

Your response

Question	Your response
<p>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.</p>	<p>Confidential? – N</p> <p>In general terms, NATS supports licensing of UAS / drone radio equipment, especially for those frequency bands that are used by aviation for the purposes of safety and flight regularity. NATS would not support outright licence exemption for all UAS / drone spectrum use.</p> <p>NATS does however have concerns with aspects of the proposed framework as presented in the consultation.</p>
<p>Question 2: Do you agree with the on the proposed authorisation approach for UAS? If you disagree, please provide the evidence that would support any disagreement with the proposals.</p>	<p>Confidential? – N</p> <p>NATS disagrees with the proposed authorisation approach as presented in the consultation document. This is on the understanding that what is being proposed is to issue a single licence document to a drone operator covering multiple frequency bands for use within one or more unmanned aircraft systems, for both the unmanned Aircraft and the Remote Pilot Station. It appears from the proposal that the use of all bands listed in Table 1 / Schedule 2 (“Table 1” to refer to both from here) of the proposed draft licence in the consultation document would be permitted as a standard set on each licence, whether or not a given UAS would require to be equipped with equipment in all of those frequency bands for the type of airspace in which the Unmanned Aircraft is/are planned to be flown.</p> <p>NATS does however agree with Ofcom’s assessment that requiring a licence for each individual piece of equipment on a drone / Unmanned Aircraft would be inappropriate, i.e. such that a single UA would require multiple licences; not least that this would be more onerous than the approach taken for an Aircraft Radio Licence.</p> <p>NATS understands that the existing Aircraft Radio licence application process (as a model for the proposed UAS framework) was, at least historically, in part used to inform the CAA airworthiness processes for aircraft radio equipment, including both transmitters and receivers. As such, the equipment categories listed by Ofcom for aeronautical systems align in</p>

part with those [published by CAA](#). The CAA categories in some cases describe several systems operating in different frequency bands but these appear to have been incompletely read across in the mapping of categories to system types and frequency bands in the current Ofcom Aircraft Radio licensing and now the proposed UAS processes.

It is also the case that aircraft equipment in a number of the (aeronautical) frequency bands quoted are intended for reception only by an aircraft and this should, in general, be no different for UA use of the bands / equipment in question.

The descriptions for certain of the band / equipment categories on the Ofcom website for Aircraft Radio Licences have also not been fully read across to the “Requirements” column in Table 1. With that, the receive only restriction to the use of systems in certain of the bands is lost and so permission to transmit in these bands might be incorrectly inferred.

This should not be interpreted as NATS proposing that only those bands that would be permitted for transmission from an aircraft / UA(S) should appear on the aircraft / UAS licences. We believe it is important to maintain the links between the WT Act licence, frequency bands in use and the requirement for all radio apparatus on an aircraft being of appropriately approved types, whether transmitters or receivers.

It is understood that only the categories of equipment / bands to be used on a given (manned) aircraft are authorised in the Aircraft Radio licence granted for that aircraft. Section 4.27 of the consultation document implies that in the case of the proposed UAS licence, the full range of bands / equipment / technologies in Table 1 would be permitted, irrespective of what is actually appropriate for the airspace within which the UA(S) is to be permitted to operate. If the UAS licence was to mirror the Aircraft Radio licence process and only permit the equipment that is intended to be fitted, even if only at a fleet level this would also provide Ofcom (and perhaps CAA) with data of the types of radio equipment actually being used with (licensed) UAS.

The consultation document defines an Unmanned Aircraft System as “An unmanned aircraft and the equipment to control it remotely.”. That remote control equipment, i.e. the Remote Pilot Station, RPS, is most likely to be a ground station (potentially a satellite station for certain bands?) rather than an air-

craft station. That said, it is not infeasible that a RPS might itself be located on an airborne or seaborne platform, although it is not known whether such scenarios are being considered by Ofcom. With inclusion of the RPS in the proposed licence and the apparent proposal to permit all of the bands listed in Table 1, it therefore appears that the proposed licensing framework is implying permission would be granted for ground station transmissions in frequency bands allocated for aviation safety purposes that are otherwise only authorised under Aeronautical Ground Station licences with specific frequency assignments and subject to other CAA Approvals. Such a potential overlap of processes would be of great concern to NATS and if this was to be intended, we would request discussions with Ofcom and CAA so that the implications may be further explored.

This appears to mean that without additional clarifications in the Ofcom processes and increased guidance to licensees, even with the proposed draft licence condition pointing towards the use of CAA Approved equipment, there is a risk that a UA(S) licence appears to permit transmissions that may impact other aviation uses of the bands under consideration. Please also see comments later in the NATS response in relation to specific bands and how these are described in the proposed draft licence.

Any aircraft flying internationally is required under Article 29 of the ICAO Convention to carry its own aircraft radio station licence. By proposing to licence at an operator and not airframe level, it would also appear that this UAS framework could not be readily extended in the future to any UA capable of flying across an international border, accepting that the current proposals permit UAS radio use only within the UK and territorial seas.

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

Confidential? – N

Non-technical licence conditions:

The section on geographical boundaries, 4.19 states, “The licence would allow use of equipment within the United Kingdom and territorial seas.....”. This limitation does not appear to be addressed in the proposed draft licence in Annex A.2 of the consultation document.

In addition, NATS understands “territorial seas” to mean within the 12NM limit, however we consider that an UA under BVLOS operation may fly beyond this limit, e.g. into the North

	<p>Sea. It is also not inconceivable that a Remote Pilot Station might be located beyond the 12NM limit, e.g. on an oil / gas platform or on a ship.</p> <p>Does the proposed geographic limitation need to be further considered so as not to preclude such potential UAS operations?</p> <p><u>Special conditions relating to the use of certain radio equipment:</u></p> <p>While it is for others to make the case for the use of mobile data networks or satellite systems for UAS/drones (for command-and-control use, i.e. aviation safety), NATS supports the proposals for specific written permission to have been provided by Mobile Network Operators or Satellite System Operators before any use of mobile data networks or ESOMPs respectively in aerial UE / Earth Stations for UAS/drones.</p>
<p>Question 4: Do you have any comments on the proposed list of equipment and associated conditions?</p>	<p>Confidential? – N</p> <p><u>Technical licence conditions:</u></p> <p>Condition 2b in the proposed draft licence makes reference to Use of Radio Equipment that conforms to the Radio Equipment Regulations 2017 or for which approval has been granted by (or on behalf of) CAA. This has lost the additional reference to also permit equipment approved by EASA (as in the sample Aircraft Radio Licence published earlier in 2022) . Should that EASA reference also be included in the proposed UAS licence?</p> <p>Other authorisation terms:</p> <p>Section 4.28 states that the WT Act licence does not address flight safety aspects of radio use, nor does it constitute permission to disregard the legitimate interests of other statutory bodies such as the CAA. NATS understands and supports these assertions, but they do not appear to be contained in the proposed draft licence in Annex 2 of the consultation document or in the Wireless Telegraphy Licence Conditions Booklet OfW 597; how are they to be applied / conveyed to licensees?</p> <p><u>Table 1 / proposed draft licence Schedule 2:</u></p> <p>Please also see the NATS response to question 2 for additional context to some of these comments.</p>

Examples are given below of apparent mismatches in descriptions of categories, systems and/or frequency bands as they apply to the UAS proposals; however, these are not to be taken as being exhaustive. NATS respectfully suggests that a review of the wording, band descriptions etc. would be beneficial across all of the equipment categories for both Aircraft Radio and the proposed UAS licences, particularly those relating to aeronautical CNS systems.

- NATS understands that the use of VDL-4 for UAS in the bands between 108 and 137 MHz is not supported in the UK; if this is indeed the case, we propose that references to VDL-4 be removed from the list of bands / requirements column etc.
- 108 – 117.575 MHz should be 108 – 117.975 MHz. The band should be noted in the “requirements” column as receive only for VOR, ILS localiser and potentially GBAS to support GNSS use. “Marker” or “marker beacons”, although still “VHF Navigation”, are outside this band as noted in a different category for Aircraft Radio licences and but are not included in the UAS proposals.
- Two entries referencing DME; both quote the full 960 – 1 215 MHz band in Aircraft Radio licence material but one of the bands incorrectly quotes 1 165 – 1 215 MHz for DME within the UAS proposals. “Area navigation” as an equipment type description in the CAA list includes a number of sensors, including DME - so shouldn’t be a frequency band-based category described as it is (DME only) in the Ofcom documentation.
- Instrument Landing System, Glide Path - 328.6 to 335.4 MHz: The band should be noted as receive only for an Aircraft Radio licence / UA. We note that this band is also missing from the Aircraft Radio licence category / equipment list.
- Aeronautical mobile airport communication system - 5091 to 5150 MHz: clarification is requested on the inclusion of this band as NATS understands that it is not widely available, if at all, for civil aviation use in the UK. The band is not an option on the Aircraft Radio licence and there is, as yet no Aeronautical Ground Station licence product available to permit its use, which is also anticipated to require specific frequency assignment activities, so its apparent availability for UAS under the proposed process is questioned.

- NATS notes that Ofcom is following discussions around the potential use of the band 5030 to 5091 MHz for UAS use, given that there are international allocations in this band to aeronautical safety services that are intended to support co-ordinated terrestrial and satellite command-and-control links. However, as such systems are anticipated to require frequency assignment activities as part of their authorisation then NATS is of the view that the proposed UAS licensing process would not be an appropriate mechanism for this band.

NATS notes that ESOMP (ESIM?) in the bands referenced in Table 1 are generally described in ITU Regulatory material, e.g. Resolution 156 (WRC-19), Resolution 169 (WRC-19), such that they "...shall not be used or relied upon for safety-of-life applications..". It would therefore appear appropriate to include such restrictions in the proposed draft UAS licence for these bands and others where there may be similar prohibitions.


On the understanding that the UAS licence is to permit the use of transmitters, receivers and other radio apparatus, there appear to be some omissions from the Table 1 list when compared to the list of equipment available to be permitted under an Aircraft Radio licence, where these systems / bands would certainly be used by UAS, e.g. GNSS / satellite navigation ("GPS") receivers.

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

Confidential? – N

NATS is working with CAA and industry towards the increased use of UAS and how they may be safely integrated into the wider aviation environment. NATS is also a licensee of aeronautical CNS ground stations so agrees with the overall direction of Ofcom's assessment on whether to introduce UAS licences.

As set out in this response however, NATS does have concerns with certain aspects of the current proposal where we believe it could lead to an overly permissive UA(S) licence such that there could be impact on the use of aeronautical Communications, Navigation and Surveillance frequency bands for both manned and unmanned aviation. These concerns arise in part from the proposed inclusion of the Remote Pilot Station in the same licence as that for the Unmanned Aircraft, moving away from the per-airframe licensing model – although we recognise that seeking to



identify individual airframes also creates complexities and the detail of certain bands as proposed to be quoted in the new licence and how their uses are being described.