

Equivalent Safety Finding on JAR/CS 25.815 : Width of aisle

Applicable to EMB-135BJ

Introductory Note:

The hereby presented Equivalent Safety Finding has been classified as an important Equivalent Safety Finding 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:

The JAR/CS 25.815 requires that the width of the passenger aisle must be 12 inches wide less than 25 inches above the floor and 20 inches wide more than 25 inches above the floor for airplanes with passenger seating capacity of 11 through 19. Some EMB-135BJ interior configurations present a width of aisle of 18 inches at more than 25 inches from the floor where seats are found symmetrically installed in both sides of the cabin aisle.

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Applicant Proposal:

The model EMB-135BJ is a transport category airplane with a maximum seat capacity of 19 passengers. For maximum passenger occupancy of 11 through 19, the JAR/CS 25.815 requires a minimum passenger aisle width of 12 inches (up to 25 inches above the floor) and 20 inches (at 25 inches and above).

Embraer stated that EMB-135BJ cabin configurations originally met the minimum aisle standard, but at a certain point, a design change made the sidewalls thermal/acoustic insulations one inch thicker, in both sides of the airplane. This change pushed the interior components one-inch inward, including the seat adjusted for TTL phases. Where one finds the seat symmetrically installed in both sides of the cabin, the clearance between Seat backrests is 18 inches more than 25 inches from the floor and keeps below 20 inches up to approximately 33 inches from the floor. This forms a minor protrusion of triangular shape with one bottom side being 1 inch and a height of 8 inches. The surface has a soft padding.

Applicant Safety Equivalency Demonstration:

The following compensating factors have been proposed EMBRAER to provide an equivalent level of safety to JAR 25.815:

1. While the present width of aisle at the height of 25" is below the 20" required by CS 25.815:
 - a) Above 25" from floor level the width of the aisle is continuously increasing,
 - b) the encroachment is considered to be minor (not more than 10% of the aisle width required) and
 - c) the required width is provided at a point not higher than halfway between armrest and seat back top at TTOL position.
Thus, the subject design will provide an even larger width than the 20" required for heights close to the upper level of the seat (seat back).
 - d) It will be demonstrated by EMBRAER that the overall free area between the height of 25" and the upper height of the seat (top of seat back) is not reduced compared to the minimum value defined by a literal compliance to CS 25.815 (assuming a rectangular free area = 20" x (upper height of the seat back – 25")).
2. The minimum aisle width required by CS 25.815 might be encroached only by padded soft surfaces that do not create any hazard to the occupants moving along the aisle.
3. The reduced aisle widths shall occur only locally in straight main aisle path areas of the cabin without the presence of any aisle joggle. There must be no aisles width reduction in laterally shifted and zigzag evacuation paths.