European Union Aviation Safety Agency

FAQ n.46186

FAQs:

Rotorcraft

Question:

How to address compliance with 27/29.251 (Vibration)?

Answer:

Vibrations related CS27/29 requirements are:

- CS 2x.251 Vibrations Requirements
- CS 2x.771(c) Pilot compartment
- CS 2x.1321 (f) Arrangement and visibility
- CS 2x.1193 (a) Cowling and engine compartment covering

They have the same objectives: Prevent the risk of excessive vibration to mitigate the risk of

- Damaging systems and primary structure, including its detachment,
- Flutter (coupling),
- Detrimental effects in handling qualities and controllability,
- Detachment of cabin/cockpit items of mass.

For compliance with CS 2x.251 vibrations must be addressed **at Rotorcraft level and at Assembly/Part level** (regardless of its criticality). This can be demonstrated by:

- Vibration identification by Resonance Assessment Profile (RAP) testing, and
- Flight tests as needed,
- In case of significant vibration, fatigue or damage tolerance evaluation may be necessary.
- Alternatively, when relevant design similarity exists, detailed design review only may be acceptable.

Note 1: care must be taken in the selection of quantitative and/or qualitative vibration evaluation.

Note 2: Flight tests outside of the approved flight envelope might be required.

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Link:

https://www.easa.europa.eu/en/faq/46186