

List of Volpe Resources for Aircraft Noise Certification

Software & Methodology Validations

A variety of information and resource materials is available to applicants to address common issues identified during the validation process. These materials were developed by Volpe - or with substantial input from Volpe - and have been made available previously via presentations at FAA's Recurrent Acoustic DER Seminars, or directly to an applicant from Volpe during validation. Some of the content has since been formalized in official specifications and guidance materials by means of part 36, Advisory Circular AC36-4, Annex 16, Vol. I, and the Environmental Technical Manual, Vol. I. Some of these materials may provide additional detail or further insight into existing specifications and guidance materials.

Additional materials will be developed as necessary, and will be provided to applicants as they become available. The following is a list of currently-available materials which will be posted on Volpe's Aircraft Certification Validation webpage, and may be obtained on request by emailing David.Read@DOT.Gov or Christopher.Cutler@DOT.Gov.

1. **Symbols & Definitions list** – excerpted from CAEP/10 Steering Group Approved version of Environmental Technical Manual, Vol. I. This list is comprehensive and up-to-date. It was developed via Authority and Industry participation in ICAO Working Group 1, and includes agreed-upon definitions and symbols. It is available in the version of the ETM that has not yet been formally published, but was approved by Steering Group during CAEP/10. (The entire ETM - from which this list has been excerpted - is available to the noise certification community on the ICAO Working Group 1 website. Contact your WG1 representative for access.);
2. **Illustrations of aircraft noise geometry elements** (Fig. 1 contained in this package) and of **start time vs. slow "timestamps"** (Fig. 2 contained in this package). Separate files for each of these fundamental illustrations are available;
3. **Illustration of background noise bands** – Annex 16 band numbering vs. ANSI/ISO band numbering; Characterization as "low-frequency" and "high-frequency" bands; Bands eligible for frequency-extrapolation; Bands eligible for time-extrapolation, etc. (This illustration has not previously been widely distributed.);
4. 2003 DER Seminar Presentation on **background noise adjustment process flow** (Step-by-step walkthrough and flow diagrams for test-day background noise process developed for the Advisory Circular and ETM);

5. 2014 DER Seminar Presentation on **background noise characterization** (Clearly defines the elements of background noise as used in the method developed for the Advisory Circular and ETM, and discusses methods for determination of the various elements.);
6. **Wind Speed Limits & Information** slides from 2010 DER Seminar Presentation (Discussion and identification of the updated and improved specifications developed in Working Group 1 for Annex 16, Vol. I);
7. Slide on **Atmospheric Layering** (apportioning of α s) from 2005 DER Seminar Presentation;
8. 2014 DER Seminar Presentation on **atmospheric absorption using the methods of SAE ARP 5534** (Identifies some of the issues that will need to be addressed prior to the imminent inclusion of this methodology in aircraft noise certification.);
9. Slides on **10 dB-down point selection** from 2005 DER Seminar Presentation (Discussion and illustrations of determining start and end points of the EPNL noise duration);
10. Slide on **noise duration** from 2012 DER Seminar Presentation (A slide illustrating a typical noise duration, with current symbols and information);
11. Slide on **varying reference spectra durations** from 2005 DER Seminar Presentation (illustrates why reference-condition spectra typically vary in effective duration from the test-day half-second records);
12. Volpe “DARP” (Digital Audio Recorder Protocol) – **guidance on validation of recording instrumentation** (Detailed guidance for evaluation of digital audio recording instrumentation for US applicants.);