



U.S. Department
of Transportation
**Volpe National
Transportation
Systems Center**

Applicant Software & Methodology Validation Data Submittal

For fixed-wing aircraft data.

Form 1

MEASUREMENT & ANALYSIS

APPLICANT _____

TEST DATE (MM/DD/YY) _____

AIRCRAFT DESIGNATION _____

Site ID (Centerline, Left Sideline, Right Sideline, etc.)			
Site Coordinates: Distances in Feet Relative to Centerline microphone site (See Figure 1)	X	[X _{MIC}]	
	Y	[Y _{MIC}]	
	Z	[Z _{MIC}]	
Microphone Height (Feet AGL)	[H _{MIC}]		
Site Elevation (Feet MSL)			
Mic. Orientation re: Flight Path (ie: grazing, normal to CPA, normal to overhead, etc.)			
Microphone Manufacturer & Model			
Windscreen Manufacturer & Model			
Recorder Manufacturer & Model			
Calibrator Manufacturer & Model			
Analyzer Manufacturer & Model			
Analyzer Averaging Time Period			
Analyzer Avg. Mode (linear/exp.)			
Tone Correction Lower Limit (Hz)			
Other Adjustment(s)			



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Form 2

FLIGHT PERFORMANCE & OPERATION

APPLICANT _____

TEST DATE (MM/DD/YY) _____

AIRCRAFT DESIGNATION _____

Event ID			
Site ID			
Event Type (Takeoff, Approach, Lateral Takeoff)			
Time at Overhead (HH:MM:SS.SSS) [T _{OH}]			
Y Offset at Overhead (Feet) [Y _{OH}]			
Aircraft Height at Overhead (Feet AGL) [Z _{OH}]			
Climb/Descent Angle (Degrees) [γ]			
Horizontal Cross-Track Angle (Degrees) [χ]			
Ground Speed (FPS) [V _G]			
Reference Height (Feet AGL) [Z _{OHR}]			
Ref. Climb/Descent Angle (Degrees) [γ_{REF}]			
Ref. Groundspeed (FPS) [V _{GR}]			
Reference Microphone Coordinates (Feet)	X [X _{MICR}]		
	Y [Y _{MICR}]		
	Z [Z _{MICR}]		
Ref Microphone Height (Feet AGL)	[H _{MICR}]		
Test Day Sound Speed (FPS) [c]			
Test Day Sound Speed Temperature (°F)			

See Figure 1



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Form 3

PROCESSING RESULTS - TEST-DAY "ADJUSTED AS-MEASURED"

APPLICANT _____

TEST DATE (MM/DD/YY) _____

AIRCRAFT DESIGNATION _____

Event ID			
Site ID			
Number of Raw Data Records			
Time @ Start of First Raw Data Record (HH:MM:SS.SS)*			
Time @ PNLTM (HH:MM:SS.SS)			
PNLTM Record Number [k_M]			
First 10dB-down Record Number [k_F]			
Last 10dB-down Record Number [k_L]			
EPNL (dB)			
PNLTM (dB)			
PNLM (dB)			
LASmax (dB)			
Tone Correction Band @ PNLTM			
Test-Day Bandsharing Adjustment (dB) [Δ_B]			
Number of Records within 2 dB of PNLTM			
Record Numbers of Peaks within 2dB of PNLTM			
Test-Day Sound Propagation Distance (Slant Range) @ PNLTM (Feet) [$SR(k_M)$]			
Test-Day Closest Point of Approach / Minimum Distance (Feet) [CPA]			

*See timing illustration



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Form 4a

PROCESSING RESULTS - REFERENCE CONDITIONS SIMPLIFIED PROCEDURE

APPLICANT _____

TEST DATE (MM/DD/YY) _____

AIRCRAFT DESIGNATION _____

Event ID			
Site ID			
EPNL _R (dB)			
PNLTM _R (dB)			
Tone Correction @ PNLTM _R			
Tone Correction Band @ PNLTM _R			
Reference Sound Propagation Distance (Slant Range) @ PNLTM _R (Feet) [SR(<i>k_M</i>)]			
Sound Emission Angle @ PNLTM _R (Degrees) [$\theta(k_M)$]			
Sound Elevation Angle @ PNLTM _R (Degrees) [$\beta(k_M)$]			
Test-Day X Emission Coordinate @ PNLTM _R (Feet) [X _E (<i>k_M</i>)]			
Test-Day Y Emission Coordinate @ PNLTM _R (Feet) [Y _E (<i>k_M</i>)]			
Test-Day Z Emission Coordinate @ PNLTM _R (Feet) [Z _E (<i>k_M</i>)]			
Simplified Delta 1 (Spherical spreading and absorption effects on PNLTM spectrum) (dB) [Δ_1]			
Simplified Delta 2 (Duration effects) (dB) [Δ_2]			
Simplified Delta 2D (Distance component of Delta 2) (dB) [Δ_{2D}]			
Simplified Delta 2S (Speed component of Delta 2) (dB) [Δ_{2S}]			
Simplified Delta Peak (Adjustment for secondary peaks) [Δ_{Peak}]			
Simplified Delta Bandshare (Adjustment for Bandsharing effects on Test-Day PNLTM spectrum) [Δ_B]			



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Form 4b

PROCESSING RESULTS - REFERENCE CONDITIONS INTEGRATED PROCEDURE

APPLICANT _____

TEST DATE (MM/DD/YY) _____

AIRCRAFT DESIGNATION _____

Event ID			
Site ID			
EPNL _R (dB)			
PNLTM _R (dB)			
Time @ PNLTM _R (HH:MM:SS.SS)*			
PNLTM _R Record Number [k_{MR}]			
Reference First 10dB-down Record Number [k_{FR}]			
Reference Last 10dB-down Record Number [k_{LR}]			
Tone Correction @ PNLTM _R (dB)			
Tone Correction Band @ PNLTM _R			
Test-Day Sound Propagation Distance (Slant Range) @ PNLTM _R (Feet) [$SR(k_{MR})$]			
Reference-Day Sound Propagation Distance (Slant Range) @ PNLTM _R (Feet) [$SR_R(k_{MR})$]			
Sound Emission Angle @ Reference PNLTM _R (Feet) [$\theta(k_{MR})$]			
Test-Day X Emission Coordinate @ PNLTM _R (Feet) [$X_e(k_{MR})$]			
Test-Day Y Emission Coordinate @ PNLTM _R (Feet) [$Y_e(k_{MR})$]			
Test-Day Z Emission Coordinate @ PNLTM _R (Feet) [$Z_e(k_{MR})$]			
Integrated Reference Condition Bandsharing Adjustment (dB) [Δ_{BR}]			
Reference Condition Closest Point of Approach (Feet) [CPA_R]			



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Form 5-1

SUBMITTAL CHECKLIST (Page 1 of 2)

1. Complete **Form 1**
2. Supply Flow Diagram and/or description of measurement, analysis & adjustment systems.
Data Submittal Instructions Item 1
3. Supply 1/3 Octave Uncorrected Aircraft Noise Spectral Time History
Data Submittal Instructions Item 2
4. Supply 1/3 Octave Pre-Detection Background Noise Spectrum
Data Submittal Instructions Item 3
5. Supply 1/3 Octave Post-Detection Background Noise Spectrum
Data Submittal Instructions Item 4
6. Supply Meteorological Data
Data Submittal Instructions Item 5
7. Supply Aircraft Position Data
Data Submittal Instructions Item 6
8. Complete **Form 2**
9. Supply 1/3 Octave Frequency-Dependent System Response Correction Spectrum
Data Submittal Instructions Item 7.a
10. Supply 1/3 Octave Microphone Sensitivity Correction Spectrum
Data Submittal Instructions Item 7.b
11. Supply data and description of any other adjustments applied to obtain Test-Day
"adjusted as-measured data, including procedures to correct for background noise effects."
Data Submittal Instructions Items 7 - 11
12. Supply 1/3 Octave Test-day "adjusted as-measured" Aircraft Noise Spectral Time-History
Data Submittal Instructions Item 12
13. Complete **Form 3**
14. Supply description of computer processing characteristics and methodology used to adjust data to
Reference-day conditions, including reference parameters.
Data Submittal Instructions Item 13



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Form 5-2

SUBMITTAL CHECKLIST (Page 2 of 2)

15. Supply 1/3 Octave Reference Condition Aircraft Noise Spectral Time History:
 - Entire event, if using "Integrated" procedure
 - PNLTM record (and records for peaks within 2dB of PNLTM if applicable), if using "Simplified" procedureData Submittal Instructions Items 14.1.g/14.2.d
16. Supply Aircraft Noise Geometry Data:
 - Entire event, if using "Integrated" procedure
 - PNLTM point (and records for peaks within 2dB of PNLTM if applicable), if using "Simplified" procedureData Submittal Instructions Items 14.1.g/14.2.e
17. Complete **Form 4a** and/or **4b**
17. Complete **Att. 2 - Software Validation Dataset Identification**