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WHARFEDALE DIAMOND 225 LOUDSPEAKER P.81

IN-DEPTH REVIEW

AURALIC'S ALTAIR STREAMING DAC

THREE-CHANNEL AMPLIFIERS FROM ATI AND MONOPRICE

ULTIMATE ANALOG PLAYBACK FROM AUDIO UNION AND MARK DÖHMANN

AC CONDITIONING FROM TORUS POWER

EUROPEAN SPEAKERS: BOWERS & WILKINS, LARSEN, WHARFEDALE

A HIGH-PERFORMANCE AMERICAN BOOKSHELF SPEAKER FROM AERIAL ACOUSTICS

TEN THE STEREOPHILE NETWORK
MARCH 2017

JOHN ATKINSON

Bowers & Wilkins 805 D3

LOUDSPEAKER

I have had a long relationship with Bowers & Wilkins. The first B&W speaker I spent serious time with was the DM-6, the infamous "pregnant kangaroo," which was reviewed by Allen Edelstein in December 1977[1] and which I borrowed for a while after interviewing the company's founder, John Bowers. Ten years later, when I met the woman who was to become my third wife, she already owned a pair of B&W Matrix 801s, a speaker reviewed by Lewis Lipnick in December 1987.[2] Both of these models were floorstanders, but the B&W speaker that spent the longest time in my listening room was the stand-mounted John Bowers Silver Signature, which I reviewed in June 1994,[3] subsequently purchased, and used as my reference until the magazine relocated from New Mexico to New York in summer 2000. The Silver Signature was launched in 1991, both to celebrate B&W's 25th anniversary and, as its name also suggests, to pay tribute to John Bowers, who had passed away in 1987.

The Silver Signatures were not as simpatico with my Brooklyn listening room as they had been with my room in Santa Fe, so I stopped using them. However, I've always kept an eye and two ears on the brand. Then, at the beginning of summer 2016, I took a train trip to Boston, both to witness the launch of the Diamond Series 800 D3 loudspeaker from Bowers & Wilkins and to celebrate the British speaker maker's 50th anniversary.

B&W's new flagship, the 800 D3, enters the Diamond line above the 802 D3, which Kal Rubinson reviewed in June 2016,[4] and it did indeed sound superb in Boston. But that trip

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crystalized my thoughts about which B&W speaker I wanted to review. I asked, not for a pair of 800 D3s, but for a pair of the smallest model in the Diamond Series, the stand-mounted 805 D3s. The 805 D3 costs $6000/pair, plus another $1000 for the matching FS-805 D3 stands. There

1 See www.stereophile.com/content/bw-dm-6-loudspeaker.

2 See www.stereophile.com/content/bw-matrix-801-series-2-loudspeaker.

3 See www.stereophile.com/standloudspeakers/272/index.html.

4 See www.stereophile.com/content/bowers-wilkins-802-d3-diamond-loudspeaker.

SPECIFICATIONS

Description Two-way, stand-mounted, port-loaded loudspeaker. Drive-units: 1" (25.4mm) diamond-dome tweeter, 6.5" (165mm) Continuum-cone woofer. Frequency range: 34Hz–35kHz. Frequency response: 42Hz–28kHz, ±3dB. Sensitivity: 88dB/2.83V/m. Nominal impedance: 8 ohms. Minimum impedance: 4.6 ohms. Harmonic distortion (second and third harmonic at 90dB at 1m on tweeter axis): <1%, 70Hz–20kHz; <0.6%, 120Hz–20kHz. Recommended amplification: 50–120W on unclipped program. **Dimensions** 16.7" (424mm) H by 8.4" (238mm) W by 13.6" (345mm) D. Weight: 28 lbs (12.6kg). **Finishes** Real-wood veneers, Gloss Black, Rosenut, and Satin White. **Serial numbers of units reviewed** 0000641, '642. **Price** $6000/pair. Approximate number of dealers: 250. **Manufacturer** B&W Group Ltd., Dale Road, Worthing, West Sussex BN11 2BH, England, UK. Tel: (44) 0800-232-1513. Web: www.bowers-wilkins.co.uk. US: B&W Group North America, 54 Concord Street, North Reading, MA 01864. Tel: (978) 664-2870. Fax: (978) 664-4109. Web: www.bowers-wilkins.com.

has been an enormous amount of development in drive-unit technology in the past quarter century—could this elegant two-way be both a descendant of and a replacement for the Silver Signature?

Description

In his review of the 802 D3, Kal Rubinson discussed the technology introduced with the Diamond Series. Briefly, whereas the midrange drive-units of B&W's speakers since the DM-6 had featured a distinctive yellow cone woven from fibers of DuPont's aromatic polyamide Kevlar, the Diamond Series models feature midrange units made of a material B&W refers to as Continuum. Still a coated, woven material (a technology B&W has been developing since 2007), Continuum performs in a manner similar to Kevlar in reducing the effects of cone breakup, but, according to B&W, to a much higher degree. The cone of the 805 D3's 6.5" woofer is made of Continuum, and the driver is reflex-loaded with a large flared port positioned below it on the front baffle. The port's flare is embossed with small dimples that, like those on a golf ball, are designed to smooth the flow of air.

The 805 D3s offered astonishing clarity in the midrange and treble.

For the 1" tweeter, Bowers & Wilkins has retained the diamond dome, produced by a vapor-deposition process, that they introduced in 2004, though they say that the motor system has been "improved considerably." As in the 802 D3, the 805 D3's tweeter is loaded with a transmission line, a feature first seen in the company's Nautilus models of 20 years ago, and mounted in an elongated bullet-shaped housing machined from solid aluminum and decoupled from the speaker's enclosure. No details are published for the crossover, though my measurements suggest that it's set at 3.3kHz with low-order filter slopes.

The ellipsoid-profiled cabinet (as seen from above) is fabricated from layers of beech wood, bent into shape under high pressure. Internal bracing, claimed to be an improved version of B&W's Matrix design, stiffens the enclosure. Electrical connection is via two pairs of high-quality binding posts set into the rear panel. The review samples were finished in gloss black. Overall, the elegant-looking 805 D3 gives the impression of careful craftsmanship applied in the service of sound quality.

Setup & Listening

As with the Aerial Acoustics 5Ts, which I also review in this issue, I used 24"-tall Celestion stands with the 805 D3s, the speakers separated from the stands' top plates with small pads of Blu-Tack. The center pillars of the stands, which placed the tweeters 40" above the floor, were filled with a mix of sand and lead shot, and their bottom plates were spiked to the wooden floor beneath the carpet. As always, I experimented with the positions of the speakers in my room to get the best transition between the mid- and upper-bass regions. The speakers were single-wired using their supplied jumpers, and toed-in to the listening seat, and I didn't use the grilles.

Once I had the speakers set up to my satisfaction, I played the low-frequency, ⅓-octave warble tones on *Editor's Choice* (CD, Stereophile STPH016-2). The tones were reproduced at full level from 200Hz down to the 50Hz band, with an emphasis of the 125Hz tone and the 40 and 32Hz tones shelved down but still audible. With the 25 and 20Hz tones, I could hear a slight rattle coming from the right-hand speaker, though the tones themselves were inaudible, which suggests low distortion. The half-step–spaced tonebursts on *Editor's Choice* spoke more cleanly in the bass than I expect from a ported design and were evenly balanced, other than a touch of reticence in the low treble.

Dual-mono pink noise revealed a smooth, even balance, though the low treble was again slightly depressed. This was with my ears level with the tweeters. The balance didn't change significantly as I lowered my head a few inches, and the image of the noise was narrow, and didn't splash to the sides at any frequencies.

Though its stereo imaging wasn't quite up to the holographic standard set by the Aerial 5Ts, the 805 D3s offered astonishing clarity in the midrange and treble. Toward the end of my listening, I purchased Robert Silverman's recent set of 23 of Beethoven's 32 piano sonatas as MQA-encoded

MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the Bowers & Wilkins 805 D3's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield and in-room responses. The B&W's voltage sensitivity is specified as 88dB/2.83V/m; my estimate was slightly higher than this, at 88.4dB(B). The nominal impedance is 8 ohms; the solid trace in fig.1 reveals that the magnitude drops below 8 ohms between 100 and 750Hz and above 8kHz, with minima of 4.6 ohms at 180Hz and 22kHz. The electrical phase angle (fig.1, dotted trace) is occasionally extreme, with combinations of 6 ohms and -35° at 118Hz and 8.2kHz. Tube amplifiers will probably work best with this speaker when used from their 4 ohm output-transformer taps.

Although it probably can't be seen at the scale this graph is printed in the magazine, there is a very slight discontinuity around 900Hz in the impedance traces. However, when I investigated the enclosure's vibrational behavior with a simple plastic-tape accelerometer I found no major problems in this region, though I did find a moderately strong mode on the curved sidewalls at 520Hz, and two lower-level modes at higher frequencies (fig.2).

The impedance-magnitude trace suggests that the large, flared port on the front baffle is tuned to 50Hz or so. The minimum-motion notch in the woofer's nearfield output (fig.3, blue trace) occurs at 48Hz, and the port's

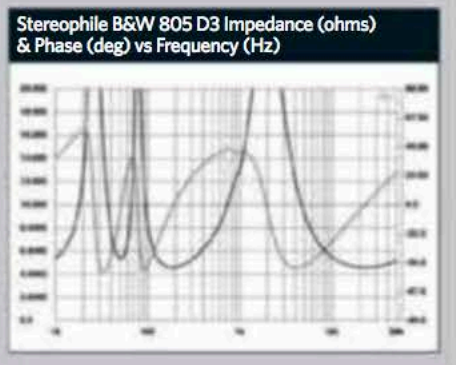

Fig.1 Bowers & Wilkins 805 D3, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.).

24-bit/88.2kHz FLAC files.[5] Though this set appeared to have been recorded in a rather dry hall, what there was of the reverb tails when decoded by the Meridian UltraDAC (review to appear next month) could be heard through the B&Ws to decay quickly and evenly, and the sound of Silverman's Steinway was both forceful and natural. This clarity was coupled with impressive dynamic capability. In the stabbing chords that punctuate the second movement of Beethoven's Sonata 4, Op.7, the piano's left-hand register was reproduced by the B&Ws in the correct proportion to the instrument's midrange, and with no low-frequency hangover.

As I said in my review of the Magico S5 Mk.II in the February issue, an optimally tuned sealed-box speaker excels at reproducing bass instruments with the necessary control and power. The problem facing a designer who needs to use a ported enclosure to extend the low frequencies is that doing so can sacrifice this control. In the 805 D3, B&W's designers have managed an optimal balance between bass power and control. Charlie Haden's double bass in his superb album with guitarist Jim Hall, *Jim Hall/Charlie Haden* (CD, Impulse! 002176502), was reproduced with good weight, but also with the leading edges of the notes well defined. (A tip of the hat to Herb Reichert for recommending this 2014 CD, recorded in 1990 at the Montreal International Jazz Festival.) The double bass in "A Taste of Honey," from Patricia Barber's *Café Blue* (DSD64, Premonition/Acoustic Sounds), sounded palpable.

For a relatively small speaker, the 805 D3 did well with well-recorded drums. The drum solo that ends "Too Rich for My Blood," also from *Café Blue*, pounded from the

5 *Beethoven Piano Sonatas at La Petite Trianon.* See www.stereophile.com/content/robert-silverman-plumbs-beethovens-depths-mqa-sound.

The elegant-looking 805 D3 gives the impression of careful craftsmanship applied in the service of sound quality.

measurements, continued

response (red) peaks between 35 and 90Hz in classic fashion. (I haven't plotted the port's output above 500Hz, as the measurement at higher frequencies was contaminated by the woofer's output.) The woofer's response is relatively even (though with a couple of small peaks and dips visible) up to 3.3kHz, where it crosses over to the tweeter (green trace). The crossover filter slopes appear to be low-order, as the complementary rolloffs of the two drive-units are initially gentle. The tweeter is balanced up to 5dB too high in level on its axis, but the primary dome resonance, and the usual dip below that resonance by a tweeter with a stiff, pistonic diaphragm, are both above the audioband.

The elevated tweeter output in the top two audio octaves can be seen in the 805 D3's farfield output, averaged across a 30° horizontal window (fig.4), and a couple of small suckouts are visible in the upper midrange and low treble. The apparent rise in the upper bass in this graph is an artifact of the nearfield measurement technique.

The plot of the B&W's lateral dispersion, normalized to the tweeter-axis response (fig.5), has impressively even contour lines—other than a well-con-

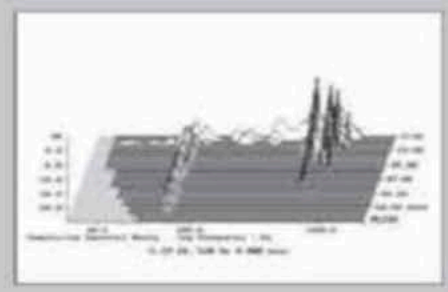

Fig.2 Bowers & Wilkins 805 D3, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of sidewall (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

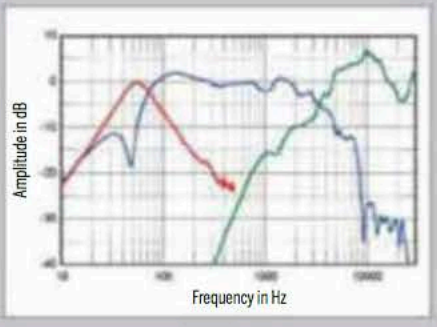

Fig.3 Bowers & Wilkins 805 D3, acoustic crossover on tweeter axis at 50", corrected for microphone response, with nearfield responses of woofer (blue) and port (red), respectively plotted in the ratios of the square roots of their radiating areas below 300 and 500Hz.

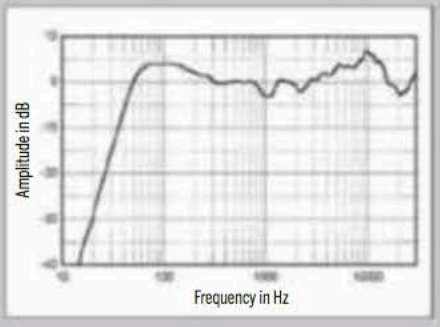

Fig.4 Bowers & Wilkins 805 D3, anechoic response on tweeter axis at 50", averaged across 30° horizontal window and corrected for microphone response, with complex sum of nearfield woofer and port responses plotted below 300Hz.

B&Ws, the speakers not being fazed by the loudness I craved: 100dB(C) at the listening position (measured with Studio Six Digital's SPL iPhone app set to Fast). And if you want to talk drums, my reference for a live drum recording is "Moby Dick," from Led Zeppelin's *How the West Was Won* (24/48 ALAC file ripped from DVD-A, Atlantic 83587-9). Eddie Kramer didn't just record the close sounds of John Bonham's kit; he also captured just enough of the auditorium's ambience to place you in the front row of the audience without smearing the impact of each drum's sound: masterful drumming laid bare by equally masterful engineering, as revealed by the B&Ws.

A word I kept returning to in my auditioning of the Bowers & Wilkinses was *brilliance.* Though the mid-treble seemed a touch laid-back—something this speaker shares with the Silver Signature—the top two octaves were present in full measure, especially when compared with the KEF LS50 and Aerial 5T. Analog tape hiss in old recordings was a little more audible than I expected—while the 805 D3s were in the system, I was archiving to digital some cassette recordings from the various bands I'd played with in the 1970s—as was the hiss from Jim Hall's guitar amplifier in the right channel of *Jim Hall/Charlie Haden.* Vocal sibilants were also emphasized to a small degree.

While I'd begun my auditioning with the B&Ws driven by MBL's Corona C15 monoblocks, the high frequencies in the Trondheim Soloists' superb performance of Vaughan Williams's *Fantasia on a Theme by Thomas Tallis* sounded a tad chromium-plated (from *Reflections*, MQA-encoded 24/352.8 FLAC file, 2L 2L-125). Changing to the Pass Labs XA60.5 monoblocks brought the top octaves into better balance, but this is a speaker that will verge on the edge of excess with

measurements, continued

trolled reduction in level, the speaker's balance doesn't change in an aggressive manner to its sides up to 8kHz or so, when the tweeter's increased directivity makes its presence known. Vertically, the use of low-order crossover filters means that a large suckout develops in the crossover region 5° below and 10° above the tweeter axis (fig.6).

Fig.7 shows the B&W 805 D3's spatially averaged response in my room. (I average 20 1/6-octave-smoothed spectra, individually taken for the left and right speakers using SMUGSoftware's FuzzMeasure 3.0 program and a 96kHz sample rate, in a rectangular grid 36" wide by 18" high and centered on the positions of my ears. This mostly eliminates the room acoustic's effects.) The balance is not as smooth as that of the Aerial 5T, which I also reviewed for this issue, and there is both a slight lack of energy in the presence region and a slightly boosted mid-treble.

The red trace in fig.8 is again the spatially averaged response of the 805 D3 in my room. The excess of mid-treble energy is apparent when compared both with the BBC LS3/5a (blue trace) and the KEF LS50 (green),[1] both measured under identical conditions. However, the B&W lacks the LS3/5a's small peak between 1 and 2kHz, which adds a touch of nasality to that vintage speaker's sound. The LS50's in-room response shelves down in the top octaves compared with the

1 See www.stereophile.com/content/kef-ls50-anniversary-model-loudspeaker.

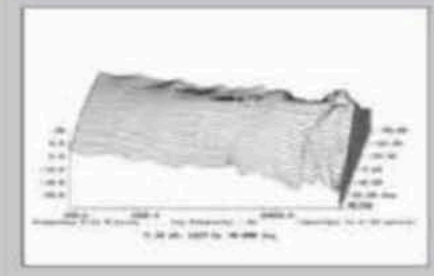

Fig.5 Bowers & Wilkins 805 D3, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

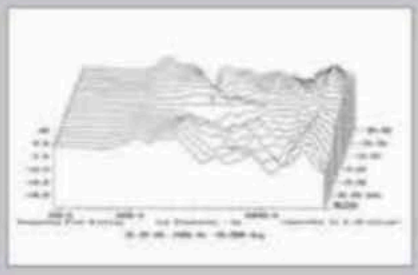

Fig.6 Bowers & Wilkins 805 D3, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 45–5° above axis, reference response, differences in response 5–45° below axis.

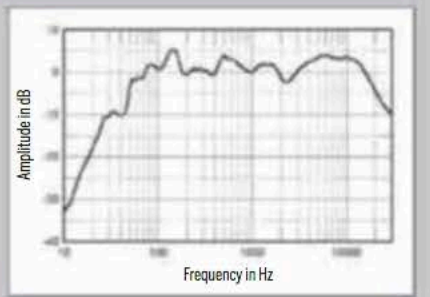

Fig.7 Bowers & Wilkins 805 D3, spatially averaged, 1/6-octave response in JA's listening room.

unsympathetic ancillary components, or in a room that itself emphasizes the highs. In this respect, the 805 D3 is not dissimilar to my 1978 pair of BBC LS3/5a minimonitors. But it was very noticeable when I set up the KEF LS50s, which at first sounded dull in comparison, with a more colored midrange. However, extended listening convinced me that the KEF's top octaves were more naturally balanced.

But I kept returning to the B&W's magic, uncolored, transparent midrange. With the Pass Labs amplifiers, the string orchestra in Vaughan Williams's *Tallis Fantasia* sounded gloriously natural, rich, and detailed, with a solidly gutty foundation provided by the cellos and basses. Patricia Barber's vulnerable contralto in "A Taste of Honey" sent shivers down my spine, as did Robert Plant's tortured tenor in "Since I've Been Loving You," from *How the West Was Won*. And again, there was that clarity: the Rhodes piano John Paul Jones plays in the verses of "Loving You" before he switches to Hammond for the guitar solo isn't that loud in the mix, but was audible enough through the B&Ws to make musical sense.

Summing Up

I very much enjoyed my time with the Bowers & Wilkins 805 D3. It is a superbly engineered, superb-sounding thoroughbred of a speaker. Its transparency, dynamic-range capability, and combination of low-frequency weight and control are something special. That somewhat elevated high treble will make it fussy when it comes to system and room matching, but in the right circumstances—and especially if piano recordings dominate your playlists—this might be all the speaker you'll need, at a lower price than you might think you have to pay.

To return to the question I posed at the start of this review: Is the 805 D3 the successor to my beloved Silver Signature? For the answer to that question, you'll have to wait for me to retrieve those quarter-century-old speakers from my storage unit and write about the comparison in a Follow-Up. Stay tuned. ■

ASSOCIATED EQUIPMENT

Analog Source Linn Sondek LP12 turntable with Lingo power supply, Linn Ekos tonearm, Linn Arkiv B cartridge.
Digital Sources Aurender N10 music server; Ayre Acoustics C-5xe^{MP} universal player; dCS Rossini CD player & Rossini Clock; PS Audio PerfectWave DirectStream D/A converter with Bridge II network adaptor; Meridian Ultra-DAC; AudioQuest JitterBug, UpTone Audio ReGen USB cleaner-uppers; Mac mini running Pure Music 3, Audirvana, Twonky server; iPad Mini running PlugPlay, Aurender apps; Ayre Acoustics QA-9 USB A/D converter.
Phono Preamplifier Channel D Seta L.
Power Amplifiers MBL Corona C15, Pass Labs XA60.5 (both monoblocks).
Loudspeakers Aerial Acoustics 5T, Rogers LS3/5a, KEF LS50.
Cables Digital: AudioQuest Coffee. USB: Canare AES/EBU. Interconnect (balanced): AudioQuest Wild Blue, Cardas Clear. Speaker: Kubala-Sosna Elation!. AC: Kubala-Sosna Elation!, manufacturers' own.
Accessories Target TT-5 equipment racks; Ayre Acoustics Myrtle Blocks; ASC Tube Traps, RPG Abffusor panels; Shunyata Research Dark Field cable elevators; Audio Power Industries 116 Mk.II & PE-1 AC line conditioners (hard drive, computers). AC power comes from two dedicated 20A circuits, each just 6' from breaker box. —John Atkinson

measurements, continued

B&W; in that respect the KEF's in-room behavior resembles that of the Aerial 5T. Both speakers sound less "brilliant" than the B&W, but I believe this is actually more neutral in-room behavior, given the increased absorptivity of the room furnishings in the high treble. The 805 D3 has a little more upper bass than the LS3/5a, but, like the KEF, its ported alignment results in a faster rolloff below the midbass.

Turning to the time domain, the Bowers & Wilkins' step response on the tweeter axis (fig.9) reveals that both drive-units are connected in positive acoustic polarity, but with the tweeter's output leading that of the woofer. In fact, the very slight discontinuity just before the 4ms mark suggests that the drive-units blend best if the listener's ears are slightly below the tweeter axis—although, as fig.5 showed, if you sit much lower, a suckout develops in the crossover region. The cumulative spectral-decay or waterfall plot on the tweeter axis (fig.10) reveals a superb lack of delayed energy across the audioband.

The B&W 805 D3's measured performance indicates that it has a somewhat "tailored" frequency response in the treble, but in all other respects there is nothing amiss. —John Atkinson

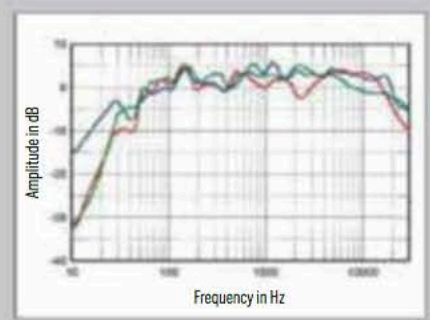

Fig.8 Bowers & Wilkins 805 D3, spatially averaged, 1/6-octave response in JA's listening room (red); of KEF LS50 (green); and of BBC LS3/5a (blue).

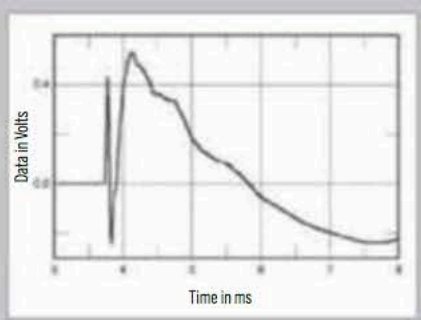

Fig.9 Bowers & Wilkins 805 D3, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

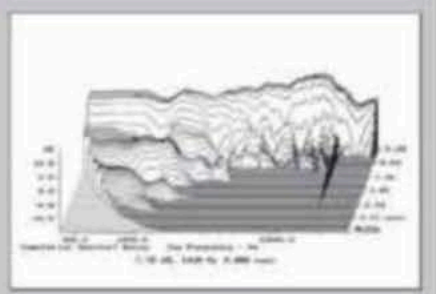

Fig.10 Bowers & Wilkins 805 D3, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).