



Notice of Proposed Amendment 2021-04

in accordance with Articles 6 to 9 (*Standard procedure*) of MB Decision No 18-2015

Regular update of the Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance ‘CS-ACNS’

RMT.0519

EXECUTIVE SUMMARY

The objective of this Notice of Proposed Amendment (NPA) is to maintain a high level of safety and address interoperability compliance of aircraft with the requirements of Commission Implementing Regulation (EU) No 1207/2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (the single European sky interoperability Regulation), and to ensure the provision of consolidated means of compliance for aircraft manufacturing and modification industries.

This NPA proposes amendments to the Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance (CS-ACNS) applicable to all aircraft. In particular, it proposes to:

- remove redundant information, and remove some information that could lead to confusion;
- enhance the clarity of the text with better or complementary information;
- align some CS-ACNS specifications, AMC or GM with the implementation aspects;
- make some editorial corrections;
- include some pieces of information that were missing from CS-ACNS, and delete an AMC reference that does not exist; and
- correct several misleading references.

This regular update is the outcome of the selection of non-complex, non-controversial, and mature rulemaking candidate subjects.

The proposed amendments are expected to maintain a high level of safety, ensure interoperability of aircraft, and reduce the regulatory burden for compliance with the single European sky interoperability Regulation. The proposed amendments are also expected to increase the efficiency of implementing CS-ACNS.

Action area:	Regular updates/review of rules		
Related rules:	CS-ACNS		
Affected stakeholders:	Aircraft operators; production organisation approval (POA) holders; design organisation approval (DOA) holders; national aviation authorities (NAAs)		
Driver:	Efficiency/proportionality	Rulemaking group:	No
Impact assessment:	No	Rulemaking Procedure:	Standard

EASA rulemaking process milestones



Table of contents

1. About this NPA.....	4
1.1. How this NPA was developed.....	4
1.2. How to comment on this NPA.....	4
1.3. The next steps	4
2. In summary — why and what	5
2.1. Why we need to amend the rules — issue/rationale	5
2.2. What we want to achieve — objectives.....	5
2.3. How we want to achieve it — overview of the proposals.....	5
2.4. What are the expected benefits and drawbacks of the proposals	9
3. Proposed amendments and rationale in detail	10
3.1. Draft certification specifications (draft EASA decision).....	10
CS ACNS.A.GEN.001 Applicability	10
CS ACNS.A.GEN.005 Definitions.....	11
CS ACNS.B.VCS.020 Performance Requirements.....	13
CS ACNS.B.DLS.B1.035 Continuity	13
CS ACNS.B.DLS.B1.060 DLIC Initiation when in CPDLC Inhibited State (Uplink).....	13
CS ACNS.B.DLS.B1.075 CPDLC Downlink Messages	14
CS ACNS.B.DLS.B1.115 Presentation Layer Requirements	14
CS ACNS.C.PBN.615 Autopilot/Flight director	15
CS ACNS.C.PBN.675 RNP system design — RNP AR integrity	15
CS ACNS.D.AC.040 Dual/multiple transponder installation	16
CS ACNS.D.EHS.015 Data transmission.....	16
CS ACNS.D.ELS.025 Altitude source	16
CS ACNS.D.ELS.045 Continuity.....	16
CS ACNS.D.ADSB.025 Provision of Data.....	17
CS ACNS.D.ADSB.105 Continuity	17
CS ACNS.D.ADSB.110 Horizontal Position and Velocity Data Refresh Rate.....	17
CS ACNS.E.TAWS.040 Integrity	18
CS ACNS.E.TAWS.045 Continuity	18
CS ACNS.E.RVSM.035 Altimetry system accuracy	18
CS ACNS.C.PBN.255 Magnetic variation	19
3.2. Draft acceptable means of compliance and guidance material (draft EASA decision)	19
GM1 ACNS.B.VCS.001 Applicability	19
GM1 ACNS.B.DLS.B1.001 Applicability	19
AMC1 ACNS.B.DLS.B1.035 Continuity	20
AMC1 ACNS.B.DLS.B1.070 CPDLC Uplink Messages.....	20
AMC2 ACNS.B.DLS.B1.070 CPDLC Uplink Messages.....	20
GM1 ACNS.B.DLS.B1.075 Downlink Messages	21
GM1 ACNS.C.PBN.501 Applicability.....	21
AMC1 ACNS.C.PBN.535 Resolution and full-scale deflection of the vertical deviation display	22
GM1 ACNS.D.AC.001 Applicability	22
AMC1 ACNS.D.AC.040 Dual/multiple transponder installation	22
AMC1 ACNS.D.ELS.001 Applicability.....	22
AMC1 ACNS.D.ELS.015 Data transmission.....	23
AMC1 ACNS.D.ELS.025 Altitude source	23
AMC1 ACNS.D.ELS.045 Continuity	24
AMC1 ACNS.D.EHS.001 Applicability	24



AMC1 ACNS.D.ADSB.080 Data Sources as defined by Mode S Elementary and Enhanced Surveillance.....	25
AMC1 ACNS.D.ADSB.090(a) Flight Deck Interface.....	25
AMC1 ACNS.D.ADSB.105 Continuity.....	26
Appendix A — Background information for Mode A/C surveillance systems.....	26
Appendix D — Differences between CS ACNS.D.ELS and JAA TGL 13 Rev1.....	26
Appendix H — Guidance on 1090 MHz Extended Squitter ADS-B Out.....	27
GM1 ACNS.E.TAWS.001 Applicability.....	28
AMC1 ACNS.E.TAWS.010 Required functions.....	28
AMC1 ACNS.E.TAWS.040 Integrity.....	28
AMC1 ACNS.E.TAWS.045 Continuity.....	28
GM1 ACNS.E.TAWS.045 Continuity.....	28
Appendix 3C — Background information for Terrain Awareness and Warning Systems (TAWS)	29
GM1 ACNS.B.DLS.B1.020 Data Link Services.....	29
GM1 ACNS.B.DLS.B1.020 Data Link Services.....	29
4. Impact assessment (IA).....	30
5. Proposed actions to support implementation.....	30
6. References.....	31
6.1. Related regulations.....	31
6.2. Related decisions.....	31
6.3. Other reference documents.....	32
7. Appendix.....	33
8. Quality of the document.....	34



1. About this NPA

1.1. How this NPA was developed

The European Union Aviation Safety Agency (EASA) developed this NPA in line with Regulation (EU) 2018/1139¹ (the 'Basic Regulation') and the Rulemaking Procedure². This rulemaking activity is included in the European Plan for Aviation Safety (EPAS) for 2021–2025³ under Rulemaking Task (RMT).0519. The text of this NPA has been developed by EASA.

It is hereby submitted to all interested parties⁴ for consultation.

1.2. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/>⁵.

The deadline for submission of comments is **17 May 2021**.

1.3. The next steps

Following the closing of the public commenting period, EASA will review all the comments received.

Considering the comments received, EASA will develop a decision that amends the certification specifications (CSs), along with the associated acceptable means of compliance (AMC) and guidance material (GM).

The comments received on this NPA and the EASA responses to them will be reflected in a comment-response document (CRD). The CRD will be published on the EASA website⁶.

¹ Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

² EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (<http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>).

³ <https://www.easa.europa.eu/document-library/general-publications/european-plan-aviation-safety-2021-2025>

⁴ In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7 of the Rulemaking Procedure.

⁵ In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).

⁶ <https://www.easa.europa.eu/document-library/comment-response-documents>



2. In summary — why and what

2.1. Why we need to amend the rules — issue/rationale

The aviation industry is complex and rapidly evolving, so worldwide aircraft experience, as well as scientific and technical progress, needs to be reflected in the CSs and the associated AMC and GM.

The CS-ACNS regular update addresses miscellaneous issues of a non-controversial nature, which are required to ensure that the CSs are fit for purpose, cost-effective, can be implemented, and are in line with the latest ICAO Standards and Recommended Practices (SARPs).

In particular, EASA has received feedback and has identified the need to consolidate CS-ACNS by making corrections and resolving inconsistencies regarding:

- the redundancy of some information, or information that could lead to confusion;
- figures or details that require clarification or complementary information;
- some implementation aspects that require the modification of some CS-ACNS specifications, AMC or GM;
- the editorial correction of items that were introduced incorrectly;
- some linked references to the Appendix within CS-ACNS that are missing or are incomplete, the AMC reference does not exist, or the AMC is required; and
- misleading references in CS-ACNS, the associated AMC or GM.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Section 2.1.

The specific objective of this proposal is to amend CS-ACNS and the associated AMC and GM in order to facilitate their comprehension, to reflect the state of the art, the best industry practices and feedback received. This amendment is based on the selection of non-controversial and mature subjects. The ultimate goal is to increase safety and efficiency.

2.3. How we want to achieve it — overview of the proposals

In order to achieve these objectives, EASA proposes the following:

- (1) Redundancy of some information, or some information that could lead to confusion.

It is proposed to simplify the information with improvements of some wording:

For the CSs:

- CS ACNS.A.GEN.001 *Applicability* (references to higher-level regulations deleted, with improvements of some wording in the CS text);
- CS ACNS.C.PBN.615 *Autopilot/Flight director* (the number of degrees of bank angle that the system needs to be able to command has been updated for consistency with CS ACNS.C.PBN.805 *RF functional requirements*).



For the AMC and GM:

- AMC1 ACNS.D.ELS.001 *Applicability* (Note 3 removed, following the simplification of CS ACNS.A.GEN.001, making reference to Commission Implementing Regulation (EU) No 1207/2011⁷);
- AMC2 ACNS.B.DLS.B1.070 *CPDLC Uplink Messages* (the ‘DM89 MONITORING’ message is no longer a mandatory downlink message element, so this AMC2 item is not needed).

(2) Figures or details require clarification or complementary information.

It is proposed to provide additional information and clarifications:

For the CSs:

- CS ACNS.A.GEN.005 *Definitions* (figure improved and two notes included).

For the AMC and GM:

- AMC1 ACNS.C.PBN.535 *Resolution and full-scale deflection of the vertical deviation display* (indentation and numbering included to provide better structure, rewording, a reminder of RTCA DO-229D, and inclusion of the signs for the bounding).

(3) Some implementation aspects require the modification of some CS-ACNS specifications, AMC or GM.

It is proposed to improve and adapt the CS-ACNS specifications, AMC or GM, as necessary.

For the CSs:

- CS ACNS.B.VCS.020 *Performance Requirements* (removal of the system characteristics of the ground installation);
- CS ACNS.B.DLS.B1.075 *CPDLC Downlink Messages* (‘DM89 MONITORING’ message removed: it is no longer mandatory to send this message);
- CS ACNS.C.PBN.675 *RNP system design — RNP AR integrity* and ACNS.C.PBN.680 *RNP system design — RNP AR continuity* (RNP is not exclusive to lateral guidance);
- CS ACNS.D.ELS.025 *Altitude source* (consistency: render the correct meaning to the sentence);
- CS ACNS.D.ELS.045 *Continuity* and CS ACNS.D.ADSB.105 *Continuity* (aligned with the updated surveillance performance and interoperability (SIP) Regulation);
- CS ACNS.E.TAWS.040 *Integrity* and CS ACNS.E.TAWS.045 *Continuity* (modified to improve consistency with ETSO-C151b and the former JAA TGL-12, and harmonise with the FAA).

For the AMC and GM:

- AMC1 ACNS.B.DLS.B1.035 *Continuity* (consideration of a loss of the data link system as a minor failure condition);

⁷ Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (OJ L 305, 23.11.2011, p. 35) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R1207&qid=1612520836456>).

- AMC1 ACNS.B.DLS.B1.070 *CPDLC Uplink Messages* (removal of the statement that when UM117 CONTACT is received, no ‘DM89 MONITORING’ message should be sent);
- GM1 ACNS.B.DLS.B1.075 *Downlink Messages* (‘DM89 MONITORING’ message removed: it is no longer mandatory to send this message);
- AMC1 ACNS.D.ELS.025 *Altitude source* (the situation ‘Where it is impractical to connect the transponder to the altitude source used to fly the aircraft’ is included);
- AMC1 ACNS.D.ADSB.090(a) *Flight Deck Interface* (additional information for consistency and practical aspects are included for Data Transmission and Display Consistency);
- AMC1 ACNS.E.TAWS.040 *Integrity*, AMC1 ACNS.E.TAWS.045 *Continuity* and GM1 ACNS.E.TAWS.045 *Continuity* (new AMC and GM are included with additional indications to improve consistency with ETSO-C151b and the former JAA TGL-12, and harmonisation with the FAA).

(4) Editorial correction of items that were introduced incorrectly.

For the CSs:

- CS ACNS.B.DLS.B1.035 *Continuity* (editorial reference in the text corrected with improvement of the wording in the content, and reference to the associated AMC);
- CS ACNS.B.DLS.B1.060 *DLIC Initiation when in CPDLC Inhibited State* (editorial reference in the text corrected);
- CS ACNS.B.DLS.B1.115 *Presentation Layer Requirements* (editorial correction of the associated AMC1 reference);
- CS ACNS.D.AC.040 *Dual/multiple transponder installation* (editorial correction of the reference to AMC1.ACNS.D.AC.040);
- CS ACNS.D.ADSB.025 *Provision of Data* (clarification when referring to AMC1 ACNS.D.ADSB.025(a) and (c)).

For the AMC and GM:

- AMC1 ACNS.D.AC.040 *Dual/multiple transponder installation* (editorial correction of the reference in the title);
- Appendix A — Background information for Mode A/C surveillance systems (correct numbering of the items);
- Appendix C — Background information for terrain awareness and warning systems (TAWS) (reference numbering in the title corrected);
- GM1 ACNS.B.DLS.B1.020 *Data Link Services* (the titles are shown twice; removal of one title).

(5) Some linked references to the Appendix within CS-ACNS are missing or are incomplete, or the AMC reference does not exist, or the AMC is required.

It is proposed to complete and correct the associated links and information.



For the CSs:

- CS ACNS.D.EHS.015 *Data transmission* (reference of 'CS ACNS.D.ELS.' is completed);
- CS ACNS.D.ADSB.110 *Horizontal Position and Velocity Data Refresh Rate* (correct reference to the AMC is completed);
- CS ACNS.E.RVSM.035 *Altimetry system accuracy* (indication of examples with the inclusion of reference to Appendix B (AMC));
- CS ACNS.C.PBN.255 *Magnetic variation* (there is no 'GM1 ACNS.C.PBN.255', so the reference is deleted).

For the AMC and GM:

- GM1 ACNS.B.VCS.001 *Applicability* (GM included, and reference to Appendix A included);
- GM1.ACNS.B.DLS.B1.001 *Applicability* (reference to Appendix A included via a note);
- GM1 ACNS.D.AC.001 *Applicability* (GM included, and reference to Appendix A included);
- AMC1 ACNS.D.ELS.001 *Applicability* (reference to Appendix B included, and consequently removal of 'note 2');
- AMC1 ACNS.D.ELS.015 *Data transmission* (reference to AMC1 ACNS.D.EHS.015 completed);
- AMC1 ACNS.D.ELS.045 *Continuity* (AMC included);
- AMC1 ACNS.D.EHS.001 *Applicability* (reference to Appendix C included);
- AMC1 ACNS.D.ADSB.080 *Data Sources as defined by Mode S Elementary and Enhanced Surveillance* (completed reference to CS ACNS.D.ELS.030(a)(3), CS ACNS.D.ELS.030(a)(1), CS ACNS.D.ELS.030(a)(2), AMC1 ACNS.D.EHS.015(c)(1) and AMC1 ACNS.D.EHS.015(c)(3));
- AMC1 ACNS.D.ADSB.105 *Continuity* (AMC included, also as reference in the associated CS);
- Appendix D — Differences between CS ACNS.D.ELS and JAA TGL 13 Rev1 (complete references CS ACNS.D.ELS.015(b)(1) and CS ACNS.D.ELS.015(b)(2));
- Appendix H — Guidance on 1090 MHz Extended Squitter ADS-B Out (complete references CS ACNS.D.ELS.015.(a)(6), CS ACNS.D.EHS.015(c)(1) and AMC1 ACNS.D.ADSB.085);
- GM1 ACNS.E.TAWS.001 *Applicability* (reference to Appendix C included).

(6) There are some misleading references in CS-ACNS, the associated AMC or GM.

It is proposed to correct the misleading information.

For the CSs:

n/a

For the AMC and GM:

- GM1 ACNS.C.PBN.501 *Applicability* (reference to CS ACNS.C.PBN.555 and CS ACNS.C.PBN.670 corrected);
- Appendix H — Guidance on 1090 MHz Extended Squitter ADS-B Out



- AMC1 ACNS.D.ADSB.070(a).1.2(a) is replaced by AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(ii);
- AMC and AMC1 to ACNS.D.ADSB.070(a).1.2(b) are replaced by AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(iii);
- CS ACNS.D.ADSB.070(a).1.2(c) is replaced by AMC1 ACNS.D.ADSB.070(a)(2)(iii);
- AMC1 ACNS.D.ADSB.070(a).1.3 is replaced by AMC1 ACNS.D.ADSB.070(a)(1) and (a)(3);
- AMC ACNS.D.ADSB.070(a).1.2(d) is replaced by AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(v);
- AMC1 ACNS.D.ADSB.070(a).1.2(e) is replaced by AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(vi);
- AMC1 ACNS.D.ADSB.070(a).1.2(f) is replaced by AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(vii);
- AMC1 ACNS.E.TAWS.010 *Required functions* (correct reference to Appendix B, with the additional inclusion of a reference to guidance on the testing of TAWS provided in Appendix A).

2.4. What are the expected benefits and drawbacks of the proposals

The main benefits of the proposals in this NPA are that they:

- further facilitate the comprehension of CS-ACNS and maintain the expected level of safety; and
- increase the efficiency of implementing CS-ACNS.

There are no foreseen drawbacks.



3. Proposed amendments and rationale in detail

The text of the amendment is arranged to show deleted, new or amended, and unchanged text as follows:

- deleted text is ~~struck through~~;
- new or amended text is highlighted in **blue**;
- an ellipsis '[...]' indicates that the rest of the text is unchanged.

3.1. Draft certification specifications (draft EASA decision)

CS ACNS.A.GEN.001 Applicability

These certification specifications are ~~intended to be~~ applicable to aircraft for the purpose of **allowing aircraft operators to** comply ~~ing~~ with **the airspace requirements on** communications, navigation and surveillance ~~carriage requirements~~ **functions**.

~~Compliance with the relevant sections of CS-ACNS ensures compliance with the following European regulations:~~

- ~~(a) Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council;~~
- ~~(b) Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability for surveillance for the single European sky;~~
- ~~(c) Commission Implementing Regulation (EU) No 1206/2011 of 22 November 2011 laying down requirements on aircraft identification for surveillance for the single European sky;~~
- ~~(d) Commission Regulation (EC) No 29/2009 of 16 January 2009 laying down requirements on data link services for the single European sky;~~
- ~~(e) Commission Implementing Regulation (EU) No 1079/2012 of 16 November 2012 laying down requirements for voice channels spacing for the single European sky.~~

Rationale

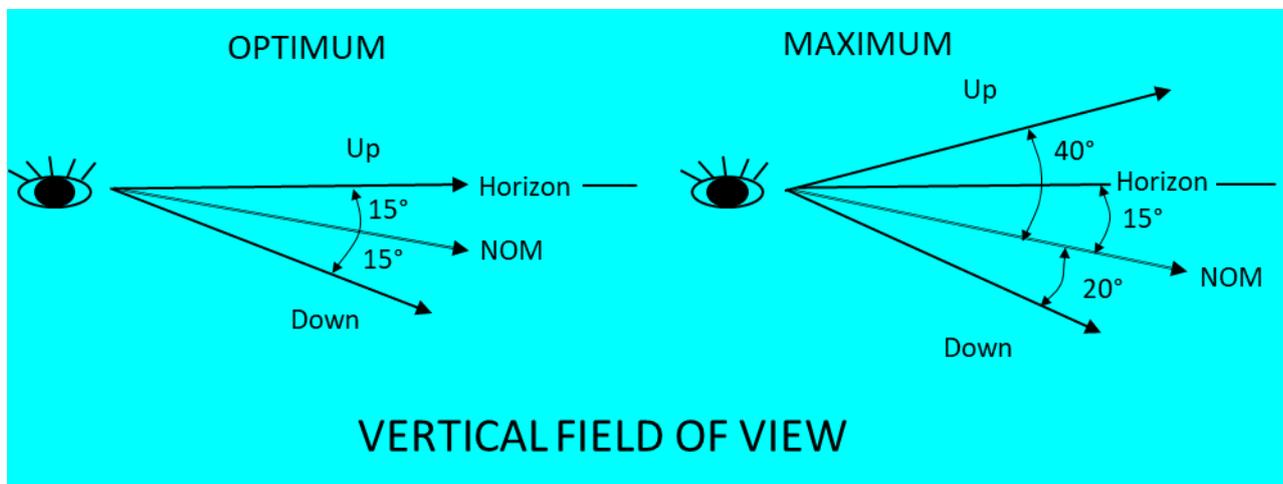
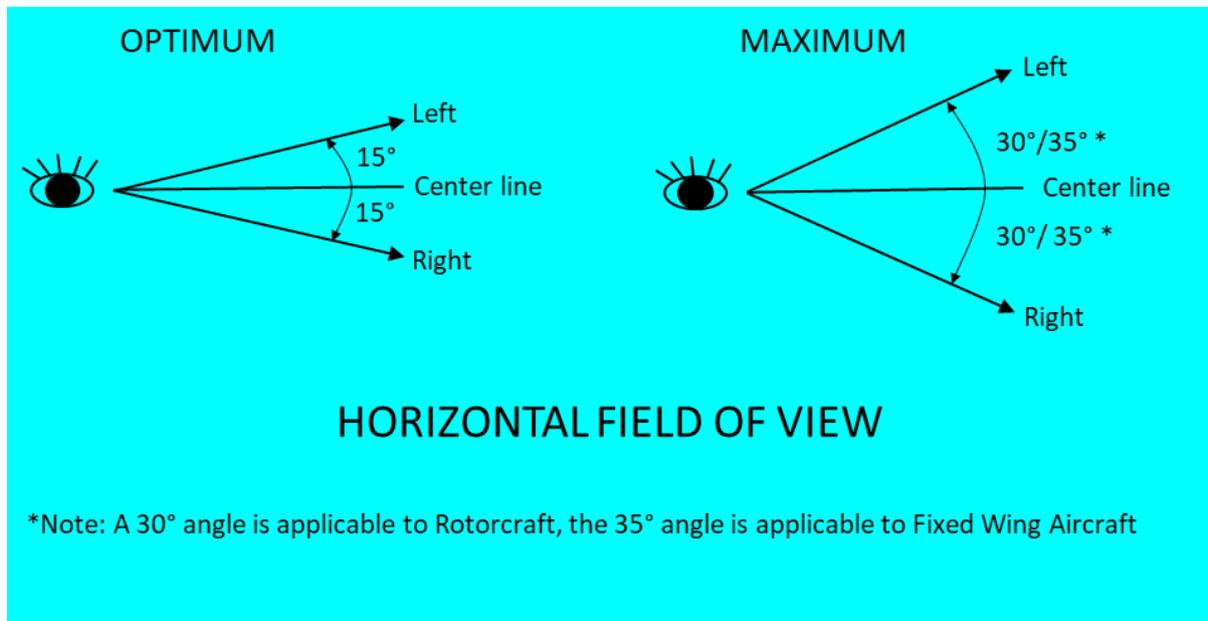
Compliance with the European Commission implementing regulations on airspace is the responsibility of the aircraft operators, not of the applicants for airworthiness approvals. CS-ACNS supports this compliance, but compliance with CS-ACNS does not necessarily constitute compliance with the European Commission implementing regulations. Moreover, CS-ACNS covers functions and applications that are not mandated by the European Commission implementing regulations, but which may be used elsewhere in the world.



CS ACNS.A.GEN.005 Definitions

[...]

Field of view refers to either the optimum or maximum vertical and horizontal visual fields from the design eye reference point that can be accommodated with eye rotation only, as described in the figure below.



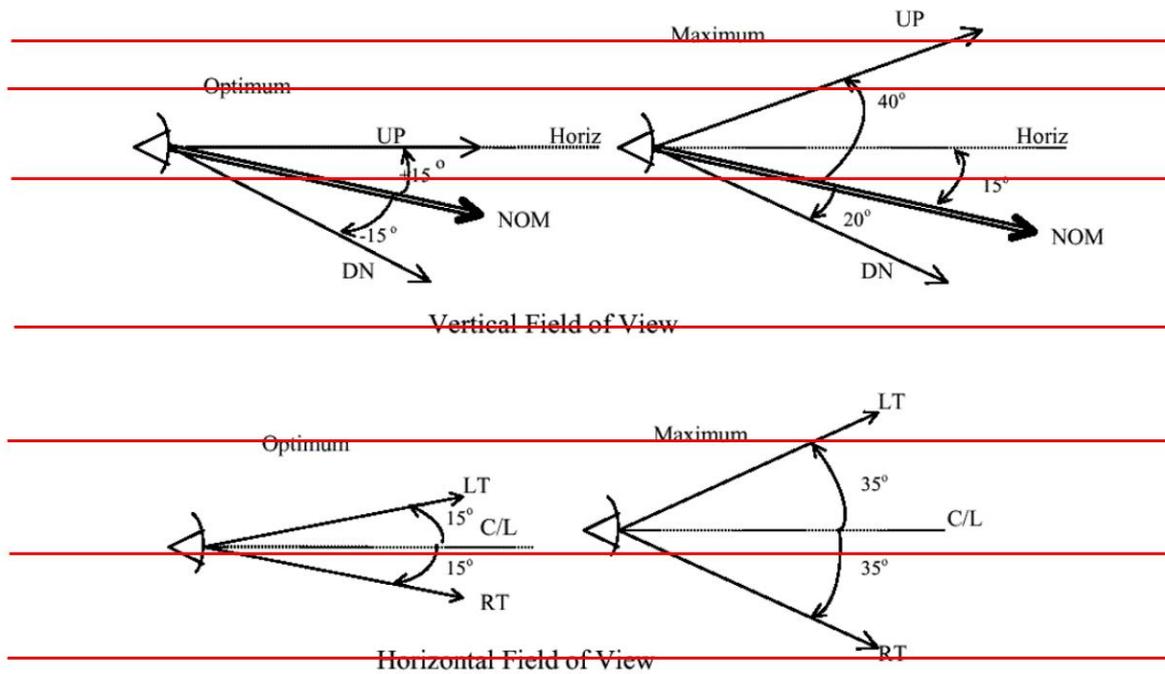


Figure 1 — Optimum and maximum fields of view

Note: This CS defines the optimum and maximum fields of view. In the context of AC 29-2C, as the FAA defines primary and secondary fields of view, 'optimum' should be read as primary and 'maximum' as secondary.

Flight plan is, in the context of PBN operations, a set of route segments and flight procedures defined and activated by the flight crew in the RNP system, relative to an intended flight or a portion of a flight of an aircraft.

[...]

Rationale

When the definition was first included, Figure A3-1 of Appendix 3 to AMC 25.11 was used as a reference. It was brought to EASA's attention that for the assessment of the field of view in rotorcraft, a different reference was commonly used, namely Figures AC 29.1321-1 and AC 29.1321-2 of FAA AC 29-2C. The subtle differences between the two references have been incorporated into the field-of-view figure and the note.

CS ACNS.B.VCS.020 Performance Requirements

The ~~v~~oice communication systems conforms to the performance requirements of the following sections of ICAO Annex 10, Volume III, Part 2 (Second Edition — July 2007 incorporating Amendment No 90), Chapter 2, 'Aeronautical Mobile Service':

- (a) Section 2.1 'Air-ground VHF communication system characteristics'.
- ~~(b) Section 2.2 'System Characteristics of the ground installation'.~~
- ~~(c)~~ Section 2.3.1 'Transmitting function'.
- ~~(c)~~ Section 2.3.2 'Receiving function' excluding sub-section 2.3.2.8 'VDL — Interference Immunity Performance'.

Rationale

The system characteristics of ground installations do not apply to airborne equipment.

CS ACNS.B.DLS.B1.035 Continuity

(See AMC1 ACNS.B.DLS.B1.035 *Continuity*)

The data link system is designed to provide a level of continuity that supports the intended operation.

~~The data link system continuity is designed to an allowable qualitative probability of 'probable'.~~

Rationale

- *Editorial correction with the correct reference.*
- *Consistent use of terminology throughout the CS.*
- *Inclusion of the associated AMC reference.*

CS ACNS.B.DLS.B1.060 DLIC Initiation when in CPDLC Inhibited State (Uplink)

When the data link system is in the 'CPDLC inhibited' state, a DLIC Contact Request is processed but the system ~~is~~ remains ~~ing~~ in the 'CPDLC inhibited' state.

Rationale

Editorial correction with the correct reference.



CS ACNS.B.DLS.B1.075 CPDLC Downlink Messages

(See AMC1 ACNS.B.DLS.B1.075, GM1 ACNS.B.DLS.B1.075, GM2 ACNS.B.DLS.B1.075 and GM3 ACNS.B.DLS.B1.075)

The data link system is capable of preparing and sending the following downlink message elements:

ID	Message
DM0	WILCO
DM1	UNABLE
DM2	STANDBY
DM3	ROGER
DM4	AFFIRM
DM5	NEGATIVE
DM6	REQUEST [level]
DM18	REQUEST [speed]
DM22	REQUEST DIRECT TO [position]
DM32	PRESENT LEVEL [level]
DM62	ERROR [errorInformation]
DM63	NOT CURRENT DATA AUTHORITY
DM65	DUE TO WEATHER
DM66	DUE TO AIRCRAFT PERFORMANCE
DM81	WE CAN ACCEPT [level] AT [time]
DM82	WE CANNOT ACCEPT [level]
DM89	MONITORING [unitname] [frequency]
DM98	[freetext]
DM99	CURRENT DATA AUTHORITY
DM100	LOGICAL ACKNOWLEDGEMENT
DM106	PREFERRED LEVEL [level]
DM107	NOT AUTHORIZED NEXT DATA AUTHORITY
DM109	TOP OF DESCENT [time]

Rationale

The 'DM89 MONITORING' message is no longer a mandatory downlink message element.

CS ACNS.B.DLS.B1.115 Presentation Layer Requirements

(See AMC1 ACNS.B.DLS.B1.115)

The ATN Presentation protocol is capable of supporting the presentation protocol data units (PPDUs) listed in the following table:

[...]

Rationale

The reference to AMC1 has been completed.



CS ACNS.C.PBN.615 Autopilot/Flight director

- (a) Means are provided to couple the RNP system with the autopilot or flight director.
- (b) The RNP system, the flight director system and the autopilot must be capable of commanding a bank angle of up to 25~~30~~ degrees above 121 m (400 ft) AGL and up to 8 degrees below 121 m (400 ft) AGL.

Rationale

Consistency with CS ACNS.C.PBN.805 and EUROCAE ED-75D, which both require the system to be able to command 30 degrees of bank angle.

CS ACNS.C.PBN.675 RNP system design — RNP AR integrity

(See AMC1 ACNS.C.PBN.675)

The integrity of the lateral guidance provided by the aircraft RNP system supports the intended RNP AR operations.

Rationale

RNP is not exclusive to lateral guidance: it applies to lateral and vertical guidance.

CS ACNS.C.PBN.680 RNP system design — RNP AR continuity

(See AMC1 ACNS.C.PBN.680)

The continuity of the lateral guidance provided by the RNP system supports the intended RNP AR operations.

Rationale

RNP is not exclusive to lateral guidance: it applies to lateral and vertical guidance.



CS ACNS.D.AC.040 Dual/multiple transponder installation

(See AMC1 ACNS.D.AC.040)

[...]

Rationale

Editorial correction of the reference to AMC1 ACNS.D.AC.040.

CS ACNS.D.EHS.015 Data transmission

(See AMC1 ACNS.D.EHS.015)

- (a) The surveillance system provides in the Mode S reply the following downlink aircraft parameters in addition to those specified in CS ACNS.D.ELS.015:

[...]

Rationale

Completion of the reference to CS ACNS.D.ELS.015.

CS ACNS.D.ELS.025 Altitude source

(See AMC1 ACNS.D.ELS.025)

- (a) The reported pressure altitude is obtained from an approved source.
- (b) The altitude resolution is **less than or** equal to ~~or less than~~ 30.48 m (100 ft.).
- (c) The altitude source connected to the active transponder is **consistent with** the source being used to fly the aircraft.

Rationale

Improved consistency to render the correct meaning to the sentence.

CS ACNS.D.ELS.045 Continuity

The Mode S ELS airborne surveillance system **continuity** is designed to **provide a level of continuity that supports the intended operation with a remote probability of failure** ~~to an allowable qualitative probability of 'remote'~~.



Rationale

This is aligned with the updated surveillance performance and interoperability (SPI) Regulation.

CS ACNS.D.ADSB.025 Provision of Data

(See AMC1 ACNS.D.ADSB.025(a) and (c))

[...]

Rationale

Clarification when referring to AMC1 ACNS.D.ADSB.025(a) and (c).

CS ACNS.D.ADSB.105 Continuity

(See AMC1 ACNS.D.ADSB.105)

- (a) The ADS-B Out system **continuity** is designed to provide a level of continuity **to an allowable qualitative probability of 'remote' that supports the intended operation with a remote probability of failure.**

[...]

Rationale

Aligned with the updated surveillance performance and interoperability (SPI) Regulation.

The reference to the associated AMC1 is also included.

CS ACNS.D.ADSB.110 Horizontal Position and Velocity Data Refresh Rate

(See AMC1 ACNS.D.ADSB.110)

[...]

Rationale

The reference has been completed.



CS ACNS.E.TAWS.040 Integrity

(See AMC1 ACNS.E.TAWS.040)

The TAWS, including its position sensors, displays, and other associated components, is designed to provide a level of integrity that supports its intended operation.

- ~~(a) Integrity of the TAWS (including un-enunciated loss of the terrain alerting function) is designed commensurate with a major failure condition.~~
- ~~(b) False terrain alerting is designed commensurate with a minor failure condition.~~
- ~~(c) Failure of the installed TAWS does not degrade the integrity of any critical system interfacing with the TAWS.~~

Rationale

Improved consistency with ETSO-C151b and the former JAA TGL-12, and harmonisation with the FAA.

CS ACNS.E.TAWS.045 Continuity

(See AMC1 ACNS.E.TAWS.045 and GM1 ACNS.E.TAWS.045)

The TAWS, including its position sensors, displays, and other associated components, is designed to provide a level of continuity that supports the intended operation.

~~Continuity of the TAWS is designed to an allowable qualitative probability of 'probable'.~~

Rationale

Improved consistency with ETSO-C151b and the former JAA TGL-12, and harmonisation with the FAA.

CS ACNS.E.RVSM.035 Altimetry system accuracy

(See AMC1 ACNS.E.RVSM.035, GM1 ACNS.E.RVSM.035)

- (a) For ~~g~~group aircraft, the altimetry system accuracy meets the following criteria ~~in~~ throughout the full envelope:
 - (1) At the point of the flight envelope where the mean ASE (~~ASE_{mean}~~) reaches its largest absolute value, that value does not exceed 25 m (80 ft);
 - (2) At the point of the flight envelope where the absolute mean ASE (~~ASE_{mean}~~) plus three standard deviations of ASE (ASE3SD) reaches ~~their~~ ~~its~~ largest absolute value, the absolute value does not exceed 60 m (200 ft).

Examples of methodologies to establish and monitor static source errors for group aircraft are provided in Appendix B.

[...]

Rationale

Inclusion of reference to Appendix B (AMC).



CS ACNS.C.PBN.255 Magnetic variation

(See AMC1 ACNS.C.PBN.255 ~~and GM1 ACNS.C.PBN.255~~)

- (a) The RNP system has the capability to assign a magnetic variation at any location within the region where flight operations are conducted, using magnetic North as the reference.
- (b) For paths defined by a course, the RNP system uses the appropriate magnetic variation value available in the navigation database.
- (c) The conditions under which the magnetic variation table (MAGVAR table), certified as part of the aircraft configuration, is updated are included in the aircraft's instructions for continued airworthiness (ICAs).

Rationale

There is no GM1 ACNS.C.PBN.255.

3.2. Draft acceptable means of compliance and guidance material (draft EASA decision)

GM1 ACNS.B.VCS.001 Applicability

Background information on voice communication systems is provided in Appendix A.

GM1.ACNS.B.DLS.B1.001 Applicability

Controller-pilot communications through the data link ~~is~~ ~~are~~ used ~~in different airspaces~~ worldwide. Different technologies ~~are~~ ~~may be~~ used, and this CS is intended to provide the airworthiness standard for such installations. Additionally, controller-pilot communications over the ATN B1 data link technology ~~has~~ ~~have~~ been mandated in Europe, through Regulation (EC) No 29/2009. Installations intended to operate within EU Airspace, defined in the ~~above-~~mentioned ~~+~~Regulation, should fully comply with all the requirements of the 'DATA LINK SERVICES' section, in its entirety.

Installations not intended to operate within EU Airspace, are not required to comply with the ~~above-~~mentioned section.

Note 1: ~~Requirements~~ CS ACNS.B.DLS.B1.010 and 015 are also applicable for CPDLC installations where, ~~in addition~~ ~~ally~~ to ATN B1 over VDL M2, other means of communications and other services are also provided.

Note 2: Further background information on data link systems is provided in Appendix A.



AMC1 ACNS.B.DLS.B1.035 Continuity

The loss of the data link system function is considered to be a minor failure condition.

Rationale

Correction of the failure classification and consistency of the format and terminology throughout the CS.

AMC1 ACNS.B.DLS.B1.070 CPDLC Uplink Messages

The data link system should comply with EUROCAE Document ED-110B, sSection 2.2.3, and comply with the CPDLC message syntax in ICAO Doc 9705 (Edition 2), sSection 2.1.4.

For the sole exception of UM117, the data link system should prepare the appropriate response downlink message to a received uplink message in compliance with EUROCAE Document ED-110B, sSection 2.2.3.3, Table 2-4. Received uplink messages with response type 'A/N' as indicated in the 'Response' column should be responded to with either DM4 (AFFIRM) or DM5 (NEGATIVE). Received uplink messages with response type 'R' as indicated in the 'Response' column should be responded to with DM3 (ROGER) or with DM1 (UNABLE). ~~When UM117 CONTACT is received, no DM89 MONITORING message should be sent.~~

The aircraft data link aircraft system should also handle unsupported messages (i.e. uplink messages not referenced in CS ACNS.B.DLS.B1.050) as specified in EUROCAE Document ED-110B, sSection 3.3.7.6.

Rationale

The 'DM89 MONITORING' message is no longer a mandatory downlink message element.

AMC2 ACNS.B.DLS.B1.070 CPDLC Uplink Messages

~~EUROCAE Document ED-110B requires (in Table 4-3, item 6a) aircraft to send the DM89 (MONITORING [unitname] [frequency]) CPDLC message upon receipt of a UM117 (CONTACT) or UM120 (MONITOR) CPDLC message. The sending of DM89 could manually prepared and sent by the flight crew in response to UM120 but not for UM117.~~

Rationale

The 'DM89 MONITORING' message is no longer a mandatory downlink message element.

GM1 ACNS.B.DLS.B1.075 Downlink Messages

The following table associates downlink messages with the data link services.

ID	Message	ACM	ACL	AMC
DM0	WILCO	x	x	
DM1	UNABLE	x	x	
DM2	STANDBY	x	x	
DM3	ROGER		x	
DM4	AFFIRM		x	
DM5	NEGATIVE		x	
DM6	REQUEST [level]		x	
DM18	REQUEST [speed]		x	
DM22	REQUEST DIRECT TO [position]		x	
DM32	PRESENT LEVEL [level]		x	
DM62	ERROR [errorInformation]	x	x	
DM63	NOT CURRENT DATA AUTHORITY	x		
DM65	DUE TO WEATHER		x	
DM66	DUE TO AIRCRAFT PERFORMANCE		x	
DM81	WE CAN ACCEPT [level] AT [time]		x	
DM82	WE CANNOT ACCEPT [level]		x	
DM89	MONITORING [unitname] [frequency]	*		
DM98	[freetext]	x	x	
DM99	CURRENT DATA AUTHORITY	x		
DM100	LOGICAL ACKNOWLEDGEMENT	x	x	
DM106	PREFERRED LEVEL [level]		x	
DM107	NOT AUTHORIZED NEXT DATA AUTHORITY	x	x	
DM109	TOP OF DESCENT [time]		x	

GM1 ACNS.C.PBN.501 Applicability

Subsection 5 sets out the certification specifications for systems that use either a barometric VNAV (BARO-VNAV) or a GNSS space-based augmented source of vertical position (SBAS-VNAV) for procedures where vertical guidance is based on a published vertical path to LNAV/VNAV or LPV minima respectively.

The vertical performance of systems that comply with CS-ACNS.C.PBN.575 CS ACNS.C.PBN.555 is not adequate to support RNP AR APCH operations, but the requirements contained in CS-ACNS.C.PBN.675 CS ACNS.C.PBN.670 should be applied instead.



AMC1 ACNS.C.PBN.535 Resolution and full-scale deflection of the vertical deviation display

Compliance with CS ACNS.C.PBN.535 can be demonstrated with one of the following ways:

(1) Installation of equipment with an ETSO authorisation against ETSO-C115d or ETSO-C146c supports the requirement of the CS, provided that the applicant ensures that the display characteristics comply with the CS.

(2) RNP systems that provide fixed vertical scaling should provide a non-numerical vertical deviation display with a full-scale deflection of ± 150 ft. In addition, the display should provide the flight crew with an easy way to readily identify a path deviation of 75 ft using the vertical deviation display alone, i.e. provide clear markings at + 75 ft and at – 75 ft.

Note: Subject to EASA's agreement, the use of a scale of other than ± 150 ft may be accepted, provided that the scaling is suitable to control the aircraft on the intended path, and the 75-ft deviation can be easily identified by the flight crew. The applicant should provide a human factors and workload assessment, as well as relevant operating procedures that ensure that the aircraft's deviation from the path can be monitored and bounded within the ± 75 -ft interval, supporting this deviation.

(3) Systems that use a type of angular vertical scaling other than the scaling defined in RTCA DO-229D should meet the following:

- (a) The deviation scaling suitably supports the flight technical error (FTE) monitoring and bounding (± 75 -ft deviation);
- (b) The deviation limits are equivalent to the operational limits for glideslope deviations during an ILS approach.

In order to meet the primary safety objective of not exceeding an FTE of 75 ft below the path to maintain obstacle clearance, it may be required to put a limitation on the length of the approach that the RNP system is able to support.

A vertical situation display is not considered to satisfy the requirements.

GM1 ACNS.D.AC.001 Applicability

Background information on Mode A/C Surveillance Systems is provided in Appendix A.

AMC1 ACNS.D.D.AC.040 Dual/multiple transponder installation

[...]

AMC1 ACNS.D.ELS.001 Applicability

Background information on Mode S ELS Systems is provided in Appendix B.

Provided that the differences listed in Appendix D have also been addressed, then previous declarations of compliance ~~declarations~~ with JAA TGL 13 Revision 1 (Certification of Mode S



Transponder Systems for Elementary Surveillance), supplemented with the additional assessments ~~is another~~, are also a ~~Acceptable~~ ~~m~~ Means of ~~c~~ Compliance.

Note 1: A list of Mode S ELS-related documents is provided in Book 2, Subpart D, Appendix B, Section (b).

~~*Note 2: More information on how the ELS information will be extracted and used by ground surveillance is available in Book 2 Subpart D Appendix B section (c).*~~

~~*Note 3: In accordance with EU Regulation No 1207/2011, aircraft operating flights as general air traffic in accordance with instrument flight rules in the airspace within the ICAO EUR and AFI regions where EU Member States are responsible for the provision of air traffic services are to be compliant with CS ACNS Book 1 Subpart D section 2.*~~

AMC1 ACNS.D.ELS.015 Data transmission

Data transmission verifications

[...]

- (h) Transmission of other parameters

When one or more other airborne data items are transmitted, they should be verified as proposed in AMC1 ACNS.D.EHS.015.

[...]

AMC1 ACNS.D.ELS.025 Altitude source

- (a) ~~Altimeters compliant~~ Compliance with JAA TGL No 6 ~~is~~ are an approved ~~and~~ a ~~Acceptable~~ ~~m~~ Means of ~~c~~ Compliance for an altimeter as an altitude source.

- (b) ~~Altimeters with a~~ A pressure altitude resolution ~~lower of less~~ than or equal to 7.62 m (25 ft) ~~is~~ are an approved ~~and~~ a ~~Acceptable~~ ~~M~~ means of ~~c~~ Compliance for an altimeter.

Note: An a Altitude source resolution of less lower than or equal to 7.62 m (25 ft) is required for aeroplanes intended to be used for international air transport as defined in ICAO Annex 6 Part 1 — 6.19.

- (c) ~~An altimeter with a~~ A pressure altitude resolution ~~lower of less~~ than or equal to 30 m (100 ft) and greater than 7.62 m (25 ft) is an approved ~~and~~ a ~~Acceptable~~ ~~M~~ means of ~~c~~ Compliance for an aircraft altimeter, provided that the following ~~provisions~~ conditions are ~~implemented~~ met:

- (1) There is no conversion of the Gillham encoded data to another format before it is inputting to the transponder unless failure detection can be provided, and the resolution (quantisation) is set in the transmitted data to indicate 30 m (100 ft);

Note 1: It is not recommended to install altimeters with a Gillham altitude encoder interface, as it supports a resolution of only 30 m (100 ft).

Note 2: Losses or errors of pressure altitude have an impact on the provision of separation by ATC. It is, therefore, important to design the altitude pressure source to minimise the loss of this data or the provision of erroneous data.

Note 3: Further guidance on altitude measurement and coding systems may be found in EUROCAE ~~e~~ Document ED-26.



(2) Altitude source comparison;

For aircraft equipped with ACAS II, where the available source of pressure altitude information is only in Gillham encoded format, the requirement for detection of an altitude source or encoder failure can be satisfied by means of dual independent altitude corrected sensors, together with an altitude data comparator (which may be incorporated and enabled in the transponder). Similar provisions are also acceptable for alternative altitude information sources that do not signal erroneous data.

The flight deck interface should provide a means to inhibit the transmission of pressure altitude information for aircraft equipped with a Gillham encoded altitude interface.

(d) If it is impractical to connect the transponder to the altitude source used to fly the aircraft, consistency may be achieved through:

(1) connecting the pressure altitude source directly (e.g. via a T-junction) to the same pitot/static pressure line(s) as the altitude source being used to fly the aircraft; and

(2) ensuring that the pressure altitude source has built-in test equipment (BITE) that permanently or frequently runs an automatic system self-test and triggers a 'FAIL' annunciator/indicator (e.g. an amber light) in the pilot's normal field of view upon detection of a failure; and

(3) ensuring that the altitude source meets design and performance standards that ensure an adequate level of integrity of its output to mitigate the risk of a possible inconsistency between the output of the altitude source and the altimeters used by the flight crew to fly the aircraft.

The altitude source may be integrated into the transponder if the above-mentioned requirements are met.

(e) The provision of manual or automatic selection of the altitude source is an acceptable means of compliance.

AMC1 ACNS.D.ELS.045 Continuity

A Mode S ELS airborne surveillance system designed to allow a maximum quantitative probability of 2×10^{-4} failures per flight hour is considered to meet CS ACNS.D.ELS.045.

AMC1 ACNS.D.EHS.001 Applicability

Background information on Mode EHS Systems is provided in Appendix C.

Provided that the differences listed in Appendix E have also been addressed, then a previous declaration of compliance declarations with EASA AMC 20-13 (Certification of Mode S Transponder Systems for Enhanced Surveillance), supplemented with the additional assessments, is another acceptable Means of Compliance.

[...]



AMC1 ACNS.D.ADSB.080 Data Sources as defined by Mode S Elementary and Enhanced Surveillance

(a) General Requirements

For the requirements and general guidance on the data sources providing the Mode S Elementary and Enhanced surveillance parameters, the following references to CS ACNS.D.ELS and CS ACNS.D.EHS apply:

- (1) Aircraft Identification: CS ACNS.D.ELS.030(a)(3);
- (2) Mode A Code: CS ACNS.D.ELS.030(a)(1);
- (3) SPI: CS ACNS.D.ELS.030(a)(2);
- (4) Emergency Mode/Status: CS ACNS.D.ELS.030(a)(1);
- (5) Pressure Altitude: CS ACNS.D.ELS.025;
- (6) MCP/FCU Selected Altitude: ÷AMC1 ACNS.D.EHS.015(c)(1);
- (7) Barometric Pressure Setting: AMC1 ACNS.D.EHS.015(c)(3);

[...]

(e) Selected Altitude (and related Modes)

With respect to the various status and mode fields contained in register 6216 (subtype 1), the respective provisions of AMC1 ACNS.D.EHS.015(c)(1) apply to the Selected Altitude Type, Status of MCP/FCU Mode Bits, VNAV Mode Engaged, Altitude Hold Mode, and Approach Mode information.

[...]

AMC1 ACNS.D.ADSB.090(a) Flight Deck Interface

(a) Installations

(1) Data Transmission and Display Consistency

The data transmitted by the active ADS-B transmit unit **should be consistent** with the data displayed to the flight crew ~~should be consistent~~.

Consistency may be demonstrated by using a compliant GNSS sensor connected to the transponder and the navigation equipment (i.e. the transponder and navigation equipment receive the same data from the GNSS source).

Where this is not practical, consistency may be demonstrated by the installation of a stand-alone GNSS receiver connected (only) to the transponder, providing the GNSS receiver is approved to ETSO-C145c or C146c (or later ETSO amendments).

Note 1: Operational Classes 1, 2 or 3 of RTCA DO-229D satisfy the 'consistency' criteria.

Note 2: The horizontal position data displayed to the flight crew ~~might~~ **may be based on data from **more position** sources **than the one** used for ADS-B transmissions.**

[...]



AMC1 ACNS.D.ADSB.105 Continuity

An ADS-B Out system designed to provide an allowable quantitative probability of 2×10^{-4} failures per flight hour is considered to meet the requirement.

Appendix A — Background information for Mode A/C surveillance systems

(a) General

This Appendix provides additional references, background information, and guidance for maintenance testing, as appropriate to Mode A/C surveillance installations.

(b) Related References

- (1) EASA
ETSO-C74d, Minimum Performance Standards for Airborne ATC Transponder Equipment.
- (2) ICAO
 - (i) ICAO Annex 10, Volume IV, Aeronautical Communications (Surveillance Radar and Collision Avoidance Systems) — Amdt. 85;
 - (ii) ICAO Document 8168-OPS/611 Volume I, Procedures for Air Navigation Services, Aircraft Operations;
 - (iii) ICAO Document 4444-ATM/501, Procedures for Air Navigation Service, Air Traffic Management; and
 - (iv) ICAO EUR Regional Air Navigation Plan, Part IV CNS Supplement SSR Code Allocation List for the EUR region, current edition.

[...]

(c) Background Information

Airborne surveillance system

[...]

Appendix D — Differences between CS ACNS.D.ELS and JAA TGL 13 Rev1

To demonstrate compliance with the CS-ACNS Elementary Surveillance requirements, the following additional points need to be addressed for aircraft previously compliant with JAA TGL 13 Rev1:

- (a) Verification that the Aircraft identification sent in Extended Squitter messages and in the Mode S replies are identical, (See CS ACNS.D.ELS.015(b)-(2));
- (b) Verification that the pressure altitude provided in Extended Squitter messages and in Mode S replies are identical, if the installation sends Extended Squitter ~~are identical~~ (See CS ACNS.D.ELS.015(b)-(2));



- (c) Other parameters provided by the airborne surveillance system are verified as correct and are correctly indicated as available: ~~(S see CS ACNS.D.ELS.015-(b)-(1)).~~

[...]

Appendix H — Guidance on 1090 MHz Extended Squitter ADS-B Out

[...]

Definition 10: Emergency Status

The provision of the Emergency Status values that do not have a corresponding Mode A value (see **Error! Reference source not found.**015(a)(6)) denoting the other emergency conditions defined in 61₁₆, is optional. This applies to the decimal values 2, 3, 6 and 7 in **Error! Reference source not found.**

[...]

Definition 21: Selected Altitude/Barometric Pressure Setting

Refer to AMC1 ACNS.D.EHS.015(c)-(1) and (c)-(3) for detailed guidance.

[...]

(a) Horizontal Position Integrity (HPL)

Horizontal Position Integrity — AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(ii).~~1.2(a)~~

[...]

Integrity Fault — Time to Alert — AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(iii).~~1.2(b)~~

[...]

With reference to the mode dependent time to alert in Table 3-5 of EUROCAE ED-72A, ~~s~~Section 3.2.1 (Table 2-1 of RTCA DO-208, Section 2.2.1.13.1), GNSS equipment manufacturers should provide information describing the equipment integrity fault output latency, along with interface instructions and/or any limitations for meeting the 10-second latency requirement of AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(iii).~~1.2(b)~~.

Note 1: The latency of reporting nominal ADS-B Quality Indicator changes, such as in response to changing GNSS satellite constellations or due to switching between position sources, is bounded by AMC1 ~~CS~~ ACNS.D.ADSB.070(a)(2)(iii).1.2(e) as well.

[...]

Mode Output — AMC1 ACNS.D.ADSB.070(a)(1) and (a)(3).~~1.3~~

[...]

(b) Horizontal Position Accuracy (HFOM) — AMC ACNS.D.ADSB.070(a)(1) and (a)(2)(v).1.2(e)

[...]

(c) Horizontal Position Latency — AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(vi).1.2(e)

[...]

(d) Horizontal Velocity Accuracy — AMC1 ACNS.D.ADSB.070(a)(1) and (a)(2)(vii).1.2(f)

[...]



(e) Geometric Altitude Accuracy (VFOM) — AMC1 ACNS.D.ADSB.085

[...]

GM1 ACNS.E.TAWS.001 Applicability

CS ACNS.TAWS airworthiness requirements are not suitable to allow the use of TAWS for navigation or for mitigation of navigation system failures.

Background information on TAWS is provided in Appendix C to this Subpart.

AMC1 ACNS.E.TAWS.010 Required functions

Note: An example of an acceptable TAWS installation is provided in ~~Appendix 2B~~.
Guidance on testing a TAWS is provided in Appendix A.

- (a) For the voice call-out, a predetermined altitude of 150 m (500 ft-) has been found acceptable. However, another altitude may be allowed when a call-out at 150 m (500 ft-) would interfere with other operations.

[...]

AMC1 ACNS.E.TAWS.040 Integrity

A functional hazard assessment (FHA) applied to the specific design should be included in the certification dossier of the system. Elsewhere, failure conditions that result in false terrain warnings, an unannounced loss of function, or the presentation of hazardously misleading information, should be considered major failure conditions.

Note: Hazardously misleading information is considered, in this case, to be an incorrect depiction of the terrain threat relative to the aircraft during an alert condition.

AMC1 ACNS.E.TAWS.045 Continuity

The loss of the TAWS function is considered to be a minor failure condition.

GM1 ACNS.E.TAWS.045 Continuity

The continuity specification should cover the detected loss of the function due to failures of the equipment or the sensors required for the function.



Appendix 3C — Background information for Terrain Awareness and Warning Systems (TAWS)

(a) General

This Appendix provides additional references, background information, and guidance for maintenance testing, as appropriate to TAWS installations.

[...]

GM1 ACNS.B.DLS.B1.020 Data Link Services

Community Specification EN 303 214 'Data Link Services (DLS) System' provides a set of test scenarios to be that demonstrated using a verified ground data link system or a ground data link system simulator.

~~GM1 ACNS.B.DLS.B1.020 Data Link Services~~

(a) Data Link Initiation Capability (DLIC) Service

The DLIC service enables the exchange of information between aircraft and ground data link equipment necessary for the establishment of data link communications. It ensures:

[...]



4. Impact assessment (IA)

- Considering the limited extent of the amendments proposed in this NPA, no impact assessment has been conducted.

5. Proposed actions to support implementation

- None.



6. References

6.1. Related regulations

- Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1)
- Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1)
- Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (OJ L 305, 23.11.2011, p. 35)
- Commission Implementing Regulation (EU) No 1206/2011 of 22 November 2011 laying down requirements on aircraft identification for surveillance for the single European sky (OJ L 305, 23.11.2011, p. 23)
- Commission Regulation (EC) No 29/2009 of 16 January 2009 laying down requirements on data link services for the single European sky (OJ L 13, 17.1.2009, p. 3)
- Commission Implementing Regulation (EU) No 1079/2012 of 16 November 2012 laying down requirements for voice channels spacing for the single European sky (OJ L 320, 17.11.2012, p. 14)
- Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)
- Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning Performance-Based Navigation (OJ L 189, 26.7.2018, p. 3)
- Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (OJ L 305, 23.11.2011, p. 35)

6.2. Related decisions

- Executive Director Decision 2013/031/R of the Executive Director of the Agency of 17 December 2013 adopting Certification Specifications for Airborne Communications Navigation and Surveillance (CS ACNS) — CS-ACNS Initial Issue



- Executive Director Decision 2003/12/RM of the Executive Director of the Agency of 5 November 2003 on general acceptable means of compliance for airworthiness of products, parts and appliances (« AMC-20 »)

6.3. Other reference documents

- None



7. Appendix

n/a



8. Quality of the document

If you are not satisfied with the quality of this document, please indicate the areas which you believe could be improved, and provide a short justification/explanation:

- the **technical quality** of the draft proposed rules and/or regulations and/or the draft proposed amendments to them;
- the clarity and readability of the text;
- the quality of the impact assessment (IA);
- application of the ‘better regulation’ principles⁸; and/or
- others (please specify).

Note: Your replies and/or comments to this section will be considered for internal quality assurance and management purposes only and will not be published in the related CRD.

⁸ For more information and guidance, see:

- https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en
- https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how_en
- https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox/better-regulation-toolbox_en

