

Audio frequency



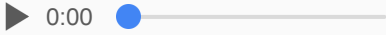
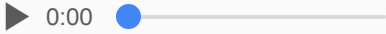

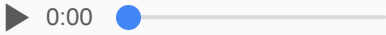
An **audio frequency** (abbreviation: **AF**) or **audible frequency** is characterized as a periodic vibration whose frequency is audible to the average human. The SI unit of audio frequency is the hertz (Hz). It is the property of sound that most determines pitch.^[1]

The generally accepted standard range of audible frequencies for humans is 20 to 20,000 Hz,^{[2][3][4]} although the range of frequencies individuals hear is greatly influenced by environmental factors. Frequencies below 20 Hz are generally felt rather than heard, assuming the amplitude of the vibration is great enough. High frequencies are the first to be affected by hearing loss due to age or prolonged exposure to very loud noises.^[5]

Frequencies and descriptions

Frequency (Hz)	Octave	Description
16 to 32	1st	The lower human threshold of hearing, and the lowest pedal notes of a pipe organ.
32 to 512	2nd to 5th	Rhythm frequencies, where the lower and upper bass notes lie.
512 to 2048	6th to 7th	Defines human <u>speech intelligibility</u> , gives a horn-like or tinny quality to sound.
2048 to 8192	8th to 9th	Gives presence to speech, where <u>labial</u> and <u>fricative</u> sounds lie.
8192 to 16384	10th	Brilliance, the sounds of bells and the ringing of cymbals and <u>sibilance</u> in speech.
16384 to 32768	11th	Beyond brilliance, nebulous sounds approaching and just passing the upper human threshold of hearing

Sound measurements	
Characteristic	Symbols
Sound pressure	<i>p</i> , SPL, <i>L</i> _{PA}
Particle velocity	<i>v</i> , SVL
Particle displacement	<i>δ</i>
Sound intensity	<i>I</i> , SIL
Sound power	<i>P</i> , SWL, <i>L</i> _{WA}
Sound energy	<i>W</i>
Sound energy density	<i>w</i>
Sound exposure	<i>E</i> , SEL
Acoustic impedance	<i>Z</i>
Speed of sound	<i>c</i>
Audio frequency	AF
Transmission loss	TL

MIDI note	Frequency (Hz)	Description	Sound file
0	8.17578125	Lowest <u>organ</u> note	n/a (fundamental frequencyinaudible)
12	16.3515625	Lowest note for tuba, large pipe organs, <u>Bösendorfer</u> Imperial grand piano	n/a (fundamental frequencyinaudible under average conditions)
24	32.703125	Lowest C on a standard 88-key <u>piano</u> .	
36	65.40625	Lowest note for <u>cello</u>	
48	130.8125	Lowest note for <u>viola</u> , <u>mandola</u>	
60	261.625	<u>Middle C</u>	
72	523.25	C in middle of <u>treble clef</u>	
84	1046.5	Approximately the highest note reproducible by the average female <u>human voice</u> .	
96	2093	Highest note for a <u>flute</u> .	
108	4186	Highest note on a standard 88-key piano.	
120	8372		
132	16744	Approximately the tone that a typical <u>CRT television</u> emits while running.	

See also

- Absolute threshold of hearing
- Hypersonic effect, controversial claim for human perception above 20,000 Hz
- Loudspeaker
- Musical acoustics
- Piano key frequencies
- Scientific pitch notation
- Whistle register

References

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