



Comment-Response Document 2014-15

Implementation of CAEP/9 amendments Update of CS-34 and CS-36

CRD to NPA 2014-15 — RMT.0172 (BR.012), RMT.0083 (34.003) & RMT.0086 (36.007) — 12.12.2014
Related Opinion No 05/2014

EXECUTIVE SUMMARY

This Comment-Response Document (CRD) contains the comments received on NPA 2014-15 (published on 24 June 2014) and the responses, or a summary thereof, provided thereto by the Agency.

Based on the comments and responses, Opinion No 05/2014 was developed.

Applicability		Process map	
Affected regulations and decisions:	<ul style="list-style-type: none"> — Regulation (EC) No 216/2008; — Annex I (Part-21) to Regulation (EU) No 748/2012; — ED Decision 2012/020/R (AMC & GM to Part-21); — ED Decision 2003/003/RM (CS-34); — ED Decision 2003/004/RM (CS-36) 	Terms of Reference:	4.12.2013
		Concept Paper:	No
		Rulemaking group:	No EASA rulemaking group for CAEP
		RIA type:	Full (by CAEP)
Affected stakeholders:	Design and production organisations	Technical consultation during NPA drafting:	No
Driver/origin:	Environmental protection	Publication date of the NPA:	24.6.2014
Reference:	n/a	Duration of NPA consultation:	2 months
		Review group:	No
		Focussed consultation:	No
		Publication date of the Opinion:	2014/Q4
		Publication date of the Decision:	2016/Q1



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1. Procedural information

Please refer to the Agency's Opinion No 05/2014, which is available at <http://easa.europa.eu/document-library/opinions>.



2. Summary of comments and responses

The comments received on NPA 2014-15 are generally positive. All nine comments (seven from national aviation authorities and two from industry) confirmed stakeholders' support for the proposed amendments. Two comments proposed additional edits which are not directly related to CAEP/9 amendments; they are addressed in Section 4.



3. Draft CS, AMC, GM

For the amendments to Regulation (EC) No 216/2008 and to Annex I (Part-21) to Commission Regulation (EU) No 748/2012, please refer to the Agency's Opinion No 05/2014 available at <http://easa.europa.eu/document-library/opinions>.

3.1. Draft CS-34

Certification Specifications and Acceptable Means of Compliance for Aircraft Engine Emissions and Fuel Venting

CS-34

Amendment 12

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Book 2

Acceptable Means of Compliance and Guidance Material

AMC 34.2 Aircraft engine emissions

The acceptable means **Acceptable Means of Compliance** for aircraft engine emissions are presented in:

- (a) for measurement of reference pressure ratio, Appendix 1 of ICAO Annex 16, Volume II;
- (b) for smoke emission evaluation, Appendix 2 of ICAO Annex 16, Volume II;
- (c) for instrumentation and measurement techniques for gaseous emissions, Appendix 3, except for its attachments, of ICAO Annex 16, Volume II;
- (d) for specification for fuel to be used in aircraft turbine engine emission testing, Appendix 4 of ICAO Annex 16, Volume II;
- (e) for instrumentation and measurement techniques for gaseous emissions from afterburning gas turbine engines, Appendix 5, except for its attachments, of ICAO Annex 16, Volume II; and
- (f) for compliance procedure for gaseous emissions and smoke, Appendix 6 of ICAO Annex 16, Volume II.

GM 34.2 Aircraft engine emissions

Guidance material **Material** for the application of the **certification specifications** **Certification Specifications** for aircraft engine emissions is presented in:

- (a) for instrumentation and measurement techniques for gaseous emissions, the attachments to Appendix 3 of ICAO Annex 16, Volume II;
- (b) for instrumentation and measurement techniques for gaseous emissions from afterburning gas turbine engines, the attachments to Appendix 5 of ICAO Annex 16, Volume II;



- (c) for definitions and symbols, Part I of the ICAO Environmental Technical Manual, Volume II;
- (d) for emissions certification of turbojet and turbofan engines intended for propulsion only at subsonic speeds, Part III, Chapter 2 of the ICAO Environmental Technical Manual, Volume II; except for the exemption process from the NO_x emissions production cut-off requirements;
- (e) for turbojet and turbofan engines intended for propulsion at supersonic speeds, Part III, Chapter 3 of the ICAO Environmental Technical Manual, Volume II;
- (f) for smoke emission evaluation, Appendix 2 of the ICAO Environmental Technical Manual, Volume II;
- (g) for instrumentation and measurement techniques for gaseous emissions, Appendix 3 of the ICAO Environmental Technical Manual, Volume II;
- (h) for specification for HC analyser, Attachment A to Appendix 3 of the ICAO Environmental Technical Manual, Volume II; ~~and~~
- (i) for specification for fuel to be used in aircraft turbine engine emission testing, Appendix 4 of the ICAO Environmental Technical Manual, Volume II;
- (j) for measurement of reference pressure ratio, Appendix 1 of the ICAO Environmental Technical Manual, Volume II;
- (k) for specification for CO and CO₂ analysers, Attachment B to Appendix 3 of the ICAO Environmental Technical Manual, Volume II;
- (l) for specification for NO_x analyser, Attachment C to Appendix 3 of the ICAO Environmental Technical Manual, Volume II;
- (m) for calibration and test gases, Attachment D to Appendix 3 of the ICAO Environmental Technical Manual, Volume II;
- (n) for the calculation of the emissions parameters, Attachment E to Appendix 3 of the ICAO Environmental Technical Manual, Volume II;
- (o) for the specification for additional data, Attachment F to Appendix 3 of the ICAO Environmental Technical Manual, Volume II; and
- (p) for compliance procedure for gaseous emissions and smoke, Appendix 6 of the ICAO Environmental Technical Manual, Volume II.

References throughout these Certification Specifications to the ICAO Environmental Technical Manual, Volume II, refer to ICAO Doc 9501 — Environmental Technical Manual, Volume II — Procedures for the Emissions Certification of Aircraft Engines, ~~First~~ **Second** Edition 2010~~4~~.

[Amdt. 34/1]

[Amdt 34/2]



3.2. Draft CS-36

Certification Specifications and Acceptable Means of Compliance for Aircraft Noise

CS-36

Amendment 34

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Book 2

Acceptable Means of Compliance and Guidance Material

AMC 36.1 Aircraft noise

The acceptable means Acceptable Means of compliance Compliance for aircraft noise are presented in:

- (a) for aeroplanes for which Chapter 2 of Annex 16 to the Chicago Convention¹, Volume I, Part II is applicable, Appendix 1 of Annex 16, Volume I;
- (b) for aeroplanes for which Chapter 3 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 2 of Annex 16, Volume I;
- (c) for aeroplanes for which Chapter 4 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 2 of Annex 16, Volume I;
- (d) for aeroplanes for which Chapter 5 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 2 of Annex 16, Volume I;
- (e) for aeroplanes for which Chapter 6 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 3 of Annex 16, Volume I;
- (f) for helicopters for which Chapter 8 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 2 of Annex 16, Volume I;
- (g) for aeroplanes for which Chapter 10 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 6 of Annex 16, Volume I;
- (h) for helicopters for which Chapter 11 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 4 of Annex 16, Volume I; and
- (i) for aeroplanes for which Chapter 12 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 1 of Annex 16, Volume I;
- (j) for tilt-rotors for which Chapter 13 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 2 of Annex 16, Volume I; and
- (k) for aeroplanes for which Chapter 14 of Annex 16 to the Chicago Convention, Volume I, Part II is applicable, Appendix 2 of Annex 16, Volume I.

¹ The Convention on International Civil Aviation on 7 December 1944.



GM 36.1 Aircraft noise

Guidance ~~material~~Material for the application of the ~~certification—specifications~~Certification Specifications for aircraft noise is presented in:

- (a) for equations for the calculation of ~~maximum permitted~~ noise levels as a function of take-off mass, Attachment A to ICAO Annex 16, Volume I;
- (b) for evaluating an alternative method of measuring helicopter noise during approach, Attachment D to ICAO Annex 16, Volume I;
- (c) for applicability of noise certification standards for propeller-driven aeroplanes, Attachment E to ICAO Annex 16, Volume I;
- (d) for general guidelines, Chapter 2 of the ICAO Environmental Technical Manual, Volume I;
- (e) for technical procedures applicable for noise certification of ~~more than one type of~~all aircraft types, Chapter 3 of the ICAO Environmental Technical Manual, Volume I;
- (f) for guidelines for subsonic jet aeroplanes, propeller-driven aeroplanes over 8 616 kg, and helicopters evaluated under ICAO Annex 16, Volume I, Appendix 2, Chapter 4 of the ICAO Environmental Technical Manual, Volume I;
- (g) for guidelines for propeller-driven aeroplanes not exceeding 8 616 kg evaluated under Appendix 6 of ICAO Annex 16, Volume I, Chapter 5 of the ICAO Environmental Technical Manual, Volume I;
- (h) for guidelines for helicopters not exceeding 3 175 kg evaluated under Appendix 4 of ICAO Annex 16, Volume I, Chapter 6 of the ICAO Environmental Technical Manual, Volume I; ~~and~~
- (i) for guidelines for tilt-rotors evaluated in accordance with Chapter 13 and Attachment F to ICAO Annex 16, Volume I, Chapter 7 of the ICAO Environmental Technical Manual, Volume I; and
- (ij) for guidelines for aircraft recertification, Chapter 9 of the ICAO Environmental Technical Manual, Volume I.

References throughout these Certification Specifications to the ICAO Environmental Technical Manual, Volume I, refer to ICAO Doc 9501 — Environmental Technical Manual, Volume I — Procedures for the Noise Certification of Aircraft, ~~First~~Second Edition 2010~~4~~.

[Amdt- 36/1]

[Amdt- 36/2]

[Amdt- 36/3]

[Amdt 36/4]



3.3. Draft AMC and GM to Part-21**AMC and GM to Part-21**

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SECTION B

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SUBPART I — NOISE CERTIFICATES**GM 21.B.425(a) Noise certificates**

1. Completion of the noise certificate by a Member State

1.1 Completion instructions

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Block 10. Maximum landing mass (kg)

The maximum landing mass associated with the certificated noise levels of the aircraft in kilograms. The unit (kg) should be specified explicitly in order to avoid misunderstanding. If the primary unit of mass for the State of manufacture of the aircraft is different from kilograms, the conversion factor used should be in accordance with Annex 5 to the Chicago Convention. This item will only be included in the noise certification documentation for noise certificates issued under Chapters 2, 3, 4, 5 and 12 and 14.

Block 11. Noise certification standard

The chapter to which the subject aircraft is noise certificated. For Chapters 2, 8, 10 and 11, the section specifying the noise limits should also be included.

Block 12. Additional modifications incorporated for the purpose of compliance with the applicable noise certification standards

This item should contain as a minimum all additional modifications to the basic aircraft as defined by Blocks 5, 7 and 8 that are essential in order to meet the requirements of the chapter to which the aircraft is certificated as given under Block 11. Other modifications that are not essential to meet the stated chapter but are needed to attain the certificated noise levels as given may also be included at the discretion of the certifying authority. The additional modifications should be given using unambiguous references, such as supplemental type certificate (STC) numbers, unique part numbers or type/model designators given by the manufacturer of the modification.

Block 13. Lateral/full-power noise level

The lateral/full-power noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB (unit of the effective perceived noise level)) of the noise level and the noise level should be stated to the nearest



tenth of a decibel (dB). This item is included only in noise certification documentation for aircraft certificated to Chapters 2, 3, 4, 5 and 12 and 14.

Block 14. Approach noise level

The approach noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 2, 3, 4, 5, 8 and 12, 13 and 14.

Block 15. Flyover noise level

The flyover noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 2, 3, 4, 5 and 12 and 14.

Block 16. Overflight noise level

The overflight noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB or dB(A) ~~(unit of the A-weighted noise level)~~) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 6, 8 and 11 and 13. For tilt-rotors certificated according to Chapter 13 only, the overflight noise level established in VTOL/conversion mode needs to be stated.

Block 17. The take-off noise level

The take-off noise level as defined in the relevant chapter. It should specify the unit (e.g. EPNdB or dB(A)) of the noise level and the noise level should be stated to the nearest tenth of a dB. This item is included only in noise certification documentation for aircraft certificated to Chapters 8 and 10 and 13.

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4. Individual comments and responses

In responding to comments, a standard form of wording has been applied to attest the Agency's position:

- (a) **Accepted** — The Agency agrees with the comment and any proposed amendment is wholly transferred to the revised text.
- (b) **Partially accepted** — The Agency either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.
- (c) **Noted** — The Agency acknowledges the comment but no change to the existing text is considered necessary.
- (d) **Not accepted** — The comment or proposed amendment is not shared by the Agency.

(General comments)	-
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4.1. CRD table of comments and responses

(General Comments)	-
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comment	1	comment by: <i>Luftfahrt-Bundesamt</i> The LBA has no comments and supports the proposed implementation of CAEP/9 amendments.	
response	<i>Noted</i>	The Agency appreciates the support of the German Luftfahrt-Bundesamt.	
comment	2	comment by: <i>DGAC France</i> DGAC France supports the implementation of the CAEP/9 amendments in the relevant european regulations as proposed in NPA 2014-15	
response	<i>Noted</i>	The Agency appreciates the support of DGAC France.	
comment	3	comment by: <i>Boeing</i> Boeing has reviewed the NPA and find it fully in line with its stated objective to provide a level playing field for all the actors in the aviation field by incorporating the latest amendments of ICAO Annex 16, Vols. I and II, in the appropriate Articles and Annexes of European regulations. We fully support EASA's attempt to faithfully implement them via this NPA.	
response	<i>Noted</i>		



The Agency appreciates the support of Boeing.

comment 5 comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

Swedish Transport Agency recommends implementing the CAEP/9 amendments in accordance with the option 1 in this NPA.

response *Noted*

The Agency appreciates the support of the Swedish Transport Agency's Civil Aviation Department.

comment 6 comment by: *UK CAA*

Please be advised there are no comments from the UK CAA on NPA 2014-15 - Implementation of CAEP/9 Amendments; Update of CS-34 and CS-36

response *Noted*

The Agency appreciates the support of the UK Civil Aviation Authority.

comment 7 comment by: *EUROCONTROL*

The EUROCONTROL Agency does not have comments on NPA 2014-15.

response *Noted*

The Agency appreciates the support of EUROCONTROL.

comment 8 comment by: *Rolls-Royce plc (ZM)*

Rolls-Royce has no objection to (NPA 2014-15) Implementation of CAEP/9 amendments. Update of CS-34 and CS-36.

response *Noted*

The Agency appreciates the support of Rolls-Royce.

3. Proposed amendments - 3.1. Draft Regulation (Draft EASA Opinion) - 3.1.1.Draft text for amending Regulation (EC) No 216/2008

p. 9

comment 9 comment by: *Austro Control*

Page No: 9

Paragraph Nr: Art 6 BR

Comment: The basic regulation requires noise certification for all products covered by Annex 16. Annex 16 has no lower weight limit for SEP aircraft. Part 21 does not address whether permanent PtF aircraft, such as LSA require noise certification or not.



Justification: The rules is not currently clear. It would be beneficial to decide whether to include or exclude these aircraft. ACG recommends these be excluded. Part 21 already makes the connection with the type certified products.

Proposed text: "Products, parts and appliances [issued with type certificates] shall comply...

response *Not accepted*

The proposed change does not fall under the scope of the present NPA, which focusses on the implementation of CAEP/9 amendments. Furthermore, the Agency notes that the lack of clarity suggested in comment 9 has not led to problems in the application of the rule as it exists today.

**3. Proposed amendments - 3.3. Draft Acceptable Means of Compliance and Guidance Material
(Draft EASA Decision) - 3.3.1. Draft text for amending the AMC and GM to Part-21**

p. 14-15

comment

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comment by: *Swedavia Air Traffic Management dept.*

Under block 13,14,15 and 16

The current wording related to the precison of EPNdB is inconsistent as ut is declared that the noise level should be stated to the nearest tenth of a decibel. This is similar to stating that mass should be presented in lb but stated to the nearest tenth of a kg. Our recommendation is to instead write:

"stated to the nearest tenth of th unite used"

response

Not accepted

The wording in GM 21.B.425(a) has been intentionally chosen by ICAO to cover the different units used in Annex 16 Volume I. Even though the EPNdB, the dB(A) Max and the dB(A) SEL are different in terms of frequency and time weighting, they are all decibels and as such the Agency considers that the wording currently used is not inconsistent.

