

MEET YOUR MAKER

Caelin Gabriel of Shunyata Research

by Chris Martens

As part of our *Hi-Fi+ Guide to Audio Cables & Power Products 2017* (available as a free download online at http://www.hifiplus.com/buyers_guides/6/) we spoke to Caelin Gabriel of Shunyata Research about his discoveries in cable and power technology, his background, and the next great jump in audio performance!

Hi-Fi+: How and when did you first discover that differences in audio cables could actually affect the sound of hi-fi systems? Were you surprised at the time?

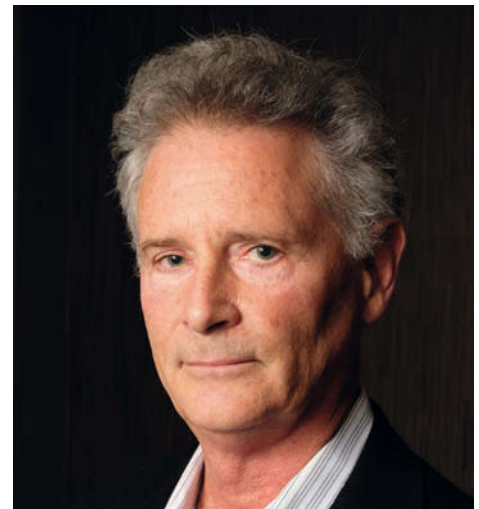
Caelin Gabriel: I worked as part of a team tasked with developing low-level signal acquisition systems for Military applications in different countries around the world. Later, in civilian life, I was involved with the development of high-speed networking devices like the 1GB/s fibre-channel interfaces and the present 100MB/s and 1GB/s Ethernet devices in the computer industry. These work experiences wreaked havoc with simple engineering truths. It became obvious long before I began building power cords and cabling for my own audio system that details related to cable and power systems were extremely important. Power and signal cabling represent by far, the longest path signals must travel within a high-resolution audio, video, or medical system.

What was the first range of cable products you designed and when did it enter the market? How did it compare to other cables at the time?

My first commercial product was introduced in 1998 and was called the King Cobra power cord. It was an extremely complicated design that took me the better part of an entire day to construct by hand. The market response to the design was significant, which led me (and my family) to believe that we could carve out a small, but sustainable business by making finely crafted products with special construction techniques, materials, and plausible science. There were a number of early reviews of the King Cobra power cord that compared it to many more expensive models. The results gave me the early idea of pricing very high-performance cable products more modestly as another competitive edge in a small market.

How has the audio cable industry evolved over the past several years? What are the pros and cons of the path the industry has taken?

We see consistently escalating retail prices in the cable industry for top-performance models, that approach new car pricing for an 8' length of speaker cables or a 6' power cord. Despite the extremely high prices, I notice there is a general lack of published science, patents, or technologies that stand up to scrutiny or explain why products cost into the mid five-figures. Shunyata Research's niche is first and foremost our focus on value, whether the products are our finest performance products or our most affordable. We design all of



our own parts and explain their importance and construction. We have seven published patents and many more pending. There are hundreds of pages available on our web site and in print explaining our design philosophy, science, and use of measurement. The challenge facing the cable market as we see it is truth in retail pricing and scientific credibility. In a few small ways, I feel we have advanced the concept of well-reasoned retail pricing and bringing real science into the consciousness of this market segment.

Some audio cable manufacturers focus primarily on premium-priced products, but your firm offers some ranges of cables that are far more sensibly priced. What led you to create ranges of value-minded cables?

The growth and longevity of Shunyata Research is directly related to our commitment to manufacturing affordable products that deliver an extremely high level of performance. We achieved success through more than ten-years of creating our



► own custom-made parts. Our most value-oriented products rely heavily on measurement, explainable science, and material refinements. We understand that our greatest market exposure will be through customer's experience with our most cost-effective products, so those have to be the finest products we make in terms of absolute value and performance. You could think of our Venom Series of signal cabling and power products as our proof of concept and our proof of commitment to our craft and our customers. Our affordable Venom Series of products are the vanguard of quality that is the embodiment of our company ethos. We are comfortable with how they perform and our feedback, media reviews, and awards over the past ten years have been worth the investment.

What do you personally consider to be the 'sweet spot' product (or products) in your range in terms of maximum performance per dollar (\$), pound (£), or euro (€)? What sets those products apart?

It's very difficult to select a single product or product range because at each price point, we compete in the market by hitting lower retail prices with obvious performance, measurement, and design advantages compared to competitive products. If forced to choose a favorite cable-set for a relatively high-performance system, I would have to say our Alpha range of signal and power cord products. Alpha Series use patented technology that measurably improves signal transfer and the Alpha NR power cord measurably reduces noise at the component's power supply. Alpha models are designed using all custom-manufactured parts, superior, hollow-core geometry conductors and have proven themselves competitive with products costing four to five times their retail price.

In developing value-minded audio cables, which design parameters have the greatest impact on overall sound? Conductors? Dielectrics? Geometry? Shielding and Jacket Design? Connectors? Other variables?

We control every variable possible in the Venom range of power and signal cables. Nothing is left to chance and there are no off-the-shelf materials or parts used in their construction. Our Venom power cord conductors are made with

the highest purity OFE copper on the market. We designed our own custom-molded AC connectors so that the connectors could accommodate large-gauge power conductors and possess superior contact integrity.

Venom signal cables use Ohno Continuous Cast Copper, which is made into a hollow core wire geometry called VTX. All the Venom cable dielectrics were chosen through careful listening evaluations and the shielding elements were selected to achieve 100% coverage. We designed all of our own RCA, XLR, and STIS (Interchangeable speaker cable terminals) because of the importance of the connections. This allows customers to choose their preferred speaker cable termination or change when needed. The material and custom-design costs invested are estimable, but that is the reason for our reputation as a very credible science-minded manufacturer of high-performance cabling systems.

As an audio cable designer, how do you strike a balance between performance on the one hand and price on the other? Is it possible to optimise both?

We started with a specific pricing model that considered a standard mark-up between parts/materials cost and retail pricing in order to break even and perhaps earn a reasonable profit. In the beginning, this model dictated that if a part you designed or purchased cost ►

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▶ you a penny, then that had to add five cents toward a retail price. This was referred to as a X5 table. 15 years ago, this was the norm for many industries. As vendor costs and US labour has gone up, so has the X table. Today, it's probably closer to a X6 table. We still follow that table, generally speaking. With our most affordable products, we earn less and with our highest performance, entirely customized hand-made products, we earn a little more so there is a balance. The trend we are seeing, mainly in the cable business, is that the normal X table of old has exploded into X20, X30, and up. Why, because some cable makers compete by increasing discounts to dealers, or adding upgrade programs, trade-in programs, rewards for exclusive business, and the list goes on. Our success in the market is predicated on offering the highest value products at each price-level that out-perform those with inflated retail prices.

Manufacturers sometimes speak in figurative terms about the ‘special sauce’ that makes their products different and better than those of their competitors. If you are at liberty to say, what’s your ‘special sauce’?

Our products’ most compelling attributes are their complete parts customization and the patented, measurable, and explainable science used to design them. If there is one “special sauce”, it would be the 18 year commitment to manufacturing products that deliver on the promise of consistently obvious performance improvement at retail pricing that does not strain the laws of credulity, even at the highest end of the performance ladder. You could point to any number of individual design attributes or perhaps one patent that is particularly relevant, but with Shunyata, it comes down to the accumulation of all the patents, pending patents, and the custom-designed parts, measurement analysis such as the peak-current (DTCD) analyser, noise-measurements, proprietary filter designs, etc. The special sauce is 18 years of parts, design, research, measurement, and simple, straightforward, no BS pricing policies.

We have two admittedly loaded questions for you. Just how close do your value-minded cables come to the performance of your flagship models? What characteristics do they have in common and what are the most noticeable differences?

Our most affordable cables must approach reference performance level in our estimation or there is little value to expending the effort, cost and more than 12 years in developing the affordable Venom range of products to represent what is the best attribute of our company. Yes, in extremely high-performance, high-resolution systems, our more expensive products are carefully designed to perform at a higher level. Because each system and listener is unique, the value equation relative to differences has to fall on the individual. Since our products have been on the market for 18 years, there have been many

reviews, customers, and dealers who have weighed in on the value of our products at each price level. Even the medical industry, heart surgeons, and hospitals have weighed in on the value of Shunyata products so we always prefer to let the market determine our products’ true worth and value. If history were the guide, I would say we’ve been very successful in providing value-oriented products that come tantalizingly close to “reference” level performance in a good system. Most of our dealers and distributors offer evaluations and money-back auditions, so we are comfortable with the idea that if people take the time to listen, they will find a very high-value match for their system at any of our price points.

What do you think the next ‘great leaps forward’ in audio cable design will be? How do you think audio cables will be different five years from now?

With the proliferation of digital systems and components, Wi-Fi and more RFI and EMI surrounding system environments, cable and power systems will have to evolve so that high-frequency noise is isolated from other noise-sensitive components in the system. Shunyata is working on a number of cable and power system components now that should address the issues related to noisy environments, because it's not the noise coming from outside the home or system that poses the greatest threat to high-resolution; rather, it's the noise that surrounds the system itself that detracts from performance. Our designs focus on isolating component-to-component noise interference and we see that as a big part of the design evolution to come. Our research into these and other areas will continue, because it's what we do best. +