

Notification of a Proposal to issue a Certification Memorandum

Airplane Flight Manual revisions for changes in mass with and without effect on the certified noise levels

EASA Proposed CM No.: CM–21.A-D-003 Issue 01 issued 24 August 2020

Regulatory requirement(s): GM 21.A.91 paragraph 3.6 (b)

In accordance with the EASA Certification Memorandum procedural guideline, the European Union Aviation Safety Agency proposes to issue an EASA Certification Memorandum (CM) on the subject identified above.

All interested persons may send their comments, referencing the EASA Proposed CM Number above, to the e-mail address specified in the 'Remarks' section, prior to the indicated closing date for consultation.

EASA Certification Memoranda are intended to provide guidance on a particular subject and, as non-binding material, may provide interpretative material. Certification Memoranda are provided for information purposes only and must not be misconstrued as formally adopted Acceptable Means of Compliance (AMC) or as Guidance Material (GM). Certification Memoranda are not intended to introduce new certification requirements or to modify existing certification requirements and do not constitute any legal obligation.

Log of issues

Issue	Issue date	Change description
01	24.08.2020	First Issue

Table of Content

Log of issues.....	2
Table of Content	2
1. Introduction.....	3
1.1. Purpose and scope	3
1.2. Abbreviations.....	3
2. Applicability	4
3. Background.....	4
4. EASA Certification Policy	5
4.1. Application Categories.....	5
4.1.1. Category 1: Applications with no change to the certified noise levels [non-DOA holders/no AFM approval privilege]	5
4.1.1.1. Guidance for the Application.....	5
4.1.2. Category 2: Applications including changes to the certified noise levels [DOA holders].....	6
4.1.2.1. Guidance for the Application.....	6
4.2. Reversion to the original higher MTOM and the associated noise levels	6
5. Addressee	7
6. Remarks	7
Appendix I.....	9
Appendix II.....	11



1. Introduction

1.1. Purpose and scope

The purpose of this Certification Memorandum (CM) is to provide specific guidance, limited to large aeroplanes, for the approval of flight manual revisions that introduce mass changes such as:

- A mass reduction within the already approved EASA envelope without the intention to establish corresponding noise levels (existing noise certificate remains valid); or
- A mass reduction to a specific mass already approved and with related noise levels listed in the EASA Noise Database (the existing noise certificate can be replaced, listing the new data).

This guidance can be applied by European and non-European Applicants and is intended to clarify the GM 21.A.91 paragraph 3.6 (b) for the specific cases described in the following paragraphs.

The implementation of Multiple/Dual Weight Variants options instructed by Service Bulletins, offered most often by TC holders but also possibly by STC holders, are outside the scope of this CM as those Service Bulletins already provide all necessary approved data, supported through related technical demonstration, and instructions needed to perform such change without the need for EASA involvement.

1.2. Abbreviations

AFM	A eroplane F light M anual
ATC	A ir T raffic C ontrol
CG	C entre of G ravity
CM	C ertification M emorandum
CS	C ertification S pecification
EASA	E uropean U nion A viation S afety A gency
GM	G uidance M aterial
MLM	M aximum L anding M ass
MSN	M anufacturer's S erial N umber
MTOM	M aximum T ake-off M ass
NAA	N ational A irworthiness A uthority (of the EU and EASA Member States)
OEM	O riginal E quipment M anufacturer
PCM	P roject C ertification M anager
RTC	R estricted T ype C ertificate
STC	S upplemental T ype C ertificate
TC	T ype C ertificate



TCDS	Type Certificate Data Sheet
TCDSN	Type Certificate Data Sheet for Noise
TCH	Type Certificate Holder
WV	Weight Variant

2. Applicability

The guidance described herein is relevant to applications concerning aeroplanes for which either Chapter 3, 4 or 14 of ICAO Annex 16, Volume I, is applicable. Specifically for this CM, this would be Large Aeroplanes (CS-25).

3. Background

This Certification Memorandum concerns the approval of flight manual revisions that introduce changes to an aeroplane's maximum take-off mass (MTOM) and/or maximum landing mass (MLM), and the effect of such mass changes on an aeroplane's certified noise levels. Guidance is given on how to classify the change and whether or not it will require technical involvement from EASA.

Applications to reduce an aeroplane's MTOM and/or MLM are typically made in order that the Operator can benefit from lower air traffic control (ATC) charges, lower airport landing charges or access to airports at which the aeroplane might otherwise be excluded from operation. The EASA Form 45 is not the document used to attest to the MTOM and/or MLM of the aeroplane, as the aeroplane flight manual (AFM) is the official document defining the aeroplane's certified weight envelope.

Point 21.A.41¹ of Annex I (Part 21) of Regulation (EU) No 748/2012 states that the Type Certificate (TC) and restricted Type Certificate (RTC) include the type design, operating limitations and Type Certificate data sheet (TCDS) for airworthiness and emissions, and that in addition the TC and RTC both include the Type Certificate data sheet for noise (TCDSN). As per point 21.B.425 European National Airworthiness Authorities (NAAs²) issue individual noise certificates (EASA Form 45) to aeroplanes on their registers in accordance with the information published in the EASA TCDSN documents and EASA published Noise Databases. This information includes the masses and the associated certified noise levels.

¹ The type-certificate and restricted type-certificate shall include the type design, the operating limitations, the type-certificate data sheet for airworthiness and emissions, the applicable type-certification basis and environmental protection requirements with which the Agency records compliance, and any other conditions or limitations prescribed for the product in the applicable certification specifications and environmental protection requirements. The aeroplane type-certificate and restricted type-certificate shall include, in addition, the applicable operational suitability data certification basis, the operational suitability data and the type-certificate data sheet for noise.

² The practice under the FAA system, for instance, is different than the one for the European system, as there are no legal requirements for the FAA to issue individual noise certificates for US registered aircraft.



4. EASA Certification Policy

4.1. Application Categories

Applications for the approval of flight manual revisions introducing changes to the MTOM and/or to the MLM typically fall into one of the following categories:

Category 1: Applications for a reduction of the MTOM and/or MLM where the Applicant does not seek a change to the Noise Certificate as issued by the competent Authority of the Member State of registry;

Category 2: Applications for a reduction of the MTOM and/or MLM with the associated reduced noise levels already approved by the Agency and traced within the TCDS/TCDSN and EASA Noise Database, where the Applicant intends to request a corresponding new noise certificate from the competent Authority of the Member State of registry.

The above cases are both addressed to Applicants other than TC holders and are to be implemented through a change to TC (by a minor change for Category 1 and by a major change through an STC for Category 2) and the outcome of the application will be a new EASA-approved AFM supplement.

The following cases are not covered by this CM and can only be applied as Major Changes³ by the TC Holder or a DOA with adequate privileges in their terms of approval:

- mass changes outside the approved aeroplane mass limits,
- mass reductions beyond 10 % of those limits, or
- mass changes associated with aeroplane noise levels not yet approved by EASA (not recorded in the EASA Noise Database).

See Appendix II for a summary of the categories.

4.1.1. Category 1: Applications with no change to the certified noise levels [non-DOA holders/no AFM approval privilege]

The scope of this type of application is for mass reduction approval, with the reduced mass being already contained in the EASA approved weight/CG aeroplane envelope, without taking credit for the potentially lower noise levels. The noise levels associated with the original higher aeroplane mass will be kept valid. Therefore, the individual noise certificate issued by the competent Authority of the Member State of registry for every MSN aeroplane concerned will remain valid and will reflect the original higher MTOM. This type of application should be categorised as a Minor Change⁴ to TC applied for to EASA by non-TCHs who do not hold a DOA approval or, although holding a DOA approval, are not granted with the privilege to approve minor changes affecting the AFM in accordance with AMC No 3 to 21.A.263(c)2 in their Terms of Approval.

If the Operator wants to revert back to the original highest MTOM and/or MLM of the aeroplane, please refer to Chapter 4.2 of this CM.

4.1.1.1. Guidance for the Application

The Applicant will fill out the associated EASA form that will contain detailed and clear instructions. The form will be available at the link indicated close to the instructions for filling out the application form. The form (see Appendix I for a specimen) will embed all the necessary information such as the request to clearly

³ Categorised Standard for Fees & Charges regulation

⁴ Refer to GM 21.A.91 3.6(b)



identify references to the TCDS, AFM Manuals and evidence of arrangement with the TCH to access and use their proprietary data.

4.1.2. Category 2: Applications including changes to the certified noise levels [DOA holders]

This category concerns a request for a change to the MTOM and/or to the MLM (contained in the EASA approved weight/CG aeroplane envelope) with the intention to request from the competent Authority of the Member State of registry a new noise certificate associated with the new MTOM and/or MLM. The certified noise levels for the proposed masses must have already been established by the TC holder in former certification projects and must have been approved and published through the official EASA Noise Database. Such an application is categorised as a Major Change to TC^{5,6} and can therefore be raised through an STC application only by Applicants holding design organisation approval with an appropriate scope.

If the Operator wants to revert back to the original highest MTOM and/or MLM of the aeroplane, please refer to Chapter 4.2 of this CM.

4.1.2.1. Guidance for the Application

The Applicant should file an application for the approval of Supplemental Type Certificate.

The approval of this specific change to the type-certificate might be also done under a DOA privilege as per point 21.A.263(c)(9). The Applicant should apply for such a privilege considering to use AMC No 2 to Part 21.A.263 (c)(9), then communicate to EASA the STC number⁷, generated as per GM 21.A.263(c)(9).

This privilege to an approved design organisation is granted if the DOAH puts in place and documents a DOA process acceptable to EASA to ensure that the mass and noise levels data will be obtained through an agreement with TCH and defining the adequate communication channels with EASA, including to whom in EASA the issued STC numbers should be communicated to EASA⁷.

The final validation of the noise data and the update of the Noise Database for recording the new STCs will be performed by EASA.

4.2. Reversion to the original higher MTOM and the associated noise levels

In case an Operator, following an aircraft mass reduction under the provisions of this Certification Memo, may wish to revert an aeroplanes back to its original highest mass (MTOM and/or MLM), the following guidance applies on this specific case:

1. The initial aeroplane status (in general the status of the aeroplane when delivered to the customer) is considered to be mass A. The competent Authority of the Member State of registry issued an individual Form 45 in accordance with the EASA approved noise levels associated with this mass when registering the MSN.
2. Then, an application for a subsequent mass reduction, to what is called mass B in the context of this CM, was made to EASA and approval was granted by the Agency. Depending on whether a reduction in the associated aeroplane Noise levels was part of the approval or not, the following two subcases can be distinguished:
 - a. Subcase B1, refer to § 4.1.1: the reduced aeroplane mass B was applied for through a Standalone AFM revision, whereas the Applicant did not seek a change to the certified noise

⁵ Simple STC for the EASA Fees & Charges regulation

⁶ Refer to Appendix A to GM 21.A.91 Examples of major changes per discipline

⁷ According to GM 21.A.263(c)(5), (8) and (9), after the STC approval, the DOA holder should send a copy of the STC to EASA.



levels associated with the higher MTOM and/or MLM of mass A. The original aeroplane noise certificate remained valid;

- b. Subcase B2, refer to §4.1.2 **Error! Reference source not found.**: the reduced aeroplane mass B was applied for and a new noise record was added to the EASA noise database during the certification process. The noise certificate of the individual aeroplane was replaced by the competent Authority of the Member State of registry.

3. Note:

- a. This case should not to be confused with so-called flexible (multiple) weight variants for which approval is granted to the TC holder, which offer the possibility to change and identify the current mass variant through the use of a cockpit placard;
- b. This guidance applies when the change has a relatively permanent status, assuming that the Applicant/Operator does not intend to frequently switch the aeroplane configuration between the different approved masses A and B.

- 4. If the Operator wishes to revert an individual aeroplane back to its original status from subcase B1 or B2 to its original mass A, the following guidance applies:

No matter whether a reversion from B1 or from B2 back to A is intended, no application to EASA and no subsequent approval are required. The Operators have to properly coordinate with their competent Authority of the Member State of registry and comply with their Air Operator Certificate⁸ on how to document and track the reversion of the aeroplane mass and noise levels back to their original status and how this should be properly documented and traced. It is the responsibility of the Operator to ensure that the AFM copy available to flight crew for the impacted aircraft MSN has been properly updated in accordance with the approved AFM content specific to the selected configuration: A, B1, B2.

5. Addressee

EASA has prepared this Certification Memorandum for Applicants wishing to submit applications strictly for the approval of flight manual revisions involving a change in the aeroplane maximum take-off mass and/or maximum landing mass and for NAAs issuing noise certificates (EASA Form 45).

6. Remarks

- 1. This EASA Proposed Certification Memorandum will be closed for public consultation on the 14th September 2020. Comments received after the indicated closing date for consultation might not be taken into account.
- 2. Comments or suggestions regarding this EASA Proposed Certification Memorandum should be referred to the Certification Policy and Safety Information Department, Certification Directorate, EASA. E-mail CM@easa.europa.eu.
- 3. For any question concerning the technical content of this EASA Proposed Certification Memorandum, please contact:

Name, First Name: Scaramuzzino, Francesca

Function: Project Certification Manager

⁸ Reference to Regulation (EU) No 965/2012.



Phone: +49 (0)221 89990 4259

E-mail: francesca.scaramuzzino@easa.europa.eu



Appendix I

EASA Form for the application of an MTOM reduction only [Application of Minor Change to TC for non-DOA Stakeholders]

1. Reference Data	
1.1 EASA Reference	SAP Project or SAP Sales Order N° (or P-N°, if applicable)
1.2 Applicant's Contact (Optional information; the Certificate will be dispatched to this person)	Name: Contact Email: ContactEMail

2. Type of Certificate/Approval		
2.1 EASA Approval of Change to Type Certificate	<input type="checkbox"/> Minor Change to TC	
2.2 Revision or Change to existing EASA Approval.	<input type="checkbox"/> Revision to Minor Change (leading to revised approval)	
	EASA Approval Number: EASA Approval Number	
2.3 F&C Classification (Commission Regulation (EU) No 319/2014)	<input type="checkbox"/> Simple	
	project has been rejected <input type="checkbox"/>	
	Justification	

3. Applicable F&C Product Category	F&C Product Category
<i>Note: Data will be automatically filled in from the EASA Product list. Contact "products.master@easa.europa.eu" if you disagree with the F&C Category classification.</i>	

4. Certificate Information		
4.1 Approval Holder (name, full address as to be printed on Certificate)	Approval Holder Street ZIP City Country	
4.2 Applicability	Type Certificate Number	Use EASA TC/TCDS when available
<i>In order to accept the application, either the Applicant belongs to one of the EU Member States or the MSN of the aeroplanes are registered in one of the EU Member States.</i>	Type Certificate Holder	
	Type Name	
	Model(s)	
	Manufacturer's Serial Number (s)	



4.3 Title/ Description (Include description if needed to make the definition of the design change clear) <i>If the application falls under case presented in Chapter 5, EASA will have to reject the application.</i>	<i>In case of specific reference to TCH WV, please indicate the former and the new WV, with related weight values and associated noise levels.</i> <i>From WV XX (MTOM, MLM) to WV ZZ (MTOM, MLM).</i> <i>EASA Noise record number associated with WV XX is:</i> <i>EASA Noise record number associated with WV ZZ is:</i>	
4.4 EASA Certification Basis <i>Note: no need to recall the Certification Basis when the first box is ticked</i>	<input type="checkbox"/> The Certification Basis (CB) for the original product remains applicable to this certificate/ approval <input type="checkbox"/> The proposed AFM-supplement is compliant with the following applicable requirements <i>List CS/JAR XX paragraphs + amdt</i>	
4.5 Product Characteristics	<input type="checkbox"/> Concerning the aeroplane Weight Variant, only the following <i>TCH WV n.</i> related AFM content is applicable: <input type="checkbox"/> Weight: <i>Identify the corresponding associated weight value per original TCH AFM</i> <input type="checkbox"/> CG envelope: <i>Identify the corresponding associated CG value per original TCH AFM</i> <input type="checkbox"/> Concerning the aeroplane weight variance with no reference to a specific TCH WV: <input type="checkbox"/> The reduced mass is less than 10 % below the MTOM: <i>Identify the value</i> <input type="checkbox"/> The reduced mass is still above the zero-fuel mass declared in the TCDS XXXYYYYZZZ: <i>Identify the value</i> <input type="checkbox"/> The reduced MTOM is within the approved envelope recorded in TCDS XXXYYYYZZZ and <input type="checkbox"/> AFM XXXYYYYZZZ	
4.5 Environmental Requirements <i>Note: Changes to the noise certification requirements and/or changes to the noise level(s) shall be recorded in the EASA TCDSN and/or the EASA noise database. Inform the Environmental Protection section to record the necessary changes.</i>	<input type="checkbox"/> Identify the corresponding associated noise levels per original TCH AFM: <i>List identification number</i> <i>or</i> <input type="checkbox"/> Indicate the noise level associated with the MSN that is indicated on the Aeroplane Individual Noise Certificate valid at the moment of the application, with the corresponding noise record number indicated on the EASA Noise Database. <input type="checkbox"/> For all the individual a/c belonging to this MSN range, the applicable individual noise certificates remain applicable, as the supplemental AFM has no impact on the noise database.	
4.6 Associated Technical Documentation	- <i>Original TCH AFM</i> - <i>Superseded AFM-Supplement</i> - <i>Proposed AFM-Supplement</i>	
4.7 Limitations/Conditions	<input type="checkbox"/>	None
	<input type="checkbox"/>	Other: if applicable, please define limitation/condition
	<input type="checkbox"/>	The approval holder shall fulfil the obligations of Part 21, Point 21A.109. <i>(only applicable for minor changes)</i>



Appendix II

