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Harman Luxury Update - August

Harman Luxury Dealer Councils

By Dave Tovissi - VP & GM, Luxury Audio

After reviewing the feedback and comments on our Supplier Survey, my team met and determined we needed to get much closer to our dealers. That led to the creation of Harman Luxury Audio Dealer Councils. I recall from my time as a luxury audio dealer how valuable it was for me to participate in dealer councils with the suppliers. I remember how passionate all the dealers were when the time came to share new product concepts and ideas. With that being our goal, I would like to officially announce the creation of the JBL Synthesis Dealer Council.

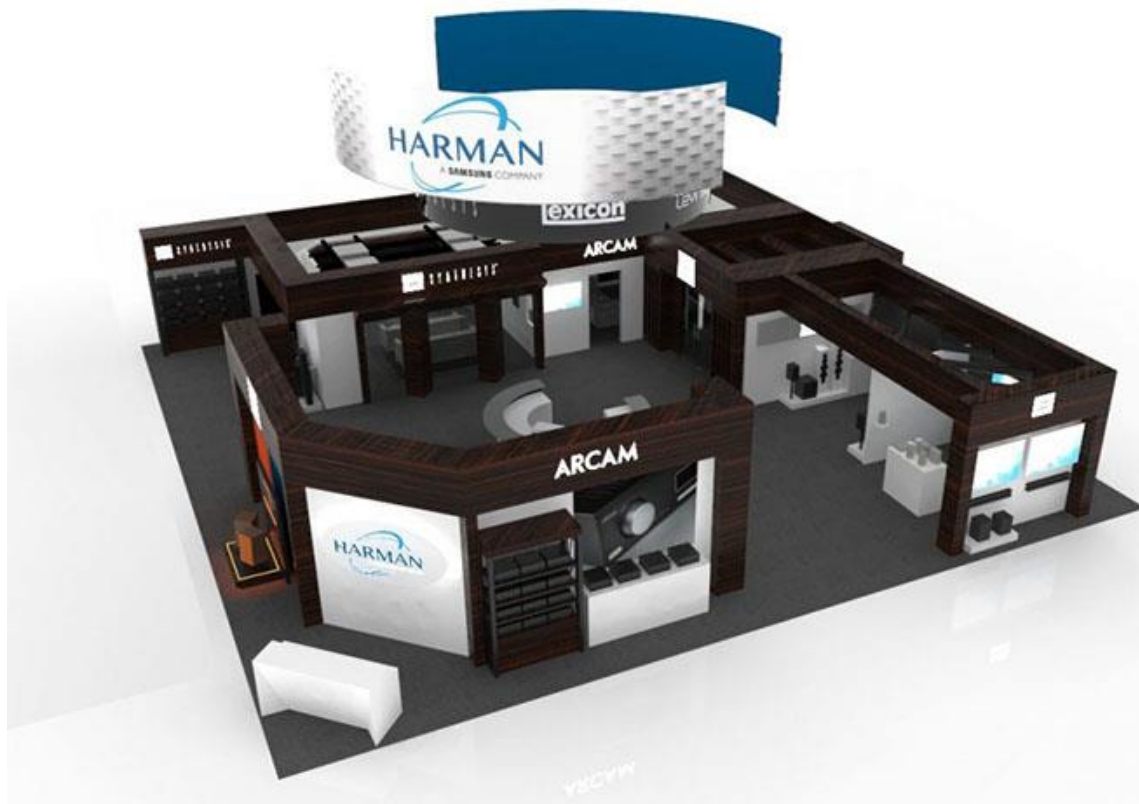


We are introducing several new JBL Synthesis products at CEDIA next month and we have set aside a substantial R&D budget to continue to release new multichannel cinematic products in the future. As the benchmark for home cinema products, JBL Synthesis needs to maintain its competitive edge by continually introducing more innovative solutions for our dealers. The JBL Synthesis Dealer Council will allow our

dealers to have input into the products we are developing, and you will help us prioritize these products based on the voids in the market. As a member of this prestigious council, you will also help us determine how to properly train and certify dealers on the complexity of our products. You will have input in the creation of our Synthesis System Designer tool to help you specify our systems based on room dimensions and budgets.

Our first JBL Synthesis Dealer Council event will be held at our Northridge Campus in January 2020. Northridge is home to our Professional Solutions and Harman Luxury Audio Product Planning Divisions, and is also the epicenter of all Harman Acoustics design and engineering. Members will have the opportunity to meet with our Electronics and Acoustic Engineers as they share their visions for future products. Additionally, you will get to experience the Eargle Theater, which showcases many of our JBL Synthesis products and will inspire your visions for JBL Synthesis solutions in the future.

If you have interest in becoming an inaugural member of the JBL Synthesis Dealer Council, please e-mail me at david.tovissi@harman.com. Include dealer name, proposed representative, and the reason you feel you would be a great asset to the council. Please put "JBL Synthesis Dealer Council" in the subject line. Thanks, and I look forward to hearing from you!



What's New

Harman Luxury Audio at CEDIA 2019

By Jim Garrett - Senior Director, Product Strategy & Planning

I can't believe it's almost that time of year again! The time when our industry gathers for this annual event we call CEDIA Expo, showcasing exciting new products and technologies, delivering powerful educational sessions, and meeting with our partners and friends to discuss how to drive new business together. As a manufacturer, enormous amounts of time and resources – both human and material – have gone in to the research and development of the products we are introducing to you. And nearly as much time and effort has gone into our booth in order to provide the perfect experience for our partners who are seeing the fruits of our labor for the very first time. For Harman Luxury Audio at CEDIA 2019, we are excited to launch more than two dozen new products and feature six compelling product demo areas, guaranteed to get you thinking about how we can Empower Your Possibilities. You definitely will want to be there to see and hear it all for yourself!



As the marquee introduction, we will be announcing a re-imagined JBL Synthesis brand with six new products, new dealer certification levels, advanced technical training (including three sessions during Expo 2019), a new JBL Synthesis technical support hotline, and more. New JBL Synthesis products include two 16-channel surround processors, a first-ever 16-channel AVR, two new G-class power amplifiers, and an exciting new SCL loudspeaker that is sure to become a very popular product. Be sure to visit our JBL Synthesis 9.1.6-channel demo room to experience some of these new products in action, along with our recently launched SSW-3 in-wall subwoofer system and our award-winning SCL-2 in-wall loudspeakers.

This past May at High End Munich, we previewed the amazing new Arcam SA30 integrated stereo amplifier that features a powerful G-class amplifier, GoogleCast streaming, Dirac Live room correction, high resolution DAC, HDMI eARC input, MM phono stage, and a headphone jack. I can't think of another product on the market that has this combination of compelling features. One of these is a MUST in your demo system, alongside its HDA Series siblings: the SA10, SA20, and CDS50.

Now at CEDIA, we are ready to show off a completely refreshed range of home cinema products including a flagship 16-channel surround processor, two 16-channel AVR's, a 12-channel AVR, and three new power amplifiers. Arcam AVR products have a well-

deserved reputation for having the best sound quality available at any price. And now, with this new range, they will have the best features available today too. Our popular Arcam demo room returns this year and will showcase some of these exciting new models so that you can hear them firsthand and become a believer yourself! Last but certainly not least, we have a little surprise for you...that is if you like incredibly useful products that can bring high-resolution streaming capability to virtually any loudspeaker system from in-room bookshelf and floorstanding, to in-wall and in-ceiling architectural.

On the loudspeaker front, we have big news from JBL – a complete new range of in-room products based on our patented D2 compression driver technology and High-Definition Imaging waveguides, along with our Advanced Aluminum Matrix diaphragm cast-frame woofers. This powerful acoustic technology is wrapped up in a stylish, contemporary cabinet design with a choice of two satin wood veneer finishes or an elegant high-gloss black painted finish. Two floorstanding models and a bookshelf are joined by a high-performance center channel and a powerful subwoofer allowing you to create packages for movies and music systems alike. Stop in our JBL demo room for a listen to a complete 7.1.4-channel configuration highlighting all five models. You are going to love these!

As gorgeous as those new JBL in-room loudspeakers look and sound, we have another exciting JBL announcement for you. While this one also sounds great, it actually doesn't look like anything! For architectural loudspeakers, today's customers want a solution that completely disappears. We've been working on something special in this category and will be demonstrating a compelling solution in the booth. While we can't really let you "see" it, we can certainly let you hear it!

For the Revel crowd, we've not left you out either. Our award-winning Beryllium series F228Be and M126Be (a loudspeaker of the year winner from The Absolute Sound) will become a full-fledged family with the addition of a smaller floorstanding model, a large center channel, and a larger flagship floorstanding model that will serve as the series' halo product.

So there you have it! There has never been a better time to be a Harman Luxury Audio partner. We look forward to seeing you at the show this year and helping to Empower Your Possibilities! Contact your Luxury Audio sales representative and schedule your appointments today! Don't forget, the famous Circle Bar will be open for the last 2 hours of the EXPO for Happy Hour with Harman Luxury Audio team members.

P.S.: If you are coming in to Denver early to catch the Rocky Mountain Audio Fest show happening the week before, be sure to stop by and say hello to us. Have a listen to the Revel Beryllium models paired with the exciting new Mark Levinson 5000 Series integrated amplifiers and CD/SACD streaming audio player. It's a tasty combination you are sure to enjoy!

What's New

JBL Synthesis SSW Subwoofers: The Ultimate Solution for Multichannel Low-Frequency Reproduction

By Jim Garrett - Senior Director, Product Strategy & Planning

With CEDIA Expo 2019 just a few weeks away, we are excited about showcasing and demonstrating some great new JBL Synthesis products in Booth #1313. Part of the unparalleled performance of a JBL Synthesis system is our patented JBL loudspeaker technology. This will be on full display in the 9.1.6-channel system demonstration this year including selections from our compelling new range of SSW passive subwoofer solutions. Two of those models have only just recently begun shipping, so I'd like to share some of the background about what makes these products so unique. But before I do, let's walk the path of how we got here.

Not so long ago, we began a quest to update every single loudspeaker in our JBL Synthesis portfolio. The original genesis of the idea was borne out of the fact that we had incredibly capable L/C/R main channel products that all used powerful compression drivers, but we didn't have any compression driver loudspeakers that could easily be used as surround channels. That meant we had systems that were limited in their overall capabilities by the relative weakest link: the dome tweeters used in the surround channel products up until that time. With the patented technologies we had available to us in our High-Definition Imaging (HDI™) waveguides and JBL Professional "D2" family of compression drivers, we set about creating the most capable in-wall loudspeakers available on the market. The first two models in the newly christened range of "Synthesis Custom Loudspeakers" were the SCL-3 and SCL-4. The SCL products not only solved the output and dynamic capability problem, but they have redefined the performance expectation for in-wall products – winning a number of awards along the way. The SCL family has since been expanded to include the mighty SCL-2, and very soon the sensational new SCL-5, in a range of ultra-high-performance in-wall compression driver loudspeakers.

With a good handle on the full-range models for JBL Synthesis, we turned our attention to the low-frequency department. The first step was to take a look at a new overall strategy that would deliver products with extended low-frequency response, increased power handling, and greater overall SPL output capability versus their predecessors. In short, subwoofers that could match the performance of the SCL full-range models. We also wanted to create logical steps between the models while providing solutions for common installation applications. This included an expansion to a new smaller, less expensive solution that we have not had previously. In the end, we settled on a dual

woofer approach for all of the models – something that gained us the performance improvements we required and allowed us some flexible enclosure configurations. This also allowed us to have a step-up solution for in-wall and built-in products.



As the smaller of the two in-wall products, the SSW-4 offers a compact solution that can be an easy retrofit thanks to its integrated back box enclosure design. The enclosure itself is less than 4-inches deep, allowing it to be used in standard 2×4-inch stud frame construction. Installation provisions include upper and lower dog-leg mounts as well as eight rubber-isolated wood screw mounting points designed to be fastened directly to the wood stud framing. Dual 8-inch front-firing drivers operate in a sealed design and deliver surprisingly solid bass performance from such a relatively small footprint. (-6dB is 36Hz on this model.) Connections are via a pair of spring-loaded terminals, guaranteeing a safe and reliable termination point. A paintable, zero-bezel, magnetically attached grille is provided for applications where the sub will be mounted in a more traditional architectural manner, or it can be left off in locations where the subwoofer is concealed behind fabric panels or similar acoustic materials. With its dual-driver configuration, the SSW-4 was designed to be used with a single 300W channel of the JBL Synthesis SDA-8300 amplifier. The SSW-4 is also the perfect companion to the SCL-4 – even sharing the same size zero-bezel grille and the ability to fit into 2×4-inch walls.

Staying within the in-wall solutions, the step-up SSW-3 provides greater all-around performance courtesy of its much larger, behind-the-drywall enclosure, and its powerful dual 10-inch woofers. Based on the sealed enclosure design of the outgoing S4S, the SSW-3 makes a number of improvements while maintaining the same footprint behind the wall. The 64-inch tall enclosure is constructed of 0.75-inch MDF with heavy internal bracing. It is designed to fit 2x6-inch wood stud frame construction and is secured via ten rubber isolation mounting points intended to help minimize sonic intrusion into the wall structure. While the back box enclosure is an evolution of the S4SBB, the baffle and drivers are a clean-sheet design. The most striking aspect of the SSW-3 is its heavily ribbed, compression-molded baffle. This ultra-rigid baffle provides a low-resonance mounting surface for the dual 10-inch transducers. Those two drivers feature cast aluminum frames, large 2.5-inch voice coils, and massive motor structures that help the SSW-3 deliver a -6dB point of 20Hz and power handling of 600W RMS. It was designed to be driven with a single 600W channel of the SDA-4600. As the larger of the in-wall models, the SSW-3 can be paired with any of the SCL in-wall loudspeakers.

Moving into the built-in category takes us to the SSW-2. This product was conceived as a replacement for the S2S-EX, but its ultra-low-frequency performance capability ended up making it a viable replacement for the older S1S-EX model. The dual 12-inch driver configuration allowed us to reduce the width and depth of the cabinet while growing its height. This aspect ratio makes it perfectly suitable to be used either vertically in a corner or horizontally underneath a screen. That positioning flexibility suits a wide range of installation applications where a larger single driver subwoofer simply would not fit. The SSW-2 enclosure is constructed from 1-inch MDF with extensive internal window-pane bracing resulting in a rock-solid foundation for the transducers. The 12-inch drivers are the most capable drivers ever used in a JBL Synthesis subwoofer. Based on a cast aluminum frame, each driver uses a massive 4-inch voice coil, powerful ferrite motor structure, and a long-throw cone/roll-edge/spider assembly. The drivers operate in a bass-reflex enclosure tuned with a pair of patented Slipstream™ ultra-low-noise front-firing ports. The SDA-4600 operating in bridged mode (2 x 1200W) is the perfect amplifier to drive one or two SSW-2 subwoofers. To complete the system for in-room applications, the SSW-2 includes a steel frame, magnetically attached, black fabric grille. The output capability of the SSW-2 makes it the ideal companion for the SCL-2 in-wall loudspeaker.

With these first three SSW models, we now offer logical steps in the dual driver configuration moving from the dual 8-inch SSW-4 in-wall (for 2x4-inch walls), to the dual 10-inch SSW-3 in-wall (for 2x6-inch walls), to the dual 12-inch SSW-2 (for built-in or in-room applications). All three models deliver serious low-end punch making them the perfect foundation for a JBL Synthesis multichannel audio system. All three models are now shipping. Talk to your sales representative today, or even better – plan to stop by and see us at CEDIA Expo 2019 in Booth #1313 to hear a system for yourself!



Dealer Profile

Dynamic Audio

Akihabara, Tokyo, Japan

Executive Team

CEO: Hitoo Funazo

Key Statistics and Information

Employees: 33

Harman Brands Supported: JBL, Mark Levinson, Revel

We recently interviewed Hitoo Funazu of Dynamic Audio, one of Japan's premier audio dealers. Here are some of the highlights...

How was Dynamic Audio started as a company? Please tell us the path that you have taken so far.

The company was founded in Akihabara, Tokyo in March 1965, against the backdrop of the first audio boom. As audio products began to spread to ordinary households, vacuum tubes were replaced by transistors. As an audio specialty store that has consistently dealt in domestic audio, we have been our customers' source for top end audio products as technology continues to advance.

What are your strengths and what are your biggest differences from other dealers?

Being conveniently located in the town of Akihabara in the Tokyo metropolitan area, we are able to quickly fulfill the needs of our sophisticated customer, whatever their product desires are. Therefore, we have a lot of visitors from not only the Kanto region but overseas as well. In addition, there are 11 floors at 2 stores in Akihabara, and each floor has its own unique product configurations and sales corners, providing customers a variety of high quality listening environments.

Please tell us about the history of your partnership with us.

Among the overseas brands that we feature, JBL and Mark Levinson have many fans in Japan, and the brands are as strong as they have ever been. In particular, JBL's successive flagship models have always performed well in sales.

What do you hope to see from our products in order to build a good partnership with us in the future?

We would like you to continue developing products that deserve to be "appreciated" by the sophisticated audio consumer, rather than products that are just designed to "consume" music. We would also like you to pursue the possibility of reaching new luxury audio customers through innovating more audio products and technologies that appeal to our sophisticated customers' appreciation for rich musicality.

Lastly, what are your company's vision and future goals?

We aim to carry products that cannot be obtained by mass production. We want the more affluent musical lifestyle that our team and enterprise promotes to truly be something special.

You can learn more about Dynamic Audio on their website at dynamicaudio.jp

Tech Talk

The Technology Behind Class G

By Nicholas Clarke - Senior Director, Global Engineering

Harman Luxury Audio group's Class G technology is the result of distilling 40 years' experience of audio amplifier design into one compact state of the art package, with the aim of inaudible distortion at all listening levels within the amplifier's power envelope, whatever the loudspeaker load.

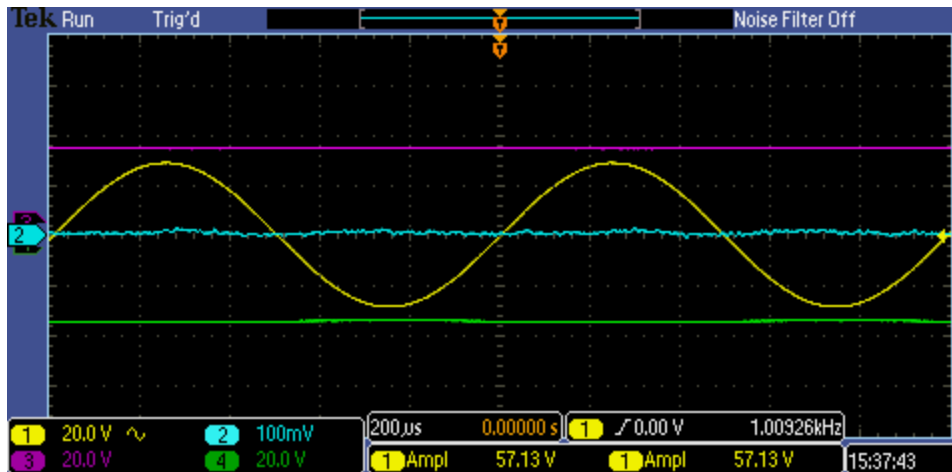


To ensure this we aimed for THD (total harmonic distortion) of typically 1ppm (1 part per million) at power levels of up to 50W into 8 ohms, coupled with minimal high order harmonics above the relatively benign 2nd and 3rd harmonics. This is very demanding and meant effectively eliminating crossover distortion, a particularly audible type of “edgy” and “rough” sounding distortion, which affects the vast majority of class AB audio power amplifiers to a greater or lesser extent.

Crossover distortion is due to non-linearity in the output stage whenever the signal crosses through 0V and is thus present all the time, at whatever level music is played. Note the nature of the distortion is odd harmonics whose amplitude does not decrease with the order of the harmonics, so they are not masked by the fundamental signal.

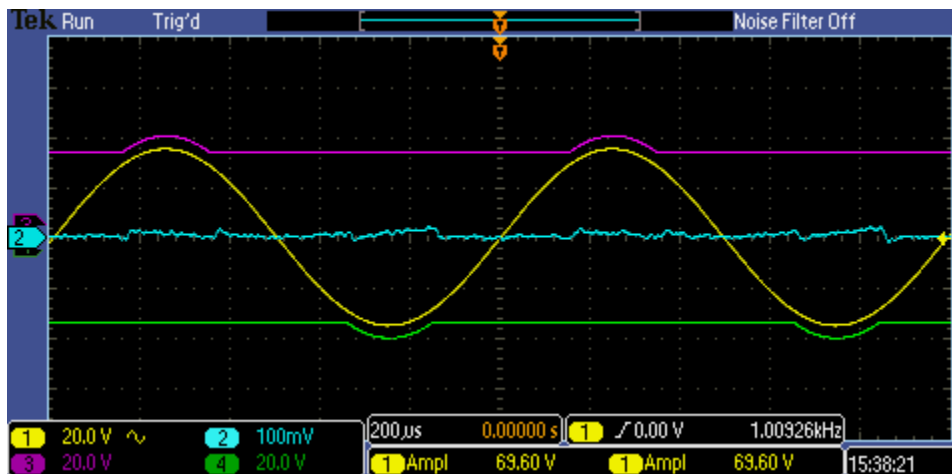
At the same time, and to fit everything into a reasonable sized form-factor without intrusive cooling fans, we required greater efficiency and cooler running than competitive designs. Here two separate sets of positive and negative power supplies are used to feed the output transistors. The higher supplies are only used when the situation requires it, at the loudest listening levels and are then smoothly blended in as and when required, accurately following the envelope of the signal so that the operation is inaudible.

Class G operation illustrated...



Above: Output transistor collector voltages (purple, green), output (yellow). The distortion is the blue trace. No class G operation.

Below: Output transistor collector voltages showing partial class G operation, for about 40% of the time, with a small increase in distortion due to rail switching. In the class G region about 5V is always present ahead of the output voltage to ensure linear operation.

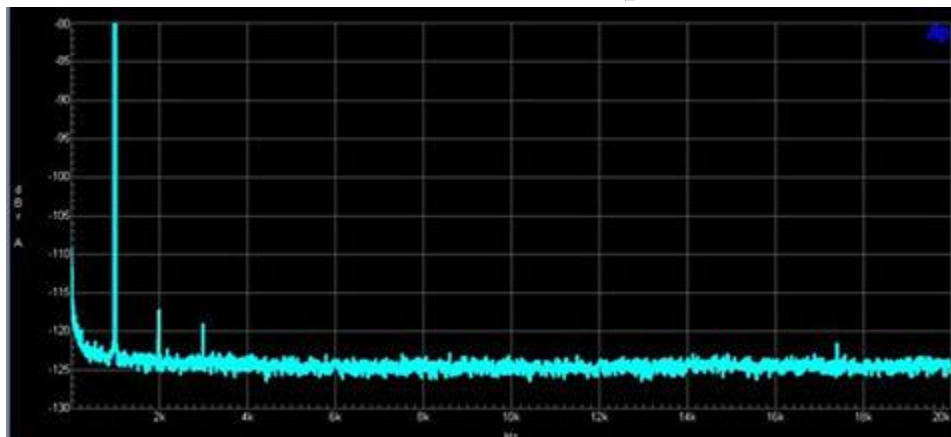
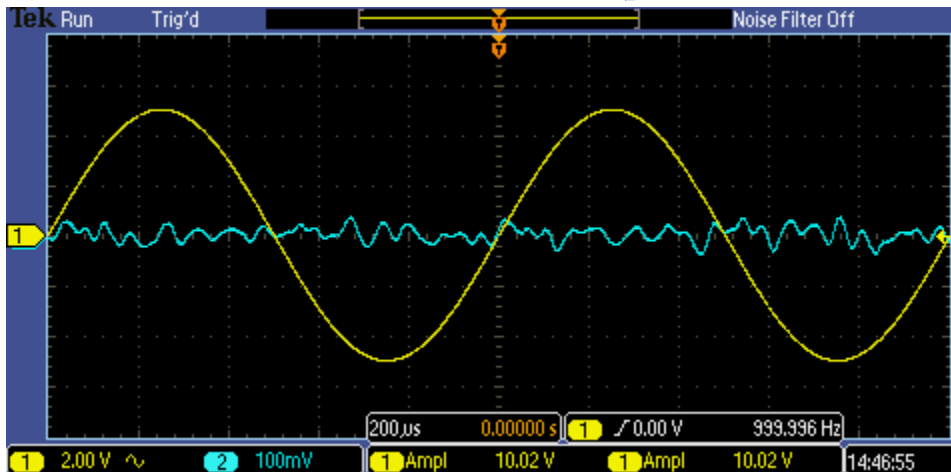


In a normal class AB amplifier there is an optimum bias current which minimises but does not eliminate variations in output impedance with output current. It is these small but relatively sharp changes which occur at low levels near the crossover point, between the NPN and PNP output transistors, which cause the insidious and audibly unpleasant phenomenon of crossover distortion. The brute force way to eliminate this is to run the output stages in class A, which requires a very high standing current of several amps. This makes the output impedance virtually constant for output currents up to twice the chosen standing current but dissipates huge amounts of power at all times; this is very inefficient and requires huge amounts of heatsinking. The output stage includes a proprietary error correction circuit that modulates the modest standing

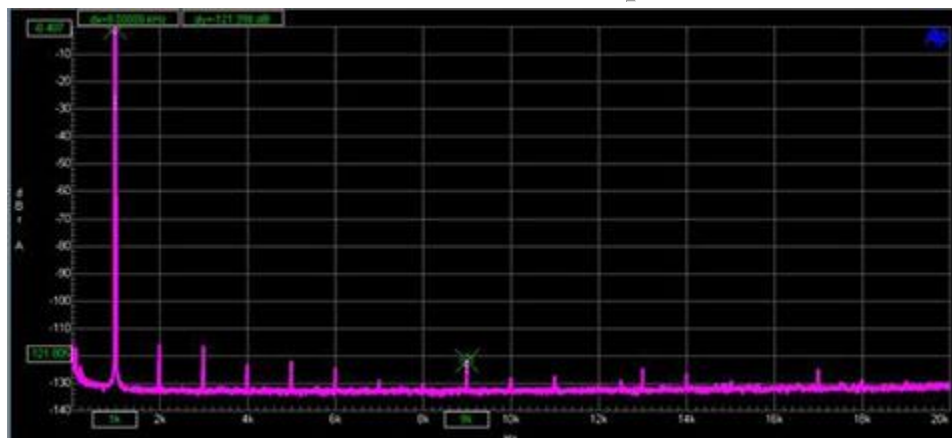
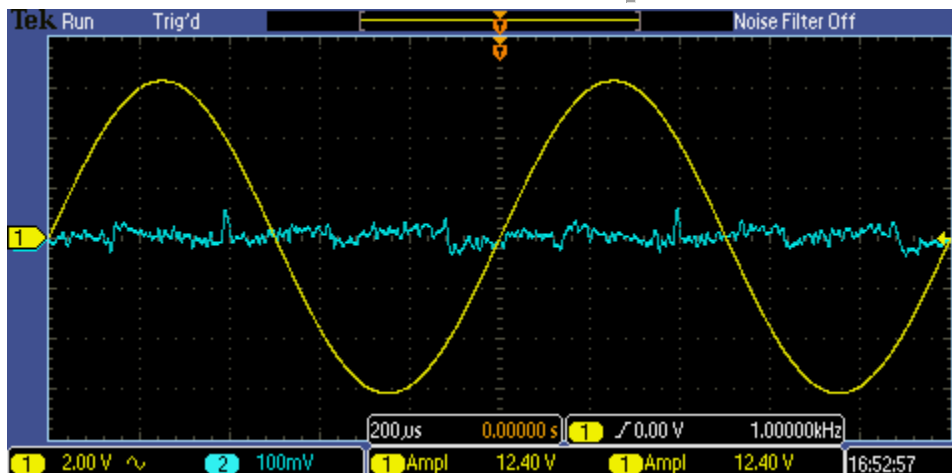
currents in the output stage and ensures a near-constant output impedance. Harman Luxury Audio group's Class G amplifiers thus behave exactly like a conventional class A amplifier up to this power level (which is specific to each model, based on many parameters such as case, heatsink and transformer size) in terms of performance but without the heat penalty.

The lifter devices that provide the collector voltages to the output transistors (the class G part of the design) comprise matched MOSFETs per rail, mounted directly on a common anodised aluminium heat shunt for close thermal tracking. When switching between the power supplies, these lifters are capable of turning on and off in well under a microsecond without misbehaving. This requires very careful PCB layout to eliminate switching artefacts.

The first pair of pictures show a Class G amplifier, now correctly biased, delivering 2W into 4 ohms. Note no distortion is discernible on the blue trace, only noise. Similarly only traces of second and third harmonics are seen on the FFT, at around -117 and -119dB respectively:



The two pictures below show the effect of the class G lifters on the residual distortion, with one channel of the Class G amplifier now running at full power into 4 ohms at 1kHz. The distortion spikes are still small and in terms of the overall THD residual, the high order harmonics contribute much less than the relatively benign 2nd and 3rd harmonics. In any case these will only occur on the loudest transients in music and will thus be totally inaudible in practice.



Training Tips

Luxury Audio Dealer Portal

By Chris Robinson – Manager, Global Training



This past spring, David Tovissi, General Manager and VP of Luxury Audio, sent many of you a questionnaire on how we can become a better partner and improve our services. We listened, and as one of the first steps in our ongoing commitment to improvement, are pleased to announce a new online dealer tool. **The Luxury Audio Dealer Portal** is designed to expedite the ordering process, save you time and money and improve communications. It will also run reports so that you can track your orders, shipments and provide order history.

The Luxury Audio Dealer Portal went live on August 1, 2019 and is now ready for your use. To get started, please complete the “Portal Log-In and Password Request Form,” available from your regional manager, and email it to Victoria.Openlender@harman.com.

You will then be issued a login in and password, and can begin using the portal immediately. It is easy to use and provides multiple methods to order products, from a simple one or two product order to ordering a whole system. A short video is also available to you to walk you through the features and use of the Portal. The password to view the video is: **9PwSfJKk**

New features will be added to provide additional benefits as we further develop the program. In the meantime, the portal will instantly enter your orders directly into our SAP system. This keeps everyone in the order process in the loop by providing instant information on your needs, no follow up phone call or email required. We are excited about this tool and hope you take advantage of it right away

Other Training News

We have three training sessions coming up that you won't want to miss:

1. **The Luxury Audio Northridge Academy** - Northridge, CA
September 26th and 27th
2. **Mark Levinson Academy** - New York, NY / Shelton, CT
October 23rd and 24th
3. **JBL Synthesis Certification and Elite Training** - Northridge, CA
December 3rd, 4th and 5th

Solutions Center

Customer Service & Spare Parts

By Stefan Happe – Customer Service Manager

Our modern world is ruled by cost and efficiency. Unfortunately, these two concepts, once the basis of a brand's stability and reliability, have become somewhat “naughty” words.



At Harman, we realize that a “one use only” mentality, one that many of our competitors still advocate, is not sustainable. An intelligent and effective Spares and Service Management department philosophy is a key component to a strong and stable future for our brands. Our goal is to keep our products delivering their renowned qualities for longer, delivering exceptional audio into your life for longer.

How do we do this?

- First and foremost, evaluate past successes and failures
- Maintain a spotless inventory
- Use analytics and trends to create airtight forecasts and eliminate waste
- Structure a distribution model compatible with geographic need

A major improvement we've recently implemented is including the Customer Service team in the process. In the past, they'd hadn't been, and therefore any decision on what spares to purchase was made with a “I need one now so I better buy 100” philosophy, leaving us with a massive discrepancy between inventory and observable demand.

Now, Customer Support is involved from the very beginning of new product introductions. Using data trends that go back many years, we define place initial orders for the assemblies we want to carry as spare parts from the original Bill of Materials, allowing us to be proactive and prepared. Diligent usage analysis gives us real-time trend data that we use to optimize our readiness. The positive changes we've seen have been dramatic!

Additionally, Spares Distribution has spread to Europe. As recently as a year ago, we only kept spare parts in our US Distribution Center, leading to occasional lengthy turnaround times for European customers. Once again, the positive impact of this change on our efficiency has been profound.

Another vital improvement that is currently in progress is getting all Luxury Spare Parts added to the Dealer Portal, enabling you to order what you need with just a few clicks.

We're confident that you, as our valued customer, will already have experienced some of these improvements and it will only continue to grow in quality.

This is our commitment to you.

Here are some helpful email addresses:

Global Parts Team: luxuryaudioparts@harman.com

US Customer Support Team: csupport@harman.com

UK Customer Support Team: luxurysupport@harman.com

From the Audio Files

Revel Performa 126Mbe Review

Audioholics - August 16, 2019

Wow! We are absolutely delighted by the remarkable review the Revel M126Be got from James Larson at Audioholics...

“The M126Be speakers are very accurate speakers with an outstanding off-axis response. They will not misrepresent or distort what is being sent to them. They could easily be used as reference monitors. They are not fussy about placement or positioning and should work well in many different listening situations. This flexibility is allowed by the exceptional off-axis response as well as the ability to seal the port. These attributes add up to a very natural sound with terrific imaging abilities. Bass extension digs down to a solid 50 Hz, which is good for a speaker of this size and capability, and the bass response also keeps an even keel whereas some bookshelf speakers of this type will have a slight mid-bass boost to give an impression of greater bass performance than in actuality.”



Full Review at <https://www.audioholics.com/bookshelf-speaker-reviews/revel-performa-m126be>