

Vibraphone Combination Tones Manual

This investigation aims to provide a visual guide to the hearing phenomenon called combination tones occurring from frequency combinations in the highest register (sixth octave) of a three octave vibraphone.

The equation for calculating the combination tone is $(x1+x2)$ which is the higher combination tone, and $(x1-x2)$ which is the sub tones which this work focuses on.

Combination examples: [https://soundcloud.com/malisimayli/vibes-harmonics/s-KBsMYCyg4T9?](https://soundcloud.com/malisimayli/vibes-harmonics/s-KBsMYCyg4T9?si=9e30967404414ac9b42b5b8d38269f4e&utm_source=clipboard&utm_medium=text&utm_campaign=social_sharing)

[si=9e30967404414ac9b42b5b8d38269f4e&utm_source=clipboard&utm_medium=text&utm_campaign=social_sharing](https://soundcloud.com/malisimayli/vibes-harmonics/s-KBsMYCyg4T9?si=9e30967404414ac9b42b5b8d38269f4e&utm_source=clipboard&utm_medium=text&utm_campaign=social_sharing)

Ratio Calculator: docs.google.com/spreadsheets/d/1P_ur5t8YfCkUsFIJkrw1tnl4JBMXenS4csUu3tlxb1k/edit#gid=0



Experimentations on all the intervals in an octave: taking the distance from the same note.
(F6 and E6 in these examples)

First Note	Second Note	Interval	First Undertone	First Overtone	Second Overtone
F6 (1397 Hz)	E6	m2	40 Hz (E0)		
F6	Eb6	M2	153 Hz (Eb1)		
F6	D6	m3	224 Hz (Bb2 QT lower)		
F6	Db6	M3	288 Hz (D3)		
F6	C6	P4	352 Hz (F3)		
F6	B6	aug4	412 Hz (Ab3)	572 Hz	
F6	Bb6	P5	466 Hz (Bb3)		
F6	A6	m6	520 Hz (C4)	362 Hz (Gb3 QT lower)	
F6	Ab6	M6	573 Hz (D4 QT higher)	310 Hz (Eb3)	262 Hz (C3)
F6	G6	m7	614 Hz (Eb4)		169 Hz (Dominant) (F2 QT lower)
F6	Gb6	M7	668 Hz (almost inaudible) (E4)		82 Hz. (Dominant) (E1)

First Note	Second Note	Interval	First Undertone	First Overtone	Second Overtone
E6	Eb6	m2	72 Hz		
E6	D6	M2	144 Hz		
E6	Db6	m3	209 Hz		
E6	C6	M3	275 Hz		
E6	B6	P4	329 Hz		
E6	Bb6	aug4	390 Hz	547 Hz	
E6	A6	P5	445 Hz		
E6	Ab6	m6	491 Hz		
E6	G6	M6	542 Hz		262 Hz
E6	Gb6	m7	622 Hz		159 Hz (Dominant)
E6	F6	M7	(inaudible)		156 Hz