ALGEBRAIC EXPRESSION FOR A-WEIGHTING RESPONSE

With much interest we noticed the letter to the editor [1]. It is a remarkably simple rule indeed, but it may be convenient to use an analytical expression. The following equation describes the transfer function of an A-weighting network:

$$H_{dBA} = Cs^4 / \Pi_{i=1}^{6} (s + 2\pi p_i),$$

where $C = 7 \cdot 397234 \, 10^9$, $p_{1,2} = 20 \cdot 6$, $p_3 = 107 \cdot 7$, $p_4 = 737 \cdot 9$, $p_{5,6} = 12200$ and s is the complex frequency. The accuracy of the equation is better than $0 \cdot 05$ dB in the frequency range from 10 to 20 000 Hz, easily meeting the tolerance limits of the IEC standard [2]. The values of p_{1-6} are given in reference [2].

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REFERENCES

[1] N. G. Humbad 1986 *Journal of Sound and Vibration* **111**, 179–180. Rule of thumb for A-weighting responses.
[2] International Electrotechnical Commission 1979 *IEC Standard Publication* 651. Sound level meters.