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## Electronic Conspicuity devices

Guidance on devices for electronic identification of light aircraft

The Department for Transport (DfT) has made available funding to encourage the adoption of Electronic Conspicuity (EC) within the UK's General Aviation (GA) and Unmanned Aircraft Systems (UAS) communities. The CAA is distributing these funds via a rebate scheme.

The scheme will open to applications from the 5 October 2020 until 31 March 2021 (or until the funding is used). Those meeting the requirements can claim a 50% rebate of the purchase cost of an EC device to a maximum of £250.00 (including VAT), per applicant. We anticipate up to 10,000 rebates will be available.

### What are the requirements to apply?

- Funding is for carry-on or aircraft-fitted devices only. Ground system components do not qualify for this scheme.
- Applicants can claim a single rebate of 50% - up to £250 - on EC equipment purchased.
- Only equipment purchased from 1<sup>st</sup> October 2020 until 28 February 2021 will be eligible for rebate.
- You must produce a proof of purchase receipt.
- You must hold at least one of the following UK issued pilot licences (UK or [EASA \(European Aviation Safety Agency\)](#) part FCL):
  - Private Pilot's Licence (PPL)
  - Commercial Pilot's Licence (CPL)
  - National PPL (NPPL)
  - Sailplane Pilot's Licence (SPL)
  - Balloon Pilot's Licence (BPL)
  - Light Aircraft Pilot's Licence (LAPL)

Or be a registered member of the British Gliding Association (BGA), or a member of the British Hang Gliding and Paragliding Association (BHPA) holding a current 'Pilot' rating.

- Alternatively, if you are UAS/UAV operator then you must hold an authorisation issued specifically to them by the CAA (i.e. a permission, exemption or "operational authorisation"). General Exemptions, permissions or authorisations which are aimed at a wider and non specific group of operators are not included

### What equipment is in scope of this rebate scheme?

We recognise that there are a range of EC solutions on the market that manufacturers and communities have developed for their own needs.

The main equipment able to be used on an aircraft for EC purposes currently available (and that a refund can be claimed against) includes:

- ADS-B Out capable transponder inclusive of GNSS position source (Mode S ES Enabled).
- ADS-B Out capable transponder without GNSS position source (Mode S ES)
- Certified GNSS source for Mode S ES transponders (Including a GNSS position sources in line with the recently published AIC2019Y141, example being Trig TN72)
- Power Flarm

- Pilot Aware Rosetta
- Sky Echo 2

We will consider requests from device manufacturers for alternative or newly developed equipment to be added on a case by case basis.

## What do I need to consider before purchasing and using EC equipment?

'See and avoid' is the foundation for Visual Flight Rules flying in the UK. EC devices can improve situational awareness for pilots but do not replace the fundamental role of 'see and avoid'. Pilots using EC devices should be aware of their functionality and what they can, and cannot, do. Devices are not always interoperable with each other. This means that users of one type of device may or may not be electronically visible to each other, may have different standards of reliability and accuracy, and may use different parts of the radio spectrum for transmitting signals.

The DfT and CAA are not recommending any specific device to pilots but do recommend that all pilots understand and consider the functional benefits, and limitations, of any EC device so they make informed decisions on the level of reliance that can be placed on the information provided to them.

While not a definitive list the table below describes the currently most used EC technologies, a high-level understanding of the interoperability between them and which are certified.

Conspicuity beacons	Which traffic receivers can see them?					
	ADS-B-in devices (certified)	ADS-B in Rx	Airborne Collision Awareness Systems (ACAS)	Pilot Aware Rosetta (PAW)	Power FLARM	Sky Echo 2 (SIL-1 Device) CAA CAP 1391 approved
ADS-B Out transponder certified GPS	Yes	Yes	Yes	Yes	Yes	Yes
ADS-B out transponder uncertified GPS (Surveillance Integrity Level (SIL) 0)	No*2	Variable*4	Yes	Yes	Yes	Yes
Power FLARM	No	No	No	Yes*1	Yes	Yes*3
Pilot Aware Rosetta (PAW)	No	No	No	Yes	No	No
Sky Echo 2 (SIL-1 Device) CAA CAP 1391 approved	Yes	Variable*4	No	Yes	Yes	Yes

\*1) Dependent on proximity to ground infrastructure

\*2) Certified Traffic receivers normally exclude reports from transponders & beacons set to SIL 0

\*3) New development requires a FLARM decode licence and a suitable display

\*4) Transponders or beacons with a non-certified GPS (source integrity level 0) may not be detected by a certified ADS-B in device. Source integrity level 1 and above can be seen.

In the above table, the term certified means a device that has been tested for meeting ICAO standards and operates in the aviation spectrum.

In parallel to the grant scheme, work will continue on a long-term strategy for EC in the UK. Surveillance technology will continue to develop quickly and, together with the DfT, we are open to exploring and embracing new technologies. Applicants should be aware that in common with other technologies in any sector, any device purchased today is not necessarily guaranteed to meet any future EC requirements.

## How to apply

Applications can be made via our online stakeholder portal from 5 October 2020. You will be requested to register on the [CAA online portal](https://portal.caa.co.uk/) (<https://portal.caa.co.uk/>) followed by submitting an online application form.

For all enquiries please contact us on [ECRebate@caa.co.uk](mailto:ECRebate@caa.co.uk) (<mailto:ECRebate@caa.co.uk>)

## What is Electronic Conspicuity?

Electronic Conspicuity (EC) is an umbrella term for the technology that can help pilots, unmanned aircraft users and air traffic services be more aware of what is operating in surrounding airspace. EC includes the devices fitted to aircraft and unmanned systems that send out the information, and the supporting infrastructure to help them work together. Airborne transponders, air traffic data displays, ground-based antennas and satellite surveillance services are all examples of EC. The information generated by these can be presented to pilots and air traffic services visually, audibly or both to provide them with information on other traffic nearby. This strengthens the principle of 'see and avoid' by adding the ability to 'detect and be detected'. To be most effective it needs 100% of users operating in a designated block of airspace using compatible EC devices, and be able to be detected by others.

EC can play a vital role in three key areas to support the UK's Airspace Modernisation Strategy (AMS):

1. Enabling the on-going modernisation of the UK's airspace structure and route network.
2. Helping to mitigate the risk of mid-air collisions in Class G, and infringements into controlled airspace.
3. Enabling the safe and efficient integration of unmanned aircraft.

## More information:

[Airspace Modernisation Strategy](https://www.caa.co.uk/Commercial-industry/Airspace/Airspace-Modernisation-Strategy/Airspace-Modernisation-Update/) (<https://www.caa.co.uk/Commercial-industry/Airspace/Airspace-Modernisation-Strategy/Airspace-Modernisation-Update/>)

Information on EC devices [www.caa.co.uk/cap1391](http://www.caa.co.uk/cap1391) (<http://www.caa.co.uk/cap1391>)

[AIC2019Y141](http://www.nats-uk.ead-it.com/aip/current/misc/AIC/EG_Circ_2019_Y_141_en.pdf) ([http://www.nats-uk.ead-it.com/aip/current/misc/AIC/EG\\_Circ\\_2019\\_Y\\_141\\_en.pdf](http://www.nats-uk.ead-it.com/aip/current/misc/AIC/EG_Circ_2019_Y_141_en.pdf)) : the steps that can be made to enable 'ADS-B out' throughout the General Aviation fleet to reflect recent changes and developments from EASA (European Aviation Safety Agency).

Information for devices falling under CAP1391:

► [Checking your EC Device has a valid declaration](#)

An EC device that operates using ADS-B at 1090MHz must have a Declaration of Capability and Conformance from the manufacturer before you can legally use it on board an aircraft. The pilot in command of the aircraft is responsible for ensuring that the EC device has a valid declaration.

If you have any questions or would like to report an issue with an EC device please [submit your question/comment here](#) (<http://>).

([/uploadedFiles/CAA/Content/Collapsible\\_Content/General\\_aviation\\_and\\_events/Approved EC Devices.xlsx](/uploadedFiles/CAA/Content/Collapsible_Content/General_aviation_and_events/Approved EC Devices.xlsx))

## Declared devices

Ref No	Issue No	Manufacturer	Type No	Category
UK.CAA.DoCC.000001	Issue 0	uAvionix Inc	Ping1090-20	Basic/transmit only
UK.CAA.DoCC.000002	Issue 0	uAvionix Inc	Echo ATT-20B	Basic/transmit only
UK.CAA.DoCC.000005	Issue 0	f.u.n.k.e. Avionics GmbH	ATOM-(000)-(000)	Basic/transmit only
UK.CAA.DoCC.000006	Issue 0	f.u.n.k.e. Avionics GmbH	LPAT-(000)-(000)	Intermediate
UK.CAA.DoCC.000003	Issue 1	f.u.n.k.e. Avionics GmbH	PNLMGE71.stp	Intermediate
UK.CAA.DoCC.000004	Issue 1	uAvionix Inc	SkyEcho	Intermediate
UK.CAA.DoCC.000007	Issue 0	uAvionix Inc	SkyEcho 2	Intermediate
UK.CAA.DoCC.000008	Issue 0	uAvionix Inc	Ping1090i	Basic/transmit only

## ➤ Understanding how your EC Device can be used

EC devices are intended for voluntary carriage on registered and non-registered UK Annex II aircraft, non-complex ~~EASA (European Aviation Safety Agency)~~ aircraft of <5700kg MTOM and for gliders and balloons (including those covered under ELA 1 and ELA 2) within uncontrolled UK airspace.

EC devices can now be operated alongside specific transponders as per the [AIC Y 141/2019](http://www.nats-uk.ead-it.com/aip/current/misc/AIC/EG_Circ_2019_Y_141_en.pdf) ([http://www.nats-uk.ead-it.com/aip/current/misc/AIC/EG\\_Circ\\_2019\\_Y\\_141\\_en.pdf](http://www.nats-uk.ead-it.com/aip/current/misc/AIC/EG_Circ_2019_Y_141_en.pdf))

## ➤ How to use 24-bit addresses with EC Devices

EC devices use a 24-bit address in the same way as a transponder. This usually forms part of an aircraft's Certificate of Registration. However, as an EC device is designed to be portable and to also be used by unregistered aircraft, the 24-bit address will be programmable by the user. You can find details on how to perform this function in your EC device's operating handbook.

For use on an unregistered aircraft

If you are using an EC device on an unregistered aircraft, you need to contact the CAA Infrastructure Section ([NISC@caa.co.uk?subject=EC Device on unregistered aircraft](mailto:NISC@caa.co.uk?subject=EC%20Device%20on%20unregistered%20aircraft)) and provide the following:

- Your contact details
- The details for your EC device, including:
  - Make
  - Model
  - Serial number

We will then allocate the EC device a unique ICAO 24 bit address to enable it to be used on multiple unregistered aircraft without re-programming.

## For use on registered aircraft

If you are using your EC device on a registered aircraft with an existing ICAO 24 bit address, then this address shall be used.

If you need to move the device between registered aircraft, it should be reprogrammed with the new aircraft's ICAO 24 bit address (as appropriate).

## Selling your device

If you sell your EC device, you need to clear any registered aircraft 24 bit address before the sale. The new purchaser must [contact us \(NISC@caa.co.uk?subject=Selling my EC Device\)](mailto:NISC@caa.co.uk?subject=Selling%20my%20EC%20Device) with their contact details and we will issue a unique 24 bit address if necessary.

## Ensuring you have the correct WTA License to use an EC Device

To operate **any** radio equipment, aircraft owners/operators must hold a valid Wireless Telephony Act (WTA) Aeronautical Radio Licence. 1090MHz EC devices are radio-transmitting equipment, so are subject to this regulation.

The WTA usually requires anyone operating a transmitter/receiver, on this frequency, to have or be under the direct supervision of someone who possesses a Flight Radio Telephony Operator's Licence or FRTOL. This was because when this radio licence condition was introduced, it was assumed that all aircraft radio stations would include a voice telephony function.

A General Exemption has been issued so that while a WTA licence is still needed, the pilot need not hold a FRTOL if the transponder is the only radio equipment on the aircraft. However, the WTA licence must be varied formally to remove the need for the FRTOL. Variations are available free of charge. They are available from the on request by completing the form [here](#). You must keep the variation with the WTA licence.

Approved transmitting EC devices will be included under the licensee's WTA licence as standard once notified.

When you buy an EC device, it is the responsibility of the aircraft owner/operator to complete the relevant application form to [obtain a WTA Aircraft Radio Licence \(/Commercial-industry/Airspace/Communication-navigation-and-surveillance/Radio-licensing/Radio-licensing/\)](#) from the CAA.

If you are a manufacturer wishing to submit a Declaration of Capability and Conformance please go to the [Aircraft Equipment \(/Commercial-industry/Aircraft/Airworthiness/Aircraft-equipment/Aircraft-equipment/\)](#) page and read CAP 1391 ([/CAP1391](#)).

