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CANADA HiFi

February/March 2013

2013 Consumer Electronics Show Highlights

Exploring the Latest
Consumer Electronics
Trends and Products
in Las Vegas

Building an Affordable Multi-room Audio System



What drives your music?

Understanding Hard Disk and Solid State
Technologies and How They Relate To
Music Storage

Reviewed Inside:

- Merlin Music TSM MMM Speakers
- System Audio Aura 1 Bookshelf Loudspeakers
- Focal Spirit One Headphones
- Clearaudio Solution Turntable





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Nordost Blue Heaven HDMI – because the Devil is in the details.

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forward >>>

As a music buff, I listen to music for several hours every day, regardless of the weather - whether it's at my computer desk, from my 2-channel system or in my car. But when the cold winter months roll around I also find myself watching more movies and playing more video games in my home theatre. I've spent a good number of evenings since the holidays playing the latest Super Mario game on the Nintendo Wii U. I hope that the readers of this magazine likewise get to spend some extra hours in front of their music or home theater systems this season. I'm also glad that you've found enough time to read this issue of CANADA HiFi!

The annual Consumer Electronics Show (CES) took place in Las Vegas last month and while the show is far too large to cover in its entirety, Jeremy Phan put together a great compilation of highlights from this year's event. His coverage looks at various product categories, not just audio and video. It is an absolute must read, if you want to learn what to expect in 2013. And if you'd like to take in a little more audio news from this year's CES, check out www.canadahifi.com.

Since most listeners store their music libraries on computers today, Malcolm Gomes educates us in this issue about hard disk and solid state drive technologies and how they relate to music storage. I, on the other hand, introduce you to the idea of setting up a multi-room audio system in your home without cleaning out your bank account.

As always we've got a number of great reviews in this issue, and even if you're not interested in these particular products I encourage you to read all the reviews. There is always something to be learned from each review.

Happy reading!

Suave Kajko
Publisher / Editor in Chief

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LG Electronics 55 inch 55EM9600 OLED TV

Big screen OLED TVs will finally be hitting store shelves soon! LG's revolutionary new OLED (Organic Light Emitting Diode) 3D TV will be available in the United States beginning in March. Canadian availability and pricing have not yet been announced but are expected to follow shortly. The 55EM9600 is truly super thin and super light – measuring just 0.16 inches (4 millimeters) deep and weighing less than 22 pounds (10 kilograms). But just as important is this TV's ability to produce astoundingly vivid and realistic pictures thanks to its superior WRGB technology. LG's unique Four-Color Pixel system features a white sub-pixel, which works in conjunction with the conventional red, blue, green setup to create the perfect colour output. LG's exclusive Color Refiner delivers even greater tonal enhancement, resulting in images that are more vibrant and natural than anything seen before. Rounding out the technological advances is an infinite contrast ratio, which maintains optimal contrast levels regardless of ambient brightness or viewing angle. Kudos to LG for delivering the world's first big OLED TV! MSRP: \$11,999 US. www.lg.com



Reference 3A NEFES Loudspeaker

Reference 3A has made its name by designing and producing uniquely direct-coupled loudspeaker drivers, resulting in some of the finest sounding speakers in the market. The latest addition to the company's range of products is the new NEFES loudspeaker, which utilizes advanced materials and crossover-less drivers at its heart. Two superb 8 inch, full range drivers and a pure Beryllium dome tweeter are assembled in a vertical array into a very rigid and inert cabinet making the foundation of the new NEFES. Beryllium tweeters are mounted behind an exponential acoustic wave guide for better time alignment and more uniform dispersion patterns. With no crossover on the main drivers (just a very high quality capacitor) the high pass filter on the Beryllium dome tweeter sounds dynamic, fast, articulate and very coherent. To further refine the performance, the NEFES uses patented Surreal Acoustic Lenses, for diffusing inherent driver cone turbulence noise; and patented Magnetic Wave Guides to purify the incoming audio signal. Cryogenically treated, Teflon insulated, pure OCC copper conductors in appropriate thicknesses for each driver and copper input connectors are also used to ensure perfect signal transmission. Housed in an extremely rigid and inert loudspeaker cabinet, NEFES is finished in a durable anthracite coloured, suede textured Nextel coating. This special coating effectively absorbs sound and light for acoustically and visually silent cabinets. MSRP: \$9,950/pair. www.reference3a.com



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Panasonic VIERA Plasma and LCD TVs for 2013

Panasonic recently announced its new TV model line-up for 2013. The new plasma models will range from 42 to 65 inches, while the new LCD/LED models will range between 32 and 60 inches. There will be five plasma series: the VIERA ZT60, VT60, ST60, S60 and X60. The top three series will offer numerous smart TV features such as a web browser with built-in wireless LAN, a “My Home Screen” feature which allows users to customize the home screen to give them quick access to their favourite content; and “Swipe & Share 2.0” which allows users to transfer photos and videos from Android and iOS devices to the screen with a simple swipe of the finger. In addition to this the ZT60 and VT60 series will offer “Voice Guidance” and “Voice Interaction” functionality. Each new Smart VIERA HDTV offers an enhanced VIERA Connect platform including more options for streaming video content, unique social networking features, fully-integrated apps, and intuitive search features designed to make the user experience fast and easy.

In 2013 all of Panasonic’s LCD TVs will feature an LED backlight to deliver the best possible picture. The 2013 line-up will span seven new series – the VIERA WT60, DT60, ET60, E60, EM60, XM6 and B6. The top four series will offer the My Home Screen, Swipe & Share 2.0 and Voice Guidance features. The top WT60 and DT60 series also adds the Voice Interactive feature. For more details about each new model, please visit www.panasonic.ca

Onkyo Headphones

Continuing the popular trend, Onkyo has jumped on the bandwagon and revealed its first headphone products. Onkyo aims to introduce the smartphone/tablet generation of listeners to component-quality sound with headphones they can comfortably take on the road. Two closed-back on-ear models will be first to hit stores—the ES-HF300, which features an audiophile-grade cable, and the ES-FC300, packaged with a tangle-free elastomer cable. Two wide-range 40 mm titanium drivers deliver stunning clarity in the mid- and high-frequency bands. Onkyo’s unique ported bass sub-chambers, meanwhile, help define a deep, muscular bottom-end response. Two in-ear models—the IE-HF300 and IE-FC300—are scheduled for release over the coming months. Powered by a 14.3 mm dynamic transducer, these in-ear headphones balance silky bass with an open and natural mid range. Also in the development pipeline is a powerful headphone equalizer app for smartphones and tablets, allowing users to quickly and precisely adjust frequency response to suit their personal taste. MSRP: \$129 to \$179 US. www.onkyo.com

Soundmatters foxL DUET Compact Satellite and Subwoofer

Soundmatters has made its name by stretching the laws of physics with its diminutively sized, high-performance speakers. The new foxL DUET is a high-powered compact desktop and travel-friendly stereo speaker and subwoofer system, that plays all the way down to 38 Hz. If you’re headed on a business trip, just detach the subwoofer, pop the foxL portable speaker into your pocket or briefcase, and enjoy great sound anywhere. Or if you’re going on vacation for the week, bring both the travel-sized foxLO subwoofer and foxL speaker along. DUET’s flexibility provides the ultimate audio experience anywhere. This system is a great solution for getting good sound out of tablets, smartphones and laptops. MSRP: \$349 US. www.soundmatters.com



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2013 Consumer Electronics Show Highlights

Exploring the Latest Consumer Electronics Trends and Products in Las Vegas

Jeremy Phan

The Consumer Electronics Show has wrapped up once again and while the products from this year's show weren't as flashy or out of this world as previous years, there were still many products that consumers everywhere will be opening up their wallets for. Without a doubt, this year's show was all about "Ultra HD", the new moniker that the industry has decided on for 4K HDTVs, and big screen OLED TVs. The automotive industry also made some exciting technology announcements and a plethora of new connected devices were scattered throughout the show floor.

As I wrote in the "4K Resolution: The Next Evolution of Video" article last year (now found in the Video Features section on www.canadahifi.com), 4K resolution is the next step in high definition, offering 4 times the resolution of current 1080p consumer HDTVs. It must be noted that 4K refers to vertical lines of resolution, not horizontal, as 1080p does. This change was made to adjust for the various (ultra-wide) aspect ratios that studios release their films in so that instead of counting empty black horizontal lines, vertical lines, all of which are used regardless of aspect ratio, are counted.

While Ultra HD TVs are still priced out of range for most consumers (all start above \$12,000), as with all technology, the price will come down as the technology improves and manufacturing yields increase. Second tier manufacturers such as Vizio and Westinghouse are also poised to release more "affordable" Ultra HD sets in 2013, albeit at smaller sizes than the gigantic sets discussed later in this article.

With Ultra HDTVs, the increase in resolution is in turn accompanied by a jump in screen size. Most Ultra HDTVs demonstrated on the show floor ranged from 55" to 85" sets. Samsung has even promised 95" and 110" sets in the near future. With the increase in resolution, a smaller TV requires (or allows, depending on your perspective) the viewer to sit closer to the TV to be able to discern the higher



resolution. If you have a large seating area that is further from the TV, you'll need a larger set to be able to see all those pixels. Unfortunately this also means that larger Ultra HD sets will be proportionately more expensive. HDTVs above 55" are already proportionately more expensive than smaller sets due to the higher costs of manufacturing larger panels. Add in the 6 million additional pixels of Ultra HD and prices jump even further; if just a single pixel out of 8+ million is bad during the manufacturing process, the entire panel is unusable.

Back in November 2012, Sony released its 84-inch XBR-84X900 (\$25,000) Ultra HDTV and now LG is also shipping its 84-inch 84LM9600 (\$17,000) in North America. LG released sales data saying that the company has already sold 300 units in Korea. Samsung showed off an 85" set that is mounted inside what looks like a chalkboard easel, dubbed as the "Timeless Gallery" stand, and pledged even larger 95" and 110" sets – however no pricing or shipping details were released except to say that they'd be available this year.

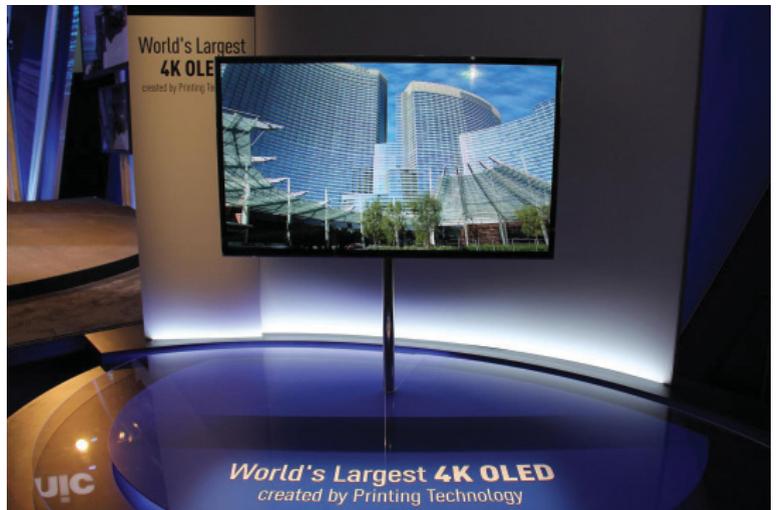
Vizio, a manufacturer known for produc-

ing quality HDTVs at lower price points, also showed off its Ultra HD offerings in 55", 65", and 70" sizes. Again, pricing and availability have not been announced. Absent from the Ultra HD offerings was both Panasonic (except for the OLED prototype) and Sharp, who is known for its large Aquos sets as well as the Elite series of LCDs. Panasonic did however show off a 9mm thin Windows 8 tablet featuring a 20" IPS Ultra HD LCD. It weighs in at 5.2 lbs. which is comparable to a medium-sized laptop, and features an Intel Core i5 1.8 Ghz processor, Nvidia discrete graphics, and stylus support. It is aimed at graphics professionals and photographers.

With these Ultra HD sets hitting the market this year, the chicken/egg problem once again rears its head. While all these new TVs have built-in up-scaling from 1080p to 4K, native content is still hard to come by. Sony packages a hard drive-based media server with its \$25,000 TV and has promised a download-based service this year. It also showed off 1080p Blu-rays that have been remastered for 4K (but are not true 4K content) on new 4K-compatible/upscaling Blu-ray players.

Given the gargantuan amount of data required for 4K content, it will most likely come through physical media given the current constraints of most Internet connectivity options. The Blu-ray standard, which supports up to 128 GB per disc, will likely be updated to support 4K streams with the association stating that they're currently investigating it. Much of the content produced in the past few years is already mastered in 4K (most digital cinemas already natively project 4K content) so get ready, once again, to purchase new versions of your favourite movies once 4K becomes more mainstream.

One of the other features of Ultra HD is what it brings to 3D, which has seen lackluster adoption due to a variety of factors: cost, content, and most of all, the glasses (whether they're active or passive). With the jump in resolution, 3D is able to shift from heavy, battery-powered active-shutter glasses to cheap, lightweight, passive glasses similar to those used by movie theatres. Passive 3D technology works by using half the vertical resolution for each eye and with 1080p, that meant the viewer was only getting 960 vertical lines of resolution. Now with Ultra HD, full 1080p HD is once again available but with the added advantage of using passive glasses. The other advantage of Ultra HD is the ability to "simul-cast" separate, full 1080p HD images to each viewer, when wearing passive 3D glasses. For gaming, this eliminates the split-screen, instead showing each player a full screen 1080p that only they can see. LG already features this in its passive 3D HDTVs. Samsung goes a step further and allows two separate inputs to be viewed simultaneously with one viewer watching one content stream, while a second watches a different content stream, both in full screen 1080p HD. The glasses have built in audio so each viewer hears audio associated with their own content. On the glasses-free 3D front, Vizio demonstrated a 55"



prototype that provides full 1080p images to the viewer. Dolby Labs is also working on glasses-free 3D utilizing Ultra HD to provide full 1080p resolution images. Once implemented and cost-effective, it'll make 3D at home much more palatable.

2013 will also finally see the introduction of large 55" OLED 1080p HDTVs by Samsung and LG, both of which will be available for purchase this spring. Sony previously sold an 11" OLED TV but its extreme price and size made it more a showcase product than an

actual TV. Sony and Panasonic also showed off prototype 56" Ultra HD OLED TVs at CES 2013. All of these OLED TVs use organic LEDs which directly emit light, negating the need for a backlight as in standard LCD HDTVs (which use full-array or edge-lit LEDs or CCFL backlights). This in turn gives them a wider colour gamut, higher contrast levels (eliminating blooming, ghosting, and other issues caused by a backlight), near-perfect blacks (since each individual OLED pixel can be completely shut off), wider viewing angles, lower power con-



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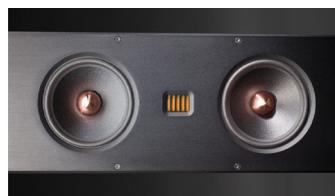
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sumption, and practically instantaneous response time to name just a few of the benefits. The LG 55EM9600 (approximately \$11,999 US) is a mere 4mm thick and weighs only 7.5 kg. Pre-orders have already started and will begin shipping in the US at the end of the first quarter. LG estimates that as early as 2016, the manufacturing cost of OLED will match conventional LCDs. Samsung has yet to announce pricing or shipping dates for its 55" OLED set.

Both Samsung and LG also showed off unique curved 55" OLED sets at this year's CES. The curved panel enhances viewing by making the distance from the viewer to the TV equal from edge-to-edge. On a standard TV, the distance is slightly further, the further left or right you look at the screen. Both manufacturers claim this produces a more immersive viewing experience and likens it to IMAX, which fills your entire field of view. On a smaller scale, Samsung showed off a flexible 5.5" OLED screen that could eventually make its way into its



smartphones.

While Ultra HD and OLED may have stolen the show at this year's CES, there were also a variety of notable non-TV products and services. 2013 will see a plethora of smart, watch-style devices – the most famous being the "Pebble" watch which was solely publicly crowd-funded on Kickstarter.com and raised over \$10M. These devices typically connect over Bluetooth to a smartphone and allow the user to access their notifications/email/texts, track their exercise regimen (running, jogging, pedometer, etc.),

and other functions. The Martian Watch turns its wearers into Dick Tracy: it allows the wearer to issue voice commands (to Google Now or iOS's Siri) as well as take calls with its built-in speakerphone.

Health was also a prominent theme this year with multiple manufacturers releasing wristband devices that allow users to track their exercise regimens (with built-in GPS, pedometers, and other sensors). Smart scales are also getting smarter, measuring not only body weight and BMI but also heart rate and ambient carbon dioxide levels, all of which can be tracked online



through the built-in WiFi connection. HapiLabs introduced the first "digital, connected" utensils which help moderate food consumption by sensing movement. If the user is eating too quickly, the fork vibrates to let the user know. Eating too quickly leads to poor digestion and subsequently, weight gain. The fork wirelessly connects to a smartphone and uploads its data to an on-

line dashboard to help track eating habits.

Connectivity also continues to be added to every device under the sun: everything from connected thermostats (really convenient since it allows for off-site remote temperature control), to the Parrot Flower Power sensor which sends an alert when the potted plant is in need of watering (surprisingly, from the same company that makes remote control flying drones).

On the automotive front, automakers, which have been adding Bluetooth, live traffic, and other features in their infotainment systems for the past few years, have now opened up those systems to allow for outside developers to create native apps for the systems (GM through its MyLink SDK and Ford with SYNC AppLink). As a result, we can expect to see a lot more current and more interesting apps on the dashboard of our vehicles in the near future.

This year's CES really showed that the lead time between demonstrations and store shelves is continuing to shrink, while the ever increasing pace of technological advancement and manufacturing efficiencies is continually pushing prices down. Ultra HD is truly beautiful (visit a Sony store to see the 84" set if you have a chance) and in a few short years, OLED will replace conventional LCDs. While this year's CES may not have been as fantastical as previous years, the products showcased continue to enable a more connected, immersive life.



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What drives your music?

Understanding Hard Disk and Solid State Technologies and How They Relate To Music Storage



Malcolm J. Gomes

Over the past few years, one of the biggest changes in the audiophile world is that computer audio has become mainstream. Evidence of this can be found at all the major audio shows from TAVES to CES to RMAF to name a few. I was surprised to see so many exhibitors at recent audio shows, demonstrate their equipment using a laptop and a DAC as their source components, sometimes even to the exclusion of the venerable turntable. It is sad to see the once ubiquitous CD player being slowly but surely supplanted.

This trend has put the spotlight on external drives that store the music and thanks to technological advances and economies of scale, this category of products has

seen sizes and prices continue shrink to a level where they have become incredibly affordable. Currently, the most popular type of drive is undoubtedly the Hard Disk Drive or HDD because they offer the best bang for your buck in terms of storage capacity and price competitiveness. Today, many brands offer 1 to 3 terabyte HDDs for around \$100 to \$300.

HDDs come in different sizes and shapes, which are determined, by the size and shape of the components that are utilized to produce the device. The conventional HDD is built around a platter or optical disc with a spindle motor making it rotate at the required speed.

Solid State Drives and a Little History

Looking to the future, many pundits are forecasting that the HDD will soon face stiff competition from the more durable Solid State Drive or SSD, which has already started making some meaningful inroads into the market. Many people regard the SSD as a new development that has recently emerged in the consumer sphere. However the surprising fact of the matter is that SSD technology is more than half a century old.

The genesis of SSDs can be traced to the 1950s when two technologies namely 'core memory' and 'card capacitor read only source' commonly referred to as

auxiliary memory units emerged during the age of vacuum tube computers. They were soon supplanted by drum storage type drives, which were a lot cheaper to manufacture. Then during the 1970s we saw the debut of drives implemented in semiconductor memory of the supercomputers of the day including names like Cray, IBM and Amdhal. At the time these were built to order and carried astronomical prices, which kept them out of the consumer sphere.

Things changed in 1978 when Texas Memory Systems developed a 16 kilobyte RAM solid-state drive, which became the darling of oil companies as it helped them in seismic data acquisition. The very next year StorageTek designed a new kind of solid-state drive and a few years later the PC-5000 was unveiled by Sharp. This caused quite a buzz because of its 128 kilobyte solid-state storage cartridge which incorporated bubble memory. At the time this was considered as very high storage capacity for an SSD.

In 1986, Santa Clara Systems launched its BatRam 4 megabyte storage system that could be expanded to 20 megabytes using add-on modules. Around a decade later M-Systems developed a flash based solid-state drive that could withstand extreme shock, temperatures and vibration and had a much longer mean time between failure (MTBF) rate. This made them great for military and aerospace applications. In 2006 Sandisk acquired M-Systems and went on to become one of the major players in this segment.

Hard Disk Drive Versus Solid State Drive

The biggest difference between HDD and SSD is that the former are electromechanical devices that incorporate spinning discs and movable read and write heads, while the latter uses microchips and totally eliminates the need for moving parts. This means that SSD memory is less susceptible to physical shock,



Top: Shows the spinning disc and movable read and write head inside a Hard Disk Drive (HDD). Bottom: Shows the microchips found inside a Solid State Drive (SSD); notice that there are no moving parts here.

operates quietly and offers lower access time and latency. The transition from HDDs to SSDs should be quite smooth because of the fact that they both use the same interface (connector type) and so switching from one to the other does not present any compatibility problems at the consumer level.

Types of Solid State Drives

When choosing an SSD it would behoove you to opt for one that has flash memory as these have the ability to retain memory even without power. If your application requires a higher input/output rate and better reliability you could consider en-

terprise flash drives (EFDs). These drives offer superior specifications to the regular SSDs. The term EFD was coined by EMC at the beginning of 2008 to help them identify SSD producers that could provide drives with better than the standard specifications. The caveat here is that there is no governing body overseeing the EFD standard and so any SSD manufacturer can claim the EFD moniker whether it offers better than standard specifications or not.

If you peek inside an SSD, the major parts you will find are the controller, which includes the electronics that bridge the NAND memory components to the SSD input/out-



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put interface. This is an embedded processor that executes firmware-level software and it plays a major role in determining the performance level of the SSD.

An SSD also contains a cache. If it is of the flash variety, it uses a small amount of DRAM as cache, which is similar to the cache in an HDD. While the drive is operating a directory of block placement and wear levelling data is also kept in the cache.

High performance SSDs also incorporate a capacitor or some form of battery. The purpose of this is to maintain the integrity of the data in the cache, which can be flushed to the drive in the event of a power failure. The better SSDs are designed to continue supplying power even if there is a power outage that lasts for a very long time.

The performance of an SSD usually scales with the number of parallel NAND flash chips that are utilized in the device. One NAND chip is usually slow because of a narrow (8/16) asynchronous input/output interface and additional high latency of the basic input/output operations. When many NAND devices operate in parallel inside an SSD, the bandwidth scales and the high latencies can be concealed just so long as enough outstanding operations are pending and the load is evenly distributed between devices.

The more affordable SSDs usually employ multi-level cell flash memory. These are slower and not as reliable as single-level cells. However this can be mitigated and in some cases even reversed by being smarter when designing the internal design structure of the SSD. Some examples of this are interleaving and using better, more efficient algorithms.

SSDs that are based on volatile memory such as DRAM are characterized by faster data access, typically under 10 microseconds. These are used mainly to accelerate applications that would otherwise be held back by the latency of flash SSDs or traditional HDDs. DRAM-based SSDs usually utilize either an internal battery or an external AC/DC adapter and backup storage systems to make sure that data is retained even while no power is being supplied to the drive from external sources. In the event of a power outage the battery supplies power while all information is copied from the RAM to the back-up storage.

When the power is restored, the information is copied back to the RAM from the back-up storage, and the SSD resumes normal operation. These types of SSD are usually fitted with the same type of DRAM modules used in regular PCs and servers, which allows them to be swapped out and replaced with larger modules.

If an SSD is made up of various interconnected integrated circuits and an interface connector, then there is a lot more flexibility in determining the shape of the device because it is now not limited to the shape of rotating media drives. Some solid-state storage solutions come in a larger chassis that may even be a rack-mount form factor with numerous SSDs inside. They would all connect to a common bus inside the chassis and connect outside the box with a single connector.

Comparing Solid State Drives to Hard Disk Drives

When comparing SSDs to HDDs you have to make certain allowances. Traditional HDD benchmarks are focused on finding the performance aspects where they are weak, such as rotational latency time and seek time. Since SSDs do not spin, or seek, they may show huge superiority in such tests. On the other hand, SSDs have challenges with mixed reads and writes, and it is entirely possible that their performance may degrade over time. To get a more accurate comparison, you should test an SSD once it is filled to capacity with data. This is because a new and 'empty' disk is likely to show a much better write performance during the test than it would show after years of use.

Some of the advantages that SSDs have over their HDD counterparts are that the former has a faster start-up than the latter because no spin-up is needed. SSDs also have faster random access because of the absence of seeking motion which is a characteristic of the rotating disk platter, the read and write heads and the head-actuator mechanism of HDDs. SSDs also have more consistent read performance because the physical location of the data is irrelevant. They also feature faster boot and application launch time. SSDs are also less susceptible to file fragmentation because unlike HDDs, they are not subjected to data access degradation caused by the

greater disk head seek activity when it tries to find data that is spread across many different locations on the disc.

SSDs are also generally a lot quieter in operational mode because unlike HDDs they do not have any moving parts. This is also the reason why they are much cooler running, consume less power, have much higher mechanical reliability and are able to endure greater shock, vibration and temperature ranges and are able to operate at higher altitude. SSDs also tend to have around double the data density of HDDs and eliminate the need to defragment the disc from time to time.

On the flip side, SSDs with flash memory have a relatively limited lifetime and can wear out after around 2 million P/E cycles. The life of the device can be extended by adopting special file systems or firmware designs that can mitigate this problem by spreading the writes over the entire device. This technique is known as wear levelling.

At the time this was written, HDDs are being sold at a lower cost per gigabyte than SSDs. This being said, SSDs are closing the gap quite quickly and at the current rate, they are expected to be price competitive with HDDs over the next few years.

How All This Relates to Music

What does all this mean for music listeners? For starters, the ever-decreasing cost of storing data is proving to be a boost for the sales of high-resolution music files, especially 24-bit/192 kHz resolution files, which are exponentially larger than their CD-quality 16-bit/44 kHz counterparts. The shrinking size of external drives is making it a lot easier and more convenient to store and carry around your music files. Today you can buy 256 gigabyte thumb drives which can probably store your entire music file collection and carry it around in your pocket.

This trend is also expected to hasten the CD system's journey into extinction. Just a couple of decades ago we marvelled at how the CD system made it so easy to store and access our music. We now live in an age where one jump drive that fits into the palm of our hand can contain the same digital music content as hundreds of CDs!

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Building an Affordable Multi-room Audio System

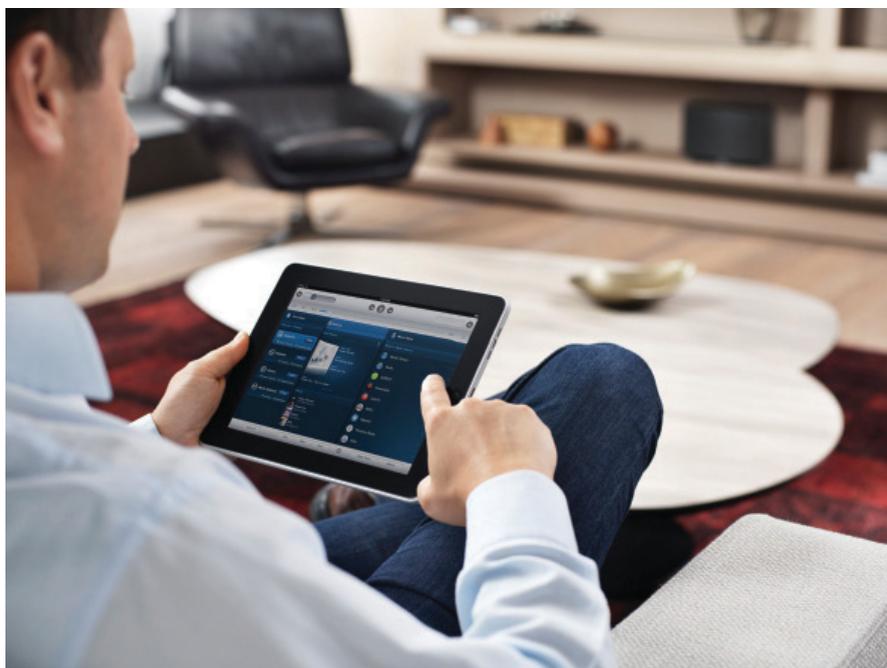
Suave Kajko

Have you ever played air guitar to Guns'n'Roses' "Sweet Child of Mine"? Or perhaps air drummed Phil Collins' "In the Air Tonight" like that infamous Cadbury gorilla? Better still, maybe you've used the shampoo bottle in the shower as a microphone. My friend – I'm afraid you've got the bug. The music bug that is! But don't worry, all this means is that you've got passion for music and we've got just the fix you need.

It wasn't so long ago that multi-room audio systems were the dreams of music listeners but attainable only by those with deep pockets. Even today many audio companies demand a lot of your hard earned money for such systems. Luckily there is one company that believes that multi-room audio should be available to just about all music fans, even those with relatively small budgets. Which company am I referring to? I'm glad you asked. But first, let's take a look at what's involved in building a multi-room audio system.

What is a Multi-room Audio System?

The term 'multi-room audio system' refers to a music system which allows you to listen to your entire music collection, stored in one or more locations, in different rooms in your home. The different rooms, also referred to as zones, can literally include every room in your home and even spaces like your patio, balcony or garage. Multi-room audio systems have been around for many years, in one form or another. So why haven't they become more popular with consumers over the years? In the past, multi-channel audio components were expensive and required you to cut into the drywall to run wires. Not to mention the expensive, large and awkward remotes that had to be programmed. Often times, setting up a multi-room audio system



meant having to hire a custom installer which further increased the price. But all of this has been slowly changing over the last few years thanks to advancements in digital, wireless, touchscreen and smartphone technologies. Together these technologies have provided a backbone for the modern multi-room audio system, while at the same time bringing the price down to a level that's affordable to the masses.

Introducing Sonos

Enter Sonos, a company that's exclusively in the multi-room audio business. Since Sonos launched its first products in 2005, the company has continued to redesign and refine its products to keep them up

to date with the latest market trends. The current Sonos family of products consists of six components. There is the CONNECT module (\$399), which allows you to stream audio to any existing audio system; the CONNECT: AMP (\$599), with built-in amplifiers, which lets you stream audio to any pair of speakers; and the BRIDGE (\$59) which connects to your internet router and uses it to create a wireless Sonos network. There are also two all-in-one wireless music systems, the PLAY:5 (\$329) and PLAY:3 (\$499), which feature built-in amplifiers and speakers. Rounding out the line is the SUB, a wireless subwoofer that retails for \$749.

As you can see then, the Sonos components are priced very reasonably. The





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sidebar

Meet the Sonos Family: An Overview of Each Component**BRIDGE**

This device is designed to connect to your home network router. It allows other Sonos components to access online music services. It is necessary to use only if your router is located in a room in which you won't be setting up an audio zone in, for example the electrical room in your basement.

**CONNECT**

The CONNECT is a digital music player which can be connected to any existing music or home theatre system and allows you to stream music via a wired or wireless connection. It can stream music from your home network computers (with or without iTunes), smartphones, tablets and Internet Radio stations. It also offer access to a wide variety of online music services including AUPEO!, Deezer, iHeartRadio, JB Hi-Fi NOW, JUKE, Last.fm, MOG, Pandora, Rdio, Rhapsody, SiriusXM, Slacker Radio, Songl, Songza, Spotify, Stitcher SmartRadio, TuneIn, Wolfgang's Vault and WiMP. When streaming music from the home network it supports all popular file formats including MP3, WAV, Apple Lossless, FLAC and Ogg Vorbis. The

CONNECT offers both analog (RCA) and digital (coax and optical) outputs. The digital outputs are included for those who wish to connect this device to an external DAC (digital to analog converter) and achieve a higher quality of sound. There is also an analog (RCA) input if you would like to feed it another music source. Two Ethernet jacks round out the rear panel.

**CONNECT: AMP**

The CONNECT: AMP is basically the same device as the CONNECT but comes with a built-in 2-channel digital amplifier, rated at 55 watts per channel. It offers all of the same inputs/outputs as the CONNET plus speaker binding posts.

**PLAY: 3**

The PLAY: 3 is an all-in-one player with a built-in tweeter, two mid-range drivers and a bass radiator, powered by three class D amplifiers. Just like the CONNECT components, it can stream music through a wired or wireless connection from your home network, smartphone, tablet, Internet radio and online music services. Its playback and volume can be controlled indepen-

dently (or together as part of a multi-room system) by a smartphone or tablet. Two PLAY: 3 players can be set up as a stereo pair in the same room for improved stereo separation.

**PLAY: 5**

The PLAY: 5 is the bigger brother to the PLAY: 3, producing a larger, room-filling sound that's suitable for larger rooms. This all-in-one player offers two tweeters, two mid-range drivers and a subwoofer, powered by five class D amplifiers. The PLAY: 5 offers all the same functionality as the PLAY: 3 with the addition of a headphone jack, a second Ethernet port, as well as a 3.5 mm audio line-in which allows for connecting of an auxiliary audio source. The PLAY: 5 can be set up as a stereo pair in the same room, just like its little brother.

SUB

The SUB is a subwoofer designed to fill in the bottom end of your music and works with all of the Sonos amplified components including the CONNECT: AMP and the PLAY:3 and PLAY: 5 all-in-one players, as well as older Sonos devices. It has two built-in force-cancelling speakers powered by two class D amplifiers. It offers ultimate subwoofer flexibility thanks to the fact that it is wireless and can be positioned vertically or horizontally – which allows you to slide it under the couch.





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other beautiful thing, which further reduces the total cost of the system, is the fact that you can use any Apple or Android smartphone or tablet to control the system. Just download the free Sonos control app for your device. And who doesn't already have one or two of these devices at home? Sonos does offer its own dedicated touchscreen remote (\$399), although if you don't already have an Apple or Android device you might as well get one because it offers much more functionality than the Sonos remote. In addition to all of this, the Sonos system can also be controlled by any PC or Mac computer. So in the simplest form, a three room Sonos system can be set up utilizing three PLAY:3 all-in-one music systems plus the BRIDGE for just over \$1,000. That's remarkable!

Features of the Sonos System

The Sonos system can be used to build an incredibly flexible multi-room system, and you don't have to decide how many zones you'll be setting up right at the beginning. You can always add new components in the future – without affecting the rest of the system. Want to start with 2 audio zones, that's fine. Budget allows you to start with 4 zones? That's even better. The beauty of this system lies in the fact that you can mix and match any of the Sonos components to create a multi-room system that suits your specific needs. Take for example a two bedroom condo. You could set up two all-in-one PLAY:3 systems in each bedroom, a CONNECT:AMP in the kitchen with two in-ceiling speakers, a CONNECT in the living room that connects to your home theatre system and another CONNECT:AMP to run your outdoor speakers on the balcony. Each of the components can play the same music or something completely different. You can also adjust the volume of all the components at once, or individually in each zone. Better still, all of the playback can be controlled by your smartphone or tablet. How neat is that?

The Sonos system can be set up as a wired or wireless system, or a mix of



the two. Each of the components is capable of streaming CD quality audio, 44 kHz/16-bit. High resolution audio playback is not supported which is unfortunate but won't impact most of the target audience. To unlock the world of Sonos, one of the components needs to be connected to your home network. Sonos says that its system will let you "stream all the music on Earth" and while that's a grand claim, it's actually not far from the truth. The Sonos system can play music from all the computers in your home, or a Network Attached Storage (NAS) drive, and stream it wirelessly from your smartphones and tablets. It can also play music from various online services such as Songza, Last.fm, Rdio, Slacker and many more. Like Internet radio? It does that too, offering access to over 100,000 free stations. It even plays downloaded Podcasts. It's not a stretch to say that it can play more music than you can listen to in a lifetime. Check out the "Meet the Sonos Family" box on the previous page for detailed info about each of the Sonos components.

Setting Up the Sonos System – Is It Really This Easy?

For the purpose of this article, I set up a three zone Sonos system in my house, spanning my living/dining room, home office and outdoor patio. If your network router sits in the electrical room in the basement, like it does in my house, you'll need to start by connecting the BRIDGE there with an Ethernet cable. The remainder of the system can be set up wired or wirelessly – I chose to go with the wireless option. Next, I set up the CONNECT with my reference 2-channel music system (ModWright Instruments amp and preamp, Bryston DAC, Focal speakers);

the CONNECT:AMP in my home office connected to Totem speakers; and another CONNECT:AMP in my kitchen which feeds speakers on my patio. With all the components in place, I installed the free Sonos control app on my iPhone, iPad and iPad mini. Finally, I let the app know which and how many Sonos components are in my house – by pressing a button on each

component and a few screen taps on the app. And voila – I had a wireless multi-room system set up and ready to play. It's that simple.

Performance of the Sonos System

Since the initial setup of the Sonos system was so easy, I was ready to listen to tunes all over my house in about half an hour. Equipped with an iPad in my hands, I began exploring the Sonos universe.

The home screen of the Sonos app greeted me with a clean menu offering quick access to my home network music library, music on my iPhone, Internet radio, Songza, playlists and various online music streaming services. The home screen also offers the option to play music from any source connected to the line-in on any of the Sonos components. I started with my own music library, stored on one of my home PCs. The Sonos system automatically accessed all the music from the shared folders on my PC and allowed me to select it in a variety of ways – by artist, album, composer, genre, song name, playlist and even folder. All of my music is stored in the lossless FLAC format.

I began by listening to the CONNECT:AMP module connected to my Totem Rainmaker speakers, and for no specific reason, the first album to hit the speakers was Social Distortion's "Greatest Hits". I was instantly presented with some high energy guitar licks and vigorous drumming. The CONNECT:AMP offered a very nice stereo separation and great dynamics, making it easy to get right into the music. I'm particularly fond of the track Ball and Chain and its effective combination of a highly distorted electric guitar in the left channel with an acoustic gui-

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tar in the right channel. The CONNECT: AMP ensured clean delivery of each of the channels, with the distorted guitar never concealing the acoustic strumming. All the while, the vocals were presented with clarity, perfectly in the middle of the soundstage. Switching gears, I listened to Air French Band's Moon Safari album. The CONNECT: AMP put forth a fluid, natural sound with a good amount of detail, although not quite as good as I've come to expect from these tracks when playing on my reference 2-channel system. One of the more notable differences was the rain in the opening of La Femme D'Argent, which simply didn't sound as realistic. The bass on the other hand was danced around tunefully and with good note definition. Of course it wouldn't be a proper listening session if I didn't queue up some Beatles. With every track I listened to from the Fab Four, the CONNECT: AMP delivered a lively, consistent performance, with a good tonal balance. Overall, I'm confident in saying that the CONNECT: AMP offered an excellent, well balanced sound that many listeners should enjoy, when paired with a good set of speakers like my Totem Rainmakers.

But what if you already have a 2-channel music or home theatre system set up in your home and just want to connect it to your Sonos system? That's exactly what the CONNECT component is for. I set up the CONNECT with my 2-channel system, which consists of a ModWright Instruments KWA 100 amp and LS 100 tube preamp, and Focal Electra 1008 Be II speakers. At first, I used the CONNECT's analog outputs to feed my preamp, in other words utilizing the CONNECT's built-in DAC. The internal DAC's performance was very decent and should serve most listeners well. The detail extraction was good and the soundstage offered a respectable width and depth. However those with higher quality audio systems will definitely observe a significant jump in performance by utilizing an external DAC. With my Bryston BDA-1 DAC in place, the soundstage opened noticeably, offering a far greater width and depth. This translated into a much more three-dimensional soundstage, in which instruments and voices had distinct locations in space. Both the highest and lowest frequencies

also benefited. The highs shimmered, offering greater detail, while the bass notes played lower and exhibited better articulation.

User Friendliness and Reliability

With the Sonos system having spent over two months in my house, I had switched between the various music sources dozens of times and chosen hundreds of different songs. There was virtually no learning curve with this system. The Sonos app is very cleanly laid out and very straight forward to use. I often entertain family and friends at my place and those that are music buffs instantly felt in love with the Sonos system – some even installed the app on their smartphones so they could also control music playback. And let's not forget that by installing the app, they were also able to stream music from their phone to my Sonos system. How amazing is that?

The Sonos system allows you to play the same music in your entire home, or choose different music in each zone. It also lets you control the volume of the system as a whole or independently for each zone. This flexibility works wonderfully well in practice. For instance, on at least a few occasions I've listened to different music with the guys on my patio, while my girlfriend listened to something entirely different with her friends in the dining room.

When I first set up the Sonos system, I set up all three zones wirelessly and I was pleasantly surprised by just how reliable the playback was from my home network. During the several weeks I spent testing the system, it did not fail once while listening to music stored on my home office PC. I did however experience a drop out (signal loss) a number of times while listening to Internet radio and the online Songza music service. This issue was rectified by wiring up the CONNECT: AMP in my 2-channel system with a cable to my home network.

As I tested the system, I did experience a few other small quirks. For example, when I added a new album to the shared network folder on my PC, the Sonos app would not always pick it up after refreshing its music index. The solution was to close the app completely and restart it. On a few occasions when I woke up

my iPhone or iPad from sleep mode, Sonos app took a little while to reconnect with the wireless network, before I could control playback again. Sometimes after waking up from sleep mode, the app would display an entirely different song than the one that was currently playing. These quirks happened rarely enough that they certainly change my overall opinion of the system. Plus all streaming devices experience these issues one way or another. The Sonos devices were actually the most reliable streaming devices I've had the pleasure of playing with to date.

One of the things that I truly love about the Sonos system is that it offers a means of discovering new and old music that you may have not heard of otherwise, thanks to its ability to play Internet radio and online music services like Songza (free and commercial free). Forget listening to local radio stations that play the same songs over and over. I've discovered tons of music over the last few months by listening to British radio stations and Songza. A couple of years ago I would have been hesitant to recommend listening to streaming music services and Internet radio stations to anyone because of their low streaming bit-rates but things have improved significantly since then. Many of these services and stations now offer reasonably good quality – certainly good enough for music discovery and casual background listening.

One other important item to note about the Sonos system is that the company is actively releasing new updates for its smartphone/tablet app which fix certain issues and unlock new functionality. For instance, during my review a new update was released that now allows all Sonos components to stream music directly from all Apple devices.

Finally...

If you love listening to music as much as we do at the CANADA HiFi magazine, I strongly urge you to explore the Sonos range of products. You'll enjoy the number of component choices, the flexibility of the system and its functionality. Kudos to Sonos for offering music buffs such an awesome multi-room system!

Merlin Music TSM MMM Speakers

Malcolm J. Gomes

I am amazed at the number of audiophiles I meet, who buy speakers based on the size, exotic designs or some unobtainium materials that some manufacturers claim, deliver superior performance. I am also surprised at how some audiophiles assume that just because a speaker carries a high price tag, it must deliver a high level of performance.

This is a pity, because with proper due diligence, you can find modestly priced speakers which will significantly outperform their more expensive, exotic looking counterparts. Unfortunately many of these speakers do not get an audition because in many cases they are endowed with unpretentious aesthetics and somewhat conventional designs. One of the speakers that fall into this category is the Merlin Music TSM MMM (\$3,080), the subject of this review.

design features

The TSM MMM is a mini-monitor with a very traditional, understated design that is unlikely to catch your eye at a dealer's showroom. However, if you choose to put this little speaker through its paces, it will be quite a revelation.

The TSM is the brainchild of Bobby Palkovich a highly regarded personality in the world of high-end audio whose philosophy is to stay away from fancy designs and esoteric materials. Rather, he prefers to stick with what is tried and true while constantly squeezing out better performance from the same basic design with meaningful enhancements. Some detractors have referred to these enhancements as merely tweaks but the fact that these 'tweaks' have yielded significant and easily detectable improvements does seem to indicate that there is a method to this perceived madness.

For decades now, Bobby has bucked the industry trend of offering marketing driven "dramatically new and im-

proved" designs. Instead, he has offered just two speaker models, the mini-monitor TSM and the floorstander VSM. Aesthetically, they look more or less the same as they did a couple of decades ago even though, in terms of performance, they are worlds apart.

The TSM MMM was delivered in a largish carton weighing around 63 pounds. The speakers were packed very professionally and should be able to withstand a good deal of abuse during shipment. Installation of the jumpers and RC networks was simplicity itself.

The TSM MMM has bulletproof build quality and are quite heavy, given their modest size. They are offered in just one colour, studio black which is a matt, workmanlike finish. Other colours can be had if you upgrade to the MXM, which comes in a premium high gloss, clear coat finish. The MXM version comes in an array of very attractive colours including Piano Black, Ruby Heart Red, Moss Green, Black Ice Blue, Pearl White and Eggplant.

The TSM has a very small footprint and benefits greatly if married to a solidly built, low resonance stand with good stability. For the review I used the Sanus top-of-the-line Foundations Ultimate Series stand filled with sand.

The TSM is a sealed, air suspension enclosure and the cabinet is made out of pan fibre held together with super strong polyurethane glue. The gently curving front edges of the speaker cabinet minimize diffraction. There are three brass tuning rods on the front of the speakers that serve to control the pitch movement of resonance patterns in the unusually thick (1.5 inches) front baffle. They also lend an elegant touch to the speaker façade.

The TSM employs matched pairs of Renaissance 30.5 liquid cooled, silk dome tweeters and matched MW 164 pulp cone woofers. The crossover is a highly optimized 12 dB per octave with a crossover



point at 2,150 Hz. It employs Caddock, Cardas and Hovland parts and the circuit topology is of the same grade as its older sibling the VSM. Both drivers are wired in electrical phase. The internal wiring is all point-to-point hand wired using Cardas' top of the line Clear, which is custom made for Merlin Music. The terminals are the very cleverly designed Cardas no-stress binding posts, which allow for bi-wiring. Bobby recommends against bi-wiring or bi-amping the TSM unless specific wire gauges are used. The provided jumpers optimize the performance of the tweeters.

I strongly believe that, all else being equal, well-engineered two-way speaker systems have distinct advantages over their three-way counterparts. It is a lot easier to design a crossover that coherently blends two drivers as opposed to achieving the same level of top to bottom continualness when blending three different drivers. Three sets of drivers create an additional cancellation node, which adds even more to the problem and makes it very difficult to achieve good coherence. In my experience, two-way speaker systems also tend to be better at imaging.

The frequency response of the TSM MMM is 55 Hz to 19 kHz (+/- 2 dB, 1 meter on axis). To get the speakers to the optimum toe-in position of 11 degrees, Bobby provides a wooden alignment tool that makes it very easy, simple and quick



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to toe-in the speaker to just the right angle vis-à-vis the sweet spot. The TSM is rated to handle up to 80 watts peak, and has a sensitivity rating of 87 db. The warranty is an impressive 10 years and covers both parts and labour. It's one of the best in the industry. The TSM is a very easy load to drive, even with relatively low output tube amplifiers. This is because of its nominal impedance of 8 ohms with a minimum impedance of 6.5 ohms.

The TSMs are not too difficult to place. A good starting point is the Cardas method that is available on the Cardas website. From there it requires just a little tweaking to lock the sonic image into place. The alignment of the speakers is also crucial to getting the best out of the TSMs.

Which brings us to the meat of the matter, the sound quality. Having reviewed audio components for over 30 years now, I have come to expect and accept some pretty significant compromises with speakers in the \$3,000 price range vis-a-vis their more expensive counterparts in the \$10,000 plus range. It was therefore a pleasant surprise to hear the TSM, which kept those compromises to a minimum.

performance

The sound quality of the midrange delivered by the TSM is equal to all but the very best speakers I have heard in the \$10,000 price range. It is smooth, full, relaxed and incredibly realistic. The dynamic contrast is easily the best I have heard from any speaker under \$5,000. The highs are rendered with incredible realism and the bass is extraordinary for a speaker with a 6.25 inch woofer. It's not exactly subwoofer territory but all the way down to 55 Hz, it is tight, controlled and tuneful. Yes, there are plenty of speakers in the \$3,000 price range that will deliver much deeper bass than the TSM, but I would rather opt for a speaker that delivers bass down to 55 Hz accurately rather than one that goes much lower but without the control and tunefulness of the TSM.

The TSM is also one of the most neutral speakers I have heard in this price range. They are great at helping you gauge the quality of your upstream components, cables and interconnects. They have great synergy with Cardas cables. I tried out lesser quality cables and the TSMs were quick to reveal the flaws in them. They

truly deserve to be matched with superior upstream components and cables, which will bring out the best in them.

The TSM is also one of the best two-way mini-monitors I have heard when it comes to getting the woofer and the tweeter to dance well together. Bobby's choice of driver units and crossovers has resulted in a speaker system that has extraordinary continuousness across all audible frequencies. The transition from the woofer to the tweeter is amazingly seamless.

With my collection of around 72,000 tracks across my vinyl, CD, Sooloos and iMac music collection, covering most genres (except hip-hop and rap) I was able to try out a wide variety of tracks on the TSM. It acquitted itself with flying colours with every genre but it did show a penchant for jazz, classical and bluegrass.

The TSM is also the top of its class when it comes to sheer musicality. I have heard countless speakers that get everything right but are just not musical. There are speakers that may be a technical tour de force but just don't tug at your heartstrings when delivering a romantic love song or seduce you when playing a husky voiced diva or make you tear up when listening to a heartbreaking ballad. This is a quality that few speakers below the \$10,000 price range have and the TSM has it in spades, delivering the emotional content of the music that really lets you connect with the artist.

When it comes to reproducing voices, especially female, the TSM has few if any rivals in its price range. Most comparably priced speakers tend to sound quite nasal, one-dimensional and flat when delivering voices. In comparison the TSM makes it very easy to conjure up a flesh and blood body as the source of the voice.

Imaging is one of the TSM's fortes. If you get the placement right and play a very well recorded track, the TSM pulls a Houdini on you. The speakers sonically disappear while leaving behind a solid and well defined sound stage that is tall, wide and deep. They are also one of the most fatigue free speakers I have heard in this price category. During the review I tried an all night listening session with the TSMs and at the end of it, it was lack of sleep rather than listening fatigue that prompted me to end the session.

Does this mean that the TSM is auto-

matically the right speaker for you if your budget is around \$3,000 to \$5,000? Not really. If you are a bass freak who expects to not just hear the bass but feel its impact on your chest, the TSM is not for you. The TSM is also not recommended for very large listening rooms (over 3,500 cubic feet). They can play surprisingly loud for their size, but when you get to sound pressure levels of over 95 dB you can detect compression and other forms of distortion.

The TSM is also not recommended if your upstream components, cables and interconnects are not of high quality. These transducers are straight talkers and do not mind telling on failings in the upstream components and cables feeding them.

It did not matter whether I drove the TSMs with solid state or tube upstream components. It was comfortable with either but it was a smidgen more partial to tubes. One particular tube amplifier that the TSMs seem to waltz beautifully with is the Ars Sonum Filarmonia. The synergy of this pairing is very apparent.

Like most fields of consumer electronics, speakers are subject to technology obsolescence in some of their parts or circuits. This sometimes makes owners wish they had waited for a later model. Bobby has countered this factor by offering reasonably priced upgrades that bring older models amazingly close to the latest models in terms of performance. I have found that Bobby offers these upgrades only when he is confident that they will make a significant and meaningful difference to the performance of the speaker.

Customer service at Merlin Music is as good as it gets. Bobby is very accessible. Current and prospective customers can call Bobby at his factory in Hemlock, New York. He has extraordinary patience and will spend all the time you need, providing guidance and advice to help you get the best out of his sonic works of art.

quickinfo

Merlin Music Systems Inc.
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System Audio Aura 1 Bookshelf Loudspeaker

George de Sa

System Audio (SA) is a company that has been manufacturing loudspeakers for a few decades. The company was founded in 1984 by a musician Ole Witthøft, who is currently SA's leader of product research and development. As System Audio points out on its website, Ole, as a musician, knew what live music should sound like and after listening to a number of products available, took it into his own hands to build his own loudspeakers – SA being the direct result. SA is a Scandinavian loudspeaker company; based out of Roskilde, Denmark, which it announces on the cover of its product line brochure – simply stating, “cool scandinavian loudspeakers”. Though Scandinavian, SA is not exclusive to the Scandinavian market, in fact; it distributes its products virtually worldwide, including places such as Singapore, the Ukraine, Greece, Europe, the United States and yes, even to us, up here in Canada. Despite its widespread distribution, I hadn't made acquaintance with SA until this past September, when I was fortunate to come across its products at the Toronto Audio Video and Entertainment Show (TAVES). At TAVES, Kimbercan, the Canadian distributor for SA, featured a number of SA products and demonstrated their sonic prowess and aesthetic appeal. Don Rhule at Kimbercan was very accommodating in supplying us with a pair of SA Aura 1 bookshelf speakers for this review. In addition, Kimbercan graciously provided some Kimber Kable products (PBJ and Hero RCA interconnects, as well as 8PR and 8TC speaker cables) to accompany the Aura 1's on their maiden voyage in my listening room.

SA's philosophy is one of simplicity and the use of 'meaningful ideas that work in the real world'. What this means is that over time SA has built up a set of ideas, which it has found to work well in creating loudspeakers. This set of simple, yet proven ideas is what SA uses to create



its loudspeakers, in all its design varieties, something the company refers to as “system design”. Within this system design philosophy, SA holds that there are three essential qualities of a successful loudspeaker – musicality, integration and quality.

To SA, musicality manifests itself in sound, which the company feels is the most essential thing in a loudspeaker. High quality sound, to SA, is connected with speed. To foster speed, the membranes in SA drivers are extremely light and designed for fast and accurate response. Smaller rather than larger diaphragms are the choice, mated to motor structures that allow relatively greater piston motion – moving more air. SA also uses natural materials for the driver membranes such as paper, wood fibres, or textile. This approach, is what SA feels brings greater control, precision and dynamics and the best possible sound.

By integration, SA implies the ability of a loudspeaker to “function in the real world”. Choosing smaller drivers results in corresponding gains in dispersion and therefore, greater flexibility with room

placement. All SA loudspeakers are acoustically optimized for in-room use, including near walls. In terms of styling, SA offers a number of finishes combined with simple stylistic lines, allowing them to easily integrate with living space décor.

The third essential SA loudspeaker quality is just that...“quality”. To ensure quality, SA involves its employees in the end-to-end production process, from assembly to testing and packaging. Each loudspeaker is subjected to no less than 14 quality tests and is backed by a two year manufacturer warranty but it doesn't stop there, SA claims its loudspeakers are actually built to meet their technical specifications for 12-15 years.

design | features

There are a total of seven different series in the SA loudspeaker line-up, namely: Reference, Mantra, Aura, Saxo, XP, On-wall and the Aktive Subwoofer series. The Aura 1 is the smallest member in the SA Aura series and one of their most recent additions. Speaking about small, the Aura 1 is just 27.5 cm high, 13.5 cm wide and 21.9 cm deep; and is one of the small-



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SONOS

est SA speakers ever. Though small in size, this little critter weighs in at a very respectable 4.5 kg, which says something about its construction. In fact, the Aura 1 is constructed of 18 mm MDF and has an integrated cabinet base that is 25 mm or just about 1 inch thick. This rather unique base controls vibration, while serving to house twin front bass ports and a rear set of shrouded gold-plated binding posts. On the bottom are four tiny but effective dampening feet – no blue-tack required here.

The Aura 1 is a two-way bass-reflex design with a stated frequency range of 52 – 35,000 Hz (+/- 3 dB), 8 ohm nominal impedance and 80 watt power handling. The tweeter used is a 1 inch textile soft dome matched to a 4.5 inch long-throw mid/bass driver. Don't be deceived by its size, the Aura 1 with its low sensitivity of 84 dB/1w/1m, calls for an amplifier with some guts - a minimum of 50 watts is recommended.

SA caters to décor by providing the Aura 1 in three finishes: black ash, ebony and white satin. I saw the ebony finish at TAVES and found it quite striking - the review set came in white satin, making a fresh, clean and contemporary statement. At least a couple visitors to my home complemented its looks. I was impressed by the impeccable build and finish quality. The little face of the Aura 1 was quite endearing, having just enough space for the bantam woofer and soft dome tweeter with its waveguide. Not that it was delicate looking but cute, just the same.

performance

I strapped the pair of Aura 1 speakers into my kit - a Bryston BP6 preamplifier, 4B-SST2 amplifier (might sound like overkill but we'll see) and Logitech Squeezebox Touch (a sleeper of a product if there ever was one but sadly now discontinued). Using the Kimber Kable interconnects and speaker cables that were provided by Kimbercan, I broke in the Aura 1 loudspeakers. SA recommends giving these speakers between 50 to 100 hours of break-in, which is what they got and then some. I can say that when I first plugged them in, what I heard was vague and sedate but those first impressions were soon to change – break-in brought on a metamorphosis, a new creature emerged.

sidebar



Kimber Kable

As mentioned, for this review, Kimbercan provided me with a couple sets of PBJ and Hero unbalanced interconnects, as well as a pair of 8PR and 8TC cables with SBAN terminations. I found these products to be all well made and of high quality. I was able to experiment with them and developed the following impressions that I thought I would share:

PBJ Interconnect (\$135/pair): is a high-value cable that provides lovely detail across the frequency spectrum while maintaining neutrality. It delivers very nice definition and imaging, with controlled bass frequencies that are well extended. High frequencies have lovely extension and the mid-range is natural and smooth, without sacrificing detail. This cable maintains excitement and rhythm.

Hero Interconnect (\$270/pair): is essentially neutral but embodies some additional warmth. Though somewhat relaxed in overall composure, the Hero effectively avoids any harsh-

ness in the upper frequencies, presenting treble in a delicate and composed manner. The midrange is full and smooth with a soundstage that is noticeably holographic. Bass frequencies are full bodied and detailed.

8PR Loudspeaker Cable (\$222): a solid performer with fullness and heft in the bass frequencies. It has an overall neutral tonal quality, while being just a touch rolled-off in the upper-most registers. It is able to foster a dynamic performance.

8TC Loudspeaker Cable (\$510): delivers a neutral and defined sound with wonderful top-end extension that serves to bring out the shimmer, airiness and delicacy that are present in many high resolution recordings. This cable provides a holographic soundstage with wonderful imaging. It is fast, bold and dynamic. Overall, the 8TC delivers a very addictive combination of sonic qualities.

Look for more details on Kimber Kable products at: www.kimber.com or www.kimbercan.com

SA designed the Aura 1 to be used in a multitude of applications, including on a shelf, within a bookcase, on wall or ceiling, as well as more traditionally on speaker stands; magnetic shielding provides even greater flexibility. I began with some placement trials. First, I tried sitting them on a low shelf, then with actual books to their sides akin to a bookshelf and eventually I moved them to stands. On the shelf, their bass was strong – striking, in fact. However, though the bass was robust, giving the little Aura 1 a large-and-in-charge demeanour it wasn't quite linear,

with some bloating in the 60 Hz region; however, I could see how many might find this bass heft appealing. Putting books to their sides didn't seem to impact their tone but it compromised centre focus and imaging. All said, the Aura 1 was definitely usable in either placement but ultimately, it was on stands that they found their best voice. Sitting on stands they sounded tighter, more accurate and had the best imaging. Stand placement was also a factor. With the stands three feet away from the back wall, the Aura 1 was wanting in bass, moving them to within a foot of the

walls and like a waking giant the Aura 1 acquired a much stronger and dynamic presentation and so that is how they sat for my ensuing listening sessions.

One album that's been getting a fair bit of play in my home is Melody Gardot's latest, "The Absence". The album is thoughtfully named, as it comes after her hiatus from the recording scene. If you haven't been exposed to Melody Gardot's wonderful voice and recordings I'd say you're missing out – go get acquainted. With the track, Lisboa, church-bells rang in the distance and the sounds of outdoors served to captivate me. Bells ringing from left to right carried not only a natural metallic brightness but also a fullness of tone. Melody's voice came in warm, inviting and noticeably smooth. This warmth in the midrange was enticing and quite surprising given the small stature of the Aura 1. A shaker was delivered with a raspy character, while bringing forth the echo of the surrounding recording venue and embodying a three-dimensional quality. I found the cymbals clear with their trailing sustain present but somewhat subdued and brief. The stand-up bass sounded surprisingly full – not quite like a full-size tower loudspeaker but enough to have you thinking you were listening to considerably larger speakers. Bass string plucks had an enjoyable tension and guitar too was delivered with a wonderful tonal quality, body and detail.

It was here, that I swapped in my Epos ELS3 bookshelf speakers for comparison. Though the Epos is larger in size with a bigger 5 inch woofer, it weighs no more than the Aura 1 and was unable to match the Aura 1 in bass weight and extension. The Epos though brought its own strengths to this aural table – delivering more distinct leading edges on notes and revealing more of the ambient sounds on this recording, such as the rustle and air of the outdoors. Cymbals with the Epos also had a more apparent shimmer and greater sustain. The soundstage with the Epos was more open and airy, adding to its size. However, vocals were more etched with sibilance more evident. I moved next to the track Amalia, which is a playful tune that balances an uplifting rhythm with the melancholy. Here the Aura 1 successfully imparted the varying emotions that Melody's voice and the arrangements were

intended to evoke. There was a very nice weight to the opening bass pluck, a lucid portrayal that had me riveted. Melody's voice, once again, sounding beautiful, liquid and smooth – her vocal inflections coming across in a natural manner. The guitar plucks had a nice snap and were accompanied by a healthy share of woody resonance. On the back-up chorals, the voices were set a little behind Melody and stretched from left to right, just pushing outside the room boundaries. The bird chirps at the end of the track left me wanting for more. With the track, So We Meet Again, the Aura 1 effectively demonstrated its ability to layer elements in the soundstage – bass centred and to the back with violins spread across the rear and guitar up front centre and to the right. Cymbals on this track were soft and feathery, though just a tad short on sustain.

I moved to the Cowboy Junkies, The Trinity Session album. First up was Sweet Jane. The high-hat was clearly to the right and the most forward element. Margot's voice was velvety and delivered in her whispering style with enticing smoothness and inviting clarity. The echo of the venue was apparent but a little contained, which brought a little more intimacy and warmth to the tune. Cymbals here were clear in their intrinsic metallic quality but somewhat subdued in their shimmer. Bass and guitar, from the rear was clear and distinct. On Misguided Angel, the airiness of the church venue was exposed. Here the Aura 1 did not disappoint in conveying the faintly whispered count, which ushers in this track...”2, 3”... Instruments were defined in their spaces and the micro dynamics of the strings were noticeable. Bass here again had impressive weight and respectable extension. Some of the deepest sonics on this album were absent but it did not detract from the musical enjoyment the Aura 1 was able to provide.

I decided to give the Aura 1 a little

different workout – moving to the Tron soundtrack from 2010. This soundtrack is an interesting mix of a full orchestra with Daft Punk's take on electronica. The album tests grandeur, delicacy, details and dynamics. On the tracks, Recognizer, Armory and Rinzier, the Aura 1 served up surprising bass weight, extension and dynamics. The soundstage was respectable in size and had good definition. I did find that some of the airiness and uppermost frequency presence were reserved. Here again I compared the Aura 1 with my Epos ELS3 speakers. The Epos was better able to bring to light the immensity of the venue, adding a greater airiness and delicacy to the track. That said, the authority which the Aura 1 delivered on this track and the overall ease was not to be matched.

The Aura 1 is a wolf in sheep's clothing. It truly surprised me in terms of the sheer size and body of the sound that it was able to command. Unlike bookshelf speakers of its size or some considerably larger, the SA Aura 1 can deliver midrange weight and bloom that leaves little to be desired. Its lower midrange and upper bass reproduction is quite astounding given its modest dimensions. Voices come across with a humanness and warmth that is very inviting. In the treble, the Aura 1 has a slightly dark quality, which ensures that it never sounds dry, etched or rough. This can be a wonderful thing when it comes to the many substandard recordings that are out there and also lends itself very nicely to rock, alternative and the like. High frequencies are more silky than incisive, which can be very pleasant. With a list price of \$799 / pair, the Aura 1 is speaker to take note of. System Audio has managed to produce something in the Aura 1 that embodies contemporary design, big sound and musical beauty. The company's philosophy has obviously served it well.

quickinfo

System Audio

www.system-audio.com
++45 36 45 80 80

Distributed in Canada by Kimbercan
www.kimbercan.com, 647-688-4619

System Audio Aura 1 Bookshelf Loudspeaker

Price: \$799/pair CAD

Focal Spirit One Headphones



George de Sa

Focal is a consumer and professional audio product company. It is the largest loudspeaker company in France, producing both finished loudspeakers as well as manufacturing loudspeaker drivers. The company has been in operation since 1979. In its 30 plus years of existence the company has produced a bounty of loudspeaker and audio products, including its current flagship \$190,000 US Grande Utopia EM loudspeaker. Given this heritage, when I got word that Focal was going to enter the headphone market, I was no less than enthusiastic to get the details. How would Focal's knowledge, experience and expertise manifest itself in a hi-fi headphone product? Enter the Focal Spirit One hi-fi mobile headphone.

The Spirit One is the result of two years of research and development on the part of Focal. It is the company's first foray into

the very competitive headphone market and is just the start of more to come. Focal reportedly intends to introduce higher-end audiophile and pro-audio models, to its Hi-Fi Headphone line in the future. In the meantime, we have the Spirit One mobile headphone. Would the Spirit One headphone convey "the Spirit of Sound" that Focal professes its products embody? Well, with its arrival at my door, I was definitely eager to find out.

design features

Just one look at the Spirit One, and I think that most would agree, Focal has created a distinctive looking headphone product. The Spirit One carries a handsome, progressive and upscale appearance that makes for a unique fashion statement. The overall styling leans to the masculine, while very successfully integrating stylis-

tic lines, materials and textures, including: brushed aluminum; silver accents; suedetextured rubberized plastic; a robust headband with hefty hinge assemblies and butter-soft leatherette skull and ear pads. Two colour schemes are offered - black with silver trim and white with grey and silver accents. With either, Focal provides just a tease of colour, red in both cases, concealed within the ear cups. Maybe it's just me but I thought the red might be a go at the risqué – like red lingerie for the ears... Both the black and white are distinctive and tasteful, yet I'd expect that more men will go for the black, given its austere appearance, while women will lean to the white, for a friskier façade.

Going from aesthetics to engineering, it's hard to not be fascinated with the intricate matrix of parts that go into a set of Spirit One headphones, as seen in the



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exploded image on this page. Such engineering is not commonplace and requires access to engineers, tools, software and knowledge – all things that a company such as Focal has at its disposal. Though all of the design, as I understand it, took place in France, the actual product is made in China. Getting into the specifics - the Spirit One uses 40 mm mylar/titanium dome diaphragms, has a 32 ohm nominal impedance and a sensitivity of 104 dB/1 mW/1 kHz. This makes the Spirit One easy to power, even with low output mobile devices such as iPhones or iPads. The frequency response, especially impressive on the low-end, is stated from 6 Hz to 22 kHz. The headphone cable is a 1.2 metre anti-tangle fabric sheathed OFC construction with an in-line three-button smart device remote and mic. At each end of the cable are gold plated mini-plugs (3.5 mm) that have an aluminum casing emblazoned with the Focal name – kudos to the marketing team. This cable allows for easy replacement or upgrade. The in-line remote control allows for calls to be picked-up or ended, volume adjustment, pause and forward/back skipping of songs. It is designed to be fully compatible with most Apple iDevices, including the iPhone 5 and iPad 3, with varying compatibility with other smart devices. The ear cups use two-point hinges that allow them to fold-in or swivel 90 degrees for flat storage. In addition, an aluminum frame combined with plastic pieces provides strength, flexibility and lightweight, at just 225 grams.

The Spirit Ones employ a closed-back circumaural design, which means that the ear cups are meant to sit directly against the skull, completely encircling the ears. This together with the firm spring hold of the headphones yields an ambient noise reduction of up to 20 dB. However, since the concave of the ear cups measure just 4 cm (wide) x 5 cm (high), I expect a true circumaural fit will be difficult for most – this was my experience, even with my relatively small ears (3.5 cm by 6.5 cm). Still, overall, I found that the isolation provided was more than adequate for most situations – including riding public transit or walking in a shopping mall. With leatherette, as soft as a baby's bottom, covering the articulating and spongy ear cups, I expected the fit to be comfortable but I soon found out the Spirit One grips like a Venus Fly Trap – taking some getting-used-to. That said, it wasn't long before I grew to find them very comfortable, even for extended listening.

The accoutrements (it's a French derived word) provided with the Spirit One were generous, including: a screw-on 3.5 mm to 6.5 mm adapter plug; twin-pin airline jack adapter; fabric drawstring travel pouch and a fabric covered semi-hard moulded, zippered storage case.

I should mention that during the tail end of my evaluation, the Spirit One began emitting distortion from the right ear piece. The Canadian distributor, Plurison, very quickly replaced the set, allowing me to complete this review. Such unexpected things do happen but it gives comfort that Focal offers a two-year manufacturer parts and labour warranty on the Spirit One, which is double the usual length for headphones.

performance

For my listening sessions, I used the Spirit One with my iPad, while on the move and with my Grant Fidelity DAC-09 headphone amp, when at home. I also took the time to compare the Spirit One to my resident Grado SR80 open-back cans. Much like other headphones, out-of-the-box, the

Spirit One sounded a bit constrained and dark. A bit of break-in time resulted in noticeable improvements, including better tonal balance, increased macro/micro dynamics, higher sensitivity and greater detail retrieval. It took just about 50 hours for them to begin to really strut, with more subtle improvements over the next 25 to 50 hours.

Melody Gardot is one of my favorite contemporary music artists and her albums get a fair bit of play in my house. Her latest album *The Absence*, is a new musical direction for her. Influenced by her extended travels from the deserts of Morocco to Lisboa, to Buenos Aires and other exotic destinations, she has successfully fused these elements into her bluesy jazz. *The Absence* is a beautiful sounding album, with lovely arrangements and melodies. When I listened to the track *Amalia*, on the Spirit One, Melody's voice imbued natural warmth with her trademark inflections nuanced and present – yet, relaxed. The bass, though bountiful was tight and defined with string plucks remaining distinct and resonant. Guitar plucks, communicated both the body as well as the string reverberations in a convincing way. I found symbol strikes had a feathery shimmer, though perhaps a touch soft in expression. In this tune, a shaker is heard and the Spirit One not only depicted it with its characteristic rasp but also making the granules moving within evident. On the track, *So Long*, I couldn't help but notice the lifelike hollowness in which popping sounds were delivered. Melody's sombre tone came across in a manner that gently drew me into the emotion of the song. On the tonal side, xylophone percussion delivered characteristic variations in woody tones. There was a stark difference in presentation with my Grado on these tracks. The Grado brought across a comparable amount of detail but sounded lighter and livelier. The bass was detailed but weak in comparison, lacking body and Melody's voice sounded a little too chiseled, missing warmth and a level of humanness. Quite surprising was the fact that the Grado, in spite of being open-back, didn't give a sense of any greater space than the Spirit One – not an insignificant achievement on the part of the Focal cans. That said, the Grado did outperform the Spirit One in providing a sense of air

around instruments and in transparency but at the cost of warmth, body and fullness.

Moving from jazz over to progressive rock – I listened to the British band Elbow and their album *Build A Rocket Boys!* On the track *Lippy Kids*, the opening repetitive single keyboard note was provided with a rich bloom and good impact. Guy Garvey’s whistle was convincing, sounding a fair bit back, with the reflection of the recording venue coming through and giving a sense of space. The bass line was solid, warm, yet taught. My headphone amplifier tended to give the Spirit One a little more than neutral bass but with the iPad direct, the tonal balance was flatter. In contrast, listening to the track with the Grado SR80, produced a considerably lighter overall balance. Guy Garvey’s voice was more raspy and less full – seemingly more focused but with less meat on the bones. The bass guitar line with the Grado was dry and didn’t ground the tune. The Grado though did reveal more airiness and openness between instruments, as well as reverb from the venue.

Trying something different once again, I stepped it up to Metric’s – *Live it Out* album and the track *Poster of a Girl*. This is a very heavy track, which is great for getting an idea of how headphones can perform with rock. The thump of the kick drum effectively anchored the track. Bass plucks via the Spirit One, came across taught and full with a hearty sound. When Emily began singing, the character of her voice was all there – just slightly nasal, girlish and seductively wispy. The cymbals were tamed to some degree but remained realistic – just as if they were a little further off. It was evident the Spirit One had a way with rock – able to tame the rough edges while still keeping it real. In comparison, the Grado, delivered ruthless clarity and definition but compromised weight of the track, diminishing its impact. Drums were reduced in perceived size and presence. Overall, the Grado made the track more two-dimensional, robbing it of fullness, versus the Spirit One.

To summarize the sound of the Spirit One, I would say that they present a very integrated and essentially neutral take on most tracks. They provide taught, full and extended bass, polite treble and a surprising out of your head soundstage. That

said, they are somewhat reticent on the extended hi-frequencies and consequently may be found as a little short on transparency. However, this might be considered a benefit, given the multitude of brittle and tipped up recordings that exist, as well as the less than optimal mobile playback devices. Music through the Spirit One was consistently portrayed in a natural and warm manner with no spotlighting or accentuation. The midrange of the Spirit One has a velvet-like smoothness, sounding lifelike with both male and female voices and bringing with it a sense of humanness. Interestingly enough, though I found that detail, dynamics and tonal colour were more present with my headphone amplifier, the overall frequency balance seemed a touch more even when I ran the Spirit One directly off my iPad. With the iPad there was a slightly lighter overall weight that provided a perception of greater openness. I would speculate that Focal spent some considerable time optimizing the Spirit One for iDevices /

mobile devices.

In a nutshell, if you’re looking for a good set of sealed headphones for mobile use – the Focal Spirit One should definitely be on your short list – they provide great value. If you’re going to rely on your iPod/iPad/mobile device alone to drive your headphones – the Spirit One is an absolute must for audition. These headphones do capture “the Spirit of Sound” and they look great while do it too!



quickinfo

Focal
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www.plurison.com
1-866-271-5689

Focal Spirit One Headphones
Price: \$279 CAD

Clearaudio Solution Turntable



Michael Osadciw

There's no doubt that vinyl playback has seen resurgence in recent years. Local hifi shops have been advertising and stocking more tables as a way to generate interest again. They are supported by the music industry's constant supply of both classic and new releases on vinyl, spanning all genres or music. For a few reasons important to me, I didn't want to be left behind in the quest for higher fidelity in physical media. I took the needed time listen to a variety of tables and Clearaudio was one of the companies that offered something unique. The emotional delivery of music is tangible from its product line. Unlike

the brand new products we normally evaluate in these pages, this review looks at the Clearaudio Solution turntable which I recently added to my system. The Solution isn't a brand new product but nevertheless, there is a great deal to be learned from this review if you're thinking about picking up a high quality turntable. I purchased the Clearaudio Solution, priced at \$3,200, equipped with Clearaudio's Satisfy Carbon Direct-Wire tonearm (\$1,400) and fitted with a Benz-Micro Glider S medium output cartridge (\$1,050). For a total bill of \$5,650, I felt that this combination offered a lasting impression of great design and performance.

The Clearaudio name has delivered

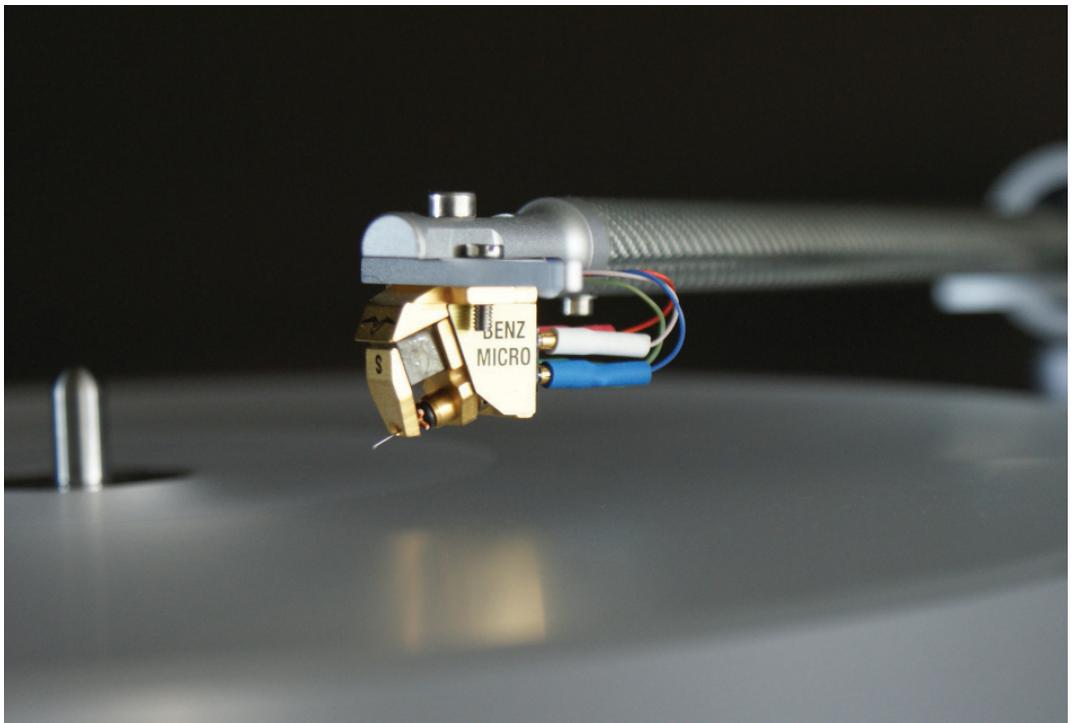
high-quality analogue products for over thirty years. Mainly a family operation, it is based on the vision and philosophy of those in the company. Its mission is to continue setting new high fidelity standards in the analogue reproduction of music. Clearaudio wants to maintain its business model as company set apart from the rest regarding quality products, manufacturing, and products that are built to last. All Clearaudio products are handcrafted in Erlangen, Germany and nearly every outsourced part is manufactured there too. Clearaudio staffs its own engineers and has its own production and testing methods. This enables the company to perform its own documentation on acoustic and

technical tests and measure each item rigorously before moving onto to mass production. Another great benefit is that the company stores original high quality spare parts for 25 years, if a repair or replacement is needed. Thus, if you're looking for new analogue gear, this is certainly a company that you should consider. Clearaudio manufactures turntables and tonearms, cartridges, phono preamplifiers, class-A amplifiers, and a variety of audiophile accessories such as racks, cables, and plugs.

design features

What first caught my eye about the Solution was its appearance. The transparent, tri-shaped resonance reducing acrylic chassis offers three points of contact to an audio rack. It looks a bit like the capital letter Y with each end being capable of accommodating a tonearm base – yes this turntable is capable of housing three tonearms at the same time. The high-precision turntable platter is made out of solid silicon acrylic and is spun by an inverted bearing with a polished ball bearing. This unit has the upgraded CMB-Bearing, a Clearaudio patent where a high precision ceramic vertical axle fits perfectly in a bronze bearing. After lubrication, the platter floats by itself on an air cushion rather than on a ball bearing, allowing for smoother turns and less drag. Supplied gloves prevent oils from the skin staining the plain translucent platter during assembly. To make this table turn, the supplied drive belt is affixed on the outer edge of the platter and spun by an acrylic pulley from a stand-alone synchronous motor. The pulley is capable of spinning vinyl at either 33.3 or 45 RPM with a speed variation of $\pm 0.2\%$. A 78RPM pulley is available as an option.

While some of the intricate items were already pre-assembled, I found it an art setting this table up when using the supplied levels and pads. For additional vibration elimination, I opted to put the



supplied pads under the motor and placed carbon fibre Black Diamond Racing LM Discs under the turntable's conical feet to reduce micro vibrations. In fact I decided to place the turntable on three large marble slab tiles that sit on the top of my audio rack. Not only did it make the setup look even better through the transparent acrylic, but it improved vibration isolation as well. The table was shipped with all accessories, a manual, and 5-year warranty card in a fairly large box with all pieces separate from each other for safe transport.

The Satisfy tonearm is available in aluminum, carbon fibre, and the much denser ebony and satiné wood versions. Each offers its own distinct sound. I thought that the very lightweight carbon fibre version would be a good match for the Benz-Micro Glider SM cartridge. The Satisfy tonearm has high quality Swiss vertical and lateral bearings.

Connecting and tweaking the headshell to the tonearm is easy, with an Allen screw that simply slides through a mounting bar. The tonearm has adjustments for weight, azimuth, and antiskating. The vertical tracking angle (VTA) can also be set but not during playback like with the newly introduced Clarify tonearm. The Satisfy can be optionally fitted with high-quality RCA connectors, although I chose to use

what I thought would be the best option and that was to have it directly wired. It is what the name implies: the wiring from the headshell continues within the tonearm directly to the male RCA connectors in a length that totals about a meter. The arm lift is extremely smooth and allows a gentle, controlled needle drop anywhere on the vinyl with very good accuracy. The Satisfy reviewed here was listened to using the Benz-Micro Glider S medium output cartridge. My phono preamplifier is Ayre's excellent phono stage built within the K-1xe preamplifier. The turntable was professionally and meticulously set up so that I could ensure it delivered the best it could. With my patience wearing thin and wanting to dive right into my music collection, I was finally ready to spin some vinyl.

performance

I connected the Clearaudio Solution to my reference system comprised of the Ayre K-1xe preamp (with Ayre's built-in phono preamp) and three Theta Enterprise monoblock amplifiers powering a pair of Dunlavy SC-IV/a loudspeakers and one Dunlavy TSW-VI tower subwoofer.

As I watched the turntable spin and listened to the sound, I immediately wanted to revisit all of my albums all over again.

For the first time in a long time, I had achieved complete system synergy. I felt wonderfully connected to the music as the instruments and voices drew me completely away from this busy world, for extended moments of time. I listened to many recordings, spanning a few genres, but since I'm a part of generation X, I gravitated toward new rock and electronica albums. I first started with the M83 double-album "Hurry Up, We're Dreaming." Anthony Gonzalaz's eclectic dreamlike atmospheric sound, fused with ambience and dark lyrics, filled my room from wall to wall. I immediately knew I was been taken by the music and couldn't miss the chance to turn out the lights and close my eyes with this late-night listen. Compared to the loud and compressed CD version of this album, the Solution delivered this vinyl's wide dynamics, creative use of depth, and punctuated bass.

Amazed by the bass delivery of this turntable rig, I was interested in exploring it further. I next listened to a recent band-project "How To Destroy Angels" created by Nine Inch Nails front man Trent Reznor and long time collaborator Atticus Ross. The EP "An Omen" has some interesting tracks, but the one that really tested the bass capability of my audio system was "Keep It Together". Sporting a heavy and deep bass line, the Solution proved to be no slouch by any means. In fact, I was surprised about how good the bass was from my Dunlavy TSW-VI subwoofer tower, which blends seamlessly with the Dunlavy SC-IV/a speakers. The subwoofer is designed to have no overhang or thick, lumpy bass. It was great to hear that the Solution had none as well. I could hear and feel everything, from a slight ripple and change in bass tone to a pant-shaking effect. The Solution/Satisfy combination is quick and firm. If it can do this with well produced electronic music, it can do the same for rock.

The remainder of my listening happened over a period of weeks and consisted of changing many albums. If I had one wish, it would be to make the centre pin in the middle of the platter just a bit thinner. Sometimes I found it difficult to pull albums off without bending them a bit. It was even trickier when swapping out 10 inch albums as I was afraid to twist and scratch the vinyl on the platter. But this

also seemed to be an issue with the vinyl. Some have larger holes and the album lifted with ease.

I listened to Florence + The Machine, Foster the People, The Black Keys, Bjork, Bob Marley, Pink Floyd, King Crimson, Tori Amos and Radiohead. A bit of classic rock mixed with the new, the Solution was not biased one way or another. I feel like this turntable was almost a passive device; it just played what was on the record regardless of how good or bad the recording was. In that sense it was very revealing which some people see as both a blessing and a curse. It made my good recordings from Radiohead and Bjork sound great.

Thom Yorke's voice in the song "Nude" from the 45 rpm edition of In Rainbows never sounded so eerily close to me. I felt the distance between him and I, and the rest of the band convincingly laid out in the room. The 45 also clearly had a lower noise floor when compared to the rest of the records I played, therefore it was always an album I returned to over and over. The Solution was quiet as ever and at no time did I detect the mechanisms of the motor or the table in the audio playback.

The sibilance often found in Bjork's voice on the CDs was virtually gone (but that's also a CD mastering issue which makes vinyl the better choice for some recordings). The song Isobel from Bjork's Post album has always been one of my favourite tracks. Bjork's voice finally had the silky vocal quality I've been wanting every time I listened to the CD. The strings in the orchestra took on a separation I've never heard before in this song. I could hear individual players on their string instruments.

The Solution also showed me that not all new rock albums can be saved from bad recordings. Florence + The Machine's excellent album Ceremonials is loaded with great songs, but sadly the compression in the recording is just too great to sound live, despite this vinyl sounding better than the CD. While I appreciated the Solution being honest with the recording, I was left wishing more care was put into the consistency and quality of mainstream recordings. The same can be said with Foster the People's Torches album. Songs such as Helena Beat were full of atmosphere and dynamics. I felt like I was ready to dance to the music at a live concert event.

It got my foot tapping! But then the second song Pumped Up Kicks sounded over produced, congested, flat and restrained. I commend the Solution to deliver such differences in recordings and being faithful to the source.

The Clearaudio Solution has spent more than six months in my 2-channel system now. It continues to perform to my highest expectations and delivers my favourite recordings with precision and pride. The Solution turntable and the Satisfy Carbon tonearm are an amazing combination, and they will gladly work with a wide range of cartridges. If you'd like to challenge your music system with even greater resolution, Clearaudio has numerous higher performance models, each incrementally improving on every design aspect. If the Solution and Satisfy Carbon duo is outside of your budget, I highly recommend looking at Clearaudio's more affordable models as I find the company's entire range of turntables to deliver great value at the various price points. I have no doubt that this turntable rig will keep me satisfied for many years to come. Highly recommended!

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Clearaudio

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1-800-263-8151

Clearaudio Solution

Price: \$3,200 CAD

Clearaudio Satisfy Carbon Direct-Wire tonearm

Price: \$1,400 CAD

Benz-Micro Glider S medium output cartridge

Price: \$1,050 CAD

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