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MartinLogan Neolith Review

Review by Theodore Nicolakis of Audioholics.com



The MartinLogan Neolith has the largest electrostatic transducer in the company's rich history

Introduction

In the 1970s, Gayle Martin Sanders and Ron Logan Sutherland met in a high-end audio store that Sanders managed in Lawrence, Kansas. While both were fans of electrostatic speakers, none of the existing models had hit the mainstream with any success. They were convinced that they could do better. The pair felt they could overcome some of the technical challenges

plaguing electrostatic speakers and produce a speaker that could reproduce all genres of music well—not just the niche genres electrostatics were famous for.

After a series of failures, the team that Sanders had assembled began experimenting with new aerospace materials. The breakthrough of those newer materials along with a horizontally curved panel (a design

Sanders envisioned) led to the development of a concept that they exhibited for the first time at the 1982 Consumer Electronics Show in Chicago.

A year later, that concept gave birth to the Monolith, the first full-range electrostatic loudspeaker developed by MartinLogan, the company that now bore the middle names of both founders. Since the early 1980s, MartinLogan has become a household name in high end audio. Unlike the towering design of the original Monolith, MartinLogan's subsequent hybrid electrostatic speakers have become smaller in both size and amplification requirements.

The Neolith: Sources of Inspiration and Innovation

Like all legendary audio companies, MartinLogan is proud of its heritage. As the company's 30th anniversary approached, they wanted to do something truly special to commemorate that milestone. MartinLogan reached out to dealers and customers to see what they envisioned in a cost-no-object speaker. At the same time, designers and engineers looked back on the company's product history and began to focus back on both the iconic simplicity of the original Monolith and the performance of the acclaimed Statement Evolution 2. After nearly three years of development, the Neolith (aka, the new Monolith) was born. The Neolith was unveiled for the first time at the 2014 Munich High End show as a testament to MartinLogan's audio legacy as well as its drive and ability to construct the best electrostatic speaker in the company's 30+ year history.

While the Neolith is very much familiar, it's also radically unique. The hybrid design features a massive 22x48-inch CLS Stat

electrostatic transducer which acts as a midrange/high frequency driver. For those keeping track, that represents a radiating surface that's 35% larger than the Statement Evolution 2, and the largest electrostatic panel that the iconic company has ever produced. Below the electrostatic panel is an enormous 15-inch rear-firing ported woofer and 12-inch front firing sealed mid-bass woofer. Altogether, this system is rated to deliver accurate, authoritative bass down to 23Hz. In other words, excepting the lowest organ notes, subwoofers need not apply.

What is very atypical and even novel with the Neolith is its design: it's fully passive. No, that's not a misprint. Unlike all other MartinLogan electrostatic speakers which have active components, the Neolith is fully passive from top to bottom. If you look at the Neolith you won't get that impression. It has a power cord like all MartinLogan electrostatics, but on the Neolith, the power cord serves only a single purpose—to charge the electrostatic panel, nothing more. MartinLogan deliberately made the Neolith a passive design so that audiophile customers could pair whatever high-performance solid state or tube amplifiers they wanted for single or bi-amping the Neolith.

In keeping with MartinLogan's signature look, the Neolith has MartinLogan's proprietary curvilinear electrostatic transducer. Like other MartinLogan electrostatic speakers, the Neolith controls the dispersion of the audible



MartinLogan's original electrostatic loudspeaker, the Monolith, was launched in 1983.

Review Summary

Manufacturer:

MartinLogan Neolith

Overall Rating: **5/5 Stars**

Value Rating: **4/5 Stars**

MSRP: **\$80k pair**

<http://www.martinlogan.com>

Pros

- Superb bass extension to die for
- Huge soundstage
- Exquisite build quality
- Ability to fine-tune bass and crossover in the speaker

Cons

- Expensive
- Huge footprint
- Require lots of amplification to make them sound their best
- Require a medium to large room



Neolith Standard Color Options

The Neolith comes in seven standard color options but can also be custom-color matched to any color.



The Neolith's power cord simply polarizes the electrostatic panel. Otherwise, the Neolith is a fully passive speaker allowing audiophiles to use any amplifier of their choice to power the Neolith.

Specifications

Neolith Speaker Specifications

Frequency Response: 23–22,000 Hz \pm 3dB

Horizontal Dispersion: 30°

Vertical Dispersion: 48" (122 cm) line source

High Frequency Transducer:

XStat™ CLS™ electrostatic transducer

Panel Dimensions: 48" × 22" (121.9 × 55.9cm)

Radiating Area: 1056 in² (6,814 cm²)

Low Frequency Transducer

Rear: 15" (38.1cm) cast basket, high excursion, rigid aluminum cone with extended throw drive assembly. Extensively vented triple shorting ring motor and 4-layer coil to eliminate compression and distortion.

Front: 12" (30.5cm) round cast aluminum alloy frame, high excursion, rigid carbon fiber sandwich cone with long throw design, 3-inch (7.5cm) diameter copper-clad aluminum flat wire voice coil, and vented pole piece and under-spider opening to reduce power compression.

Sensitivity: 90 dB/2.83 volts/meter

Impedance: Nominal: 4 ohms, 0.43 ohms @ 20 kHz.
Compatible with 4, 6, or 8 Ohm rated amplifiers.

Recommended Amplifier Power: 20-1300 watts per channel

Crossover Frequency: 60, 250-400 Hz

Components: High-Pass Crossover: 1% resistors mounted to heat sinks, polypropylene capacitors, air core inductors, dual toroidal audio transformers to drive electrostatic element **Low-Pass Crossover:** 1% resistors mounted to heat sinks, toroidal inductors, supports user options to modify sound output via jumpers

Audio Controls: Bass Control: 0dB, -4dB, -8dB

Distance Control: 3 meters (or less), 4 meters, 5 meters (or greater)

Lighting: LED intensity control: On, Dim, Off

Cabinet: Phenolic Resin Polymer: Dense substrate with superb mechanical strength to minimize cabinet vibrations caused by woofer cone motion counter forces to provide an ideal baffle for the electrostatic panel and woofers.

Inputs: WBT-0705Ag nextgen™ 5-way bi-wire binding posts feature a filigree signal conductor made from fine silver for high conductivity. Fully insulated for CE and IEC conformity providing shock hazard protection. Free from eddy current effects. Max constant current 30 A, admissible peak current 200 A. Outer metal cap with palladium plated finish.

Power Draw: Standby: 1W each **Max:** 15W each

Weight: 385 lbs. (175 kg)

Dimensions: 74.8" × 30.3" × 34.2" (189.9cm × 76.9cm × 87cm)

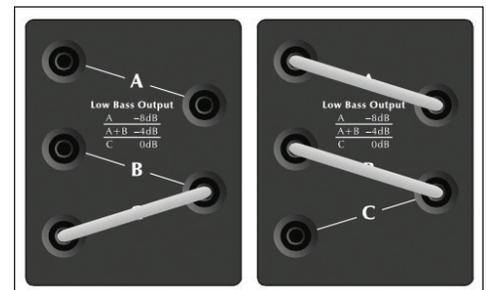


signal on a 30 degree horizontal axis. In contrast to dynamic speakers or other speaker technologies that have a very wide horizontal dispersion, MartinLogan deliberately controls the dispersion by design to increase the listening area while also minimizing acoustic interactions with a listening room's side walls, floor, and ceiling.

The Neolith is made from a super-dense phenolic resin polymer. It's the only speaker in the MartinLogan lineup to use this polymer. I asked MartinLogan why they chose this material over some others. MartinLogan said that phenolic resin polymer was an ideal choice vs. aluminum and other rigid options. The polymer's combination of structural rigidity and vibration absorption helps minimize cabinet vibrations that result from the reactive forces of the powerful woofers.

The Neolith is finished in automotive-grade paint (more on that later) from top to bottom. There are no wood veneer choices. There are, however, seven stock color finishes— from bold to reserved— available for the Neolith. At the same time, customers aren't limited to just those stock colors. Customers who want the Neolith in custom colors can work with their local MartinLogan dealer to have a pair fully paint-matched with whatever color they want.

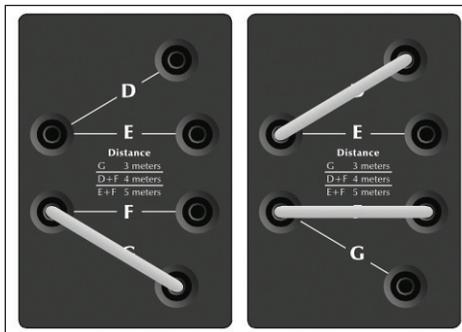
I won't go into all the other premium quality components in the Neolith, but there are two features that I feel are worth mentioning: the bass attenuation jumpers and the speaker distance jumpers. Because of the size of the Neolith, placement of the speakers in small to medium-sized rooms is going to present a challenge in getting the bass and the crossover points between the electrostatic panel and the midrange right.



Low bass output jumpers



Detail view of the Neolith's jumpers—located on the rear of the speaker. Low bass was set to zero and distance was set to 4 meters.



Listening jumpers

the Neolith required any adjustment in their manufacturing process. Indeed it did. Because MartinLogan wanted to make the Neolith in-house, some refinements to existing processes and the development of new techniques had to be developed at the company's massive Ontario, Canada manufacturing facility.

For example, to machine and finish the Neolith's phenolic resin in-house required fine tuning the cutters, feed, and speed of the CNC routing machinery to accommodate the extreme density of the polymer, and to meet the extreme precision required. The end result was a significant increase in the processing and cutting time compared to traditional speaker substrates.

The finishing process also needed to be refined. Several adjustments were needed to bring the automotive finishes in-house, as well as to accommodate the application and post-processing requirements of the Neolith's finish. The paint process for the Neolith is very labor intensive. There are several steps of painting, wet-sanding, and hand-buffering each surface to give each part a gloss finish before assembly can start. According to MartinLogan, just the painting, curing process, and buffering process for a single pair of Neolith speakers takes two full weeks.



The Neolith's build quality and finish are exquisite. The Neolith is custom-built completely in-house. Refinements needed to be made to existing manufacturing processes and new ones needed to be created around the Neolith.

To address this, MartinLogan's engineering team included two jumpers. The first is a low bass output compensation option.

You set the low bass output options via manual jumpers on each speaker's rear panel. By moving the jumpers you can attenuate the bass at 0dB, -4dB, or -8dB to fine-tune it to your room. I asked why jumpers were used instead of dial or something else and the gist of the response I got was because jumpers are cool, old-school, and requires the audiophile to make a conscious decision to put the jumper into that setting. Fair enough.

On the same panel and below the low bass output jumpers you set a second jumper for distance. Your distance options include 3, 4 or 5+ meters. I asked MartinLogan what exactly the distance jumper accomplishes and I got a detailed response from Joe Voijsko, MartinLogan's Senior Acoustic Engineer. Joe said that the distance jumper is used to optimize the electrostatic panel to the front woofer crossover. The optimum crossover and jumper position varies with the listener's distance to the speaker. Joe went on to elaborate that the jumper addresses the directionality of

the frequencies. The lower frequencies from the panel are not as directional as the upper frequencies. Because of physics, Joe said that these lower frequency sound waves experience a floor bounce. At three meters the timing difference between the direct and reflected is long enough that the panel can play down to 250Hz. Once you get to 5 meters, the timing difference is reduced. Partial cancellation of the sound waves occurs in such a way that the lower frequencies produced by the panel need augmentation by the front woofer. Thus, the distance jumper sets the front woofer low pass filter to produce a good listener response based on the listening distance.

I cannot emphasize how important these options are to dial a speaker into your room properly. Such options become even more critical if your preamp doesn't feature room correction. I've experienced the benefit of such a design from other high-end manufacturers and these options make a radical difference in a speaker's performance in different rooms and placement scenarios. I applaud MartinLogan for including both the bass management and crossover options for audiophile customers and dealers to fine-tune the speaker to the target room.

Because of the Neolith's size, new materials, and complexity, I asked MartinLogan if building

Speaker assembly likewise had to be re-adjusted around the Neolith. Normally, assembling a MartinLogan speaker will pass from one specialized work area to the next throughout the manufacturing facility until the speaker is finished. Not so with the Neolith. Because of its size and weight, it cannot be moved around the factory. Instead, the sub-assembly teams have to congregate to the work area where the meticulous hand-crafting of the speaker takes place. The process to manufacture a pair of Neolith speakers is so meticulous that MartinLogan will only accommodate two pairs per week for production. Order fulfillment will take anywhere from 6 weeks to three months. When I spoke to the MartinLogan reps, they told me that production was starting this month for orders that have already been placed.

Finally, unlike the other speakers that are traditionally shipped in corrugated cardboard cartons, the massive size and weight of the Neolith speaker required development of custom wooden crates to ship and protect the speaker. Each custom wooden crate weighs in at 215lbs.

A Different Kind of Review for a Different Kind of Speaker

The prospect of getting a pair of MartinLogan's new flagship speaker in for review was enticing. I really wanted to get this pair into my setup and give it an extended audition. However, when I spoke with MartinLogan's Marketing and Communications Manager, Erin Phillips, she told me with deep regret that we wouldn't be able to get a pair of Neoliths in for review. The reason? The \$80,000/pair Neolith speakers are custom made, built-to-order only. Moreover, the crated weight for each speaker is a massive 700 pounds.

"When I first set eyes upon the Neoliths I was simply in awe of their size."



MartinLogan's event took place at Stereo Exchange in New York City.

Fortunately, all was not lost. There would be an opportunity to audition the Neolith during a tour that Martin Logan has been conducting in the United States to promote the speaker. The tour, called "Truth in Sound", was taking place across select cities. After talking with Gene DellaSala, Audioholics President, about this option, we both agreed that it was worth it so long as we noted this to our readership. We decided to target the New York City stop for the Neolith. The New York City venue for the "Truth in Sound" event was Stereo Exchange located in the NOHO building in lower Manhattan. Stereo Exchange is one of the venerable high-end audio stores in Manhattan. It's been a family-owned operation since its founding in 1984. Stereo Exchange has been at its current location at 627 Broadway since 1989.

When I arrived at Stereo Exchange, a banner towards the front of the store directed me down the store's central hallway which opened up to a dedicated listening space. There, the Neoliths were jamming away. A team from MartinLogan traveling with the Neoliths greeted me upon arrival. The MartinLogan team included Dennis Chern, MartinLogan's Eastern Regional Sales Manager; Peter Soderberg, Western

Regional Sales Manager; Joe Voijko, Senior Acoustic Engineer; Justin Bright, Director of Marketing & Digital Technology; and Erin Phillips, Marketing & Communications Manager. The MartinLogan team was very cordial, gave me lots of space, and provided unfettered access to anything I wanted while answering every question I posed. I want to extend my thanks to each of them and to the folks at Stereo Exchange for their kind hospitality.

I won't forget coming upon the Neoliths for the first time. Past the event banner, Martin Logan had the lineup of its hybrid electrostatic speakers arranged along the left wall of the corridor—a nice visual touch. About eight feet past that, the original MartinLogan Monolith stood guard at the entrance of a larger listening area. While the Monolith's visual placement near the current MartinLogan lineup provided



A banner guided you down to the listening area where the Neoliths were setup.



Martin Logan's Erin Phillips and Justin Bright stand next to the Neolith.

an interesting design juxtaposition and nod to the company's history, it really didn't prepare me for the Neoliths. I walked past the Monolith into a large listening space dominated by MartinLogan's newest flagship speaker.

When I first set eyes upon the Neoliths I was simply in awe of their size. These were not the same MartinLogan speakers that I've been accustomed to seeing slimming down over the years. On the contrary, the Neoliths were far more comparable to the imposing size to the loudspeaker tradition they pay homage to: the MartinLogan

Monolith. The Neoliths sported a gorgeous Ferrari-style red called "Rosso Fuoco" that you would associate with only the finest automobiles. I saw, first-hand the results of the manufacturing refinements and the fruit of that painstaking labor.

Setup and Associated Equipment

At the event, the MartinLogan Neolith speakers were driven by \$50,000 worth of Bel Canto Black electronics: the ASC1 asynchronous stream controller (\$20,000) and a pair of MPS1 monoblocks (\$15,000 each).

Bel Canto claims that the MPS1s can supply 300 watts into 8 Ohms and 1200 watts into 2 Ohms with 128dB of dynamic range. The available sources were the Sony HAP-ZIES, which is a high-res \$2,000 music server with a terabyte of storage and a \$12,999 Audio Research Corporation's Reference CD9 tube-driven CD player. Power conditioning and cabling was all Shunyata, with a Hydra AV feeding power to everything.

The Neoliths were set up at the front of the room with ample distance from the back wall and moderate distance from the side walls. There were three rows of seating set up in the room with the middle sweet spot seats indicated by a different, more comfortable chair. The StereoExchange building and the listening space were typical, old-school Manhattan. The room itself

had a very tall 20' plus ceiling with exposed duct work. The "room" where the Neoliths were placed was obviously part of a later segmentation of the space. The walls did not go all the way up to the ceiling and the room was large, cubical-style and it opened up into



The equipment driving the Neoliths.



Closeup of the Audio Research CD9 and Shunyata Hydra AV with Shunyata power cords.

a hallway that led to other offices and display area within Stereo Exchange. My simple point here is that the Neoliths were ultimately playing in a very large overall space that wasn't necessarily a perfect listening room.

Sound Quality Test Results

When I do speaker reviews, I always like to see if loudspeakers sound like real-musicians playing from another room. As I first came down the hallway and came upon the Neoliths I made a conscious effort to see if the Neoliths could potentially convey that feeling and the Neoliths presented a few audible cues and dynamics that did just that.

After conversing with the MartinLogan reps for a bit, they left me alone to sit down and do an extended listening session. I chose to do the initial listening of the first track from the right edge seat. I then moved to the front row, middle seat, and then the

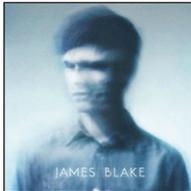


The Neoliths were even more massive in person than I imagined and certainly not the slimmed-down MartinLogan designs of recent years.

second row, middle seat to get a good sense of the speaker's off-axis performance and any variation across listening positions.

The first track was Adele's "Lovesong" from her hit album, 21. Adele's sultry vocals resonated beautifully throughout the listening space. Instrumentation was wonderfully detailed. The plucking of the guitar strings at the beginning of the song had a tactile, "you are there" quality to them. Instrumentation decay—particularly evident with cymbals—was natural and I got a great feel not simply for the sound emanating from an instrument but also the texture of the instrument making the sound. As mentioned, I was sitting off to the right side for this track. Consistent with my prior experience with electrostatics and their narrower horizontal dispersion (about a 30 degree window), the off-axis imaging suffered a bit. That's not a knock on the speakers themselves, but in my experience an inherent characteristic of electrostatics when you sit off-axis.

Next up was James Blake's, "Limit To Your Love." For this track, I moved to the front center seat. Any off-axis imaging issues disappeared. This track was intense through the Neoliths, and I felt the space beautifully pressurize with tight, defined bass. You haven't heard this song properly unless you've heard it through full-range speakers with ample amplification. The Neoliths nailed it. The Neoliths had complete command of the bass notes at all times. At about 2:49 into the song, cymbals just snapped into the music in such beautiful, realistic way. The cymbals and drums were crisp and once again, the instrument decay was natural and controlled with pinpoint accuracy.



distort your ability to hear nuances and detail in the music. On this James Blake track, the Neoliths acted like an ever-vigilant musical conductor keeping all the musical notes in their logical place and balance. The song's strong bass notes didn't muddy the music's detail at any point. The Neolith's clean bottom-end performance on this track handily outperformed and put to shame countless subwoofers.

Are you wondering about the soundstage? Well, the soundstage for both of these songs was exceptional. This is one of those aspects that you just cannot get with smaller-footprint speakers and one of the things that electrostatics just excel at. If you think you've heard a large, lifelike soundstage before, then the Neoliths will challenge any previous notion.

I was very curious about the volume level. Again, this was not a small or closed space by any means and the Neoliths were playing at some serious volume. I pulled out the SPL app on my phone and measured 92dB peaks on the first two songs. I measured most songs during the session and without exception each song measured 92dB - 95dB peaks in that space—and the Neoliths were not even breaking a sweat.

Next up was "Tin Pan Alley" by Stevie Ray Vaughan & Double Trouble from the album, *Couldn't Stand the Weather*. Wow. The song opened with this dynamic, life-like, cymbal that snapped from a three dimensional space on the left side. Stevie Ray has been known for his favoritism of clean amps and did it ever come through on this track with the Neoliths. I could feel each plucking of the guitar strings. The song had beautiful detail and micro-dynamics. The sound was so clean and spot-on that I stopped taking notes and just listened. At around 5:09 into the song there's the line, "I heard a pistol shoot..." which compelled me to pick up my iPad and write, "the music started and stopped on a dime and exploded like a canon with superb speed and dynamics."



Stevie Ray gave way to my favorite musical presentation of the night, Led Zeppelin's,

"That's the Way." Let me just say it outright: this is the best presentation that I've ever heard of this song. I'll also pay perhaps the biggest compliment to the Neoliths. I looked around the room and saw everyone's head nodding and foot tapping to the beat of the song. Jimmy Page's guitar notes were ethereal and beautifully haunting. Playing a bit of Zeppelin warranted cranking up the volume just a bit. With my SPL meter handy, I measured 95dB peaks on this track. The tonal quality of Robert Plant's trademark vocals were reproduced very well. The imaging and overall soundstage were great. The bass that comes in at the last 40 or so seconds of the song was the cleanest I have ever heard. If you don't have an exceptional system, the last part of this song will be an uncontrolled, bloated mess. With the Neoliths, there was no sign of bass bloom or bloat.

Closing out my listening session were two classic Jazz tracks, "Blue Rondo a la Turk" by Dave Brubeck from *Dave Brubeck's Greatest Hits* and Miles Davis' "So What". The Neoliths commanded these tracks like all the other songs. Horns, piano, drums, bass lines, cymbals were all superb. The soundstage



Martin Logan Neolith in Desert Silver (Metallic)

"The Neolith is all about knocking the two-channel musical experience out of the park."

was huge; instruments were well placed; and I just got lost in the music.

For the most part, there was little to fault. My only complaint was that I noticed hints of strain at times during the Adele and Led Zeppelin tracks and perhaps at some other points here and there. To my ears, the sound was more like the amplifiers starting to clip than what I felt was a limitation or flaw in the speakers themselves. This wasn't the ideal listening space and in such a context, I can only state what I perceived in such a limited session and I would be very cautious in making any definitive assertions.

However, there are a few things that I can confidently infer about the Neoliths. First, you need ample amplification that is stable into low-impedance loads to make these speakers sing to their full potential. I feel that a bare minimum of 250wpc into 8ohms is what you need to look for. Personally, I'd pair the Neoliths with a 500-600W amp. Secondly, these speakers aren't for small rooms. They dominated this listening space, and judging from their design and physical footprint, there's an assumption that the Neoliths will reside in a dedicated listening room or larger, open space. Finally, these are speakers for two-channel purists. The Neoliths have been designed to be full-range heavy weights and want to spurn any association with subs. I suppose you could put these in a home theater environment, but I really got the impression that these speakers have been meticulously designed for the audiophile. Martin Logan isn't coming out with a complementary Neolith subwoofer, center, or surrounds. The Neolith is all about knocking the two-channel musical experience out of the park.

Conclusion

Selfishly speaking, I wish I had a chance to get these speakers in house for an extended review period. While the listening environment wasn't ideal, it was good enough to give me a real taste of what the Neoliths can deliver. The Neoliths flexed their reference-level muscle—and it was impressive.

Over the years I have had the pleasure to audition many different loudspeaker technologies and systems from the best

names in the business ranging in price from hundreds of dollars to tens of thousands of dollars. Without question the Neolith ranks among the best full range speakers I've heard. Pair the Neoliths with the right amplification, put them in the right sized room, and you'll have a recipe for countless evenings of musical bliss.

At \$80,000/pair for the Neoliths plus \$50,000-\$120,000 for electronics and amplification, you are talking about a serious investment for a very select audience.

However, if you have the funds, love the magic of electrostatics, and want one of the best loudspeakers on the market today (not to mention serious bragging rights among your friends), then the MartinLogan Neolith deserves your urgent attention.

By Theo Nicalakis

Email - info@audioholics.com

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Score Card

The scoring below is based on each piece of equipment doing the duty it is designed for. The numbers are weighed heavily with respect to the individual cost of each unit, thus giving a rating roughly equal to: **Performance x Price Factor/Value = Rating**

Audioholics.com Note: The ratings indicated below are based on subjective listening and objective testing of the product in question. The rating scale is based on performance/value ratio. If you notice better performing products in future reviews that have lower numbers in certain areas, be aware that the value factor is most likely the culprit. Other Audioholics reviewers may rate products solely based on performance, and each reviewer has his/her own system for ratings.

Audioholics Ratings Scale:

-  **Outstanding** (reserved for features or areas that exceed market norms)
-  **Above Average**
-  **Average**
-  **Below average**
-  **Very poor**

METRIC	RATING
Build Quality	
Appearance	
Treble Extension	
Treble Smoothness	
Midrange Accuracy	
Bass Extension	
Bass Accuracy	
Imaging	
Soundstage	
Dynamic Range	
Fit and Finish	
Performance	
Value	