1. A measurement of sound. Technically, a logarithmic measure of the ratio of two signal levels using the formula:
dB=20Log(V1/V2)=10Log(P1/P2), or just the simplified formula, dB=10Log(P1/P2).
2. Decibel is the unit used to express relative differences in signal strength. It is expressed as the base 10 logarithm of the ratio of the powers of two signals. Signal amplitude can also be expressed in dB. Since power is proportional to the square of a signal's amplitude (for example, a power ratio of 100 is equivalent to an amplitude ratio of 10), dB is expressed as follows:
dB = 20 log (A1/A2)
Logarithms are useful as the unit of measurement because
(a) signal power tends to span several orders of magnitude and
(b) signal attenuation losses and gains can be expressed in terms of subtraction and addition. For example, suppose that a signal that passes through two channel segments is first attenuated in the ratio of 20 to 1 on the first leg and 7 to 1 on the second. The total signal degradation is in the ratio of 140 to 1. Expressed in dB, this becomes 13.01 (10 log 20) + 8.45 (10 log 7) = 21.46 dB. This reference chart helps to indicate the order of magnitude associated with dB.

1 dB attenuation indicates 0.79 of the input power survives
3 dB attenuation indicates 0.50 of the input power survives
10 dB attenuation indicates 0.1 of the input power survives
20 dB attenuation indicates 0.01 of the input power survives
30 dB attenuation indicates 0.001 of the input power survives
40 dB attenuation indicates 0.0001 of the input power survives
It should also be mentioned that often dB ratios are expressed using a third letter (or letters), such as dBm. The third letter is a reference level for the log operation. In our dBm example, dBm is used to define dB levels in a 50 Ohm RF system, using a 1 milliwatt reference level.

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