
Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

[Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields \(EMF\) – Welsh overview](#)

FURTHER CONSULTATION:

Publication Date: 5 October 2020

Closing Date for Responses: 16 November 2020

Contents

Section

1. Overview	1
2. Consultation on revised versions of the EMF licence condition and 'Guidance on EMF Compliance and Enforcement'	3
3. Next steps	6

Annex

A1. EMF licence condition	7
A2. Guidance on EMF Compliance and Enforcement	10
A3. Responding to this consultation	21
A4. Ofcom's consultation principles	23
A5. Consultation coversheet	24
A6. Consultation questions	25

1. Overview

Alongside this consultation, Ofcom has published a statement setting out its decision to formally incorporate the limits in the ICNIRP Guidelines for the protection of the general public¹ from EMF exposure into spectrum authorisations.²

We are now proceeding to implement the decisions set out in the statement. This will initially involve including the new EMF condition in all licences within all licence classes which authorise the use of radio equipment at powers higher than 10 Watts EIRP. It will also involve amending licence exemption regulations on a case-by-case basis as considered appropriate in the future to include an EMF-related condition.

As the first step in this process, we are inviting stakeholders to provide feedback on the specific drafting changes we have made to the wording of the EMF licence condition and our 'Guidance on EMF Compliance and Enforcement' presented in this document.

What we are proposing – in brief

- We are proposing to use the updated versions of the EMF licence condition and 'Guidance on EMF Compliance and Enforcement' included at Annexes 1 and 2 to implement our policy decisions in the October 2020 Statement.
- In addition, we are proposing to publish an online EMF calculator which will enable many spectrum users to check easily whether the use of their radio equipment is likely to comply with the ICNIRP general public limits.

- 1.1 In our February 2020 consultation, we proposed to include an EMF-related condition in all spectrum authorisations which authorise the use of radio equipment at powers higher than 10 Watts EIRP. We also presented draft versions of the EMF licence condition and 'Guidance on EMF Compliance and Enforcement'.
- 1.2 Following a careful review of responses to this consultation, we have published a statement (the October 2020 Statement) confirming our policy decision to include the EMF licence condition in all relevant spectrum authorisations. We also made a number of other decisions including in relation to the scope of the EMF-related condition.
- 1.3 We have also made a number of drafting changes to the wording of the EMF licence condition and to our 'Guidance on EMF Compliance and Enforcement' to take into account comments made by respondents to the February 2020 consultation. These changes are discussed in detail in the October 2020 Statement.

¹ We refer to these limits as the 'ICNIRP general public limits'

² We use the term "spectrum authorisations" to refer to radio equipment that is authorised to operate, whether under a Wireless Telegraphy Act licence or under licence exemption regulations (in which case the equipment is exempt from the requirement to obtain a licence).

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

- 1.4 In view of the drafting changes that we have made to the wording of the EMF licence condition and to our 'Guidance on EMF Compliance and Enforcement', we consider that it is appropriate to give stakeholders a further opportunity to provide feedback on the detail of these drafting changes before we commence work to include the EMF condition in licences.
- 1.5 In addition, we are publishing a trial version of an online EMF calculator on our website. The calculator will enable many licensees, installers and users to check easily whether the use of their radio equipment is likely to comply with the ICNIRP general public limits, based on some conservative assumptions. We would also welcome feedback from stakeholders on this calculator. We expect to publish a finalised version of this calculator around the same time that we publish updated versions of our licence condition and 'Guidance on EMF Compliance and Enforcement' (as appropriate) following further consultation.
- 1.6 We will be consulting until 16 November 2020.
- 1.7 We will then review responses to this consultation and consider whether it is appropriate to make any further amendments or clarifications to the wording of the EMF licence condition, our 'Guidance on EMF Compliance and Enforcement' and/or our EMF online calculator.
- 1.8 Once this is done, we will:
- publish a document on our website which will address any comments we have received in response to this consultation and include updated versions of our EMF licence condition, 'Guidance on EMF Compliance and Enforcement' and our EMF calculator;
 - following the publication of this document, we will start the process of varying all licences within all licence classes which authorise the radio equipment to transmit at powers above 10 Watts EIRP in accordance with the procedure in Schedule 1 of the Wireless Telegraphy Act 2006 and as explained in section 6 of our October 2020 Statement.

2. Consultation on revised versions of the EMF licence condition and ‘Guidance on EMF Compliance and Enforcement’

- 2.1 In our October 2020 Statement, ‘*Measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)*’ (the October 2020 Statement), we set out our decision to include a new EMF condition in all licences within all licence classes which authorise the use of radio equipment at powers higher than 10 Watts EIRP.
- 2.2 We also made a number of changes to the wording of the draft EMF licence condition and our ‘Guidance on EMF Compliance and Enforcement’ to take into account comments made by respondents to the February 2020 consultation.
- 2.3 These changes were discussed in detail in the October 2020 Statement. We present a list of the changes that we made to the licence condition and ‘Guidance on EMF Compliance and Enforcement’ below, and the questions that we are seeking feedback on in this consultation.
- 2.4 The revised versions of the EMF licence condition and the ‘Guidance on EMF Compliance and Enforcement’ are presented at Annexes 1 and 2.

Summary of changes to the wording of the EMF licence condition

- 2.5 In order to implement the decisions we have made on the scope of the licence condition in our October 2020 Statement, we have made the following key additions, amendments and clarifications to the licence condition to:
- define the “general public” as any person who is not: (1) the Licensee, owner, operator or installer of the radio equipment; or (2) acting under a contract of employment or otherwise acting for purposes connected with their trade, business or profession or the performance by them of a public function;
 - clarify that our licence condition only requires licensees to comply with the ICNIRP general public limits in areas that are accessible to the general public;
 - include the “shared site exemptions”, which will mean that many licensees will only need to assess the EMF exposure produced by their own radio equipment or will not need to take into account the EMF exposure produced by all other radio equipment on shared site;
 - taking into account the addition of the shared site exemptions, included a separate licence condition requiring licensees to ensure their own radio equipment complies with the ICNIRP general public limits (without any requirement to take into account another licensee’s radio equipment on the same site);
 - define ‘site’ as ‘a physical structure, building, vehicle or moving platform’ and add a definition of a ‘shared site’;

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

- remove the reference to the 1998 version of our ICNIRP Guidelines and instead require compliance with the version of the ICNIRP Guidelines which we identify in our ‘Guidance on EMF Compliance and Enforcement’;
- reword the main condition so that it refers to the “electromagnetic field exposure levels” rather than “the total EIRP”;
- clarify that compliance with the reference levels in the ICNIRP Guidelines will ensure compliance with the relevant basic restriction;
- clarified that our licence condition to require records to be kept by the licensee also allows the licensee to procure that records are kept by any contractor working on its behalf;
- added a new licence condition which explains that licensees will not need to comply with the relevant levels in the ICNIRP general public limits if (i) radio equipment is being used for the purpose of seeking emergency assistance or reporting or responding to an emergency situation including for search and rescue activities and maritime emergency communications; and (ii) compliance with the relevant levels in the ICNIRP Guidelines for the protection of the general public is likely to result in or create an immediate and serious threat to the safety of the public or public health.

Question 1: Please provide feedback on the additions, amendments and clarifications we have made to the wording of the licence condition to implement our decisions on the scope of the licence condition in our October 2020 Statement, giving reasons for your response.

Summary of changes to our ‘Guidance on EMF Compliance and Enforcement’

2.6 We have updated our ‘Guidance on EMF Compliance and Enforcement’ to include additional guidance and clarifications for licensees, users and installers including the following key changes:

- note that we are making an EMF calculator available on our website and explain how it can be used to demonstrate compliance;
- include BS EN 50665:2017 and BS EN 62311:2020 in the list of relevant standards;
- clarify expectations around when and how often licensees, users and installers should reassess compliance (including conducting measurements where licensees deem it appropriate);
- explain how to demonstrate compliance in situations where the radio equipment is not at a permanent fixed location;
- explain the new shared site exemptions and amend what we expect of licensees, installers and users in terms of compliance records for shared sites;
- explain how we intend to deal with situations where the actions of third parties may result in the ICNIRP general public limits being breached;
- provide additional information on factors we may consider when deciding whether to take enforcement action;

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

- explain that we do not intend to take enforcement action against a licensee for a failure to have appropriate records in place demonstrating EMF compliance for a period of up to 6 months after their licence is varied (although licensees will need to provide evidence to Ofcom on request that a specific site is compliant with the ICNIRP general public limits within a period of 20 calendar days).

Question 2: Please provide feedback on the additions and clarifications to our 'Guidance on EMF Compliance and Enforcement', giving reasons for your response.

EMF calculator

- 2.7 We are publishing a trial version of an online EMF calculator on our website. The calculator will enable many licensees, installers and users to check easily whether the use of their radio equipment is likely to comply with the ICNIRP general public limits, based on some conservative assumptions. The equations and assumptions we have used are included in the notes section of the calculator. The calculator can be found [here](#).

Question 3: Please provide feedback on the trial version of our EMF calculator, giving reasons for your response.

3. Next steps

- 3.1 We welcome stakeholders' responses to this consultation, with a deadline for providing responses of **5pm on 16 November 2020**.
- 3.2 We will then review responses to this further consultation and if considered appropriate, make any further amendments or clarifications to the EMF licence condition, our 'Guidance on EMF Compliance and Enforcement' and/or our EMF online calculator.
- 3.3 We will publish a document on our website which will address any comments we have received in response to this consultation and include updated versions of our EMF licence condition, 'Guidance on EMF Compliance and Enforcement' and our EMF online calculator.
- 3.4 We will subsequently start the process of varying licences in all licence classes which authorise radio equipment to transmit at powers above 10 Watts EIRP in accordance with the procedure in Schedule 1 of the Wireless Telegraphy Act 2006 and as explained in section 6 of our October 2020 Statement.

A1. EMF licence condition³

Definitions applicable to Licence Condition

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

“EIRP” means equivalent isotropically radiated power which is the product of the power supplied to an antenna and the absolute or isotropic antenna gain in a given direction relative to an isotropic antenna.⁴

“general public” means any person who is not: (a) the Licensee, owner, operator or installer of the Relevant Radio Equipment; or (b) acting under a contract of employment or otherwise acting for purposes connected with their trade, business or profession or the performance by them of a public function.⁵

“ICNIRP Guidelines” means the version of the Guidelines published by the International Commission on Non-Ionizing Radiation Protection for limiting exposure to electromagnetic fields which are identified in Ofcom’s Guidance on EMF Compliance and Enforcement that is in force at the relevant time.⁶

“Other Radio Equipment” means wireless telegraphy stations and wireless telegraphy apparatus other than Relevant Radio Equipment (whether or not it is operated by the Licensee or by other users).

“Relevant Radio Equipment” means the Radio Equipment that is authorised by this Licence to transmit at powers higher than 10 Watts EIRP.

³ Unless otherwise stated, we intend to include all footnotes in this Annex in the licence condition.

⁴ If a licence already contains a definition of EIRP then we do not intend to add any further definition or amend the current definition. In licences which refer to ERP, we intend to make clear the relationship between ERP and EIRP in the definition of EIRP to be added to those licences i.e. in linear units $EIRP (W) = 1.64 \times ERP (W)$; in decibels $EIRP (dB) = ERP (dB) + 2.15$. [Footnote not to be included in licence condition]

⁵ There is pre-existing health and safety legislation which already requires employers to protect workers from EMF including the following legislation specifically relating to EMF: The Control of Electromagnetic Fields at Work Regulations 2016, The Control of Electromagnetic Fields at Work Regulations (Northern Ireland) 2016 and The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Electromagnetic Fields) Regulations 2016.

⁶ Ofcom’s Guidance on EMF Compliance and Enforcement will initially require the Licensee to comply with the ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz), published in: Health Physics 74(4):494-522, dated April 1998 and available at: <https://www.icnirp.org/cms/upload/publications/ICNIRPmfgdl.pdf> (“1998 Guidelines”). We note that in March 2020, ICNIRP published an updated version of its Guidelines, referred to as the ICNIRP Guidelines for limiting exposure to electromagnetic fields (100 KHz to 300 GHz), published in: Health Physics 118(5): 483–524; 2020 and available at: <https://www.icnirp.org/cms/upload/publications/ICNIRPPrfgdl2020.pdf> (“2020 Guidelines”). However, the relevant standards explaining the methodology for assessing compliance with the 2020 Guidelines have not been developed. Once work on these standards has progressed sufficiently, Ofcom will consult on updating its Guidance on EMF Compliance and Enforcement to explain that going forward Ofcom will be requiring the Licensee to comply with the 2020 Guidelines. Following consultation, we will publish an updated version of our Guidance on EMF Compliance and Enforcement on our website. We will follow the same process for any subsequent versions of the ICNIRP Guidelines.

“Shared Site Exemption” means any of the following three situations apply:

The first situation is that the wireless telegraphy station or wireless telegraphy apparatus is authorised to transmit higher than 10 Watts EIRP but not higher than 100 Watts EIRP.

The second situation is that the electromagnetic field exposure levels produced by the wireless telegraphy station or wireless telegraphy apparatus in any area that is accessible to the general public is no more than 5% of the basic restrictions in the relevant tables for general public exposure identified in the ICNIRP Guidelines.⁷

The third situation is where the wireless telegraphy station or wireless telegraphy apparatus has an antenna gain that is equal to or higher than 29 dBi and has a fixed beam.

“shared site” means a site that is shared by the Licensee and at least one other person for the purposes of establishing, installing, modifying or using wireless telegraphy stations or wireless telegraphy apparatus.

“site” means a physical structure, building, vehicle or moving platform.

Draft Licence Condition⁸

Sites which are not a shared site

- 1. The Licensee shall only establish, install, modify or use Relevant Radio Equipment if the electromagnetic field exposure levels produced by the Relevant Radio Equipment are below the basic restrictions⁹ in the relevant tables for general public exposure identified in the ICNIRP Guidelines¹⁰ in any area that is accessible to the general public.*

Sites which are a shared site

- 2. In the case of a shared site where the Shared Site Exemption applies to the Relevant Radio Equipment, the Licensee shall comply with paragraph 1 above.*
- 3. In the case of a shared site where the Shared Site Exemption does not apply to the Relevant Radio Equipment, the Licensee shall only establish, install, modify or use the Relevant Radio Equipment if the electromagnetic field exposure levels produced by the Relevant Radio Equipment, together with the total electromagnetic field exposure levels produced by all Other Radio Equipment on the same site for which the Licensee can reasonably assume that a Shared Site Exemption does not apply, are below the basic restrictions in the relevant tables for general*

⁷ The relevant tables for general public exposure are identified in our Guidance on EMF Compliance and Enforcement.

⁸ The precise wording of the licence condition may differ depending on the format and structure of the spectrum licence we intend to vary but the substance of the draft licence condition will be the same. The paragraph numbers in this licence condition have been added for illustrative purposes only. *[Footnote not to be included in licence condition]*

⁹ Compliance with the reference levels for general public exposure identified in the ICNIRP Guidelines will ensure compliance with the basic restrictions.

¹⁰ The relevant tables for general public exposure are identified in our Guidance on EMF Compliance and Enforcement.

public exposure identified in the ICNIRP Guidelines¹¹ in any area that is accessible to the general public.

Emergency Situations

4. *The obligations in paragraphs 1, 2 and 3 above will not apply if:*

(a) the Relevant Radio Equipment is being used for the purpose of seeking emergency assistance or reporting or responding to an emergency situation including for search and rescue activities and maritime emergency communications; and

(b) compliance with paragraph 1, 2 or 3 above is likely to result in or create an immediate and serious threat to the safety of the public or public health.

Relationship with authorised transmission levels

5. *The Licensee shall comply with paragraphs 1, 2 and 3 above notwithstanding the maximum transmission levels identified in [insert reference to relevant clause identifying maximum transmission levels in Licence] of this Licence.*

Records

6. *The Licensee shall keep, or shall procure that each of its contractors shall keep, and shall make available to Ofcom on request, records (including the results of any calculations, measurements and/or tests) that demonstrate how it has complied with the basic restrictions in the relevant tables for general public exposure identified in the ICNIRP Guidelines when Relevant Radio Equipment is established, installed, modified or used.*

Ofcom's Guidance on EMF Compliance and Enforcement

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

¹¹ The relevant tables for general public exposure are identified in our Guidance on EMF Compliance and Enforcement.

A2. Guidance on EMF Compliance and Enforcement

Introduction

- A2.1 This document provides guidance on compliance with the basic restrictions for general public exposure to electromagnetic fields (EMF) identified in Tables 4 and 5 of the guidelines published by the International Commission on Non-Ionizing Radiation Protection for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz), published in: Health Physics 74(4):494-522 dated April 1998 (“1998 ICNIRP Guidelines”).¹² It applies to:
- a) Licensees that are subject to an EMF condition in their spectrum licence(s)¹³; and
 - b) Installers and users of radio equipment that is exempt from the requirement to obtain a spectrum licence but which is subject to licence exemption regulations that contain an EMF-related condition.
- A2.2 We refer to an EMF licence condition and any EMF-related condition we may include in licence exemption regulations in the future collectively as an EMF-related condition. The EMF-related conditions discussed in this guidance concern radio equipment that is authorised to operate at powers higher than 10 Watts EIRP.¹⁴
- A2.3 For the avoidance of doubt, any licence condition that requires licensees to comply with the basic restrictions in the relevant tables in the ICNIRP Guidelines, requires licensees to comply with the basic restrictions identified in Tables 4 and 5 of the 1998 ICNIRP Guidelines. We refer to these limits as the ICNIRP general public limits.
- A2.4 This guidance covers the following key areas:
- exposure to the general public;
 - assessing compliance and the procedures a licensee, installer or user may use to demonstrate compliance;
 - frequency of assessments;
 - assessments of radio equipment at temporary or mobile sites;
 - records of processes and other information that a licensee, installer or user should keep in order to demonstrate how it is complying with an EMF-related condition;
 - how to ensure compliance when a site is shared with other spectrum users;
 - the impact of the actions of third parties on compliance;
 - site access requirements; and

¹² See: <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>.

¹³ Spectrum licences are also referred to as Wireless Telegraphy Act licences.

¹⁴ EIRP stands for Equivalent Isotropically Radiated Power. It is a measure of the strongest power emitted in any direction from an antenna. In this document, when we refer to the power transmitted by a piece of radio equipment, we are referring to EIRP unless explicitly stated otherwise.

- the enforcement options available to Ofcom in the event of breach of an EMF-related condition.

Exposure to the general public

- A2.5 This guidance concerns public exposure to EMF i.e. exposure to the general public. It does not concern occupational exposure which is governed by pre-existing legislation, and which falls under the remit of the Health and Safety Executive and the Department for Transport.
- A2.6 This guidance does not therefore apply to the protection of workers from EMF who should already be protected under health and safety legislation including [The Control of Electromagnetic Fields at Work Regulations 2016](#),¹⁵ [The Control of Electromagnetic Fields at Work Regulations \(Northern Ireland\) 2016](#) and [The Merchant Shipping \(Health and Safety at Work\) Electromagnetic Fields Regulations 2016](#).¹⁶
- A2.7 For example, this means that if the only individuals that may potentially be exposed to EMF in breach of the ICNIRP general public limits are window cleaners, roofing contractors, air conditioning engineers, insurance inspectors and antenna riggers, then their employer – whether a site owner, other licensee or otherwise – should already be taking appropriate steps to mitigate the risk of their exposure to EMF in accordance with pre-existing health and safety legislation. In this scenario, licensees, installers and users are not required to take any additional steps to comply with the ICNIRP general public limits.
- A2.8 Licensees, installers and users are also not required to comply with the ICNIRP general public limits if only the licensee, owner, installer or user of radio equipment may be exposed to EMF in breach of the ICNIRP general public limits. For example, an amateur radio licensee does not need to comply with our licence condition in respect of their own exposure to EMF.
- A2.9 If, however, a licensee, installer or user exposes an individual who is not (i) a worker who should therefore already be protected under pre-existing health and safety legislation; or (ii) the licensee, owner, installer or user of radio equipment, then they will need to ensure they comply with the ICNIRP general public limits. For example, if a licensee exposes family, friends, visitors, neighbours, paying customers or other members of the general public to EMF then they will need to ensure they comply with the ICNIRP general public levels.
- A2.10 Licensees, installers and users are also only required to comply with the ICNIRP general public limits if there is a risk that the relevant levels may be exceeded in any publicly accessible area. There may be circumstances where radio equipment – such as an amateur’s radio equipment or radio equipment installed on vehicles used for newsgathering and outside broadcasts – is located on a site that is not accessible to the general public and/or set up in a way which means it is not possible for the EMF exposure levels from that radio equipment to exceed the ICNIRP general public limits in areas that

¹⁵ Also see [Guidance issued by the Health and Safety Executive](#).

¹⁶ Also see [Guidance issued by the Maritime and Coastguard Agency](#).

are accessible to the general public. In such a scenario, the radio equipment would comply with the ICNIRP general public limits.

Assessing compliance with ICNIRP general public limits

- A2.11 Licensees, installers and users should ensure that their use of radio equipment authorised by their licence or licence exemption regulations complies with the ICNIRP general public limits in any areas that are accessible to the general public.
- A2.12 This means that they should not establish, install, modify or use radio equipment on a site unless the EMF levels produced by their radio equipment are below the ICNIRP general public limits in any publicly accessible area.
- A2.13 It should be noted that the reference levels for general public exposure identified in Table 7 of the 1998 ICNIRP Guidelines '*... are given for the condition of maximum coupling of the field to the exposed individual, thereby providing maximum protection*'. Therefore, if the reference levels are met this will ensure compliance with the basic restrictions.¹⁷
- A2.14 In order to comply with an EMF-related condition, licensees, installers may need to carry out an EMF assessment. An EMF assessment may include one or more of the following:
- following manufacturers' guidance/instructions;
 - desk-top calculations;
 - measurements.
- A2.15 In cases where manufacturers' guidance/instructions are followed, it is the responsibility of the licensee, installer or user to ensure that these are adequate and appropriate for their particular circumstances.
- A2.16 For calculations, the EMF calculator on Ofcom's website may be used. Licensees, installers and users may print out the results of the calculations using this calculator and use these as records for demonstrating compliance with an EMF-related condition.
- A2.17 Licensees, installers and users may also conduct calculations using:
- methods in recognised standards such as BS EN 62232:2017, PD IEC TR 62669:2019, BS EN 50385, BS EN 50401, BS EN 50665:2017 and BS EN 62311:2020 as they may be amended;
 - other EMF calculators that the licensee, installer or user can demonstrate produce accurate results.
- A2.18 Where licensees, installers and users choose to undertake measurements, we recommend that they use the methodology set out in any of the relevant standards listed above.

¹⁷ The 1998 ICNIRP Guidelines indicate that "*if measured values are higher than reference levels, it does not necessarily follow that the basic restrictions have been exceeded, but a more detailed analysis is necessary to assess compliance with the basic restrictions.*"

Frequency of assessments

- A2.19 We expect licensees, installers and users to reassess compliance (including conducting measurements where they deem it appropriate) when they make any change or addition to a site which is likely to increase the EMF exposure levels in publicly accessible areas above the levels in their most recent EMF assessment.
- A2.20 Where licensees are using measurements as part of their compliance assessment, they should consider what measurement interval would be appropriate taking into account the extent to which the EMF exposure levels from a site are likely to change over time, e.g. as a result of changes to traffic loading.
- A2.21 It is for licensees, installers and users to determine if and how often they measure EMF levels at a particular site depending on the circumstances at that site. What may be appropriate on one site may not be appropriate on another site.

Assessments of radio equipment at temporary or mobile sites

- A2.22 In cases where radio equipment is moved but the operating parameters remain the same, demonstrating compliance may not require a new assessment and may simply involve ensuring that a safe separation distance is maintained between the equipment and members of the public.
- A2.23 Licensees, installers and users should be aware of the safe separation distance needed to maintain compliance with the ICNIRP general public limits, and where necessary, undertake a risk assessment and have measures or mitigations in place to ensure that members of the public are not exposed to EMF levels which exceed the ICNIRP general public limits.
- A2.24 The ICNIRP general public limits are averaged over a time period (e.g. six minutes for frequencies below 10 GHz). For radio equipment installed on vehicles or moving platforms, the licensee, installer or user will need to consider whether it is likely that the moving platform or vehicle will be stationary close to any publicly accessible area for a sufficient time, in relation to the averaging period, for the limits to be breached.

Processes to ensure compliance with ICNIRP general public limits

- A2.25 Ofcom may, from time to time, conduct EMF compliance checks and audits. Licensees, installers and users should therefore be in a position to explain the steps they have taken to ensure compliance with the ICNIRP general public limits and provide records demonstrating their compliance. To this end, they should have appropriate processes in place that will enable them to:
- a) Provide evidence that a site is compliant with the ICNIRP general public limits, including by providing, as appropriate:
 - i) information from manufacturer's guidance/instructions, calculation results, measurement results or other procedures they have carried out; or

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

- ii) information on the location of a site and/or the set-up of radio equipment which means it is not possible for the EMF exposure levels from radio equipment to exceed the ICNIRP general public limits in areas that are accessible to the general public.
 - b) Explain why they considered the steps they have taken to ensure compliance with the ICNIRP general public limits were appropriate for a particular site.
 - c) Explain how they ensure they continue to comply with the ICNIRP general public limits, including:
 - i) when they have made a change to a site which may have resulted in the EMF exposure in publicly accessible areas increasing above the levels in their most recent EMF assessment;
 - ii) when they become aware that a site may not be complying with the ICNIRP general public limits; and
 - iii) the frequency at which they carry out calculations, measurements or other procedures at a particular site.
 - d) Explain what measures are in place to ensure members of the public cannot unknowingly enter areas close to antennas where exposure may exceed the ICNIRP general public limits.
- A2.26 All licensees, installers and users should keep records of the date when they made the last change to the site and any EMF assessment that they undertook at that time.
- A2.27 Licensees, installers and users will have a period of 6 months after the EMF-related condition comes into effect to ensure that EMF compliance records for all their radio equipment that is subject to the EMF-related condition are in place and up-to-date. During this time, however, where Ofcom carries out a compliance check and requests access to EMF compliance records for a specific site, licensees, installers and users need to provide evidence to Ofcom that the site is compliant with the ICNIRP general public limits within a period of 20 calendar days.

Shared Sites

- A2.28 Licensees, installers and users are not required to take into account the EMF exposure levels produced by other radio equipment on a site if one or more of the following shared site exemptions (identified in an EMF-related condition) apply to a licensee's, installer's or user's radio equipment:
- a) The radio equipment is authorised to transmit higher than 10 Watts EIRP but not higher than 100 Watts EIRP;
 - b) The electromagnetic field exposure produced by the radio equipment in any area that is accessible to the general public is no more than 5% of the ICNIRP general public limits;

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

- c) The radio equipment has an antenna gain that is equal to or above 29 dBi and has a fixed beam.
- A2.29 If a licensee, installer or user has determined that a shared site exemption applies to its own radio equipment then they should have records in place that demonstrate one or more of the exemptions apply.
- A2.30 Licensees, installers and users that are not covered by any of the shared site exemptions above should only establish, install, modify or use radio equipment on a shared site where they have undertaken a compliance assessment to confirm that the total electromagnetic field exposure levels at the shared site will remain below the ICNIRP general public limits in any area that is accessible to the general public.
- A2.31 In undertaking this assessment, licensees, installers and users will need to take into account EMF exposure levels produced by both their own equipment and other licensees' equipment on the same site. However, they only need to take account of other licensees' radio equipment on a site that is not (or that they can reasonably assume is not) covered by one or more of the above shared site exemptions.
- A2.32 For example, on a shared site occupied by Licensee A and Licensee B:
- a) Licensee A **will not** be required to take into account the EMF exposure levels produced by Licensee B's radio equipment where one or more of the above exemptions apply in relation to Licensee A's radio equipment.
 - b) If none of the above exemptions apply in relation to Licensee A's radio equipment, Licensee A **will be** required to take into account the EMF exposure levels produced by Licensee B's radio equipment **unless** Licensee A can reasonably assume that one or more of the above exemptions apply in relation to Licensee B's radio equipment.
- A2.33 Licensees, installers and users on a shared site that are not covered by a shared site exemption should calculate the total EMF exposure levels taking into account other radio equipment on the same site by:
- a) taking reasonable steps to obtain relevant information in relation to other radio equipment on shared site; and/or
 - b) making reasonable assumptions about other radio equipment on a shared site (and making allowances for a degree of uncertainty in making such assumptions).
- A2.34 Licensees, installers and users on a shared site that are not covered by a shared site exemption should have records in place that will enable them to explain:
- a) how they have determined whether they need to take into account the EMF exposure levels of other radio equipment on a shared site;
 - b) where the licensee, installer or user can reasonably assume that none of the shared site exemptions apply to other radio equipment on a shared site:
 - i) what processes they have in place to take account of the EMF exposure levels of that other radio equipment;

- ii) the steps they have taken to obtain relevant information about that other radio equipment and/or any reasonable assumptions they have made.

A2.35 For the avoidance of doubt, it is the party who makes the last change to a site (and is not covered by a shared site exemption) that is responsible for ensuring the total EMF exposure levels from the site (i.e. from all radio equipment not covered by a shared site exemption) continue to comply with the basic restrictions. If they are unable to demonstrate the continued compliance of the site, they should not make any changes.

Impact of actions of third parties on compliance

A2.36 Whilst it may not be possible for licensees, installers and users to become aware of all changes near to sites on which it has radio equipment, we expect licensees, installers and users to be mindful of the environment surrounding a site. If they become aware of certain developments around a site which could in the future cause a site to breach the ICNIRP general public limits, we expect licensees to monitor the progress of such developments and engage with relevant authorities and other persons, as considered appropriate to ensure a site remains compliant with the ICNIRP general public limits.

A2.37 In general, if changes around a site are made by third parties that the licensee, installer or user is unaware of and which make the site non-compliant, Ofcom would not expect to immediately take enforcement action. However, once the licensee, installer or user becomes aware of this situation, it should take appropriate action to bring the site back into compliance. Depending on the specific circumstances of the case and the risk of harm to the public, Ofcom may require licensees, installers or users to take immediate action to reduce transmitter power or make other adjustments to their sites until a more permanent solution to the issue can be arranged.

Access to Sites

A2.38 Ofcom has existing powers in spectrum licences that allow Ofcom to have access to radio equipment and to inspect, examine and test it. Ofcom also has powers under the Wireless Telegraphy (Inspection and Restrictions on Use of Exempt Stations and Apparatus) Regulations 2005¹⁸ to require installers and users to permit and facilitate the inspection by Ofcom of certain licence exempt radio equipment.

A2.39 Ofcom may carry out its own EMF measurements from a particular site.

A2.40 Licensees, installers and users should facilitate Ofcom being provided with access to a site in order to carry out its own EMF measurements.

A2.41 Where we do decide to exercise our discretion and undertake EMF measurements at a particular site, the amount of advance notice we will provide to a licensee, installer or user (if any), will depend on the circumstances and what we consider to be appropriate taking all relevant factors into account. We reserve the right to not provide any notice.

¹⁸ See: <https://www.legislation.gov.uk/uksi/2005/3481/regulation/4/made>

Potential Enforcement Action

- A2.42 Ofcom has a range of enforcement options available to it to ensure compliance with a licence condition or licence exemption regulations that require compliance with the ICNIRP general public limits. These include:
- a) Engaging with licensees, installers and users to provide information, advice and/or warnings
 - b) Varying or revoking Wireless Telegraphy Act licences
 - c) Requiring licensed radio equipment to be temporarily or permanently closed down or requiring the use of certain licence exempt equipment to be ceased or restricted
 - d) Taking criminal action including:
 - i) Issuing fixed penalty notices;
 - ii) Issuing cautions; and
 - iii) Instigating criminal proceedings
 - e) Taking regulatory enforcement action for breach of a Wireless Telegraphy Act licence which may result in a financial penalty being imposed on a licensee.
- A2.43 Ofcom may decide to pursue more than one of these options in the particular circumstances of the case and as permitted by the relevant legislation.
- A2.44 When deciding whether to take enforcement action and what enforcement action may be the most appropriate, Ofcom will consider all relevant factors. These may include the following factors (as appropriate) although other factors may also be relevant:
- the available evidence indicating a licensee, installer or user may be in breach of the ICNIRP general public limits;
 - the risk of harm to the public including (a) the location of the relevant site and proximity to busy public spaces; and (b) the age and health status of the public at risk;
 - whether any breach may be ongoing;
 - the steps a licensee, installer or user has taken to ensure compliance with the ICNIRP general public limits including the processes and records a licensee, installer or user has in place to ensure compliance (and the extent to which they have in place the processes and records identified in this guidance);
 - the length of time and time of day during which the ICNIRP general public limits were exceeded;
 - whether any breach may be repeated, intentional or particularly flagrant;
 - whether the licensee, installer or user has a history of similar breaches or a poor record of compliance;
 - whether timely action was taken to bring a site into compliance; and

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

- the type of licensee that we are considering taking enforcement action against.¹⁹

A2.45 Ofcom intends to take a proportionate and pragmatic approach to compliance and enforcement. It is not our intention to immediately take enforcement action and impose a financial penalty or other sanctions on a licensee, installer or user if a site on which they are present is found to be in breach of the ICNIRP general public levels regardless of the circumstances. Whilst we may consider such action to be appropriate in certain circumstances, our key objective is to foster and facilitate a climate of compliance across all licensees, installers and users caught by an EMF-related condition. Our key objectives are to ensure licensees, installers and users are:

- a) taking appropriate steps to ensure they are and remain compliant with the ICNIRP general public levels when installing, using or modifying their radio equipment (which may in some cases require licensees, installers and users to cooperate with other licensees, installers and users on a shared site and/or make reasonable assumptions); and
- b) keeping appropriate records which demonstrate the steps they have taken and why they considered them to be appropriate in the circumstances.

A2.46 We are less likely to take enforcement action against a licensee, installer or user that can demonstrate it has taken such appropriate steps.

Variation or revocation of licence

A2.47 Ofcom has the power to vary or revoke a spectrum licence in accordance with the procedure set out in Schedule 1 of the Wireless Telegraphy Act (the 2006 Act). Variation or revocation of a licence may ultimately require radio equipment to be temporarily or permanently closed down.

A2.48 If Ofcom identifies “*an immediate risk of ... a serious threat to the safety of the public [or] to public health*”²⁰ it can take urgent action to vary or revoke a licence.

Restricting use of licence exempt equipment

A2.49 Ofcom has the power to require an installer or user of certain radio equipment that is exempt from the requirement to obtain a licence but which is subject to licence exemption regulations, to cease or restrict its use of the licence exempt equipment.²¹

¹⁹ For example, it would not be appropriate to take regulatory action against a licensee that is an individual. This is because individuals do not have any annual turnover within the meaning of sections 43 and 44 of the Wireless Telegraphy Act 2006 which could be used as the basis for imposing a financial penalty.

²⁰ See paragraph 7(7) of Schedule 1 of the 2006 Act.

²¹ See Regulation 4 of the Wireless Telegraphy (Inspection and Restrictions on Use of Exempt Stations and Apparatus) Regulations 2005.

Criminal offences

- A2.50 Breach of a spectrum licence or licence exemption regulations can constitute a criminal offence. In the event a licensee has its licence revoked, use of radio equipment without a licence is also a criminal offence.²²
- A2.51 Ofcom has the power to issue fixed penalty notices if it has reason to believe that a person has committed a breach of the 2006 Act that constitutes a criminal offence.²³
- A2.52 Ofcom can also pursue a prosecution for breach of licence or licence exemption regulations. In England and Wales, the decision to proceed with a court case rests with Ofcom. We decide whether to prosecute after considering the strength of the evidence and the guidance set down by the Director of Public Prosecutions in the Code for Crown Prosecutors. Ofcom may decide to pursue criminal action if, for example, there is evidence *“of an immediate risk of ... a serious threat to the safety of the public [or] to public health”*.²⁴
- A2.53 No prosecution may go ahead unless the prosecutor considers there is sufficient evidence to provide a realistic prospect of conviction and that a prosecution would be in the public interest.
- A2.54 The Code for Crown Prosecutors requires that the decision to prosecute is kept under continuous review so that any new facts or circumstances, in support of or undermining the prosecution's case, are taken into account in the decision to continue or terminate the proceedings. Where the circumstances warrant it and the evidence to support a case is available, Ofcom may prosecute without prior warning or recourse to alternative sanctions.
- A2.55 In Scotland, the Procurator Fiscal decides whether to bring a prosecution. This may be based on a recommendation by Ofcom. Ofcom decides whether to report a case to the Procurator Fiscal with a view to prosecution. Before prosecutions can be instituted, the Procurator Fiscal will need to be satisfied that there is sufficient evidence and that prosecution is in the public interest. Therefore, in Scotland the decision to prosecute is made by the prosecutor rather than by Ofcom although Ofcom's views will typically be taken into account.
- A2.56 If a case is taken to court, penalties for breach of a spectrum licence can include an unlimited fine and/or prison sentence of up to 51 weeks in England and Wales (or 6 months in Scotland and Northern Ireland).²⁵

Regulatory enforcement

- A2.57 Ofcom may also consider taking regulatory enforcement action for breach of a Wireless Telegraphy Act licence, including where there is evidence to suggest a licensee may not be

²² See Sections 8 and 35 of the 2006 Act.

²³ See paragraphs 1 and 3 of Schedule 4 of the 2006 Act.

²⁴ See section 41(4) of the 2006 Act. The procedure for prosecutions is set out in sections 39 and 41 of the 2006 Act.

²⁵ See Sections 8 and 35(5) and (6) of the 2006 Act.

Implementation of measures to require compliance with international guidelines for limiting exposure to electromagnetic fields (EMF)

complying with an EMF-related condition.²⁶ This may result in Ofcom opening an investigation which may result in a financial penalty being imposed on a licensee.

- A2.58 If Ofcom decides to open a regulatory investigation and take enforcement action against a licensee, we will follow the procedures set out in our Enforcement Guidelines for regulatory investigations.²⁷
- A2.59 Ofcom has the power to fine a licensee up to 10% of its relevant gross revenue if Ofcom determines it is in breach of a condition of its licence.²⁸
- A2.60 When deciding whether to impose a financial penalty in a specific case and if so, what level of penalty would be appropriate and proportionate, Ofcom will have regard to its Penalty Guidelines.²⁹ Ofcom will also consider the factors identified in paragraph A3.44 above (as appropriate) and any other relevant factors.
- A2.61 Ofcom also has the power to require a licensee to take steps to remedy its breach by ensuring its radio equipment complies with the ICNIRP general public limits or by bringing a site into compliance which may include requiring radio equipment to be closed down.

²⁶ See Sections 39 and 42-44 of the 2006 Act.

²⁷ See: https://www.ofcom.org.uk/_data/assets/pdf_file/0015/102516/Enforcement-guidelines-for-regulatory-investigations.pdf.

²⁸ See Sections 42(1), 43(2A) and 44(3) of the 2006 Act.

²⁹ See: <https://www.ofcom.org.uk/about-ofcom/policies-and-guidelines/penalty-guidelines>

A3. Responding to this consultation

How to respond

- A3.1 Ofcom would like to receive views and comments on the issues raised in this document, by 5pm on November 16, 2020.
- A3.2 You can download a response form from <https://www.ofcom.org.uk/consultations-and-statements/category-1/limiting-exposure-to-emf>. You can return this by email to the address provided in the response form.
- A3.3 If your response is a large file, or has supporting charts, tables or other data, please email it to EMFImplementation@ofcom.org.uk, as an attachment in Microsoft Word format, together with the [cover sheet](#). This email address is for this consultation only, and will not be valid after November 2020.
- A3.4 We welcome responses in formats other than print, for example an audio recording or a British Sign Language video. To respond in BSL:
- Send us a recording of you signing your response. This should be no longer than 5 minutes. Suitable file formats are DVDs, wmv or QuickTime files. Or
 - Upload a video of you signing your response directly to YouTube (or another hosting site) and send us the link.
- A3.5 We will publish a transcript of any audio or video responses we receive (unless your response is confidential)
- A3.6 We do not need a paper copy of your response as well as an electronic version. We will acknowledge receipt if your response is submitted via the online web form, but not otherwise.
- A3.7 You do not have to answer all the questions in the consultation if you do not have a view; a short response on just one point is fine. We also welcome joint responses.
- A3.8 It would be helpful if your response could include direct answers to the questions asked in the consultation document. The questions are listed at Annex 6. It would also help if you could explain why you hold your views, and what you think the effect of Ofcom's proposals would be.
- A3.9 If you want to discuss the issues and questions raised in this consultation, please contact Reuben Braddock on 020 7981 3108, or by email to EMFImplementation@ofcom.org.uk.

Confidentiality

- A3.10 Consultations are more effective if we publish the responses before the consultation period closes. In particular, this can help people and organisations with limited resources or familiarity with the issues to respond in a more informed way. So, in the interests of transparency and good regulatory practice, and because we believe it is important that

everyone who is interested in an issue can see other respondents' views, we usually publish all responses on [the Ofcom website](#) as soon as we receive them.

- A3.11 If you think your response should be kept confidential, please specify which part(s) this applies to, and explain why. Please send any confidential sections as a separate annex. If you want your name, address, other contact details or job title to remain confidential, please provide them only in the cover sheet, so that we don't have to edit your response.
- A3.12 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and try to respect it. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A3.13 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's intellectual property rights are explained further in our [Terms of Use](#).

Next steps

- A3.14 Following this consultation period, Ofcom plans to publish a statement in early 2021.
- A3.15 If you wish, you can [register to receive mail updates](#) alerting you to new Ofcom publications.

Ofcom's consultation processes

- A3.16 Ofcom aims to make responding to a consultation as easy as possible. For more information, please see our consultation principles in Annex 4.
- A3.17 If you have any comments or suggestions on how we manage our consultations, please email us at consult@ofcom.org.uk. We particularly welcome ideas on how Ofcom could more effectively seek the views of groups or individuals, such as small businesses and residential consumers, who are less likely to give their opinions through a formal consultation.
- A3.18 If you would like to discuss these issues, or Ofcom's consultation processes more generally, please contact the corporation secretary:

Corporation Secretary
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA
Email: corporationsecretary@ofcom.org.uk

A4. Ofcom's consultation principles

Ofcom has seven principles that it follows for every public written consultation:

Before the consultation

- A4.1 Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. If we do not have enough time to do this, we will hold an open meeting to explain our proposals, shortly after announcing the consultation.

During the consultation

- A4.2 We will be clear about whom we are consulting, why, on what questions and for how long.
- A4.3 We will make the consultation document as short and simple as possible, with a summary of no more than two pages. We will try to make it as easy as possible for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.
- A4.4 We will consult for up to ten weeks, depending on the potential impact of our proposals.
- A4.5 A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.
- A4.6 If we are not able to follow any of these seven principles, we will explain why.

After the consultation

- A4.7 We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.

A5. Consultation coversheet

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing

Name/contact details/job title

Whole response

Organisation

Part of the response

If there is no separate annex, which parts? _____

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)

A6. Consultation questions

Question 1: Please provide feedback on the additions, amendments and clarifications we have made to the wording of the licence condition to implement our decisions on the scope of the licence condition in our October 2020 Statement, giving reasons for your response.

Question 2: Please provide feedback on the additions and clarifications to our 'Guidance on EMF Compliance and Enforcement', giving reasons for your response.

Question 3: Please provide feedback on the trial version of our EMF calculator, giving reasons for your response.