

Appendix F-2
Computational Work Sheet
to Hand-Calculate L_{eq}
from Sound Level Meter
Measurements Recorded
on Data Log

A	B	C	D
Noise Level Band, dB	Count	Relative Noise Energy	Relative Total Noise Energy
100	x	=	
98	x	79,400	=
96	x	50,100	=
94	x	31,600	=
92	x	20,000	=
90	x	12,600	=
88	x	7,910	=
86	x	5,010	=
84	x	3,160	=
82	x	2,000	=
80	x	1,260	=
78	x	794	=
76	x	501	=
74	x	316	=
72	x	200	=
70	x	126	=
68	x	79.4	=
66	x	50.1	=
64	x	31.6	=
62	x	20.0	=
60	x	12.6	=
58	x	7.94	=
56	x	5.01	=
54	x	3.16	=
52	x	2.00	=
50	x	1.26	=
48	x	.79	=
46	x	.501	=
44	x	.316	=
42	x	.200	=
40	x	.26	=
38	x	.0294	=
36	x	.0501	=
34	x	.0316	=
32	x	.0200	=
30	x	.0126	=
SUM B = _____		SUM D = _____	
SUM D/SUM B = _____		L_{eq} = _____	

Data Requirements:

- Each noise reading must be taken at a standard time interval between measurements.
- Each noise level recorded is the instantaneous level.

Step Procedure

- 1 Enter number of counts per noise level in Column B.
- 2 Multiply the counts in Column B by the number in Column C and enter the result in Column D.
- 3 Add all values in Column B to determine Sum B, add all values in Column D to determine Sum D, and divide Sum D by Sum B.
- 4 Locate the value in Column C that is approximately equal Sum D/Sum B. The corresponding value in Column A is equal to L_{eq} . Interpolate to the nearest 0.5 dB.

Example

Given the following count data, find L_{eq}

Noise Level	Number of Occurrences	A	B	C	D
81					
82	2	x	2,000	=	4,000
80	0	x	1,260	=	0
82	2				
78	5	x	794	=	3,970
80	—				
76	11	x	501	=	5,511
78	5				
76	11				
74	4	x	316	=	1,264
72	0	x	200	=	0
74	4				
72	—				

Using Steps 1—4 gives:

Sum B = 22; Sum D = 14,745
 Sum D/Sum B = 670
 L_{eq} = 70 dB

- by linear interpolation in Column C and Column A