



JULY 2005



MURATA ES103A SUPER TWEETER

Reviewer: Michael Lavorgna

Source: Audio Aero Capitole MKII

Preamp: Déjà Vu Audio, Audio Tropic Mœbius [in for review]

Amp: Fi 45 prototype (based on the Fi 2A3 stereo amp, optimized for the 45 tube by Don Garber)

Speakers: Cain & Cain Abby (Normal) and Cain & Cain Bailey; Tonian Acoustics TL-R2 Super Tweeter [on loan]

Cables: PHY interconnects, Auditorium 23 Speaker Cable, JPS Labs Digital AC Power Cable, Audience PowerChord, ESP Essence Power Cord, and Z-Cable Heavy Thunder V2 on the Blue Circle MR

Stands: pARTicular Basis Rack

Powerline conditioning: Blue Circle Music Ring MR800

Accessories: Symposium Rollerblocks Series II under AA Capitole, Yamamoto Sound Craft PB-10 Ebony Bases under Abbys, PS Audio Ultimate Outlet and AudioPrism Quiet Lines. Room damping provided by lots of books.

Room size: 13' w x 14' d x 9' h



muRata Manufacturing Co., Ltd. The muRata Manufacturing Co., Ltd. is not your typical audio manufacturer. They're not even your atypical audio manufacturer. "muRata as an 'Innovator in Electronics' supports the infrastructure of our electronic society by developing new electronic components and technologies." Don't believe it? muRata was formed in 1944. Their revenues for 2004 were roughly 4 billion US dollars. If you want to find their super tweeters in the company's annual report, you'll have to look in the "piezoelectric components" category - and I suspect we're talking a tiny fraction of income. You see, the ceramic spherical diaphragm that is the breath of the ES103A was an offshoot of some R&D into a core product line - piezo-electronic ceramics. We are talking high-tech and high budget R&D to the tune of \$300 million plus last year. The notion that someone within the muRata ranks thought to spin off a line of super tweeters amidst the millimeter wave radar modules and piezoelectric vibrating gyroscopes is pretty darn fascinating.



TYPE: ES103A
ES103B

Oh to have been a fly on the wall when this request trickled up from the bowels of a lab, to be presented in their decision-making department as "oh and by the way, we'd like to spend some time and money developing a (cough, clear throat) super tweeter. Our target market are (choking back tears and/or laughter) - audiophiles". I can think of any number of pertinent business objections and I'm not even a shareholder. Let's start with the fact that muRata manufactures components that plug into other mega-corporations' stuff; automobiles, cell phones, computers. Their typical clients are buying quantity with a capital Q, with those economies of scale playing a large part in supporting operational expenses including R&D. While an add-on super tweeter is a component, it's also a consumer product. So let's call it a component without a home, nurtured through R&D and production to be born and presented as a well-intentioned orphan to the world of high-end audio consumers. No corporate partner to plug into, no contract with a nice fat PO to write off expenses against, I'd be hard-pressed to find a US-based equivalent. This clearly represents a leap of faith and one inspired by a love of music over fanatical attention to the bottom line. Bravo!

In addition to the ES103A, muRata also makes the ES103B and ES105, the differences mainly being fit'n'finish. There is also a super tweeter driver, the ESTD01, based on the same technology for OEM use. In addition to the super tweeter lineup, muRata offers the ES024 Spherical Speaker (sold in Japan only).



"The ES024 is a two-way speaker system consisting of a spherical ceramic squawker and a dynamic woofer. The squawker's spherical ceramic design offers excellent transient character and generates omni-directional spherical waves, providing superlative reproduction of the middle and upper ranges. Lower tones are produced by a sturdy, honeycomb vibration board that bounces the sound off the floor, generating omni-directional, rich and deeply impressive bass tones."

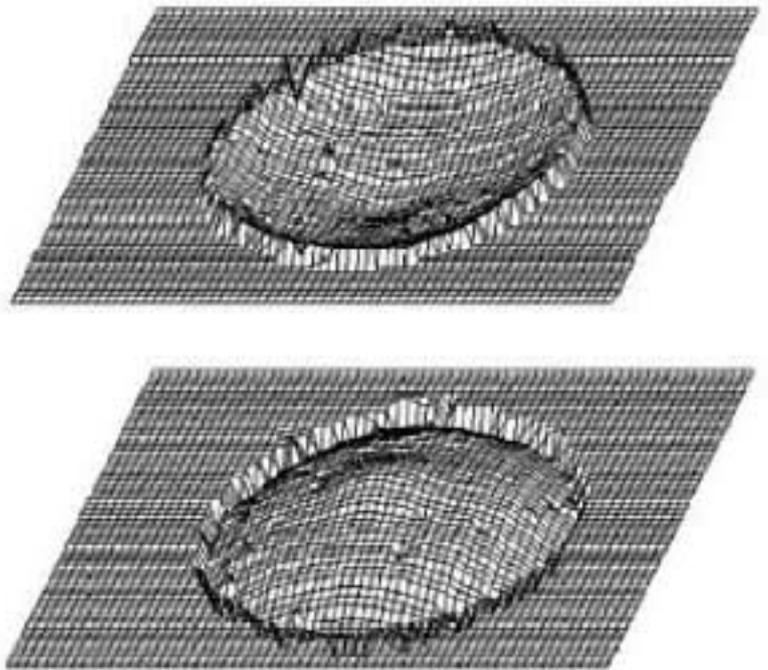
Piezoelectric ceramics and super tweeters. It's not the size of the wave; it's the motion in the membrane muRata claims that the ES103 provides "extremely faithful tracking of the input signal, resulting in superlative transient characteristics and delicate, rich sound reproduction." On a purely technical level, there's no argument against these claims from me. Piezoelectric ceramic materials are capable of extremely accurate controlled mechanical movements. This property has been put to practical use in ultrasonic imaging and the scanning tunnel microscope, which uses piezoelectric ceramic wafers for positioning a probe over a nanometer range. The actual "driver" of the ES103 is a semispherical ceramic membrane. It converts electrical oscillations to mechanical ones causing the semispherical membrane to breathe.

"Another unique feature of the ES103 diaphragm is its unusual vibration mode. With conventional speakers, the diaphragm generates a front-back pistonic vibration. But the semispherical ceramic diaphragm in the ES103 expands and contracts like a balloon - a "breathing" vibration mode that actually realizes the point-type tone generation ideal for a speaker."

ES103A - one nice package

The muRata ES103A spherical super tweeter comes in a corporate business box with the company name and model number professionally printed on the white cardboard exterior. An aluminum case fits perfectly inside the box and inside that case, the ES103As are nestled in form-fitting foam insets. A pair of white cotton gloves, a product sheet and a pair of cables provided by Nick Gowen of True Sound, the US importer for muRata, filled out the order. When I first unlatched the clasp on the case, I could have sworn I heard a slight sigh, a smoky breath easing out as if some space-age cryo-air was keeping the muRatas fresh on their long journey from Japan to California to New Jersey.

muRata ES103A Breathing Vibration Mode



Holding the nickel-plated buffed aluminum cylinder in one's white-gloved hands is a rare treat. The quality of materials and construction are impeccable (now there's a word I don't get to use much). You really have to hold these things and see them up close to know what I'm talking about. The muRatas are made to tolerances and a micro-fine scale well beyond most any other object in my home. I actually went around looking for some object that would match this ultra-refined precision without being entirely made from plastic. I came up empty-handed. I'd have to look inside things to find an equal and that really nails it; the muRatas are built like they fit into some larger, more complex machine; a cog in some grander schema.



Vital Statistics

Size: 2.6" diameter by 4.3" long

Weight: 2.9 lbs each

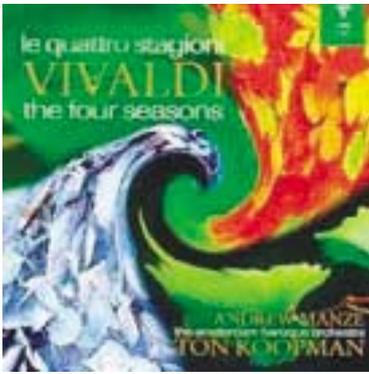
SPL: 90dB/W/m nominal

Frequency Response: 15kHz to 100kHz

Self-resonant Frequency: 103kHz nominal

The muRatas have an internal high pass filter so it's a plug-and-play device. I used the supplied cables to connect from the posts on the ES103A to the Abbys' binding posts.

Blow in my ear and I'll follow you anywhere
The muRata's piezoelectric ceramic membrane breathes a fine musical mist from its turbine-like opening, adding subtle sonic goodies to the sounds coming out of the Abbys. If the QC readily apparent in the ES103s appearance suggests refinement, their sound delivers just that.



Vivaldi's *Le Quattro Stagioni* performed on period instruments by The Amsterdam Baroque Orchestra under Ton Koopman [erato 4509-94811-2] was originally composed for the young ladies of the Pio Ospedale della Pietà in Venice where Vivaldi taught violin. During Vivaldi's time, there were four special ospedali, essentially state-financed music academies for illegitimate and orphaned girls who, like aural nuns, lived a life there devoted to playing music. According to the liner notes by Denis Herlin, "...this orchestra was a veritable laboratory, enabling Vivaldi to experiment incessantly." And I bet he did. As many times as *The Four Seasons* has been sound-tracked, I still enjoy this recording and suffer no musical paralysis caused by the intrusion of some remembered plot-line or voice-over. On the denser passages in late spring/early summer where harpsichord, oboe, bassoon and strings join forces, the muRatas uncompress the air around each instrument and provide unflappable micro-fine detail. The harpsichord is a potentially problematic instrument. I've heard Sir Thomas Beecham's infamous quote describing the sound of the

harpsichord as "two skeletons copulating on a tin roof in a thunderstorm" played out to perfection on any number of systems. The muRatas take some jangle and clank out of those bones by completely unraveling the plucked strings without a blur: speed and delicacy at work around and on the notes.

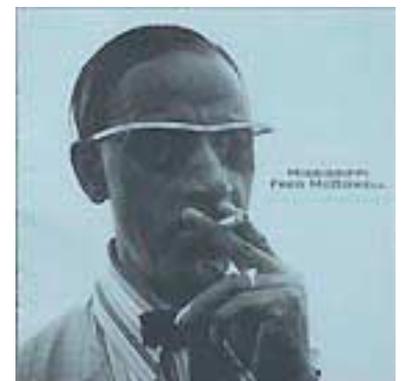
Davitt Moroney's recording of J.S. Bach's *Das Wohltemperierte Clavier* [HMC 901285.88] features Mr. Moroney playing a 1980 John Phillips clavichord. The clavichord strikes its strings as opposed to the harpsichord's pluck, introducing a different but nonetheless problematic set of potentially boney roof-rattling sounds. Played straight, no super tweeter, the clavichord is shrill in its upper registers as though there's another piece of metal being rattled just after the note. The muRatas take this edge off and at the same time produce a well-rounded tone from each strike, allowing more of the craft of Mr. Moroney's playing through by shifting the focus away from an otherwise mechanical-sounding event.



The Sonatas of Padre Antonio Soler as performed by Marie-Luise Hinrichs on piano are all flesh and blood. From an interview with Ms. Hinrichs on Soler's sonatas, "there was also this simplicity, a hidden sensuality - something entirely new which captured me." There is nothing flashy about Ms. Hinrichs performance. Her skill lies in combining control and passion. This is where I began to understand the muRatas' voice. Their most consistent quality is one of control - control of micro-detail. Admittedly this effect is very subtle and took some real focus before realizing I could listen in closer to the workings of the pianos pedal, pressure, tone and decay. From an unnamed reviewer on Ms. Hinrichs' web site, "worthy of note are her subtle dynamic shadings and her outstanding use of pedal. Her legato and her phrasing truly draw the listener into another world. Perhaps it is this quality of her playing which might remind one of Horowitz; her playing "breathes". Hinrichs' is a career well worth watching, and this disc is one which should be on the shelf of every classical audiophile." I couldn't agree more.



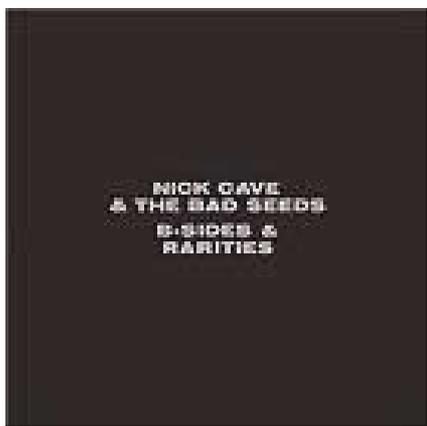
On material of sub-standard recording quality or less subtle instrumentation, the ES103s remain near silent, their subtle breath a whisper against the standard Abby fare. The less tonally complex the recording, the less muRata one hears. Mississippi Fred McDowell's *Live at the Gaslight* [grr 1001] features Fred McDowell on guitar and Tom Pomposello on bass and the crowd at the Gaslight were treated to a night of some great music. The track "Jesus Is On the Mainline" has more drive than most four-man bands can muster regardless of how many Marshall stacks they have stacked. The ES103s input/output here is a subtle unraveling of tone and added clarity mainly noted on the guitar work. If you are trying to learn to play like Fred McDowell, the muRatas may give you a fightin' chance. While this level of added detail does not interfere with the groove, it is an extremely subtle shift.



The ES103s' stated 90dB efficiency may be causing the 94dB Abbys to overshadow the muRata effect especially at lower volumes. I must admit to taking a bit of time on some recordings. I couldn't easily nail down exactly what the muRatas were doing, wondering if I should walk up and give 'em a tap, a blow and a "are these things on?" confirmation. I had to listen in on some recordings, which is not a natural tendency for me - a kind of furrowed-brow beard- stroking aural inquisition. Where the muRatas really shine are on well-recorded music and their overall effect is a heightened level of detail without messing with the macro picture. The muRatas also grace most recordings with a bit more air, a lightening that translates into added listening pleasure.

A tale of two tweeters

Tony Minasian of Tonian Acoustics graciously agreed to have me hang on to his TL-R2 ribbon super tweeters for a direct comparison with the muRatas. One thing I've learned about Tony? He is not adverse to some serious competition as the ES103As are nearly twice the price of the TL-R2s. A direct head-to-head comparison yielded some big flips and flops from yours truly. Initial reactions had the muRatas ahead of the TL-R2s, their added detail and delicacy leading me to recordings I normally avoid, all skeletons and tin seemingly blown away. Over time and varied tunes, the dark horses from Tonian pulled ahead. Well, that is for the most part. Okay, I admit I did initially vote for the muRatas and I'm not saying I'm voting against them now... and there goes my presidential bid.



Nick Cave & The Bad Seeds B-Sides& Rarities [Mute B00022LJH4] is a godsend for anyone who might think 56 tracks following a double CD just last year is a good thing. You can count me in that group. These tracks span the 21 years of Nick Cave and the Bad Seeds and as the title suggests, even the more hard core will find some treats. There are a number of acoustic versions, unplugged if you must, and while the ES103As add more pick to the guitars and more jingle to the tambourine, the TL-R2s add more weight to Mr. Cave whose voice emanates from somewhere deep within his skeletal frame. If you've heard the Bad Seeds live, they can conjure up some real menace lead by Nick Cave's smoky crooning. The TL-R2s version is more able to convey that threat. There are a few cover tunes, some covered earlier on Kicking Against the Pricks [mute cd stumm 28] but I welcome their inclusion regardless. The Seeds version of Roy Orbison's "Running Scared" has all the suggestive evil hovering around this seemingly innocent tune just as David Lynch pictured Blue Velvet. Cave & Co pull it off without the visuals. This tipped-up Tonian super tweeter effect has a downside

- a bit of an edge reminiscent of those skeletons copulating on a tin roof at times. While there's more meat to Davitt Moroney's clavichord, there's also a touch of that extra shard of metal whereas the muRatas completely remove the din.

I revisited a number of CDs from the Tonian TL-R2 review. The most telling in terms of different sonic characteristics between our two tweeters was Fritz Hauser's solodrumming [hat ART CD 6023]. With the Tonians, there's drama. The volume of the space is clearly present and every time Hauser hits his kit, it reverberates sometimes more, sometimes less but the air around him has been sensitized, electrified and is thrilling to listen to. The muRatas are more interested in the strikes themselves, the minutia of the event, lessening the sense of voluminousness and zapping some of the energy out of the atmosphere.



Putting on my thinking cap, my guess is that the Tonians have a gentler slope in their high pass filter, making them a better mate for the single-driver Abbys which lack a stand-alone tweeter and thus sport a rolled-off high end. The Tonians would thus stand in not just as a super tweeter but assume standard tweeter duties about 8kHz. The ability to vary the TL-R2's input impedance via outboard resistors is also a very useful option, allowing for a better match with whatever main speakers one might own. I'd have welcomed a similar option for the muRatas. I was tempted to pump them up so I could hear them more clearly. I also believe the ribbon tweeter is a better complement to the Abbys' paper cones as it has a fatter texture that adds more weight to the Fostex driver. It delivers a livelier event, grabbing you more firmly where it counts compared to the muRata's gentler, subtler touch. This does come at the expense of some glare and a less refined presentation but for my tastes, I could live with this trade-off.



Coffee, tea or muRata
If I have any reservations with the muRatas, it's one of price and compatibility. I'm not talking intrinsic value. These puppies are built like they should screw into something nuclear and I believe the shortcomings I've noted are relative to how they interact with my particular single-driver speakers. In a nutshell, they are just too subtle to justify the expense. I'd have to assume and very strongly suggest that a prospective muRata buyer will spend significantly more on their main speakers, leaving the cost of the ES103As as the smaller percentage of their overall speaker expenditure. From this perspective, they may be a valuable add-on since many mega-buck speakers drop off at 20kHz. While I am not going to step up and over the 20kHz issue here, I have to believe that a super tweeter's ability to reproduce ultrasonic frequencies also allows them to capture and let you hear all the micro-fast transients that do exist up to your hearing limit which other drivers are just too slow to deal with. Based on what I've heard, this information surrounds every note more or less and accounts for that airy feeling.

Adoptive audiophiles take note; the ES103As can take the sonic hand-off and jetset with the highly refined where they can work their micro-sculpting and nano-tuning magic to great effect. They also come with their own luggage.

Publisher's comment: To explore the muRatas with regularly tweeter'd speakers, John Potis has penned a brief follow-up to describe what they sound like when acting as a true super tweeter, i.e. one that operates beyond/above the 20kHz range of a conventional soft dome. Reports from the field tell us that the muRatas with the Avantgarde Duos, for example, are supposed to be an excellent combination. See the next page for John's findings - Ed.

Michael Lavorgna

