Ofcom's EMF licence condition - What you need to know as an Amateur Radio user

This guide provides an overview of what you need to do to comply with Ofcom's EMF licence condition. For full details, you should read our detailed "Guidance on EMF Compliance and Enforcement".

Step 1 - Do I need to comply?

The purpose of the EMF licence condition is to ensure that members of the general public are not present in areas where the general public EMF limits (as defined in section 3 of Ofcom's "Guidance on EMF Compliance and Enforcement") may be exceeded when you are transmitting. It does not require you to protect yourself, other radio amateur licensees or workers from EMF.[1]

If any of the following apply **you do not need to take further action.**

- You do not use your radio equipment at present
- You only use frequency bands below 500 kHz at present

If they do not apply, you are likely to need to carry out a compliance check. **Please proceed to step 2.**

[1] We provide further information on who needs to be protected in step 3 (page 4) of this guide.

Step 2 - Carrying out a compliance check

The purpose of a compliance check is to identify the boundaries of the zone around the antenna within which the general public might be exposed above the general public EMF limits if transmission takes place while a member of the general public is or can be expected to be present.[2] We call this zone the "EMF exclusion zone".

There are a number of ways to carry out a compliance check including:

i. Using Ofcom's EMF calculator or another calculator that you are confident produces accurate results, e.g. the RSGB's[3] EMF calculator
ii. Using one of the pre-assessed equipment configurations developed and shared by representative organisations, for example, the RSGB

Other methods for checking compliance are presented in section 6 of the detailed "Guidance on EMF Compliance and Enforcement".

Using Ofcom's EMF calculator or another calculator that you are confident produces accurate results, e.g. the RSGB's EMF calculator

Ofcom's EMF calculator requires the following input parameters:

- Maximum radiated power[4]
- Maximum transmission time in any 6 minute period
- Frequency of operation (MHz)

RSGB's EMF calculator (designed for amateur stations) and instructions for use are available on RSGB's website.

If the chosen calculator indicates that 'No further assessment is required':

Save the output (e.g. as a pdf, gif or screenshot) or print off a copy and keep this with your licence document. **No further action is required.**

If the calculator provides you with a compliance distance:

Proceed to Step 3

If the calculator indicates that you have entered an invalid frequency:

Ofcom's EMF calculator does not currently cover frequencies below 10 MHz. For these frequencies, you will have a longer period within which to comply, i.e. by 18 November 2022. Ofcom will provide further guidance on compliance in these frequencies in a future version of this guide. You can sign up to receive updates on

[2] Further information on what we mean by the general public and the areas in which they are or can be expected to be present is set out in sections 4 and 5 of our detailed "Guidance on EMF Compliance and Enforcement".
[3] Radio Society of Great Britain.
[4] Ofcom's EMF calculator accepts powers inputted as ERP or EIRP. If you do not know the ERP or EIRP of your equipment, but you do know your peak envelope power and antenna gain, you can enter these parameters in the Power Calculation Tool sheet in Ofcom's EMF calculator. This tool calculates the ERP or EIRP based on these parameters. You can then copy the resulting ERP or EIRP into the main calculator sheet.

Spectrum issues (including updates on this guide and other EMF matters) at the following webpage: https://www.ofcom.org.uk/about-ofcom/latest/email-updates

Using a pre-assessed equipment configuration

This refers to a defined set of station equipment configurations – including antenna type, height, frequency and averaged transmit power – that have already been assessed to be compliant. If there is a pre-assessed equipment configuration available (e.g. on RSGB's website[5]) that corresponds to your own station configuration, you can use this to demonstrate compliance for your equipment.

Proceed to step 3.

[5] Note: RSGB has carried out a number of pre-assessments on behalf of its members and the wider radio amateur community. However, whilst Ofcom recognises that RSGB as an organisation is likely to have the necessary skills and competence to carry out these pre-assessments, Ofcom is not able to verify each and every pre-assessed configuration. Other organisations (e.g. individual radio amateur clubs) may also make pre-assessed configurations available. In all cases, licensees should satisfy themselves that the organisation or individual providing the pre-assessed configuration has the necessary EMF skills and competence. Even where a pre-assessed configuration has been used, if non-compliance is identified, Ofcom will expect the licensee to correct the non-compliance.

Step 3 - Managing compliance

The size and shape of the EMF exclusion zone will depend on the antenna, its location, and the RF power level. Simple methods of assessment produce a single figure of "compliance distance" based on the worst case in any direction. More advanced methods, including pre-assessed configurations, will provide more realistic 3D estimates of the EMF exclusion zone.

You need to ensure that you do not transmit if any member of the general public is or can be expected to be present within the EMF exclusion zone.[6]

The general public can include family, friends, neighbours, lodgers and visitors as well as other members of the general public of all ages. None of these individuals should be exposed to EMF above the general public EMF limits. The general public may either be on public or private property including, for example, on a public footpath, or in a private residence, including in the garden or on a balcony.[7]

No further action is required if the only people able to enter the EMF exclusion zone are either:

i) you (i.e. the licensee);
ii) other amateur radio licensees; or
iii) workers (i.e. persons already protected under existing health and safety legislation). This includes any workers you may invite onto your property e.g. a nanny or tradesman.[8]

Can you manage the EMF exclusion zone as described above without any further action?

YES – Proceed to step 4 **NO – Proceed to step 3A**

Step 3A – What should I do if I can't maintain the compliance distance?

There are a number of actions you can take, each described in more detail below:

i. Using control measures to prevent members of the general public being exposed to EMF above the general public EMF limits.
ii. Changing parameters, e.g. reducing power or transmission time, and recalculating the compliance distance.
iii. Moving the antenna to a different location.

i. Using control measures

Where it may be possible for a member of the general public to get closer to the antenna than the boundary of the EMF exclusion zone, you could consider using control measures to ensure that equipment never transmits if a member of the general public is or can be expected to be present within the EMF exclusion zone.

[6] With certain limited exceptions related to very short exposure times (e.g. from mobile operation – see later)
[7] Further information on what we mean by the general public and the areas in which they are or could be expected to be present is set out in sections 4 and 5 of our detailed "Guidance on EMF Compliance and Enforcement".
[8] In some circumstances you may be considered the employer of workers you invite onto your property which means you will need to comply with existing health and safety legislation in relation to those workers. In any event, you should inform any worker you invite onto your property about potential EMF risks from your radio equipment to enable them to understand and mitigate any risks. Licensees can refer to HSE's website for guidance on how to comply with health and safety legislation.

For example, you might decide to:

- Improve your supervision of the EMF exclusion zone, so that you will be aware if anyone enters and can take appropriate action.
- Physically limit access to the EMF exclusion zone.
- Install clear warning signs.

Further detail on control measures is available in paragraphs 6.27 – 6.30 of our detailed "*Guidance on EMF Compliance and Enforcement*".

ii. Changing station operation

There may also be a number of operational options to reduce the average power transmitted. This will reduce the size of the EMF exclusion zone, so that compliance can be achieved with fewer control measures (NB: each of these options will need to be re-assessed).

Reducing power: Some users may be able to use a lower transmit power without impacting the practical usage of their radio.

If you think it is possible to use reduced power, you can enter the reduced power in the calculator and recalculate the compliance distance. If this is successful, you can proceed to step 4.

Reducing transmission time: Some users may be able to transmit for a smaller percentage of time. A reduction in the transmit time over any six-minute period will give a corresponding reduction in the average power. This can reduce the compliance distance or, may even reduce the average power below the threshold requiring compliance.

If you think it is possible to reduce your average transmission time, you can try entering a different transmission time in the calculator to understand the impact this has on the compliance distance.

If you decide that it is feasible to limit the use of the radio in this way, but think there is a risk that the radio may be used for longer than you have assumed in your compliance calculation, you could also consider some of the control measures listed above.

iii. Moving the antenna

Another option that may be possible in some circumstances is to move the antenna to a different location so that the EMF exclusion zone is no longer accessible to members of the general public.

Proceed to Step 4

Step 4 – Keeping an appropriate compliance record

If you have used Ofcom's calculator or another calculator

You should save the output (e.g. as a pdf, gif or screenshot) or print off a copy and keep this with your licence document.

If you have used any of the control measures mentioned in step 3A, you should also keep a record of this.

If you have developed your own calculation method, you should document this in appropriate detail so that your calculations can be fully understood.

If you have used a pre-assessed equipment configuration

You should keep a record showing the pre-assessed equipment configuration that you used. You should also be able to demonstrate (i) how the set-up of your equipment reflects the pre-assessed configuration; and (ii) how the pre-assessed configuration is followed.

Once you have carried out your compliance assessment and kept (or saved) your record(s), **no further action is required**.

You need to have done this by the following dates:

- **18 November 2021** for frequencies you are using at or above 110 MHz;
- **18 May 2022** for frequencies you are using above 10 MHz but below 110 MHz;
- **18 November 2022** for frequencies you are using at or below 10 MHz.

Further information on the type of records that can be used to demonstrate compliance are set out in section 12 of our detailed "Guidance on EMF Compliance and Enforcement".

Other questions about EMF compliance

How often do I need to check my equipment complies with the new rules?

You will only need to reassess compliance if you make changes to your equipment which is likely to **increase** the EMF exposure levels in any area where a member of the general public is or can be expected to be present. This could happen if, for example, you change or adjust the antenna or make other permanent technical changes to the equipment.

Mobile operation

If your equipment is mobile (e.g. in-car installations), you do not need to repeat your compliance assessment every time it moves. However, you should be aware of your EMF exclusion zone and always make sure that members of the general public are not exposed to EMF in breach of the general public EMF limits. For example, you should ensure members of the general public do not remain in your EMF exclusion zone while your vehicle is stationary. We note that this is unlikely to occur when you are moving and members of the general public are outside the vehicle. Further information is provided in section 10 of our detailed "Guidance on EMF Compliance and Enforcement".

Portable and temporary operation

Ahead of the planned operation, you should assess the size and shape of the EMF exclusion zone for the station configuration that you intend to use. On arrival at the location, identify the area covered by your exclusion zone and then take any appropriate steps to manage EMF exposure to the general public.

I have two or more antennas which transmit towards areas where members of the general public are or can be expected to be present – how do I take account of this?

If you have more than one antenna transmitting simultaneously at greater than 61 Watts ERP, you should calculate the aggregate EMF from these antennas. The additional usage notes in Ofcom's EMF calculator provide a 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.

I am a volunteer for RAYNET-UK. Do I still need to comply?

The EMF condition applies to amateur licensees that are volunteers in the same way it applies to other licensees. This means amateur licensees are not required to protect themselves or each other from EMF exposure.

If you have temporarily set-up your equipment near an emergency situation in order to assist first responders (for example, by acting as a relay facility in a car park) but where you are not actively and directly involved in the emergency response, you will still need to comply with the general public EMF limits. It should still be possible for you to set up your equipment to comply with the general public EMF limits, even if you don't know in advance what environment you will be operating in. Further information is provided in section 13 of our detailed "Guidance on EMF Compliance and Enforcement".

What will Ofcom do to assess compliance?

Ofcom's Spectrum Engineering Officers carry out spot checks to ensure that radio equipment is being operated in accordance with all the terms and conditions of licences.

The checks could come at any time, so it's important for you to make sure you can provide information which demonstrates you're complying with the rules.

If Ofcom finds the EMF from your equipment is above the general public EMF limits or if you cannot provide appropriate records demonstrating compliance to Ofcom, we may take enforcement action.

Further information on potential enforcement action and our approach to enforcement is set out in section 15 of our detailed "Guidance on EMF Compliance and Enforcement".

Feedback on this guide

This guide provides simplified guidance on how to check and demonstrate compliance with Ofcom's EMF licence condition. More detail is provided in our "Guidance on EMF Compliance and Enforcement".

If you think that any part of this guide is unclear or you have general feedback on this guide, you can email us at EMFImplementation@ofcom.org.uk. We will then review your feedback and may take account of this in future versions of this guide. However, we cannot provide individual responses to emails or provide bespoke advice on individual compliance queries.

Version History

The table below shows the version history of this guide. You should always check that you are using the most recent version of this guide when carrying out a compliance check. The most recent version of this guide will be the one published at this webpage: https://www.ofcom.org.uk/manage-your-licence/emf/compliance-and-enforcement-guidance

Version number	Description	Changes	Publication date
V1.0	Original draft version		11 March 2021
V2.0	This version	Comprehensive update following feedback on the draft version	17 June 2021