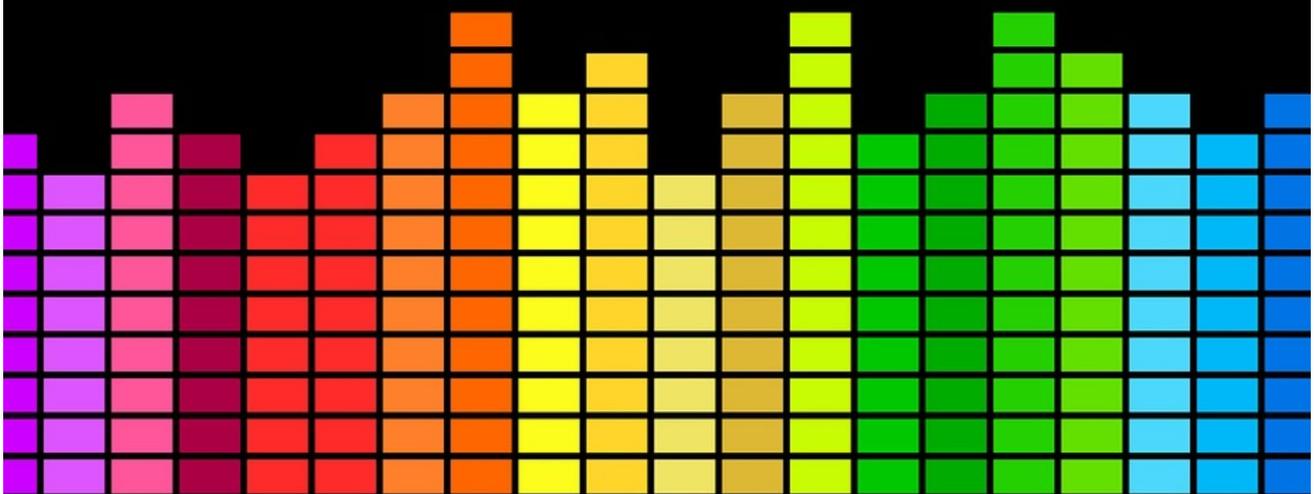


# Magic EQ Frequencies

Everyone With A DAW Should Know

Predominant Frequencies  
For Every Mix Element



**BOBBY OWSINSKI**



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# Welcome To The Magic Frequencies

When it comes to EQing, there are certain frequencies that seem predominant for every instrument. Many call them the magic frequencies, because they do tend to work most of the time.

Here's a rundown of those frequencies excerpted from the latest edition of my [\*Mixing Engineer's Handbook\*](#).

Remember that using the magic frequencies might make an instrument or voice sound dynamite on its own when soloed, but then it might not fit in the mix properly.

*That's why it's best to listen against other instruments when adding or subtracting EQ.*

Also remember that every song is different because the players, arrangement, recording environment, gear and feel is different, which will greatly influence your EQ decisions.

Get ready for your next mix to sound great!



Bobby Owsinski



# Bass Guitar



The difficulty with EQing the bass guitar lies in the fact that it's usually EQed too low (below 100Hz) leading to conflicts with the kick while not being heard on small speakers.

***TIP:** Look to the upper bass area (120 to 320Hz) for a more present and defined low end.*

## Magic Frequencies

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- Girth - 50 to 80Hz
- Bass - 120 to 320Hz
- Attack - 700Hz
- Snap - 2.5kHz



# Kick Drum



The kick is also easy to EQ too low, masking the bass guitar while not being heard on small speakers.

***TIP:** Don't confuse the girth frequencies with the resonant frequency of the drum, which is higher (usually 80 to 100Hz).*

## Magic Frequencies

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- Girth - 40 to 60Hz
- Bottom - 80 to 100Hz
- Hollowness (beach ball sound) - 400Hz
- Point - 3k to 5kHz



# Snare

EQing a snare depends on the track and how it fits with the other instruments more than most mix elements. It's the heartbeat of the song so it can't be masked, yet it's easy to mask other mix elements when it's heard clearly.



***TIP:*** To find the “point,” boost the midrange at 1kHz by 6dB and sweep the frequencies until the snare jumps out. Then decrease the boost to taste.

## Magic Frequencies

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- Fatness - 120 to 240Hz
- Point - 900Hz to 2kHz
- Crispness - 5kHz
- Snap - 10kHz



# Rack Toms



Rack toms that sound good with the rest of the kit contribute to the kit's overall sound.

With that said, sometimes toms that sound great when soloed can muddy up the rest of the drum kit from their leakage, meaning that the toms must be muted until they're played.

***TIP:** Listen with rest of the kit first. Mute or automate as necessary for a clean drum sound.*

## Magic Frequencies

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- Fullness - 240 to 500Hz
- Attack - 4k to 7kHz



# Floor Tom

Like the rack toms, the sound of the floor toms can add to the sound of the overall kit, or get in the way.

***TIP:** Make sure that the predominant frequency that's boosted is not the same as the kick or bass. Cuts at those frequencies are okay*



## Magic Frequencies

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- Fullness - 80Hz
- Howness (beach ball sound) - 400Hz
- Attack - 5kHz



# High Hat and Cymbals



So much of the sound of the cymbals is dependent on the cymbals themselves. If a player uses gigging cymbals they're usually heavier so they don't break easily, but that provides more "clang" than thinner cymbals.

***TIP: A high-pass filter can be very effective in eliminating frequencies that clash with other instruments while adding nothing to the sound. Set it anywhere from 100 to 500Hz.***

## Magic Frequencies

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- Clang - 200Hz
- Sparkle - 8k to 10kHz



# Electric Guitar



The more distorted the electric guitar, the more difficult it is to fit into the track, especially if doubled or against multiple guitar parts in the mix.

**TIP:** Both high-pass and low-pass filters can be very effective in eliminating frequencies that clash with other instruments. Set the high-pass anywhere from 100 to 400Hz. Set the low-pass anywhere from 6k to 8kHz.

## Magic Frequencies

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- Fullness - 240 to 500Hz
- Presence - 1.5k to 2.5Hz
- Attenuate - 1kHz for 4x12 cabinet sound



# Acoustic Guitar



Acoustic guitar sounds vary widely because of the style of guitar used, how it's constructed, and its purpose in the mix. This makes it one of the more difficult mix elements to equalize.

***TIP:** An acoustic guitar playing rhythm to add motion to the song will usually sound best with fewer low frequencies.*

## Magic Frequencies

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- Fullness - 80Hz
- Body - 240Hz
- Presence - 2k to 5kHz
- Finger noise - 10kHz



# Piano

Like acoustic guitars, the sound of acoustic pianos can vary wildly, but most lean heavily on the mid-range frequencies.



***TIP:** The fewer instruments in the mix, the more fullness the piano needs. The more instruments in the mix, the thinner (fewer low frequencies) it needs to be.*

## Magic Frequencies

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- Fullness - 80Hz
- Presence - 3k to 5kHz
- Honky Tonk - 2.5kHz



# Organ



A real organ or organ simulation is the perfect pad instrument, and usually added to the mix to glue it together rather than stand out.

***TIP:** In the case of a real organ miked through a Leslie speaker, the fullness depends on whether the lower rotor is miked or not.*

## Magic Frequencies

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- Fullness - 80Hz
- Body - 240Hz
- Presence - 2k to 5Hz



# Horns

The type of horns used in the mix will determine the EQ usually needed. Brass instruments are made to be piercing, so fewer high frequencies need to be added. Woodwinds like saxophones are mellower by nature and can use some additional EQ to rise above a mix.



## Magic Frequencies

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- Fullness - 120Hz (brass)
- Piercing - 5kHz (brass)
  
- Warmth - 200Hz (saxophone)
- Boxiness - 400 to 500Hz (saxophone)
- Nasal - 1.2kHz (saxophone)
- Presence - 5k to 6kHz (saxophone)



# Vocal



The vocal sound is sometimes determined by how loud the vocal is in the mix. For genres where the vocals are in the front of the music, like pop, vocals tend to

be fuller sounding than genres like rock where the vocal is pulled back in the mix to give the music more power.

***TIP: Male and female vocals are different and require a different EQ approach. Generally the EQ points are a little higher for women.***

## Magic Frequencies

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- Fullness - 120Hz
- Boomy - 240Hz
- Presence - 2k to 5Hz
- Sibilance - 4k to 7kHz
- Air - 10k to 15kHz



# Strings

In most popular music today strings are a complimentary instrument used as a pad and to fill in between vocal lines.



This usually means that care is given to how they fit with the vocal.

***TIP:** You can generally cut a lot of the low frequencies and still have plenty of tone left. High-pass filter from 40 to 100Hz.*

## Magic Frequencies

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- Fullness - 240Hz
- Boxy - 400Hz
- Move Forward - 3kHz
- Scratchy - 7k to 10kHz



# Conga



Congas add motion to a track, and by their very nature can easily take it over without some EQ adjustments.

***TIP:** The resonant frequency of the drum can sometimes be overwhelming. Boost 6dB and sweep the frequencies between 200 to 400Hz to find it, then cut to taste.*

## Magic Frequencies

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- Ring - 200 to 300Hz
- Attack - 1.5kHz
- Slap - 5kHz



# Hand Percussion

Like the congas, hand percussion like shakers and tambourine are used to add motion to a song. The trick is to get them to fit in without sticking out.



***TIP:** There are few low frequencies coming from hand percussion instruments so a high-pass filter set to between 100 and 400Hz can clean the track up considerably.*

## Magic Frequencies

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- Fullness - 200 to 400Hz
- Harshness - 2k to 3kHz
- Air - 6k to 7kHz

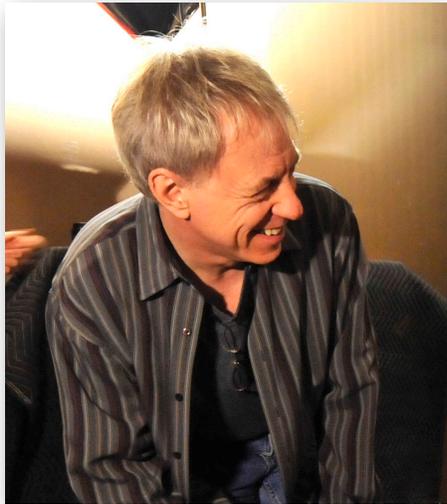


# Magic Frequencies In Chart Form

Instrument	Magic Frequencies
<b>Bass guitar</b>	Bottom at 50 to 80Hz, attack at 700Hz, snap at 2.5kHz
<b>Kick drum</b>	Bottom at 80 to 100Hz, hollowness at 400Hz, point at 3k to 5kHz
<b>Snare</b>	Fatness at 120 to 240Hz, point at 900Hz, crispness at 5kHz, snap at 10kHz
<b>Rack Toms</b>	Fullness at 240 to 500Hz, attack at 5k to 7kHz
<b>Floor Toms</b>	Fullness at 80Hz, attack at 5kHz
<b>Hi-hat and cymbals</b>	Clang at 200Hz, sparkle at 8k to 10kHz
<b>Electric guitar</b>	Fullness at 240 to 500Hz, presence at 1.5k to 2.5kHz, attenuate at 1kHz for 4 × 12 cabinet sound
<b>Acoustic guitar</b>	Fullness at 80Hz, body at 240Hz, presence at 2k to 5kHz
<b>Organ</b>	Fullness at 80Hz, body at 240Hz, presence at 2k to 5kHz
<b>Piano</b>	Fullness at 80Hz, presence at 3k to 5kHz, honky tonk at 2.5kHz
<b>Horns</b>	Fullness at 120Hz, piercing at 5kHz
<b>Voice</b>	Fullness at 120Hz, boomy at 240Hz, presence at 5kHz, sibilance at 4k to 7kHz, air at 10k to 15kHz
<b>Strings</b>	Fullness at 240Hz, scratchy at 7k to 10kHz
<b>Conga</b>	Ring at 200Hz, slap at 5kHz
<b>Percussion</b>	Fullness at 200Hz, harshness at 3kHz, air at 7kHz



# About Bobby Owsinski



Bobby Owsinski started his career as a guitar and keyboard player, eventually becoming an in-demand producer/engineer working not only with a variety of recording artists, but on commercials, television shows and motion pictures as well.

Living in Los Angeles and always on the cusp of the latest technology, he was one of the first to delve into surround sound music mixing, and eventually worked on over a hundred 5.1 surround projects and DVD productions for a variety of legendary superstar performers including The Who, Willie Nelson, Neil Young, Iron Maiden, The Ramones, and Chicago, among many others.

More recently, Bobby has produced and mixed records that made it to #2 on the Billboard Blues Chart and #5 on the iTunes Rock Chart.

Bobby is also one of the best selling authors in the music industry with 24 books that are now staples in audio recording, music, and music business programs in colleges around the world, including *The Mixing Engineer's Handbook*, *Social Media Promotion For Musicians*, *The Recording Engineer's Handbook* and more.

He's also a contributor to Forbes writing on the new music business, his award-winning blogs are nearing 20 million visits, and he's appeared on CNN and ABC News as a music branding and audio expert.



# Before You Go

We're not done yet. . .

*Please know that my goal is to deliver exceptionally good value that you can't find anywhere else.*

You can find even more great recording, mixing and music business [resources here](#).

Check out my courses and offerings at [BobbyOwsinskiCourses.com](http://BobbyOwsinskiCourses.com), or watch the free training workshops that I give from time to time.

An especially good deal is to [join the Diamond Tier](#) of my Hit Makers Club where you'll get access to 9 of my courses immediately.

Find out more about [Hit Makers Club](#) here.

And you also might like my [Inner Circle podcast](#) for up-to-date music industry news and interviews with music movers and shakers.



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by Bobby Owsinski

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