

Response ID ANON-72TN-18T7-Y

Submitted to Consultation on Electronic Conspicuity – Initial Technical Concept of Operations
Submitted on 2025-10-03 08:51:24

About you

1 Are you responding in an official capacity on behalf of an organisation?

Yes

If yes, please tell us its name:
British Gliding Association

2 What is your name?

What is your name?:
Pete Stratten

3 What is your email address?

Email:
pete@gliding.co.uk

4 Are you answering as:

If other, please specify:
British Gliding Association

5 If you are a member of the General Aviation community, which sub-category are you answering as?

Glider / TMG

If other, please specify:

6 If you are from the commercial aviation industry, which sub-category are you answering as?

If other, please specify:

7 What, if any, EC Device do you currently use?

What, if any, EC Device do you currently use?:
Predominantly FLARM, but also SkyEcho, Mode S transponder, and Pilot Aware all in use across the UK sailplane fleet, all of which is purchased, installed and maintained by private owners.

8 Have you read the Initial Technical Concept of Operations for EC before completing this consultation?

Yes

9 Do you consent to your response being published on this consultation website?

Yes, with personal identifying information (name, organisation, respondent category, location, additional information - please note your email address will NOT be published if you choose this option)

The Role of EC in UK Airspace

10 Position 1. EC will be an enabler for both air-to-air tactical and strategic deconfliction within non - segregated airspace. Tactical deconfliction will be the primary mitigation, while strategic deconfliction will enhance risk management. Ground infrastructure will enhance both mitigations where appropriate

Tend to Disagree

Please explain your answer and provide any other general comments.:

The BGA strongly encourages EC use. Gliding was the first GA sector to adopt EC, and almost all UK gliders are equipped with FLARM, which provides effective tactical deconfliction and seems behind a manifold reduction in mid-air collision. It's also used for strategic deconfliction by ATS and in the air.

ADS-B is an enabler but not a complete EC system, in particular for tactical deconfliction, which needs trajectory processing, conflict detection, displays, and effective but selective alerts. Current ADS-B-based systems support only strategic deconfliction; pilots often report that they are too crude in tactical situations and that alerts must be ignored or turned off. It's not clear that the ADS-B state-vector, which contains less information than developed EC

systems such as FLARM, has enough information for close manoeuvring situations, eg airfield circuits, where collision risk is greatest.

No mandate should be considered until a complete system exists and has been proved.

EC Device Standards

11 Position 2. The overall performance of the EC system will be enhanced, where appropriate through a combination of interoperable airborne and ground-based systems that build on existing architecture.

Tend to Disagree

Please explain your answer and provide any other general comments.:

Ground based systems are fundamental to a strategic and tactical enabling EC system. However, the CONOPs avoids the difficult issues of who will be responsible for installing and funding ground based infrastructure. It is therefore difficult for us to assess whether the CONOPs as presented is a viable approach.

The indicated timescale for the ground-based infrastructure is likely to be a long way towards the 2040 date identified by QinetiQ when 1090MHz use may become unsustainable.

Airspace Architecture

12 Position 3. EC with an appropriate level of accuracy and performance set out in this document, will aspire in the short term, to support operations for the following:

Tend to Disagree

Please explain your answer and provide any other general comments.:

The timescale for some of these functionalities is long and unclear. TCAS changes are slow, as they affect the worldwide commercial fleet, and current functionality is limited; where available, the extent to which traffic displays will be unacceptably cluttered by widespread GA EC has not been considered. Much the same is true for ANSP use, which will also require profound changes of rules and procedures that will again take much time.

Equipage requirements

13 Position 4. Within non - segregated airspace, aircraft operating at <140 knots (Kts) Indicated Air Speed (IAS) must use 1090MHz ADS-B devices emitting a SIL and SDA of at least 1, such as (for example) some CAP1391 devices. Alternatively, a TSO-C112 and TSO-C166 compliant transponder with extended squitter connected to TSO-C199 class B or TSO-C145 Global Navigation Satellite System (GNSS) source.

Tend to Disagree

Please explain your answer and provide any other general comments.:

This position will result in exclusion or high cost and other issues associated with equipage.

The SIL and SDA requirements require justification. There is little evidence (eg NATS, GA ADS-B/GPS Trial Results, 2015) that system performance requires these standards, or that other performance standards need not be met. That the SIL supplement is not defined (per sample or per flight hour), and mention in (2.21) of ACAS sXu suggests that interoperability with other systems is instead the reason. If so, the requirement should be this interoperability, rather than just SIL and SDA, so that other requirements can be identified.

To achieve the second objective, it would be reasonable (on the basis of the party reaping the benefit paying the implementation costs) to require UAS to implement reception of existing emissions from systems that fully meet the requirements of their sectors.

14 Position 5. Within non - segregated airspace, aircraft operating at >140kts IAS must use a Mode S transponder with ADS-B Extended Squitter functionality and SIL = 3, SDA = 2, typically a TSO-C112 and TSO-C166 compliant transponder connected to a TSO-C145 GNSS source.

Tend to Disagree

Please explain your answer and provide any other general comments.:

It is not clear how the SIL and SDA values or use of a certified GNSS source relate to detection range, nor how Extended Squitter functionality enhances collision mitigation when the aircraft is already equipped with a Mode-S transponder. GNSS performance is thus significant only for reception by low-speed aircraft. In any case, COTS GPS has been found empirically adequate. It is thus highly unlikely that a certified GNSS position source is justified by technical performance; if it is necessary for system interoperability, this should be the reason stated.

(2.17) The idea of monitoring for frequency congestion suggests that it will be mitigated by halting the roll-out when a fraction of the fleet has been equipped. The assumption that low-power ADS-B will be installed in preference to Mode-S-ES is predicated on pilots/operators considering the extra cost of Mode-S-ES to outweigh the additional benefits. This is a brave assumption.

TAS, not IAS, determines time-to-impact etc.

15 Position 6. Any ADS-B – In carriage for manned aircraft will remain a personal or organisational risk-based choice for the manned aircraft operator.

Tend to Disagree

Please explain your answer and provide any other general comments.:

For the reasons given in para (2.18), there should be no mandate for ADS-B-in equipage. The difference in ability to perform an avoidance manoeuvre (eg paragliders, balloons) should also be noted.

The point in (2.19) about new cockpit hazards is an important concern. In suggesting and in some circumstances relying upon carry-on equipment, there is a need to carefully consider the risk associated with unairworthy mounts, loose cables and potential cockpit obstructions and distractions that conflict with good practice.

16 Position 7. Within non - segregated airspace, UAS in the Specific Category operating BVLOS, must emit a 978MHz UAT ADS-B signal. The device should function in accordance with the RTCA minimum performance standards DO-282B, (It is expected that DO-282C will be the standard from 2027) and of a minimum power yet to be set out within CAP1391 supplementary amendment 2025/01. Emissions must meet SIL and SDA of at least 1.

No strong feelings either way

Please explain your answer and provide any other general comments.:

The principal justification offered is to prevent UAS-UAS collisions, which pose no direct threat of human injury. It is not clear that an EC mandate is proportionate to the risk.

It is again unclear what the SIL and SDA figures are to achieve. If specific interoperability, it is this that should be specified, not the individual performance figures. Given the manoeuvrability of quadcopters etc., high position precision and accuracy would not seem necessary.

(2.22) refers to 1090MHz emission only when a manned aircraft is detected within a defined proximity. This would be a new functionality that requires proper design well beyond CAA competence.

We are broadly satisfied to see UAS use 978MHz, mitigating but perhaps not resolving the congestion (potentially affecting CAT safety) on 1090MHz.

17 Position 8. Specific category UAS operating BVLOS in non - segregated airspace must be equipped to receive ADS-B 1090MHz and 978MHz UAT in order to detect both manned and unmanned aircraft.

Don't know

Please explain your answer and provide any other general comments.:

The accompanying text (2.25-2.28) seems unrelated to the position statement, and suggests a requirement for a specific level of performance or certification not stated in the position statement.

Responsibility for EC Installation and Efficacy

18 Position 9. Aircraft operators, both manned and unmanned, are responsible for ensuring that their EC device is installed in accordance with the equipment manual and any CAA advice. Pilots must also ensure their device is functioning effectively.

Tend to Disagree

Please explain your answer and provide any other general comments.:

The key question here is what evidence, if any, will be required to demonstrate the installation and performance of non-certified EC devices and antennae.

Additional Comments on the EC Concept of Operations

19 Do you have any additional comments or concerns regarding the EC Concept of Operations?

Additional Comments:

QinetiQ believe frequency congestion could become a problem from 2040.

The strategy of containing frequency congestion by monitoring implies eventual reduced ADS-B relevance.

Collision risk analysis is not described.

Aircraft cross borders, and avionics companies generally require an international market.

Lack of technical expertise means that it is wildly over-ambitious to consider new system development.

'ConOps' is used to refer to a regulatory rather than technical description.

ADS-B provides communications for electronic conspicuity. Collision prediction algorithms, filtering, displays and alerts are also key components, and significant technical and human factors challenges. To leave these to eg (3.8, 3.9) training and awareness shows that the CAA's proposal is extremely immature.

(3.14) refers to 'the immediate aims of industry' rather than flight safety.

ADSB high vulnerability to GNSS spoofing is overlooked.

The significant GA-MIL collision risk is not addressed.

Call for Evidence on the EC Mandate

20 In principle, do you support or oppose the introduction of a potential EC Mandate for lower airspace users in the UK?

Oppose

Please explain your answer and provide any other general comments.:

The driving focus for the CAA and DfT aspiration for an EC mandate is to support the DfT/CAA decision to require all airspace to be accessible to unmanned air vehicles. Any mandate must be justified. Safety as well as operational and economic viability are key factors.

Going forward, as now, there will be volumes of airspace where EC supports safe and efficient operations. Equally, as now, there will be volumes of airspace where an EC mandate would be disproportionate and a disabler (e.g. cost, unserviceability unnecessarily grounding aircraft, etc). In addition, different risks will require different levels of EC assurance; e.g. a busy CTR/CTA is one thing; commercial drone activity around pipelines and powerlines is something else.

21 What operational, financial, or technological barriers, if any, do you foresee with a potential EC Mandate? Please detail your answer.

What operational, financial, or technological barriers, if any, do you foresee with a potential EC Mandate? Please detail your answer. :

The costs of EC equipage and maintenance etc are well known and CAA has access to the data from previous consultations.

In supporting the creation of business opportunities around unmanned aviation that impose new challenges on or potentially move aside established airspace users, it is clear that a consequence of the benefits accruing to that sector is that they should bear the significant costs of all equipage to enable continued safe and equitable access to airspace. If public safety is impacted by unmanned aviation, clearly public funding should be employed to mitigate the risk.

Many of the associated technical challenges are described elsewhere in our response; mandating equipage that may have little benefit to the user and/or a limited lifespan is unacceptable.

Battery capacity is improving. However, there are large numbers of aircraft that fly in UK airspace that cannot generate power.

Equipment unserviceability can unnecessarily stop operations.

22 What opportunities, if any, do you foresee with a potential EC Mandate? Please detail your answer.

what opportunities, if any, do you foresee with a potential EC Mandate? Please detail your answer. :

We do not see opportunities from an EC mandate that is based on the current CONOPs described by CAA.

Opportunities can emerge from use of existing EC equipment (see ADSL) to continue to reduce MAC risk and provide in flight awareness of manned flight activity. That coupled with effective DAA that is not 100% reliant on ADSB, would present significant opportunity going forward. Add a U-space approach to unmanned flight, and an appropriate and accessible concept emerges.

23 What data, studies, or evidence are you aware of, that should be considered in the development of a potential EC Mandate?

What data, studies, or evidence are you aware of, that should be considered in the development of a potential EC Mandate? :

We refer to the BGA response to the CAA Phase 2 consultation on a Mode S EC mandate dated May 2008. A copy is available on request.

24 What other views, if any, on the potential introduction of an EC Mandate should the CAA consider at this early stage?

What other views, if any, on the potential introduction of an EC Mandate should the CAA consider at this early stage?:

We note that this call for evidence is buried at the end of the CAA's EC CONOPs consultation.

An EC mandate is too important an issue for the CAA to understand the issues via a call for evidence buried within another consultation.

It is a significant concern that the potential EC mandate and call for evidence is not the subject of a separate well-publicised consultation. This point will be picked up separately with CAA.