1. Purpose.
   
a. This advisory circular (AC) recognizes several SAE Aerospace Recommended Practices (ARPs) and European Organization for Civil Aviation Equipment (EUROCAE) documents as acceptable methods for showing compliance with airworthiness regulations. These industry documents provide guidance on aircraft lightning environment and test waveforms, aircraft lightning zoning, aircraft lightning test methods, and aircraft lightning direct effects.

b. This AC is not mandatory and does not constitute a regulation. It describes an acceptable means, but is not the only means, to help you to obtain certification for lightning protection.

2. Applicability. This AC applies to all applicants for a new type certificate (TC) or a change to an existing TC when the certification basis requires you to address the certification requirements of aircraft lightning protection.


4. Industry Documents on Lightning. The following industry documents define the characteristics of lightning flashes and how lightning attaches to aircraft. Aircraft and aircraft equipment designers should use these recommended practices when developing lightning protection for aircraft structures as well as fuel, and electrical and electronics systems.

   a. SAE ARP 5412B (or EUROCAE ED-84A), Aircraft Lightning Environment and Related Test Waveforms, describes lightning waveforms that you may use for lightning tests and analysis to support aircraft certification. The standardized voltage and current waveforms in this document represent the lightning environment, and will help you assess the direct effects of lightning on your aircraft. You can use the standardized external current waveforms to derive standardized transient voltage and current waveforms that can appear on electrical cable bundles and at equipment interfaces.
b. SAE ARP5414B (or EUROCAE ED-91B), Aircraft Lightning Zoning, describes aircraft lightning attachment zones used in defining where lightning will attach to the aircraft (called “lightning zoning”). Zoning information and hazard assessments may be used to determine how to protect a given aircraft part or a specific location.

c. SAE ARP5416A (or EUROCAE ED-105A), Aircraft Lightning Test Methods, describes test methods and test procedures to evaluate lightning effects on aircraft structure, components, electrical and electronic systems, and fuel systems.

d. SAE ARP5577, Aircraft Lightning Direct Effects Certification, describes guidance on lightning certification associated with aircraft structure, mechanical systems, hydraulic systems, and external components and sensors.


7. Related Documents.


b. FAA ACs. ACs are available on the FAA website at http://www.faa.gov/regulations_policies/advisory_circulars/. You can also view and download copies from our web based regulatory and Guidance Library (RGL) at www.airweb.faa.gov. On the RGL website, select “Advisory Circular”, then select “By Number”.


d. Industry Documents.


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