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# Guidance on EMF Compliance and Enforcement

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**GUIDANCE:**

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# 1. Introduction

- 1.1 All uses of radio spectrum generate electromagnetic fields (EMF) and there are international guidelines to help ensure services operate in a way that will not adversely affect peoples' health. In normal conditions, most uses of radio spectrum for wireless communications present no health risk to humans - but exposure to very high levels of radiofrequency EMF can be harmful.
- 1.2 In the UK, Public Health England (PHE) takes the lead on public health matters associated with radiofrequency electromagnetic fields, and has a statutory duty to provide advice to Government on any health effects that may be caused by exposure to EMF. PHE's main [advice](#) is that EMF exposure should comply with the Guidelines published by the International Commission for Non-Ionizing Radiation Protection (ICNIRP). The ICNIRP Guidelines include internationally recognised limits on EMF exposure for the protection of the general public. We refer to these limits as the "**general public EMF limits**".
- 1.3 This document provides guidance on how spectrum users can ensure their use of radio equipment does not exceed the general public EMF limits.
- 1.4 This Guidance covers the following key areas:
- Scope - which spectrum users are required to comply
  - The relevant general public EMF limits
  - Meaning of members of the general public
  - Areas in which the general public may be present
  - Types of EMF assessment
  - EMF assessments on sites that are not shared with other users
  - EMF assessments on sites that are shared with other users
  - Frequency of assessments
  - Radio equipment at temporary or mobile sites
  - The impact of the actions of third parties on compliance
  - Appropriate records demonstrating compliance
  - Emergency situations
  - Site access requirements
  - Enforcement options available to Ofcom in the event of breach of an EMF condition.

## 2. Scope - which spectrum users are required to comply

- 2.1 This Guidance applies to:
- a) Licensees that are subject to an EMF condition in their spectrum licence(s)<sup>1</sup>; and
  - b) Installers and operators 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.
- 2.2 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 condition**”. We refer to licensees, installers and operators that are subject to an EMF condition collectively as “**spectrum users**”.
- 2.3 All spectrum users that are subject to an EMF condition, and whose radio equipment<sup>2</sup> is currently authorised to transmit at powers higher than 10 Watts EIRP<sup>3</sup> or 6.1 Watts ERP<sup>4</sup>, *are required to* take this Guidance into account in order to ensure they comply with the EMF condition. A failure to take this Guidance into account can constitute a breach of an EMF condition and may result in Ofcom taking enforcement action.

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<sup>1</sup> Spectrum licences are also referred to as Wireless Telegraphy Act licences or radiocommunications licences.

<sup>2</sup> When we refer to radio equipment in this document, we are referring to the set of equipment or apparatus used for transmitting, which includes the antenna.

<sup>3</sup> EIRP stands for Equivalent Isotropically Radiated Power. It is a measure of the strongest power emitted in a given direction from an antenna. In this Guidance, when we refer to the power transmitted by a piece of radio equipment, we are referring to EIRP unless explicitly stated otherwise.

<sup>4</sup> ERP stands for Effective Radiated Power which is the product of the power supplied to an antenna and its gain in a given direction relative to a half-wave dipole.

## 3. Relevant general public EMF limits

- 3.1 The EMF condition requires spectrum users to ensure their use of radio equipment does not exceed the basic restrictions in the relevant tables for general public exposure identified in the version of the ICNIRP Guidelines which are identified in this Guidance.
- 3.2 This Guidance, and therefore the EMF condition, requires spectrum users to ensure their use of radio equipment does not exceed the basic restrictions in either:
- a) Tables 4 and 5 of 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](#) (“**1998 Guidelines**”); or
  - b) Tables 2, 3 and 4 of the [ICNIRP Guidelines for limiting exposure to electromagnetic fields \(100 kHz to 300 GHz\), published in: Health Physics 118\(5\): 483–524; 2020](#) (“**2020 Guidelines**”).
- 3.3 We refer to the 1998 Guidelines, the 2020 Guidelines and any subsequent version collectively as the “**ICNIRP Guidelines**”.
- 3.4 Once work on the relevant standards explaining the methodology for assessing compliance with the 2020 Guidelines has progressed sufficiently, Ofcom will issue a public consultation on updating this Guidance to explain that going forward we will be requiring spectrum users subject to an EMF condition to comply with the 2020 Guidelines only. Subject to the outcome of that public consultation, Ofcom will publish an updated version of this Guidance on its website. Ofcom will follow the same process for any subsequent versions of the ICNIRP Guidelines.
- 3.5 Compliance with the reference levels for general public exposure identified in the ICNIRP Guidelines will ensure compliance with the basic restrictions. The relevant tables setting out the reference levels for general public exposure are Table 7 in the 1998 Guidelines and Tables 5 – 9 in the 2020 Guidelines.
- 3.6 For the avoidance of doubt:
- a) Spectrum users need to take into account all relevant tables in the version of the ICNIRP Guidelines they decide to comply with. Spectrum users cannot for example decide to comply with some tables in the 2020 Guidelines but not other tables in the 2020 Guidelines that are also relevant to their use of radio equipment.
  - b) The EMF condition does not allow spectrum users to comply with any future version of the ICNIRP Guidelines until Ofcom amends this “Guidance on EMF Compliance and Enforcement” to explicitly refer to and allow spectrum users to comply with that future version.

## 4. Meaning of members of the general public

- 4.1 The EMF condition requires spectrum users to ensure members of the general public (as defined in the EMF condition) are not exposed to levels of EMF above the general public EMF limits. It does not require spectrum users to protect any person from EMF exposure who is:
- 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.
- 4.2 This means that the EMF condition does not require spectrum users to comply with the general public EMF limits if they have determined that only the licensee, owner, operator or installer of radio equipment may be exposed to EMF in breach of the general public EMF limits. For example, an amateur radio licensee does not need to comply with the EMF condition in respect of their own exposure to EMF. The EMF condition also does not require amateur licensees to protect each other from EMF when they are visiting each other or working together.
- 4.3 The EMF condition concerns public exposure to EMF i.e. exposure to the general public. It does not concern occupational exposure and does not therefore require spectrum users to protect workers from EMF.
- 4.4 Workers should already be protected from EMF exposure under pre-existing health and safety legislation<sup>5</sup> – which falls under the remit of the Health and Safety Executive and the Department for Transport – including the following legislation specifically relating to EMF (as amended from time to time): [The Control of Electromagnetic Fields at Work Regulations 2016](#),<sup>6</sup> [The Control of Electromagnetic Fields at Work Regulations \(Northern Ireland\) 2016](#) and [The Merchant Shipping \(Health and Safety at Work\) Electromagnetic Fields Regulations 2016](#).<sup>7</sup>
- 4.5 All workers (regardless of whether or not they work in the radiocommunications industry) are occupationally-exposed individuals and are not members of the general public whilst they are working. This means that if a spectrum user has determined that the only individuals that may potentially be exposed to EMF in breach of the general public EMF limits are workers<sup>8</sup>, the EMF condition will not require spectrum users to take any

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<sup>5</sup> UK health and safety legislation imposes a duty on all employers and self-employed persons to take reasonable steps to prevent harm in the workplace. This duty includes considering any risks to workers arising from exposure to EMF. The legislation identified in paragraph 4.4 of this Guidance goes further and imposes specific obligations on employers in relation to exposing their workers to EMF including limits on EMF exposure.

<sup>6</sup> Also see [Guidance issued by the Health and Safety Executive](#).

<sup>7</sup> Also see [Guidance issued by the Maritime and Coastguard Agency](#).

<sup>8</sup> This includes but is not limited to the following workers, whether employed or self-employed: antenna riggers, installers, commissioning/testing and maintenance technicians as well as window cleaners, roofing contractors, scaffolders, lift/air conditioning engineers, insurance inspectors, surveyors, architects, street lighting maintenance contractors, airport ground

additional steps to comply with the general public EMF limits. Where workers are exposed to EMF, 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.

- 4.6 Anyone else is a member of the general public for the purposes of the EMF condition. The general public can therefore include family, friends, lodgers, visitors, neighbours, passengers, paying customers and all other members of the general public of all ages. Where any of these individuals are not (i) the licensee, owner, operator or installer of the relevant radio equipment; or (ii) a worker who should already be protected from EMF exposure under pre-existing health and safety legislation, the EMF condition requires spectrum users to ensure they are not exposed to EMF in breach of the general public EMF limits.

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staff, Harbour Masters and marina managers. It also includes individuals carrying out public functions, whether as a volunteer or otherwise, for organisations including the Maritime and Coastguard Agency, the Royal National Lifeboat Institution and mountain rescue teams.

## 5. Areas in which the general public may be present

- 5.1 The EMF condition requires spectrum users to ensure the general public EMF limits are not breached in any area where a member of the general public *is or can be expected to be* present when transmissions are taking place. For simplicity, we refer to these areas as areas where members of the general public *may be* present.
- 5.2 Spectrum users do not need to comply with the general public EMF limits in any area where they are sure a member of the general public is not, and will not, be present when transmissions are taking place.
- 5.3 However, if a spectrum user cannot be sure whether a member of the general public will be present in any area where they can be expected to be present, the user will need to presume a member of the general public *will be* present (even if they may not ordinarily be present in those areas). If, for example, a neighbour generally only goes in their garden once a month or the general public infrequently use a public pathway, that does *not* mean spectrum users can expose them to EMF in breach of the general public EMF limits on the occasions that they are present in those areas.
- 5.4 Members of the general public (as defined in the EMF condition) can be present on both public and private property. Examples of where the general public can be expected to be present include any:
- a) public property or space including a public pathway, park, playground or car park;
  - b) private residential or business property including in a garden or on a balcony;
  - c) on a boat or other vessel or on a public or private quayside, marina or harbour area;
  - d) on an aviation or sports flying aircraft or next to it on the ground.
- 5.5 Spectrum users may be able to put procedures in place to determine if a member of the general public will be present in any of the above types of areas when transmissions are taking place.
- 5.6 There are some areas where spectrum users do not need to expect members of the general public to be present. These include:
- a) areas where a spectrum user or third party has installed appropriate warning signs, barriers and/or locks designed to prevent members of the general public from accessing areas in which the general public EMF limits may be exceeded;
  - b) areas which may be public property but which in practice have become and remain inaccessible, for example, due to overgrown vegetation.
- 5.7 We cannot account for every possible circumstance or area in which a member of the general public may be present. It is ultimately for spectrum users to ensure they take appropriate steps to ensure compliance with the general public EMF limits.

## 6. EMF Assessments

- 6.1 All spectrum users subject to an EMF condition that are currently authorised to transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP will need to ensure they comply with the EMF condition.

### Calculating EIRP and ERP

- 6.2 Many spectrum authorisations (i.e. spectrum licences and licence exemption regulations) define the maximum allowed transmit power in terms of EIRP or ERP. Many licensees should therefore already know the EIRP/ERP of their equipment in order to comply with the existing terms of their licence.
- 6.3 Where spectrum users do not know the EIRP/ERP of their equipment, they can either:
- Use the maximum EIRP/ERP figure in their licence or in licence exemption regulations (or in documents referenced in their licence or licence exemption regulations) as the basis for their compliance calculation;
  - Work out (or obtain) the actual EIRP/ERP of their equipment.
- 6.4 The maximum EIRP/ERP is often identified either in the licence itself (including the schedules). The licence or licence exemption regulations may also refer to other documents (e.g. Interface Requirements on Ofcom's website) which identify the maximum allowed transmit power. For ship radio licences, we are publishing a table on our [website](#) which sets out the maximum allowed transmit powers for various equipment authorised under the ship radio licence.
- 6.5 Spectrum users who wish to work out the actual EIRP/ERP of the equipment will need to know the output power of their equipment and the gain of their antenna. This information may be available in equipment manuals or manufacturer's specifications (or could be obtained by contacting the manufacturer).
- 6.6 Manufacturers will typically specify antenna gain in dBi or in dB (in both cases this should be the gain relative to an isotropic antenna). Sometimes, however, gain may be specified in dBd (gain relative to a half-wavelength dipole). To convert from gain in dBd to gain in dBi, the following simple calculation can be used:

$$\text{Gain (dBi)} = \text{Gain (dBd)} + 2.15.$$

- 6.7 To convert gain in (dBi or dBd) to gain expressed as a linear ratio, the following calculations can be used:

$$\text{Gain (linear isotropic)} = 10^{(\text{Gain (dBi)}/10)}$$

$$\text{Gain (linear half-wavelength dipole)} = 10^{(\text{Gain (dBd)}/10)}$$

- 6.8 The formula for working out the EIRP/ERP is as follows:



EIRP (Watts) = Transmitter output power or peak envelope power (PEP) in Watts x  
Antenna Gain relative to an isotropic antenna expressed as a linear ratio

ERP (Watts) = Transmitter output power or peak envelope power (PEP) in Watts x  
Antenna Gain relative to a half wave dipole expressed as a linear ratio

- 6.9 We have included a sheet in our [EMF calculator](#) which allows spectrum users to enter the transmitter output power (or PEP) and antenna gain, and the calculator will calculate the EIRP on their behalf. They can then enter the EIRP in the main calculator sheet.
- 6.10 There are also a number of free online EIRP/ERP calculators which spectrum users may use to perform this calculation.
- 6.11 Spectrum users may also wish to seek help from the installer of the radio equipment or another radiocommunications professional to help them work out the EIRP/ERP of their equipment.

## **Circumstances in which spectrum users are not required to carry out an EMF assessment**

- 6.12 In the following scenarios, spectrum users subject to the EMF condition will not need to carry out an EMF assessment and will not need to demonstrate compliance with the general public EMF limits:
- a) The spectrum user is not currently authorised to transmit at power levels higher than 10 Watts EIRP or 6.1 Watts ERP (for example, a spectrum licence may not currently allow the licensee to transmit at power levels higher than 10 Watts EIRP or 6.1 Watts ERP).
  - b) The spectrum user is no longer using their radio equipment (i.e. they do not currently transmit using any of their equipment that is authorised to transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP).
  - c) The spectrum user does not transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP.
  - d) The spectrum user has calculated that they (i) do not transmit at an average power<sup>9</sup> higher than 10 Watts EIRP or 6.1 Watts ERP; and (ii) do not transmit at a peak power above 100 Watts EIRP or 61 Watts ERP.
  - e) The spectrum user has previously carried out an EMF assessment and is satisfied their equipment already complies with the general public EMF limits.<sup>10</sup>

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<sup>9</sup> We explain how to calculate average power in paragraphs 6.17 – 6.21 below.

<sup>10</sup> For example, a user may have already ensured their equipment is set-up in a location or has been designed or installed in a way which means it is not possible for the EMF exposure levels from their equipment to exceed the general public EMF limits in any area in which a member of the general public may be present when they are transmitting.

- f) The spectrum user only uses their radio equipment in emergency situations (see Section 13 below for further information on the Emergency Situations).<sup>11</sup>
- 6.13 In all of the scenarios identified in paragraph 6.12 above (apart from scenarios (d) and (e)), spectrum users will not need to carry out an EMF assessment or hold any EMF records demonstrating their compliance with the EMF condition. In scenarios (d) and (e), spectrum users will not need to carry out an EMF assessment but they will need to hold appropriate EMF records demonstrating their compliance. Further information on appropriate EMF records is available in Section 12 below. For example, in scenario (d), the spectrum user will need to keep a record showing how they have calculated the average power of their equipment. We explain how to calculate the average power in paragraphs 6.17 – 6.21 below.
- 6.14 If any of the scenarios identified in paragraph 6.12 above change in the future, the spectrum user may need to carry out an EMF assessment. For example, if a spectrum user who was not using their equipment decided to start using their equipment again, they would need to check whether an EMF assessment is necessary (and if so, carry it out) before starting to use the equipment.
- 6.15 We have produced an [EMF compliance flowchart](#) to help spectrum users work out whether they need to carry out an EMF assessment.
- 6.16 In relation to scenarios (c) and (d) in paragraph 6.12 above, when spectrum users are assessing whether their equipment ever transmits at power levels higher than 10 Watts EIRP or 6.1 Watts ERP, the relevant power is the strongest power (EIRP or ERP) emitted in *any direction*. However, when spectrum users are carrying out an EMF assessment, they can use the EIRP/ERP in the relevant direction (i.e. they can take account of the radiation pattern of the antenna where this is known).

## Working out the average power

- 6.17 When assessing whether equipment transmits at powers higher than 10 Watts EIRP (or 6.1 Watts ERP), spectrum users can take into account the average power<sup>12</sup> of their equipment (provided their equipment does not transmit at a peak power<sup>13</sup> higher than 100 Watts EIRP or 61 Watts ERP).

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<sup>11</sup> This may only apply to a limited amount of radio equipment such as EPIRBs (emergency position indicating radio beacons).

<sup>12</sup> By 'average power' we mean the radiated power (EIRP or ERP) averaged over the relevant averaging period (e.g. 6 or 30 minutes).

<sup>13</sup> By 'peak power' we mean the maximum instantaneous radiated power (EIRP or ERP).

- 6.18 To calculate the average power of their equipment, spectrum users will need to know the maximum length of time<sup>14</sup> that their equipment will transmit for in any six minute period.<sup>15</sup>
- 6.19 They can then enter this in [Ofcom's EMF calculator](#) (along with the peak power of the equipment) and the calculator will calculate the average power.
- 6.20 Spectrum users should make a conservative assessment of the maximum length of time that they transmit for in any six minute period. For example, if equipment is sometimes used continuously for six minutes at a time, then the user should enter a time period of six minutes in the calculator, even if the equipment is not used continuously throughout the day.
- 6.21 If the result of the calculation shows that the average power is less than 10 Watts EIRP (or 6.1 Watts ERP), the spectrum user will not need to carry out an EMF assessment. However, they should still print off a copy of the average power calculation and keep this record with their licence document.

## Types of EMF Assessment

- 6.22 If the spectrum user cannot rely on any of the scenarios identified in paragraph 6.12 above, they will need to carry out an EMF assessment. The type of assessment that will be appropriate will depend on the circumstances including how the relevant radio equipment is used.
- 6.23 The spectrum user will need to assess how to keep members of the general public at a sufficient distance from the antenna of their radio equipment in order to ensure compliance with the general public EMF limits. We refer to this distance as the “compliance distance”. In general, higher powers will result in larger compliance distances. Spectrum users will need to make sure that the distance between the antenna and any area where a member of the general public may be present whilst transmissions are taking place is greater than the compliance distance. In many cases, the compliance distance is likely to be relatively small and it may not be possible for members of the general public to get close to the antenna. For example, spectrum users might have an antenna on the top of a mast, or behind a fence.
- 6.24 An EMF assessment may include one or more of the following, as considered appropriate:
- a) **Manufacturers' instructions:** Installing and operating radio equipment in accordance with manufacturers' instructions relating to EMF compliance. Instructions may be provided with the equipment (for example, in the form of user manuals, equipment specifications or instructions for use) or available online and some instructions will include information on EMF compliance distances. It is the responsibility of the

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<sup>14</sup> In determining the maximum length of time, spectrum users may also take account of the manufacturer-defined duty cycle of their equipment where this is known. We provide further information on this in the simplified guidance documents available on our website at <https://www.ofcom.org.uk/manage-your-licence/emf/compliance-and-enforcement-guidance>.

<sup>15</sup> The averaging period used in the 1998 Guidelines is 6 minutes. If a spectrum user is complying with the 2020 Guidelines, there are some circumstances identified in the 2020 Guidelines when averaging should instead be carried out over a 30 minute period.

spectrum user to ensure any instructions are adequate and appropriate for their particular circumstances. Following manufacturers' instructions is unlikely to be appropriate where a spectrum user has multiple transmitters on the same site with overlapping target coverage areas (unless this scenario is explicitly covered in the instructions).

- b) **Ofcom's EMF calculator:** Using Ofcom's [EMF calculator tool](#) to work out the compliance distance. Using Ofcom's EMF calculator will not be appropriate for all spectrum users. Further information on how to use Ofcom's EMF calculator and when it may not be appropriate is available on our [website](#).
- c) **Other EMF calculations:** Spectrum users can also carry out desk-top calculations using:
  - i) Methods in [recognised standards](#) that are identified on our website;
  - ii) Other EMF calculators that the spectrum user is confident produce sufficiently accurate results (i.e. do not result in a breach of the general public EMF limits).
- d) **Measurements:** Carrying out on-site measurements of EMF exposure levels (or having them carried out by a professional) in accordance with methodologies in [recognised standards](#) that are identified on our website. Measurements may be helpful where there is some uncertainty in the calculations, where calculations may produce compliance distances considered to be too conservative or for more complex radio installations involving multiple transmitters. The spectrum user should be confident that any measurements produce sufficiently accurate results (i.e. do not result in a breach of the general public EMF limits).
- e) **Pre-assessed equipment configurations:** Checking that equipment is installed and operated in a way that is consistent with the compliance distance(s) calculated for pre-assessed equipment configurations:<sup>16</sup>
  - i) provided by Ofcom in practical examples in its simplified guidance documents for specific licence classes available on its [website](#);
  - ii) developed and shared by reputable organisations such as industry associations and representative organisations, for example, the Radio Society of Great Britain (RSGB) and the Federation of Communication Services (FCS).
- f) **Instructions from a third party expert:** Asking a third party (such as a radiocommunications industry professional) to install (or advise on how to install and operate) the equipment in accordance with manufacturers' instructions or their own expertise and knowledge relating to EMF compliance. The spectrum user will need to satisfy themselves that any third party they ask for help, has the technical expertise to ensure that equipment is installed and can be operated in a way which ensures compliance with the general public EMF limits. The third party should provide the user

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<sup>16</sup> A pre-assessed equipment configuration refers to a set of equipment parameters (or range of parameters) which can be used to calculate the EMF compliance distance(s) (including e.g. antenna type, height, frequency and averaged transmit power). To be consistent with the pre-assessed equipment configuration, the user's equipment would need to operate within the parameters (or within the range of parameters) defined for the relevant pre-assessed equipment configuration.

with appropriate instructions on how to ensure compliance with the general public EMF limits.

- 6.25 When carrying out an EMF assessment (e.g. to establish compliance distances), spectrum users should also take into account the following points:
- a) EMF assessments can be based on the normal maximum operating conditions of the radio equipment concerned. For example, if a piece of radio equipment is currently capable of transmitting at 100 Watts EIRP but the user normally restricts their transmit power to a maximum of 50 Watts EIRP, they may use 50 Watts EIRP in their assessment. However, if the user decides at some point to transmit at the full 100 Watts EIRP that their equipment is capable of, they should carry out a re-assessment using 100 Watts EIRP to ensure they are still compliant.
  - b) As explained in paragraphs 6.17 – 6.21 above, spectrum users can take into account the average power of their equipment based on the maximum length of time that their equipment is transmitting for over the averaging period of six minutes.<sup>17</sup> However, if they later decide that they want to extend the maximum transmit time, they should carry out a re-assessment to ensure they are still compliant under the new operating conditions. Further guidance on Frequency of assessments is provided in Section 9 below.
  - c) As noted in paragraph 6.16 above, when calculating the compliance distance, spectrum users can take account of the radiation pattern of their antenna where this known. This may mean that different compliance distances would apply for different directions from the antenna.
  - d) Compliance distances and EMF levels should be assessed from the point of the antenna that would be closest to a member of the general public.
  - e) Where a spectrum user decides to demonstrate compliance with the 2020 Guidelines before work on updating the relevant standards and methodologies are sufficiently advanced, they will need to ensure any EMF calculations or measurements they undertake are based on methods they are confident produce sufficiently accurate results.
- 6.26 EMF assessments can be carried out by the spectrum user or by a third party procured by a spectrum user to carry out the assessment on their behalf.

## After the compliance distance has been calculated

- 6.27 Once the spectrum user has calculated the compliance distance, they should consider how they can ensure members of the general public cannot access any area within the compliance distance in which the general public EMF limits may be breached. In some

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<sup>17</sup> The averaging period used in the 1998 Guidelines is 6 minutes. If a spectrum user is complying with the 2020 Guidelines, there are some circumstances identified in the 2020 Guidelines when averaging should instead be carried out over a 30 minute period.

cases, equipment may already be installed in a location such that members of the general public cannot access any area within the compliance distance. In other cases, spectrum users may need to implement control measures to ensure members of the general public cannot access any area within the compliance distance when the equipment is transmitting and ensure that this remains the case. What is appropriate will depend on the circumstances but it may include:

- a) Introducing barriers or locks to limit access to areas close to the antenna.
- b) Installing clear and easy to understand warning signs directing people where not to sit/stand when equipment is being used and setting out simple explanations of risks.
- c) Ensuring equipment never transmits when a member of the general public may be present in an area in which the general public EMF limits may be breached.
- d) Ensuring equipment is only used intermittently and for no longer than a specified period, for example, by introducing signs stating not to hold a button and use equipment for more than [x] seconds/minutes.

6.28 Alternatively, the spectrum user may be able to reduce the compliance distance by moving the antenna or changing the operating parameters of their equipment (for example, by improving the antenna gain or pattern). As noted above, what is appropriate will depend on the individual circumstances.

6.29 In relation to control measure (d) above, signs could be placed on or next to radio equipment in cases where a spectrum user determines that there is a risk that the radio equipment will be used for a greater percentage of time than they have assumed in their compliance calculation (which may result in possible non-compliance with the EMF condition). For example, where a spectrum user has assumed equipment will transmit for a maximum length of time of 3 minutes in any 6 minute period, they may decide to use a sign which warns users not to transmit for more than 3 minutes in any 6 minute period (or more than 30 seconds in every minute).

6.30 Ofcom's EMF calculator allows users to enter the maximum length of time that equipment will be transmitting for in any six minute period. Spectrum users can therefore use control measure (d) above as a way to ensure their equipment is not used for a longer period of time than that assumed in their calculation.

6.31 Spectrum users will not need to take any additional steps to ensure compliance with the general public EMF limits if the compliance distance demonstrates that their radio equipment only ever exposes the following individuals to EMF that may potentially breach the general public EMF limits: (i) the licensee, owner, operator or installer of the relevant radio equipment; or (ii) a worker who should already be protected from EMF exposure under pre-existing health and safety legislation.

## **Ofcom assessments of compliance with the general public EMF limits**

- 6.32 Ofcom intends to use a shared risk approach when making decisions about compliance with the general public EMF limits. This means that in cases where Ofcom conducts its own measurement, we will assess compliance based on whether the measured value (e.g. electric field strength, power density, etc.) averaged over the relevant time interval (e.g. 6 or 30 minutes) is above or below the general public EMF limits.
- 6.33 We will use this approach for cases where our expanded measurement uncertainty, at a confidence interval of 95%, does not exceed a target of  $\pm 4$  dB. In cases where our expanded measurement uncertainty, at a confidence interval of 95%, does exceed  $\pm 4$  dB, the measured value will be reduced by an appropriate amount (based on the difference between the target uncertainty and the actual uncertainty) before comparison with the general public EMF limits.

## 7. EMF assessments on sites that are not shared with another user

- 7.1 All radio equipment on a site will contribute to the overall EMF levels. The EMF condition therefore requires spectrum users to assess EMF exposure levels taking into account *all* of their own equipment on the same site that transmits at powers higher than 10 Watts EIRP or 6.1 Watts ERP.
- 7.2 Spectrum users will **not** need to calculate the aggregate exposure in situations where:
- a) **Their transmitters do not have overlapping target coverage areas:** There may be circumstances where a user can reasonably assume that the target coverage area of some of its radio equipment on a site will not overlap with the target coverage area of its other radio equipment. In this situation, the user can calculate the compliance distance of each transmitter on an individual basis. It is reasonable for maritime licensees to make this assumption in relation to radar or satellite equipment on a boat which have been installed and maintained in line with manufacturers' instructions. However, where spectrum users have multiple transmitters covering the same or overlapping areas, they should take into account the combined total radiated power of their equipment – a simple sum of the radiated powers (in EIRP or ERP) of all the user's radio equipment in the relevant direction – in order to ensure compliance with the general public EMF limits.
  - b) **Their transmitters do not transmit simultaneously:** Where a user does not use one piece of radio equipment at the same time as it uses another piece of equipment, it can reasonably assume that both pieces of radio equipment will not produce EMF at the same time. In this situation, the user does not need to calculate the aggregate EMF exposure produced by both pieces of equipment and can calculate the compliance distance of each transmitter on an individual basis. It may be reasonable to make this assumption in relation to the use of radio equipment on a boat where some equipment is only used intermittently.
- 7.3 The additional usage notes in Ofcom's EMF calculator provide a very conservative approach for calculating the compliance distance for multiple transmitters. Ofcom may provide an additional calculator in the future with a less conservative approach for multiple transmitters.
- 7.4 Alternatively, spectrum users can use other assessment methods as set out in paragraph 6.24 above.



## 8. EMF assessments on sites that are shared with another user

- 8.1 On a shared site, all radio equipment on the site will contribute to the overall EMF exposure levels. Spectrum users may therefore need to take into account other users' equipment on the shared site to ensure compliance with the general public EMF limits.
- 8.2 Spectrum users will *not* need to take into account other users' radio equipment on a shared site if their own equipment that is authorised to transmit above 10 Watts EIRP or 6.1 Watts ERP meets any of the following conditions:
- a) All their equipment on the shared site does not transmit at a combined total radiated power in any particular direction that is higher than 100 Watts EIRP or 61 Watts ERP (taking into account overlapping target coverage areas as explained in paragraph 7.2 above). This exemption will apply to most radio equipment used for private mobile radio (PMR)/business radio.<sup>18</sup>
  - b) The total EMF levels produced by all their equipment on the shared site do not exceed 5% of the general public EMF limits in any area where a member of the general public may be present when transmissions are taking place.
  - c) Their equipment has a fixed beam and an antenna gain of 29 dBi or higher. This will apply to most if not all fixed links.
- 8.3 Spectrum 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 general public EMF limits in any area where a member of the general public may be present when transmissions are taking place.
- 8.4 In undertaking this assessment, spectrum users will need to consider EMF exposure levels produced by both their own equipment and other users' equipment on the same site. However, they only need to take into account 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.
- 8.5 For example, on a shared site occupied by User A and User B:
- a) User A **will not** be required to take into account the EMF exposure levels produced by User B's radio equipment if either:

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<sup>18</sup> Please note, '[IR 2044 Business Radio Land Mobile Services](#)' allows a range of power categories, the highest of which is 100 Watts ERP for equipment with a 25 kHz channel bandwidth. This is above 100 Watts EIRP or 61 Watts ERP and therefore PMR users of equipment operating at this power will need to take into account other users' equipment on a shared site unless one of the exemptions in (b) or (c) apply.

- i) User A determines that one or more of the above exemptions apply to its own radio equipment; or
  - ii) User A can reasonably assume that one or more of the above exemptions apply to User B's radio equipment. For example, it will be reasonable to make such an assumption where User B's radio equipment is private mobile radio (PMR) equipment or fixed links equipment.
- 8.6 There may also be circumstances on a shared site where a spectrum user can reasonably assume that the target coverage area of another user's radio equipment on a site will not overlap with the target coverage area of its own radio equipment. This situation may arise if, for example, users have equipment located on opposite ends of the same building, where the equipment is providing coverage to different areas. If it is reasonable to make such an assumption in relation to another user's equipment on a shared site, there is no requirement to take into account any EMF exposure levels from that other user's equipment.
- 8.7 We have produced a [shared site compliance flowchart](#) to help spectrum users assess whether they need to take into account another user's equipment on a shared site.
- 8.8 Where spectrum users on a shared site cannot rely on a shared site exemption and need to assess the total EMF exposure levels taking into account other users' radio equipment on the same site, they should, where possible, do this by making reasonable worst-case assumptions about another user's equipment (and making allowances for a degree of uncertainty in making such assumptions). If those worst-case assumptions are too restrictive and further information is required to make a more accurate EMF assessment, spectrum users will need to take reasonable steps to obtain relevant information in relation to another user's radio equipment on the shared site.
- 8.9 When assessing what information may be considered necessary to obtain and share with other spectrum users to ensure compliance with the general public EMF limits, we expect spectrum users to take into account the following principles:
  - a) Spectrum users should only share the minimum information necessary for another user to make an accurate EMF assessment at a particular site. Where appropriate, spectrum users should therefore only share limited technical information about specific radio equipment on a specific site.
  - b) Spectrum users should not share aggregate site information just in case it may be required in the future; users should only share information where it is required for a particular site.
  - c) Where considered appropriate, spectrum users (such as mobile network operators) should consider whether they should implement appropriate internal confidentiality safeguards to ring-fence the information that is provided by another user and ensure it is only provided to authorised individuals on a strictly need-to-know basis for the specific purposes of assessing EMF exposure levels at a particular site.

## Last party to make a change to a site

- 8.10 The party who makes the last change to a site is responsible for ensuring the total EMF exposure levels from the shared site comply with the general public EMF limits (the “last party rule”) except where:
- a) that party does not make any change which is likely to increase the EMF exposure levels in any area in which the general public may be present when transmissions are taking place; or
  - b) a shared site exemption applies to that party’s own equipment on the shared site.
- 8.11 If the last party rule does apply, then the party making the last change can only make changes to the site if they can demonstrate the continued compliance of the site. When carrying out this assessment, the last party is not required to take into account the EMF exposure levels of other equipment on a site for which they can reasonably assume a shared site exemption applies or where the target coverage area of other equipment will not overlap with its own.
- 8.12 The last party rule applies from the point at which the EMF condition takes effect (which for licensees that have had their licence varied to include the new EMF condition means 18 May 2021). Where Ofcom identifies a breach of the general public EMF limits at a shared site where the last change occurred before the EMF condition took effect, Ofcom will require all spectrum users at the shared site to cooperate and take action to ensure the general public EMF limits are not exceeded. If spectrum users fail to cooperate and/or take such action, we may take enforcement action against one or more spectrum users at the shared site as considered appropriate on a case-by-case basis.
- 8.13 Where more than one spectrum user starts transmissions simultaneously, we expect that all such users will have conducted (or will have procured a third party to conduct) an EMF assessment to ensure that their use complies with the EMF condition, taking into account the total EMF exposure from other users’ radio equipment on the shared site as required by the EMF condition.
- 8.14 If a spectrum user requires advance notice of what changes another user on a shared site may be making in the near future, it may be appropriate to put arrangements in place to notify each other of such changes. When assessing what information may be considered necessary to share with another spectrum user for this purpose, we expect users to take into account the principles identified in paragraphs 8.8 – 8.9 above.

## Sites managed by a third party

- 8.15 In some circumstances, a third party site provider or site manager (that is not a spectrum user subject to the EMF condition) may insist on carrying out any EMF assessments on a site themselves. In such cases, we expect the site provider to play a proactive and cooperative role in ensuring the site is and remains compliant with the general public EMF limits. If we find a breach of the general public EMF limits in such circumstances, we may

consider using soft enforcement tools (which, if considered appropriate, may include identifying the names of site providers).

- 8.16 We may also decide to take enforcement action against the spectrum user subject to the EMF condition. We will act reasonably and proportionately and take all relevant circumstances into account. One factor we would consider is whether the spectrum user could reasonably have been expected to have done more to ensure that the site provider complied. We expect spectrum users to provide site providers with all the information they need in order to fully assess the EMF exposure levels from the relevant equipment on the site. We also expect spectrum users to ensure site providers are kept updated when the user makes any change to its equipment which may increase the EMF levels in any area in which a member of the general public may be present. Spectrum users may decide to include contractual clauses relating to EMF compliance in any agreements they enter into with site providers.

### **Other equipment nearby that is not on the same site**

- 8.17 The EMF condition does not specifically require spectrum users to consider radio equipment located on another site (for example, radio equipment on neighbouring buildings in a built-up area; equipment installed on different vehicles such as other newsgathering trucks parked nearby; other transmitters on separate structures within a compound; or equipment temporarily set-up in the vicinity of other equipment directly on the ground in an open public space).
- 8.18 However, if Ofcom becomes aware of a breach of the general public EMF limits in any area in which the general public may be present when transmissions are taking place which is the result of EMF exposure produced by radio equipment on more than one site, Ofcom expects spectrum users to cooperate and take action to ensure the general public EMF limits are not exceeded. If spectrum users fail to cooperate and/or take such action, we may consider using soft enforcement tools (which, if considered appropriate in the circumstances, may include identifying the names of such spectrum users).
- 8.19 We also expect spectrum users to take a reasonable view of what is a site and not for example to categorise different transmitters located on the same building as being on different sites simply because they are attached to different support structures.

## 9. Frequency of assessments

- 9.1 We expect spectrum users to reassess compliance (including conducting measurements where considered appropriate) when they make any change or addition to a site which is likely to increase the EMF exposure levels above the levels in their most recent EMF assessment in any area where the general public may be present when transmissions are taking place.
- 9.2 Not all changes to equipment configuration will necessarily require a reassessment or the creation of a new record. It may be possible in some cases to carry out an assessment for a realistic 'worst-case' equipment configuration (e.g. in terms of antenna gain and transmit power), which would cover most future changes to configuration of the relevant equipment.
- 9.3 Where spectrum users 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.
- 9.4 It is for spectrum 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.

## 10. Radio equipment at temporary or mobile sites

- 10.1 Spectrum users making use of equipment at temporary or mobile sites will need to ensure their equipment complies with the EMF condition.
- 10.2 As explained in paragraph 6.12 above, spectrum users whose equipment does not transmit at an average power higher than 10 Watts EIRP or 6.1 Watts ERP will not need to perform an EMF assessment.
- 10.3 Spectrum users whose equipment does transmit at an average power higher than 10 Watts EIRP or 6.1 Watts ERP (or transmits at a peak power higher than 100 Watts EIRP or 61 Watts ERP) will need to carry out an EMF assessment using one of the methods described in paragraph 6.24 above.
- 10.4 Where radio equipment is moved but the operating parameters remain the same, a new EMF assessment will not be required. Spectrum users simply need to ensure that the compliance distance (between the antenna and any area where the general public may be present when transmissions are taking place) identified in their original EMF assessment is maintained in order to ensure compliance with the general public EMF limits.
- 10.5 For radio equipment installed on vehicles (e.g. in car-installations) or moving platforms, spectrum users will need to consider whether any members of the general public are or can be expected to be present in any area where the general public EMF limits could be breached when the user is transmitting. We provide further detail on areas where members of the general public may be present in Section 5 above.
- 10.6 Spectrum users will need to ensure they comply with the general public EMF limits in relation to any member of the general public that may be present:
  - a) inside a vehicle or on a moving platform; and
  - b) outside a vehicle or moving platform when the vehicle or moving platform is stationary (or moving slowly within the same area).
- 10.7 In both these scenarios, the spectrum user will need to ensure members of the general public cannot access areas within the compliance distance when their equipment is transmitting (for example, by implementing appropriate control measures, such as those identified in paragraph 6.27 above). This may be straightforward if for example the only members of the general public that may be exposed to EMF in breach of the limits are outside the vehicle and the compliance distance does not extend beyond the physical boundaries of the vehicle. Alternatively, the spectrum user could ensure they do not use their radio equipment when members of the general public could be exposed to EMF in breach of the limits.
- 10.8 Where a vehicle is moving, it is unlikely that the user could expose any member of the general public outside the vehicle to EMF in breach of the general public EMF limits. In this

specific scenario, spectrum users will not need to carry out an EMF assessment in relation to members of the general public outside the vehicle.

## 11. Impact of actions of third parties on compliance

- 11.1 Whilst it may not be possible for spectrum users to become aware of all changes near to sites on which it has radio equipment, we expect spectrum users to be mindful of the environment surrounding a site. If a spectrum user becomes aware of certain developments around a site which could in the future cause a site to breach the general public EMF limits, we expect them 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 general public EMF limits.
- 11.2 In general, if changes around a site are made by third parties that the spectrum user is unaware of and which make the site non-compliant, Ofcom would not expect to immediately take enforcement action. However, once the spectrum 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 spectrum 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.



## 12. Appropriate records demonstrating compliance

12.1 Ofcom may, from time to time, conduct EMF compliance checks and audits. Spectrum users should therefore be in a position to explain the steps they have taken to ensure compliance with the general public EMF limits and provide appropriate records demonstrating their compliance.

### When an EMF record is not required

12.2 We do not require spectrum users to hold an EMF compliance record where any of the following scenarios apply:

- a) The spectrum user is not currently authorised to transmit at power levels higher than 10 Watts EIRP or 6.1 Watts ERP (for example, a spectrum licence may not currently allow the licensee to transmit at power levels higher than 10 Watts EIRP or 6.1 Watts ERP).
- b) The spectrum user is no longer using their radio equipment (i.e. they do not currently transmit using any of their equipment that is authorised to transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP).
- c) The spectrum user does not transmit at powers higher than 10 Watts EIRP or 6.1 Watts ERP.
- d) The spectrum user only uses their radio equipment in emergency situations (see Section 13 below for further information on the Emergency Situations).

12.3 Where Ofcom carries out an EMF compliance check or audit, we may however ask the spectrum user to confirm whether one of the above scenarios applies to its equipment.

### Examples of appropriate records

12.4 Unless one of the scenarios in paragraph 12.2 above applies, the spectrum user will be required to hold an appropriate record demonstrating compliance with the EMF condition.

12.5 What we would accept as an appropriate record for demonstrating compliance with the EMF condition will depend on the circumstances. Spectrum users must hold an appropriate record for all equipment subject to the EMF condition no later than the date on which the user was required to have appropriate records in place. This record must be updated or a new record created each time the spectrum user makes any change or addition to a site which is likely to increase the EMF exposure levels above the levels in their most recent EMF assessment in any area where the general public may be present when transmissions are taking place.

12.6 Examples of what we may accept as an appropriate record include one or more of the records identified below. Where the spectrum user is relying on a compliance distance,

they will also need to have a record of what control measures or other steps have been taken to ensure members of the general public cannot access any area within the compliance distance.

- a) Keeping a record of the calculations they have carried out to confirm that the average power of their equipment is not higher than 10 Watts EIRP or 6.1 Watts ERP (e.g. by printing or taking a print screen of the output from Ofcom's EMF calculator).
  - b) Keeping a record of calculations carried out to determine the compliance distance that needs to be maintained between members of the general public and the antenna (e.g. by printing or taking a print screen of the output from Ofcom's EMF calculator).  
Spectrum users should record the version number of any calculator they have used to determine compliance (which should be automatically included in the print-out from Ofcom's EMF calculator).
  - c) Keeping the relevant manufacturer's instructions on EMF compliance to hand and being able to demonstrate how they are followed.
  - d) Keeping the results of any on-site EMF measurements carried out by the spectrum user or a professional.
  - e) Keeping a record showing the pre-assessed equipment configuration that has been used for assessing compliance and being able to demonstrate (i) how the set-up of their equipment reflects the pre-assessed configuration; and (iii) how that pre-assessed configuration is followed.
  - f) Keeping relevant information on EMF compliance from a third party expert that helped install or advise on the installation and operation of the equipment to hand. This record should provide information on the relevant technical expertise of the third party expert as well as how the spectrum user follows the information they provided.
  - g) Keeping a record of the control measures put in place or how the spectrum user may otherwise ensure that no member of the general public is present in any area in which the general public EMF limits may be exceeded when transmissions are taking place.
  - h) Keeping a record of how it was determined radio equipment only ever exposes individuals that are not members of the general public (as defined in the EMF condition) to EMF that may be in breach of the general public EMF limits.
- 12.7 Spectrum users should record the date on any EMF record they create as well as the version number of any Guidance document they have used to assess their compliance.
- 12.8 Spectrum users should have appropriate processes in place that will enable them to produce the type of evidence identified in paragraph 12.6 above in relation to each site on which they have radio equipment.
- 12.9 Spectrum users should also have appropriate processes in place that will enable them to:
- a) Explain why they considered the steps they have taken to ensure compliance with the general public EMF limits were appropriate for a particular site.

- b) Explain any reasonable assumptions they have made in relation to overlapping target coverage areas and simultaneous transmissions in relation to their own equipment on a site.
  - c) Explain how they ensure they continue to comply with the general public EMF limits including:
    - i) When they have made a change to a site which may have resulted in the EMF exposure levels in any areas in which a member of the general public may be present increasing above the levels in their most recent EMF assessment.
    - ii) When they become aware that a site may not be complying with the general public EMF limits.
- 12.10 All spectrum users should keep a record of the date on which they made the last change to a site which is likely to increase the EMF exposure levels above the levels in their most recent EMF assessment in any area in which the general public may be present when transmissions are taking place. Spectrum users should also keep any EMF assessment that they undertook at that time.
- 12.11 On sites that are shared with another spectrum user, spectrum users should additionally have records in place that will enable them to explain the following (if applicable):
- a) How they have determined that a shared site exemption applies in relation to their own equipment.
  - b) Any reasonable assumptions they have made about whether a shared site exemption applies in relation to another user's radio equipment.
  - c) Where the spectrum user has determined that a shared site exemption does not apply in relation to another user's 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) Any reasonable assumptions they have made about the target coverage area of that other radio equipment.
    - iii) Any reasonable worst-case assumptions they have made about the EMF exposure levels produced by that other radio equipment.
    - iv) Any steps they have taken to obtain relevant information about that other radio equipment.
  - d) Any processes they have in place with other users to determine who has made the last change to a site or be notified of any future changes planned by another user.
  - e) Any processes they have in place to ensure a third party site provider has the information they need to ensure a site remains compliant.
- 12.12 If a spectrum user has equipment operating in multiple locations, they can keep a central record of how they demonstrate their equipment at each site complies with the general public EMF limits. Spectrum users are not required to have a copy of their compliance

record at each individual site. If a spectrum user is relying on the same compliance record for multiple sites then they should be able to demonstrate why that is appropriate (for example because they have the same equipment which is set-up and operates in exactly the same way at each site).

- 12.13 Records can be held by a third party. However, it is the responsibility of the spectrum user that is subject to an EMF condition to provide these records to Ofcom on request. Spectrum users should therefore ensure there are processes in place to ensure compliance records can be made available to Ofcom on request.

## Time period for compliance

- 12.14 Licensees that have had their licence(s) varied to include the new EMF condition, have the following time periods to ensure that EMF compliance records for all their radio equipment that is subject to the EMF condition are in place and up-to-date:
- a) Until 18 November 2021 for any equipment which operates at frequencies above 110 MHz, licensees will have until 18 November 2021.
  - b) Until 18 May 2022 for any equipment which operates at frequencies between 10 and 110 MHz inclusive.
  - c) Until 18 November 2022 for any equipment which operates at frequencies below 10 MHz.
- 12.15 During this time Ofcom may still carry out routine compliance checks and request access to a licensee's EMF compliance records. If the licensee does not currently have any records then if requested the licensee will need to provide evidence to Ofcom that the site is compliant with EMF limits within a period of 20 calendar days. However, we would only expect to request records during this period if we discover radio installations that we consider are likely to be in breach of the general public EMF limits. Provided the licensee cooperates with Ofcom's request and takes any necessary steps to ensure the site is compliant, we are unlikely to take enforcement action and impose a financial penalty or other sanctions on a licensee during this time.
- 12.16 The EMF condition will apply immediately to any new authorisations that include the EMF condition including new licences that are issued. However, all spectrum users subject to an EMF condition will have the time periods identified in paragraph 12.14 above to ensure they have up-to-date EMF compliance records in place.

## 13. Emergency situations

- 13.1 Spectrum users do not need to comply with the general public EMF limits if their radio equipment is being used for the purpose of seeking emergency assistance or reporting and responding to an emergency situation (in the vicinity of that situation) including for search and rescue activities and maritime emergency communications.
- 13.2 This means the use of radio equipment by a spectrum user that is actively and directly involved on the ground in seeking emergency assistance or reporting or responding to an emergency situation is exempt. This includes the scenario where radio equipment is being used by first responders such as mountain rescue teams, the Maritime and Coastguard Agency (MCA) and the Royal National Lifeboat Institution (RNLI) to respond to emergency situations, regardless of whether the relevant radio equipment is a portable device or a mobile installation (e.g. on a vehicle or boat). It also includes all distress communications in a maritime context (by which we mean communications in circumstances where there is a grave and imminent danger to a ship or person and assistance is required).
- 13.3 The emergency exemption does not exempt spectrum users from complying with the general public EMF limits in the following scenarios:
- a) Use of radio equipment that has been temporarily set-up in the vicinity of an emergency situation (such as in a car park) in order to assist first responders (for example, by acting as a relay facility) but where the spectrum user is not actively and directly involved in the emergency response. Whilst the user may not know the exact surroundings in which they may be required to set-up their equipment, we expect users to know in advance how they need to set-up their equipment to ensure it complies with the general public EMF limits.
  - b) Where radio equipment is set-up in a fixed remote location to help facilitate seeking emergency assistance or reporting or responding to an emergency situation i.e. where radio equipment is not being temporarily used in the vicinity of an emergency situation. Where equipment is being used in a fixed remote location, the spectrum user should have already ensured its equipment is set-up in a way which complies with the general public EMF limits.
  - c) Where radio equipment is being used for training activities. Training activities are likely to be planned and we would expect a risk analysis (including risks relating to EMF compliance) to be carried out prior to any training activity. If a spectrum user does not consider it can comply with the general public EMF limits during a training exercise then it can consider undertaking the exercise where no member of the general public will be present in any area where the general public EMF limits may be exceeded when transmissions are taking place. Further, if only workers may be exposed to EMF during a training exercise then the higher occupational EMF limits in pre-existing health and safety legislation will be applicable.
- 13.4 The emergency exemption is a temporary exemption that only applies for as long as an emergency situation exists; it is not an exemption that permanently applies to radio

equipment that is sometimes used in an emergency situation. Spectrum users will need to ensure they comply with the general public EMF limits in all non-emergency situations.

- 13.5 Where the emergency exemption applies to use of a piece of radio equipment, it will also apply to any routine/periodic testing of that equipment that the user needs to carry out to ensure the equipment will work as required in the event of an emergency situation.

## 14. Access to Sites

- 14.1 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 2005<sup>19</sup> to require spectrum users to permit and facilitate the inspection by Ofcom of certain licence exempt radio equipment.
- 14.2 Ofcom may carry out its own EMF measurements from a particular site.
- 14.3 Spectrum users should facilitate Ofcom being provided with access to a site in order to carry out its own EMF measurements.
- 14.4 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 spectrum 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.

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<sup>19</sup> See: <https://www.legislation.gov.uk/uksi/2005/3481/regulation/4/made>

## 15. Potential Enforcement Action

- 15.1 Ofcom has a range of enforcement options available to it to ensure compliance with a licence condition or licence exemption regulations that require spectrum users to comply with the general public EMF limits and keep appropriate records demonstrating their compliance. These include:
- a) Engaging with spectrum 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 simple cautions
    - iii) Instigating criminal prosecution 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.
- 15.2 Ofcom may decide to pursue more than one of these options in the particular circumstances of the case, as permitted by the relevant legislation.
- 15.3 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 spectrum user may be in breach of the general public EMF limits or does not hold appropriate EMF compliance records;
  - 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;
  - the length of time and time of day during which the general public EMF limits were exceeded;
  - the steps a spectrum user has taken to ensure compliance with the EMF condition including the processes and records a spectrum user has in place to ensure compliance (and the extent to which they have in place the processes and records identified in this Guidance);
  - where a spectrum user allows a third party to be in control of their radio equipment, whether the spectrum user could reasonably have been expected to have done more to ensure compliance;<sup>20</sup>
  - whether any breach may be ongoing;

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<sup>20</sup> For example, we may consider whether any third party has been informed of the requirement to comply with the general public EMF limits; whether any training on EMF risks has been provided to the third party; and whether any control measures have been put in place.



- whether timely action was taken to bring a site into compliance;
- whether any breach may be repeated, intentional or particularly flagrant;
- whether the spectrum user has a history of similar breaches or a poor record of compliance; and
- the type of spectrum user that we are considering taking enforcement action against.<sup>21</sup>

15.4 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 spectrum user if a site on which they are present is found to be in breach of the EMF condition 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 spectrum users subject to an EMF condition. Our key objectives are to ensure spectrum users are:

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

15.5 We are less likely to take enforcement action against a spectrum user that can demonstrate it has taken such appropriate steps.

15.6 We recognise that family and friends may be more likely than other members of the general public to be in a position where they can understand, control and/or mitigate the risk of exposure to EMF. We will take all relevant circumstances into account when deciding whether to take enforcement action and what enforcement action may be the most appropriate, noting that proactive enforcement in relation to family and friends is unlikely to be our priority. In particular, we do not anticipate carrying out proactive enforcement related activities in relation to EMF exposure within an amateur radio user's household. However, we reserve the right to amend this approach if we become concerned about compliance and/or the effectiveness of RSGB's training on EMF risks within an amateur's household.

## Variation or revocation of licence

15.7 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.

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<sup>21</sup> 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.

- 15.8 If Ofcom identifies “an immediate risk of ... a serious threat to the safety of the public [or] to public health”<sup>22</sup> it can take urgent action to vary or revoke a licence.

## Restricting use of licence exempt equipment

- 15.9 Ofcom has the power to require spectrum users 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.<sup>23</sup>

## Criminal offences

- 15.10 Criminal offences can be committed in a number of ways as a result of the unauthorised use of radio equipment including:<sup>24</sup>
- a) A failure to comply with the terms and conditions of a spectrum licence including the EMF condition. This may be a failure to comply with the general public EMF limits or a failure to hold appropriate records from the date on which the licensee was required to have such records in place.
  - b) A failure to comply with licence exemption regulations that contain an EMF condition.
  - c) The continued use of radio equipment after a licence has been revoked.
- 15.11 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.<sup>25</sup>
- 15.12 Ofcom can also pursue a prosecution for breach of licence or licence exemption regulations. Ofcom may decide to pursue a prosecution if a spectrum user fails to bring a site into compliance after we have notified the user of a breach of the EMF condition.<sup>26</sup> We may also decide to pursue a prosecution there is evidence “of an immediate risk of ... a serious threat to the safety of the public [or] to public health”.<sup>27</sup>
- 15.13 There are distinct legal processes and standards that Ofcom must follow before a prosecution can be commenced in the different nations of the UK.
- 15.14 If a case is taken to court, penalties for breach of licence or licence exemption regulations 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).<sup>28</sup>
- 15.15 Ofcom can also issue a simple caution where a spectrum user admits they have committed a criminal offence and a prosecution could otherwise have been brought.

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<sup>22</sup> See paragraph 7(7) of Schedule 1 of the 2006 Act.

<sup>23</sup> See Regulation 4 of the Wireless Telegraphy (Inspection and Restrictions on Use of Exempt Stations and Apparatus) Regulations 2005.

<sup>24</sup> See Sections 8 and 35 of the 2006 Act.

<sup>25</sup> See paragraphs 1 and 3 of Schedule 4 of the 2006 Act.

<sup>26</sup> See sections 39 and 41 of the 2006 Act.

<sup>27</sup> See section 41(4) of the 2006 Act. The procedure for prosecutions is set out in sections 39 and 41 of the 2006 Act.

<sup>28</sup> See Sections 8 and 35(5) and (6) of the 2006 Act.

## Regulatory enforcement

- 15.16 As an alternative to other types of enforcement action, Ofcom may 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 complying with an EMF condition.<sup>29</sup> When deciding whether regulatory enforcement action may be appropriate in the circumstances, we will consider the factors identified in paragraph 15.3 above (as appropriate) and any other relevant factors.
- 15.17 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.<sup>30</sup>
- 15.18 If, following a regulatory investigation, Ofcom determines that a licensee has breached one or more conditions of its licence, Ofcom has the power to impose a fine of up to 10% of the licensee's relevant gross revenue.<sup>31</sup>
- 15.19 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.<sup>32</sup> Ofcom will also consider the factors identified in paragraph 15.3 above (as appropriate) and any other relevant factors.
- 15.20 Ofcom also has the power to require a licensee to take steps to remedy its breach by ensuring its radio equipment complies with the general public EMF limits or by bringing a site into compliance which may include requiring radio equipment to be closed down.

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<sup>29</sup> See Sections 39 and 42-44 of the 2006 Act.

<sup>30</sup> See: [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0015/102516/Enforcement-guidelines-for-regulatory-investigations.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0015/102516/Enforcement-guidelines-for-regulatory-investigations.pdf).

<sup>31</sup> See Sections 42(1), 43(2A) and 44(3) of the 2006 Act.

<sup>32</sup> See: <https://www.ofcom.org.uk/about-ofcom/policies-and-guidelines/penalty-guidelines>