



Advisory Circular

Subject: Aircraft Electromagnetic
Compatibility Certification

Date: 06/01/2018
Initiated By: AIR-600

AC No: 20-190

1 PURPOSE.

1.1 This advisory circular (AC) identifies SAE Aerospace Recommended Practices (ARP) 60493, *Guide to Civil Aircraft Electromagnetic Compatibility (EMC)*, dated October 25, 2017, and European Organization For Civil Aviation Equipment (EUROCAE) ED-248, *Guide to Civil Aircraft Electromagnetic Compatibility (EMC)*, dated January 22, 2018 as recommended practices for showing compliance pursuant to the following Title 14, Code of Federal Regulations (14 CFR):

- § 23.2500
- §§ 25.1309(a), 25.1309(e), 25.1353(a), and 25.1431(c)
- §§ 27.1309(a), and Part 27 Appendix B
- §§ 29.1309(a), 29.1309(g), 29.1353(a), and 29.1431(b)

1.2 This AC is not mandatory and does not constitute a regulation. It describes recommended practices, but not the only practices, for you to demonstrate that aircraft electrical and electronic systems are not adversely affected by electromagnetic emissions from other electrical and electronic systems onboard the aircraft. This AC does not invalidate previous means of compliance. If you use SAE ARP 60493 or EUROCAE ED-248 you should use the recommended practices applicable to your project using a risk-based approach.

2 **AUDIENCE.** This AC provides guidelines for applicants for a new type certificate (TC), a new supplemental type certificate (STC), or an amendment to an existing TC or STC when the certification basis requires you to address the regulations described in paragraph 1.1. Technical Standard Order (TSO) authorization applicants may also use this guidance when addressing equipment EMC qualification requirements.

3 **SAE ARP 60493 AND EUROCAE ED-248.** SAE ARP 60493 and EUROCAE ED-248 describe recommended practices for demonstrating electrical and electronic systems installed on civil aircraft can operate without adversely affecting, or without being affected by, the operation of other electrical and electronic systems onboard the aircraft. The technical contents of SAE ARP 60493 and EUROCAE ED-248 are identical, and either can be used. They include recommended practices for aircraft system EMC certification of installation or modification to the aircraft electrical or electronic systems. They also include methods and procedures for aircraft system EMC

analysis and tests. The rigor and scope of the aircraft system EMC certification are dependent on the scope of the systems and changes. The scope and extent of the aircraft system EMC certification should reflect the aircraft category, complexity of the change, and the impact it can have on safety.

ARP 60493 and ED-248 provide recommended practices for aircraft system EMC certification to include the following:

- List of appropriate EMC regulations applied to the aircraft certification.
- Description of the aircraft systems under consideration for EMC certification.
- Definition of applicable equipment qualification requirements, such as the applicable RTCA Document No. (RTCA/DO)-160G/EUROCAE ED-14G, *Environmental Conditions and Test Procedures for Airborne Equipment*, sections and appropriate test levels.
- Detailed test procedures to demonstrate appropriate equipment qualification.
- Examples of detailed test reports that demonstrate appropriate equipment qualification.
- Aircraft EMC ground test procedure and acceptance criteria.
- Aircraft EMC flight test procedures and acceptance criteria, if required.
- Examples of detailed aircraft EMC ground and flight test reports that demonstrate acceptable EMC performance.

4 REFERENCED DOCUMENTS. You can:

- 4.1 View copies of 14 CFR parts online at the GPO website: www.ecfr.gov.
- 4.2 Download copies of ACs online from our website: http://www.faa.gov/regulations_policies/advisory_circulars/ or www.airweb.faa.gov/rgl.
- 4.3 Order copies of SAE documents online from the SAE website: www.sae.org.
- 4.4 Order copies of RTCA documents online from their website: <https://www.rtca.org/>.
- 4.5 Order copies of EUROCAE documents online from their website: <http://www.eurocae.net>.

If you have any suggestions for improvements or changes, you may use the template provided in appendix A at the end of this AC.



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Appendix A. Advisory Circular Feedback Information

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) emailing this form to 9-AWA-AVS-AIR-DMO@faa.gov or (2) faxing it to (202) 267-1813.

Subject: AC 20-190

Date: Click here to enter text.

Please check all appropriate line items:

- An error (procedural or typographical) has been noted in paragraph Click here to enter text. on page Click here to enter text.
- Recommend paragraph Click here to enter text. on page Click here to enter text. be changed as follows:
Click here to enter text.
- In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)
Click here to enter text.
- Other comments:
Click here to enter text.
- I would like to discuss the above. Please contact me.

Submitted by: _____

Date: _____