Your response

Question	Your response
Question 1: (Section 2) Do you have any comments on our assessment of potential use cases, demand and deployment strategies for new uses of mmWave spectrum?	
Question 2: (Section 2) Do you have any comments on our proposed overall approach to mmWave spectrum (including our aim to make the 26 GHz and 40 GHz bands available for new uses on the same or similar timeframe)?	Yes, please see response from pp. 4-8 below.*
Question 3: (Section 3) Do you agree with our approach of specifying high and low density areas in the UK, and authorising new uses differently in those areas?	
Question 4: (Section 3) Do you agree with our overall authorisation approach in high density areas for the 26 GHz band (i.e. to grant Shared Access licences on a first come, first served basis for the bottom 850 MHz of the 26 GHz band, (24.25-25.1 GHz), and to auction citywide licences for the rest of the 26 GHz band (25.1-27.5 GHz))?	
Question 5: (Section 3) Do you agree with our overall authorisation approach in low density areas for the 26 GHz band (i.e. to grant Shared Access licences on a first come, first served basis)?	
Question 6: (Section 3) Do you agree with adopting a similar approach to authorising the 40 GHz band as our proposals for the 26 GHz band, if we were to decide to re-allocate the 40 GHz band?	

Question 7: (Section 4) Do you agree with our proposed methodology for identifying and defining high density areas?	
Question 8: (Section 4) Do you agree with our proposed cut-off point of 40 high density areas?	
Question 9: (Section 5) Do you agree with our proposal to clear the fixed links in and around high density areas from the 26 GHz band?	
Question 10: (Section 5, Annex 8) Do you agree with our estimates of the cost of migrating fixed links into alternative spectrum bands?	
Question 11: (Section 6) Do you agree with the proposed approaches we have outlined to manage coexistence between new 5G users and the different existing users in the 26 GHz band? In particular, do you have any views on our proposals to limit future satellite earth stations in this band to low density areas only, and to end access to this band for PMSE users with five years' notice?	
Question 12:(Section 7) Do you agree with our initial assessment on which option for enabling the 40 GHz band for new uses would best achieve our objectives?	
Question 13: (Section 7, Annex 8) Do you agree with our analysis of the impact on existing 40 GHz licensees, including our estimates of the cost of moving fixed links under the options involving revocation (options 2, 3 and 4)?	

Question 14: (Section 8) Do you have any comments on our high-level Shared Access proposals (including technical and non-technical licence conditions and proposed approach to setting fees)?	
Question 15: (Section 8) Do you agree with the overall approach we have set out to coordination and coexistence between new Shared Access users in the 26 GHz band and existing users?	
Question 16: (Section 9) Do you have any comments on our initial thinking in relation to auction design?	
Question 17: (Section 10) Do you have any comments on the licence duration options we have considered in this section for new licences for the 26 GHz and 40 GHz bands that we would auction?	
Question 18: (Section 11) Do you agree with our assessment of potential competition concerns and that it may be appropriate to impose a competition measure such as a 'precautionary cap'?	

** Please see pp. 4-8 below for PHIRE's response to this consultation (please turn to next page).*

Physicians' Health Initiative for Radiation and Environment (PHIRE)

Response to Ofcom (18/07/2022)

Consultation: 'Enabling mmWave spectrum for new uses'

"We are proposing to make a large amount of millimetre wave (mmWave) spectrum available for use of mobile technology, including 5G. We want to enable opportunities for a wide range of users and applications across the country to access mmWave spectrum for new uses.

We recognise that mass market applications for mmWave spectrum are still at an early stage worldwide, but believe this spectrum has the potential to deliver significant benefits by enabling large increases in wireless data capacity and speeds."

About the responding organisation

The Physicians' Health Initiative for Radiation and Environment (PHIRE) is an independent association of medical doctors and associated specialists assembled for the purposes of improving education regarding health effects of non-ionising radiation (NIR).

We collate research produced globally on this issue, share and critique it, and also conduct our own research. We use the resulting knowledge to help educate ourselves and others, improve best practice guidance, and facilitate the protection and support of vulnerable groups.

Reason for this submission

We have overriding concerns about the important health consequences of increased exposures to non-ionising radiation from wireless technology.

Further information

Additional evidence in support of our consultation and inquiry responses:

PHIRE & BSEM 2020 NIR Consensus Statement (PHIREmedical.org)

Electromagnetic Radiation Safety: Website search results for 'mm waves' (SaferEMR.com)

Procedural note

Ofcom states in the Enabling mmWave spectrum for new uses main consultation document that "in the interests of transparency and good regulatory practice, and because we believe it is important that everyone who is interested in an issue can see other respondents' views, we usually publish all responses on the Ofcom website as soon as we receive them" (p. 124, A1.11). We agree with these principles; however, although the regulator is known to have received other critical submissions we note that the consultation webpage simply read 'No responses to show' by the time of the deadline.

Consultation questions and responses

Question 2: Do you have any comments on our proposed overall approach to mmWave spectrum?

As set out in detail in the referenced PHIRE & BSEM 2020 NIR Consensus Statement, and as we further affirmed recently in responding to HMG's Biological Security Strategy consultation and the Commons DCMS Select Committee's connected tech inquiry, the approach taken regarding the use and regulation of non-ionising radiation (NIR) in general has proved to be biologically deleterious;[1] and there is still more reason to be concerned about 5G NR (New Radio) emissions in prospect.[2] Whilst there is less data concerning use of mmWaves, nonetheless, there is evidence of negative biological interaction,[3] and new papers are emerging which corroborate these concerns.[4]

As Ofcom and its partners in industry, government, and advisory agencies have been made well aware in recent years, the majority of independent, peer-reviewed scientific studies and expert opinions show that radiofrequency radiation (RFR) emitting systems currently in use undermine human, animal, and plant health and resilience.[5] In the context of copious evidence of harm below guideline levels of exposure, as well as deficient communication of potential *and* demonstrated hazards and risks on the part of key public, private, and third-sector organisations (including Ofcom and its partners), RFR exposure is causing preventable damage to public and environmental health.

Given the continued absence of health and safety and environmental impact assessments, the unchecked proliferation of wireless technology is entirely unethical. We know that Ofcom relies on the UK Health Security Agency (UKHSA) to provide advice regarding the impact of NIR on public health: the agency is also in receipt of the Consensus Statement and has, together with HMG, failed to properly respond. As such, it is incumbent upon the regulator to intervene, in the public interest.

The public have never been afforded the rightful opportunity to either provide or withdraw their informed consent to exposure which, given the rapid spread of RFR throughout our environment, is by now essentially impossible to avoid. Nor have citizens been provided with democratic representation/recourse, or seen close to adequate action on the part of advisory and regulatory agencies, on this and related issues. Instead the wireless/IoT agenda has been advanced, recklessly and unrelentingly, regardless of the compelling concerns raised.[6] As such, it should be clear that the present agenda runs entirely contrary to British values and, as is becoming evident, represents a material threat to not only health and well-being but also to trust, security, and democracy.

Besides numerous demonstrated as well as potential human health effects, as Ofcom and DEFRA are aware, there are wider direct ecological and indirect environmental problems relating to NIR. As set out below, mmWave spectrum release is not consistent with the regulator's Environmental Policy: Ofcom has a key "part to play in addressing threats to our planet natural systems and biodiversity" but is not "preventing pollution" or "minimising the environmental impact" where NIR is concerned.[7]

A growing body of research suggests that plants and wildlife are being harmed by NIR, with insects (predictably) being particularly profoundly affected by higher GHz frequencies. For instance, as Ofcom should be aware, a recent substantial three-part scientific review titled "Effects of Non-Ionizing Electromagnetic Fields on Flora and Fauna" (2021) noted that: "Numerous studies across all frequencies and taxa indicate that current low-level anthropogenic EMF [electromagnetic fields] can have myriad adverse and synergistic effects, including on orientation and migration, food finding, reproduction, mating, nest and den building, territorial maintenance and defence, and on vitality, longevity and survivorship itself."[8]

"Wired infrastructure is inherently more future-proof, more reliable, more sustainable, more energy-efficient, and more essential to many other services. Wireless networks and services are inherently more complex, more costly, more unstable, and more constrained." – Dr Tim Schoechle, Senior Research Fellow, National Institute for Science, Law and Public Policy, Washington DC.[9]

At PHIRE our primary focus, however, is health: any benefits arising from further deployment of NIR emitting technology will never offset the very real and present damage to the health of humans and natural ecosystems. *Please see our 2020 NIR Consensus Statement for further details and references.*

Relatedly, we note recent legal developments both sides of the Atlantic, e.g. in the US Federal Court of Appeal,[10] and the UK Court of Appeal.[11] Such cases hinge on clear failures to respond to numerous cogent and well evidenced reports of human and broader ecological harm and the pressing need to meaningfully revisit NIR exposure guidelines, together with associated administrative, procedural, and informational failings. These cases signal the beginning of the end for unsafe and unsustainable NIR emitting wireless technology.

Ofcom should now publicly fully commit to working with *all* stakeholders to ensure that current scientific evidence of hazard and risk, together with both precautionary and urgent advice, reaches the entire population: given the dire need for this we must see public health informational policies and campaigns on a scale matching those of the recent past.

Relatedly, the regulator must now also finally dispense with ICNIRP's arbitrary, skewed, and unscientific guidelines,[12] which include only short-term, thermal effects and hence fail to address well established sub-guideline adverse bioelectromagnetic effects. Instead, genuinely independent and objective, scientific, biological evidence-based international exposure guidelines should be adopted as an urgent priority. BioInitiative,[13] EUROPAEM 2016,[14] IGNIR, [15] and Building Biology are useful reference points in this regard,[16] and we are happy to further input here (as elsewhere).

By the same token, Ofcom must now also lead on ensuring that we finally see a much needed and long overdue immediate moratorium on deployment of new RFR emitting wireless systems and on the release of any additional spectrum in the UK. Whilst we have plenty of evidence of biological harm at lower frequencies, few studies have been published on human health effects of mmWaves. As US Senator Richard Blumenthal put it, in addressing industry representatives during a committee hearing in 2019, "we're kind of flying blind here, as far as health and safety is concerned".[17]

What we *do* know is that mmWaves are maximally absorbed superficially, and hence adverse effects on skin, eyes, and testes are of particular concern in humans.[3] Further quasi biological experimentation on all exposed organisms and broader interconnected ecosystems with RFR emissions obviously should not and *cannot* be permitted.

The above-noted factors are especially perturbing given the ever-increasing number, range, and total spectrum bandwidth of exploited frequency bands, with ever higher peak intensity emissions emanating from transmitters in ever closer/more covert proximity to people, pets, and wildlife.

To complement any moratorium, Ofcom also has a duty to ensure that relevant stakeholders focus squarely on working to replace RF systems with alternatives, and to otherwise endeavour to minimise environmental exposure levels and to protect members of vulnerable groups in particular: these include pregnant women and foetuses, children, the elderly, those acutely affected by Electromagnetic Hypersensitivity (EHS), and those with any one or more of a broad range of comorbidities, including cancer, dementia, and cardiovascular disorders.[1]

Beyond the above, no new NIR-emitting technology – e.g. 5G NR/6G/wireless charging – should be permitted: the onus must be on those proposing to irradiate our landscape, society, and wider environment to comprehensively demonstrate the safety and sustainability of their products *before* deployment. After all, market leading operators such as EE have sought to placate concerned citizens for years, repeatedly stating that 5G mmWaves were not "coming to the UK".[18]

Additionally, Ofcom could and should do much more to signal, lead on, and otherwise incentivise safe, ethical, and sustainable digital trends, e.g. by working to swiftly implement a future-focused program of 'low-EMF' grants, prizes, and stakeholder education and information campaigns. This would best be approached on a united multisectoral basis, as a matter of most urgent priority. Again PHIRE, among other interested independent organisations, would be happy to support this.

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