extraneous noise from other locations in the building. Background noise can seriously impact the correct simulation of airplane sounds and should be kept below the airplane sounds. In some cases, the sound level of the simulation can be increased to compensate for the background noise. However, this approach is limited by the specified tolerances and by the subjective acceptability of the sound environment to the evaluation pilot.

(b) The acceptability of the background noise levels is dependent upon the normal sound levels in the airplane being represented. Background noise levels that fall below the lines defined by the following points, may be acceptable:

(i) 70 dB @ 50 Hz;

(ii) 55 dB @ 1000 Hz;

(iii) 30 dB @ 16 kHz

(NOTE: These limits are for unweighted ⅓ octave band sound levels. Meeting these limits for background noise does not ensure an acceptable flight simulator. Airplane sounds that fall below this limit require careful review and may require lower limits on background noise.)

(6) Validation testing. Deficiencies in airplane recordings should be considered when applying the specified tolerances to ensure that the simulation is representative of the airplane. Examples of typical deficiencies are:

(a) Variation of data between tail numbers;

(b) Frequency response of microphones;

(c) Repeatability of the measurements.

TABLE A2B—EXAMPLE OF CONTINUING QUALIFICATION FREQUENCY RESPONSE TEST TOLERANCE

| Band center frequency | Initial results (dBSPL) | Continuing qualification results (dBSPL) | Absolute difference |
|---|---|---|---|
| 50 | 75.0 | 73.8 | 1.2 |
| 63 | 75.9 | 75.6 | 0.3 |
| 80 | 77.1 | 76.5 | 0.6 |
| 100 | 78.0 | 78.3 | 0.3 |
| 125 | 81.9 | 81.3 | 0.6 |
| 160 | 79.8 | 80.1 | 0.3 |
| 200 | 83.1 | 84.9 | 1.8 |
| 250 | 78.6 | 78.9 | 0.3 |
| 315 | 79.5 | 78.3 | 1.2 |
| 400 | 80.1 | 79.5 | 0.6 |
| 500 | 80.7 | 79.8 | 0.9 |
| 630 | 81.9 | 80.4 | 1.5 |
| 800 | 73.2 | 74.1 | 0.9 |
| 1000 | 79.2 | 80.1 | 0.9 |
| 1250 | 80.7 | 82.8 | 2.1 |
| 1600 | 81.6 | 78.6 | 3.0 |
| 2000 | 76.2 | 74.4 | 1.8 |
| 2500 | 79.5 | 80.7 | 1.2 |
| 3150 | 80.1 | 77.1 | 3.0 |
| 4000 | 78.9 | 78.6 | 0.3 |
| 5000 | 80.1 | 77.1 | 3.0 |
| 6300 | 80.7 | 80.4 | 0.3 |
| 8000 | 84.3 | 85.5 | 1.2 |
| 10000 | 81.3 | 79.8 | 1.5 |
| 12500 | 80.7 | 80.1 | 0.6 |
| 16000 | 71.1 | 71.1 | 0.0 |
| Average | | | 1.1 |

8. ADDITIONAL INFORMATION ABOUT FLIGHT SIMULATOR QUALIFICATION FOR NEW OR DERIVATIVE AIRPLANES

a. Typically, an airplane manufacturer's approved final data for performance, handling qualities, systems or avionics is not available until well after a new or derivative airplane has entered service. However, flight crew training and certification often begins several months prior to the entry of the first airplane into service. Consequently, it may be necessary to use preliminary data provided by the airplane manufacturer for interim qualification of flight simulators.

b. In these cases, the NSPM may accept certain partially validated preliminary airplane and systems data, and early release (''red label'') avionics data in order to permit the necessary program schedule for training, certification, and service introduction.

c. Simulator sponsors seeking qualification based on preliminary data should consult the NSPM to make special arrangements for using preliminary data for flight simulator qualification. The sponsor should also consult the airplane and flight simulator manufacturers to develop a data plan and flight simulator qualification plan.

d. The procedure to be followed to gain NSPM acceptance of preliminary data will vary from case to case and between airplane manufacturers. Each airplane manufacturer's new airplane development and test program is designed to suit the needs of the particular project and may not contain the same events or sequence of events as another manufacturer's program, or even the same manufacturer's program for a different airplane. Therefore, there cannot be a prescribed invariable procedure for acceptance of preliminary data, but instead there should be a statement describing the final sequence of events, data sources, and validation procedures agreed by the simulator sponsor, the airplane manufacturer, the flight simulator manufacturer, and the NSPM.

NOTE: A description of airplane manufacturer-provided data needed for flight simulator modeling and validation is to be found in the IATA Document ''Flight Simulator Design and Performance Data Requirements,'' as amended.