Virgin Media O2 response to Ofcom's consultation on

Spectrum for Unmanned Aircraft Systems (UAS):

Approach to authorising the use of radio equipment on UAS

September 2022

INTRODUCTION

Virgin Media O2 ("VMO2") welcomes the opportunity to respond to Ofcom's consultation on Spectrum for Unmanned Aircraft Systems (UAS): Approach to authorising the use of radio equipment on UAS[1].

Ofcom's consultation is timely, as drones are becoming more commonplace in society and have the potential to play an important role in many areas. Harnessing the possibilities of drone technology for good, connected by mobile networks, can allow us to find solutions to many daily challenges and even help save lives.

VMO2 are actively supporting innovation of connected drones through tests and trials on our 5G network, and developing solutions that support the healthcare and emergency services industries. Working with partners that hold a shared vision for the future of technology that benefits society, our tests and trials are focused on opening up the possibilities of drones and how they can be deployed to help people in critical situations and assist the NHS.

Working with drone logistics operator Skyfarer, along with Cranfield University, Phoenix Wings and unified traffic management solutions provider Altitude Angel, VMO2 has been able to power the first medical drone delivery network trial in England[2]. The trial has shown that the ability to relay real-time data over our network, can speed up patient response times and make drone delivery of blood for lifesaving transfusions a reality. The infrastructure that we're helping to build, will provide a faster, greener form of medical transport – with no impact on road congestion or fossil fuel emissions. On top of this, the technology has the wider potential to expand logistical developments, upskill workers and innovate a new sector.

Working with Swiss drone company Fotokite, VMO2 also conducted a first of its kind trial in the UK, testing a 5G-enabled, tethered drone in a simulated rescue mission[3]. The interactive drone provides emergency services and public safety teams with accessible and mission critical situational awareness tools. With a quick set up time of two minutes, no time is lost in conducting situational analysis of a scene, potentially saving lives. The tethered drone can be positioned up to 45 metres above a situation and using 5G technology, sending real-time data to first responders on the ground and teams in other locations such as local hospitals, to immediately assess what's happened. Using thermal imaging capabilities to highlight where people are is a particularly useful tool in dark and densely forested areas, and this type of response also has significant green benefits too, as the drone is lightweight and powered by electricity.

[1] https://www.ofcom.org.uk/__data/assets/pdf_file/0035/238697/drone-condoc.pdf

[2] https://news.virginmediao2.co.uk/archive/first-medical-drone-delivery-network-set-to-take-flight-in-the-heart-of-england-potentially-cutting-waiting-times/

[3] https://news.virginmediao2.co.uk/5g-connected-tethered-drone-to-elevate-possibilities-for-emergency-services-first-responders/

Our test and trials programme helps shine a spotlight on the capabilities of 5G innovation, focusing on tangible projects that will benefit the wider society. Over the past couple of years, we've trialled several services, including the use of drones, that put our connectivity potential into action, and we have shown that these applications and technology have the power to revolutionise emergency service rescue and patient care.

We are further exploring and developing 5G-enabled services that will make real differences to the public, from smart cities to connected vehicles. By applying the capabilities of our network to everyday use cases, there is an opportunity to demystify 5G and show how the technology can improve people's lives now and in the future.

GENERAL COMMENTS

We welcome the fact that Ofcom are taking a pro-active approach by consulting on proposals in relation to the potential authorisation of the use of a range of radio equipment on drones. We recognise that the ability to fly drones at greater distances, and the demand to transmit back high-quality video, as well as support remote operations beyond visual line of sight ("BVLOS"), is likely to drive demand for use of suitable mobile spectrum and utilisation of mobile networks.

Decisions that Ofcom take in this area could enable significant benefits, or (if such decisions are mis-directed, or ill-informed), could result in negative consequences. Ofcom should therefore take an informed and balanced approach. For example, it must ensure that it's spectrum authorisation approach minimises the risk of interference and negative impact to the technical quality of service of the host mobile network.

The use of drones, connected to mobile networks, is still at an early stage of development. This makes it difficult, at this stage, to be sure about outcomes. Test and trial activity is ongoing and 'unknowns' undoubtedly remain, both in terms of the potential impact to mobile networks, including interference, and any unforeseen impacts, as well as the likely take-up and usage.

As a result, we strongly recommend that, prior to full authorisation, there should be a trial period, for example 6 months, in order to first prove or disprove possible interference, and any unforeseen impacts to host mobile networks.

We provide below, our responses to Ofcom's specific consultation questions.

RESPONSES TO OFCOM QUESTIONS

Question 1: Do you agree with the proposal to license drone equipment rather than to licence exempt? If you disagree, please provide the evidence that would support any disagreement with the proposals.

Yes, we agree that a licensed approach (as opposed to licence exempt) is appropriate.

Question 2: Do you agree with the proposed authorisation approach for UAS? If you disagree, please provide the evidence that would support any disagreement with the proposals.

We strongly recommend that, prior to full authorisation, there should be a trial period, for example 6 months, in order to first prove or disprove possible interference, and any unforeseen impacts to host mobile networks.

We do not agree with the proposal to license each UAS operator, rather than each UAS. The key aspect here is interaction with the mobile network, in terms of equipment on each drone, and the location of that drone.

Ofcom's approach should be to licence all the equipment on a UAS. As Ofcom itself points out, this would mirror the method currently used to authorise equipment on an aircraft, whereby each aircraft has its own licence that details all of the equipment on board. Ofcom identifies that this approach has many benefits as it would require only one application per UAS and would follow mature processes that it has in place. It would also allow flexibility for additional equipment to be included in the licence, making it easier to enable the deployment of any new technology, or to implement safety requirements from the CAA.

Question 3: Do you have any comments on the proposed licence conditions?

We think that the 3.8-4.2 GHz (shared access) band could be suitable for use by drones. Ofcom has already authorised some trials in this band through its Innovation and Trial licensing regime and we see no obvious reason why this band is not included in the consultation proposals.

Question 4: Do you have any comments on the proposed list of equipment and associated conditions?

As mobile networks were not specifically designed with drone usage in mind, there will be some limitations to the distance and altitude at which the associated User Equipment ("UE") will be able to operate via connection to a mobile network. As a result, a 'safe auto-land' feature should be mandated, to ensure that any disconnection from the mobile network does not impact the safe operation of the drone. Absence of such a feature raises a significant issue in relation to authorisation, as well as liability.

Whilst Ofcom's proposals are clear that the licensee must first have written permission for airborne use of its UE from the mobile network(s) to which that UE connects, it is not clear how Ofcom intends to deal with a situation whereby an unauthorised UE is connecting in an unauthorised manner (noting

that any SIM may connect, including national roamers). We would be interested in understanding Ofcom's anticipated approach to such a scenario.

We completeness, believe that UE usage should involve CE certified modules, 0dBi omni antennas, low power operation, SIM authenticated, and use 3GPPP Release 15 (or later).

Question 5: Do you agree with Ofcom's assessment on whether to introduce UAS operator licences? If you disagree, please provide further information.

We strongly recommend that, prior to full authorisation, there should be a trial period, for example 6 months, in order to first prove or disprove possible interference, and any unforeseen impacts to host mobile networks.

We think that it would be sensible for test and trial to be conducted in rural areas first, in order to help understand any issues, before moving to assess potential feasibility in urban areas.