

**FREQUENCY WEIGHTING NETWORK FOR APPROXIMATION OF
PERCEIVED NOISE LEVEL FOR AIRCRAFT NOISE**
1. PURPOSE

This Aerospace Recommended Practice specifies a frequency weighting network which may be used for the approximation of Perceived Noise Level.

2. BACKGROUND

There has been an increasing desire for the definition of a frequency weighting network which could be incorporated into direct reading and other instruments for the approximate measure of the Perceived Noise Level of an aircraft flyover. The 40 Noy contour of ARP 865, Definitions and Procedures for Computing the Perceived Noise Level of Aircraft Noise, has been selected as the most representative for this purpose.

3. DEFINITIONS

3.1 N Weighting Network: The frequency weighting network specified herein shall be called the N Weighting Network.

3.2 L_{PN} : The corrected approximate Perceived Noise Level resulting from the insertion of the N Weighting Network shall be stated as L_{PN} in decibels, dB (N).

4. NETWORK CHARACTERISTICS & CORRECTION

4.1 The Network response characteristics shall conform to the values and tolerances stated in Table I.

4.2 The measurement system incorporating the Network shall be corrected to read 7dB greater than the Sound Pressure Level in dB re .0002 dynes/sq. cm. when calibrated by a pure tone or 1/3 octave band of noise at 1000 Hz. *

* It should be noted that the maximum value of L_{PN} observed during an aircraft flyover is an approximation of the maximum perceived noise level for the event. However, the maximum value of L_{PN} is approximately 2dB less than the approximate value of the composite perceived noise level, a quantity which is currently used for monitoring aircraft noise by several organizations. Therefore, when the N Network is utilized for estimation of composite perceived noise level, a correction of +9dB will be required, rather than the 7dB correction required to obtain L_{PN} .

TABLE I

N WEIGHTING NETWORK

(All values are in dB relative to the value of 1000 Hz)

<u>Frequency (Hz)</u>	<u>Relative Response Level (dB)</u>	<u>Tolerance</u> <u>(All values are $\pm$)</u>
40	-14	1.5
50	-12	1.0
63	-11	1.0
80	- 9	1.0
100	- 7	1.0
125	- 6	1.0
160	- 5	1.0
200	- 3	1.0
250	- 2	1.0
315	- 1	1.0
400	0	1.0
500	0	1.0
630	0	1.0
800	0	1.0
1000	0	1.0
1250	+ 2	1.0
1600	+ 6	1.0
2000	+ 8	1.0
2500	+10	1.0
3150	+11	1.0
4000	+11	1.0
5000	+10	1.0
6300	+ 9	1.5
8000	+ 6	1.5
10000	+ 3	2.0
12500	0	2.5

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