

ANNEX A

Consultation Draft - Civil Aviation Order 20.18 Amendment Instrument 2019 (No. 1)



Australian Government
Civil Aviation Safety Authority

I, SHANE PATRICK CARMODY, Director of Aviation Safety, on behalf of CASA, make this instrument under regulations 5, 207 and 232A, and subregulation 174A (1), of the *Civil Aviation Regulations 1988*, and subsection 33 (3) of the *Acts Interpretation Act 1901*.

Shane Carmody
Director of Aviation Safety

December 2019

Civil Aviation Order 20.18 Amendment Instrument 2019 (No. 1)

1 Name of instrument

This instrument is the *Civil Aviation Order 20.18 Amendment Instrument 2019 (No. 1)*.

2 Commencement

This instrument commences on the day after it is registered.

3 Amendment of Civil Aviation Order 20.18

Schedule 1 amends Civil Aviation Order 20.18.

Schedule 1 Amendments

[1] Paragraph 9B.2, the chapeau

repeal and substitute

9B.2 In subsections 9B, 9BA, 9C and 9E, and in Appendices XI, XII, XIII and XIV:

[2] Paragraph 9B.2, definition of *approved equipment configuration*, including the Note

substitute

approved equipment configuration for ADS-B transmitting equipment means an equipment configuration that:

- (a) meets the conditions for approval set out in Appendix XI, XII, XIII or XIV, as applicable under the Application provisions of the Appendix; or
- (b) is approved in writing by CASA.

[3] **Paragraph 9B.2, definition of *EASA AMC 20-24***

substitute

EASA AMC 20-24 means Annex II to ED Decision 2008/004/R titled *Certification Considerations for the Enhanced ATS in Non-Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090 MHz Extended Squitter*, dated 2 May 2008, of EASA, as in force on that date.

[4] **Paragraph 9B.2, definition of *NIC***

substitute

NIC means Navigation Integrity Category as specified in paragraph 2.2.3.2.3.3 of RTCA/DO-260B, as in force from time to time.

[5] **Paragraph 9B.2, definition of *RTCA/DO-260A***

omit

[6] **Paragraph 9B.2, definitions**

insert

AMSL means above mean sea level.

CAP means a CAA Advisory Publication, published by the Civil Aviation Authority of the United Kingdom.

CASR means the *Civil Aviation Safety Regulations 1998*.

certain light sport, experimental and exempted aircraft means any of the following:

- (a) a light sport aircraft for which a special certificate of airworthiness has been issued and is in force under regulation 21.186 of CASR;
- (b) a light sport aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (j) or (k) of CASR;
- (c) any other aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (g) or (h) of CASR;
- (d) an aircraft for which an experimental certificate has been issued and is in force under subregulation 21.190 (1) of CASR;
- (e) an aircraft that is:
 - (i) a power-assisted sailplane, or a powered sailplane, or a sailplane, to which Civil Aviation Order (***CAO***) 95.4 applies;
 - (ii) a glider engaged in charter operations, to which CAO 95.4.1 applies;
 - (iii) a hang-glider to which CAO 95.8 applies;
 - (iv) a low-momentum ultralight aeroplane to which CAO 95.10 applies;
 - (v) a gyroplane having an empty weight not in excess of 250 kg to which CAO 95.12 applies;
 - (vi) a 2 place gyroplane, or a single-place gyroplane, certificated as a light sport aircraft to which CAO 95.12.1 applies;

- (vii) a weight shift controlled aeroplane, or a powered parachute, to which CAO 95.32 applies;
- (viii) a manned balloon, or a hot air airship, engaged in private operations, to which CAO 95.54 applies;
- (ix) an ultralight aeroplane to which CAO 95.55 applies.

Class A TABS means TABS functionality relating to transponder function, altitude source function, and ADS-B OUT function, in accordance with TSO-C199, or a later version as in force from time to time.

Class B TABS means TABS functionality relating to position source function, in accordance with TSO-C199, or a later version as in force from time to time.

Class B TABS position source device means a device with a Class B TABS functionality.

EASA CS-ACNS means Annex I to ED Decision 2013/031/R titled *Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance CS-ACNS*, dated 17 December 2013, or a later version as in force from time to time.

IFR has the same meaning as I.F.R. and stands for instrument flight rules.

integrated TABS device means a device with integrated Class A TABS and Class B TABS functionality.

MTOW means maximum take-off weight.

NACp means Navigation Accuracy Category for Position as specified in paragraph 2.2.3.2.7.1.3.8 of RTCA/DO-260B, as in force from time to time.

RTCA/DO-260B means RTCA Inc. document RTCA DO-260B titled *Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance – Broadcast (ADS-B) and Traffic Information Services – Broadcast (TIS-B)*, dated 2 December 2009.

SDA means System Design Assurance as specified in section 2.2.3.2.7.2.4.6 of RTCA/DO-260B.

SIL means Source Integrity Level as specified in paragraph 2.2.3.2.7.1.3.10 of RTCA/DO-260B.

TABS means traffic awareness beacon system.

VFR has the same meaning as V.F.R. and stands for visual flight rules.

[7] Paragraphs 9B.3 to 9B.12, inclusive

substitute

- 9B.3 Subject to paragraph 9B.12, if an aircraft carries ADS-B transmitting equipment for operational use in Australian territory, the equipment must comply with an approved equipment configuration under Appendix XI, XII, XIII or XIV in accordance with the Application provisions of the Appendix.
- 9B.4 When serviceable ADS-B transmitting equipment is operated in Australian territory, the equipment must transmit:
 - (a) the current aircraft address; and

- (b) a flight identification that:
 - (i) corresponds exactly to the aircraft identification mentioned on the flight notification filed with ATC for the flight; or
 - (ii) if a flight notification is not filed for the flight — is:
 - (A) for an aircraft registered on the Australian Civil Aircraft Register and operating wholly within Australian territory — the aircraft's registration mark; or
 - (B) for an Australian aircraft registered by a RAAO — in accordance with the organisation's operations manual; or
 - (iii) is directed or approved by ATC.
- 9B.5 If an aircraft in flight carries serviceable ADS-B transmitting equipment, the equipment must be operated:
 - (a) for equipment that complies with an approved equipment configuration set out in Appendix XI — continuously during the flight in all airspace and at all altitudes, unless the pilot is directed or approved otherwise by ATC; and
 - (b) for equipment that complies with the approved equipment configuration set out in Appendix XII, XIII, or XIV — continuously during the flight, within the airspace and within the altitude limits specified for the flight in the applicable Appendix, unless the pilot is directed or approved otherwise by ATC.
- 9B.6 Subject to paragraph 9B.7, if an aircraft carries ADS-B transmitting equipment which does not comply with an approved equipment configuration, the aircraft must not fly in Australian territory unless the equipment is:
 - (a) deactivated; or
 - (b) set to transmit only a value of zero for the NUCp, NACp, NIC or SIL.

Note It is considered equivalent to deactivation if NUCp, NACp, NIC or SIL is set to continually transmit only a value of zero.
- 9B.7 The ADS-B transmitting equipment need not be deactivated for paragraph 9B.6 if the aircraft is undertaking an ADS-B test flight in VMC in airspace below FL290.
- 9B.8 Subject to paragraph 9B.9, an aircraft that is operated:
 - (a) in an IFR operation; or
 - (b) in any operation at or above FL290;must carry serviceable ADS-B transmitting equipment that complies with the approved equipment configuration set out in Appendix XI.
- 9B.9 If an aircraft is operated in a VFR operation below FL290:
 - (a) it may carry serviceable ADS-B transmitting equipment (the *equipment*); and
 - (b) if it carries the equipment — the equipment must comply with the approved equipment configuration set out in Appendix XI, XII, XIII or XIV.
- 9B.10 Paragraph 9B.8 does not apply to an aircraft if:

- (a) the aircraft owner, operator or pilot has written authorisation from CASA for the operation of the aircraft without the ADS-B transmitting equipment; or
 - (b) the equipment is unserviceable for a flight, and each of the following applies:
 - (i) the flight takes place within 3 days of the discovery of the unserviceability;
 - (ii) at least 1 of the following applies for the flight:
 - (A) flight with unserviceable equipment has been approved by CASA, in writing, subject to such conditions as CASA specifies;
 - (B) the unserviceability is a permissible unserviceability set out in the minimum equipment list for the aircraft and any applicable conditions of a direction under subregulation 37 (2) of CAR 1988 have been complied with;
 - (iii) before it commences, ATC clears the flight despite the unserviceability.
- 9B.11 Unless otherwise approved in writing by CASA, ADS-B transmitting equipment carried on an aircraft must allow the pilot to activate and deactivate transmission during flight.
- Note* This requirement is met if the ADS-B transmitting equipment has a cockpit control that enables the pilot to turn ADS-B transmissions on and off.
- 9B.12 A requirement under Appendix XI, XII, or XIII that an approved equipment configuration for ADS-B transmitting equipment be authorised in accordance with a specific TSO or ETSO does not apply to the ADS-B transmitting equipment carried on certain light sport, experimental and exempted aircraft provided that:
- (a) the equipment configuration that is carried provides the pilot, other aircraft and ATC with the same transponder and surveillance capability as would be provided if the equipment were expressly authorised in accordance with the specific TSO or ETSO; and
 - (b) the pilot or the operator has a statement of conformance (however described) from the equipment manufacturer stating the particular standard or standards of the TSO or ETSO with which the equipment conforms.

[8] After subsection 9B

insert

9BA Instructions — SSR transponder equipment

- 9BA.1 For subregulation 174A of CAR, this subsection specifies the SSR transponder equipment that must be carried on certain aircraft before they undertake a VFR flight.
- 9BA.2 Unless this subsection provides otherwise, an aircraft must carry serviceable SSR transponder equipment in accordance with subsection 9E.
- 9BA.3 A serviceable Mode A and Mode C SSR transponder must be carried on an aircraft that:

- (a) was manufactured before 6 February 2014; and
- (b) has not been modified by having its transponder installation replaced on or after that date; and
- (c) operates under the VFR and within ATC radar coverage, in Class A airspace below FL290, in Class B airspace, or in Class C airspace.

Note Carriage of a Mode A and Mode C transponder does not remove the requirement to obtain CASA approval to operate in Class A airspace: see subregulation 99AA (3) of CAR.

- 9BA.4 Paragraph 9BA.3 does not apply if the aircraft carries serviceable Mode S transponder that meets the standards set out in subparagraph 9E.2 (c)
- 9BA.5 A serviceable Mode A and Mode C SSR transponder must be carried on an aircraft that:
- (a) was manufactured before 6 February 2014; and
 - (b) has not been modified by having its transponder installation replaced on or after that date; and
 - (c) has an engine-driven electrical system capable of continuously powering a transponder; and
 - (d) operates under the VFR in Class E airspace, or above 10 000 ft AMSL in Class G airspace.
- 9BA.6 Paragraph 9BA.5 does not apply if the aircraft carries:
- (a) a serviceable Mode S transponder that meets the standards set out in subparagraph 9E.2 (c); or
 - (b) a serviceable integrated TABS device that meets the standards set out in Appendix XIII.
- 9BA.7 This subsection repeals instrument CASA 316/98.

[9] Paragraph 9C.3, Note 1 and Note 2

substitute

Note CASA Advisory Circular 21-46 provides guidelines on Mode S transponder equipment.

[10] After paragraph 9C.9

insert

- 9C.10 Subject to paragraph 9C.11, if Mode S transponder equipment incorporates ADS-B functionality, the equipment must comply with the applicable approved equipment configuration required under subsection 9B for ADS-B transmitting equipment.
- 9C.11 For paragraphs 9C.3 and 9C.10, a requirement, under Appendix XI or XII, that an approved equipment configuration for ADS-B transmitting equipment be authorised in accordance with a specific TSO or ETSO does not apply to the ADS-B transmitting equipment carried on certain light sport, experimental and exempted aircraft provided that:
- (a) the equipment configuration that is carried provides the pilot, other aircraft and ATC with the same transponder and surveillance capability as would be

provided if the equipment were expressly authorised in accordance with the specific TSO or ETSO; and

- (b) the pilot or the operator has a statement of conformance (however described) from the equipment manufacturer stating the particular standard or standards of the TSO or ETSO with which the equipment conforms.

[11] Paragraph 9E.2

omit all words after sub-subparagraph 9E.2 (b) (ii) and insert

must carry:

- (c) a serviceable Mode S transponder that meets the standards:
 - (i) for Mode S transponder equipment — in subsection 9C; and
 - (ii) for ADS-B transmission using an approved equipment configuration set out in Appendix XI — in a clause or clauses of Appendix XI as follows:
 - (A) clauses 2 and 5 of Part B; or
 - (B) clause 7 of Part C; or
 - (C) clause 8 of Part C; and
 - (iii) for ADS-B transmission using an approved equipment configuration set out in Appendix XII — in clauses 1 and 4 in Part B of Appendix XII; or
- Note* The requirement is for aircraft to be fitted with a Mode S transponder with ADS-B OUT capability. That does not mean that ADS-B OUT transmission is also required under this paragraph. It means that, with the later connection of compatible GNSS position source equipment, ADS-B OUT can be transmitted as well as Mode S SSR responses.
- (d) for an aircraft that is operated under the VFR:
 - (i) in Class E airspace; or
 - (ii) above 10 000 feet AMSL in Class G airspace;

a serviceable integrated TABS device that meets the standards in Appendix XIII.

Note An aircraft operated under the VFR in Class E airspace or above 10 000 ft AMSL in Class G airspace has the option of complying with either subparagraph (c) or (d).

An aircraft operated under the VFR or the IFR in Class A, B, or C airspace has no option but to comply with subparagraph (c).

An aircraft operated under the IFR in Class E airspace or above 10 000 ft AMSL in Class G airspace has no option but to comply with subparagraph (c).

[12] Paragraph 9E.4, the chapeau

substitute

- 9E.4 An aircraft operating at Brisbane, Sydney, Melbourne or Perth aerodrome must carry a serviceable Mode S transponder that meets the standards of:

[13] Appendix XI, the heading

substitute

Appendix XI — Approved equipment configuration — IFR and VFR flight

[14] Appendix XI, Part A

substitute

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — IFR and VFR flight

- 1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it complies with the standards specified in Part B or Part C of this Appendix.

Application

- 2 ADS-B transmitting equipment carried on an aircraft in an IFR flight has an approved equipment configuration if, and only if, it complies with the standards in Part B or Part C of this Appendix.

Note No other Appendix applies to the equipment in an IFR flight.

- 3 ADS-B transmitting equipment carried on an aircraft in any operation at or above FL290 has an approved equipment configuration if, and only if, it complies with the standards in Part B or Part C of this Appendix.

Note No other Appendix applies to the equipment in an operation above FL290.

- 4 ADS-B transmitting equipment carried on an aircraft, in a flight that is not an IFR flight or any flight at or above FL290, has an approved equipment configuration if it complies with the standards in Part B or Part C of this Appendix.

Note For example, ADS-B transmitting equipment carried on an aircraft in a VFR flight below FL290 would have an approved equipment configuration if it complied with the standards in Part B or Part C of this Appendix. However, another Appendix may apply to the equipment in the VFR flight.

[15] Appendix XI, clause 6, including the heading and Note

omit

[16] Appendix XI, paragraph 7 (a)

substitute

- (a) it has been approved or accepted by:
 - (i) the NAA of a recognised country, as meeting the standards of EASA AMC 20-24 or EASA CS-ACNS, as in force from time to time; or
 - (ii) the FAA, as meeting the standards of 14 CFR 91.225 for 1090 Megahertz (MHz) Extended Squitter ADS-B, as in force from time to time; and

[17] Appendix XI, paragraph 8 (a)

substitute

- (a) it has been approved or accepted by:
 - (i) EASA as meeting the standards of EASA AMC 20-24, as in force from time to time; or
 - (ii) the FAA as meeting the standards of 14 CFR 91.225 for 1090 Megahertz (MHz) Extended Squitter ADS-B, as in force from time to time; and

[18] After Appendix XI

insert

Appendix XII — Approved equipment configuration — Mode S transponder with Class B TABS position source device — VFR flight below FL290 only

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — Mode S transponder with Class B TABS position source device

- 1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it is a Mode S transponder with Class B TABS position source device that complies with the standards specified in Part B of this Appendix.

Application

- 2 A Mode S transponder with Class B TABS position source device carried on an aircraft has an approved equipment configuration if it complies with:
 - (a) the standards in Part B of this Appendix; and
 - (b) the conditions set out in clauses 3 and 4.

Note Another Appendix may apply to the equipment in a VFR flight.

- 3 For paragraph 2 (b), a Mode S transponder with Class B TABS position source device may only be operated:
 - (a) in VFR flight below FL290; and
 - (b) in an aircraft that:
 - (i) has a MTOW of no more than 5 700kg; and
 - (ii) has a maximum cruising speed not exceeding 250 kt; and
 - (iii) is not used for RPT operations or charter operations.
- 4 For paragraph 2 (b), if a Mode S transponder with Class B TABS position source device transmits a SIL value of less than 2, the aircraft must not enter controlled airspace in which:
 - (a) aircraft are required to carry serviceable ADS-B transmitting equipment that complies with an approved equipment configuration in accordance with Appendix XI; or

- (b) VFR aircraft are required to carry ADS-B transmitting equipment.

Note Carriage of a Mode S transponder with Class B TABS position source device does not remove the requirement to obtain ATC clearance to operate in Class B or C airspace. Nor does it remove the requirement to obtain CASA approval to operate in Class A airspace – see subregulation 99AA (3) of CAR.

Part B — Standards for a Mode S transponder with Class B TABS position source device

Mode S transponder —standard

- 1 The Mode S transponder must be of a type that:
 - (a) is authorised in accordance with (E)TSO-C166B, or a later version as in force from time to time; or
 - (b) approved in writing by CASA as meeting the specifications in RTCA/DO-260B dated 2 December 2009, or a later version as in force from time to time; or
 - (c) is authorised in writing by CASA as being equivalent to a device mentioned in paragraph (a) or (b).
- 2 When required to be operated, the Mode S transponder must transmit NACp, NIC, SIL and SDA values in accordance with the authorised capability of the GNSS position source.

GNSS position source equipment

- 3 The geographical position transmitted by the Mode S transponder must be determined by:
 - (a) a Class B TABS position source device that is authorised in accordance with (E)TSO-C199, or a later version as in force from time to time; or
 - (b) another source that is authorised in writing by CASA as being equivalent to a source mentioned in paragraph (a).

Altitude source equipment — standard

- 4 The pressure altitude transmitted by the Mode S transponder must be determined by:
 - (a) a barometric encoder of a type that is authorised in accordance with (E)TSO-C88a, or a later version as in force from time to time; or
 - (b) another system that is authorised in writing by CASA as being equivalent to a barometric encoder mentioned in paragraph (a).

Appendix XIII — Approved equipment configuration — Integrated TABS device — VFR flight below FL290 only

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — integrated TABS device

- 1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it is an integrated TABS device that complies with the standards specified in Part B of this Appendix.

Application

- 2 An integrated TABS device carried on an aircraft has an approved equipment configuration if it complies with:
 - (a) the standards in Part B of this Appendix; and
 - (b) the conditions set out in clause 3.

Note Another Appendix may apply to the equipment in a VFR flight.

- 3 For paragraph 2 (b) an integrated TABS device may only be operated in transmitting mode:
 - (a) in VFR flight below FL290; and
 - (b) in an aircraft that:
 - (i) has a MTOW of no more than 5 700kg; and
 - (ii) has a maximum cruising speed not exceeding 250 kt; and
 - (iii) is not used for RPT operations or charter operations; and
 - (c) in Class D, Class E or Class G airspace.

Note An integrated TABS device is not a substitute for mandatory carriage of a transponder in relevant airspace, except in Class E airspace, or in Class G airspace above 10 000 ft: see subparagraph 9E.2 (d); see also subparagraph 9BA.6 (b).

Part B — Standards for an integrated TABS device

- 1 An integrated TABS device must meet the technical specifications in (E)TSO-C199, or a later version as in force from time to time, that are for a device with integrated Class A TABS and Class B TABS functionality.
- 2 An integrated TABS device must transmit a SIL value of 1.
- 3 Subject to clause 4, an integrated TABS device must be authorised by the relevant National Aviation Authority (NAA) of the equipment manufacturer as meeting the standards mentioned in clauses 1 and 2.
- 4 Clause 3 does not apply to an an integrated TABS device carried on certain light sport, experimental and exempted aircraft provided that the TABS device that is carried:
 - (a) provides the pilot, other aircraft and ATC with the same transponder and surveillance capability as would be provided if an integrated TABS device were expressly authorised by the relevant NAA; and

- (b) the pilot has a statement of compliance (or however described) from the equipment manufacturer certifying that the equipment otherwise meets the standards mentioned in clauses 1 and 2.

For consultation

Appendix XIV — Approved equipment configuration — EC device — VFR flight below FL290 only

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — EC device

- 1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it is an electronic conspicuity device (an **EC device**) that complies with the standards specified in Part B of this Appendix

Note Only EC devices that meet all of the requirements of this Appendix are EC devices for the purposes of this Appendix.

Application

- 2 An EC device carried on an aircraft has an approved equipment configuration if it complies with:
 - (a) the standards in Part B of this Appendix; and
 - (b) the conditions set out in clause 3.

Note Another Appendix may apply to the equipment in a VFR flight.

- 3 For paragraph 2 (b), an EC device, must not be operated in transmitting mode:
 - (a) in VFR flight at or above FL290; or
 - (b) concurrently with a Mode S transponder that is also transmitting ADS-B.

Note An EC device may be operated concurrently with a Mode A/C, or a Mode S transponder (other than one that is transmitting ADS-B) but it is not a substitute for mandatory carriage of a transponder in relevant airspace.

Part B — Standards for an EC device

- 1 Subject to clauses 3 and 4, an EC device must meet the technical specifications in the 2nd edition of UK CAA Advisory Publication 1391 dated April 2018, or later version as in force from time to time (**UK CAP 1391**).
- 2 An EC device must use a Class B TABS position source that complies with the performance standards specified in (E)TSO-C199, as in force from time to time.
- 3 An EC device must be capable of transmitting a SIL value of 1, in accordance with the standards in UK CAP 1391 for an EC device that uses a Class B TABS position source.
- 4 Despite the standards in UK CAP 1391, an EC device must:
 - (a) meet the requirements described in paragraph 2.2.3.2.7.2.4.6 of RTCA/DO-260B for transmitting an SDA of 1; and
 - (b) transmit an SDA value of 1.
- 5 An EC device must use a barometric encoder for altitude information.
- 6 An EC device must have a statement of compliance (however described) (a **statement**) from the EC device manufacturer certifying that the device meets the requirements mentioned in clauses 1 to 5.

- 7 The pilot in command of an aircraft that uses an EC device must carry the statement or a copy of it on board the aircraft.
- 8 An EC device must not be operated in a transmit mode anywhere in Australia unless CASA or an NAA considers that a manufacturer has made a valid declaration of capability and conformance to clauses 1 to 5.

Note CASA lists on its website some EC devices whose manufacturers are considered to have made valid declarations of capability and conformance to clauses 1 to 5.

- 9 An EC device must be mounted in accordance with the manufacturer's instructions.
 - 10 An EC device, when mounted in accordance with the manufacturer's instructions, must not:
 - (a) interfere with aircraft controls; or
 - (b) otherwise affect the safe operation of the aircraft.
-

For consultation