

Saturn Moon Loge

A 21st Century Immersive Cinema Moonshot

Peter C^INERAMAX Montoulieu



A maximum size that fits the space bespoke CINERAMAX screen on a pneumatic lift reveals the Alcons CRMS center and 8 subwoofers.



Rt-400 reverberation time from 1 to 10 kHz is the ideal for Atmos in a room this size.



Multipurpose home cinemas are more flexible under the new normal, cinema, bar, classroom, conference room, concert hall.



The eye-catching Alcons Sentinel 3 amplifier controller Cyclop eyes look around and wink inside the equipment rack.



A fully stocked wine cellar and wine bar complement the cinematic or concert-going experience.



A convertible cinema opens up a panoramic lake view, while the projected image is still excellent. Cinema with a view...



Main loudspeaker and left right heights are inside the wood columns. Acoustical wideband absorbers above the screen.



The main doors are massive, solid core to keep the sounds inside the cinema.



A view from the back of the room.

Custom Home Theatre Design

Home Cinema Is Back In Vogue!

Ah, 2020. There are realities that this new age of stay-at-home has forced us to re-evaluate the importance of striving for really great immersion in our home cinemas and media rooms, as these spaces will be getting way more use than before, and not only for quality sanity time but for telecollaboration and yet-to-come, new-normal innovations.

Why A Moon Shot?

In my 35-year career, my cinema, wine bar, home cinema with a view LOGE in Sarasota, Florida is the rarest of instances, where the end results blindsided my expectations. The project and installation was planned very thoroughly, and for the first time in my 3D BIM process, I not only pointed all the loudspeakers to the main three-seat listening area using the Trinnov Audio Triple Format guidelines with cross-firing, backward sloping surrounds, focal points, etc., but incorporated the dispersion parameters of the Alcons Audio waveguides to carefully overlap the loudspeaker sitting points to cover a very tight 3D bubble, with precision dispersion coverage overlap. This is something best done with controlled directivity loudspeakers.

A New Hope

For all we know, the way the world is upended nowadays, an asteroid might strike Earth sometime soon, so excuse me if my message has undertones of urgency to it. I am determined to leave an indelible impression that wrongs need to be righted because better systems not only are possible but, indeed, have arrived. This is the story of how, for the first time in 35 years, I was blindsided over my expectations by identifying the unique progressive elements of home cinema design that were manifested with such performance competence in LOGE.

Three Schools Of Hi-Cinema Design

There are many excellent cinema designers from several schools of thought: Theo Kalomirakis theatres are INTERIOR DESIGN DRIVEN, Keith Yates, Tony Grimani, and Sam Cavitt are ACOUSTICIAN ENGINEERED, and then there's an outlier underdog school. I wonder who that school might belong to?

Mine is the HOLISTIC EGOCENTRIC IMMERSION school. Many of us know that without curated 3D (audio but also video in some cases) content and HDR, our systems cannot bloom to their full potential.

Speaking about engineering techniques that worked in LOGE, one entailed a basic understanding of the Gestalten archaeo-acoustical foundations behind the two distinct types of 3D Immersive Sound fields we enjoy at the present. EGOCENTRIC conforms to innate mechanisms having spanned 60 millennia of evolution while ALLOCENTRIC supports learnt mechanisms introduced during a short 19 centuries. Hacking the loudspeaker selection and positioning for an EGOCENTRIC immersive loudspeaker topology will allow you to inject more organically per-



Deconstructive acoustical form follows function results in an inviting Lux space.

ceived awe into your future projects, as our DNA knows what sounds more immersive than apparently some re-recording engineers do.

Exceeding Expectations Exponentially

The terms “Exceeding Expectations” and “Deep Diving” get bandied around a lot. In my case, I got used to often exceeding expectations (four times I literally pinched my face during cinema deployments). After a while, partial incremental successes rendered me a bit jaded, and somewhere along the way, the phrase in quotes above lost its power to me. The better Deep Diving is when you get the BENDS, achieving the wisdom of avoiding past failures and surpassing the sum of all cumulative incremental past improvements. In the case of this best-ever B-chain discovery, the result is not as much due to the luxury brand itself but more the acquired knowledge from the experimental tryouts of the brand's multiple loudspeaker models across projects chasing the better mousetrap. Cherry picking from the excellent Alcons brand taught me that in loudspeakers bigger is not always better, nor satellite petite either. The in-between was the crown jewel and enables us to leapfrog ahead to the promised land with the ultimate in corpuscular point sourceness.

What I did right in this project (available for enthusiasts to post-COVID-19 vaccine assess and inspect soon) is the EXPONENTIAL RANK in the exceeding expectations department. All of us—the client, industry veterans, my calibrator and the Sarasota Cycling Club (for the first time in my career face-pinching became a lame reaction) were simply astonished.

Pre-Reading Assignment

Widescreen Review published two articles in January 2016 (Issue 203) and March 2016 (Issue 205) that chronicled the decades-long process commissioning cost-no-object, envelope-pushing viewing rooms and our early jump into the Dolby Atmos bandwagon at the 2013 Gravity Premiere at Dolby Laboratories in Burbank, California. Tony Grimani also attended that event, and

there are a few coincidental immersive audio best-practice commonalities presently converging from that event.

It appears that any other industry luminaries in immersive audio that were not there to hear the “Houston-Houston” intimately circling our heads, are wrongly placing their height layer loudspeakers too far apart. This is an industry crisis because separating Dolby Atmos tops’ azimuth (height layer) greater than 30 degrees from multiple listing positions will just create a donut hole on the height layer, imaging as a TALL LEGACY 7.1 soundfield. What is the benefit of that? I look forward to a future Trinnov ALL Format Layout that spaces the Dolby Atmos tops closer together, like Tony and I have independently arrived at.

The backstory in Issue 203 and Issue 205 talks about how one European captain of industry made us his personal cinema designer for four carte blanche “performance first” systems, placing us at the unfettered helm over Europe’s most competent highly motivated architect and designer teams to achieve “maximum aesthetic realization” as a close second objective. We are talking of AD 100 hall-of-famer Jacques Grange from Paris, Dame Zaha Hadid of London, and Massimo Iosa Ghini of David Bowie and Ferrari fame from Bologna. How hard we all worked in such closed unison to create end results... out of this world. What I learned in HI-DECONSTRUCTIVISM architecturally was a surrealist experience that tapped my childhood fantasies, as I am a frustrated architect. Imagine leading those luminary dream teams, me! Yeah, I often pinched myself then too.

This theatre benefits aesthetically and technically from some degree of engineered deconstructivism, which we will highlight. If theatres are boxes, deconstructivism is the opposite.

On the TECHNICAL side, the three years globe-spanning research culminated in one CEDIA 2015 demo ensembling an Alcons 3D Audio CRMS 4-inch Pro Ribbon with an 8-inch woofer array and a 3D Laser 6P Barco projector that Editor Gary said was the best of all demos he had ever experienced at a CEDIA Expo. Today we take you from 2015, in a roundabout way, to a very similar (same loudspeaker models) ensemble in the 21st Century Immersive Cinema Moonshot.

Controlled Directivity Trumps 3D Spatial Accuracy Over Non-Controlled

If you want a safe bet from a spatial imaging precision, two options come to mind. This project’s results convinced us that the Alcons CRMS Series is proven best, as you will see, but if you prefer the safety of a global brand name with an abundant user base, a JBL M2-based system will achieve the 3D imaging benefits of controlled directivity loudspeakers, while still sounding excellent, just not as linearly verisimilar as a full-blown CRMS ensemble. Also notably at another level is the stability of the phantom images in between all bed channels. This projects a coherent continuity ring-shaped sound field around the MLP, not previously possible at this level of clarity and dynamics.

There are many great non-controlled directivity loudspeakers out there, but you will have to work harder if you want to have a Moonshot, and harder yet to attempt a Mission to Mars. Yes, we are approaching the red planet’s orbit on another project, but what a pain.

In the SOLFAR, Sony’s first Crystal LED Wallscreen Skylounge Mars project, as with any reference-grade, non-controlled directivity loudspeakers, it will be so much harder to properly populate a

3D canopy to form a hermetically contiguous gapless and hole-less invisible dome to get the angles to overlap perfectly in 3D BIM so as to snap in like a puzzle—AS EVERY POST 2020 HOME CINEMA SHOULD.

As I stand here serenely pondering among the craters of Luna, gazing at my beloved blue marble and reminiscing on the arduous voyage, I have come to a solemn realization. Moving forward, why reinvent the wheel when the CRMS’s Controlled Directivity can best solve all the relevant issues in the most effective and efficient manner?

Since Alcons has added the 8-inch woofer plus 4-inch Proribbon CRMS SR H/V 90x90 to the family, the need for bespoke loudspeaker cabinets has been greatly reduced. So using all Alcons Audio for future Mars Missions is now practical.

Ford vs Ferrari

At the 2015 CEDIA Expo, my calibrator Walter Fortmuller was walking around with the JBL M2 brochure in hand. He was excited that this was the first horn loudspeaker to sound like a dome. I humorously retorted: TRAITOR! So he did in fact go all out and do the only known 9.6.8 Dolby Atmos system at his home with not three but nine bed JBL M2 loudspeakers—the King of all JBL systems, with an Artnovion-treated room. He was very proud of this system due to all the dialing-in and tweaking. That was up until when we fired up the LOGE system last year. I had played for him my Kaleidescape proposed standard scene script for the height layer and Wraparounds Scene Analysis (more on the practicality of that test script later, but feel free to peruse the scripts section of the Kaleidescape Owners Forum, where I have parked many scripts, including the lone Alcons Audio CEDIA 2019 TOPSMMER-SIVE demo that many said trumped all other demos, including the Wisdom One Million Dollar room).



A befuddled Walter: “You can’t do this with JBL!”

As owner Brad Scott and I went outside to the back terrace to sip some Russian River Valley Pinot, we could see Walter through the glass in the captain seat, shaking his head. After the script ended he came walking toward us grinning but still shaking his head. He opened his arms and exclaimed in admittance: “YOU

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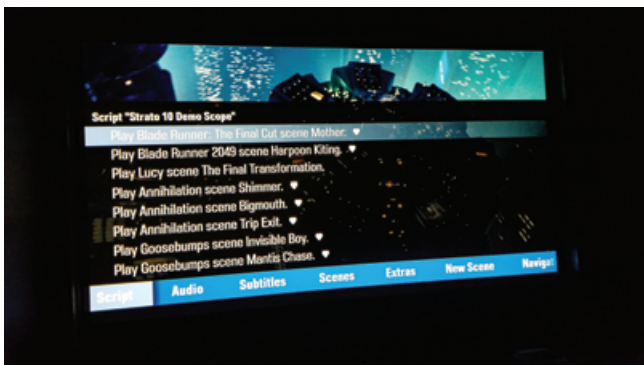
Cyclists eyeing a 14 f-stop HDR image for the first time.

CAN'T DO THAT WITH JBL!" Said the guy with the most over-the-top ALL M2 bed system. That is when the exponential expectations blindsiding commenced, as we showed more people, and then the cycling club. One of the cyclist leaders asked afterwards: "IS THIS LEGAL?"

So, dear still-skeptical reader, you can easily verify what the most ardent JBL M2 expert user clearly stated: that this all CRMS system, precision aligned in BIM 3D for waveguide dispersion coverage interlock, knocked the JBL M2 from the throne.



Cyclist asks: "Is this legal?"



A Kaleidescape demo script shows a continuous loop of immersive scenes to astonishing effects.

EQ'd Turbo vs. Cylindrical Flat 1 To 20 Wave

At the 2019 CEDIA Expo, after we blew some minds with the special TOPSMMERISIVE demo, we went to dinner and I sat across

from Tom Back, the founder of Alcons, and Walter was off to the side. I was telling him that finally we got the perfect system. "You liked it?" asked Tom. No, Tom, you do not understand, you have not heard anything like this. He snorted the claret and looked at me as if thinking: "Are all Cubans this presumptuous?" I qualified for a home theatre, in a million years THIS WAS NOT SUPPOSED to sound so over-the-top cohesive.

So, I asked Tom to demystify this whole M2 Versus CRMS vs. Horns, theatre of action. Following are his thoughts.

Tom Back

I always use three analogies to explain the core differences between pro-ribbon vs compression driver:

1) "Garden hose effect"—The compression driver technology was developed 100 (!) years ago, to maximally utilize the available (low) electrical power. The horn was introduced (placed in front of a radiating surface). Next step was to squeeze the horn, for even higher efficiency (= output), thus the "volume compressor" was developed. Analogue to reaching further with your garden hose with a fixed water pressure, you squeeze the hose, to be able to reach further, at the expense of a distorted water stream.

2) "Acceleration of a truck vs that of a sports car"—The weight of the moving mass of compression drivers is much higher than that of the diaphragm of the pro-ribbon; This is due to the fact that the dome-shaped piston needs to be stiff (= weight) to be able to withstand the (compression) pressure and the flexing of the dome, due to the large distance to the drive part (= the voice coil), as the dome is only driven on the edges of the coil. So the larger the dome (3-inch or 4-inch), the stiffer the material should be to prevent flexing at high speed (= break-up). Thus, the larger diaphragm compression drivers have even lower frequency response on the top-end. The pro-ribbon is driven over the entire radiating surface, directly driven with a flat, integrated (!) coil so doesn't have break-up, regardless of size of driver (largest Alcons has is 18 inches).

So, a heavyweight (= truck) cannot accelerate as fast as a lightweight (= sports car), meaning weight is everything to get a flat and high-frequency response (remember that 20 kHz is a membrane needing to move 20,000 cycles per second! So weight is key here)—especially in cinematic applications, with the most difficult sounds to reproduce (speech, music, Foley, sound effects), all happening at the same time and at the same frequencies! How can our brain discern a 1 kHz tone from a bird, background music, or speech?? A superfast impulse response!

3) "Turbo effect"—The compression driver uses this "compressor" effect, with the result that at low SPLs no pressure is made (hence you need to add EQ to get presence out of the system). At medium SPLs, the compressor makes enough pressure to get high frequencies out of the driver. Of course, at high SPLs distortion rises even further. This is a completely non linear effect (Meyer says their systems are "linear response," but they're using 3-inch and 4-inch diaphragm compression drivers).

The pro-ribbon driver has a linear, direct drive principle—no compression "turbo" effects. It has the same response at low, medium and high SPLs, so indeed "linear response." Specially in cinematic applications, with the most difficult sounds to reproduce (speech, music, Foley, sound effects), dynamics are highest, as these are part of the experience (vs i.e. Electronic Dance Music,

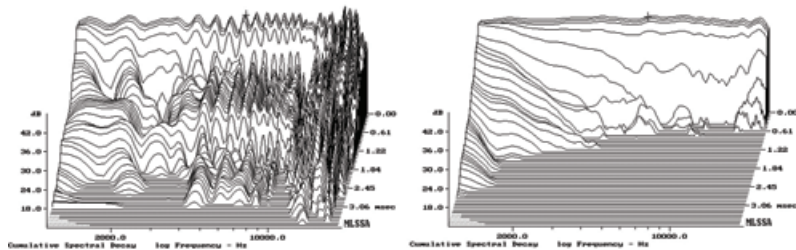
which doesn't have any dynamics).

Another advantage of the pro-ribbon worth mentioning is the RMS-to-peak power ratio: the compression driver has a 1:2 (some manufacturers claim 1:4) ratio, so 50-Watts RMS is 100-Watts peak. The Alcons pro-ribbons have a 1:16 RMS-to-peak handling, so 50-Watts RMS is 800-Watts peak. Thus, the loudspeaker is not the limiting factor in reproducing even the most dynamic sources. The extreme power handling also makes this possible at even the highest SPLs and largest applications (i.e. concert sound).

With the above-mentioned advantages, we are able to combine studio monitor sound quality with concert system outputs, from the exact same transducer technology. With this multiple-patented technology, Alcons develops systems from the smallest residential applications, to even the largest concert touring concerts (from the two-seat home cinema, 20-seat screening room, 200-seat pro-cinema, 2,000-seat Broadway show up to the 20,000-seat and beyond concerts!).

The JBL M2 uses a so-called "annular ring" driver. It's a lower compression ring driver (two rings into one, so each ring has its own frequency range to cover). The effects are not as drastic as with a full compression driver, but they're nowhere near a pro-ribbon driver in terms of flat frequency response, impulse response and dynamic output.

There are also systems with an Air Motion Transformer. This is a harmonica-formed driver with a folded lightweight membrane to reproduce a high-frequency response. But it uses an inefficient magnet system (and not thermally efficient), with limited excursion capabilities (no high output).



Comparison of Alcons driver to compression driver highlights TIME SMEAR common to thousands of loudspeakers.

Above is a comparison of the spectral decay plot of the Alcons RBN1402 (14-inch driver with 14-inch voice coil and 3,500 Watt peak power handling), as featured in our largest touring system, compared with a 3-inch, high-end, Italian-made driver, as featured in many top brand professional systems. Initial response on the rear line (not flat for compression driver) + third axis shows the time response, with nasty time smear (beyond 4 milliseconds).

Thanks Tom. Peter jumping back in here.

I had gotten into hot waters with Keith Yates when he said, there was no such

thing as time smear (disavowing the existence of the term) in the Home Theater of the Year thread that was featured in AVSForum, a spectacular never-before tour de force acoustical design—a true "Pieta," but my lone critique was that it uses \$450 weatherproof JBL PA loudspeakers for overheads. Such, I argue, "imbalances" should not happen when your cinema designer is of the HOLISTIC EGOCENTRIC IMMERSION school of thought.

To all other compression driver loudspeaker brands in the world, if you cannot contribute to progress, please get out of the way. Beep, beep!

The Quest For The Perfect B-Chain—Which Alcons Proved Best?

As a couple of European Cinephiles saw the work that took us from Miami to London and past them to Moscow (before Putin Invaded Ukraine, whence several multiple large-scale ongoing projects evaporated into thin air), having read Editor Gary's reaction to the 2015 CEDIA demo influenced the patronage of a client in Germany with the first Trinnov Altitude³² deployment and Qusted Amt Ribbons (not a controlled-directivity loudspeaker) and in Istanbul (our first Altitude³² Alcons Audio CONTROLLED-DIRECTIVITY system).

Hyperion Istanbul—Amazing Success Yet Alcons Mains May Be Too Big?

This system was a Trinnov DTS:X PRO ready system four years before the codec came out—having been optimized for all three immersive audio formats by deploying extra codec-specific loudspeakers to use depending on the content. You may recall that we left packing from the Zaha Hadid Spaceship House Cinema in Moscow as 500 tanks were rolling into Ukraine. The heartache! So what are the chances of our engineering and deploying this next best Istanbul system in under 120 days in the face of not one but two combat like events, an airport bombing, AND an attempted Coup D'Etat? Lo and behold that is what transpired during our short project window. Henceforth, I was



Hyperion in Istanbul, the first Altitude³² Alcons Audio sound system ever.

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Redundant Dolby Atmos and DTS:X/Auro-3D loudspeakers require no unified format compromises.



Cineak Strato Plus seats with CINERAMAX MINI-PLF headrests keep the eyes naturally facing the screen instead of upwards.



For centuries Turkish master craftsmen outperformed European woodworkers—it still shows.



Using our 3D BIM process, we were carefully able to build for a successful implementation remotely.



The Holistic Egocentric Immersion school in Action.



The imposing Alcons CR3 in a metal baffle wall.

determined to avoid entirely any more European geo-political drama, time to focus on GETTING BACK TO THE USA.

Having no more taste left for European turmoil, I sent Walter Fortmuller, my courageous calibrator, to take care of the Bosphorus' project moon deployment. He is based out of Austria so he had more convenient escape route options. I joke.

It Went Well So We Showed It At CEDIA

The feedback was outstanding, so we attempted to re-create 75 percent of that system with Alcons during CEDIA 2016, for

which Alcons imported the giant CR3 mains. These have two four-inch ribbons and two mid-range 5-inch drivers besides the woofers. The demo was excellent, probably the loudest, and one session certainly the longest-ever demo at CEDIA (four hours before dinner).



Posing with the CR-3 during CEDIA 2016 setup.

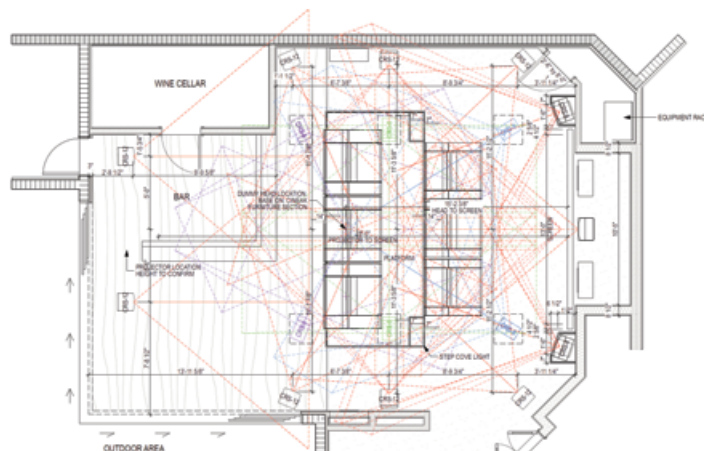
To be honest, upon listening, the front mains appeared to overwhelm the other 4-inch ribbon and 2-inch ribbon loudspeakers. Some loudspeakers imaged more present than others. I was missing a bit of the multilateral point source PRO-RIBBON exuberantly detailed 1 to 20 kHz articulation, with cohesive bubble envelopment of the CEDIA 2015 configuration.

We also executed an excellent Trinnov 16-channel compact CRMS 2-inch ribbon cinema in Dallas, but again, when compared to the original, the system also lacked the above-mentioned outstanding traits. ALCONS SLIGHTLY TOO SMALL? I know, we are spoiled.:-)

Enter Loge

My Fortune 50 EVP client friend that attended the CEDIA 2016 demo agreed that those CR-3s were more befitting a larger venue. That is when it was decided that LOGE would be a CRMS-based system, where the performance of the mid-frequencies and high-frequencies of the CRMS SR bed channels is exactly the same as in the mains CRMS. What this accomplished, after trigonometric studies, guided our first 3D BIM Speaker Waveguide Coverage Mapping to 2-degree overlap accuracy (we use ARCHICAD that sports the most photorealistic on-the-fly 3D BIM iPad visualization software for home cinemas). That, ladies and gents, is how we landed in the moon of immersive audio—loudspeaker wise.

By keeping the seating area to an 11-foot-wide, three-seat-per-row design we kept all seats far away from the walls, which are 26 feet apart. This resulted in an EGOCENTRIC sound field ISLAND with the loudspeakers bracketed off the walls, pointed at the main listening position in a DECONSTRUCTIVIST floating placement (there are three other methods to keep the loudspeakers floating off the wall: fabric concealment, beveled fabric panels, and inside



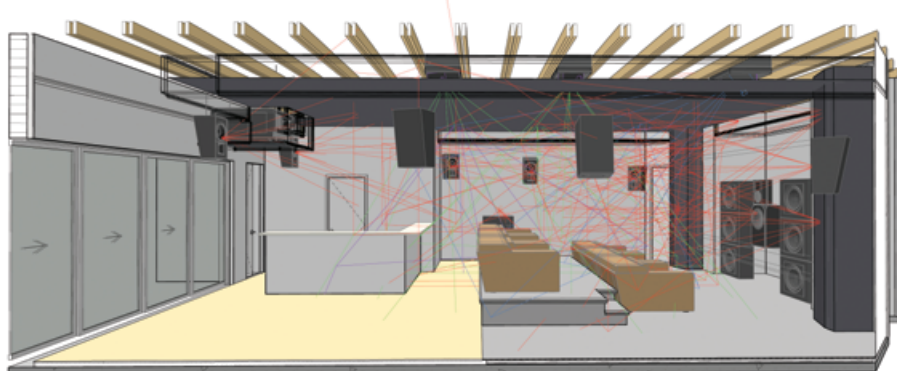
Plan view of BIM Alcons Pro-ribbon Waveguide coverage overlap for total immersion effect.

radial steel diffuser columns). The later two methods we pioneered. The very worst thing one can do with a loudspeaker is to stick it in the wall, which will result in an ALLOCENTRIC non-focused sound field, and it will suffer from boundary interactions, making the frequency response less linear and veiling the loudspeaker's image.

Why are my sensitivities so biased against ALLOCENTRIC immersive audio? As a kid, my mom was a virtuoso piano player, and we had a fully fitted music room with a Pleyel, Hammond B3, Fender Rhodes, guitars, and a slew of percussive instruments. So I grew up sitting among the musicians vs spectating from afar. As soon as Quadraphonic came out, I had lots of music that was mixed with panning surrounds. My friends and I would play and go listen to Quad, back and forth. There are 300 EGOCENTRIC among 600 multichannel audio recordings that are only matched in their immersiveness by a mere 12 terabyte of demo-worthy movies among a 60 terabyte Kaleidescape Library that I vetted for EGOCENTRIC soundfield attributes. One "can" easily beat other demos at CEDIA with these scripts. If you visit the quadraphonic forum, these recordings are graded for maximum panning effects. These 300 are must haves for DTS:X PRO and Auro-3D sampling in a serious immersive setup, of course, along with the cherry picked 12 terabyte Best of the Kaleidescape store. I have proposed a short test script to persuade the general community to progressively embrace EGOCENTRIC over ALLOCENTRIC mixes,

in the hopes that Hollywood broadens their practices to more effectively tap into our egocentrically conditioned collective unconscious and stop our scene analysis habituation mechanisms from frequently shutting down during scene analysis of our understanding of the mixes through discreteness oversaturation.

This is the negative aspect of HABITUATION, yet there is a positive aspect to it. By using Kaleidescape scene scripts every moment a scene ends and playback pauses while cueing the next scene, HABITUATION mechanisms clean the palate and refresh the brain to clearly appreciate with maximum binaural intelligibility the next demo clip. It is the most effective way to do scene analysis on Immersive soundtracks because the



Elevation view of BIM Alcons Pro-ribbon Waveguide coverage overlap for total immersion effect.

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short scene durations concentrate the focus and the refresher breaks in between to exploit the better aspect of HABITUATION (attention palate cleansing in preparation of what lies ahead binaurally).



Easter Aquhorthies' stones are positioned near exactly in a DTS:X pattern.

CINERAMAX Overhead Stomps and Wraparounds

You can reorder the steps by dragging a step up or down.

- Play *Star Wars Episode IV: A New Hope* scene **Overflight**
- Play *Pet Semetary* scene **Dumb Waiter**
- Play *10 Cloverfield Lane* scene **Barbed Spinctermouth Bigfoot**
- Play *Terminator Genisys* scene **Bus Ride**
- Play *Goosebumps* scene **Invisible Boy**
- Play *Cliffhanger* scene **Engine Failure**
- Play *Jumanji* scene **Ju**
- Play *Batman Forever* scene **god**
- Play *Doctor Strange* scene **Eye Opener**
- Play *Spider-Man: Far from Home* scene **Illusion**
- Play *Sherlock Gnomes* scene **9**
- Play *Sherlock Holmes* scene **Voice**
- Play *Goosebumps* scene **Mantis Chase**
- Play *Gretel & Hansel* scene **Mushrooms**
- Play *The Man from U.N.C.L.E.* scene **Taiko Drums**

Tops and wraparounds K script exploits palate-cleansing benefits of HABITUATION to empower maximum understanding during sound effects competence analysis.

Panning rear surrounds is a hallmark of some of the most famous naturally occurring archaeoacoustical binaurally immersive sound fields—a 60 millenia-old Monolithic rock hollow in Africa, the 17 millennia-old Altamira Cave in Spain, and the 3 millennia-old Easter Aquhorthies stone circle near Aberdeen in the United Kingdom. These ancient mystical sites had better surround sound in my book than many movie theatres, LOL. This from a quadraphonic-like enveloping panning surround effects perspective, nat-

urally occurring when playing primitive percussion instruments and drums. One of them, the Altamira site, even had a TOPSMMER-SIVE effect, our latest demo innovation last CEDIA, when we were DROPPING THE HIPPOPOTAMUS on top of the Alcons booth, LOL.

ALLOCENTRIC loudspeaker deployments (i.e., rectangular arrangement with in-walls) will suck the life out of EGOCENTRIC (aka stage perspective) recordings in 5.1 music, and the movies curated into my Kaleidescape scripts, whereas going for the later design (floating aimed equidistantly circularly) as in LOGE will not impact the quality of the “forward stage in a rectangle oriented” audience perspective as in Live Concerts. LOGE fixed that for good. The best of both worlds can finally be enjoyed with maximum immersion.

ALLOCENTRIC recordings descend from the early Catholic cathedrals (Gregorian chants), the result of building technology evolution—you have a stage where the sounds originate and are projected towards the back of the rectangle. This is pretty much what happens in movies like *Aquaman* and the Marvel cinematic universe (except *Dr. Strange* and a couple others), ZERO WRAPS AROUND THE HEAD. It sounds unnaturally simplistic to me, with its lack of binaural cue ecodiversity, and feels like riding a subway. These tentpole movies are so stem rich originally that when folded into few objects for the home mix, the subway effect very quickly saturates our senses, shutting comprehension down through our brain's HABITUATION mechanism. So there are many of what I call ineffective, semi-static Dolby Atmos mixes and then some truly immersive EGOCENTRICALLY ENGULFING ones. It should be quite anodyne for the mixers and creatives to entertain this discourse, for as my \$45,000 investment in the 60 terabyte Kaleidescape store, I should have way more immersion candy than the 12 terabytes I had to scour for. Get the point?

Since studios do not downmix the height layer for bass management, there is this new world of TOPSMMERSSION available for us to exploit, BUT NOT with little passive loudspeakers nor upfirs. You need to go active, near full-bandwidth overheads to be able to affectionately DROP THE HIPPOPOTAMUS on your head.

So, I hope you get an idea of the many HOLISTIC elements we obsess over to achieve maximum immersion. This is beyond STC 55+ room isolation with oversized silencing ductworks, proper technical power, and a competent acoustical design for a natural reverberation time value of 400 ms from 1 to 10 khz at the center seat in a room the size of a small dub stage like this.

And I haven't even gotten started. Did you know that there was a 1961 study that provided a treasure map showing EXACTLY where to position your overhead loudspeakers where they would be more discreetly localizable, an uphill battle due to the way humans hear overhead, by identifying minute angles of maximum effect? None of the three codec companies even considered it when devising their home formats.

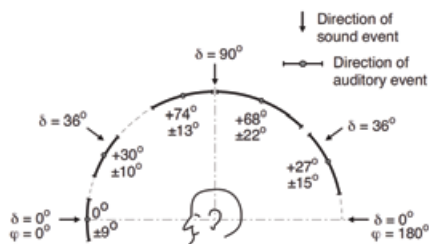
Luckily, LOGE met the fixed prescribed 45-degree and 65-degree elevation in the median plane parameter of this pivotal paper. Unrelatedly, Tony Grimani has deployed the same 45/65 tops angles in his Kaleidescape seminars (as I exactly have in my lab), AND he also espouses the alignment in between the mains and the center when aligning the Dolby Atmos tops spacing as I do. That those pre-existing trusses were spaced to facilitate such mission critical tops angling was both fortuitous and synchronous in LOGE.

Then the cone of confusion tells you exactly what loudspeakers,

the only ones that can be arrayed, should go directly to the side of the egocentric three-seater row to eliminate focal points but exploiting the cone edges to bookend the arrayed loudspeakers. This configuration has wonderful effects on object pans continuity despite being arrayed. The cinema designer that designs the immersive loudspeaker arrangement to fit multiple rows, is not going anywhere.

It is counterproductive to dilute the maximum EGOCENTRIC Spatial Resolution potential. Give three seats in the house the very best and I promise you that the surrounding secondary seats will image tremendously too, just from an outside looking in, but "still cool" perspective. Not speaking about inter-seat bass and Sound Field Management etc., speaking about the all-out immersive Head Related Transfer Function-cues rich assault on the ears and the multi-directionally sensitive thoracic cavity, always treated like a stepchild by LFE bass management. Yessiree, Bob (idiomatic expression), bass is multidirectional—stop damping that aspect with one-channel bass.

Localization accuracy in median plane



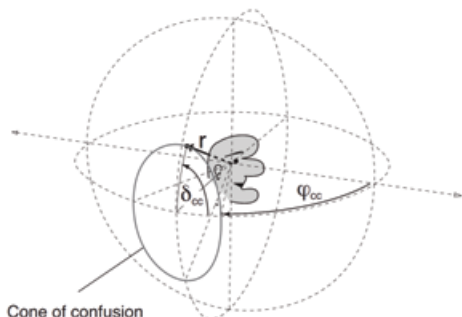
Adapted from Damaske and Wagener (1969)

- Monaural cues are effective only after adaptation with visual reference, thus field-of-vision has better accuracy

The Damaske and Wagener 1961 Study is the most overlooked rule for proper Atmos tops loudspeakers placement in median plane.

Coordinate system 2

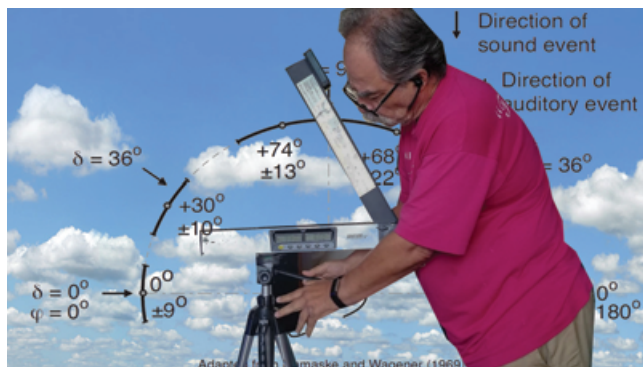
- Cone of confusion



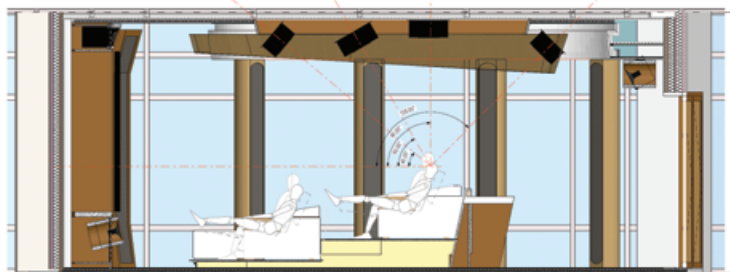
The cone of confusion demystifies the determination of which loudspeakers should be arrayed that so called experts waste your money on.

We have vetted these theories and have shown it to a Dolby director, and he was impressed with all of it in our Dynaudio Full-Bandwidth non-controlled directivity near field system here in the lab, using the same egocentric Kaleidescape scripts and 5.1 music discs, where the sound field transfers precisely scalable

from an image tracking standpoint to LOGE's midfield tour de force. The difference there is better 3D accuracy because of the waveguide 3D alignment, the Alcons 4-inch Dynamic Linearity plus the spatial accuracy of the Trinnov 3D microphone, but the microphone only works in the bed channels. I am telling you that you need to apply this 1961 study when planning your theatre and the main listening position seat to truss layout so that no two pairs of overheads combine to sound as a pair—a very common occurrence following vendor guidelines.



Necessity is the mother of invention, our dual laser angle finder tool for exploitation of 1961 rules.



TOPSMIMMERSIVE+EGOCENTRIC+CONFUSION CONE ARRAY HACK CLED Mars Mission.

A "Live N' Bernin" Native Auro-3D Certified Room?

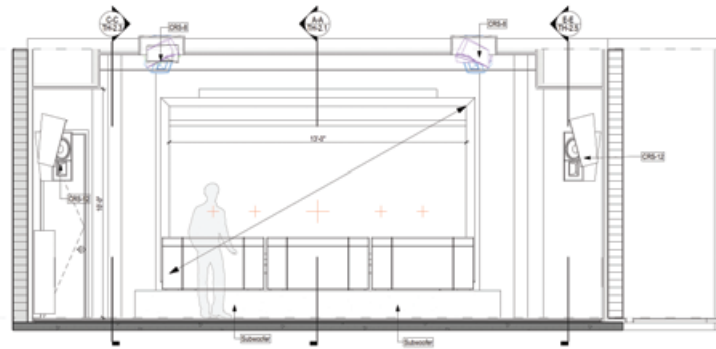
I witnessed this live performance's REFERENCE Auro-3D recording session when it took place at Joe's Great American Bar & Grill in Burbank. I was seated at the bar towards the back on the long leg of the L-shaped room. The recording, produced by Editor Gary, blows away those NORDIC (remember drums are the primordial instrument ingrained in our DNA for 60 thousand years) string and choral church music ones, which can't come close.

In LOGE the spatial rendition of the space in the Auro-3D masterpiece is so accurate that you can hear me woohooing from behind the bar. The client gets a kick out of it. Listen to track 12 after Bernie's solo. I'm the guy coming out of the surround left back.

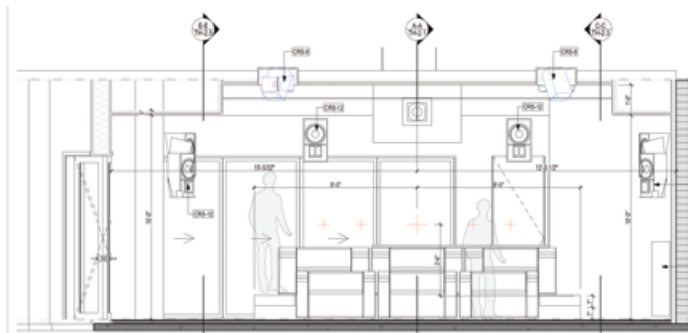
A Slightly Modified Trinnov All-Format Implementation

Trinnov Audio has developed a unified loudspeaker placement format that has been covered in past issues of *Widescreen Review*

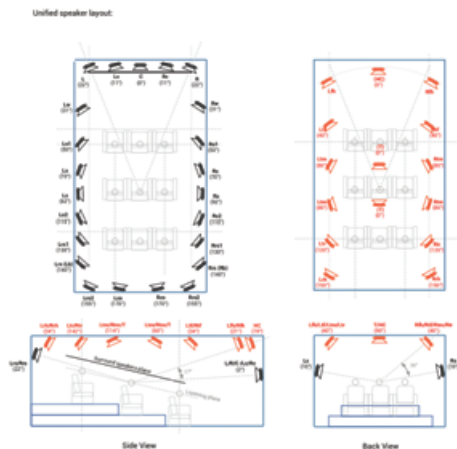
Custom Home Theatre Design



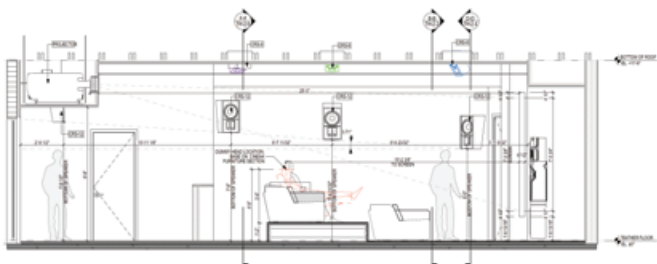
LOGE Front Elevation with tops positioning.



Loge Rear Elevation shows loudspeaker aiming of rears and top rears.



TRINNOV ALL FORMAT unified loudspeaker layout standards, I find the tops too far apart for what I am looking for in immersion.

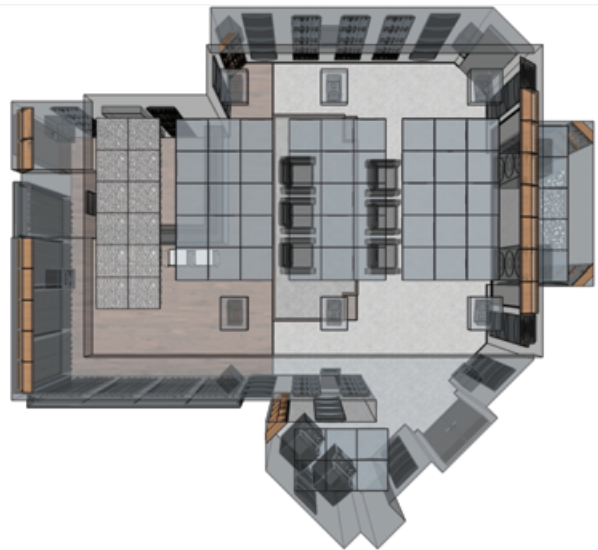


TRINNOV RECOMMENDED sloping surround bed channels implemented in textbook fashion.

& Custom Home Theatre Design (See Issues 239 through 242, May, June, July, August 2019). When implemented in rectangular rooms with very wide seating areas, the placement of the height loudspeakers falls too far apart from the center seats, and this comes at a cost for the Dolby Atmos tops, as they are too far from the cinema layout, which aligns between the main loudspeakers and the center channels. Because of the egocentric island concept deployed at LOGE and through deliberately pushing the tops as close together as possible to fit a row of three seats, the tops imaging on Dolby Atmos is closer to the around-the-head envelopment some experienced at the Gravity Premiere. You can literally extend your arm out and grab sound objects panning around.



The original Vicoustics acoustical treatments plan in elevation.



The original Vicoustics treatment plan in plan view, not one bad seat (close to a wall) in the room.

A Modified Vicoustics Acoustical Design

The client had originally commissioned Vicoustics to come up with an acoustical design.

Because we measured the absorption of the custom-modified headrest Cineak Strato Plus seats, which absorb a ton of bass, we knew that the design had to be modified, in addition, the reverberation time values with the way they had placed absorption over the seats, prompted us to replace the whole section of treatments above the main row to diffusion.

Also, the back of the room has a hard floor, for which the client

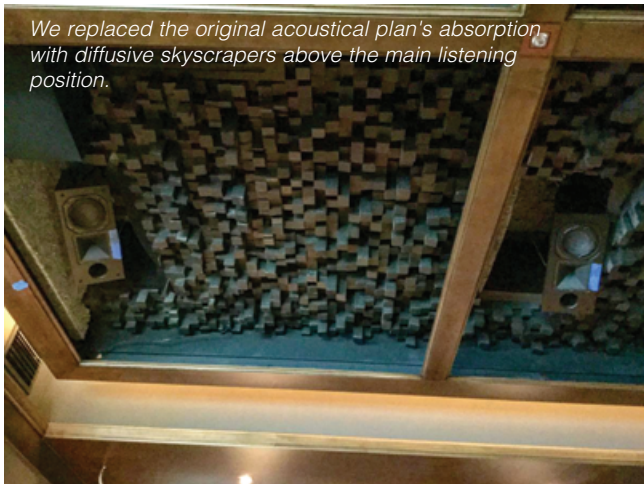
decided to go with GYK absorbers instead, those floating rectangles that look deconstructively interesting. An additional layer of vicoustic bass traps was integrated into the curtain L-shaped bal-
last, the end result was a very well-balanced and musically natural space with an RT-400 sound decay on the main row.



The magnificent CRMS center channel, with the CRMSC HOR VER center height above flanked by eight Seaton F-18 sealed subwoofers.



The CRMSC SR HV 90x90 used in the center height and Vog positions for DTSX-PRO and Auro-3D.



We replaced the original acoustical plan's absorption with diffusive skyscrapers above the main listening position.



Special bracketry aimed the front, center and back tops aimed in TRINNOV RECOMMENDED crossfiring aimings.



Alcons CRMSC HV 90x90 dispersion Dolby Atmos tops loudspeakers cover all six seats.

Installation And Acoustic Plan Modification

You can see here the changes we made to add diffusion above the seating area, plus the closer tops separation Dolby Atmos overhead, the center height and "Voice of God" loudspeakers dedicated for Auro-3D and DTS:PRO. Tops height loudspeakers were pointed in crossfiring fashion as per Trinnov all-format protocol.

D-BOX Cineak Strato Plus Seats with Cineramax Mini-PLF Headrest

The Cineak Strato line of low-back cinema seats is something we have been co-developing with the manufacturer for a decade now. What is great about this line is that the headrests, unless deployed for all seats, do not block sounds coming from behind. For this latest generation of seats, we took anatomical measure-

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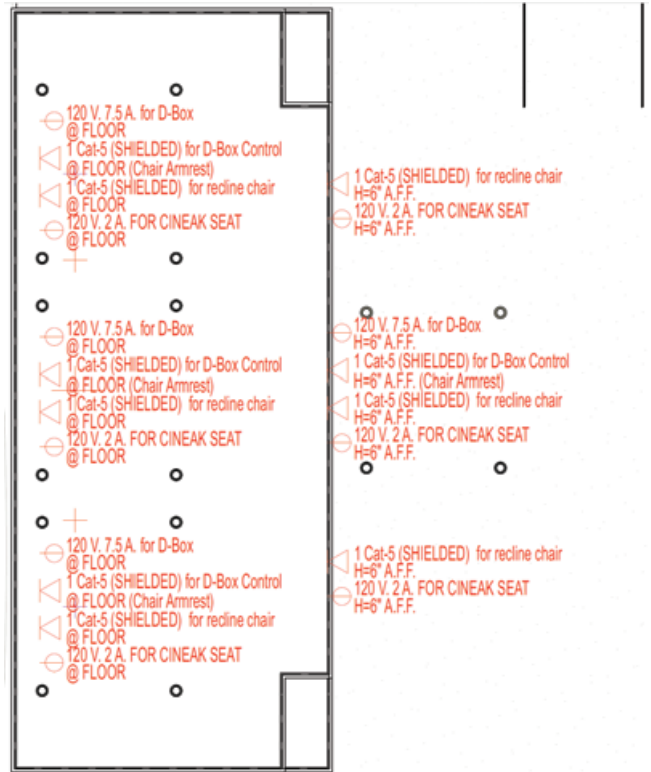


Cineak Strato Plus MINI-PLF headrest is our 6th-generation ERGOVISUAL improvement.

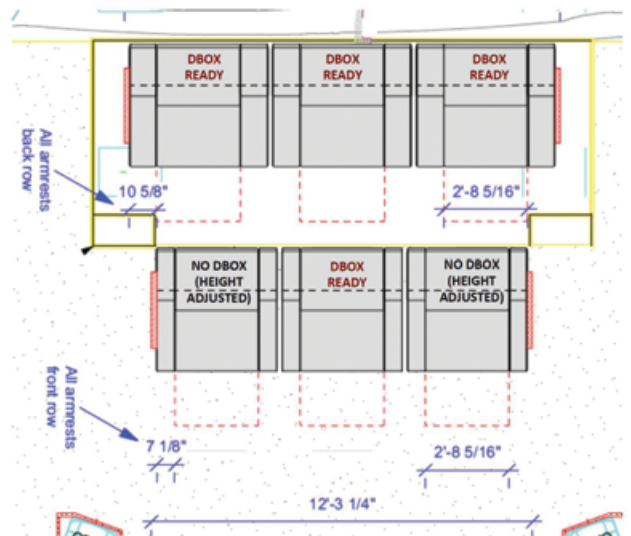


The front row was bespoke leveled to match the center seat height for D-BOX.

ments for individuals 5-foot, 8 inches to 6-foot, 3 inches; the headrest is ERGOVISUALLY aligned to hold your eyes facing forward toward a premium, large-format (PLF) movie screen instead of



Electrical connection for all setas show power and D-BOX wiring.



Non D-BOX seats on front-row legs are adjusted for the center seat.

looking up in a slant as the STRATO PLUS does.

D-BOX Integration For Quintuple Dimensionality

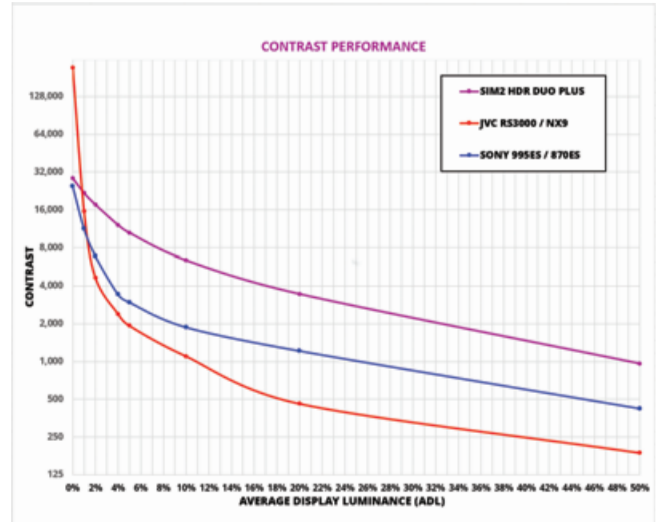
Unlike other 3D rooms, this room has 3D audio WITH 3D movie capability (the client mixes the Dolby Atmos and DTS:X audio extracted from his UHD discs with the 3D version of the movie). Initially, the client had been skeptical about the effectiveness of the D-BOX motion system until I brought him to my laboratory where I let him experience it. He was surprised about the vicerality and immersion synergy D-BOX added to the whole experience and made a complete turnaround, deciding to prepare four seats for D-BOX. He loves to crank those seats for maximum thrust, with the better three-axis, 4x440-pound-per-piston system. This quintuple dimensional experience is his preferred method of enjoying his cinema now.



Bespoke ventilated projector stack hushbox.



SIM2 duo plus mounting gimbal base.



Contrast metrics comparison curves courtesy of Nigel Archer of Absolute Ultimate AV.

ADL (%)	SIM2 HDR DUO PLUS	JVC RS3000 / NX9	SONY 995ES / 870ES
0%	28,600 :1	217,713 :1	24,651 :1
1%	21,779 :1	15,579 :1	11,300 :1
2%	17,595 :1	4,644 :1	6,876 :1
4%	12,109 :1	2,395 :1	3,420 :1
5%	10,510 :1	1,930 :1	2,963 :1
10%	6,384 :1	1,101 :1	1,875 :1
20%	3,450 :1	461 :1	1,216 :1
50%	960 :1	187 :1	422 :1

Contrast metrics comparison chart courtesy of Nigel Archer of Absolute Ultimate AV.

SIM2 DUO

During the first UHD Alliance seminar at CES 2015, a PIXAR presenter claimed that the maximum f-stop limit potential in animation was 22 foot-Lamberts, which would take a giant file roughly 250 terabytes to make, but that for live action the practical limitation from the cameras was 16 f-stops. Right after the meeting I went to the SIM2 suite, and I found Domenico Toffoli, SIM2's Technical Director, discussing their HDR mastering monitor with the PIXAR gent. While I stood on the side listening, he walked over to a stacked set prototype showing 14 f-stop HDR. The picture looked good to me and the PIXAR guy liked it too.

That is when I called Alan Gouger, the former owner of AVS Forum, and told him this is one technology that seemed to work. Alan ordered one set of these and within some months he, Joe Kane, and SIM2 embarked on the development of the SIM2 DUO Plus, modeling the final gamma curves, etc. I ended up showing it to my LOGE client, because they are 45 minutes apart. As the performance improvements were progressively implemented, my client kept on reporting to me in excitement. He was sold.

Absolute Ultimate AV became the U.S. distributor. The projector stack achieves 14 f-stop HDR. In the real world, the intensity of natural light can span up to 14 orders of magnitude from night to direct sunlight. The ratio between maximum and minimum luminance is called dynamic range. The human eye can instant-

Custom Home Theatre Design

neously perceive up to five orders of magnitude without adaptation. HDR (high dynamic range) is, therefore, the ability to render a large range of luminance in a display, from extremely dark to extremely bright values, hence creating brighter whites, darker blacks, and brighter colors that better match what we see in the real world.

Although I have always been a fan of contrast-modified DCI projectors for color, Modulation Transfer Function and 3D quality with decent 8 f-stop EDR (extended dynamic range), I must say, when compared to the excellent latest Barco RGB Laser Series 4, there is simply no comparison in the HDR department with this stack. Alan also took his time mechanically aligning the two projectors, which have not drifted since.

Nigel Archer, Alan's new confederate in the Absolute Ultimate AV franchise, has a peculiar level of competence in the metrics department of projector comparisons, and he went out of his way to compile these mind-expanding contrast measurements. Impressive? The screen frame with pneumatic screen hatch mechanism was manufactured to order by CINERAMAX, it was sized to the maximum frame possible that fit the envelope. The 139 inches wide 1.78:1 was tone mapped using a Lumagen Radiance Pro but also for a 2.0:1 aspect ratio zoom effect on scope films. The screen material is the popular DreamVision .8 gain three-layer woven screen with black backing.

Fourteen F-stop HDR is yet another holistically synergistic benchmark that manifested as moon shot rank at LOGE. Soon Absolute Ultimate AV will have a 1,000,000:1 contrast projector in



Altamira: First Motion Image with Surround Sound Huff Effects.

their lab, and you may want to contact me as soon as we have a solution to experience both setups. There will be no better-sounding demo at the 2021 CEDIA Expo, and the Christie® Eclipse 4K RGB pure laser projector is quite a sight to behold. You have my information below, any enthusiast champagne or beer pocket is welcomed. Feel free to contact me 24/7 with any questions, technical arguments or design concepts to discuss. **WSR**

THE BBB FEATURING BERNIE DRESEL

Recorded at Capitol Studios, Hollywood, CA



The new album **Bern Bern Bern** provides potent testimony to the sheer exhilaration of big band jazz... A combination of intense swing and fiery soloing, as well as tight ensemble playing, powered by Bernie Dresel's extraordinary drumming talents.

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peter@wallscreen-skylounges.com
1 305 206 6073

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Partial Equipment List

VIDEO

Projector: SIM2 Duo Plus
Video Processor: Lumagen Radiance Pro 4444
Screen: 138 Inches wide 1.77:1 CINERAMAX
Custom Lift Gate with DreamScreen v6.

AUDIO

Audio Processor: Trinnov Altitude³² feeding 16 channels AES with the rest analog
Power Amplifiers: 6 X Alcons Audio Sentinel 3 Controller Amplifiers
Loudspeakers: 3 X Alcons Audio CRMS MKII Reference Monitors, left, center, right; 8 X Alcons Audio CRMS SR Surround Monitors, Wides, SUR 1, SUR 2, SUR BACK; 10X Alcons Audio CRMSC SRHOR VERT 90°X90° Heights and "Voice of God"; 8 X Seaton F-18 Subwoofers for LFE plus front stage; 2 X Seaton DS18-12 Bass Management left and right Surround Subwoofers

SOURCES

Panasonic UBD 820 4K Ultra HD Blu-ray Disc Player
Zidoo Media Player
Kaleidescape Strato Plus