MartinLogan Summit X Loudspeaker

Xtasy

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For MartinLogan X marks the spot. Promoted as the world's best hybrid electrostatic, the Summit X does in fact redefine sonic expectations in this particular loudspeaker genre. Updated from the original Summit, the X features redesigned crossovers and electronics. On paper the hybrid approach makes perfect sense. The goal is to blend electrostatic mids and highs with a conventional woofer for enhanced dynamics and bass extension. The key word here is "blend," as too often the end result had been a discombobularity where the transducers were joined at the hip. This may not be a rigorous technical term but it perfectly captures the sensation of listening to disparate drivers whose radiation pattern and resonant signatures are distinctly different.

No one has been at it longer or worked harder at it than MartinLogan. It has been a long climb to the summit, but I'm pleased to pronounce the Summit X as the winner. It succeeds on multiple levels, including industrial design. Framed by extruded aluminum-alloy pillars, a Curvilinear Line Source (CLS) transducer presents a slim and elegant façade that should translate into a high wife acceptance factor. A curvilinear diaphragm requires the steel stator panels to be positioned front and back to exacting tolerances, and that is only possible with the help of a rigid frame. The stators are said to expose twice as much diaphragm surface area as a similar sized conventional electrostatic panel. This means that not only can you see through them more readily, but also more sound energy is radiated into the room.

The woofers and a bevy of electronics are packaged in a modestly sized bass module that is neatly tucked away on the backside. It is home to a pair of 10" aluminum cone woofers (one facing out and one firing downward) and two 200W Class D amplifiers. There are no bass-reflex ports to be seen anywhere. The enclosure is sealed and the frequency response is equalized and contoured to provide extension into the low 20s—lower response, in fact, than that of many so-called subwoofers. Of course, the bass is actively powered. The nominal crossover frequency is 270Hz, which means that the external power amp you connect only drives the electrostatic panels, while the built-in power amplifiers take over below that frequency. For those of you who are curious, here is a synopsis of the signal path flow based on information kindly provided by Devin Zell at ML: From the binding posts the signal proceeds in two directions. For the ESL transducer, there is a passive high-pass filter followed by a step-up transformer. For the bass, the signal is first stepped down to a preamplifier line-level. The signal then passes through (not necessarily in exact order) low-pass and high-pass filters, EQ filters, and 25 and 50Hz EQ controls. The signal is then split and fed to custom filters to implement the controlled-dispersion PoweredForce bass. Bass signals are monitored to

prevent amplifier-clipping or overdrive conditions before being fed to the power amplifiers to drive the woofers. Apparently, all of this electronic wizardry is loosely denoted as the "Vojtko crossover," designed by or under the supervision of "Chief Audio Technologist and resident genius," Mr. Joe Vojtko.

You may wonder what exactly Controlled Dispersion PoweredForce bass is all about. Being an essential factor in the Summit's transducer integration, it's worth an in-depth look. The basic idea is to make the woofer's dispersion pattern around the crossover point mimic the dipole radiator pattern of the electrostatic panel. It is well known that a dipole exhibits a figure-eight radiation pattern with little side radiation in the bass and a back wave that is 180-degree out of phase with the front wave. Output cancellation occurs when the wavelength is large enough to wrap around the baffle. The Vojtko crossover allows the woofers to remain in phase below 100Hz and radiate omnidirectionally. Woofer phasing is shifted slowly between 100 and 160Hz so that the front and back woofer output becomes dipole-like above 160Hz. The end result is that in the overlap region between the transducers the wave launch blends cohesively, giving the impression of a single transducer at work. Well, the concept works well enough except for one missing detail and that is matching surface loudness density. While the electrostatic panel distributes sound energy over a fairly large surface area, the woofer's output is confined to a small area. A piano makes for an instructive analogy. It generates a lot of acoustic energy but it is spread out over a large soundboard. By contrast, a conventional woofer squeezes a piano's low end out of a 10-inch-or-so diameter area, effectively a point source relative to wavelength. You obviously will not notice anything unusual about the bass range when transitioning to the Summit from a box speaker. But if you are accustomed to planar bass, e.g., Magnepan, or in my case the Analysis Audio Omega planar magnetic/ribbon, then it's easy to recognize the surface loudness difference. In a nutshell, planar bass is spatially more expansive, and hence more realistic.

Given its 91dB sensitivity, you would think that driving the 'stat panel would be a piece of cake for even low-power tube amplification. I was looking forward to deploying my substantial collection of 30Wpc tube amplifiers in the pursuit of sonic bliss. Unfortunately, that notion went right out the window. The electrostatic panel's impedance is capacitive in nature and decreases with increasing energy, reaching a minimum of 0.8 ohms at 20kHz. That makes the Summit a prime candidate for amplifier-speaker interaction. Unless an amp's source impedance is very low, meaning that its damping factor (DF) is high, it will invariably roll off the treble. The Berning ZH-230 struggled in this respect as did other tube amps. A typical tube amplifier with a source impedance of about 1 ohm is said to have a DF of 8 relative to an 8-ohm load. The same amp would exhibit a DF of less than one driving the electrostatic panel at 20kHz. One tube amp in particular started rolling off the Summit at 5kHz and was down 10dB at 20kHz. Make no mistake about it: This represents significant adulteration of the tonal balance. The amps that performed best in preserving the Summit's frequency response were high-DF solid-state (rather than hollow-state) designs, with a minimum DF of 150 relative to 8 ohms. MartinLogan doesn't recommend any particular amplifier; however, I can. My two favorite amps for the task at hand turned out to be the Electrocompaniet AW180 (DF=1000) and my Ampzilla II (DF=150), refurbished and upgraded to a FET front end by Mike Bettinger, GASAudio.net.

It seems to me that two-channel audio's best chance of survival in a surround-sound world is in the hands of dipole loudspeakers. My imaging priorities are a stable out-of-the box soundstage and realistic image size. In these areas, dipoles, and in particular planars, have in my experience outperformed conventional box speakers. I'm not a fan of pin-point imaging, which my British peers have held up as a gold standard for over a generation. I rather prefer image outlines to possess realistic extension rather than to be midget-sized, condensed, if you will, into a virtual star field. Planars, including the electrostatic transducer, do a nice job of simulating a realistic height and depth perspective.

Setup, however, is critical and a bit more challenging in the case of a dipole. As with all dipoles, it's essential to have some control over the listening environment. For optimal performance the speakers should be positioned about five feet from the rear wall. Be sure to read the owner's manual for a good discussion of set-up strategy. A key adjustment is toe-in angle. Be sure to experiment in this regard, as it seriously impacts the overall tonal balance. As the speaker is rotated from fully toed-in to straight ahead, the

SPECS & PRICING

Frequency response: 24-23,000 Hz +/-3dB
Horizontal dispersion: 30°
Vertical dispersion: 44" (112cm) line source
High-frequency transducer: XStat electrostatic transducer: 44" x 11.3" (497 square inches)
Low-frequency transducer: Two 10" cast-basket, high-excursion woofers
Amplifier: Woofer, 200Wpc (4 ohms)
Sensitivity: 91dB/2.83 V/1 meter
Impedance: 4 ohms, nominal; 0.8 ohms, minimum at 20kHz
Recommended amplifier power: 20-600 watts per channel
Crossover frequency: 270Hz
EQ controls: +/-10dB at 25Hz; +/-10 dB at 50Hz
Power Draw: Standby: <1W/channel; Max: 350Wpc
Dimensions: 12.7" x 60.9" x 21.3"
Weight: 75 lbs.
Price: $13,995

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ASSOCIATED EQUIPMENT
Kuzma Reference turntable; Kuzma Stogi Reference 313 VTA tonearm; Symphonic Line RG-8 Gold MC phono cartridge; Air Tight ATE-2 phono preamp; SoundTradition Live! MC-10 step-up; Weiss Engineering Jason CD transport and Medea DAC; Concert Fidelity CF-080 line preamplifier; Lamm Audio M1.2 Reference, Electrocompaniet AW180, and deHavilland 50A monoblocks, GASAudio.net Ampzilla II and Berning ZH230 stereo power amps; FMS Nexus-2 interconnects; FMS Nexus speaker cable

frequency range affected is 2kHz to 10kHz. In particular, expect a 3 to 4dB reduction in the range of 3 to 4kHz, which is right smack in the upper midrange and presence regions. In my room a straight-ahead orientation worked best—that is, no toe-in, with the listening seat in line with the inner third of the electrostatic panel. Of course, your tastes may differ from mine. I strongly dislike a bright tonal balance. I've been accused occasionally of disliking treble. For the record, I think that treble has its place; it should fit within a realistic tonal perspective. And if that means a slight treble roll-off with increasing frequency, the result of no toe-in, so be it. It is also possible to adjust the vertical angle of the panel from -1 to -11 degrees by appropriate selection of front and rear feet. The feet are set for -5 degree out of the box, which should work for most listening environments. Finally, be sure to break in the woofers for the full 72 hours recommended in the manual. The Butyl surrounds are stiff and need plenty of exercising before bass output reaches specification.

Conceptually it is quite proper to view the Summit as a full-range transducer with bass augmentation. The payoff is total cohesiveness starting in the lower mids and extending to the upper treble. The conventional approach to designing a wide-bandwidth speaker is to deploy a bevy of drivers: woofers, midrange, tweeter, and possibly even a super-tweeter. The assumption inherent in any multiway box speaker is that it is possible to chop up the corpus of the music using crossover networks and then reconstitute it acoustically. The ugly truth is that since the drivers' acoustic centers are typically non-coincident on the front baffle, there is considerable interference between them. Move your head a few inches up or down and the frequency response changes. There's usually one axis on which measured response looks good, and that's the one you would expect to show up in the sales brochure. The electrostatic panel, on the other hand, does not suffer from such issues. The measured frequency response at the listening seat was quite smooth above 300Hz. The payoff of speaking with one voice over the critical midrange and upper octaves is a stable and extremely transparent soundstage. In my room, the resultant soundstage width extended well beyond the speakers' outer edge, and the depth perspective was fully fleshed out. It was truly spooky at times, when the sensation of being able to reach out and touch someone took hold. With no veiling to speak of, stage lighting, if you will, was fully turned on. It was effortless accessing the inner recesses of the soundstage to localize a particular spatial outline. My gut feeling was that transparency was not only as good as I've experienced, but also as good as it's likely to get.

The traditional electrostatic virtues of transient speed and detail resolution were very much in evidence. The mechanics of music-making are about starting and stopping, attack and decay, and this the Summit reproduced with excellent fidelity to the real thing. It was easy to hear deeply into a complex mix or to resolve nuances inherent in cymbal brush work. Harmonic textures impressed with exceedingly low distortion levels, as pure and sweet as a snow white dove. There was more, however, to the Summit than just "pretty" sound. Talk about spontaneous combustion! Its presentation sparkled with dynamic nuance, and given the chance in matching amplification, musical lines caught on fire delivering the music's full emotional intensity.

And unlike full-range electrostatics, it could really push

the pedal to the metal, changing gears from soft to loud effortlessly—no strain, no pain. In my room, bass extension was nearly 20Hz, putting to shame all extant full-range ESL designs. Midbass headroom was stupendous, generating an impressive punch factor on tympani strikes. It was more than just a case of quantity; bass lines were generally tight and well defined. The combination of non-resonant bass and midrange clarity added up to unadulterated timing cues and a compelling sensation of rhythmic drive. I preferred to leave the bass EQ controls at the 0dB setting. Even a +2dB adjustment at 50Hz resulted in noticeably ripe midbass. Actually, the problem in my room was a response notch in the upper bass, centered at about 200Hz. The result was a slightly lean tonal balance lacking the big tone presentation of my Omega planar magnetics. There may well be a slight dip around the crossover frequency at 270Hz, which is further exacerbated by room modes. In any event, I certainly could have used a bit more upper bass output, say +3dB. It would have been really nice to trade the 25Hz control for one at 200Hz. How about it, MartinLogan? In most rooms it's either the midbass or the upper bass that needs fixing, making 50Hz and 200Hz controls most relevant.

If a speaker ever deserved hyperbolic praise, it is the Summit X. I'm Xtatic about the Summit X! It represents a technological triumph, but most importantly, technology in the service of music. Whether you're an oil Sheikh or on a more moderate budget, the Summit X should be on your short buy list. I can safely affirm that it is the best-sounding hybrid ESL in the world, and that is bad news for expensive box speakers. In fact, I can't think of a box speaker under $40k I would rather live with. A mandatory audition for anyone serious about reproduced music. **tas**