

OMEN DEF

OWNER'S MANUAL

1 | 2012

THANK YOU

Thank you for your purchase of the Zu Audio Omen Def loudspeaker system. Every element is designed for a lifetime of hassle-free high-performance playback. It's our intent that these loudspeakers exceed every reasonable expectation in product performance, quality, durability and customer service, for as long as you own them.

ZU VISION FUTURE & PAST

Impressions of new realities struggle and flow—eventual transition.... Awareness of surroundings, songs of tranquility and warning—history and intuition instruct that patterns of sound have been a fundamental constant. Observance of nature, both physical and spiritual, teach us of the endless interplay of vibrational forces.

While traveling the line of time we observe many periods of increased awakening and technological advancement but none so powerful and rapid as that of the Scientific Revolution, Enlightenment and the birth of modern physics. The dramatic increase of understanding regarding possibility, vibration and energy coincide with our collective ability to listen and express patterns of life. David Toop in his book *Ocean Of Sound* paints a powerful image of our modern musical creativity: "...Starting with Debussy in 1889, is an erosion of categories, a peeling open of systems to make space for stimuli, new ideas, new now, this environment included sounds of the world—previously unheard musics and ambient sounds of all kinds, urban noise and bioacoustics... unfamiliar tuning system and structuring principles, improvisation and chance."

Welcome to Zu



OMEN DEF (((WARNINGS)))

WARNINGS

Never leave children unattended in your playback room. Even though Omen Def has a wide base and takes a fair amount of torque to knock it over, care should be taken to prevent accidents.

(Besides, you already know if you let them in your room uneducated and unattended they are going to bust your needle, play catch with your discs, bend your tube pins, and write their name on your new leather chair—good secondary reasons for spending time with ‘em. So hang with your kids, grand kids, and neighbor kids, listen to some great music together, teach ‘em about playback and great music. Introduce them to Lucinda Williams, The Clash, Miles, Hendrix, Beethoven, Zeppelin, Sinatra, Rush, Silver Jews, Debussy, Woody Guthrie, Deep Purple, Wagner, Black Keys, Marty Robbins, Kyuss, Spoon, Steve Earle, Sabbath, Velvet Underground, Eels, CVB, Joanna Newsome, Ry Cooder, Cash, Ryan Adams, Zappa, John Prine, The Who, Ian McKay, Zakk Wylde, Sex Pistols, Julian Cope, Alice In Chains, Legendary Pink Dots... the Stones, Charlie Parker, Hank Williams, Elvis, Beatles and Mozart.)

The Omen Def loudspeaker system is not intended for outdoor use, do not expose to rain or moisture.

Also, we recommend unplugging your loudspeakers, main amplifier(s) and electronics during lightning storms or when the playback system will not be used for an extended period of time.

WARNING: Electrocutation through loudspeaker cable is possible, though very unlikely. Still, to avoid electrocutation make sure your amplifying gear is switched off prior to connecting or disconnecting. This will also reduce the possibility for accidental damage to your audio amplifier.

WARNING: Omen Def loudspeakers are heavy enough that we recommend you have a second person assist you.

WARNING: Omen Def loudspeaker drive units create stray magnetic fields that extend far beyond the boundaries of the cabinet. We recommend you keep magnetically sensitive electronics and media at least two feet [.7m] from the loudspeaker.

WARNING: Omen Def loudspeakers are capable of extreme sound levels, play responsibly. If caution is not exercised your hearing will be damaged. And your neighbors will either hate you or want to party with you.

OMEN DEF UNPACKING

UNPACKING

Omen Def features our new FlexPak foam-encapsulating shipping containers. They are extremely protective, lightweight, simple, and reusable.

WARNING: practice good lifting techniques (squat down, use your legs, keep your chest up), consider getting a friend to help. Each packaged loudspeaker weighs about 78 pounds [35kg].

CAUTION, watch out for snaps, rivets, jewelry, and belt buckle scratching the cabinets when positioning the loudspeakers.

1. Make sure your path is clear and your room is made as open as possible. If lifting is required, lift with your legs and not your back, and if you are not accustomed to lifting, get the assistance of a friend.
2. Lay a moving blanket, or similar, down on your floor.
3. Using a hand truck to make it easier, wheel one packaged loudspeaker into the room and lay it on its side.

NOTE: Shipping companies are not allowed to enter your house, if you are nice they will likely wheel the speakers right up to your door. But even if you give them a big tip, they are not going to lend any muscle inside your home.

4. Cut the banding with a knife, and while still laying down, cut the tape securing the tabs on either end of the box. You do not need to cut the box off the speaker, be nice to your box and save the packaging.
5. Sit down in front of one of the open ends, grab the box flaps with your hands, and with your feet press the foam encapsulated loudspeaker out the other end.
6. With the loudspeaker still horizontal, remove one of the foam halves, then gently roll the loudspeaker over and remove the other foam half. Leave the plastic wrap on. Careful of the lower rear portion of the loudspeaker where the binding posts are located.
7. With the loudspeaker still horizontal and wrapped in plastic, confirm the ball-end footers are installed in the base. If the loudspeakers will be standing on carpet or on a rug, peel back the plastic wrap to expose the base and feet, remove the ball-end studs and replace them with the supplied spikes.
8. Lifting the top of the speaker, pivot onto its feet.
9. Move the loudspeaker into position and then remove the plastic wrap.

OMEN DEF PLACEMENT

QUICK TIPS ON GETTING GREAT SOUND FROM OMEN DEF

Omen Def loudspeakers now get 200 hours or more of factory burn-in, they will sound good right out of the box but will not give you their best for a few weeks, depending on how much play, and how cold they got in shipping, as well as what kind of music they see. If shipped in the winter months you can expect them to need the first week to warm up and start sounding good, not sure why, it just is.

Make sure you have 1/4" [6mm] or greater gap between the bottom of the loudspeakers and the floor, finger ports on bottom of loudspeaker cannot be obstructed.

Remove the protective plastic shipping discs covering the full-range drivers. (Yes, there have been a few times "speakers didn't sound right" just to find out the full-range shipping discs were still in place.)

In addition to the installed ball-end footers (for hard surface flooring) Omen Def also ship with spikes that are to be used to punch through and anchor the speaker on carpets and rugs.

INITIAL PLACEMENT

While your initial placement for the Omen Def loudspeakers may not be the acoustic ideal, know they are not hyper-sensitive to where in your room they are placed and you should get satisfactory performance from most any position. Nevertheless, you will be rewarded if you work on setting them up for the best sound. The following details may assist you in the pursuit of tone, texture, and realistic stereophonic recreation. Loudspeakers should be placed to work with the natural acoustics of the room rather than fight them. The following basic points should be followed.

- Turn your electronics off before disconnecting and connecting your loudspeakers.
- Connect loudspeaker and amplifier RED to RED | BLACK to BLACK.
- Position left and right speakers symmetrically (classic stereo arrangement but wider) for best stereophonic playback.
- Point Omen Def loudspeaker directly at central listening seat for greatest intimacy.
- Point Omen Def loudspeakers directly forward for less treble and more diffused playback.
- Subtle changes to cabinet rotation (toe-in) and tilt (canting) significantly change sound.
- Experiment with placement to get best sound.
- A great setup book is Jim Smith's, Get Better Sound. Self published, www.GetBetterSound.com

LOUDSPEAKER FEET

Hard surface ball-end feet have been pre-installed in the Omen Def loudspeakers and carpet spikes have been included in the package. Ball-end footers are more gentle on hard surface flooring but will mar it, especially if slid. We recommend you lift and move the loudspeakers to avoid damage. For carpeted floors we recommend that you use the supplied spikes. Spikes provide increased support to the loudspeaker, allowing it to couple with the structure of the floor and not wobble about on the carpet. Carpet spikes will also reduce permanent carpet or rub impression from the loudspeaker.

OMEN DEF PLACEMENT

PLACEMENT OVERVIEW

Place the speakers where you had planned. Connect the loudspeaker cables: red to red, black to black on both the amplifier and loudspeaker. Put some music on and light 'em up. Now, take fifteen minutes and read the rest of this booklet. Omen Def loudspeakers are burned-in at the factory and should sound good right out of the box provided the amplifier is happy. If at first you find them restrained and aggressive, relax, they will come around.... If you position and tune them for best sound during the first week or two please take time to retune after they have opened up.

Omen Def, like most Zu loudspeakers are not overly sensitive to placement. However, for best sound we recommend you take time to optimize and integrate the loudspeakers with the acoustic nature of the living room or space, as well as optimizing for your sonic quality preferences. But for now, lets just get them up and running and sounding good, in a place within the room that you, your family and friends can appreciate and live with. After all, if you don't have convenience and good looks from your playback system, you aren't going to get the amount of use you desire.

First, make sure you have at least 1/4" [6mm] gap between the bottom of the loudspeakers and the floor. If you can't slide a CD jewel case underneath then you need to raise them; and more if you like, depending on the amplifier and on the interaction with the room—there is no perfect height. The finger ports are part of the Zu-Griewe box loading technology. They are not ports as used in a bass-reflex design (Helmholtz resonators in all their forms) but the finger ports do need to see the acoustic space of the room. Blocking them turns Omen Def into a "sealed" design.

From an architectural and room usage point of view, position the loudspeakers to balance the natural seating / facing position within the room. Architecture that is livable and attractive almost always sounds good, loudspeakers that look out of place within a room usually sound out of place. And as with art of this size (monoliths, pottery, statuettes...) Omen Def loudspeakers need enough open space to both visually and audibly appear relaxed. Loudspeakers crammed up against the wall, corner, furniture, or other pieces of art, do not look good and do not sound as good as they could. The amount of free-space is usually predicated by the room size and shape, bigger rooms with higher open areas seem to demand more free space around the loudspeakers. Smaller rooms require less. No ruler required, what looks good will very likely sound good. If you hold convincing stereophonic recreation as a desirable sonic attribute (we do, but know for some stereophony is a secondary, or even unimportant aspect of fidelity; and yes there are good reasons for it, maybe Phil Spector really did have it right—just about recording and playback, assumed I'm sure) then you must also work in symmetry. For good two-channel stereo loudspeakers must be precisely mirrored, left / right, and facing the focal point of the room. This aspect is detailed in the following pages.

OMEN DEF PLACEMENT

PLACEMENT OVERVIEW WRAP-UP

The Zu approach to be reasoned out as you fine-tune your playback system to your room is this: we feel Omen Def or any loudspeakers should be placed to work with the natural acoustics of the room rather than fight them, and in most every case, where they will sound best is also where they will look best.

Professional audio engineers aside, we strongly recommend that you place your speakers with your eyes and ears first. Audiophiles, please fight the urge to set them up based on what has been handed out in the popular magazines and internet. Generally, the information found is over simplified, or complicated, and wrapped in jargon, thus obscuring the problem and the solution. If you are a student of Olson, Jeans, Rayleigh, and the like, do your thing, and realize there is a strong aesthetic undertone in most all great works of acoustics.

Again, getting good sound is not as hard as you might think, so long as you... yep, think with your eyes and ears and not with your brain. What most of us regard as architecturally attractive is at least subconsciously influenced by how a structured space sounds.

Laying out a system based on room flow and visual appeal usually results in good sound, and speakers shoved in corners are not an example of appealing visual integration. If you only have a random or even less than scholarly understanding of acoustics we again encourage you to plan with your eyes and ears, and less with your brain and measuring tape. Nevertheless, these finer points, which require such tools, are present on the following pages.

RECOMMENDED READING ON ACOUSTICS

Whatever the reason, the current consumer playback world is generally lost in its conception of acoustics and the nature of sound—much has been written in the hi-fi world but little of it is genuine. For a great nontechnical loudspeaker setup book, get Jim Smith's, *Get Better Sound*. Self published, www.GetBetterSound.com.

Recommended works on the subject of acoustics representing a good cross-section include:

Helmholtz, Hermann L. F., *On The Sensations of Tone*, 4th ed. trans. Alexander J. Ellis (Dover, 1954. Original 1885-77)

Rayleigh, J.W.S. Baron, *The Theory of Sound*, 2nd ed. Vol. 1 & 2, (Dover, 1945. Original 1894)

Lamb, Horace, Sir, *The Dynamical Theory of Sound*, 2nd ed. (Dover, 1960. Original 1925)

Jeans, James, Sir, *Science & Music*, (Dover. Original 1937)

Olson, Harry F., *Music, Physics and Engineering (Musical Engineering)*, 2nd ed. (Dover, 1967. Original 1952 & 1967)

Benade, Arthur H., *Fundamentals of Musical Acoustics*, 2nd ed. (Dover, 1976, 1990)

Kinsler, Frey, Coppens, and Sanderds, *Fundamentals of Acoustics*, 3rd ed. (Wiley, 1982)

OMEN DEF PLACEMENT TUNING

PLACEMENT FINE TUNING OVERVIEW + LESSON ON TONE

There are two main areas of fidelity if bandwidth, dynamic range, and group delay (more or less timing) are assumed—and dynamic range, bandwidth and group delay are largely set by the system and the user can't really tune these elements anyway—they are tone, (*tone* as used by Helmholtz and further defined by guitarist everywhere) and stereophonic realism (“soundstage” as is the hi-fi jargon) which is the ability to recreate three-dimensionality.

Traditional musical instruments are tuned around the concept of tone, and not stereo. If your playback system doesn't do tone little else matters (to the majority anyway). So if you want to hear what Mike Watt is doing with his 1963 Gibson EB-3 bass guitar, or tell it apart from a 1966 Fender Mustang, focus on building tone in your room and system and forget the stereophonic. Once you have tone and texture, then move to dialing in the stereophonic aspects of playback.

NOTE: How and where the loudspeakers excite a room and how a room reacts are relative to the type and source of excitation and room reactance—a function of boundaries (walls, floors, etc.); boundary properties (mass, compliance, Q, damping, texture and structure); area impedances (shape, volume); diffusion and absorption (furnishings, people, flooring, etc.); source and type of wave excitation (loudspeaker design and placement); resonators (closets, forced air ducting, hallways, etc.); even atmospheric pressure and humidity, though very minor, will influence sound. While the above are beyond the scope of this manual, the recommendations and listed books will start you down the proper acoustic path. Now, with your loudspeakers positioned for visual appeal, livability and fidelity, you can now begin fine-tuning. This involves three major steps: in sequence they are bass, mids and treble. If you can't fine-tune your system within an evening or two please contact us, we're here to help.

PLACEMENT FINE TUNING | BASS

If you have one loudspeaker that is framed with more wall space than the other, this is the loudspeaker you will fine-tune and then simply mirror the other. Select recordings with large amounts of sustained low frequency information; dramatic pipe organ and dance music work, as do test recordings that have warbled low frequency tracks (50~100Hz range). Note that steady-state sine, triangle and square wave signals prove very difficult to interpret. Bass information with some transient content will enable the listener to make fast work of fine-tuning.

With the loudspeaker playing at a moderate level, (VERY IMPORTANT—only the ‘tuning loudspeaker’ should be connected and ‘on’) walk over and kneel down next to it. Kneeling will put your head in the seated listening horizontal plane and allow you to hear how the loudspeaker integrates with the room. Now move your head and ears in all directions around the vertical axis of the loudspeaker, say a few feet or so [.5m] on all sides. It's big bass waves we are listening to here (envision the size of North Shore surf, moving at the speed of sound, moving around, impinging and bounding off all the walls in your home. Yep, bass waves are big). Listen to the fidelity of the bass, does it sound woolly and muddy right behind the loudspeaker? Is the bass more defined a bit to the left or right? If the bass sounds better a bit to the left, move the loudspeaker to this position and then listen again. Remember, moving the

OMEN DEF PLACEMENT TUNING

sound source also changes how the room reacts, so with each move, you should also listen in your listening seat and attempt to confirm and corollate your observations at both positions. Complicated rooms can be further modeled by walking about the whole room, noting nodes and anti-nodes (peaks) within bass octaves. If you aren't hearing much, move on, you could have it nailed or have a great sounding room; or your ears really are painted on and should send your speaks back for refund.

For problem rooms there is also a good technique referred to as 'listener mirroring', please read carefully, mirrors confuse. Put one loudspeaker in the spot you want your listening area to be. Face this loudspeaker, the one now standing where your listening chair would be, toward the spot you want to place the loudspeaker. Now play the bass-heavy material, then walk over and listen in the area you want the loudspeaker to be. Find the good sounding spot, this will most likely be the best sounding spot to then place your loudspeaker.

PLACEMENT FINE TUNING | MIDRANGE

Once the lower octaves are sounding good, natural and vibrant midrange and treble can then be dialed in. Before you begin, it's important to understand a few details about midrange tuning. While similar to that of bass, midrange is a task of inches [decimeters] rather than feet [meters], and upper octaves a matter of fractions of an inch [centimeters] and loudspeaker firing axis (wavefront and where they face). And while midrange and treble changes can be heard at the 'being positioned loudspeaker', it is much more helpful to have a friend do the positioning while you listen from the sweet spot/listening position. Select lighter recordings for this—singer-songwriter, folk, jazz, space-ambient, violin solos, acoustic guitar, and so on—music with good overtone color and not too heavy.

Staying with the same loudspeaker tuned for low frequencies, (remember you only tune one channel and then mirror its mate) and with your favorite light recording playing, start tuning for mids and highs. Move the speaker toward the closest wall an inch or two at a time [3~6cm]. The sweet spot observer, and possibly the person positioning the loudspeaker, should notice midrange color and presence transition from low and masked to open and intimate—that's the goal anyway. There may be several spots within the good sounding bass area that have good presence, go with the widest point (closest to the wall) for an expansive and engaging stereophonic soundscape. Don't worry about center focus, Omen Def loudspeakers throw an expansive and focused image (provided it's in the recording and passes unhindered through the electronics—there's nothing worse than some stupid whizbang technology forever synthesizing space and tone).

OMEN DEF PLACEMENT TUNING

PLACEMENT FINE TUNING | TREBLE

Once a midrange position is selected it's time to work on the highest octaves. This is usually as simple as rotating the Omen Def loudspeaker to face directly at the seated listener—pivoting the speaker on its front inside spike. Now listen again for soprano voice and light instrument openness and intimacy, minor placement adjustments and face angle will likely be necessary. Realize that best placement may change with speaker age, electronics upstream, and other variables. The simple guideline is if it's a bit treble rich, rotate each speaker to focus behind the main listening area a few feet—experiment. And yes, this same technique works for other Zu speakers, and most others you might be proud to own.

ADJUSTING LOUDSPEAKER FEET & BAFFLE CANTING

Spikes for carpet, ball-end studs for hard surface floors. Once positioned and tuned-in, your last step is to level the loudspeakers by adjusting the spike or ball-end studs. Each loudspeaker should stand straight and level and all four contact points should be equally weighted. If you have a high listening position, or would like a greater sense of image height, you can cant the loudspeakers back, lowering the rear feet / raising the front feet. This rotates and elevates the stereophonic image. Just be sure the left and right loudspeakers both have the same amount of canting. And yes, you can use spikes in the front and ball-end studs in the rear for even more dramatic angles. As always, experiment and have fun.

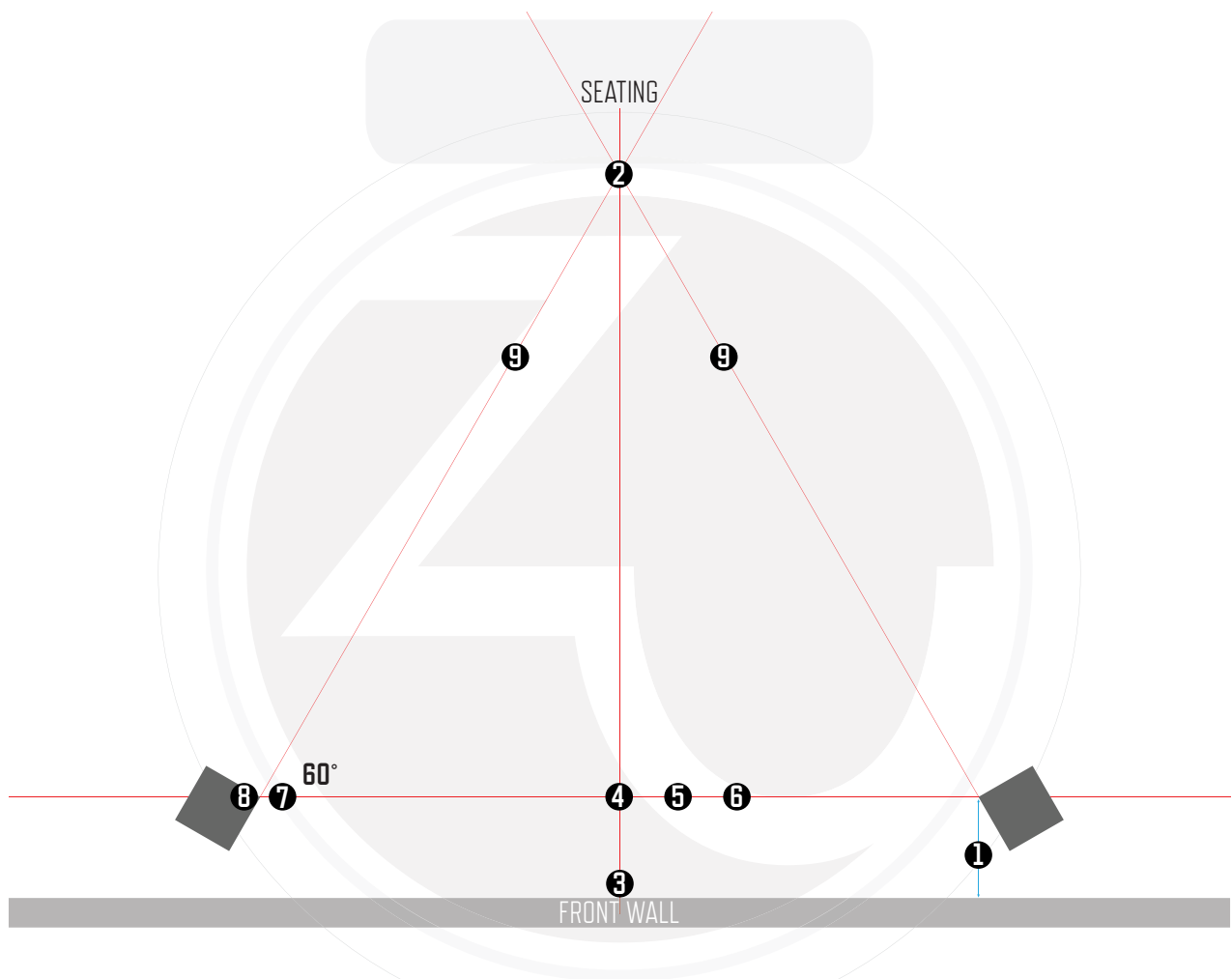
OMEN DEF STEREO TUNING

TWO-CHANNEL STEREOPHONY TUNING

Recommended tools: tape measure, masking tape, Strait-Line® intersect laser level, or similar (inexpensive and useful for leveling wall art when you aren't using it for fiddling with your hi-fi).

With the one loudspeaker now tuned and sounding good, getting convincing two-channel stereophonic effect is now simply a matter of measuring and mirroring. Don't fuss over whether or not your loudspeakers are perfectly square with the walls, or get obsessive with the room's mathematical relationship. To do so is to waste time and possibly mess things up. Trust what you've already established with your single-channel effort so forget about everything other than establishing your center plane and mirroring the other channel.

In the mono 'speaker you established two points of reference that will now establish your two-channel stereo mirror plane. Those points are your seating position and your tuned loudspeaker.



OMEN DEF STEREO TUNING

(Reference illustration—two-channel stereophonic loudspeaker setup)

- 1) Measure and note the distance from the wall behind to the positioned loudspeaker's inside forward base corner.
- 2) Sit in your center seat, mark the center spot of the floor right between your feet with a bit of masking tape.
- 3) With the Strait-Line® intersect laser level in hand, stand and walk straight ahead to the facing wall. Butt the intersect laser level up against the wall and position the laser so the side plane laser indicator runs parallel with the wall, and the center plane intersects your seating center mark.
- 4) From the wall, along the center laser mark pointing at your chair, measure the same distance as in step one, and mark with a bit of tape. These two points establish your stereo center plane.
- 5) Move the intersect laser level forward so the intersection is on that bit of masking tape nearest the wall and the center laser mark intersects your seating center mark. This should result in the orthogonal laser striking the tuned loudspeaker right on the inside front corner.
- 6) Measure and note the distance from the laser intersect to the point of laser contact (inside front base corner) on the positioned loudspeaker.
- 7) Reflect this distance on the other side of the stereo plane, marking the mirrored distance with tape.
- 8) Now place the second speaker's inside front corner on this mark and approximate the toe-in by pivoting it on this inside front corner. If fine tuning of toe-in is needed pivot either loudspeaker on the front inside corner footer only. This will keep the mirrored stereo relationship the same and you won't have to get the laser and tape measure out every time you mess with toe-in.
- 9) While you can also use lasers to adjust and ensure mirrored stereo toe-in, we recommend that initially you eyeball it based on the amount and angle of the loudspeaker's visible inside cabinet edge. Before you get "laser crazy" with toe-in we highly recommend that after you get close, by eyeballing it, you then level your loudspeakers, or start messing with firing axis (canting and elevation, which Omen Def is very sensitive to) for which the laser is also a very handy, sometimes essential tool.

OMEN DEF CABLE

WIRE AND CABLE

The most common abuse in hi-fi is to use cable as a form of tone control. Doing so usually leads to frustration and further loss of fidelity. When cable affects timbre it affects timing, phase, frequency response, and so on. Avoid using cables as tone controls.

Timbre problems are usually solved with loudspeaker break-in and correct loudspeaker placement. If the cable has good properties relative to phase, gain, group delay, impedance, and bandwidth, it will likely convey with fidelity the transmitted emotion and color. As an aside, avoid taking other people's opinions on cable as gospel—just because a reviewer makes blanket statements about cable “sound” means little relative to your rig and your ears. So trust your own ears, they're yours for a reason. Also, bear in mind that just because you had a good sound with cable A on loudspeaker X does not mean that cable A will be a good system match for Omen Def loudspeakers.

For best stereophonic imaging you should run matched pairs of left / right cable of the same length. If tone is more your thing and stereophonic effect is not so important then length matching of left / right channels is not critical.

While insulation, jacket materials, pigments, conductor shape, metallurgy and structure are important (yep, they really are), all pale into insignificance compared to the influence of electrostatic / electromagnetic forces, virtual ground plane, and conductor relational geometry. It is the E&M model, or cable geometry, that largely determines a cable's measured attributes.

Improvements that will be noticed from well engineered cables such as ours should include: enhanced bass depth and resolution, lower system noise floor, richer harmonic structure and timbre, faster attack, greater stereophonic accuracy and an overall ease of listening—simply a lot closer to real and satisfying and a lot further from typical hi-fi animation. But this assumes you are striving for the natural. Preferences in playback are just that, and individual enjoyment really is the goal, and not some ideal of what playback should be. Yes you can strongly feel our hepcat bias, but that's just us—do what makes you happy, and hopefully it includes some Zu.

OMEN DEF MAINTENANCE

MAINTENANCE & CLEANING OF THE LOUDSPEAKERS

Zu finishes of all types are engineered for a lifetime of trouble free good looks. Just wipe 'em down whenever you feel the need. A lightly damp microfiber cloth or chamois is recommended. Wood finishes are impregnated with a sealer and state-of-the-art conversion varnish top coats and are highly water resistant but are not waterproof. You can use any household wood finish cleaner / wax / polish you like, as well as the mentioned damp chamois or microfiber cloth.

High gloss finishes do not need any additional UV or other protection and we do not recommend wax or UV protective sprays. For serious cleaning and polishing on the gloss finishes, we recommend 3M® Perfect-It™ 3000 Glaze Polish or equivalent. All our painted finishes are top shelf, super durable, waterproof, and will remain so for decades, even in direct sunlight.

Dusting of the 10" full-range drivers should only be done with hand-held compressed air as used in photograph and sensitive electronics dusting. Or, if you are careful, you can use a very soft brush or even your bare hand to dust the full-range driver—but I would stick to the compressed air. And as for the tweeter, not much you can bungle there.

OMEN DEF ECOLOGY

MATERIALS, ENVIRONMENTAL REGULATIONS & DISPOSAL

All parts used within Omen Def are 100% recyclable. They do not contain any toxic material. Any Zu product or part may be sent back to Zu, free of charge, for proper re-use or disposal. Zu Omen Def loudspeakers are RoHS compliant (European Union's Directive 2002/95/EC, Restrictions of Hazardous Substances), and therefore do not contain any of the following substances: mercury (Hg), cadmium (Cd), hexavalent chromium (Cr6+), polybrominated biphenyls (PBB), or polybrominated diphenyl ether (PBDE). Additionally, Zu Omen Def loudspeakers do not contain beryllium (Be). They are classified as a lifetime life-cycle product and will most likely be in service for well over 50 years.

ENVIRONMENTAL STATEMENT / HONEST ECOLOGY

We at Zu take pride in hard work, innovation, engineering and manufacturing know-how, and at the end of it, an honest, well built, kick-ass product. We also love to get out and enjoy life and embrace all that the world has to offer.

Zu is sincere in its search for real environmental, human and ecology-friendly manufacturing; no fluffy feel-good bullshit, just the real deal; and not because of some great googly moogly "climate change" geopolitical power play nonsense. It's simple isn't it? People like being healthy and enjoying blue skies, green hills and wildlife. We keep our impact to a minimum because we get out and enjoy nature and don't want to muck it up.

Zu makes good stuff, products that last, things you can pass down to your kids and their kids, stuff that isn't going to end up in landfills. Want to make a difference? Do a little research on your own before you fall for hype, support a cause, discriminate, or purchase a product. The people driving and building Zu believe that manufacturers and users have equal responsibility and an obligation to their respective communities. Users and producers must search for real solutions and maximize their positive impact on family, community, nature, and technology.

REUSE

RoHS



CE



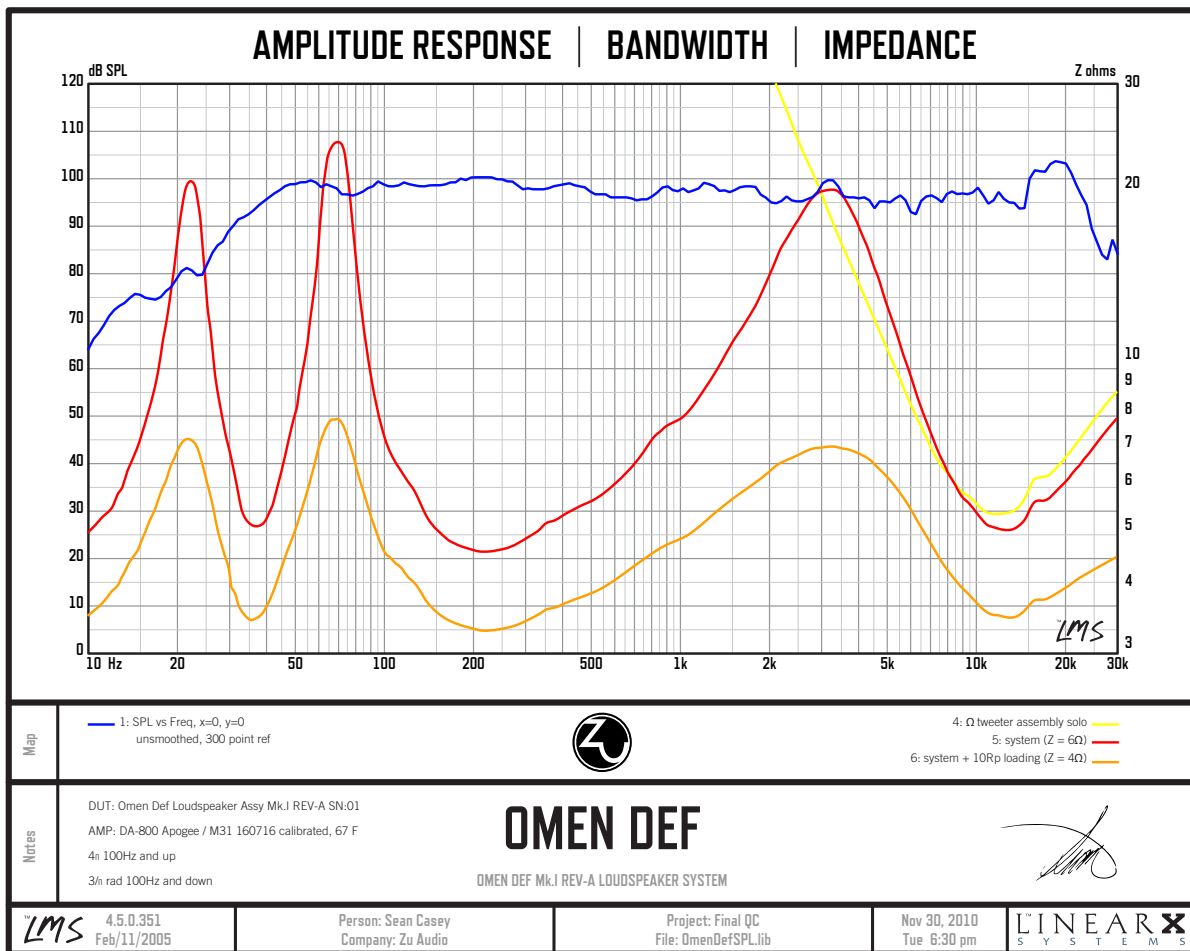


OMEN DEF SPECIFICATIONS

ZU AUDIO OMEN DEF Mk.I [REV-A] LOUDSPEAKER SYSTEM SPECIFICATIONS

Design	High efficiency, high output, moderate impedance, direct radiating floor standing loudspeaker. Omen Def features Zu's full-range driver (Zu260FRD/G4), in the Zu Definition architecture, Zu-Griewe driver/box/room acoustic loading technology, no crossover or filters on full-range drivers, complimented by a phenolic composite dome time-aligned machined from 6061 billet lensed tweeter to provide the acoustic sparkle and resolution from 10kHz and up.
Launched	November 2010 with production units shipping December 1, 2010
H W D	47 x 12 x 12" [119.4 x 30.5 x 30.5cm]
Footprint	12 x 12" [30.5 x 30.5cm]
Weight	78 pounds [36kg]
Packaged	FlexPak, one loudspeaker per shipping box, 84 pounds [38kg]
Driver Complement	2x Zu260FRD/G4, 10-1/3" full-range driver in Zu Def array covering 30—12kHz Zu APT-L2 tweeter assembly with stainless screen
Component Tolerance	better than 1% driver pair matching, 0.1% on all other electrical components
Recommended Connector	5-way binding posts accepting:
Accepted Connectors	1/4" spade [6.3mm fork], 5/16" spade [8mm fork], bare wire \leq #4 AWG, banana plugs
Efficiency	98dB SPL @ 1W,1m
Impedance	6 ohm, nominal full bandwidth (see impedance graph for complete detail) 4 ohm with 10 ohm parallel loading resistor (option, simple in-room binding post install)
Average Room / Moderate Volume	2—6 watt
Large Room / Loud	6—20 watt
Large Room / Concert Level	30—0 watt
Max Music Input Power	400 watt
Max sustained RMS Power	300 watt
Bandwidth	30—25kHz
Group Delay	< 5ms
Dynamic Range	122dB
Horizontal Acoustic Center	35" [89cm]
Horizontal Listening Window	45°
Vertical Listening Window	20°
Full-range Driver Network	none
Super-tweeter Network	2nd order bessel @ 10kHz (Erse PusleX condensers and ALq chokes)
Internal Cabling	Zu Mission hookup wire, pure copper
Cabinet	North American MDF skinned with real wood veneer
Spike / Feet Insert Thread	3/8—16 TPI (9/16" hex nut, 14mm wrench can be used but is tight)
Included With Loudspeaker	hard surface ball end footers installed with S.S. 9/16" jam nuts also included are carpet spikes, owners manual, polish cloth, and copper lug cleaning kit
Manufacturers Country Of Origin	U.S.A. 98%
Life Expectancy	100 years plus, all parts
Compliances	RoHS WEEE
Warranty & Service	5 years limited on cabinet and drivers—warranty does not cover misuse, abuse, components upstream from the loudspeaker system, modifications or non-factory service.

OMEN DEF TESTS & MEASURES



LMS 4.5.0.351
Feb/11/2005

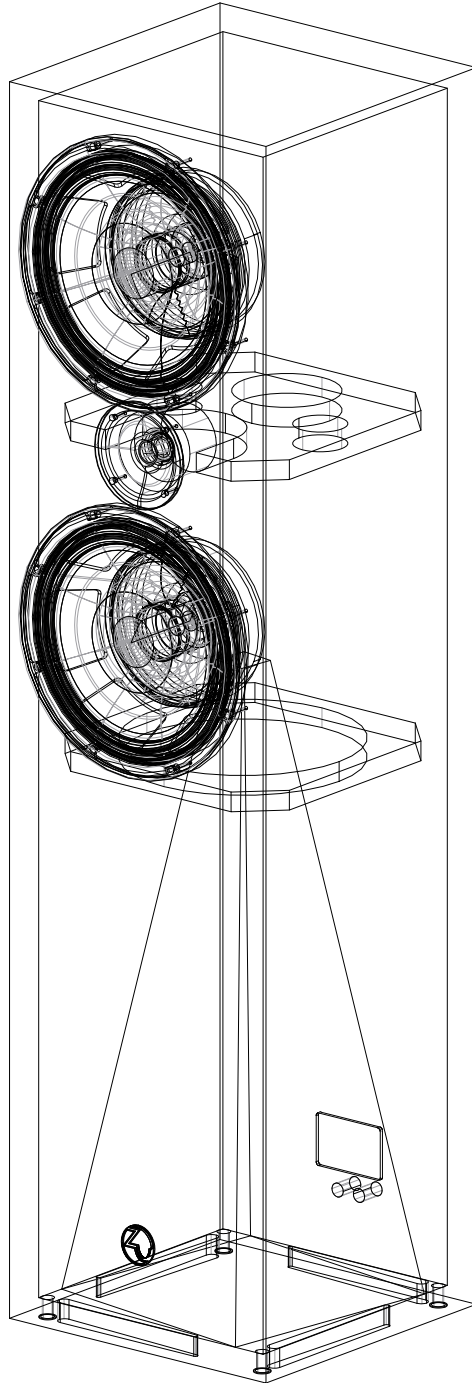
Person: Sean Casey
Company: Zu Audio

Project: Final QC
File: OmenDefSPL.lib

Nov 30, 2010
Tue 6:30 pm

LINEAR X
SYSTEMS

OMEN DEF OWNERS' MANUAL



OMEN DEF OWNERS' MANUAL

Zu products are designed and manufactured to the highest quality. However, if something does go wrong Zu will fix or replace the product free of charge. Zu Omen Def loudspeakers have a five year limited warranty from date of purchase to original owner. If under normal home use you have any problems with drivers, cable, parts, cabinet, we will fix or replace the product. Loudspeaker warranty and service can usually be performed by the user, also known as DIY service, in such cases Zu will provide full technical support. This provides faster repair of product (reducing down time is always good), minimizes handling hassle and damage potential to both Zu and you, and reduces shipping costs.

Zu loudspeaker finish warranty covers color changes in paint, finish checking, and oxidizing. Wood finishes are not guaranteed against fading and you should keep them out of direct sunlight, just like a piano. While every effort is made to ensure a perfect finish that will last a lifetime, this warranty does not cover damage from impact and abrasion, or seam / core construction visibilities in extreme high temperature / high humidity environments. Zu products are designed to be used in temperature and humidity controlled environments, namely your home or office unless otherwise stated. Warranty does not cover loudspeaker finish damage caused by the extremes of an uncontrolled environment.

If in the highly unlikely event that a Zu product arrives to you dead on arrival (D.O.A.), and after discussing it with a Zu tech, we will ship another of the same product at our expense and arrange for the D.O.A. product to be collected. If after inspection we find that you have misrepresented a returned product's condition, and that it was improperly handled or used, Zu will charge you for all damaged parts, labor, shipping and handling of the product.

Warranty does not apply to damage caused by operating the product outside the intended use, accident, another product, misuse, abuse, flood, fire, earthquake or any other external causes. Warranty does not cover damage caused by modification or service performed by anyone other than a Zu representative. Cosmetic damage is also excluded from warranty, as is all product that has any part of the Zu serial number removed.

When a product or part is exchanged the replacement becomes your property and the suspect or damaged part becomes Zu's property. Parts provided by Zu must be used in products for which the warranty service is claimed.

WHAT YOU CAN EXPECT IF WARRANTY SERVICE IS NEEDED

If warranty becomes necessary, you must call or email for a return of material authorization (R.M.A.) number, or to arrange for user serviceable parts. This provides opportunity to assist in diagnosing the problem and helps us to schedule for rapid turnaround in the event that parts, service or repair is needed.

Upon factory inspection of parts or product, warranty eligibility will be determined. While service options, parts availability and response times will vary, we do our best to keep you happy. International customers should know that Zu will comply with all applicable export / import laws and regulations, you may be responsible for custom duties, taxes, broker fees, freight, and other charges. When shipping of product or part is required, repackage the complete product, or part, in its original packaging. If you have any questions about packaging please call or email. Product damage caused from incorrect repackaging is not eligible for refund or warranty and the freight company may also reject your insurance claim. Until we have the product back in the shop and sign-off that it is eligible, the product is still your property, we recommend you insure or declare the full value when shipping. We also recommend that you only ship with a freight company that has a good reputation and offers tracking and insurance for the full amount.



ZU AUDIO

Ogden Commercial Industrial Park

3350 S. 1500 W.

OGDEN, UTAH — U.S.A.

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