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Musical Notes, Color Spectrum and the Chakras of the Human Body

Introduction

The following study addresses the relationship between the human energy system (Chakras), sound and the Westernized musical scale of seven major notes. The study contemplates the relationship of sound and color with regard to their common characteristic of frequency in the context of the musical scale and the colors commonly associated with the human energy chakra system of Eastern Yogic origins.

The Number 7

The number 7 is an important number in esoteric theory; it relates to the Seven Rays of emanation that come from the Three, which comes from the One unified force in the universe. As time has progressed in the age and era we are in, esoteric thought has been incorporated into human cultural life and civilization in many ways. This theory is called spiritual science, implying the fact that spiritual phenomenon can be studied just like any material phenomena we typically think of as falling under scientific study. The westernized 7-nodal Chakra system appears to be based on the theory from the Seven Rays (1. Wood, 1925)

The Musical Scale

Music is universally enjoyable and utilized throughout all cultures and civilizations. As cultures have progressed and regressed through time music theory has developed and with that the notes, scales and study of sound. In the Westernized cultures, it is commonly accepted that there are seven notes and alongside of these are minor sharps and flats. It is the seven notes of the major scale that are of interest in this study, and in particular the major C scale.

The Human Energy System

In parallel with the major musical scale, the study concerns itself with the Chakra system generally accepted in the Westernized cultures, which has its origins from the eastern Yogic traditions. The Chakra system in question consists of seven energy centers that are interactive and located within an etheric aspect of the human body. The chakra system consists of the several important characteristics relating to location and purpose of each energy center.

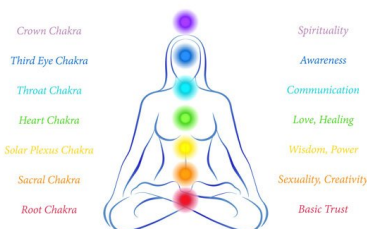


Figure 1. Diagram of Human Energy Chakra System (2. Natutudreams.com)

Crown – Spirituality, oneness with the Universe
Third Eye – Awareness, assessment of situation
Throat – Communication – self-expression, hearing higher worlds
Heart – Love, healing, connection to self, others
Solar Plexus – Wisdom, power, community action with self-love
Sacral – Sexuality, creativity, living in abundance of life
Root – Basic trust, thriving survival

Each energy center in the Chakra system is associated with a color. Different cultural norms associate varying colors with the chakra system. The Hindu system generally associates the colors of the rainbow in order from Red to Purple, westernized omni-spirituality generally accepts this system as representative of the chakra system. Each Chakra has a certain color associated with it, in a certain region of the body and has a certain life expression associated with it.

Sound Healing

The concept of sound healing has been utilized throughout cultural and civilized time. As time progresses in our global society, sound has been an integral part of human life and its healing and medical aspects have been the subject of study by many. Several fundamental concepts to Sound Healing that are important to this study are Entrainment, Resonance and Intention, these are described below.

Entrainment is a phenomenon in Sound Healing where a strong frequency will draw in and smooth out unsmooth frequencies in comes in contact with. The theory is that sound waves made from a clear and focused tone are strong enough to pull other sound waves in the region to its oscillating characteristics through entrainment.

Secondly, resonance has a related characteristic where sound waves, that contact objects that emit the same or similar sound wave when activated, will become stronger because the object begins to vibrate the same frequency thereby increasing the magnitude of the sound.

The last, but equally important fundamental concept to be noted for this study is the use of intention to bring about positive change in the context of applying sound in a healing environment. The use of intention is a concept that has been utilize for millennia by different cultures. The Ancient Yogis of the Eastern Tradition utilized intention in meditation, and it is typically this use of intention that corresponds directly to sound healing. A sound healer utilizes his or her own intention while applying sound to a person or group. This intention has its own frequency, or can be aligned with the frequency of a sound that is being made. The intention helps to carry the sound and the frequencies associated with the thought to the people in the area, and helps to aid in conscious development. The concept of the intention of one person producing a change in another has been studied and results show this fact to be true. A recent study that address this concept is one where a couple are split into two different rooms, one prays for the other and the other has notable brain changes when the prayer is made. The exact timing of the prayer is not relayed to the person being prayed to, but that persons brain exhibits changes at the exact time of the prayer (3. npr.com).

Dislodging Negative Energy Patterns and Sound Healing

Taking these concepts into account, healing can be brought about by applying sound and intention to a person to dislodge and smooth out negative, stuck and chaotic energy. Building on this theory, the question of how exactly do the notes of music dislodge and smooth out non-flowing or unsmooth energy from a human?

To answer this question, Esoteric concepts are introduced again. Noted above, the Seven Rays correspond to the Seven original aspects of the Divine, embodied in visible form (including light). A very short explanation of the Seven Rays is as follows (1. Wood, 1925):

Ray 1:	Ichachha – Freedom
Ray 2:	Jnana – Unity
Ray 3:	Kryia – Comprehension
Ray 4:	Maya – Harmony
Ray 5:	Sattwa – Truth
Ray 6:	Rajas – Goodness
Ray 7:	Tamas – Beauty

Esoteric teachings also point to the fact that the seven notes of the major scale also correspond to the Seven Rays in Esoteric teachings (4. Rudhyard, 1982). Information from the unseen worlds is carried into the manifest world via sound (5. Steiner, 2016). This study contemplates the attributes of the 7 rays as a summary of the information that comes through to the manifest world from the unseen worlds.

Crystal Bowls for Use in Sound Healing

Sound healing works on the human body to bring about healing in the mind and body through the use of resonance and entrainment. This study addresses the use of Crystal Bowls as a sound healing instrument and tool to achieve results. Although any instrument can be used to facilitate sound healing, crystal bowls have become a widely accepted tool to be used in sound healing events and privately with clients. A set of crystal bowls usually consists of the seven major notes of a scale in typically in the 4th Octave of Western-based Musical Theory, and usually are sold in the set of 7 as C, D, E, F, G, A, B, corresponding directly to the major C scale. Tuning is specified according to the A4 of the scale, typical tuning systems for the crystal bowls are A440 or A432. All other bowls are tuned using equal tempered tuning to correspond with the A note in the set.

In addition to the C Major scale marketing, Crystal bowls are marketed as a Chakra set, and each of the seven chakras of the Westernized Eastern Yogic Chakra system are noted on the crystal bowls so that the C note corresponds to the Root Chakra, and is represented by the color red, and so on up to the B note that corresponds to the Crown Chakra represented by the color purple.

The question that arises is, how does sound; specifically, the notes of the scale, color and achieving greater health through strengthening the Chakra system relate to one another, in fact, can we say they are related?

The many parts and aspects of the human body have numerous frequencies that have been documented to resonate at set frequency intervals. Sound Healing theory postulates that the frequencies from an instrument can strengthen the cavities, associated frequencies and other frequencies inherent in the body. From a scientific point of view, why would a C note

correspond to the color red, or an F note to the color green, and what implications does this have for humans? Why does the Root chakra correspond to the color Red, whereas the Heart chakra corresponds to the color green? How can a note, a color and an energy center be related?

Assimilation of Sound into the Human Body

The study attempts to answer this question by using the concept of harmonics and the concept of derivatives. The term derivative can be defined by firstly, something that is based on another source, and secondly, an arrangement whose value derives from and is dependent on the value of another asset. The concept of derivative is employed here in this study to attempt to understand the connection between the notes of the audible spectrum and the colors of the visible spectrum.

Additionally, the concept of Harmonics is utilized to test the connection between the audible spectrum and the visible spectrum. Harmonics occur naturally from the generation of a note on an instrument. Harmonics are generally identified as whole number intervals of a fundamental note, they can be whole number intervals in frequencies higher than the fundamental and whole number divisible fractions for frequencies lower than the fundamental.

Building on the concept of harmonics the building blocks of life are introduced to this study. Such a concept is introduced to account for the human energy system which consists of physical, etheric (energetic), and emotional (mental) bodies that interconnect. The Chakra system is theorized here to be connected with these three aspects of the human, and the final most recently developed body; the egoic body. It is postulated here, as many have postulated before, that the existence of and interaction between these bodies is tied to the mechanism for health and wellbeing and for illness and maladies.

Digestion as a Simile to Sound Assimilation

Utilizing the concept of the derivative and the interactive bodies of the human being one can conjecture that the environment that affects one of the bodies of the human being should and will affect the other bodies of the human being if they are all connected. Here the concept of eating and digesting food is given to assist in the discussion. A person eats a piece of food and enzymes break the food down in order to assimilate the nutrients into the body. If the food is contaminated, those contaminants have the potential to assimilate into the body as well. The assimilation is achieved by producing derivatives of the original source into usable products for assimilation. This food is assimilated into refined aspects of the human from the gross to the subtle, such as the stomach, to the intestines, to the blood, to the cells, etc., of the human.

Similar to food, sound can be thought of as a nutrient. It is commonly accepted that certain types of music are helpful for such things as concentration and becoming calm, whereas some types of sounds are accepted to be polluting to the human system. It is also an accepted fact that color can be used to create harmony and wellbeing in a person; as noted, it appears to be accepted that color and tone have corresponding pairs and matches. The question is, is there any way to prove this?

Building on this, how can one say the sounds of a Chakra set of crystal bowls can have positive effects on the chakra system of the human body? What is the implication of sounding a tone into the human body that has an associated color, and how does one even know if that associated color is really connected with that tone? Without any method of evidence to support the concepts, it becomes difficult to fully support the theory except by noting that this is what people have been saying for centuries so it must be true.

This paper attempts to find a way to prove the connection between the seven accepted notes of the C Major scale, which are marketed as directly corresponding to the Chakra system, which also is marketed as directly corresponding to seven colors related to the color spectrum.

The factor used to correlate these three systems is the concept of the Fibonacci sequence, which can be considered the fundamental building block of life. The Fibonacci Sequence is a mathematical series where each subsequent number of the series is the sum of the previous two. The ratio between two numbers in sequence called Phi and is 1.618. Phi is also the same as when a line is divided into two parts the whole length divided by the long part is equal to the long part divided by the short part. This ratio has been found to be present as a building block of life. Figure 2 below shows how the proportions of the man painted by Michelangelo the artist corresponds exactly to Phi.

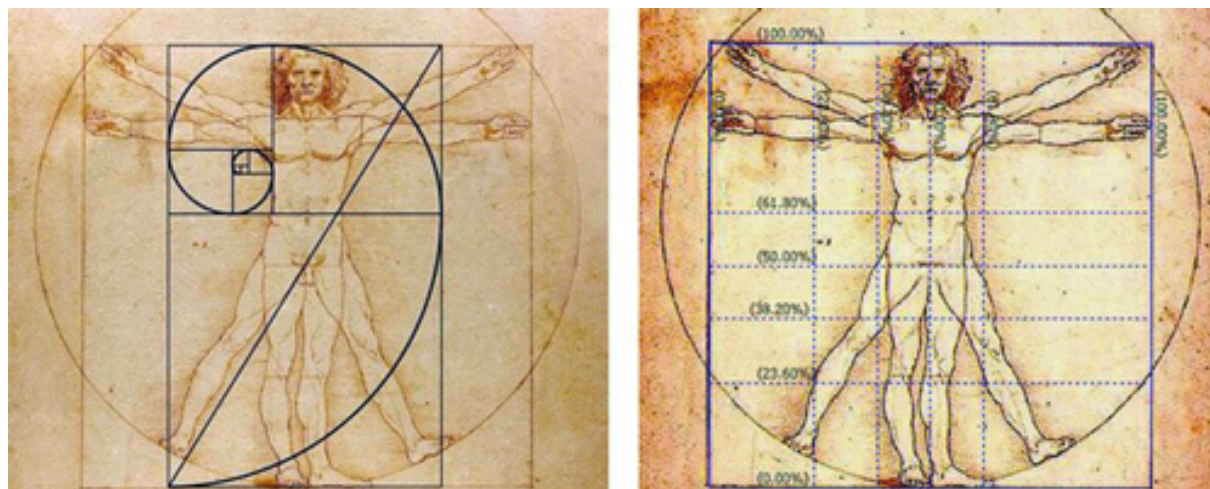


Figure 2. artists who employed the Golden ratio include Michelangelo, Raphael, Rembrandt, Seurat, and Salvador Dali (6. yogaesoteric.net)

This study uses the concept of harmonics and the Fibonacci Sequence to derive a color spectrum frequency from the fundamental audible frequency. The concept of harmonics acting on the body is used in the same way the digestion of food is described above. The theory is that a fundamental tone will enter the body, and then processes within the body utilize the tone to produce derivatives.

It should be noted, harmonics of the fundamental tone will enter the body while the bowls are played from the natural emanation of the sound. This study is concerned with the fundamental

tone and processes that may happen in the body once that fundamental tone enters. The study uses the concept that physical, etheric and emotional body processes may produce a derivative of the original fundamental tone through the life bringing Fibonacci series (Phi ratio). If the proportions of the human follow exactly the Phi ratio, why would not the same process be utilized in different ways in the human body.

The purpose of looking at harmonics according to the Fibonacci series for these fundamental notes is to attempt to document how the seven notes and the seven colors are related, since the color spectrum is simply a very high set of harmonics from the fundamental tones of the audible spectrum. If there is a relationship that can be quantified, this has positive implications in the application of sound and color to the Chakra system, one can say with greater purpose, for example, the C note and the color red can interchangeably access the root chakra and be used to strengthen and balance it.

Research

The research completed for this study is a mathematical calculation of harmonics of the fundamental notes of the A440-tuned C scale of the crystal bowls, octavised up by the use of the Fibonacci Sequence to the light spectrum, where the color within the spectrum is determined for each fundamental note. The calculation is made by the following steps:








1. Determine the frequency/tone/note of the bowl
2. Octave up to the visible spectrum using the Fibonacci Sequence
3. Convert the Hz (Thz) from the visible spectrum to nanometers to determine the color using the color spectrum
4. Find the color derived from the fundamental tone associated with the nm value that appears in the visible spectrum. Color can be found online at color generator websites.

See Appendix A for the full results and Appendix B for the calculations utilized to convert from Hz to nm.

Findings

The results show that when using the Fibonacci sequence as the mechanism to move up octaves, at the region of the color spectrum the conversion from wavelength to color corresponds with the accepted colors of the chakras for each note of each bowl. This is a compelling discovery considering that using simple harmonics does not produce the same result; this is being attempted with different calculations. The color spectrum associated with the notes of the scale and the chakra system seem to correspond directly to the application of the Fibonacci Sequence to the fundamental tone entering the body.

Figure 3., below shows the findings from the study.

Note (crystal bowl)	Chakra (human energy system)	Ray Attribute (esoteric knowledge coming from higher- worlds)	Hz (audible spectrum)	nm (derived by applying the Fibonacci Sequence to each harmonic of the fundamental tone)	Color (visible spectrum)
B4	Crown	Beauty	493	763,880,400,696,283	
A4	Third Eye	Goodness	440	680,442,728,752,195	
G4	Throat	Truth	392	606,138,308,468,035	
F4	Heart	Harmony	349	539,883,533,714,659	
E4	Solar Plexus	Comprehension	329	509,542,562,098,627	
D4	Sacral	Unity	293	453,969,047,761,099	
C4	Root	Freedom	261	404,277,966,696,067	

It should be noted; several notes have two different nodes where the color spectrum is accessed using this approach, the others have one frequency in the color spectrum that creates a harmonic node using the calculation.

Conclusion

In conclusion, the Fibonacci Sequence is used to create octaves up to the visible light spectrum from the notes of the musical forth octave C Scale. The results successfully generate the colors of the visible spectrum in order according to each bowl and each accepted chakra color, this is a compelling discovery since it points to a quantifiable connection between tone, color and the chakra system.

This bolsters the process when using the Crystal Bowls for sound healing; one can use with confident intention the relationship between the Seven Rays/Seven Chakras and associated colors, and the Seven Notes of the musical scale to fortify and nourish the human energy system.

The concept that information from the higher-worlds, or non-seen worlds are brought into this world via sound (5. Steiner, 2016), applied to this study implies that the attributes of the seven rays can be passed along to humans via both sound and color (via crystal bowls for example). These attributes can be used in sound healing both by way of amplifying the effects of the sound by the patient and the practitioner, and by way of simply receiving the information through the sound that is generated.

Additional research should be done to test the theory of harmonics and the Fibonacci sequence working on the body from the fundamental note, and the implications of greater health and wellbeing in all aspects of the body from the use of the bowls as a strengthening tool for the human energy system; both on the physical, etheric (growth oriented) mental, and spiritual aspects of the body.

Resources

- 1) The Seven Rays, The Theosophical Publishing House, Ernst Wood, 1925.
- 2) <https://navutudreams.com/2017/01/11/chakras-explained-the-7-chakras-you-need-to-know-about/>
- 3) <https://www.npr.org/templates/story/story.php?storyId=104351710>
- 4) The Magic of Tone and the Art of Music, Dane Rudhyar, 1982
- 5) Music, Mystery, Art and the Human Being, Rudolf Steiner Press, From the work of Rudolf Steiner, Edited and Introduced by Michael Kurtz, Translated from German by Matthew Barton, 2016.
- 6) <http://www.yogaesoteric.net/content.aspx?lang=EN&item=13322>

Appendix A. Data Results from Harmonics based on Fibonacci Sequence – Audible Range to Visible range of Bowl Note.

	C4 Root Bowl	D4 Sacral Bowl	E4 Solar Plexus Bowl	F4 Heart Chakra Bowl	G4 Throat Bowl	A4 Third Eye Bowl	B4 Crown Bowl
Visible Color (nm)	458.30	408.14	363.62	555.29	494.59	440.58	392.46
Visible Color (nm)	741.55	660.38	588.36	898.48	800.27	712.88	635.01
THz	654,135,491,016,935	734,537,349,117,883	824,457,184,190,283	539,883,533,714,659	606,138,308,468,035	680,442,728,752,195	763,880,400,696,283
THz	404,277,966,696,067	453,969,047,761,099	509,542,562,098,627	333,666,373,802,059	374,614,076,516,614	420,536,733,766,582	472,104,050,970,192
THz	249,857,524,320,868	280,568,301,356,784	314,914,622,091,656	206,217,159,912,600	231,524,231,951,421	259,905,994,985,613	291,776,349,726,091
THz	154,420,442,375,200	173,400,746,404,315	194,627,940,006,972	127,449,213,889,459	143,089,844,565,193	160,630,738,780,969	180,327,701,244,100
THz	95,437,081,945,668	107,167,554,952,468	120,286,682,084,684	78,767,946,023,141	88,434,387,386,229	99,275,256,204,645	111,448,648,481,991
THz	58,983,360,429,532	66,233,191,451,847	74,341,257,922,288	48,681,267,866,318	54,655,457,178,964	61,355,482,576,324	68,879,052,762,110
THz	36,453,721,516,136	40,934,363,500,621	45,945,424,162,396	30,086,678,156,823	33,778,930,207,264	37,919,773,628,320	42,569,595,719,881
THz	22,529,638,913,396	25,298,827,951,227	28,395,833,759,892	18,594,589,709,496	20,876,526,971,700	23,435,708,948,004	26,309,457,042,229
THz	13,924,082,602,741	15,635,535,549,394	17,549,590,402,505	11,492,088,447,327	12,902,403,235,564	14,484,064,680,316	16,260,138,677,653
THz	8,605,556,310,655	9,663,292,401,833	10,846,243,357,387	7,102,501,262,168	7,974,123,736,135	8,951,644,267,687	10,049,318,364,576
THz	5,318,526,292,086	5,972,243,147,561	6,703,347,045,118	4,389,587,185,159	4,928,279,499,429	5,532,420,412,629	6,210,820,313,077
THz	3,287,030,018,569	3,691,049,254,272	4,142,896,312,269	2,712,914,077,009	3,045,844,236,706	3,419,223,855,058	3,838,498,051,500
THz	2,031,496,273,517	2,281,193,893,290	2,560,450,732,849	1,676,673,108,150	1,882,435,262,723	2,113,196,557,571	2,372,322,261,577
GHz	1,255,533,745,052	1,409,855,360,982	1,582,445,579,420	1,036,240,968,859	1,163,408,973,984	1,306,027,297,488	1,466,175,789,923
GHz	775,962,528,465	871,338,532,308	978,005,153,429	640,432,139,290	719,026,288,739	807,169,260,083	906,146,471,654
GHz	479,571,216,587	538,516,828,674	604,440,425,991	395,808,829,569	444,382,685,245	498,858,037,405	560,029,318,268
GHz	296,391,311,877	332,821,703,634	373,564,727,437	244,623,309,721	274,643,603,493	308,311,222,677	346,117,153,386
GHz	183,179,904,710	205,695,125,040	230,875,698,554	151,185,519,848	169,739,081,752	190,546,814,728	213,912,164,882
GHz	113,211,407,167	127,126,578,595	142,689,028,883	93,437,789,873	104,904,521,742	117,764,407,950	132,204,988,504
GHz	69,968,497,543	78,568,546,445	88,186,669,671	57,747,729,975	64,834,560,010	72,782,406,778	81,707,176,378
GHz	43,242,909,624	48,558,032,150	54,502,359,212	35,690,059,898	40,069,961,732	44,982,001,172	50,497,812,126
GHz	26,725,587,920	30,010,514,295	33,684,310,460	22,057,670,077	24,764,598,278	27,800,405,606	31,209,364,252
GHz	16,517,321,704	18,547,517,854	20,818,048,752	13,632,389,820	15,305,363,454	17,181,595,566	19,288,447,875
GHz	10,208,266,216	11,462,996,441	12,866,261,708	8,425,280,257	9,459,234,825	10,618,810,041	11,920,916,377
GHz	6,309,055,488	7,084,521,413	7,951,787,044	5,207,109,564	5,846,128,629	6,562,785,525	7,367,531,498
GHz	3,899,210,728	4,378,475,028	4,914,474,664	3,218,170,693	3,613,106,195	4,056,024,515	4,553,384,879
GHz	2,409,844,759	2,706,046,386	3,037,312,379	1,988,938,870	2,233,022,434	2,506,761,010	2,814,146,619
GHz	1,489,365,969	1,672,428,642	1,877,162,285	1,229,231,823	1,380,083,762	1,549,263,506	1,739,238,260
MHz	920,478,790	1,033,617,744	1,160,150,094	759,707,047	852,938,672	957,497,504	1,074,908,359
MHz	568,887,178	638,810,897	717,012,190	469,524,776	527,145,090	591,766,002	664,329,901
MHz	351,591,612	394,806,847	443,137,904	290,182,270	325,793,582	365,731,502	410,578,458
MHz	217,295,566	244,004,050	273,874,286	179,342,506	201,351,507	226,034,499	253,751,442
MHz	134,296,046	150,802,797	169,263,618	110,839,764	124,442,075	139,697,003	156,827,016
MHz	82,999,521	93,201,254	104,610,669	68,502,742	76,909,432	86,337,496	96,924,426
MHz	51,296,525	57,601,543	64,652,949	42,337,023	47,532,643	53,359,507	59,902,590
MHz	31,702,996	35,599,711	39,957,720	26,165,719	29,376,789	32,977,989	37,021,837
MHz	19,593,529	22,001,832	24,695,229	16,171,304	18,155,854	20,381,518	22,880,753
MHz	12,109,467	13,597,880	15,262,491	9,994,415	11,220,935	12,596,471	14,141,083
MHz	7,484,062	8,403,952	9,432,738	6,176,888	6,934,919	7,785,047	8,739,670
MHz	4,625,405	5,193,928	5,829,753	3,817,527	4,286,016	4,811,424	5,401,413
MHz	2,858,657	3,210,024	3,602,985	2,359,361	2,648,903	2,973,623	3,338,257
MHz	1,766,747	1,983,904	2,226,767	1,458,166	1,637,112	1,837,800	2,063,156
KHz	1,091,910	1,226,120	1,376,218	901,196	1,011,791	1,135,823	1,275,101
KHz	674,837	757,784	850,549	556,970	625,321	701,977	788,056
KHz	417,073	468,336	525,669	344,226	386,470	433,846	487,045
KHz	257,765	289,448	324,881	212,744	238,852	268,132	301,011
KHz	159,308	178,889	200,788	131,483	147,618	165,714	186,034
KHz	98,457	110,559	124,093	81,261	91,233	102,417	114,976
KHz	60,850	68,330	76,694	50,221	56,385	63,297	71,058
KHz	37,607	42,229	47,399	31,040	34,849	39,121	43,918
KHz	23,243	26,100	29,295	19,182	21,536	24,176	27,140
KHz	14,364	16,129	18,104	11,858	13,313	14,945	16,778
KHz	8,879	9,971	11,191	7,324	8,223	9,231	10,363
KHz	5,484	6,158	6,912	4,534	5,090	5,714	6,415
KHz	3,395	3,812	4,279	2,790	3,132	3,516	3,948
KHz	2,089	2,346	2,633	1,744	1,958	2,198	2,467
Hz	1,306	1,466	1,646	1,046	1,175	1,319	1,480
Hz	783	880	987	698	783	879	987
Hz	522	587	658	349	392	440	493
Hz	261	293	329				

Appendix B.

Conversion from audible (sound) range to visible (color) range:

Convert nm to Hz
 $C = l * n$

c = speed of light in a vacuum 299,792,458 m/s
 l = wavelenth in meters
 n = frequency in Hz or (1/s)

Hz to nm						
$l = c/n$		$\frac{299,792,458 \text{ m}}{\text{s}}$	*	$\frac{\text{s}}{413,303,915,249,712 \text{ Hz}}$	=	0.000000725 m
			*	$\frac{1,000,000,000 \text{ nm}}{1 \text{ m}}$	=	725.36 nm

Ex:	Violet	392.99 nm	*	$\frac{1 \text{ m}}{1,000,000,000 \text{ nm}}$	=	0.000000393 m
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Frequency: $n = c/l$		$\frac{299,792,458 \text{ m}}{\text{s}}$	*	$\frac{1}{0.000000393 \text{ m}}$	=	762,858,714,917,376 Hz
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Hz = 1-999
 kHz = 1,000 - 999,999
 MHz = 1,000,000 - 999,999,999
 GHz = 1,000,000,000 - 999,999,999,999
 THz = 1,000,000,000,000 - 999,999,999,999,999

1 nm = 1E-09 m (10^-9)