



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

BT's response to the consultation published on 21 February 2020

12 June 2020

Comments should be addressed to:
BT Group Regulatory Affairs, BT Centre, London, EC1A 7AJ
[✉]@bt.com

Executive summary

1. BT¹ considers the issue of Radio Frequency (RF) safety to be of paramount importance when planning deployment and the operation of all types of radio systems. In BT's case this primarily concerns mobile networks, fixed radio links, satellite networks and licence-exempt technologies. Our consideration of RF safety extends to all relevant parties, be it our customers, our employees and contractors, or other industry players and the general public. We, like other industry players and Ofcom, look to the recognised international standards and follow the advice of international experts that lay down relevant limits on Radio Frequency emissions (notably the relevant advice of ICNIRP)² and recognised international standards for measurements and calculation to ensure compliance.
2. We welcome Ofcom's increased engagement in this subject area, including its programme of measurements of mobile base station emissions. We welcome that this was recently extended to include 5G mobile networks and note that Ofcom's recent mobile base station measurements were well within applicable safety limits by a very considerable margin.
3. In the absence of compliance problems relating to limits on exposure to EMF, we do not think that substantive additional regulation is needed. But we nevertheless agree, in principle, with Ofcom's proposal to include a new provision in the Wireless Telegraphy Act (WT Act) licences to require that all operators (of radio transmitters above 10W power) comply with the ICNIRP safety requirements for the protection of the general public. We recognise this could help instil public confidence in the safety of radio equipment, which we consider to be important, as well as helping to ensure that all radio users are aware of the requirements and standards.
4. We acknowledge the importance of demonstrating this compliance to Ofcom if required and welcome the proposal to publish Ofcom guidance notes to support the process. However, we have concerns about the proposed wording and exact scope of the clauses that would be added to relevant future and existing WT Act licences.

¹ Including its subsidiary EE Ltd.

² International Commission on non-Ionizing Radiation Protection.

1 Introduction

BT has extensive interests in the operation of radio networks of all kinds, most notably mobile networks, satellite networks and microwave fixed links where we hold a very large number of WT Act licences that would be affected by Ofcom's proposals. We also provide our customers with equipment that is subject to licence-exempt use, such as wi-fi routers.

We welcome Ofcom's active involvement in the issue of RF safety compliance through its independent measurements and we recognise the potential advantages to public confidence if suitable specific provisions could be agreed that would be suitable for inclusion in appropriate WT Act licences. This would also help ensure that all radio users are clear on their obligations and the need to ensure compliance.

We set out our detailed views and provide evidence in response to each of the consultation questions in section 2 below.

2 Response to the consultation questions

Question 1: Do you agree with our proposal to take steps to mitigate risks related to EMF and be in a position to hold licensees, installers and users to account if issues are identified?

Please explain the reasons for your response.

Yes, BT recognises that Ofcom has relevant expertise and is well placed to help mitigate risks related to RF Safety and to help reassure the public. In the absence of compliance problems relating to limits on exposure to EMF, we do not think that substantive additional regulation is needed. Nevertheless, we can agree in principle with Ofcom's proposed approach if our comments on the detail of the proposed licence conditions are resolved.

Question 2: Do you agree with our proposal (a) to include a condition in spectrum authorisations requiring compliance with the basic restrictions for general public exposure identified in the ICNIRP Guidelines; and (b) that this condition should apply to equipment that can operate at powers greater than 10 Watts?

If you do not agree with this proposal, please explain what alternative measures you think would be appropriate and why.

BT agrees in principle with the proposal to include a clause relating to ICNIRP compliance within relevant WT Act licences. We also agree that a threshold of 10W EIRP is appropriate to help ensure that the measure is proportionate.

We have some concerns with the wording of the proposed WT Act licence clauses and do not support the proposal as it is currently expressed.

Ofcom's proposed wording for the licence clauses is as follows:

When establishing, installing, modifying or using the Relevant Radio Equipment authorised under this Licence, the Licensee shall only establish, install, modify or use Relevant Radio Equipment on a site (whether or not all of the wireless telegraphy stations and/or wireless telegraphy apparatus on that site is operated by the Licensee or by other users) if the total EIRP emanating from all wireless telegraphy stations and/or wireless telegraphy apparatus on the site is below the basic restrictions for general public exposure identified in Tables 4 and 5 of the ICNIRP Guidelines.

The Licensee shall comply with paragraph [...] above notwithstanding the maximum transmission levels identified in [insert reference to transmissions limits in Licence] of this Licence.

The Licensee shall keep, and make available to OFCOM on request, records (including the results of any measurements, tests and calculations) that demonstrate how it has complied with the basic restrictions for general public exposure identified in Tables 4 and 5 of the ICNIRP Guidelines when Relevant Radio Equipment is established, installed, modified or used.

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

BT has several concerns with this proposed licence wording:

1. The following phrase is not appropriately drafted:

"... if the total EIRP emanating from all wireless telegraphy stations and/or wireless telegraphy apparatus on the site is below the basic restrictions for general public exposure..."

It is not the EIRP of the transmitter that must be below the threshold field strengths; rather it is the signal strength at the relevant locations in the proximity of the transmitter where the general public may be present that has to be below the thresholds.

2. The established practices of technical cooperation amongst mobile network operators enables a licensee to take account of emissions from *other* operators' equipment (that is co-located on the site) when assessing compliance with the ICNIRP requirements. However, this may not be as straightforward in the case of other radio systems. For example, for fixed microwave links a licensee may not routinely have access to the full technical details of all other co-located transmitters that share a transmitter site. The fixed links transmitter scenario is, however, very different to that of mobile base station emissions, but the risk of non-compliance if signals from other operators are not taken into account is much lower because public exposure to emissions outside of the narrow beam of the fixed link are much lower.
3. It is not, therefore necessary (nor reasonable) to require a consideration of signal aggregation as a licence condition in all cases. If it is required, then Ofcom should make available to licensees the full technical details of other licences that are co-located at a site, where it has this information.³ It is also unclear what legal obligation other operators or site owners would have to share such information with a licensee who seeks it for the purpose of providing documented calculations for the purpose of an Ofcom licence condition. We therefore invite Ofcom to give further consideration to these points before any proposals are taken forward. One approach could be to explain within the proposed Ofcom ICNIRP guidance note that, where detailed information of other deployments at a site is not available, a licensee may need to make calculations using reasonable assumptions to reflect unknown additional signal sources (and for allowances to made for a degree of uncertainty in making such assumptions).

³ We note that some fixed links are deployed under a spectrum access licence where Ofcom does *not* hold individual transmitter technical details at each site where the spectrum is deployed.

4. The proposed Ofcom guidance notes explain that compliance with the reference levels for general public exposure in Table 74 of the ICNIRP guidelines should ensure compliance with the basic restrictions of Tables 4 and 5 of the ICNIRP guidelines. However, it would be preferable to recognise this explicitly within the licence itself. In practice the evidence that a licensee might provide by way of demonstration of compliance is most likely to be in terms of predicted power density levels as a ratio of the Table 7 reference levels. We propose that, if any requirement in relation to historical records is included, the licence should explicitly say that the licensee must demonstrate compliance with the basic restrictions of Tables 4 and 5 or the reference levels in table 7 of the ICNIRP guidelines.
5. The licence clause regarding keeping and making available records does not seem suitable for existing licences as it is presently worded. It needs to be clearer that it is not retrospective and would only cover future deployments under existing or new licences. Some of BT's WT Act licences are several decades old and we may not, in every case, hold ICNIRP assessments / measurements from the time the stations were originally brought into use (some licences started before ICNIRP guidelines were even issued) even though the present ICNIRP requirements are respected. For historical deployments under existing versions of licences, the requirement should instead be to demonstrate, if Ofcom requests, that the emissions from a given transmitter comply with the ICNIRP guidelines. It should not require records of how the ICNIRP requirements were complied with when the equipment was "established" or "installed" as the requirements to keep records for Ofcom did not exist at the time and in some cases the ICNIRP requirements did not exist either. It will still meet the objective of the intervention if operators are simply asked to demonstrate *current* compliance to Ofcom on request.

Finally, we have noted in section 6 of the consultation that Ofcom has set out an analysis of the relevant legal framework, which is helpful. Whilst this covers the legislative provisions, we note that some existing mobile spectrum licences may also require the consent of the licensee to a proposal to vary the licence terms.

**Question 3: Do you agree with our proposed guidance on EMF compliance and enforcement?
Please explain the reasons for your response.**

BT agrees that it is helpful for Ofcom to issue guidance on this subject. In general, BT considers the guidance in Annex 2 of the consultation document to be clear. However, we would suggest that some additional detail is provided on the evidence that is expected, particularly with reference to the use of statistical methods. While IEC62669 is referenced in relation to standards, this document refers to case studies on a small number of cells in a specific location, which may not be representative of different operators in different locations. It is unclear to BT whether reference to this document would be seen by Ofcom as sufficient evidence/justification to use the power back-off factors found in those case studies on a general level, or whether specific evidence would be required by Ofcom for an individual network, or even cell site level, and what such evidence would look like.

BT also notes that, where measurement is to be used as the basis for continued compliance (A2.12), no reference is made to the need for *ongoing* measurements. Even without modification to the site,

⁴ We note that since the consultation was issued the ICNIRP guidelines have been updated and the Table numbering has changed, but for the purpose of this response we refer to the prior numbering that Ofcom used and assume Ofcom will use the updated references in its final Statement.

the power output of a site varies depending on a number of factors including number of users and their location within a cell at the time of measurement. We would therefore welcome Ofcom suggesting a framework for ongoing measurement.

BT also suggests that Ofcom offers advice for scenarios where an operator is unaware of a site potentially becoming non-compliant due to circumstances outside of its control. This should cover how this should be managed and highlight responsibilities which would reside with other organisations. For example, in the scenario where a new building is developed within the compliance distance of a site and the risk has not been appreciated by the local planning authority or the building contractors, resulting in the operator not being informed.
