vehicle repeaters; and

d) making a number of minor drafting changes to improve the legal clarity of the Regulations.

3.22 The Regulations set out the full detail of the terms, provisions and limitations of the exemption for static indoor mobile phone repeaters.[11] The terms, provisions and limitations of the Regulations are consistent with the requirements to be objectively justified, proportionate, not unduly discriminatory and transparent, and consistent with our spectrum management duties, for the reasons set out in the 2021 Repeaters Statement.

3.23 Further, we are satisfied that it is appropriate, taking account of our statutory duties, to make the Regulations technology neutral insofar as they apply to static indoor mobile phone repeaters,[12] and note that respondents to the Notice either supported this proposal or did not comment on it. This is because:

a) it should further the interests of citizens and consumers as it allows for the licence-exempt use of mobile repeater devices where 5G signal is poor, which is likely to become increasingly important in future as MNOs start to roll out their 5G networks. This should be particularly beneficial for those in rural areas or those with otherwise poor mobile coverage, by allowing consumers to self-install them and thereby promoting competition in the repeater device market. We recognise that, at present, the main frequency band used by the MNOs to deliver 5G services (the 3.4-3.8 GHz band) is not covered by the Regulations, so - for the time being - the benefits to 5G will be limited. Nonetheless, we believe it is worth making the rules applicable to static indoor repeaters technology neutral and note that MNOs may use the 700 MHz band (and other bands covered by the Regulations) to deliver 5G services;

b) for the reasons set out in our 2021 Statement, our view is that the Regulations should ensure that any licence-exempt repeaters (including those, for example, which amplify 5G signals in the frequency bands covered by the Regulations) are not likely to involve undue interference, endanger safety of life, or have adverse effects on technical quality of service. Our technical analysis applies equally to 5G repeaters operating in the frequency bands considered and therefore there is no reason to believe that static indoor 5G repeaters should be any more likely to cause undue interference or other adverse effects on technical quality of service than other (2G, 3G, 4G) repeaters;

c) linked to b) above, it should also result in a more proportionate licence-exemption regime, as we have not identified any reason to confine the scope of the extension to 2G, 3G and 4G repeaters and are concerned that doing so would impose an unnecessary restriction on the use of mobile repeaters. Indeed, it would be consistent

[11] To ensure that the rules regarding licence-exemption of mobile phone repeaters are contained in one place, the Regulations revoke the entirety of the 2018 Regulations (including those provisions which relate to the licence-exemption of in-vehicle mobile phone repeaters). For the avoidance of doubt, the rules regarding in-vehicle repeaters are simply being carried across into the Regulations and no change is being made to these rules (including the associated interface requirement).

[12] As noted above, we did not intend to modify the rules on in-vehicle repeaters and have therefore revised the definition of mobile repeater device to ensure that the original definition (contained in the 2018 Regulations) continues to apply to in-vehicle repeaters.

with our decision in the 2021 Repeaters Statement to allow 700 MHz spectrum to be amplified by mobile repeaters;

d) it would be consistent with our duty to take account of the desirability of Ofcom's carrying out its functions in a manner which, so far as practicable, does not favour one form of electronic communications network or electronic communications service over another (section 4(6) Communications Act 2003);

e) in reaching this view, we have had regard to the desirability of encouraging the availability and use of high-speed data transfer services throughout the UK (which includes 5G mobile services) and the principles under which regulatory activities should be consistent;

f) we consider that this would not be unduly discriminatory against particular persons or against a particular description of persons in that the Regulations would apply to all users of relevant repeaters (and, indirectly, to all manufacturers and sellers); and

g) we consider that the rules on the licence-exempt use of mobile repeaters would be transparent, in that they would be specified in the Regulations and in the associated Interface Requirements.

3.24 We set out the general effects of the Regulations in the Notice and below.

General effect of the Regulations

Extent of application

3.25 The Regulations will apply in the United Kingdom, the Channel Islands and the Isle of Man, subject to formal adoption by the Island Authorities.

Overall general effect

3.26 The overall general effect of the Regulations is to implement the 2021 Repeaters Statement and make the Regulations (insofar as they relate to static indoor repeaters) technology-neutral. In particular, to extend the licence exempt regime for static indoor mobile phone repeaters to include provider-specific and multi-operator repeaters.

3.27 They contain terms, provisions and limitations to which this licence exemption is subject. Devices that do not meet those terms, provisions and limitations do not fall within the exemption and their establishment, installation and use without a licence will continue to be a criminal offence. The specific substantive requirements for, and detailed effects of, the exemption are set out in the 2021 Repeaters Statement.

3.28 The Regulations are set out as follows:

- Regulation 1 sets out the date when the Regulations come into force, which is 16 June 2022;
- Regulation 2 revokes the 2018 Regulations.
- Regulation 3 sets out a number of defined terms, which are used throughout the Regulations.

- Regulation 4 provides for both provider-specific and multi-operator repeater devices to be licence exempt. It explains that the terms, provisions and limitations at Regulations 5 to 8 must be satisfied by both provider-specific and multi-operator repeaters. These rules include, amongst others, that the repeater does not cause or contribute to undue interference to other radio users. It then explains that Regulations 9 to 12 will also apply in respect of provider-specific repeaters only, and that Regulations 13 to 17 will also apply in respect of multi-operator repeaters only.
- Regulation 18 takes the rules on repeaters for use in vehicles (rather than static indoor repeaters, which were the subject of the 2021 Repeaters Statement) and incorporates them into the Proposed Regulations. The Proposed Regulations do not modify in any way the rules regarding licence exemption for in-vehicle repeaters (which continue to refer to Interface Requirement 2102.2).[13]

Entry into force of the Regulations

3.29 On 26 May 2022, Ofcom made the Regulations which, as noted above, will enter into force on 16 June 2022.

3.30 An unofficial copy of the Regulations is set out in Annex 2 for indicative purposes, in the form submitted for registration and publication after they have been made by Ofcom.

3.31 Copies of the Regulations can be obtained from http://www.legislation.gov.uk/, the only authorised source for published statutory instruments.

[13] https://www.ofcom.org.uk/__data/assets/pdf_file/0016/112291/IR_2102.pdf

A1. Respondents

- Individual
- Freshwave
- Nextivity
- BT

A2. (Unofficial) Copy of Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022

STATUTORY INSTRUMENTS

2022 No.

ELECTRONIC COMMUNICATIONS

The Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022

Made - - - -	26th May 2022
Coming into force - -	16th June 2022

CONTENTS

PART 1
Introductory Provisions

1. Citation and Commencement
2. Revocation
3. Interpretation

PART 2
Mobile repeater devices for indoor use

4. Scope of exemption for indoor use

Terms, provisions and limitations for all mobile repeater devices

5. Limitations on transmissions
6. Prohibition on undue interference
7. Anti-oscillation requirements
8. System noise figure limit

Terms, provisions and limitations for provider-specific mobile repeater devices

9. Frequencies to be amplified

10. Automatic standby requirement

11. Power limits

12. System gain limits

Terms, provisions and limitations for multi-operator mobile repeater devices

13. Frequencies that must be amplified

14. Automatic standby requirement

15. Limits on power spectral density

16. System gain limits

17. Limit on transmitted intermodulation products

PART 3

Mobile repeater devices for use in a motor vehicle

18. Scope of exemption for use in a motor vehicle

The Office of Communications ("OFCOM") make the following Regulations in exercise of the powers conferred by section 8(3) and section 122(7) of the Wireless Telegraphy Act 2006([14]) (the "Act") and in exercise of those sections of the Act([15]) as extended to the Bailiwick of Guernsey, to the Bailiwick of Jersey and to the Isle of Man.

Before making these Regulations, OFCOM have given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with section 122(4)(b) of the Act and have considered the representations made to them before the time specified in that notice in accordance with section 122(4)(c) of the Act.

PART 1

Introductory Provisions

Citation and Commencement

1. These Regulations may be cited as the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2022 and shall come into force on 16th June 2022.

Revocation

2. The Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2018([16]) are hereby revoked.

([14]) 2006 c.36

([15]) Section 8(3) and section 122(7) were extended to the Bailiwick of Guernsey by article 2 of the Wireless Telegraphy (Guernsey) Order 2006 (S.I. 2006/3325); to the Bailiwick of Jersey by article 2 of the Wireless Telegraphy (Jersey) Order 2006 (S.I. 2006/3324); and to the Isle of Man by article 2 of the Wireless Telegraphy (Isle of Man) Order 2007 (S.I. 2007/278).

([16]) S.I. 2018/399, as amended by S.I. 2019/1450.

Interpretation

3. In these Regulations—

(a) "Act" means the Wireless Telegraphy Act 2006;

(b) "coverage antenna" means the antenna connected to a mobile repeater device which receives transmissions from mobile devices;

(c) "coverage port" means the interface between a mobile repeater device and its coverage antenna;

(d) "dB" means decibel;

(e) "dBm" means decibels of power referenced to one milliWatt;

(f) "dBm/MHz" means decibels of power referenced to one milliWatt per megahertz;

(g) "dBm/5 MHz" means decibels of power referenced to one milliWatt per five megahertz;

(h) "donor antenna" means the antenna connected to a mobile repeater device which receives transmissions from the base stations of mobile network operators;

(i) "donor port" means the interface between a mobile repeater device and its donor antenna;

(j) "downlink frequencies" means the frequency bands 758-788MHz, 791-821MHz, 925-960MHz, 1805-1880 MHz, and 2110-2170MHz;

(k) "ETSI" means the European Telecommunications Standards Institute;

(l) "e.i.r.p." means equivalent isotropically radiated power, which is the product of the power supplied to an antenna and the absolute antenna gain in a given direction relative to an isotropic antenna;

(m) "GSM system" means an electronic communications network that complies with standards EN 301 502([17]) and EN 301 511([18]) published by ETSI for the Global System for Mobile Communications (also known as GSM);

(n) "indoors" means inside premises, which—

(i) have a ceiling or a roof; and

(ii) except for any doors, windows or passageways, are wholly enclosed;

(o) "IR2102.2" means interface requirement "IR2102.2: Minimum requirements for the use of: low gain mobile phone repeaters for in-vehicle use" contained within the document entitled "UK Interface Requirement 2102 – Licence exempt mobile phone repeaters" published by OFCOM on 26th May 2022;

(p) "LTE system" means an electronic communications network that complies with standards EN 301 908-1([19]), EN 301 908-13([20]) and EN 301 908-14([21]) published by ETSI for the Long Term Evolution telecommunication system (also known as LTE);

(q) "MHz" means megahertz;

(r) "mobile repeater device" means a wireless telegraphy station or wireless telegraphy apparatus which amplifies the radio signals carried over frequencies licensed to one or more mobile network operators;

(s) "motor vehicle" means a mechanically propelled vehicle intended or adapted for use on roads;

(t) "OFCOM" means the Office of Communications;

(u) "power spectral density" means, in respect of a particular frequency band or frequencies, the e.i.r.p. of the transmissions made by the mobile repeater device on that particular frequency band or frequencies (as applicable) with the average power per five MHz bandwidth centred on that frequency band or frequencies, radiated in the direction of the maximum level;

([17]) EN 301 502 (version 12.5.2) published in the Official Journal of the European Union (OJEU) No C180, 8.6.2017, p.14.

([18]) EN 301 511 (version 9.0.2) published in OJEU No C180, 8.6.2017, p.14.

([19]) EN 301 908–1 (version 11.1.1) published in OJEU No C180, 8.6.2017, p.17.

([20]) EN 301 908–13 (version 11.1.1) published in OJEU No C180, 8.6.2017, p.18.

([21]) EN 301 908–14 (version 11.1.2) published in OJEU No C180, 8.6.2017, p.18.

(v) "system gain" means, in respect of a particular frequency band or frequencies, the difference between (i) the power received at the input antenna of the mobile repeater device in respect of that particular frequency band or those particular frequencies, and (ii) the power transmitted by the output antenna of the mobile repeater device in respect of that particular frequency band or those particular frequencies (which difference shall be expressed in dB);

(w) "UMTS system" means an electronic communications network that complies with standards EN 301 908—1, 301 908—2([22]) and EN 301 908—3([23]) published by ETSI for the Universal Mobile Telecommunications System (also known as UMTS);

(x) "uplink frequencies" means the frequency bands 703-733 MHz, 832-862 MHz, 880-915 MHz, 1710-1785 MHz and 1920-1980 MHz;

(y) "uplink noise power" means the total amount of noise produced by a mobile repeater device in the relevant uplink frequencies, expressed in dBm/MHz; and

(z) "WiMAX system" means an electronic communications network that complies with standards EN 301 908—1, EN 301 908—21([24]) and EN 301 908—22([25]) published by ETSI for the Worldwide Interoperability for Microwave Access telecommunication system (also known as WiMAX).

PART 2

Mobile repeater devices for indoor use

Scope of exemption for indoor use

4. The establishment, installation, or use of a mobile repeater device is exempt from the provisions of section 8(1) of the Act if—

(a) that device complies with the terms, provisions, and limitations specified in regulations 5 to 12([26]); or if

(b) that device complies with the terms, provisions, and limitations specified in regulations 5 to 8 and regulations 13 to 17([27]).

Terms, provisions and limitations for all mobile repeater devices

Limitations on transmissions

5.—(1) The mobile repeater device must only be established, installed, and used where the transmissions it makes on downlink frequencies are made indoors.

(2) The mobile repeater device may only amplify signals carried over the downlink frequencies and the uplink frequencies.

Prohibition on undue interference

6. The establishment, installation, and use of the mobile repeater device must not cause or contribute to undue interference to other users of the electromagnetic spectrum.

Anti-oscillation requirements

7.—(1) The mobile repeater device must—

a) automatically detect any oscillations it makes; and

([22]) EN 301 908–2 (version 11.1.1) published in OJEU No C180, 8.6.2017, p.17.
([23]) EN 301 908–3 (version 11.1.3) published in OJEU No C180, 8.6.2017, p.17.
([24]) EN 301 908–21 (version 6.1.1) published in OJEU No C180, 8.6.2017, p.19.
([25]) EN 301 908–22 (version 6.1.1) published in OJEU No C180, 8.6.2017, p.19.
([26]) Such a device is known as a provider-specific mobile repeater device.
([27]) Such a device is known as a multi-operator mobile repeater device.

b) use an anti-oscillation technique, in accordance with paragraphs (4) and (5), where it detects any such oscillations.

(2) Any oscillations in the uplink frequencies must be detected within 0.3 seconds.

(3) Any oscillations in the downlink frequencies must be detected within one second.

(4) Subject to paragraph (5), if the mobile repeater device detects any oscillations, it must use an anti-oscillation technique which stops those oscillations and continues for at least one minute.

(5) If an anti-oscillation technique has been used on five occasions in accordance with paragraph (4), and the mobile repeater device subsequently detects further oscillations, it must cease transmitting.

(6) A mobile repeater device which has ceased transmitting in accordance with paragraph (5) must only resume operation if it has been manually reset.

(7) For the purpose of this regulation, a mobile repeater device makes oscillations when the transmissions made by the mobile repeater device are received and subsequently re-amplified by that device, resulting in a fluctuation in the transmit power of that device (either in the frequency band being amplified or in another frequency band).

System noise figure limit

8.—(1) The system noise emanating from the mobile repeater device shall not exceed a system noise figure of 7 dB.

(2) For the purpose of this regulation—

(a) "system noise figure" means the difference between (i) the noise power measured at the output port of the mobile repeater device, and (ii) the noise power which would be present at the output port of that device if the only source of noise from that device were thermal noise (which difference shall be expressed in dB); and

(b) "thermal noise" means the noise power from a mobile repeater device due to the thermal agitation of charge carriers within that device at room temperature, which noise occurs even if the mobile repeater device is not amplifying any signals.

Additional terms, provisions and limitations for provider-specific mobile repeater devices

Frequencies to be amplified

9. Where the mobile repeater device amplifies signals carried by a mobile network operator over an LTE system or a WiMAX system, it must also amplify signals carried by that mobile network operator over a GSM system or a UMTS system.

Automatic standby requirement

10.—(1) Where the mobile repeater device does not serve an active connection between a mobile device operating on the network of a particular mobile network operator and that particular mobile network for five minutes or more, it must ensure that any transmissions it makes on the uplink frequencies licensed to that mobile network operator comply with the limit in paragraph (2).

(2) The transmissions, when measured in any direction, must have an uplink noise power which does not exceed -70 dBm/MHz e.i.r.p.

Power limits

11. The mobile repeater device may only emit transmissions on frequencies licensed to a mobile network operator which—

(a) in the frequency band 703-733 MHz or 832-862 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have an e.i.r.p. no greater than 23 dBm;

(b) in the frequency band 880-915 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have—

(i) an e.i.r.p. where those transmissions are carried over a GSM system no greater than 33 dBm;

(ii) an e.i.r.p. where those transmissions are carried over a UMTS system no greater than 24 dBm; and

(iii) an e.i.r.p, where those transmissions are carried over a terrestrial electronic communications network that is not a GSM system or UMTS system, no greater than 23 dBm;

(c) in the frequency band 1710-1785 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have—

(i) an e.i.r.p. where those transmissions are carried over a GSM system no greater than 30 dBm;

(ii) an e.i.r.p. where those transmissions are carried over a UMTS system no greater than 24 dBm; and

(iii) an e.i.r.p. where those transmissions are carried over a terrestrial electronic communications network that is not a GSM system or UMTS system, no greater than 23 dBm;

(d) in the frequency band 1920-1980 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have an e.i.r.p. no greater than 24 dBm;

(e) in the frequency band 758-788 MHz or 791-821 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have—

(i) an e.i.r.p. no greater than 17 dBm; and

(ii) a power spectral density no greater than 10 dBm/5 MHz;

(f) in the frequency band 925-960 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have—

(i) an e.i.r.p. where those transmissions are carried over a GSM system no greater than 10 dBm;

(ii) an e.i.r.p. where those transmissions are carried over a terrestrial electronic communications network that is not a GSM system, no greater than 17 dBm; and

(iii) a power spectral density, where those transmissions are carried over a terrestrial electronic communications network that is not a GSM system, no greater than 10 dBm/5 MHz;

(g) in the frequency band 1805-1880 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have—

(i) an e.i.r.p. where those transmissions are carried over a GSM system no greater than 10 dBm;

(ii) an e.i.r.p. where those transmissions are carried over a terrestrial electronic communications network that is not a GSM system, no greater than 17 dBm; and

(iii) a power spectral density, where those transmissions are carried over a terrestrial electronic communications network that is not a GSM system, no greater than 10 dBm/5 MHz; and

(h) in the frequency band 2110-2170 MHz, when measured in any direction and in respect of the frequencies licensed to that mobile network operator only, have—

(i) an e.i.r.p. no greater than 17 dBm; and

(ii) a power spectral density no greater than 10 dBm/5 MHz.

System gain limits

12.—(1) Where the mobile repeater device emits transmissions on frequencies licensed to one mobile network operator only, the uplink and downlink system gain must not exceed the limit in paragraph (3) where the uplink and downlink system gain is measured for each of the frequency bands being transmitted.

(2) Where the mobile repeater device emits transmissions on frequencies licensed to more than one mobile network operator within a particular frequency band, the uplink and downlink system gain must not exceed the limit in paragraph (3) where the uplink and downlink system gain is measured separately for the frequencies licensed to each mobile network operator within that band that are being transmitted.

(3) The uplink and downlink system gain must not exceed whichever is the smaller of—

a) 100 dB; and

b) BSCL – 30 dB.

(4) Where the mobile repeater device cannot determine the BSCL for a particular frequency band or for the frequencies licensed to a particular mobile network operator, it shall not make any transmissions on that frequency band or those frequencies (as applicable).

(5) In this regulation, "BSCL" means base station coupling loss, which is the difference between (i) the power transmitted by the base station (which may be determined from the system information messages sent by that base station on its control channels) and (ii) the power received by the mobile repeater device from the base station (which difference shall be measured in dB).

Additional terms, provisions and limitations for multi-operator mobile repeater devices

Frequencies that must be amplified

13. The mobile repeater device must emit transmissions on all of the following frequencies—

a) 880 – 915 MHz;

b) 925 – 960 MHz;

c) 1710 – 1785 MHz;

d) 1805 – 1880 MHz;

e) 1920 – 1980 MHz; and

f) 2110 – 2170 MHz.

Automatic standby requirement

14.—(1) Where the mobile repeater device does not serve an active connection between a mobile device and a mobile network for five minutes or more, it must ensure that any transmissions it makes using the uplink frequencies comply with the limit in paragraph (2).

(2) The transmissions, when measured in any direction, must have an uplink noise power which does not exceed -70 dBm/MHz e.i.r.p.

Limits on power spectral density

15.—(1) The mobile repeater device may only emit transmissions on uplink frequencies in a particular frequency band which, when measured in any direction, have a power spectral density no greater than 17 dBm/5 MHz.

(2) The mobile repeater device may only emit transmissions on downlink frequencies in a particular frequency band which, when measured in any direction, have a power spectral density no greater than 10 dBm/5 MHz.

System gain limits

16.—(1) When measured separately for each of the frequency bands being transmitted—

(a) the uplink and downlink system gain must not exceed whichever is the smaller of—

(i) 100 dB; and

(ii) 10 dB – RSSI; and

(b) the uplink and downlink system gain must be equal.

(2) In this regulation, "RSSI" means received signal strength indicator, which is the total downlink signal power received at the donor port of the mobile repeater device, for all base stations in the frequency band being transmitted (and which shall be measured in dBm).

Limit on transmitted intermodulation products

17.—(1) For each frequency band that is being transmitted by the mobile repeater device, the power level of transmitted intermodulation products due to input signals within that frequency band shall not exceed −19dBm at the donor port and coverage port of that device.

(2) In this regulation, "transmitted intermodulation products" due to input signals within a frequency band means any signals transmitted by the mobile repeater device within that frequency band which have been created from the non-linear combination of two or more input signals within that frequency band.

PART 3

Mobile repeater devices for use in a motor vehicle

Scope of exemption for use in a motor vehicle

18.—(1) The establishment, installation and use of a mobile repeater device is also exempt from the provisions of section 8(1) of the Act where the terms, provisions, and limitations in this regulation are met.

(2) The mobile repeater device must only amplify signals carried over a GSM system, a LTE system, a UMTS system or a WiMAX system.

(3) The establishment, installation, and use of the mobile repeater device must comply with IR2102.2.

(4) The mobile repeater device must only be established, installed, and used in a motor vehicle.

(5) The establishment, installation, and use must not cause or contribute to any undue interference to any wireless telegraphy.

Helen Hearn
Group Director of Spectrum
Office of Communications

26th May 2022

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations exempt the establishment, installation and use of certain wireless telegraphy stations or apparatus, known as "mobile repeaters", which comply with certain terms, provisions and limitations, from the requirement to be licensed under section 8(1) of the Wireless Telegraphy Act 2006 (c.36). These Regulations also revoke the Wireless Telegraphy (Mobile Repeater) (Exemption) Regulations 2018 (c.399) (the "2018 Regulations").

The mobile repeaters that are exempted are those used indoors and those which are used in motor vehicles.

Mobile repeaters which are used indoors must comply with either Regulations 5 to 12 (in which case, they are more commonly known as provider-specific mobile phone repeaters) or with Regulations 5 to 8 and Regulations 13 to 17 (in which case, they are more commonly known as multi-operator mobile phone repeaters).

Mobile repeaters which are used in motor vehicles must comply with Regulation 18, which incorporates technical specifications and conditions set out in an interface requirement published by the Office of Communications ("Ofcom"). Within the European Union, interface requirements are published in accordance with Article 8.1 of Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment. The interface requirements are published by Ofcom and available to the public on its official website at https://www.ofcom.org.uk/ and from its library at Riverside House, 2a Southwark Bridge Road, London SE1 9HA.

The ETSI standards referred to in the Regulations are European Union harmonised standards and are available to the public from the official website of the European Union at http://eur-lex.europa.eu/oj/direct-access.html or from the EU Bookshop (as managed by the Publications Office of the European Union) by emailing: bookshop@publications.europa.eu, or from the Publications Office of the European Union at 2 rue Mercier, 2985 Luxembourg, Luxembourg. The ETSI standards themselves are available to the public

from ETSI on their website at http://www.etsi.org or from the ETSI Secretariat at 650 Route des Lucioles, 06560 Valbonne, Sophia-Antipolis CEDEX, France (Tel: +33 4 92 94 42 00).

A full regulatory impact assessment of the effect of these Regulations is available to the public from Ofcom's website at http://www.ofcom.org.uk or from the Ofcom library at Riverside House, 2a Southwark Bridge Road, London SE1 9HA. Copies of this assessment have also been placed in the library of the House of Commons.