



Audio Engineering Society,
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AES Standard Playback Curve

BASED ON THE PREMISE that the proper approach to the problem of equalizing disc recordings and transcriptions is to standardize on a *playback* curve and to let the recording engineers make their records however they see fit, knowing that they must sound properly balanced when played on this standard reproducing characteristic, the Audio Engineering Society announces the adoption of such a curve. This announcement follows action of the Board of Governors approving the report of the Society's Standards Committee consisting of: Gordon Edwards, chairman; S. E. Sorensen, vice chairman; James Bayless, Harry Bryant, and Russell Hanson, members of the Western Division; and Theodore Lindenberg, N. C. Pickering, A. A. Pulley, and Ralph Schlegel, members of the Eastern Division. Robert Liesenberg served as alternate to Mr. Sorensen.

The standard curve, shown in Fig. 1, is represented by the values in Table 1.

The decision to specify a standard playback response characteristic instead of a recording characteristic was deliberate on the part of the Standards Committee. This course was chosen because of the impossible task of achieving a universal recorded characteristic compatible with all individual recording conditions and systems.

Reference to the tabulation will indicate that all points on the curve are related to 1000 cps. This reference point has been used as a standard for many years, making it evident that the maintenance and calibration of equipment would be expedited by retention of this frequency as a reference point. Furthermore, the slope of the curve at this point is sufficiently flat so that an error of 10 per cent in frequency will pro-

TABLE 1

| Frequency | db | Frequency | db |
|-------------|-------|-----------|-------|
| 30 | +22.5 | 1500 | -1.5 |
| 40 | +20 | 2000 | -2.2 |
| 50 | +18 | 2500 | -3 |
| 70 | +15 | 3000 | -4 |
| 100 | +12 | 4000 | -5.5 |
| 150 | +8.5 | 5000 | -6.7 |
| 200 | +6.5 | 6000 | -8 |
| 300 | +4.5 | 7000 | -9 |
| 400 | +3 | 8000 | -10 |
| 500 | +2 | 9000 | -11 |
| 800 | +0.5 | 10000 | -12 |
| 1000 (ref.) | ± 0 | 12000 | -13.5 |
| | | 15000 | -15.5 |

Permissible tolerance ± 2 db

duce a deficiency of not more than 0.5 db.

The majority of engineers active in the recording field have felt for some time that the degree of high-frequency emphasis prescribed by the NAB transcription characteristic is excessive. The trend in modern microphones and am-

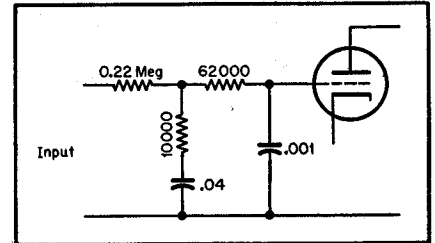


Fig. 2. High impedance network to provide standard playback curve in grid circuit of amplifier stage.

plifiers to a wider frequency range, approaching 15,000 cps, and the use of acoustically brighter studios have made this problem much more difficult. With this extended range, the acceleration of the reproducing stylus becomes a limiting factor. Consequently, it was deemed necessary to restrict the degree of high-frequency rise used in recording. This was accomplished by making the reproducing characteristic roll off only 12 db at 10,000 cps—approximately 3 db below the NAB specification—and continuing the response out to 15,000 cps. By doing this, the high-frequency situation has been alleviated somewhat. Since microphone and studio characteristics must be considered by the recording engineer, it is required that the sum of the electrical rise in the recording equipment and the acoustical rise in the microphone must not exceed the values shown by the reciprocal of the reproducing characteristic, unless it is intended to make the high end overbrilliant.

The low-frequency characteristic was chosen to fall somewhere in the middle of the numerous low-frequency curves now in use. It is felt that the turnover frequency is low enough to keep rumble down to reasonable levels, and high enough to avoid excessive amplitude and intermodulation at low frequencies. It will be noted that no "shelving" of the characteristic at low frequencies is recommended. Again, if the recording engineer desires for some reason to have a "bassy" sound, he can easily

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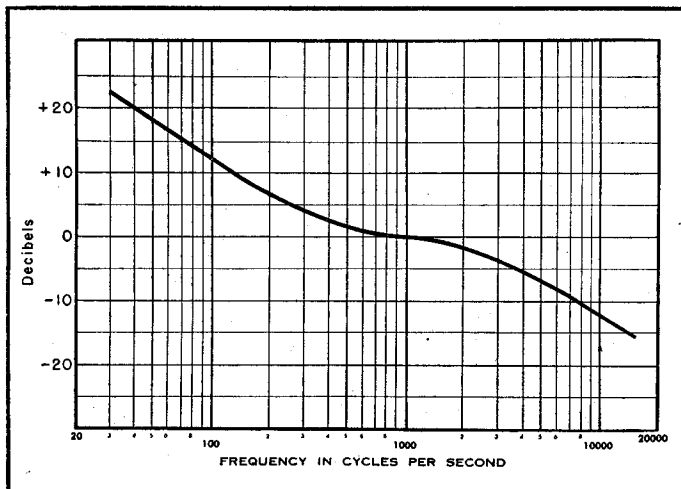


Fig. 1. Newly adopted standard playback curve.

