RTCA Update

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RTCA Background

- The FAA Technical Center was requested by the Avionics Systems Branch in Washington to work with members of the RTCA to develop flammability test criteria and procedures for electronic enclosures.
- Advisory Circular (AC21-16F) identifying RTCA Doc. No. (RTCA/DO)-160F as an acceptable means of environmental qualifications for showing compliance with airworthiness requirements was released.
- The AC excluded Section 26, “Fire and Flammability” as it is not as stringent as FAA accepted methods.
- First Task Group meeting was held in Naples, Florida in March 2009

RTCA Background (*continued*)

- The purpose of this group was to draft a new Section 26 for inclusion into RTCA DO-160 document.
- Section 26 deals with flammability.
- Members agreed developing a test or tests for an “electronic” box would take longer than one year.
  - “Electronic” refers to avionics equipment, communication equipment, operating components, etc.
- Thus, the group focused on testing specified in FAR 25.853, Appendix F:
  - Vertical Bunsen burner test
  - Horizontal Bunsen burner test
  - The 60 degree wire test
  - The 45 degree test

RTCA Background (*continued*)

- In order to select the appropriate test method:
  - Define the product.
  - Define what needs testing (such as covers, internal components, printed circuit boards, etc.)
  - Determine what a small part is and does it fall under the small parts exclusion.
  - Determine configurations or parts of the product that may be exempt from testing.
  - Determine which test to conduct.

RTCA Background (*continued*)

- As an exercise, the task group was asked to perform a flammability analysis on two electronic units manufactured by Thrane and Thrane Company.
- Thrane and Thrane provided the drawings and description of these units. These were sent to each task group member.
- The two units were …

RTCA Background (*continued*)

- The SBU (Swift Broadband Unit) which is used to send and receive RF signals to the HLD Diplexer:

SBU, Metal unit with cooling/vent holes

RTCA Background (*continued*)

- The HLD (HPA/LNA/Diplexer which is a high power, low noise amplifier

HLD, metal construction with no cooling/vent holes

RTCA Ongoing Work

- The Section 26 Draft, Fire, Flammability was sent to Working Group members in early October for their review
- Modified sections of the Fire Test Handbook have replaced the entire Category C: Flammability
- Specifically, procedures that apply to the type of components being tested to DO160 procedures
- The policy of the RTCA/DO160 document is to not make reference to any standard or agency
- Therefore, the applicable test methods from the Handbook were not copied verbatim
- The three tests that are applicable are:
  - Vertical Bunsen burner test
  - Horizontal Bunsen burner test
  - 60 degree Bunsen burner test

RTCA Ongoing Work

- 1st Review of Section 26 will be held at the RTCA Meeting scheduled for the week of March 17th.
- All comments/changes will be forwarded to the working group members.
- Once Revision G is finalized, we will continue working on alternate test methods through the working group.