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## Macintosh: Sound Terminology Definitions (6/96)

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TOPIC -----

The Power Macintosh 8500 technical specifications refers to "A-weighted" in the audio section. What is this?

DISCUSSION -----

The first tentative standard for sound level meters (Z24.3) was published by the American Standards Association and the Acoustical Society of America in 1936. Two frequency curves "A" and "B" were modelled on the ear's response to low and high levels of sound respectively. The two curves became a standard or "weighted" measurement.

Apple uses an "A-weighted" curve at low frequencies to mark the decibels at which noise begins to be apparent to the human ear. The level just under the point at which noise is detected would contain "no audible discrete tones."

Sound in and sound out can also be measured by its quality - in bits and sample rates. Sound is captured using a sample rate - or the number of times the computer listens in a given period to the audio source. Higher numbers (44.1 kHz) denote an increased number of times the computer is capturing information. After the sound is captured, it is stored in memory measured in bits. With more room to store subtle nuances, 16 bit audio is more realistic than 8 bit audio.

Older Macintosh computers used mic-level to capture audio which was not pre-amplified. Pre-amplified audio is more sensitive and is necessary for speech recognition or nuances that occur at low levels. The differences between mic-level and line-level audio can be measured in the amount of decibels per one milliwatt (dBm) where mic-level is between -60dBm to -20dBm and nominal line-level is +4dBm.

Finally, captured audio can become distorted if amplified beyond a certain point. The point at which sound begins to exhibit noise which did not exist in the original source is measured as Total Harmonic Distortion. The result is the loudest decibel reading measured without any audible discrete tones (tones audible to the human ear).

More information on audio terminology can be found at the Acoustical Society of America homepage, <http://asa.aip.org>

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