

Certification Memorandum

Classification of design changes to cabin interiors of Large Aeroplanes

EASA CM No.: CM-21.A-CS-001 Issue 02 dated 30 April 2021

Regulatory requirement(s): Point 21.A.91 of Annex I to Regulation (EU) No 748/2012 – Classification of changes to a type-certificate

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 clarify the European Union Aviation Safety Agency’s general course of action on specific certification items. They are intended to provide guidance on a particular subject and, as non-binding material, may provide complementary information and guidance for compliance demonstration with current standards. 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.

EASA Certification Memoranda are living documents into which either additional criteria or additional issues can be incorporated as soon as a need is identified by EASA.



Log of issues

Issue	Issue date	Change description
01	18.12.2019	First issue.
02	30.04.2021	Issue 2 include all changes introduced based on the comments received during the public consultation of Issue 1 from 18 th December 2019 to 31 st January 2020.

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1 Introduction

1.1 Purpose and scope

The purpose of this Certification Memorandum is to provide specific guidance for the classification of design changes to cabin interiors of Large Aeroplanes, considering the intent of the guidance material currently included in GM 21.A.91.

1.2 References & requirements

It is intended that the following reference materials should be used in conjunction with this Certification Memorandum:

Reference	Title	Code	Issue	Date of entry into force
Regulation 748/2012	Regulation (EU) No 748/2012 as last amended by Commission Delegated Regulation (EU) 2020/570 of 28 January 2020			24.3.2020
EDD 2021/001/R	AMC and GM to Part 21 — Issue 2, Amendment 11			20.3.2021
EDD 2020/024/R	Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (CS-25) – Amendment 26	CS-25	26	23.12.2020

1.3 Abbreviations

AMC	Acceptable Means of Compliance
EU	European Union
GM	Guidance Material
LOI	Level of Involvement
PED	Personal Electronic Device

2 Background

Point 21.A.91 of Annex I (Part 21) to Regulation (EU) No 748/2012 reads as follows:

‘Changes to a type-certificate are classified as minor and major. A ‘minor change’ is one that has no appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emission, operational suitability data or other characteristics affecting the airworthiness of the product. Without prejudice to point 21.A.19, all other changes are ‘major changes’ under this Subpart. Major and minor changes shall be approved in accordance with points 21.A.95 or 21.A.97 as appropriate, and shall be adequately identified.’



An Ad Hoc working group was set up in 2013 by EASA to address the requests coming from DOAs to improve the guidance on the classification of design changes in the cabin safety domain. The objective of the working group was to develop a list of examples of design changes and to provide for each one of them a rationale in support of the expected outcome of the classification process. EASA would then transfer the content of the list into a Certification Memorandum and, eventually, use it as a basis for a revision of GM 21.A.91.

In the meantime, the additional need to provide clear decision criteria was identified as important to provide a level playing field for all affected Design Organisations. This CM also takes into account the provisioning for risk-based compliance verification and the new privileges for Design Organisation implemented by Commission Regulation (EU) 2019/897 amending Regulation (EU) No 748/2012, and clarifies that the classification of design changes to the cabin interiors of Large Aeroplanes must be performed solely based on the impact on airworthiness.

3 EASA Certification Policy

GM 21.A.91 clarifies that the intent of the GM is:

‘...to provide guidance on the term ‘appreciable effect’ affecting the airworthiness of the product or affecting any of the other characteristics mentioned in 21.A.91, where ‘airworthiness’ is interpreted in the context of a product in conformity with type design and in condition for safe operation.’

The present Certification Memorandum follows the same philosophy as that of GM 21.A.91, and includes a **non-exhaustive list of** examples of design changes to cabin interiors that should be classified as major based on paragraph 3.4 of the GM and on the additional guidance on the classification of design changes in the cabin safety domain that is provided in paragraph 2(i) of Appendix A of GM 21.A.91:

2. Cabin Safety

(i) *changes which introduce a new cabin layout of sufficient change to require a re-assessment of emergency evacuation capability or which adversely affect other aspects of passenger or crew safety.*

Items to consider include, but are not limited to,:

- *changes to or introduction of dynamically tested seats.*
- *change to the pitch between seat rows.*
- *change of distance between seat and adjacent obstacle like a divider.*
- *changes to cabin lay outs that affect evacuation path or access to exits.*
- *installation of new galleys, toilets, wardrobes, etc.*
- *installation of new type of electrically powered galley insert.*

Item #	Scope of the design change	Relevant guidance in GM 21.A.91*	Justification for the classification as major
1	Installation/relocation of passenger seats on an aircraft	3.4 (d); 3.4 (g);	Any reduction in the level of performance of passenger seats below the level of safety established by



Item #	Scope of the design change	Relevant guidance in GM 21.A.91*	Justification for the classification as major
	required to comply with CS 25.562.	App. A 2.(i)	CS 25.562 may result in multiple fatalities in an emergency landing.
2	Modification/installation of seat components (features in the occupant head strike: monitors, tray tables, latches, etc.; occupant restraint systems; bottom and backrest cushions; etc.) that affect the performance in dynamic test conditions of a seat installed on an aeroplane having CS 25.562 in its certification basis.	3.4 (d); 3.4 (g); App. A 2.(i)	Any reduction in the level of performance of passenger seats below the level of safety established by CS 25.562 may result in multiple fatalities in an emergency landing. A modification to a seat compliant with CS 25.562 may affect its structural performance (due to an excessive weight increase or adverse impact on the level of performance of the components in the primary load path from the occupant to the seat tracks), the level of protection offered to the occupant (e.g. by increasing HIC above 1 000), or compromise occupant egress (due to excessive permanent deformation).
3	Installation of one or more of the following types of interior components: seats, galleys, toilets, wardrobes, etc.	3.4 (d); App. A 2.(i)	The effort needed to generate new substantiation data necessary to comply with the applicable certification requirements is considerable.
4	Installation/relocation of interior components (seats, galleys, lavatories) affecting the location, or reducing the width of aisles, cross aisles, passageways leading to the emergency exits.	3.4 (d); 3.4 (g); App. A 2.(i)	The location and dimensions of aisles, cross aisles, passageways leading to the emergency exits is essential to ensure safe and rapid evacuation of passengers and crew from the aircraft.
5	Installation/replacement of emergency egress assisting means (e.g. escape slides, inertia reels, ropes, etc.).	3.4 (d); 3.4 (g); App. A 2.(i)	The design and installation of emergency egress assisting means is essential to ensure safe and rapid evacuation of passengers and crew from the aircraft.
6	Deactivation of an emergency exit.	3.4 (d); 3.4 (g); App. A 2.(i)	The deactivation of an emergency exit affects the evacuation of passengers and crew from the aircraft.
7	Derating of emergency exits.	3.4 (d); 3.4 (g);	The derating of an emergency exit has an impact on evacuation and at the same time requires a reassessment of



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		App. A 2.(i)	the distribution of passenger seats in the cabin.
8	Installation/relocation of seats designated for use during take-off and landing by a cabin crew member required by the Operating Rules.	3.4 (d); 3.4 (g); App. A 2.(i)	The design and installation of seats occupied by cabin crew members during take-off and landing has a significant influence on the contribution that crew members may provide to achieve rapid evacuation of the cabin.
9	Installation of means (mirrors, camera systems) to enhance direct view of the cabin area for which the cabin crew member is responsible.	3.4 (c)	The use of mirrors or camera systems to monitor the cabin area that a crew member is responsible for requires an assessment of considerable complexity.
10	Installation of a crew rest compartment.	3.4 (d); 3.4 (g); App. A 2.(i)	Crew rest compartments are usually installed in remote areas, are isolated by means of a door from the passenger cabin and are accessible to crew members only. EASA has issued special conditions to address the safety issues (accessibility, evacuation, fire protection) associated with the installation of crew rest compartments, taking into account the function of such compartments and the complexity of the limitations/procedures associated to their use.
11	Installation of thermal/acoustic insulation materials on aircraft required to comply with CS 25.856(b). This item covers also design changes that introduce a new method of installation of already certified materials.	3.4 (g)	The intent of CS 25.856(b) is to extend the time available to cabin occupants for evacuation before an external fire can burn through the fuselage and reach the cabin. The time to burn through is critical because, in survivable aircraft accidents, the heat and smoke released by burning cabin materials ignited by an external fuel fire may incapacitate passengers before they are able to escape.
12	Installation of stretchers.	3.4 (d); 3.4 (g); App. A 2.(i)	Procedures must be developed to ensure that the installation of stretchers should not hinder or delay the rapid evacuation.



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13	Introduction of an Incomplete Passenger Cabin (as defined in CM-CS-010-001 Issue 1).	3.4 (g)	See CM-CS-010-001 Issue 1.
14	Installation of a new type of floor proximity emergency escape path marking system.	3.4 (d); App. A 2.(i)	The installation of floor proximity emergency escape path marking ensures that evacuation of the cabin can occur in critical visibility conditions. The effort needed to generate new substantiation data necessary to comply with the applicable certification requirements is considerable.
15	Installation of large glass items (ref. AMC 25.603(a)) or large display panels (ref. AMC 25.788(b)) in the cabin.	3.4 (d)	The failure of large glass items or large display panels in an emergency landing and or following cabin depressurisation, may result in the release of fragments and in the exposure of sharp edges that may injure cabin occupants.
16	Installation of seat cargo bags.	3.4 (g)	See CM-CS-003 Issue 1.
17	Modifications that affect the ballistics or intrusion resistance of flight deck protection systems compliant with CS 25.795 and required by the applicable Operating Rules.	3.4(d); 3.4(g)	The effort needed to generate the substantiation data necessary to certify the installation or the modification of flight deck protection systems is considerable.
18	Installation of a PED charging station /stowage compartment.	3.4 (g)	The introduction of facilities designed to stow PEDs during their battery recharge process may increase the risk of having a thermal runaway event that may involve multiple PEDs. The propagation of a PED fire to other PEDs may result in a fire event that may have catastrophic consequences. The installation of In-Seat Power Supply Systems (ISPSS) is not addressed by this item, provided that they are not installed in fully enclosed compartments.
19	Installation of safety-related symbolic placards other than those described by AMC 25.1541.	3.4 (d)	Safety marking is essential to provide instructions/information to cabin occupants in emergency scenarios. The design of symbolic placards should be evaluated through comprehension



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			testing conducted with naïve subjects. The effort needed to generate the necessary substantiation data is considerable.
20	Installation of handheld fire extinguishers and related agents not listed in the FAA Advisory Circular AC 20-42D.	3.4(b); 3.4(d); 3.4(g)	The handheld fire extinguishers required by CS 25.851(a) are essential to ensure that fires developing in occupied areas can be effectively controlled so that they do not have catastrophic consequences. The demonstration of adequate performance of a new extinguishing agent involves the need to generate a considerable amount of test evidence and substantiation data. If the new extinguishing agent is not listed in FAA AC 20-42D EASA has to establish a Means of Compliance alternative to AMC 25.851(a).

* In accordance with 21.A.91, if a worst-case non-compliance of a change to type certificate may have an appreciable effect on the airworthiness that includes crashworthiness and occupant safety, the change needs to be classified as major. This applies irrespective of previous compliance demonstration that might be reused or assumed no-safety effect due to compliant design or processes.

4 Whom this Certification Memorandum affects

This Certification Memorandum affects any Design Organisation or legal person that develops design changes to the cabin interiors of Large Aeroplanes.

5 Remarks

1. Suggestions for amendment(s) to this EASA Certification Memorandum should be referred to the Certification Policy and Safety Information Department, Certification Directorate, EASA. E-mail CM@easa.europa.eu and to the contact person indicated on the EASA webpage where this document is published.
2. For any question concerning the technical content of this EASA Proposed Certification Memorandum, please contact:

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