UNDERSTANDING HOW SPEAKERS WORK
Founded in 1972, Jam Industries Ltd. began operating in Montreal under the trade name of Erikson Music as an importer/distributor of musical instruments and accessories, with sales of less than $1 million. In the 1980s Jam Industries widened its scope with the formation of Korg Canada and Erikson Pro Audio allowing greater focus on important Marketing areas. In April 1986, Jam industries purchased Coast Wholesale Music Ltd. and proceeded to transform this Western Canadian company from a regional distributor into a full-fledged national marketing and sales force.

Into the 1990s the company further expanded its Pro presence by creating two divisions; Erikson Pro and Erikson Audio, each with specific expertise addressing lighting contractors, installed sound, touring sound, broadcast, recording etc. As well Jam ventured into the consumer electronics industry in the early 90’s, with a newly founded division - Erikson Consumer. The largest division of Jam Industries, Erikson Consumer’s enormous growth necessitated that it be divided into 3 distinct subdivisions: Home, Mobile, and Multimedia. The most recent addition of American Music & Sound has enabled Jam industries to emulate their business strategies in the United States.

With over thirty-five years of experience, today Jam Industries is a unique distribution network made up of 10 divisions that serve markets ranging from musical instruments to consumer electronics, with sales exceeding $200 million.

**THINGS TO REMEMBER**

- Jam Industries was founded in 1972
- Sales from its 10 divisions exceeds $200 million
- Erikson Consumer is the largest division of Jam Industries
Erikson Consumer Home distributes a select group of audio products including home theater, mobile audio/video, and custom products which can be found in national and regional CE chains, department stores, furniture and appliance chains, and specialized independents. Products distributed include home theater receivers, speakers, CD and DVD players, custom electronics and computer speakers. Renowned brands include Harmon/Kardon, JBL, Infinity, Arcam, Nuvo Technologies, and many more. Erikson Consumer also designs and manufactures a wide variety of unique loudspeakers for many different customers. We constantly conduct market research to evaluate our position and that of our competitors within the loudspeaker market in Canada. Erikson's multiple loudspeaker lines approximate account for a 20% market share, making us the largest speaker manufacturer/distributor in Canada BY FAR, no one even comes close.

**THINGS TO REMEMBER**

- Erikson Consumer distributes renown brands such as Harman Kardon, JBL, Arcam, Sirius, Nuvo Technologies and many more.
- Beyond distributing, Erikson Consumer designs and manufactures loudspeakers.
- Erikson's lines have a 20% market share, more than anyone else by far.
We develop a partnership with our clients aimed at long term success and we need to understand their needs in order to develop the products and offer the service they require. The New Product Development process starts with in-depth discussions with our clients to achieve an understanding of what will work on their sales floor.

One speaker line does not fit all and there are radical differences in requirements from client to client based on their current product mix and what they want...big, small, lifestyle, retro, contemporary, flat friendly, lots of choices, focused selection, finishes, type of sound or price points. Only when we have a clear understanding of the desired product, such as the target pricing, acoustic goals and cosmetic goals does design begin.

When this information is gathered, it is studied by the NPD team which includes our own engineer, David Aggerholm, one of the most respected engineers in the world today. David had his own company and designed Angstrom speakers, one of the best reviewed speakers companies of its time, and has worked as a consultant for many speaker manufacturers. Not only does he design the drivers, crossover, and cabinets but he oversees every step in the production process.

Although manufactured in China, every element of the speaker is designed by us and is completely unique in the marketplace. We do not purchase "off the shelf drivers" and hope they work in the given cabinets, every single driver in every single Erikson Consumer speakers are unique to the brand and cannot be found in any other speaker, however as vehicles of German engineering. All speaker brands developed by Erikson are completely designed top to bottom in Canada by Canadians.

KEYS TO SUCCESSFUL LOUDSPEAKER DEVELOPMENT

Erikson can attribute the success in developing loudspeakers to:

- Developing a given series based on the specific needs of our client.
- Strong new product development and engineering team.
- Every element of every speaker is completely unique and will not be found in another speaker.

THINGS TO REMEMBER
Canada has a long, storied history when it comes to speaker development. In the late 1970 to early 80’s, the National Research Council conducted double blind listening trials with more than 330 speaker designs and 2000 listeners from a broad demographic spectrum. The extraordinary results of this research were an enormous surprise not only to the industry but also to “audio experts” around the world. What was learned is still applied by engineer David Aggerholm and new product development manager Jason Zidle today.

It had always been assumed that listeners had many different preferences for sound but the startling results of the testing showed that 97% of the trial participants consistently selected the performance of a small group of similar sounding speakers as their top choices. What this data revealed was that anyone, regardless of their “audio” inclination and experience, can choose a superior speaker, and secondly, that speaker preference does not depend upon musical tastes. Based on the results of the NRC research, engineers determined that there were three characteristics common to the speakers that consistently achieved high scores in the listening trials. It was determined that listeners preferred speakers that could produce the whole range of frequencies equally efficiently (Wide bandwidth with a flat response), both on and off axis (wide dispersion), clearly

KEYS TO NATIONAL RESEARCH COUNCIL

Canada is a world leader in loudspeaker development

- Characteristics common to all Erikson Consumer speakers include:
  - Low distortion,
  - Wide bandwidth,
  - Flat response both on and off axis.

THINGS TO REMEMBER
Flat Response Graph
This is a graph (figure 1) of a speaker displaying a flat response. The line is consistently flat from the bottom of its range through to the top of its range, which tells us that no range of frequencies is more pronounced than another. All high, midrange, and bass frequencies are played with equal efficiency.

Non Flat Response Graph
This is a graph (figure 2) of a speaker displaying a frequency response that is not flat. The various peaks and valleys tells us that certain frequencies are pronounced, in the case of the peaks, and less pronounced in the case of the valleys. Therefore, high, midrange, and bass frequencies are not played with equal efficiency.

Wide Bandwidth Graph
This is a graph (figure 3) of a speaker displaying a wide bandwidth. The line on the graph extends from the far left at about 20Hz, displaying very low frequencies being played, right up to 20kHz, the maximum of high frequencies discernible to the human ear. Therefore, this speaker can produce the full range of frequencies.

Narrow Bandwidth
This is a graph (figure 4) of a speaker displaying a narrow bandwidth. The line on the graph only begins at 100Hz, meaning it is incapable of very low frequencies being played, and ends at about 5K, meaning it doesn't play high frequencies very well. Therefore, this speaker cannot produce the full range of frequencies.
Understanding How Speakers Work
There are a variety of different types of speakers boasting various types of technologies, though their ultimate function is the same; displace air to create sound. Whether the speaker is of dynamic driver design, the most popular speaker design, or planar, meaning electrostatic or ribbon design, their common goal is to move the air and make music. Since 99% of the available speakers on the market and all of speaker produced by Erikson Consumer are dynamic driver systems, we'll focus specifically on how they work.

- A dynamic driver speaker uses the traditional driver array of woofers for low frequencies, tweeters for high frequencies, and perhaps midranges in a three-way speaker design.
- An electric signal from the amplifier travels to the speaker through the speaker wire.
- This signal creates a magnetic field around the voice coil.
- The voice coil is located within the ring of the driver’s magnet.
- The signal flowing through the voice coil creates another magnetic field.
- This created field forces the driver to move back and forth.
- The movement of the driver creates the sound.
Woofer and Midrange
The woofer is normally the largest driver in a speaker cabinet and it is designed to produce the low frequencies, like those associated with a bass or drum for music or thunder and explosions in home theater. A midrange looks just like the woofer but is typically smaller. The midrange band of frequencies produces the sounds to which the human ear is particularly sensitive, like vocals in music and dialog in home theater.

THE WOOFER AND MIDRANGE HAVE VIRTUALLY IDENTICAL COMPONENTS, HERE ARE THE KEY PARTS

- **Magnet**: The donut shaped magnet surrounds the pole piece to create a magnetic field.
- **Voice Coil**: The voice coil is made of two parts: The cylinder or former, which fits over the pole piece, and the copper wire wound around it. It is the driving element of a dynamic driver. Electrical current through the wire creates a magnetic field that interacts with the fixed field of the magnet, causing the voice coil assembly to move.
- **Pole Piece**: Part of the magnet assembly, the voice coil fits over the pole piece.
- **Spider**: A ridged, material suspension that holds the voice coil in place and provides linear motion.
- **Cone**: The conical shaped diaphragm that physically moves the air to produce sound. It is suspended at its periphery by a surround and at its neck by a spider.
- **Surround**: The compliant suspension at the outer edge of a cone that permits it to move.
- **Basket**: The framework of a dynamic driver.

**Erikson can attribute the success in developing loudspeakers to:**

- Developing a given series based on the specific needs of our client.
- Strong new product development and engineering team.
- Every element of every speaker is completely unique and will not be found in another speaker.
Tweeter
A tweeter actually works in the same way as a standard dynamic driver even though we don’t see it move. But, like a dynamic driver, it does, and many of the parts used in a dynamic driver are also used in a tweeter. It’s smaller size and capacity for generating immense heat created the need for some basic differences in the parts, though many are the same.

- **Dome**: Where a driver uses a cone, the tweeter usually uses a dome. This is the portion that moves air.
- **Ferrofluid**: This magnetic fluid sits in the gap between the pole piece and the voice coil. It helps to cool the tweeter.
- **Cloth Suspension**: This helps suspend the tweeter and eliminate resonance.

**THINGS TO REMEMBER**
- A tweeter produces high frequencies, like the sound of cymbals.
- A tweeter’s frequency range is usually from about 2kHz up to 20kHz.
- Tweeters are usually dome shaped.
Crossover
The incoming signal from the amplifier is full range, meaning it contains high, mid, and low frequencies. The crossover is the “electronic brain” of the speaker that designates which driver should play which frequency range. The two terms most commonly associated with crossovers are crossover point and slope. The crossover point describes the specific frequency that one driver’s job ends and another begins. For instance, a crossover point of 3.5kHz in a two way system means that the woofer can handle all low frequencies up to 3.5kHz, and the tweeter picks up from the 3.5kHz mark and plays all frequencies from there and up. The intersection of the two lines (figure 5) is the crossover point. The steepness of the lines is referred to as the slopes. This steepness is measured in db/octave. This measurement dictates how the crossover design will be described and can be seen in the list below. The steepness of the lines is referred to as the slopes. This steepness is measured in db/octave. This measurement dictates how the crossover design will be described and can be seen in the list below.

<table>
<thead>
<tr>
<th>Crossover Point</th>
<th>Where the crossover splits the frequencies to assign them to specific drivers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slope</td>
<td>The measured steepness of the crossover filter.</td>
</tr>
</tbody>
</table>

**CROSSOVER DESIGN**
- First order crossover
- Second Order
- Third Order
- Fourth Order

**SLOPE**
- 6 dB/Octave
- 12 dB/Octave
- 18 dB/Octave
- 24 dB/Octave

**THINGS TO REMEMBER**
- A crossover directs the given frequencies to the designated drivers.
- Crossover designs are differentiated by their order, or slope steepness.
The shape and quality of construction of the cabinet has a very big influence to the overall sound. The materials and machines used to create the cabinet, as well as the research and development, can make it the most expensive component of the speaker.

A common test of the average speaker shopper is to knock on the side or top of the cabinet and listen to the resulting sound. This is actually a decent test of the construction. A quality speaker will produce a duller sound and give the impression that you are knocking a solid, well-built speaker. A hollow sound means that the enclosure is not built solidly enough.

There is pressure built up in the cabinet while it plays, the result of the driver’s motion. This pressure must be controlled or the cabinet will flex while it plays, allowing the cabinet itself to create music. The combination of the sound generated from the flexing cabinet and drivers results in reduced clarity and a change in the musical notes. Sound is also generated within the cabinet and can be problematic for many of the same reasons as a flexing cabinet. Unless the interior sound is controlled, the speaker can have a smeared, echo-like sound. This ricocheting sound is called standing waves.

Many Erikson Consumer speaker cabinets are made of very solid inert Medium Density Fiberboard. Our manufacturing facilities allow us to create many speaker building techniques to use the MDF to its maximum potential and create solid, flex-free cabinets. The cabinet is then lined with damping material, which can be fiberglass or a similar material. The damping material absorbs the ricocheting sound, eliminating the sonic disturbances caused by standing waves.

**THINGS TO REMEMBER**

- The shape and quality of construction of the cabinet has a very big influence to the overall sound.
- The pressure built up from the drivers can cause a cabinet to flex.
- Speaker cabinets should be constructed solidly or they can produce music altering distortion.
Types of Speakers

Erikson Consumer designs and manufactures a wide variety of different speakers to suit various markets, applications, and personal tastes. There is a speaker available from Erikson Consumer to suit every customer’s needs, from a large speaker designed to rock the biggest home theater to one created for listening enjoyment while relaxing on a patio. In order to make a sale you must understand your customer’s needs to know what speaker will best suit their application. In order to do so, it is very important to understand the different types of speakers that are available today.

Tower Speaker
These are large, floor-standing speakers that typically have multiple drivers. Large speakers are usually used as the main channels in a surround sound system or as the only speakers in a stereo system.

In-Wall Speaker
This type of speaker doesn’t have a cabinet, just a flat front baffle, so it can be integrated into a wall by simply passing the wire and cutting a hole in the wall. These speakers are popular in the custom installation world where people want to hear and not see their speakers. An In-wall speaker is typically rectangular, an in-ceiling speaker is circular.

Center Channel
This is the speaker that sits above or below the television in a home theater set-up. It’s called the center channel because it sits in the center, between the left and right channels.

Surround Speaker
This is a speaker that was specifically designed to act as the surround channel in a home theater system. As such, it is small and typically shallow so it doesn’t draw attention to itself. Sometimes simple bookshelf speakers are used as surround speakers.

HTIB
Stands for Home Theater in a Box. This normally means 5, 6, or 7 satellite speakers and a subwoofer are included in one package.

Multimedia Speakers
Speakers that can be connected to a computer. Because they are connected to a computer and not an amplifier, they have built in amplification and volume controls.

Bookshelf Speaker
These speakers are usually no taller than about 18 inches. Despite their name, they are not necessarily only put in bookshelves, they can be placed on stands or wall mounted. Because of this versatility, they are typically used as the rear channels of a surround system or as the second pair in a multi-room system.

All Weather
These speakers are designed to withstand the weather for outdoor use, or can be used in the house in areas of high humidity, like the bathroom, kitchen, or solarium. They usually have a hard plastic cabinet to

Subwoofer
Subwoofers are speakers that sit on the floor and only play low bass frequencies. They are the .1 in 5 (or 6 or 7, etc) in 5.1 systems. Subwoofers are typically powered, meaning they have built in amplifiers.

Powered Tower
Some large, tower speakers have built in subwoofers to produce extremely deep, powerful bass and relieve the need for a separate subwoofer in a system. These speakers usually have the subwoofers mounted on the side of the cabinet.

Satellite
These are the smallest speakers available, usually with a driver no larger than 3 or 4 inches. They can be found in most 6 piece speaker systems, accompanied by a subwoofer to produce the low frequencies.

Plasma Speakers
A generic term for any speaker system that would look acceptable next to a flat panel television.
Understanding the Statistics

All speakers will come with a list of specifications describing their basic characteristics. These statistics are highly important to the consumer who sees these numbers as the only form of measurement from one speaker to another so it is vital to understand them. The following is the standard list of specifications normally associated with speakers.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Type</td>
<td>Bass Reflex</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>35Hz-22kHz, +/- 3dB</td>
</tr>
<tr>
<td>Tweeter</td>
<td>1&quot; (25mm) Dome</td>
</tr>
<tr>
<td>Midrange</td>
<td>5.25&quot; (130mm) Polypropylene Cone</td>
</tr>
<tr>
<td>Woofer</td>
<td>Two 8&quot; (203mm) Polypropylene Cones</td>
</tr>
<tr>
<td>Crossover Points</td>
<td>3 kHz</td>
</tr>
<tr>
<td>Room Efficiency</td>
<td>91 dB</td>
</tr>
<tr>
<td>Impedance</td>
<td>8-ohms</td>
</tr>
<tr>
<td>Recommended Amplifier Power</td>
<td>10 to 200-watts RMS/Channel</td>
</tr>
<tr>
<td>Inputs</td>
<td>Gold-Plated, 5 way Terminals</td>
</tr>
<tr>
<td>Weight</td>
<td>51.7lb (23.5kg)</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>in. 39 ¼ x 9 ¼ x 13 13/16</td>
</tr>
<tr>
<td></td>
<td>cm. 100 x 25 x 35</td>
</tr>
<tr>
<td>Finishes</td>
<td>Cherry, Beech, Black Ash</td>
</tr>
</tbody>
</table>
### Speaker Type

**SYSTEM TYPE: BASS REFLEX**
This refers to the cabinet enclosure having a tuned port, sometimes referred to as a vented cabinet. Another common system type is called acoustic suspension sealed enclosure, which means there is no port.

**FREQUENCY RESPONSE: 35HZ-22KHZ, +/- 3DB**
This refers to the cabinet enclosure having a tuned port, sometimes referred to as a vented cabinet. Another common system type is called acoustic suspension sealed enclosure, which means there is no port.

- **35Hz - 22KHz, +/- 3dB**
  The first number indicates how deep the speaker can play, and a lower number is preferable than a higher one. In our case, the speaker can play as low as 35Hz, which means it would play frequencies deeper than a speaker rated at 40Hz, but not as deep as a speaker that can play at 30Hz. The **Hz** stands for hertz, a standard of measurement for low frequency sound. An average person can hear sound all the way down to about 20-25Hz.

- **35Hz - 22KHz, +/- 3dB**
  The second number indicates how high the speaker can play, so a higher number is preferable than a lower one although this specification will rarely exceed 20kHz. In our case, the speaker can play as high as 22kHz. The **kHz** stands for kilo-hertz, a standard of measurement for high frequency sound. An average person can hear sound all the way up to about 20-22 kHz.

- **35Hz - 22KHz, +/- 3dB**
  The final number indicates the accuracy of the measurement, in this case +/-3db. Without this statistic, a measurement is useless because it doesn’t indicate if this frequency is being played as strongly as the others, or even strong enough to be heard. **3dB** means three decibels, an increment of sound measurement that normally accompanies a frequency response. A lower number is fine, but anything higher is not. A higher number, such as 20db, could mean that the frequencies indicated on the frequency response may only be played loud enough for a dog to hear. This doesn’t mean that the speaker will play nothing; it will in fact play a large range of frequencies, but will not play them all at the same strength.

**TWEETER: 1” (25MM) DOME**
The 1” (25mm) tweeter is the small driver that is responsible for reproducing frequencies above approximately 3 kHz.

**WOOFER: TWO 8”(200MM) POLYPROPYLENE CONES**
The driver that is responsible for reproducing bass frequencies below about 500Hz. Polypropylene refers to the material used to manufacture the cone.

**MIDRANGE: 5.25” (130MM) POLYPROPYLENE CONE**
The driver most commonly used in three way speakers that is primarily responsible for producing the middle frequency range, from about 500 Hz to almost 3kHz. Most voices fall into this range, making our ears very sensitive to midrange performance. Polypropylene refers to the material used to manufacture the cone.
CROSSOVER POINTS: 500HZ, 3 KHZ
This is the frequency where two outputs of a crossover meet. The speaker in our example is a three way design, meaning that there is a tweeter, midrange, and woofer. Each driver can cover a specific range of frequencies but must eventually concede and allow a different driver to cover the remaining range. In this case, 500Hz indicates that the woofer, which we saw from the frequency response is capable of playing all the way down to 35Hz, covers the range up to 500Hz, where the midrange takes over. The midrange then plays from 500Hz all the way up to 3kHz. The tweeter takes over from there, playing all frequencies from 3kHz up.

ROOM EFFICIENCY: 91 DB
Efficiency, measured in db which stands for decibels, is the ratio of acoustic output power to electrical input power. Room efficiency measures how loud a pair of speakers can play in a room with a given input. The higher the number, the louder it can play.

IMPEDANCE: 8-OHMS
This represents the resistive and reactive load that a speaker presents to the amplifier driving it. Anything in the 4-8ohm range is acceptable. A rating lower than 4 ohms means the speaker is difficult for the average amplifier to drive efficiently and causes it to work harder. A rating higher than 8 means the amplifier doesn’t need to work hard at all but could actually have too much power to be played at higher listening levels.

FREQUENCY RESPONSE: 35HZ-22KHZ, +/- 3DB
This refers to the cabinet enclosure having a tuned port, sometimes referred to as a vented cabinet. Another common system type is called acoustic suspension sealed enclosure, which means there is no port.

AMPLIFIER POWER: 10 TO 200-WATTS RMS/CHANNEL
This is a suggested range of wattage that a receiver or amplifier should have in order to efficiently drive the given speaker. In this case, the speaker in our example should be connected to an amplifier capable of generating from 10 to 200 watts to maximize its performance.

INPUTS: GOLD-PLATED, 5 WAY, BI-AMP/BI-WIRE TERMINALS
The inputs describe what type of connections will be found on the speaker. Gold plating is advantageous because it is a good conductor. 5 way describes the binding posts being used. In this case, they are good quality banana plugs that accommodate a variety of connection options. Bi-amp/Bi-wire terminals means that there are two sets of these binding posts to allow bi-amplification or bi-wireability.

WEIGHT: 51.7LB (23.5KG)
The weight of the speaker itself.

The exterior measurements of the speaker

FINISHES: CHERRY, BEECH BLACK ASH
The availability of the product in different colors.
Glossary
There are a variety of other terms you will encounter so here’s a glossary as a reference for your growing audio/video vocabulary.

**Acoustic Suspension**
A type of speaker that uses a sealed enclosure in which the air trapped behind a woofer provides its restoring force. This system is known for tight bass and low distortion.

**Baffle**
A panel on which speaker drivers are mounted.

**Bass Reflex**
A vented enclosure in which a woofer’s back wave emerges through a port to reinforce low frequency output.

**Biamping**
The use of separate amplifiers to drive the low and high frequencies of a loudspeaker. Biamping is possible with speakers equipped with two sets of binding posts.

**Bipolar**
A speaker with drivers mounted on the front and rear of the cabinet, radiating in phase to create a large spherical soundstage. This type of design is popular for rear surround speakers.

**Biwiring**
The use of a separate set of wires between the amplifier and the high and low frequency inputs on a speaker. This can be done to all our products equipped with two sets of binding posts, which include all our floor standing speakers.

**Cone**
A diaphragm shaped in the form of a cone suspended at its periphery by a surround and at its neck by a spider. Most cones are made of special compounds, like polypropylene, to achieve optimum performance in a given speaker design.

**Crossover**
Electrical filters that divide the audio spectrum into two or more frequency bands for distribution to different drivers.

**Crossover Point**
The frequency where two outputs of a crossover meet.

**Db (decibel)**
A standard of measurement used to compare the power differences in sound pressure.

**Damping**
The way any object ceases to vibrate after the driving force has been removed. Damping material is used in our speakers to eliminate interior waves.

**Diaphragm**
The moving element in a driver (commonly known as the “dome” or “cone”) that is primarily responsible for generating sound waves.

**Diffraction**
A phenomenon that causes wave propagated energy, such as sound, to change direction when reaching a sharp edge.

**Dipol**
A speaker with front and rear mounted drivers that radiate out of phase.

**Dispersion**
The degree of sound spread out over the listening area.

**Distortion**
Unwanted noise in the audio signal.

**Dome**
A diaphragm shaped in the form of a dome suspended at its periphery, commonly used in tweeters. All Infinity tweeters are dome shaped.

**Driver**
A single sound generating device in a speaker, like a woofer, midrange or tweeter.

**Dynamic Range**
The difference between the smallest and largest signals.

**Efficiency**
The ratio of acoustic output power to electrical input power.

**Ferrofluid**
A magnetic and thermally conductive liquid used to maintain a driver’s cool operating temperature by conducting heat from a voice coil to the magnet structure. This is used in all Infinity tweeters.

**Flat Response**
The reproduction of sound without emphasizing any part of the range.

**Frequency Response**
Describes the uniformity of acoustical output as a function of frequency expressed in terms of a range in hertz and the maximum deviation in decibels over that range.

**High Pass**
A filter that lets the high frequencies go through while cutting low frequencies.
Biamping
The use of separate amplifiers to drive the low and high frequencies of a loudspeaker. Biamping is possible with speakers equipped with two sets of binding posts.

Hz
Cycles per second, normally seen as a measurement for low frequencies.

Imaging
The ability to reproduce sound accurately enough that the listener can imagine the true source is there.

Impedance
The resistive and reactive load that a speaker presents to the amplifier driving it.

Infinite Baffle
A long and wide board, like a wall, that prevents a speaker’s rear emanating sound from reaching the front without affecting the compliance of the moving system.

KHz
Kilohertz, represents higher frequencies.

Line Level
The RCA connection sent to a subwoofer. This level is too low to power a speaker and usually requires a self amplified product.

Low Pass
A filter that lets the low frequencies through but cuts the high frequencies.

Midrange
The driver most commonly used in three way speakers that is primarily responsible for producing the middle frequency range, from about 500 Hz to almost 3kHz.

Near Field
The region sufficiently close to the speaker that direct radiation predominates and reflected sound has minimal sonic influence.

Octave
The difference in frequencies where one is twice the other. 200Hz is an Octave higher than 100Hz.

Diffraction
A phenomenon that causes wave propagated energy, such as sound, to change direction when reaching a sharp edge.

Ohm
A measure of the electrical resistance.

Passive Radiator
A diaphragm mounted on the surface of a speaker enclosure and driven by the sound pressure created by the active driver within the cabinet rather than electrically with a voice coil. A passive radiator performs a function similar to a port.

Phase
The time relationship between two signals.

Port
In a vented enclosure, this is the opening that tunes the bass or mid-bass frequencies.

Q
The magnification of the resonance factor of a device.

RMS
Root Means Square, the average power output.

Sensitivity
Related to efficiency, speaker sensitivity is specified in terms of the sound pressure level (SPL) in decibels, generated at a specific distance from the speaker when a specified signal level is applied.

Slope
The boost or attenuation expressed in decibels of change per octave.

Spider
The part of a driver that suspends the diaphragm.

SPL
Sound pressure level.

Subwoofer
A driver designed to reproduce the lowest frequencies. Or, an active or passive speaker designed to reproduce the lowest frequencies.

Surround
A compliant suspension at the outer edge of a diaphragm.
Glossary

**Surround Speaker**
A speaker used in home theater, placed at the rear of the room that reproduces ambient or surround sound effects.

**Transducer**
A synonym for driver, it’s a single sound generating device in a speaker, like a woofer, midrange or tweeter.

**Treble**
The higher part of the frequency range, from about 3K and up.

**Tweeter**
The driver that is responsible for reproducing treble frequencies above approximately 2 kHz.

**Voice Coil**
The driving element of a dynamic driver. A coil of high quality copper wire, wound on a “former”, physically connected to the diaphragm and immersed in the magnetic field within the gap of a magnet assembly. Electrical current through the wire creates a magnetic field that interacts with the fixed field of the magnet, causing the voice coil assembly to move.

**Woofer**
The driver that is responsible for reproducing bass frequencies below about 500Hz. The woofer is normally the largest driver in a speaker cabinet and it is designed to produce the low frequencies, like those associated with a bass or drum for music or thunder and explosions in home theater. A midrange looks just like the woofer but is typically smaller. The midrange band of frequencies produces the sounds to which the human ear is particularly sensitive, like vocals in music and dialog in home theater.