

Infinity IRS Gamma Speaker System

Servo-Control & EMI drivers combine for
a magical listening experience. Play
music as loudly as you want!

By Lawrence B. Johnson

The hardest reviews to write are the wildly, egregiously, head-over-heals enthusiastic ones. Whether it's a concert performance, a recording or a new audio toy, when an experience turns you to butter, it's tough not to come out looking like a grease spot: just a big Wow splattered all over the page. The subject at hand is the Infinity IRS Series Gamma loudspeakers.

Let me try to explain my critical problem by describing a group of friends, all musicians or connoisseurs of music (not hi-fi, mind you, but music), gathered in my living room listening to the Gammas for the first time. At the risk of enormous personal compromise, let me add: imagine the writer among them.

As a vibrant string pizzicato passage from Prokofiev's *Romeo and Juliet* shatters the air in the room, I'm kneeling beside the last seat in the ring of listeners, about 90 degrees off axis, and thinking this is impossible. I'm in the worst possible listening position and yet the stereo image remains spread across a full stage. Instinctively, I turn to comment on this phe-

nomenon, but the words stop on the tip of my tongue. I see a roomful of glazed eyes and stupid grins.

People come over all the time to hear what's happening in my living room. They don't turn automatically into happy idiots as they enter. They're knowledgeable listeners. This, however, isn't your typically exceptional hi-fi encounter; this is an exponentially different experience, and upon scanning those oblivious souls I begin to sense that I'm looking into a mirror.

Into The Scene

Well, that was the scene as I remember it. I recall that someone actually blurted out, "Wow!"—but never mind about that. I'm sure it was just an unguarded moment. Anyway, I was sure until sometime later, when my guests had gone, and I continued to listen to the Gammas alone into the late hours, then the wee hours, watching the pile of CDs and LPs steadily grow around me, old favorites that I hadn't heard in years, perhaps never had heard at all. Wow. Butter. Sleep.

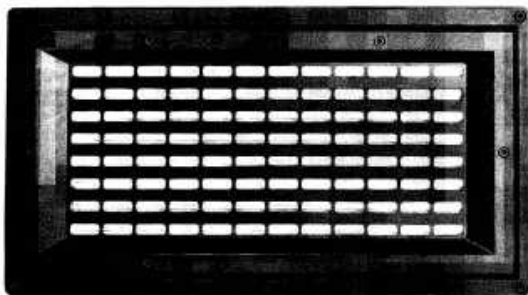
The object of this auditory fixation is a large pair of black-screened towers, which measure 22 inches wide and some 63 inches tall, framed by a narrow band of reddish-brown Santos pau ferro hardwood from Brazil. Such is the striking frontal view of the Infinity IRS Gammas, third in the line speakers crowned—in the most patrician sense of the word—by the \$50,000 IRS V.

Above The Gammas

Above the Gammas stand the IRS Betas, a dual columnar design in which each channel presents a stack of four bass drivers housed separately from the mid/high-frequency array. The mid/high-frequency cabinet also includes one more lower midrange driver than the similar array used for the Gamma speakers.

Scale the \$10,500 Betas down to a single speaker enclosure per side and you have basically the same acoustical technology provided in the Gammas. The Gammas sell for the reduced but still breathtaking sum of \$7,000.

The remaining IRS Delta model, at \$5,500, offers the same cabinet structure and driver array as the Gammas, but comes with-



The 130 to 750 Hz frequency range for the Gamma speaker is handled by the newly designed L-EMIM, which is claimed to have a diaphragm area as large as a conventional 12-inch cone driver—Infinity photograph

out the little black box that apparently accounts for the Gamma system's incredible bass.

The Gamma Speakers

But first, the top end. The Gamma loudspeaker's mid- and high-frequencies are covered by four planar elements, in as many different sizes, that use Infinity's now-celebrated electro-magnetic induction (EMI) technology. In Infinity's version of push-pull magnetic drive, the flat diaphragm is simultaneously pulled from one side and repelled by the other, thus achieving excellent transient response and cancelling distortion.

Infinity tags the 4 drivers with the acronyms of L-EMIM for the newly designed Large EMI Midrange (135-750 Hz), which covers the important lower midrange frequencies, EMIM for its redesigned midrange design (750 Hz-4.5kHz), EMIT for the basic tweeter (4.5-10kHz) and SEMIT for the recently added wide-dispersion super-tweeter, active from the highest octave of human hearing (specifically, from 10kHz) all

the way out to 45kHz. The stratospheric SEMIT, says Infinity, assures accurate reproduction of overtones.

The four EMI drivers rise in a thin planar column, L-EMIM on the bottom and the SEMIT on top. There's an acoustical grille attached to each driver's face for control of rear as well as forward dispersion. Passive crossover controls for each of the four EMI elements are located on the rear of the woofer enclosure. The Gammas also offer internal automatic protection circuits to guard the tweeters and midrange drivers from damage due to overloading or any system failure.

Two Woofers

On the bottom end, each Gamma structure houses two 12-inch polypropylene-graphite woofers in a 33-inch-high module that tapers slightly from the planar frame to a depth of 14 inches. Tempered only by the passive crossover built into the Delta version, says Infinity, the twin woofers operate down to 28 Hz. That's where the Gam-

ma's little black box comes in. The box contains an active crossover and then some that plunges bass response to 15 Hz, and lends it an intensity and definition that must be experienced to be appreciated.

Servo-Control Unit

The box, or servo control unit, displays five dials for adjusting the system's high-pass and low-pass filters, bass contour, low-frequency phase and low-frequency level. Although Infinity suggests a "normal" setting of 22 Hz for the high-pass and 134 Hz for the low, corrections can be made to accommodate the acoustical peculiarities of any listening room.

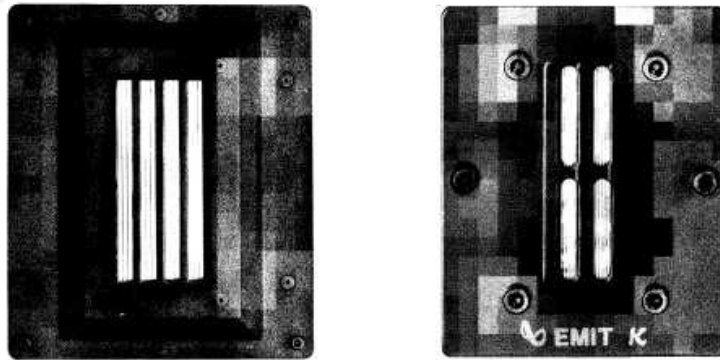
Likewise, the bass contour dial boosts or cuts the crossover slope from 20 to 100 Hz by as much as five dB at 100 Hz. Low-Frequency Phase is a two-position switch that maintains the signal phase or inverts it 180-degrees. The correct phase is critical—seriously, perilously critical—to the Gammas because of the last, perhaps key function of the servo control unit.

Bass Servo-Control

That key function is the automatic monitoring and cancelling of distortion from the woofers. Infinity's technique addresses the principle of motional feedback. In essence, large woofer cones, which are less than models of agility, constantly produce distortions.

To offset this unhappy effect, Infinity's electronic servo-controller measures the woofer cone motion via an accelerometer mounted on the woofer's voice coil, and to which the servo unit is linked by a thin umbilical cord. The amplified accelerometer output is compared with the input signal by a differential servo-amplifier. The servo-amplifier in

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Left: In the Gamma, the redesigned EMIM driver covers the range from 750 Hz to 4.5kHz with a special low-mass kapton diaphragm. (In actual physical dimensions, the EMIM driver is several times the size of the EMIT shown at right.) Right: The newest generation EMIT driver, which provides the frequency range from 4.5 to 10kHz in the Gamma speakers, is claimed to have basically flat response to 45kHz—Infinity photographs

turn generates a signal representing the difference (the distortion factor) between the electrical input signal and the woofer's acoustic output—and sends it back to the woofer's power amplifier in reverse phase to nullify the distortion.

Does it work? Does it ever! But more on that later, with some boggling cases in point.

Two Stereo Amps Required

First, a word about the Gammas' special power requirements and tolerances. Presumably for marketing as Delta models, the loudspeakers come with their twin sets of inputs (bass and mid-high) linked by a gold-plated strap. For Gamma use—that is, with the servo control—the strap must be removed and two amps employed. One stereo power amplifier is required for the bass end, and another is needed for the mid-high frequency range.

Obviously, this is a special power requirement. (A more complex arrangement of mono amps can be used, but you get the basic idea.) Infinity recommends a pow-

er range of 75 to 300 watts/channel for the mid-high panel, and 100 to 300 watts/channel for the bass. High current capability is needed for both amplifiers, says Infinity. The Gammas carry a nominal impedance of 4 ohms.

Associated Equipment

Normally, the matter of associated equipment in these reviews is relegated to a laundry list at the end. But what one puts behind the Gammas is so vital to their performance that I feel an explanation up front is in order.

For the top, I used Counterpoint's SA-20, a tube-MOSFET hybrid rated at 220 watts/channel. It is an extremely musical amplifier, my all-around reference piece. The bass was assigned to a Perreux PMF 3150, a solid-state horse of thoroughbred quality rated at 300 watts/channel. Thus, we're talking about slightly more than a kilowatt of high-grade system power.

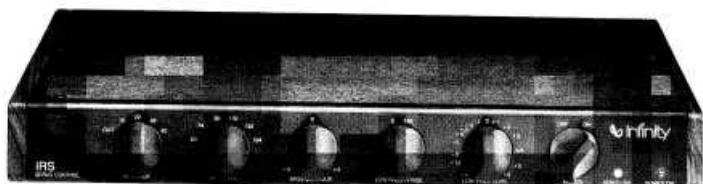
The preamp was the SA-20's usual companion, Counterpoint's all-tube SA-5.1. Finally,

the principal music sources were: Onkyo's DX-G10 compact disc player, an 18-bit device using twin digital-to-analog converters and eight-times oversampling, for the CDs; and an Oracle Delphi turntable fitted with a Stax arm and the Monster Alpha Genesis 1000 moving-coil cartridge for all of the LP sources.

All the signal connections were made with Monster cable: MS2K strands between the pre-amp and servo, and servo to power amps, with Monster's new MS2 firehose-weight cables linking both amplifiers to their assigned speaker arrays.

As a comparative reference point, I used the Magnat MSP-300 speakers, certainly an excellent speaker at roughly a quarter the price of the Gammas. But for the most part I was comparing the Infinities with the real thing—the sound of music in the concert hall, recital hall and opera house as I have heard it across the United States and Europe during 22 seasons as a classical music critic.

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The IRS Servo-Control unit provided with the Gamma speakers offers a range of 5 adjustments (high-pass filter, low-pass filter, bass contour, low-frequency phase & low-frequency level), but its most important function is motional feedback control over the woofers. (See box below for further explanation)—Infinity photograph

A Magic Show

The Infinity IRS Gamma speakers are a never-ending magic show. "Life-like" has been the audio writer's favorite cliché since the Edison cylinder, but how else does one fairly characterize the singular presence, depth, clarity, and dynamism offered by these Gamma speakers?

The SEMIT is similar to the EMIT, but has smaller apertures on its grille and other changes to optimize it for higher frequency operation—Infinity photo

They delivered orchestral sonorities with the timbre, texture and body of music as it resonates in a roomful of live instruments—or a single human voice. And while some other speakers may match the firmly focused image given by the Gammas—the Magnet 300s and KEF 107s are notable among them—few of them can touch the balanced stereo stage that they present for even the

most acutely off-axis listening positions. That combination is really extraordinary!

With every sort of musical material, the naturalism of these Gamma speakers was reflected in the timbre, texture, body, indeed the holographic illusion of the performers themselves. After a while, one virtually ceases to see loudspeakers any longer—it's just the music and the performers.



Why Is Bass Servo Control Needed?

The Infinity motional feedback servo control is designed to correct for woofer distortion. Some prime causes of distortion are: a large woofer cone can't stop, start or accelerate its motion instantaneously; a magnetic field isn't totally even over the entire range of motion of a woofer's voice coil; the suspension of the woofer cone (at the rear of the apex and at the outer edges) doesn't offer an even resistance to motion of the cone over its entire range of travel, or for forward versus backward movement.

With an accelerometer mounted on the woofer's voice coil, the differential servo amplifier can compare the actual cone acceleration with the level it should be if the input signal was translated into woofer motion without any distortion. It then feeds the reverse of that difference back to the woofer's power amplifier to compensate.

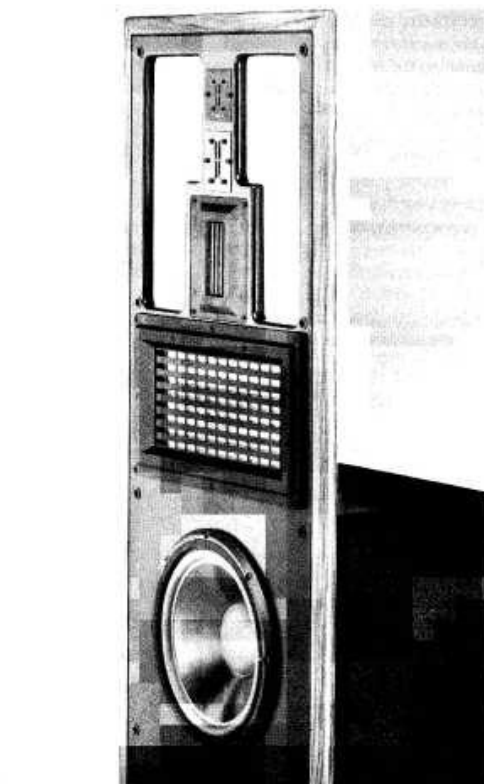
The Gammas betrayed no weak spots anywhere in their frequency blend, vitality or accuracy. The bass they can deliver is the stuff that breaks apartment leases. In a particularly difficult test, the drum machine heard on Oregon's album *Ecotopia*, the Gammas caused the room and every loose object in it to shake; but the speakers certainly remained unshaken, no matter how high the volume was cranked.

If anything about the Gammas was more awe-inspiring than the power and accuracy of their bass response, it was their capacity for playing very loudly without the first hint of distortion. And yet, they unfailingly displayed a middle voice and high-frequency response of crystalline elegance.

**Prokofiev, Excerpts from Romeo and Juliet. Los Angeles Philharmonic, Erich Leinsdorf
Sheffield Lab LP Lab-8**

This is the recording that stunned my assembled audience with its clarity, breadth and discombobulating presence on playback with the Gammas. Credit the Monster Cable Alpha Genesis 1000 moving-coil cartridge with much of the revelation witnessed here—sound as lifelike as any compact disc I've heard—but the music that comes out is inevitably defined by the speakers at the other end of the chain. The Gammas really showed their stuff to a large circle of critical listeners, most of whom were seated off-axis. We played a bit of musical chairs and everyone readily agreed that the sound stage held firm from almost any point in the listening room.

I've heard some superbly imaging speakers, the Magnat MSP-300s among them, but only the KEF 107s with their pivoting high-frequency drivers have



The four EMI drivers on the Gamma are basically mounted in an open frame with the twin woofer enclosure extending behind at the base. The woofer cabinet measures 22 inches across the front face and extends 14 inches to the rear. Infinity says the top area of the frame is open to reduce any possible diffraction of the output of the drivers—Infinity photograph

matched the Gammas' embrace as demonstrated here. Wow!

Time Out, Dave Brubeck Quartet, CBS/Sony LP 20AP 1459 (Japanese pressing)

An especially telling remark came spontaneously from a non-musician friend who happens to be a great jazz enthusiast. As we started listening to *Strange Meadowlark*, he asked about the price of

the imposing Gammas. He said they sounded pretty good, but that he wondered whether an extra measure of realism could be worth such a princely sum as \$7,000. The moment passed and we listened as Paul Desmond's alto sax came in at center stage, every warm, singing inflection caught by the Genesis 1000 and delivered into our laps by the Gammas. The jazz buff's face lit

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up. He began to shift in his seat. Then he chimed: "It's like real music. It's like not having speakers at all." For the next hour, the mundane issue of price submitted to aesthetic transport.

Ecotopia, Oregon, ECM LP 1354

One of the best test records I know, this brilliant marriage of musicianship and sound engineering now offered an even more

dazzling soundscape than I suspected was there. No way was the Magnat 300s' subtle bass going to match the room-shaking sonority the Gammas drew from Ralph Towner's drum machine in *Twice 'round the Sun*. And I'm not talking about a formless, head-punching thump, but finely textured, well-muscled bass. When I turned the volume up to plausible night-club levels, that huge sound set the floor, my chair and the

window atremble, but the Gammas obviously weren't even taxed. But if their bass definition and dynamic capacity were staggering, so in the same cut was the middle-voice accuracy of the piano, the wispy top of synthesizer riffs and the singular depth of image of the whole band.

Infidels, Bob Dylan, Columbia LP QC 38819

If the Genesis-Gamma duo (abetted to be sure by the Counterpoint-Perreaux axis) illuminated the best qualities of great recordings, with no less exactitude the system pointed up shortcomings where it found them. Witness the overbearing bass that reduces Dylan's voice to a sort of backup role in *Man of Peace*. Now there is bass that simply goes bump in the night. Where no light exists, the Gammas see none. Lacking that tremendous bass energy—and definition, the Magnat 300s, like virtually ever other speaker I know, provide a prettier picture of that track. But I've heard enough of the Gammas and that astounding Monster cartridge to believe anything they say; and the word on *Infidels* is fair to flabby-listed.

Made in U.S.A., Beach Boys Capitol CD CDP 7 46324 2

Through many a spin with the Magnats, I've always savored the vitality on this greatest hits disc. The mix of good, strong rock bass line and the typically transparent vocal arrangements always came across with fetching immediacy. Lively recording, smart performances, and fine speakers: good reference points. At the risk of repeating myself—I had no ideal Bring up the sound on this one and the Beach Boys are cooking right there. I mean there, 12 feet from my seat. (I grope anxiously

The front face of the Gammas has the four-speaker EMI speaker array stacked atop the dual woofer arrangement for the bottom end. The woofer cones are formed of polypropylene with radially aligned graphite fibers injected under high pressure and temperature for added rigidity—Infinity photograph



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for my ticket stub.) This is hi-fi when it's fun (as it's meant to be). I found myself staring intensely between the speakers, as if instinctively trying to conjure the band. Same thing happened when I put on some original Kingston Trio LPs with Dave Guard. Creepy.

Bartok, Sonata for Two Pianos and Percussion; Brahms "Haydn" Variations, Georg Solti and Murray Perahia, CBS Masterworks CD MK 42625

So much for the bad rap some audio tweaks like to put on "commercial" compact discs. The Gammas, which don't know CBS from MTV, confirmed what the Magnats and assorted others already had proclaimed: This stylish, sympathetic collaboration ranks among the sonic exemplars of piano recording. Better still (and this was an absolute joy with the Gammas) Bartok's pungent, variegated percussion part serves to heighten the pointillistic sparkle of the keyboard lines. As for the piano as the voice of romanticism, Brahms' "Haydn" Variations registered as cleanly and warmly in the Magnats as in the Infinitys, but the natural color and temperament captured by those grand towers outclassed all of the other piano sound I've heard, with the possible exception of the KEF 107s.

Mahler, Symphony No. 2 in C Minor ("Resurrection"), New York Philharmonic, Leonard Bernstein, Deutsche Grammophon 423 395-2

This magnificent production got quite a workout when I carried it from exhibit to exhibit at the Winter Consumer Electronics Show in Las Vegas. I had taken Disc 1 of the two-CD set as a reference source for sampling new audio

wares. Nearly every high-end exhibitor who heard it—I played only the opening measures from the double basses' ferocious entry to the first brass climax—wanted a copy. I would have been happier to share its real sound: the daunting growl from the basses', the violins' sweet and soaring line, the cataclysm of brasses; in short, the sound I knew from the Infinity Gammas. But the CES setups are acoustic nightmares, so comparisons were pointless anyway. One thing was pretty plain: few could touch the Judgment Day dynamics the Gamma speakers achieved with such ease.

Addictive & Shocking

They're addictive, the infinity IRS Gammas, a \$7,000 bag of Fritos. Nibble on one and you end up munching all night. I may have spent as much time auditioning other pieces of equipment, but I can't remember when I sat in front of a stereo system for such long stretches or played music as loudly as I delighted in playing the Gammas. The music can be from a Spanish guitar or the Berlin Philharmonic. Pick your fantasy and close your eyes. But hold on to your seat!

For many music lovers—what am I saying, for all but a lucky few—these marvelous loudspeakers pose a paradox: something like the real sound world framed at an otherworldly price. What's more, you don't prop up the IRS Gammas with a 60-watt receiver, or even pretty good separates. If you aren't going to back them with top-flight electronics, you're wasting seven grand. The two amplifiers and preamp I strung together represent about \$6,000; the turntable, arm and cartridge another \$3,000; the CD player \$2,500. The Monster con-

necting cables carry a retail value of well over \$1,000. Those are real-world numbers to ponder: they add up to roughly \$20,000. Shocking, no?

No. It's completely out of sight for most of us. Maybe irrelevant. But outrageous? Not at all. This is where it comes down to value judgments. I watched a lot of people blanch when I quoted the Gammas' selling price. But hock yourself to your eyeballs to buy a Porsche 928 and most people will think that's cool. Priced cabin cruisers lately? Thought about buying an airplane? Like the man said, flying too high with some gal in the sky is my idea of nothing to do—but I sure get a kick out of these Gammas, and all the audio toys it takes to make them sing.

This is what hi-fi is about. You can listen for less and love it, get to the supermarket in a Yugo. But a Porsche is a Porsche. And after a very extensive road test, the Infinity IRS Gammas still give me chills.

Besides, they're cheaper than the Betas. □

IRS Gamma Drivers

Two 12-inch polypropylene and graphite cone woofers (claimed to have the highest stiffness-to-mass ratio of any cones today).

One L-EMIM planar driver with diaphragm area equal to 12-inch woofer.

One EMIM planar driver with ultra-low-mass kapton diaphragm with neodymium magnets.

One EMIT planar driver with a super-light kapton diaphragm and neodymium magnets. One driver is mounted on the front face and another is mounted on the rear.

One SEMIT planar driver with similar construction as EMIT.