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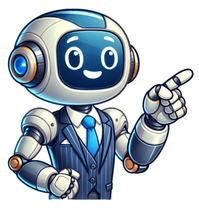

This project is a result of swapping some six-inch flared ports for an IXL-18 driver. Given the number of sealed and EBS ported boxes out there using this driver, it was time to come up with something a bit different... Concept The 6th order alignment consists of a ported chamber either side of the driver, resulting in a bandpass response. The small 60 litre chamber has a single 6-inch port tuned to 53hz. The larger 200 litre chamber has a pair of 6-inch ports tuned to 25hz Design WinISD Output Shown compared to an LLT Sonosub (365 litres, 15hz tune light red) Both designs have 1000w applied The bandpass box has less extension, but more slam (6dB more at 30hz), and has a slightly smaller box Cone excursion A high pass filter is recommended to control excursion below the tuning point of the large chamber. A Butterworth high-pass filter tuned to 16hz is sufficient Another characteristic of this design is that port loading decreases cone excursion at the tuning frequencies, which can lead to a decrease in the cooling of the voice coil. Care needs to be taken not to exceed the rating of the driver Ports for large chamber Peak velocity is 21 m/sec at around 25hz A pair of 6-inch ports with 30mm exit flares will be noise free Peak velocity is 31 m/sec at around 60hz Whilst Flare-it has only been experimentally verified for frequencies up to 35hz, in this case the results can be extrapolated to get an idea of port performance. A single 6-inch port with a 30mm exit flare will be noise free Dimensions and Cutting list Dimensions Volumes Cutting list Six full sheets of 1800mm by 600mm by 19mm MDF are required. The approach is the same as outlined in the Speaker Building page Where an exact edge is required, it is initially cut 5mm oversize using a sawboard and then trimmed back to the green dotted line with a router The Build The long ports even manage to make an 18inch driver look small...... After several days of marking up and cutting, routering etc, you get..... After after a few more days.... The rear wall of the inner chamber extends the full height of the box to provide bracing A pair of shelf braces sit between the inner chamber and the rear wall of the box and also support the ports Shelf bracing is rebated into the surrounding panels All holes in the shelf bracing have edges removed with a rollover bit The outer shell of the box has chamfered edge bracing around all seams An access window allows the driver to be installed after the box is built The driver baffle is double thickness, for strength and to provide depth for mounting screws One-piece ports can be used The 18inch Mach5 driver will be quite snug in there.... Hot-melt glue was used to secure the ports to the front baffle and the lower brace Hot-melt glue is great for getting a quick and strong bond. It is however, difficult to ensure a complete seal. Going over the joint with silicone sealant, which can be worked into any voids solves the problem. The next picture shows the hot-melt only on the left versus the dual-glue solution on the right Edge bracing and door support panel glued into place. Detail of small port flanged into driver chamber. I was in a hurry and accidentally glued the bottom on at an angle. Another detour whist I worked out how to use a router as a milling machine Carcass just before front panel is glued on Carcass just before back panel is glued on Less interesting with it's clothes on...... Fitting the driver took the total weight to 68kg, which is 150lbs in the old money... There's a certain presence .... Flush mounting of ports turned out well Performance Everything was dragged outside for measuring with REW The response was measured at 1m and 2m with the microphone in line with the ports and at a lower height. This done was to identify any ground bounce effects or port coupling effects. The graphs were essentially the same, so only the 1m inline graphs are shown. Blue: Response at 1m measured with REW Green: Predicted response from WinISD Tuning frequencies turned out to be a bit higher than the design frequencies and the peaks are stronger than expected by around 7dB The red graph explores the WinISD prediction when the volumes of the two chambers are adjusted so that the frequencies of the response peaks line up with what was measured. The port lengths were left unchanged as these are a known length. This shows that even if the build volumes are off, the higher peaks are still not predicted by WinISD. Perhaps WinISD is a bit woolly when it comes to this style of box The longer ports have a first resonance of 227hz and a second resonance of 454hz Sources of the peak around 330hz could include: Box side-to-side resonance of 349hz Driver chamber top-to-bottom resonance of 338hz There's a +/- 6dB dip/peak centred around 95hz - I'm not sure what that is! Dialing it in BFD Filters An REW sweep was taken in-room and then some filters added using a Behringer Feedback Destroyer (BFD) Since the high-pass filter has not been built as yet, an extra cut was added at 20hz for some excursion protection Unfiltered response shown in green. Response with BFD filters applied shown in brown The dip at 50hz is a room null Measuring the output voltage of the EP2500 allows the power to be determined Power = RMS voltage squared divided by DC resistance of driver With the AV amp pushing enough signal to light the yellow warning LED on the BFD on the sensitive setting (-10dB), the subwoofer amp is only able to manage about 100w into 4ohms. Bridging the EP2500 lifts this to about 400w - still short of what's needed. Switching the BFD to the less sensitive input level (+4dB) and maxing out the LFE level of the AV amp gets us up to 900w, which is the design level. This measures 122dB @1m and 117dB at the seat, corrected for RS meter at 30hz - pretty much in line with what WinISD predicted. After careful listening, it seems that 900w is pushing things a bit, with some excessive noises evident. I've been slack and haven't built the high-pass filter yet, so it may be an excursion issue. For the moment, it seems prudent to back the power off to 600w, dropping the peak output to 120dB @1m. A cleanbox has been aquired and modified. Along with winding back the gain controls on the EP2500, this allows the signal to be trimmed to just light the red LED on the BFD at maximum output, which will make it easier to adjust the LFE levels for different movies. This design is known as a parallel tuned 6th-order bandpass. There is also such an animal as a series tuned 6th-order bandpass. Dan McGrath from the UK has built an isobaric version of one, and has a pretty good write-up of his experience. A bandpass enclosure will allow you to play only certain frequencies and silence the others. This is a very efficient way of playing low frequencies because it allows for larger drivers in a relatively small enclosure. Typically, we're going to talk about "6th order" bandpass enclosures here at BoomSpeaker. 6th orders are characterized by having one port and two speakers (woofers) in series. The advantage of such an arrangement is that there is no change in polarity across the frequency range. The total number of acoustic outputs (one from each driver) equals the number of ports when impedance increases or decreases through zero at resonance. 6th Order Subwoofer Box Design The design for this subwoofer box is a 6th order bandpass. A bandpass enclosure will offer the best performance possible at low frequencies as it allows for both front and rear waves to cancel each other out, which greatly reduces resonance that would produce SPL but also introduces "group delay". The physical construction of such a box consists of a sealed outer enclosure with an opening cut into it, leaving a membrane between the outer and inner chambers. Like all ported enclosures, the port needs to be tuned so that box can play a desired range of frequencies without overloading. In this case, we used the well-known formulae to derive fc (the port frequency) and Qt (the box resonance Q). fc = 1/(2*pi*(Vb/S)) Qt = sqrt(WL/CH) Where Vb is the internal volume of the box, S is the surface area of the port, W is the width of the port, L is the length of the port, and C is the height of the port. To achieve a response as flat as possible down to 20 Hz, we set fc to 28 Hz and Qt to 0.707. This will give us an enclosure with a -3 dB point at around 27 Hz. 6th Order Bandpass Calculator When it comes to bandpass filters, there is a lot of calculation that needs to go into ensuring that the filter works as intended. One tool that can help with this process is a 6th order bandpass calculator. This calculator can help you determine the appropriate values for your filter, based on the desired parameters. It can be used to calculate the cutoff frequency, ripple, and other factors. It's important to note that this calculator is only meant to provide an estimate; you will still need to do some testing to ensure that the filter meets your specific needs. But it can be a helpful starting point and can help you avoid making costly mistakes during the design process. If you're looking for a bandpass filter that meets your specific needs, be sure to check out the 6th order bandpass calculator. It can help you get started on the right track. 6th Order Bandpass Ratio A 6th order bandpass ratio is a measure of how well a filter can separate adjacent frequency bands. This ratio is calculated by dividing the bandwidth of the desired signal by the bandwidth of the unwanted signal. A higher ratio means that the filter is better able to isolate the desired signal from adjacent frequencies. There are many applications for filters with high 6th order bandpass ratios. In telecommunications, for example, these filters can be used to separate different signals and improve transmission quality. They can also be used in electronic equipment to eliminate noise and interference from other signals. When choosing a filter, it is important to consider its 6th order bandpass ratio. This will help you determine how well it can perform its intended function. For example, if you need to filter out only one specific frequency, it is better to choose a filter with a high ratio than one with a low ratio. 6th Order Bandpass Design Software A 6th order bandpass design software can be used to design a bandpass filter with the desired response. The software can be used to calculate the component values for the filter, and also to simulate the filter's performance. This can help to ensure that the filter meets the desired specifications. There are many different types of 6th order bandpass design software available, and each one has its own set of features. It is important to choose a software package that is suitable for your needs. Some packages are more user-friendly than others, while others offer more flexibility in terms of the types of filters that can be designed. Once you have chosen a software package, you will need to enter the relevant information about the filter. This includes the required center frequency, passband and stopband frequencies, and the type of filter response that you wish to design. Where Can I Find A 6th Order Bandpass Box for Sale? A 6th order bandpass box can be found for sale at a variety of different places. Some common places to find them include online retailers such as Amazon and eBay, as well as specialty stores that deal specifically in audio equipment. It is important to do your research before purchasing one of these boxes, however, as they can be quite expensive. Make sure to read reviews from other customers to get an idea of the quality of the product before making a purchase. Additionally, it is important to make sure that the box will fit into the space you have available, as they can be quite large. If you are looking for excellent sound quality and want to purchase a 6th order bandbox, there are several different places you can look. Just be sure to do your research beforehand to make sure you are getting the best product for your needs. What Does One Get With A 6th Order Bandpass Design? The answer is, quite probably the best possible performance you can expect from a sealed enclosure. This is because the 6th order bandpass has 2 air-in and air-out ports. The port tuning frequency (fp) of these ports essentially 'seals' the cone in place to prevent it from trying to move at frequencies where it's no longer needed. This means that there is very low pressure acting on the cone at frequencies well below tuning which results in very little distortion, fast response, and an almost perfectly linear excursion vs input voltage (xmax) curve. Theoretically, this would result in an exceptionally high sound quality combined with deep bass extension. As mentioned earlier, there is a price to pay for all this however and that is the increased complexity of the design. Not only do you need to calculate and build the box correctly, but also find the right tuning frequency for your specific subwoofer and enclosure size. This can be a tricky process and one which should not be taken lightly. With that said, if you are up for the challenge and want the best possible performance from your sealed subwoofer enclosure, then a 6th order bandpass design may be just what you are looking for. Conclusion As we have seen, there are a few different ways to design a bandpass subwoofer box. The most important factors are the dimensions of the box and the frequencies that you want to pass through it.In general, the larger the box, the lower the frequencies that will be passed. However, if the box is too large, it will become difficult to move around. Norvan Martin is a professional Electronics Engineer who founded BoomSpeaker.com as a hub for Hi-Fi enthusiasts. With a deep passion for home audio systems and AV electronics, Norvan shares his knowledge and insights on Hi-Fi audio, home theaters, and the latest in audiophile technology, providing valuable insights and advice for audio enthusiasts. My email: Connect on Pinterest and Linkedin Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. How can financial brands set themselves apart through visual storytelling? Our experts explain how.Learn MoreThe Motorsport Images Collections captures events from 1895 to today's most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors' Picks.Browse Editors' FavoritesHow can financial brands set themselves apart through visual storytelling? Our experts explain how.Learn MoreThe Motorsport Images Collections captures events from 1895 to today's most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors' Picks.Browse Editors' FavoritesHow can financial brands set themselves apart through visual storytelling? Our experts explain how.Learn MoreThe Motorsport Images Collections captures events from 1895 to today's most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors' Picks.Browse Editors' Favorites Welcome to the fascinating universe of subwoofer box designs! Whether you're a dedicated audiophile or just someone who revels in the deep resonance of bass, you've landed in the perfect spot. This article will delve into the distinct characteristics that set 4th order bandpass vs 6th Order Bandpass subwoofer boxes apart. These two designs are at the forefront for anyone looking to elevate the bass performance of their sound system. The decision to opt for a 4th order bandpass or 6th-order bandpass box is crucial, as it influences the overall sound quality, efficiency in handling power, and the spatial demands of your audio setup. Embarking on this journey, we'll uncover which bandpass Order might best match your sonic preferences. The comparison between 4th vs 6th Order Bandpass subwoofer boxes isn't just about technical specs; it's about matching the right acoustics to your audio desires. Understanding the nuances of these designs will empower you to make an informed choice, ensuring that your audio system resonates with your expectations regarding bass clarity, depth, and power. But WHY do you want to do a 6th order bandpass? Or bandpass in the first place? What are the benefits you are gaining from that enclosure? Understanding Subwoofer Boxes Regarding car subwoofers, the enclosure plays a crucial role in shaping the audio output. Subwoofer boxes, or enclosures, are specially designed structures to house subwoofers. They are not just a box to contain the subwoofer but rather an important component that controls the movement of the subwoofer diaphragm and, ultimately, the sound it produces. The type of subwoofer box you choose, such as a db box, can significantly impact your subwoofer's frequency response, precision, and overall audio performance. What is a Subwoofer Box? A subwoofer box, called an enclosure, is a purpose-built housing designed to hold subwoofers. It serves the dual role of protecting the subwoofer components and optimizing the audio output. The enclosure ensures that the subwoofer operates efficiently by isolating the sound waves the subwoofer produces, delivering an optimal bass response. This is achieved by designing and constructing the subwoofer box, which considers factors such as the subwoofer's frequency response, the enclosure's internal volume, and the port or vent size. Importance of a Subwoofer Box The importance of a subwoofer box cannot be overstated. It is crucial in enhancing low-frequency audio precision, which is essential for achieving high-quality sound reproduction. An adequately designed subwoofer box prevents the cancellation of low-frequency sounds, ensuring the bass response is robust and accurate. Moreover, subwoofer boxes contribute to the overall audio system efficiency by controlling the rear chamber air volume, providing the subwoofer with the necessary parameters to maximize its performance. Whether you are a music lover, a movie enthusiast, or simply someone who enjoys deep bass, having the correct subwoofer box is paramount in achieving the desired audio experience. 4th Order Subwoofer Boxes Now, let's delve into 4th-order bandpass subwoofer boxes. These enclosures offer a hybrid design, combining the characteristics of sealed and ported enclosures to create a unique sound signature. By using the rear chamber to interact with the subwoofer, 4th-order bandpass subwoofer boxes can influence the frequency response and optimize the low-frequency output. Look at the basics, pros, and cons of 4th-order sealed box subwoofer boxes. Basics of 4th-Order Subwoofer Boxes 4th order subwoofer boxes, also known as 4th-order bandpass subwoofer boxes, are a hybrid design that combines the characteristics of sealed and ported enclosures. These enclosures comprise two chambers, separated by a sealed rear chamber and a ported front chamber. The sealed rear chamber acts as a low pass filter, allowing only low-frequency sounds to pass through, while the ported front chamber serves as a high pass filter, allowing only higher-frequency sounds to pass through. This interaction between the sealed rear chamber and the ported front chamber creates a unique frequency response that emphasizes specific low-frequency bands, enhancing bass performance. Thread Tools, such as Q(ms), can calculate the performance of 4th order subwoofer boxes and determine the best configuration for optimal sound quality. Pros of 4th-Order Subwoofer Boxes Enhanced frequency response: 4th-order subwoofer boxes are designed to deliver a specific frequency response, often tailored to the subwoofer's capabilities, resulting in enhanced low-end performance. SPL (Sound Pressure Level) boost: The enclosure design of 4th-order subwoofer boxes enables them to produce higher sound pressure levels, providing a more impactful bass experience. Increased bass output: 4th-order subwoofer boxes excel in producing a robust and tight bass response, delivering deep and punchy low-frequency audio. Improved linearity: Thanks to the sealed rear chamber, 4th-order subwoofer boxes minimize distortion, resulting in cleaner and more accurate bass reproduction. Optimal subwoofer efficiency: With their precise tuning, 4th-order subwoofer boxes can optimize their efficiency, allowing them to perform at their best in the low-frequency range. Cons of 4th Order Subwoofer Boxes Reduced bandwidth: 4th-order subwoofer boxes have inherent limitations in bandwidth, emphasizing specific low-frequency bands while potentially sacrificing the overall frequency range. Challenging enclosure design: The complexity of 4th-order subwoofer boxes can pose challenges for DIY enthusiasts, as achieving the desired frequency response may involve meticulous adjustments and testing. Cutoff frequency limitations: The cutoff frequency, which determines the point at which the rear chamber begins filtering the low-frequency sounds, needs to be carefully chosen to ensure optimal performance, requiring advanced audio engineering knowledge. Rear chamber considerations: The sealed rear chamber in 4th-order subwoofer boxes requires careful design considerations, including the volume and damping, to achieve the desired bass response, adding complexity to the enclosure construction. What is the difference between a 4th order and a 6th order bandpass? The main difference between a 4th order and a 6th order bandpass is the steepness of the roll-off slope. A 4th order bandpass has a 24 dB/octave slope, while a 6th order bandpass has a steeper 36 dB/octave slope. This results in better control and precision in filtering frequencies. 6th Order Subwoofer Boxes Moving on, let's dive into the world of 6th Order bandpass subwoofer boxes. These enclosures take the concept of bandpass design even further, offering more control over the subwoofer's frequency response and bass output. Using two separate chambers, a sealed rear chamber, and a ported front chamber, 6th-order subwoofer boxes can fine-tune the low-frequency response, delivering powerful and extended bass performance. With a frequency response that rolls off at a rate of 6dB per octave, these boxes are ideal for producing deep and punchy bass while minimizing the impact of the filter on the response. Let's dig deeper into the basics, pros, and cons of 6th-order subwoofer boxes. Basics of 6th-Order Subwoofer Boxes 6th-order subwoofer boxes, also known as 6th-order bandpass boxes, are designed to optimize the low-frequency response of the subwoofer by utilizing the interaction between two chambers. The rear chamber is sealed, acting as a low pass filter, while the front chamber is ported as a high pass filter. This combination allows 6th-order subwoofer boxes to deliver a wider bandwidth and extended bass response than 4th-order subwoofer boxes. The precise tuning of the rear chamber and the ported front chamber results in controlled low-frequency precision, impactful bass, and enhanced subwoofer performance, making the box a crucial component in achieving optimal sound quality. Pros of 6th Order Subwoofer Boxes Extended low-frequency response: 6th-order subwoofer boxes deliver an extended low-frequency response, allowing for reproducing sub-bass frequencies with precision. Increased sound pressure levels: Their ported chamber design allows 6th-order subwoofer boxes to produce higher sound pressure levels, resulting in a more forceful and immersive audio experience. Wider bandwidth: 6th-order subwoofer boxes offer a broader bandwidth, allowing for a more comprehensive range of low-frequency audio, capturing the sub-bass spectrum with exceptional detail. Enhanced frequency response: Thanks to the rear chamber's precise tuning and filtering capabilities, 6th-order subwoofer boxes can optimize the subwoofer's frequency response, enhancing audio performance across the low-frequency range. Excellent bass control: 6th-order subwoofer boxes provide exceptional bass control, reproducing bass frequencies with precision and impact. Cons of 6th Order Subwoofer Boxes Complex enclosure design: 6th-order subwoofer boxes have a more complex enclosure design compared to sealed or ported boxes, requiring advanced construction skills and knowledge. Space requirements: Due to the larger rear chamber, 6th-order subwoofer boxes require more space for installation, which may limit their usability in specific vehicle or room configurations. Less user-friendly for beginners: The intricate setup of 6th-order subwoofer boxes can be challenging, as meticulous attention to detail is required for optimal performance. Potential vent noise: The ported chamber in 6th-order subwoofer boxes can introduce the possibility of vent noise, requiring careful design considerations to minimize unwanted artifacts. Increased reliance on subwoofer specifications: 6th-order subwoofer boxes may require a closer match between the subwoofer and the enclosure specifications to achieve the desired audio performance. Comparing 4th and 6th Order Subwoofer Boxes Now that we understand 4th and 6th-order subwoofer boxes let's compare the two designs. Both 4th and 6th-order subwoofer boxes have unique advantages and limitations, making choosing between the two an important consideration when designing your audio system. The following sections will compare the sound quality, space and size requirements, and power handling capabilities of 4th and 6th-order subwoofer boxes. Sound Quality Comparison Regarding sound quality, both 4th and 6th-order subwoofer boxes have their strengths. 4th order subwoofer boxes, with their emphasis on low-frequency precision, excel in delivering accurate bass response, making them well-suited for audio enthusiasts who prioritize tight and controlled low-end performance. On the other hand, 6th-order subwoofer boxes offer a more amplified bass experience, extending the low-frequency response and capturing sub-bass frequencies with more significant impact. The 4th-order subwoofer box may provide your desired precision and definition depending on your audio preferences. In contrast, the 6th-order subwoofer box can add extra bass excitement, especially for genres that rely heavily on sub-bass, such as electronic music. Space and Size Comparison Space and size requirements are essential when selecting between 4th and 6th Order subwoofer boxes. 4th order subwoofer boxes, with their hybrid design, tend to be more compact, making them ideal for installations where space is limited. These enclosures offer practicality while still delivering solid bass performance. On the other hand, 6th-order subwoofer boxes, with their larger rear chamber, require more space for installation, making them better suited for setups with ample room. When planning your audio system, consider the available space in your vehicle or living space and the desired level of bass performance to determine which woofer box design will fit best. Power Handling Comparison The power handling capabilities of 4th and 6th-order subwoofer boxes can also influence your choice. 4th order subwoofer boxes are designed to efficiently handle power, providing a balanced audio output for moderate power levels. They are suitable for various applications, catering to diverse audio preferences. On the other hand, 6th-order subwoofer boxes can handle higher power, delivering a more forceful audio experience. These enclosures excel in applications where high sound pressure levels (SPL) are desired, making them popular choices in car audio competitions and venues that require bass-heavy audio. Consider the power requirements of your audio system and the desired SPL levels to choose the subwoofer box design that will provide the best power-handling capabilities for your specific needs. Making The Right Choice Several factors come into play when choosing between 4th and 6th-order subwoofer boxes. It's essential to consider the available space, the desired frequency response, the power handling requirements, and personal audio preferences. By evaluating these factors, you can make an informed decision and ensure that the subwoofer box you choose aligns with your audio goals. Let's consider the factors when choosing between 4th and 6th-order subwoofer boxes. Factors to Consider While Choosing between 4th and 6th Order Frequency response: Consider the desired frequency response of your audio system. If you prioritize precision and accuracy in the low-frequency range, a 4th order subwoofer box may be the better choice. For a more impactful and bass-heavy audio experience, a 6th-order subwoofer box might be the preferred option. SPL requirements: Consider the sound pressure levels (SPL) you want to achieve with your audio system. If you desire high and immersive SPL levels, a 6th-order subwoofer box is more likely to deliver the intense bass you want. However, if you prefer a balanced audio output without compromising on low-frequency precision, a 4th order subwoofer box may be the better fit. Bandwidth considerations: The bandwidth, or the range of frequencies the subwoofer box can effectively reproduce, should also be considered. 4th order subwoofer boxes typically have a narrower bandwidth, optimized for specific low-frequency bands. In comparison, 6th-order subwoofer boxes offer a broader bandwidth, capturing a more comprehensive range of frequencies, including the sub-bass spectrum. Enclosure and space requirements: Evaluate the available space in your vehicle or living area to determine which subwoofer box design will fit best. 4th-order subwoofer boxes, with their more compact size, are well-suited for setups where space is limited, while 6th-order subwoofer boxes require more room due to the larger rear chamber. Understanding Your Sound Preferences Understanding your sound preferences is crucial when choosing between 4th and 6th-order subwoofer boxes. Consider the type of audio you enjoy and the level of bass amplification you desire. If you appreciate accurate low-frequency reproduction and prioritize tight and controlled bass, a 4th order subwoofer box may be the better option. On the other hand, if you enjoy more pronounced and impactful bass, especially in genres that rely heavily on sub-bass, such as electronic music, a 6th-order subwoofer box might be the preferred choice. Knowing your preferred audio experience, whether a precise and focused bass or a more intense and immersive one, will help you select between 4th and 6th-order subwoofer boxes. Real-World Examples of 4th and 6th-Order Subwoofer Boxes Let's look at real-world examples to understand the capabilities of 4th and 6th-order subwoofer boxes. These success stories highlight the advantages and applications of each subwoofer box design, providing insights into the performance and impact they can have in different audio systems. Success Stories with 4th-Order Subwoofer Boxes Users have reported positive experiences with 4th order subwoofer boxes, praising their efficient bass delivery and space-saving design. Success stories highlight the enhanced low-frequency response, balanced audio output, and improved sound quality achieved with 4th-order bandpass subwoofer boxes. Users have also noted the versatility of these enclosures, showcasing their performance in various sound systems, including car audio setups, home theaters, and studio environments. These success stories reaffirm the benefits of 4th-order subwoofer boxes, making them popular among audio enthusiasts and professionals. Success Stories with 6th-Order Subwoofer Boxes The success stories with 6th-order subwoofer boxes resonate with those seeking extended low-frequency response, impactful bass, and precision audio reproduction. Users have reported improved bass response, enhanced low-frequency extension, and exceptional audio performance with 6th-order bandpass subwoofer boxes. These success stories highlight the advanced engineering and design of 6th-order subwoofer boxes, showcasing their performance in various audio systems, including car audio installations, home theaters, and live sound setups. The positive user experiences reflect the benefits of 6th-order subwoofer boxes, which provide unparalleled bass control, expansive frequency response, and outstanding low-frequency precision. Expert Opinions on 4th vs 6th Order Subwoofer Boxes Experts in the audio industry have shared their insights on the comparison between 4th and 6th-order subwoofer boxes, shedding light on the advantages and considerations of each design. Many experts emphasize the benefits of 6th-order subwoofer boxes, particularly for low bass frequencies, highlighting their extended frequency response and controlled bandwidth. The rear chamber design of 6th-order subwoofer boxes, paired with the low pass filter precision, is often praised for its ability to deliver exceptional bass performance. Professionals often recommend 6th-order subwoofer boxes for their advanced filtering capabilities, which optimize the subwoofer's audio output. These expert opinions serve as valuable guidance for audio enthusiasts and professionals when choosing between 4th and 6th-order subwoofer boxes, helping them understand the complexities and nuances of each design. Common Misconceptions About 4th and 6th-Order Subwoofer Boxes Like any topic, there are common misconceptions surrounding 4th and 6th-order subwoofer boxes. It's essential to address these misconceptions to accurately understand the designs' capabilities and limitations. One common misconception about 6th-order subwoofer boxes is that they prioritize vent size over box volume, which experts debunk, emphasizing the need for a carefully matched rear chamber to optimize the low-frequency response. Another misconception is that 4th-order subwoofer boxes are less capable compared to 6th-order subwoofer boxes when, in fact, they offer distinct advantages, such as enhanced low-frequency precision. By dispelling these misconceptions, audio enthusiasts can make more informed decisions when selecting the subwoofer box design that best suits their audio needs. Is One Order Better Than the Other? The debate between 4th and 6th-order subwoofer boxes is ongoing, as both designs offer distinct advantages and trade-offs. It isn't easy to declare one Order superior to the other, as the choice depends on various factors, including the audio preferences of the listener, the desired frequency response, and the available space. While 4th-order subwoofer boxes prioritize low-frequency precision and are more compact, 6th-order subwoofer boxes deliver extended low-frequency response and higher sound pressure levels. The decision ultimately lies in the listener's priorities, audio preferences, and the specific characteristics of their audio system. By evaluating the unique features, pros, and cons of 4th and 6th-order subwoofer boxes, audio enthusiasts can make an informed decision that aligns with their audio goals and provides the best bass performance for their specific setup. Conclusion In conclusion, 4th and 6th-order subwoofer boxes have unique qualities and advantages. The choice between the two depends on your sound preferences, available space, and power handling requirements. If you prioritize sound quality and have limited space, a 4th order subwoofer box might be your better option. On the other hand, if you need higher power handling capabilities and have more space to work with a 6th-order subwoofer box could be the way to go. It's essential to consider these factors and consult with experts to make an informed decision. Remember, the goal is to enhance your audio experience and find the perfect balance between performance and practicality. Bandpass Box Design Basics Demystifying Bandpass Box Low Frequencies SVS Ultra Evolution Bookshelf Compare Prime Elevation Compare SVS Ultra Evolution Titan Compare Prime Center Compare SVS Ultra Evolution Nano Compare SVS Ultra Evolution Center Compare Prime Satellite Compare Prime Bookshelf Compare Prime Pinnacle Compare Prime Tower Compare SVS Ultra Evolution Tower Compare SVS Ultra Evolution Pinnacle Compare SVS Ultra Evolution Elevation Compare Prime Satellite 5.1 System Prime Satellite 2.1 System Marantz and Emotiva are two well-known brands in the audio industry. Marantz in particular is synonymous with well-built receivers, preamps, and amplifiers. Emotiva has also built out a niche for itself as an American company that produces quality audio equipment. This article compares these two audio equipment makers according to their components, performance, and user review. Marantz vs Emotiva Comparison Table Before we do that, here are some other comparisons in this series: Marantz History Saul B. Marantz, a businessman and music enthusiast, created the Marantz company in 1953. Among the many motivating factors for him was Saul's insistence on including musical instruments as part of the living room's furniture set. The varied equalizers that were employed by music producers were the problem that Marantz noticed in the music industry in the early years. This differing equalizer utilized by music producers results in a changing discrepancy between the equalization curves, which in turn produces different sound quality as a result of the different EQ settings employed by each producer. A preamplifier with a large number of equalization curves was developed by Marantz to address this problem. The first set of preamplifiers was created in 1952, but it wasn't until 1953 when the firm was officially constituted, that the company was able to begin mass production on a larger scale. In 1953 the company hired its first head engineer (Sidney Smith), and in 1954 it led to the first significant upgrade to the preamplifier. The preamplifier was remodeled and manufactured as Model 1. Emotiva History The Emotiva company was officially founded in the year 2003 by Dan Laufman. Emotiva is an Italian word meaning "emotional". The brand was borne out of the founder's passion for anything related to audio. Dan Laufman started his career path as an engineer building audio gears for different firms, particularly the infinity system. Emotiva started at a critical point of peak competition, but it was able to make headway as a result of the killer product design. It pioneered the online sale of audio equipment as early as 2003, at a time when the other manufacturers were still doubtful. The first major production was the DMC-1 (preamplifier) produced in 2005. Differences Between Marantz and Emotiva There are some major observable differences between Marantz and Emotiva, some of which are: Emotiva has evolved into having more channels than Marantz Most Marantz receivers are designed with sleek and slim body designs that are more mobile than Emotiva. Although they both are pretty much affordable, Emotiva products have more affordability. Marantz Receivers – Features, Design, and Performance Features, Design, and performance that make the Marantz receiver stand out include the following: A sleek body design. Attractive lighting display. Multi-channel receiver systems. Strong power boosts more than 100w current flow. Active surround sound support. Strong design with heavy gauge steel chassis to keep the different parts in place and isolated from vibrations. Emotiva Receivers – Features, Design, and Performance Emotiva, according to the literal translation, puts emotion into every aspect of the receiver design. It is almost impossible to have problems with the use of the Emotiva receiver because of its well-detailed labeling system. Almost all features and performance information have been clearly stated on the body of the receiver. However, some important features you might need to know before buying an Emotiva receiver include: An auto-sensing power voltage that actively blinks on the receiver's rear. Many port receiver channels up to 16 The input and output ports are clearly labeled. It supports input from CD, USB, Bluetooth, Aux, and many others. Pros and Cons of Marantz Receivers Pros Generalizing the pros of Marantz receiver: Multi face channel High sound delivery Ease of use Dolby-supported surround sound Video input Easy configuration for use with multiple devices Cons The cons of using the Marantz receiver include: Incomplete sound fidelity Mixing up channel No video input is allowed on the stereo receiver Regular trouble setting up the home theater receivers Pros and Cons of Emotiva Receivers Emotiva receiver systems are largely what you could call the twenty-first-century receiver system. However, as much as the receiver tackles a lot of the new age problems there are some cons to it as well. Pros The pros include: Professional surround audio supported Comes with a multichannel amplifier An inbuilt digital-to-analog converter Cons The cons of the Emotiva receiver include: Lower mid-fi sound Poor preamplifier Marantz Mm8077 Vs Emotiva XPA-7 Gen3 When it comes to amplifiers, the Marantz MM8077 and Emotiva XPA-7 Gen3 stand out as contenders in the realm of high-fidelity audio. Since production, the Marantz MM8077 has been the biggest amplifier with multichannel. This amplifier comes with a 7-channel with a power of 150 watts. It comes with a sleek design that gives it an attractive outlook. Contrastingly, the Emotiva XPA-7 Gen3 steps up the game with seven channels of audiophile-grade amplification, each pushing 200 watts. The Marantz MM8077 comes with a built-in Wilson current mirror that gives it a quality sound delivery that cancels out distortion. Connectivity plays a pivotal role in home audio, and both amplifiers offer distinct advantages. While the Marantz MM8077 provides a range of inputs and outputs for versatile compatibility, the Emotiva XPA-7 Gen3's modular design adds a layer of customization to meet specific audio requirements. Best Marantz Receivers on Amazon This is a list of the 7 best Marantz receivers on Amazon. This is a list compiled based on the receiver performance, component, affordability, and other users' reviews. You can get all of the Marantz receivers on Amazon. Marantz Vs Emotiva Pre-amps Marantz pre-amps generally have a faster response to control than Emotiva. For example, you press a button on Marantz and you see the corresponding result on the actual unit almost instantaneously. Most Emotiva Pre-amps on the other hand, usually lag for a few seconds before they respond to commands. Yes, it doesn't happen all the time but it does create hiccups along the way. Thus, Marantz has a faster processor speed than Emotiva. The cycle through to HDMI and volume control works flawlessly on Marantz. Apart from processing speed, Marantz has a stronger reputation in comparison to Emotiva. They have been around for a pretty long time so most users tend to choose their product by default due to their long history of providing good products. Marantz sort of serves as a status symbol. However, one plus side to most Emotiva preamps is that they are upgradeable and expandable up to 28 channels (which is probably more than most users will make use of). Also, the HDMI board can be upgraded instead of throwing them all the way out when an upgraded version comes out. Marantz Av7706 Vs Emotiva Xmc 2 According to popular opinion, enthusiasts would rather go for the Marantz Av7706 over the Emotiva XMC 2. But why is this? While the XMC-2 is a high-quality stereo or multichannel sound system, the XMC-2 caters to music lovers who don't require all of the RMC-1's advanced features and performance, but at a significantly lesser price. However, one problem with Emotiva is the difficulty with video delivery. Many have complained about the XMC-2 UI and that there is no precise adjustment of volume control. The Marantz on the other hand is a more affordable selection at around two thousand dollars. The Marantz Av7706 has a dynamic HDR of HDR10+ and quick media switching. A major factor to note about the Emotiva XMC-2 is the fact that it is not as heavy as you would expect from its look. Generally, Marantz Av7706 is significantly more stable and mature from a software perspective than Emotiva XMC-2. Emotiva Xmc 2 Review The Emotiva XMC-2 D processor gives practically all of the RMC-1's amazing audiovisual performance except for some of the extremely advanced and optional supplementary functionalities that provide major cost savings to the user. A greater percentage of Hi-Fi music and home theater enthusiasts will benefit from the XMC-2's revolutionary audio and video performance. The XMC-2, like the RMC-1, is a cutting-edge AV processor that serves as the command center for a modern home theater or surround sound system. The flawless 18Gbps bit video switching gives the best image quality of the latest HDR and Dolby Vision 4k UHD discs, while the powerful audio decoding engine and hardware deliver audiophile sound. Features True audiophile sound quality Supports single/double rate stereo DSD via USB Digitally controlled ALN volume control Supports both stereo and surround sound However, XMC-2 was put on the market too early and they are considered to be not as stable as RMC -1. Many users have complained of several bugs and UI issues. Marantz 7015 Vs Marantz 8015 We're going to compare Marantz SR8015 with Marantz SR7015 to see what their common advantages and drawbacks are, as well as the differences between them, so you can make an informed decision before buying. The Marantz SR8015 features 11 channel amplifiers, while the Marantz SR7015 has 9, with the Marantz SR8015 being more powerful. It should also be noted that the SR8015 has more speaker terminals and more large speaker terminals than the 7015. It also features more Analog Audio Line Inputs and more Composite Video Inputs than its counterpart, SR7015. The SR8015 is generally considered an improved version of the SR7015. Conclusion On a concluding note, this article has made a thorough effort to compare, giving a brief background history as well as a check into the pros and cons of the two brands. To make selection a lot easier, the article has made a list for you of the best Marantz receivers you can get on Amazon. The list is based on the performance, components, affordability of the receivers, and reviews by other users. Subwoofers boost not only the low-end but also increase the richness and quality of sound coming out of your system. Wireless subwoofers are becoming more popular as days pass. However, most of them are limited to a closed ecosystem where you can only use them with speakers from the same manufacturer. In this guide, we have evaluated the best wireless subwoofers for this year. Our top picks carter for any budget or the size of the room in question. For more information on wireless subwoofers, see our comparison table and buying advice below. Our Top Wireless Subwoofers WIRELESS SUBWOOFER RMS* DRIVER DIRECTION FREQ.** DIMENSIONS Klipsch R-12SWi 200 12″ Front-Firing 29 – 120 Hz 14″ x 18.5″ x 16″ Sonos Sub Unknown 2 x 6″ N/A Down to 25Hz 15.8″ x 15.3″ x 6.2″ Audioengine S8 125 8″ Down-Firing 27-180Hz 11.25″ x 11.25″ x 11.25″ Amazon Echo Sub 100 6″ Down-Firing 30-200Hz 8.3″ x 8″ (Cylinder) B&W Formation Bass 250 2 x 6.5″ Front/Rear 20-150Hz 11″ x 10.2″ x 10″ RMS* = RMS Wattage * FREQ.** = Frequency Range Best Wireless Subwoofers 1. Klipsch R-12SWi – Our Best Wireless Subwoofer Wattage: 200 (RMS) Driver Size: 12″ Direction: Front-firing What We Like: excellent build quality, Easy to set up, great bass response What We Don't: nothing much Klipsch is renowned for the number of home audio products they offer. From speakers, headphones, amps, subwoofers, etc., their products have gained popularity in the market. The Klipsch R-12swi is one of the best-powered subwoofers around. The sub sounds great, and the wireless connectivity is excellent. Read more in-depth below. The Klipsch R-12SWi comes in a box design like most subwoofers out there. Like most Klipsch subwoofers, the speaker has a copper color that looks very nice. The sub features a 12″ sub driver that is front-firing. A grille is included, which covers the driver for a minimalist look. The subwoofer's build quality is excellent and very well executed. On the back, the subwoofer has a ported design, and you will also find the control knobs, switches, and ports of the sub. To enable wireless connectivity, the Klipsch R-12SWi comes with the Klipsch WA-2 wireless subwoofer kit. The WA-2 can also be purchased separately to add wireless capability to an existing subwoofer. The advantage of getting the sub along with the kit is that it comes pre-paired – you plug it to power, connect to your Klipsch speaker receiver and play. Wireless set up is great, and we did not notice any lag or delays in the sound. Though set up is a breeze, with this sub, you will still have to set crossover and phase to match your current speaker's specs and your preferences(read or crossover and other settings below). The Klipsch R-12SWi is designed to for use in moderate-sized homes. The subwoofer is very powerful, shakes the house with heavy bass, and sounds great. For movies and music, the sub did quite an excellent job of reproducing the low notes. The bass response is clear and thumps with authority. Overall, the bass quality coming out of this sub was impressive. Easy setup, no delay in the sound signal, great bass response are some of the perks that come with the Klipsch R-12SWi. The sub with the included wireless transmitter should work with almost any receiver out there. It might not be the best, but for the price, it is an excellent investment. See The Klipsch R-12SWi Wattage: Unknown Driver Size: 2 x 6″ Direction: N/A What We Like: Clear and deep bass without rattling, easy setup, sharp and beautiful looking piece of equipment What We Don't: Expensive, Works with only Sonos gear When the Sonos wireless subwoofer launched in 2012, it was a boost to the company's range of speaker and soundbars. Back then, the best offerings from Sonos included the Sonos Play 3 and Play 5. Since then, the company's portfolio has grown to have the Playbar, Playbase, and Beam. The sub compliments the Sonos home theatre line-up. Unlike most subwoofers, the Sonos wireless subwoofer comes with a unique design. Like all Sonos devices, the Sonos sub has a minimalist design. The sub has a box shape with a rectangular opening in the center that shows the sub's two 6″ drivers. The overall finish is excellent, and the quality shows it. The sub is available in a black gloss finish or white gloss finish. Apart from the underside of the sub, there are no buttons or imperfections on its casing. The bottom of the sub reveals a power port and an ethernet port. The size of the sub is large, and its weight is 16kg. The major downside of the Sonos wireless sub is that you cannot use it with equipment from other manufacturers. So, if you've got an existing 7.1 home theater setup that is not Sono's, you are out of luck. Other than that, the first set up process is easy. The sub will work with any Sonos speaker and is an excellent supplement to other devices like the Playbase, Playbar, or beam. After a successful setup, you can control the app through the Sonos controller app on your smartphone. Once you install the app, it takes you through the setup process, which is very easy. The downside of the Sonos app is that the interface looks outdated. However, if you get around the outdated design, it is straightforward to use and offers the various sub adjustments to customize it to fit your preferences. To test the sound quality, we used the Sonos sub with a set of Sonos One smart speakers. The Sonos subs add depth to music and movies. Unlike other subwoofers, the Sonos sub does not rattle or vibrate. This is because of the face-to-face positioning of the two speaker drivers, and it results in a very tight and punchy bass. Overall we were impressed with the results. It is effortless to set up and guarantees clear and deep bass response at all times. The downside is that you will need to own Sonos gear to use the sub. A set of Sonos One smart speakers is cheap and should get you started. The only major negative is the price, which is a bit questionable. However, they are high quality and put out clean, undistorted bass when demanded. See The Sonos Sub 3. Audioengine S8 Wireless Subwoofer Wattage: 125 (RMS) Driver Size: 8″ Direction: Down-firing What We Like: Compact, wired option available, good wireless audio adapter What We Don't: Price Audioengine is an American owned company that is renowned for its desktop PC speakers, DACs and amplifiers. One of their most popular speakers is the A5+ wireless, which is regarded as one of the best bookshelf speakers around. After loving some of their speakers and amplifiers, let's see how the S8 subwoofer performed. The Audioengine s8 has a minimalist approach in its design. The subwoofer is compact and has a square shape with beveled edges. The enclosure of the subwoofer is front-ported and features an 8″ down-firing speaker. The sub comes in two colors, white and black, but we prefer the black one. The backside has all the controls and ports of the sub which include volume, phase, and crossover. A 3.5mm input port, RCA, and SVDC offer connectivity options. Though the Audioengine S8 offers a wired connectivity option, the wireless option comes with a wireless audio extender that offers wireless connectivity. The Audioengine W3 Wireless Audio Adapter Kit exists to enable you to play music wirelessly from a computer or any device to Audioengine's speakers, subwoofer, or stereo receivers. To use the Audioengine W3 Wireless Audio Adapter Kit with subwoofer, you will need to plug the sender on your receiver or amp and the receiver part on the subwoofer. Connection with the Audioengine w3 is easy to set up, and there was no noticeable lag. We also tested the W3 adapter kit with a TV and a wireless speaker. The latency was extremely minimal. We tested the sub with different sets of speakers. Once you find the ideal crossover frequency for the sub and a good placement spot, you should be able to hear improvement in the sound quality. Read about the crossover and sub placement below. The bass quality of the S8 is good. However, the bass is not tight like a sealed sub but has a good impact. It is clear and does not sound muddy in any way. At a lower volume (20-25%), you can feel the bass, and it is also pretty loud. Turning it up to over 50% reduce the quality of the bass, but on the brighter side, we don't think you will need to turn it up that high. Overall, the Audioengine S8 comes in a compact size, and an excellent wireless connection option makes it a with the partners. At a price, the sub is not exactly cheap. Though we did not test the sub with Audioengine speakers, we have read the sub works very well with them. For a reasonably sized small area, the sub does a lovely job. See The Audioengine S8 4. Amazon Echo Sub – Best Smart Home-Compatible Subwoofer Wattage: 100 (RMS) Driver Size: 6″ Direction: Down-Firing What We Like: Compact size, budget-friendly sub What We Don't: It only works with Amazon Echo speakers The Amazon Echo Sub is a great idea to improve and get better sound. For smart-home owners who already have the Echo speakers, the Echo Sub is a great addition to bring out the bass out of the system. However, like the Sonos Sub, it is limited to only speakers manufactured by Amazon. Despite this disadvantage, it has several positives an Echo speaker owner will like. The sub comes in a flat top and bottom cylindrical shape, unlike a cube or large box, as generally expected from a subwoofer. The design is similar to the Amazon Echo speakers line. It features the curved edges and a black mesh fabric grille around the sides. However, unlike the Echo speakers, it is only available in black. The sub is a little raised on the bottom side to allow the sub to breathe. A small notch on the lower side has the pairing button and a power connector port. When it comes to connectivity, the options to connect the sub to other speakers are limited. The sub only works with Echo speakers, so you will not hook it to your soundbar, TV, or a third-party speaker. With Echo devices, the sub can pair with the Echo studio, Echo Plus (2nd Gen), Echo (2nd Gen), Echo (3rd Gen), and Echo Dot (3rd Gen). The setup process is designed to be as simple and as fast as possible. However, the set up is also quite tricky, and we repeated the same steps several times before we successfully paired the sub with the Amazon Echo Plus (2nd Gen). All setup is through the Alexa app. If you already have echo speakers, you should first unpair them before you connect the sub. The sound quality of the Amazon Echo Plus (2nd Gen) smart speakers is fine; however, the addition of the Echo Sub does add the bass and overall improve the sound quality. The bass is also well-controlled and feels louder even in a medium-sized room. Overall, anyone with Echo speakers should try the Echo Sub. It is cheaper and improves the overall sound reproduction. See The Amazon Echo Sub 5. B&W Formation Bass Wattage: 250 (RMS) Driver Size: 2 x 6.5″ Direction: Front/Rear-Firing What We Like: compact, dual-ended drivers to reduce distortion What We Don't: Expensive, only works with other B&W Formation products. Bowers & Wilkins launched the Formation wireless multiroom system that comes with something for everyone. The Formation suite comes with the formation bar (soundbar), formation wedge, formation duo, formation flex, formation audio, and lastly, the formation bar. The Bowers & Wilkins Formation Bass is like the Sonos Sub, only works with other products in the formation line. The first thing about the Formation Bass is the shape. While most subwoofers come in cube-shaped enclosures, the B&W Formation Bass comes in a barrel or cask shape. It is not a large subwoofer and comes in black with silver circles on the sides. Everything looks and feels solid and well put together. The shape is like the B&W PV1, which is one of the best subwoofers from the company. We also love the dual-ended driver look, which, as you will learn below, gives an outstanding sound quality. On the underside of the sub, you get a reset button, a volume knob, a power port, an ethernet port, and a service port. Connectivity, like most wireless subwoofers, is a breeze: No crossover setup or phase adjustment. Just plug the sub to a power source connected with Formation speakers, and you are all set. You will need to download the Bowers & Wilkins app for your iPhone or Android device. Once done, setting up the sub is a one-time project. Opposed dual-driver technology, a powerful amp, and a dynamic EQ all work to reproduce a clear, dynamic, and punchy low-end performance. For the size, the bass is pretty good. It is not that loud, but it is ideal for small and medium-sized rooms. Being confined to a specific ecosystem is not something many people would like, especially if you have an existing home theatre equipment. The B&W Formation Bass only works with other B&W Formation products. That, coupled with a hefty price tag, is enough to keep most people away from this wireless sub. If you are already own gear in the B&W Formation, the Formation Bass is a great addition to complete your sound. See The B&W Formation Bass Wireless Subwoofer Buying Advice How do Wireless Subwoofers Work? Wireless subwoofers are a proper way to get rid of the wires in your home theater system. In traditional wired subwoofers, the sound signals and power are passes via wire connections from the amplifier to the subwoofer. However, in a wireless subwoofer, an in-built wireless receiver is required in the subwoofer to receive audio signals from a transmitter. The transmitter can be built-in or physically connected to the preamp outputs of a receiver. However, since power cannot be transmitted wirelessly, a wireless subwoofer will need to be physically plugged into a power source and amplifier. The amplifier is built-in for convenience, thus it becomes a powered subwoofer. Klipsch R-12SWi & 10″ Wireless vs. Wired Subwoofers Most home theater and hi-fi subwoofers come with wired connections. However, most subwoofers that come with soundbars are entirely wireless. A wireless subwoofer has several advantages; however, the main one is they are effortless to set up. Most come ready, and all you need to do is plug the power cord, and you are ready. Although you will still have to figure out where to place the sub, most of the difficulty initial setup is taken out. The downside of wireless subwoofers is not most of them offer better audio quality like wired subwoofers. Also, wireless subwoofers are not entirely wireless, and you will still have to plug them into a power source. Passive vs. Powered/Active Subwoofers Subwoofers fall into two categories, active and passive subwoofers. An active subwoofer is also known as a powered subwoofer and comes with a built-in internal amplifier. A passive subwoofer does not have an in-built internal amplifier and must be driven with an external one. Passive Subwoofers An external amplifier powers passive subwoofers. A subwoofer needs enough power to reproduce the low frequencies with efficiency. Therefore, your receiver or amplifier should be able to supply enough power to the subwoofer. The power requirements of your subwoofer will depend on the watts RMS, impedance, and several other factors. For a passive subwoofer to work well, it should be evenly matched to the amplifier. Correctly matching a subwoofer to your amplifier ensures it is neither underpowered or overpowered. Read more about matching subwoofers and amplifiers at Crutchfield. Active/ Powered Subwoofers Active subwoofers come with an in-built amplifier which solves the problem of improper matching your subwoofer to your amplifier or receiver. An active subwoofer is properly matched, removing the hassle of trying to match them separately. As an added advantage, active subwoofers only require a single cable connection from the source or receiver. Audio Engine S8 Down-Firing Wireless Subwoofer Front-Firing vs. Down-Firing Subwoofers Apart from passive and active, subwoofers are can further be split into two categories: front-firing and down-firing. To figure out which is which comes down to the direction of the driver (the big circular element). If the driver position is in-front, then this is a front-firing subwoofer. A bottom facing driver then becomes down-firing. Because bass/low-end frequencies are non-directional, It will not matter which you pick between the two in terms of the bass quality. However, depending on the placement of a subwoofer, you can choose whichever fits in your home. If you are planning to place your subwoofer underneath your TV, then it is worth investing in a front-firing subwoofer. If you plan to set the subwoofer at a corner or side of the room, a down-firing will do. Read more about the subwoofer placement below. Ported vs. Sealed Subwoofer Enclosures Ported subwoofers have one or more openings on the enclosure, which allows movement of air. Sealed subwoofers have a cabinet that is entirely closed. Both of these two types will have an impact on the reproduction of the bass frequencies. With ported subwoofers, the bass is louder and boomy. Sealed, on the other hand, offer a tighter but sacrifice a little on the volume. Both ported and sealed subwoofer enclosers have their strengths. Deciding on which you will choose will depend on several factors. Room size, overall subwoofer size, playback level, system usage, available floor space, and aesthetic consideration – all contribute to your choice. Below is a summary table of the difference between ported and sealed subwoofer enclosures. Type of subwoofer box Features & Impact Ported box Bass is louder and more boomy, less accurate Larger box size More efficient, doesn't require as much amp power Sealed box Tighter, more accurate bass. Smaller box size Needs more power for louder bass Driver Size Explained The laws of physics dictate that a bigger subwoofer driver has the potential to reproduce deeper bass with higher Sound pressure levels (SPL) compared to a smaller subwoofer driver. However, bass extension and SPL are not the only vital features to measure a subwoofer's performance, and so not all big drivers will perform exceptionally. Other factors to consider when checking the performance of a subwoofer with a driver of any size include speed in transients, accuracy, and the ability to blend with full-range speakers. 12-inches driver size is the most common in subwoofers. However, there are subwoofers with bigger driver sizes than 12-inches. The advantage of bigger drivers is the subwoofer can adequately work in large rooms and will also reproduce serious dramatic bass. However, bigger drivers are also vulnerable to boominess and distortion. Simply put, the bigger the driver, the harder it is to control and therefore offers no guarantee of deeper bass and better SPLs than a smaller subwoofer. BOWERS-&-WILKINS Sealed Subwoofer Design Wattage Explained The discussions around subwoofers mainly revolve around two things, driver size, and power. Because we have already discussed driver size above, let's talk about power. Though there is more that comes with the wattage of a sub, broadly speaking, the more watts a sub has, the louder it will sound without distortion. Therefore, a high wattage amp will cost more than a lower one. In subwoofer wattage, there is RMS (also called continuous), and peak (dynamic). Though both are similar in concept, there are essential distinctions when you start breaking them down. Root Mean Square, abbreviated as RMS and refers to the power a subwoofer can handle continuously. Because RMS refers to the power a subwoofer will handle continuously, it is reflective of the experience a sub will offer most of the time. Subwoofers with around 1000 watts of RMS power are appropriate for most people. However, you can go higher, depending on your budget. Peak power, as the name suggests, is the total power a sub will manage but for a short period. The main words in the previous sentence are "for a short period". Peak power could be experienced during a big bass when watching a movie or a loud note in a song. However, we do not recommend using peak power when choosing a subwoofer. Peak power is mostly higher than RMS, sometimes even five or six times. However, RMS is going to be the better characterization of how your sub will sound mostly. Manufacturers will still advertise peak power as opposed to RMS because they know most consumers are unaware and belive a large peak power handling subwoofer is better. Subwoofer Placement Explained Subwoofer placement has a significant impact on how your system will sound. Properly setting up your subwoofer will not only improve performance, but you will also get to experience quality bass from your subwoofer. Where to place your subwoofer will depend on several factors. The size of your room, shape, and your subwoofer are some of the things you should look out before deciding on the final spot. Mostly, subwoofers are placed in the front corner, or front of the room. However, it is crucial to test various spots for the best sound. Sometimes, subwoofer placement may be limited to only one location. If this is your case, then moving through the room may help you decide the best place to sit. If your home/room has different locations, you can place your subwoofer; then, you can try the 'subwoofer crawl' technique. 'Subwoofer crawl' technique can help you decide the best subwoofer placement location. First, place the subwoofer on your primary listening position. Play a familiar track, and move around the room at/near knee level. While walking around, listen, and evaluate the bass quality. You should be able to pick a location that has a more accurate bass response, place your subwoofer there. The 'subwoofer crawl' technique may seem odd, but it works wonders in helping to determine the best placement location. For wireless subwoofers, the bass quality might reduce under different circumstances. If there is an obstacle between the receiver and wireless subwoofer, it might affect the bass reproduced. A lack of quality bass can also be caused by devices in the room using the same frequency as the wireless connection of the sub. Examples could be microwave, wireless LAN device, or medical equipment. sonos wireless subwoofer Setting Up Your Wireless Subwoofer A subwoofer is easy to set up. Just plug an RCA cable into the back of your sub and out to your receiver or amplifier. Lastly, connect the sub to a power source, and you are done. The first-time connection with wireless subwoofers is straightforward and effortless. Connect the subwoofer to a power source and turn it on. Turn on your wireless receiver, and it should connect automatically to your subwoofer. Setting up a subwoofer can also be complicated and sometimes will depend on the rear panel of the sub. Expensive models might come with a variety of switches and controls that will let you customize the setting for the best bass. Phase and crossover are some of the settings you can manually adjust in most subwoofers. An alternative to a wireless subwoofer is to purchase a wireless subwoofer kit which will convert your existing wired subwoofer to a wireless one through audio transmitters. Subwoofer Phase & Crossover Explained The phase control, which is also referred to as a polarity switch, has a range of 0 180 degrees. Phase in a subwoofer helps by adding electrical delay to the incoming audio signal, which allows integrating the subwoofers in a room better. To set phase, set your subwoofers so that they are facing the same direction. This will enable you to determine better the sound quality coming out of the subwoofers. When listening to music, you may end up without phase subwoofers. When subwoofers are out of phase, the bass cancels out, and you end up with poor bass quality. To help with this, you should flip the phase switch either to 0 or 180 degrees and re-listen to the quality of sound, and you are done. With phase try experimenting between 0 and 180 degrees. One may sound excellent than the other, depending on your gear and room. Pick whichever sounds better. The crossover frequency of a subwoofer is the frequency at which the speakers start

rolling off, and the subwoofer takes over with bass notes and LFEs. Based on the capabilities of your subwoofer, most receivers and amplifiers have an auto EQ that automatically adjusts the crossover frequency. If your system does not have an automatic EQ that adjusts the crossover, then you can manually do it yourself. For example, if your speaker set has a frequency range of 80Hz – 20kHz. It means the crossover point needs to be set at 80Hz. This is the point your speakers will not be able to produce sound, and the subwoofer takes the wheel. Lastly, adjust the volume until you cannot hear the bass. Then slowly increase the volume to comfortable listening level and stop. You are done setting up your sub. Amazon Echo Bundle How Many Subwoofers Do You Need? In some cases, it is better to have more than one subwoofer. Common subwoofer configurations are two and four. The bass quality will improve, but you run the possibility of masking other sounds if they are not set correctly. When getting a new subwoofer, it should not be to add the intensity of the bass. The key thing is to improve the bass quality and to distribute it better throughout a room. Two, three, or even four subs when properly positioned not only reduce room resonancess, but as a user, you will have multiple listening positions around a room. Back to Our Best Wireless Subwoofer Picks Back to Our Comparison Table Most often only seen in SPL competitions, the sixth & eighth order bandpass and Quasi-sixth & Quasi-eighth order bandpass enclosures can offer a GREAT deal of SPL in a "relatively" small enclosure if built "dead on balls accurate", but often (expletive removed) at reproducing anything worth listening to in the mobile enviroment. Unless precisely constructed, the end result is almost guaranteed to be a waist of time, money, and effort. Don't let my opinions stop you from trying. Remember, it doesn't matter what I like, or for that matter, what anyone else likes. It only matters what you like. So if you're feeling ambitious, and want something that has the potential of being incredibly loud, go for it, but keep the following in mind and please do not email me if you waist a few hundred dollars or more on lumber, hardware, and replacing blown woofers. The only response you'll get from me is "I told you so." Enough of my rambling (heh). Here's what you should know. The enclosure's performance is limited to a very narrow bandwidth of frequency response and can be extremely complex to build correctly. Woofers are very susceptible to cone over-excursion for frequencies outside of their operating region (specifically when they unload below the tuned port frequency). For this reason alone a high quality electronic crossover should be used with a 24 dB per octave cut-off slope or higher and each woofer should be fused appropriately. It is unlikely that you will be able to hear when a woofer in these enclosures is about to turn into a paper weight, but once you do notice it, it's probably too late. And now if you haven't made the enclosure so it's easy to change the woofer, you're probably wishing that you never decided to build it in the first place. The transient response of a sixth order enclosure is worse than any other enclosure with the exception of an eighth order enclosure. The power handling is excellent within the bandpass region and SPL can be intense. This is what makes these a great choice for some SPL competitors, but for everyday listening, they are less than desirable. So why did I make this page about sixth and eight order enclosures? Mainly so you can recognize these enclosures and perhaps if you happen to see any in use, you'll have some appreciation for the effort that went in to the design and construction of them. I take my hat off to those that have done it correctly, but as you can tell, these are not enclosures that I feel are worth trying to incorporate into a mobile enviroment. For the amount of space, time, money, and effort it takes to build any of these enclosures, you can more easily build enclosures that are more suitable for everyday listening and that can be just as competitive. Below are several examples of sixth and eighth order enclosures. Sixth Order Enclosures Sixth Order Enclosures Eighth Order Enclosures Eighth Order Enclosures