YG Acoustics DC2 Crossover Update in Sonja 2.2i Loudspeaker

A Major Upgrade

Kirk Midtskog

First, some naming clarification. The *DC* in DC2 stands for DualCoherent crossover—the principal technology that set YG speakers apart from other multiway speakers when YG was founded in 2002 (and still sets them apart, as far as I know). YG developed a loudspeaker crossover that simultaneously optimized frequency response and relative phase. Most designs sacrifice either frequency response or phase alignment for better performance in one domain or the other. DC2 is the latest and most significant update to YG's crossover technology. The standard DualCoherent crossover has also undergone various refinements over the years (updates to parts, layout, circuit board, and mounting, etc.), but I believe the DC2 is the first crossover available as a stand-alone upgrade. YG makes its own circuit boards, by the way, along with driver membranes, cabinets, binding posts, footers, and even coils—all in Denver, Colorado. For more information about YG and the Sonja 2.2 speaker, please see my review in Issue 279. For more about relative phase, please consult Editor-in-Chief Robert Harley's book, *The Complete Guide to High-End Audio*. Even if you don't have a DC2-ready speaker or ever will, this new YG crossover demonstrates the value of improved relative phase in a multiway design.

Second, some development background. In a discussion with YG back in 2018, I was told that they were finalizing a significant crossover redesign and that it had been in the works for about a year. Without wanting to talk a lot about it at the time, they did mention that the update would improve relative phase response even more than the current production crossovers did at that time. In the standard DualCoherent crossover, the overlap between the tweeter and mid/woofer drivers was optimized, and a wider relative phase tolerance in the mid/woofer and bass driver overlap was accepted to achieve overall beneficial phase behavior in the speaker system. DC2 now makes the relative phase response of both the upper- and lower-frequency overlap zones (at 1.75kHz and 65Hz, respectively), for all intents and purposes, the same: ±5 degrees. Importantly, frequency response remains ±1dB in the audible band, per YG. DC2 was first made available in the two-tower Sonja XV*i* and XV*i* Studio models in 2018 and then offered as an update in the Sonja 2.x*i* in 2019. All current Sonja models ship from the factory with the DC2 crossover.

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The Sonja 2.2*i*'s in my system were updated in the field, and this would also be the case with all other DC2-ready models. (Updating the crossover to DC2 changes the 2.2 model designation to 2.2*i*.) The crossover exchange can be done by one trained person, usually a dealer or distributor. YG sent Dick Diamond and Gary Mulder, both very knowledgeable, interesting, and affable people with lengthy experience in the high-end industry. Only the Sonja's upper-cabinet crossover needed to be updated. The lower (or bass) cabinet does not need to have its crossover changed. The whole process took about two hours for both speakers. The newer crossover looks quite different from the standard

Equipment Report YG Acoustics DC2 Crossover Update in Sonja 2.2

Specs & Pricing

Sonja 2.2i speaker
Driver complement: One 1" YG BilletDome tweeter, two 6" YG BilletCore mid-woofers (main module), one 10.25" YG BilletCore woofer (bass module)
Frequency response: Usable output below 20Hz to above 40kHz
Sensitivity: 88dB/2.83V/1m anechoic
Impedance: 4 ohms nominal, 3.2 ohms minimum
Recommended amplifier power: Minimum, 60 high-current watts
Crossover points: 65Hz and 1.75kHz
Cabinet: Aircraft-grade milled aluminum
Dimensions: 13" x 51" x 25"
Weight: 271 lbs. each
Price: $88,300 in standard black or silver anodized finish (other special finishes/colors available)
DC2 crossover upgrade: $11,500 for Sonja 2.x models; $37,000 for Sonja XV models

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Associated Equipment
Analog source: Basis Debut V turntable & Vector 4 tonearm, Benz-Micro LP-S MR cartridge
Phonostage: Simaudio Moon 610LP
Digital sources: Hegel Mohican CDP, HP Envy 15t running JRiver MC-20, Hegel HD30 DAC
Linestages: Ayre K-1xe, Hegel P30
Integrated amplifier: Hegel H390
Power amplifiers: Gamut M250i, Hegel H30
Speakers: YG Acoustics Sonja 2.2i, Dynaudio Confidence C1 Signature
Cables: Shunyata Sigma V2 signal cables, Shunyata Sigma USB, Shunyata Alpha S/PDIF and AES/EBU, Shunyata Sigma NR and Omega XC power cords
A/C power: Two 20-amp dedicated lines, Shunyata SR-Z1 receptacles, Shunyata Everest 8000 and Typhon power conditioners
Accessories: PrimeAcoustic Z-foam panels and DIY panels, Stillpoints Ultra SS

assembly. DC2 is larger and heavier and has more components on it. The DC2 upgrade price is $11,500 for Sonja 2.x models and $37,000 for Sonja XV models.

As long as flat frequency response is achieved—or as close to it as is possible—does narrowing the relative phase tolerances in multiway speakers really matter all that much in a practical sense? I can't argue that it does from a technical perspective, but the more I've learned about the importance of the time domain in audio the more I have come to appreciate the value of improved relative phase. In the case of YG speakers, you get both excellent frequency response and relative-phase behavior, so it is not an either/or proposition. All I can say is that updating to DC2 in the already high-performing Sonja 2.2 brought more sonic improvements than I anticipated or thought possible. So, yes, in this instance, I think relative phase matters a lot.

When one considers that just the high-pass section of the mid/woofer-filter's phase alignment was the principle change to the crossover, the overall sonic advancement is nothing short of astonishing. The summarizing sonic descriptor here is "lucid." The entire presentation became more transparent, more intelligible, more immediate, more present, more vivid. There is also no attendant downside, no spotlighting or exaggeration from top to bottom. The Sonja remains neutral.

I feel a little silly about carrying on about a seemingly minor crossover tweak. But music playback became more immersive and, well, more *interesting*. Much of this can be attributed to an increase in resolution of low-level detail. For example, there are some subtle, low-pitched thumps or "knocks" buried in the mix of a live recording of Bob Walsh performing "Ain't No Sunshine" [*En Spectacle/Live*, Les Disques Bros.]. The source of these thumps could be from the guitar pickups registering mechanical contact as the guitar gently bumps up against the microphone stand when Walsh moves while he plays and sings. Or the mic could be picking up the sound of its stand being lightly knocked by the guitar. Or both. I had noticed some of these thumps pre-DC2, but I quickly realized *with* DC2 that there are more of them, and they occur pretty much throughout the song, every few seconds. Hearing this live recording with that increase in resolu-

tion—thumps and all—made me feel as if I were witnessing an event, rather than merely listening to a recorded song again.

I heard more details on every recording I played. Everything sounded more fully rendered, more fleshed out, and thus more alive. So, with better relative phase alignment comes less time smear, which seems to lead to better resolution. At least that is my working hypothesis. The Sonja 2.2*i* sounds both more lithe and more controlled—able to start and stop more quickly, if you will. In this regard, the updated Sonja reminded me more of an electrostatic speaker (but with greater dynamic range, bass weight, and extension) than its non-updated version did. Let me also mention that bass pitch definition and dynamic crispness were also improved. Nothing in the bass module was changed, so DC2 apparently cleans up the lower range of the mid/woofer (and its overlap with the bass driver) to the extent that it influenced my perception of bass quality. The impression of greater slam and dynamic agility is definitely apparent. This makes perfect sense when one considers the 65Hz crossover point, above which there is plenty of bass energy.

Soundstage depth became more layered, and the interstitial haziness that sometimes clouds the spaces between images was cleared up. The soundstage seemed to open up a bit more across the board. How could improving phase in the *lower* overlap help imaging and the rendering of "space" around instruments to the extent I was hearing? I would expect this sort of soundstaging improvement if the *upper* overlap, closer to the frequency range where imaging information exists, had been improved. I cannot explain it, but it's there. Whatever technical reasons are involved, the DC2 crossover brought about the same kinds of improvements in resolution, soundstaging, and dynamic agility that I heard when the ground-breaking YG Billet-Dome hybrid tweeter was introduced in early 2018 (see my Sonja 2.2 review)—which is to say, very rewarding performance increases, indeed. Is the pre-DC2 Sonja 2.2 still a great speaker? Yes, but better is better, and DC2 advances the Sonja further.

YG's DC2 crossover improves the Sonja 2.2*i*'s overall sound quality more than I imagined was possible, and I presume similar or greater improvements are conferred on the upper Sonja models, as well. It is as if a key piece of a building were put in place, and the integrity of the entire structure became more robust. The DC2 crossover "unifies" more of the listening experience. YG has pursued both flat frequency response and a low relative phase angle with excellent results. The DC2 update further validates its approach. The time domain matters a lot in this game. I continue to be impressed with YG speakers, and the DC2-equipped Sonja 2.2*i* is another resounding success. tas