

Proposed Special Condition on Installation of mini-suite type seating

Applicable to Airbus A350

Introductory note:

The following Special Condition has been classified as an important Special Condition and as such shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of Issue

Airbus has applied for A350-900 interior arrangements, including first class mini-suites with a partial height partition that will surround the occupant providing additional comfort, convenience, and privacy. Complete enclosure can be achieved by moving sliding partition element(s).

The proposed design could be seen as not meeting the following applicable A350-900 Certification requirements :

CS 25.813(e) requires that:

No door may be installed in any partition between passenger compartments.

CS 25.785 (h)(2) requires that:

(h) Each seat located in the passenger compartment and designated for use during take-off and landing by a cabin crewmember required by the Operating Rules must be:

[...]

(2) To the extent possible, without compromising proximity to a required floor level emergency exit, located to provide a direct view of the cabin area for which the cabin crewmember is responsible.

Similar certification context was already experienced while installing "mini-suites" with high height partition on other large aeroplane transport category (for instance A380, B777, etc ...). At that time consultation papers were issued supporting Special Condition requirements. Those original SC requirements are taken over in the current proposed SC, but reinforced by additional ones to address the specificity of the A350 design, installing a significantly higher number of mini-suites, having a significantly smaller size.

The Special Condition that include new or different requirements, compared to what was published by EASA in the past, are highlighted hereafter in red, and the potential comments should only focus on those last ones.

Interpretative Materials, as well as Means of Compliance, included through Appendix 1 & 2 are provided for supporting the above-mentioned SC requirements, and are therefore entitled to be commented.

Special Condition D-37 - Installation of mini-suite type seating

Applicable to A350

1. Only single occupancy of the Mini-suite is allowed during taxi, take-off and landing.
2. The mini-suite entrance must only provide access to the specific mini-suite.
3. Mini-suites must not provide the required egress path for any passenger other than for its single occupant.
4. Installation of the mini-suites must not introduce any additional obstructions or diversions to evacuating passengers, even from other parts of the cabin.
5. The design of the doors and surrounding "furniture" above the cabin floor in the aisles must be such that each passenger's actions and demeanour can be readily observed by cabin crew members with stature as low as the 5th percentile female, when walking along the aisle.
6. The mini-suite door(s) must be open during taxi, take-off and landing.
7. A hold open retention mechanism for mini-suite doors must be provided and must hold the doors open under CS 25.561(b) emergency landing conditions.
8. There must be a secondary, backup hold open retention mechanism for the mini-suite doors that can be used to "lock" the doors in the open position if there is an electrical or mechanical failure of the primary retention mechanism. The secondary retention mechanism must hold the doors open under CS 25.561(b) emergency landing conditions.
9. There must be a means to readily check that all mini-suite doors are fully open and in the latched condition.
10. There must be means to prevent the seated mini-suite occupant from operating the doors. This means is envisaged to be used in particular to secure the TTOL phases of the flight.
11. Appropriate placards, or other equivalent means, must be provided to ensure the mini-suite occupants know that the doors must be in the open position for taxi, take-off and landing.
12. Operating instruction materials necessary to provide adequate compliance with SC 5, 9 and 10, considering also the number of individual mini-suites, shall be discussed and agreed with EASA and shall be provided to the operator for incorporation into their cabin crew training programs and associated operational manuals. This may affect the minimum acceptable number of cabin crew required to operate the aeroplane.
13. In the TT&L configuration, the mini-suite must provide an unobstructed access to the main aisle having a width of at least 30 cm (12 inches) at a height lower than 64 cm (25 inches) from the floor, and of at least 38 cm (15 inches) at a height of 64 cm (25 inches) and more from the floor. A narrower width not less than 23 cm (9 inches) at a height below 64 cm (25 inches) from the floor may be approved when substantiated by tests found necessary by the Agency.
14. In addition, the mini-suite must have an Emergency Passage Feature (EPF) to allow for evacuation of the mini-suite occupant in the event a door closes and becomes jammed during an emergency landing. The EPF must provide a free aperture for passage into the aisle consistent with SC 13 or meeting the requirements of CS 25.807 applicable to a Type IV emergency exit.

If the EPF consists of frangible and/or removable elements they must be easily broken/removed by the occupant of the mini-suite when a door becomes jammed.

If an EPF consists of dual independent sliding doors opening in opposite directions, the remaining unobstructed access width with one door in the fully closed position must be consistent with SC 13 or meet the requirements of CS 25.807 applicable to a Type IV emergency exit .

The occupant of the mini-suite must be made aware of the EPF and its way of operation.

In no case shall the occupant using the EPF have to rely on another occupant to assist in passage.

15. The height of the mini suite walls and doors must be such that a 95th percentile male can fit between them and the aeroplane interior furnishing.
16. No mechanism to latch the door(s) in the closed position shall be provided.
17. The mini-suite door(s) must be openable from the inside or outside with 25 pounds force or less regardless of power failure conditions.
18. If the mini-suite doors are electrically powered, in the event of loss of power to the mini-suite with the door(s) open, the door(s) must remain latched in the open position.
19. The mini-suites installation must not encroach into any required main aisle, cross aisle or passage ways.
20. No mini-suite door may impede main aisle or cross aisle egress paths in the open, closed or translating position.
21. The mini-suite doors must remain easily openable, even with a crowded aisle.
22. The seat of the Cabin Crew responsible for a suite area must be located to provide a direct view of the egress path from each suite and of each main aisle adjacent to the suites.

Appendix 1

Interpretative Material D-37

a) IM to SC requirement 13: The requirements related to the access to the aisle for the occupant of the mini-suite are consistent with the requirements of CS 25.815 applicable to the 10 passengers or less seating capacity case and apply regardless of the number of mini-suites installed on the aeroplane. Permanent deformations of seats/ furniture/doors bounding the access to the aisle must be taken into account in the assessment, considering the inertia loads specified in CS 25.561, and, for seats, in CS 25.562.

b) IM to SC requirement 14: The EPF required by SC requirement 14 should be available in every position in which the door may jam, unless an opening meeting SC requirement 13 remains available without using the EPF.

A smaller aperture than that specified in SC requirement 14, combined with an assessment of the possibility for an occupant to exit the suite by climbing over the surrounding wall (considering critical human physical abilities) might be considered acceptable. Use of this compliance approach must first be discussed and agreed with the Agency.

The design of the mini-suites will be reviewed to determine if a range of occupants can climb over the walls of the mini-suite and enter the aisle with acceptable ease and safety. Worst case permanent deformations resulting from required static and dynamic loading conditions of the components that will be used as steps, handholds etc. will need to be simulated or accounted for.

The number and size of occupants and variations in their physical strengths/abilities, to be considered in the evaluation of ease and safety of egress, will be those expected to be most critical, taking into account the geometry of the items to be negotiated and the free space provided for manoeuvre, and will be determined by the Agency.

c) IM to SC requirement 3: When all suite egress path obstructions are removed, the suite should not provide a required evacuation path for a passenger not coming out of the suite. No passage through the suite should be an evacuation path for passengers. Nevertheless, in the case of two adjacent suites, which are only separated by low furniture that may easily be climbed over, it is not necessary to provide means to forbid access to the adjacent suite. This however does not allow to count the adjacent suite access as one of the egress path required per SC requirements 13 and 14.

Appendix 2

Means of Compliance D-37

1. MOC to SC requirement 22. The Means of Compliance to demonstrate compliance to this Special Condition requirement of Cabin Crew direct view of the mini-suite area may be based on one of the two criteria defined below. Airplane level (and remaining zone) direct view requirements apply to the remainder of the cabin and exclude the mini-suite cabin area. Note that mirrors may be proposed, however the visibility should then be enhanced beyond the minimum requirements outlined below. In determining compliance, Cabin Crew head movement should be consistent with the documented current model MOC.
 - i. The length of each main aisle adjacent to the suite must be visible at least to the point of the entrance area of the last suite enclosure. An aisle is considered visible if at least 50% of the width of the aisle is visible.
 - ii. At least 80% of the suite entrances must be visible. An entrance is considered visible, if a person standing in the aisle at the suite entrance is observable, considering a body depth of 12”.