



The Unified Theory of Speaker Cables

A String Quartet of Speaker Cables

BY MYLES B. ASTOR

George Cardas wrote, in an excellent review of cable design, that the most common element between different competing cable designs involves the use of multiple, parallel conductors and multi-filar construction (“Conductor Design,” from *The Audiophile Reference*, p. 49-52, Winston Ma, ed., Golden String, Publisher). The result, Cardas observed, is that the best high-end audio cables “lower conductor resistance and inductance without increasing capacitance. Even less obvious to the eye,” Cardas noted, “but most obvious to the ear, is the degree to which conductor resonance is reduced by the various geometries.”

The upshot? There are many different paths a cable designer can travel to arrive at the final destination: the ultimate interconnect or speaker cable. As Cardas opined, each type of cable geometry comes with its own particular sets of strengths and weaknesses. The latest generation of high-end audio cables achieve low resistance and inductance via a variety of means including manipulation of cable geometry, presence or absence of cable networks, choice of conductors and dielectric material, attention to manufacturing tolerances and termination and reduction of electrical and mechanical resonances.

DISPELLING OLD THEORIES

It’s been a long time since a magazine (or reviewer) undertook a comprehensive look at today’s best interconnect or speaker cables. Topping the list of reasons why a cable survey hasn’t been conducted is the time needed to break-in and listen to each cable. Continuing further down the list is the system-to-system dependence of different cables—though the newest generation of cables are markedly better in this regard. While it’s clear that the earlier generations of cables were at best, nothing more than sophisticated tone controls, today’s cables are far more neutral and work with a wider range of audio equipment. Finally, there’s nothing more frustrating than the inevitable sonic tradeoffs. Cable A’s midrange is better but lacks the transparency of Cable B—but no cable combines the midrange and dynamic strengths in one package.

It’s a common industry practice to find manufacturers lending cables for the purposes of reviewing audio components. After playing with a variety of cables in the last six months, it seemed a shame not to share my experiences. Thus, here are four of the better speaker cables that I’ve recently had the opportunity to audition.

QUICK NOTES ON THE CABLE TESTING

Each of the cables was listened to with a wide range of electronics, front ends and speakers. Cables were “broken-in” for a minimum of 150 hours before initiating critical listening sessions. All cables were 8 foot pairs; two of them, the Nordost and Wireworld, came in a biwired configuration.

Early on, it quickly became evident that these listening sessions were going to entail more than just disconnecting the Nordost speaker cable, hooking up the Wireworld and sitting down and taking notes. Even after the obligatory 15 minute amplifier stabilization period, the system just didn’t sound right. For whatever the reason, each cable needed 2 to 3 hours after reconnecting to sound their best (some have suggested this is due to disturbing the cable placement).

Finally, all cables were evaluated both resting on the carpet and raised off the floor. No fancy cable supports were employed—just some empty, cardboard output tube boxes placed under the cables to raise them approximately 6 inches off the floor. The take home message? The cable’s sensitivity to being placed on floor vs. being elevated varied from cable-to-cable.

THE RESULTS

KIMBER KABLE SELECT KS3038 SPEAKER CABLE

Kimber, though 20 years old, represents the new breed of cable manufacturers with diversified business interests and markets outside the audio industry. This diversification allows them access to tooling and equipment unavailable to smaller cable concerns. During the design process, each cable undergoes a battery of tests including spectral analysis, phase, group delay, gain, series and parallel capacitance, inductance, DC resistance and conductivity.

One of the products coming out of this program is Kimber's top-of-the-line \$15,000 Black Pearl Model 88 speaker cable, renowned for its ultra-wide bandwidth, low noise and lack of ringing and artifacts.

Kimber's top entry in their new Select series of speaker cables is the KS3038—essentially a scaled down version of the Black Pearl. The KS3038 uses Kimber's tried and true trademark braided geometry. Inside the KS3038 are twelve (6 plus and 6 negative) 6-9N Ag conductors (with low Cu and S content to prevent oxidation) coated with a non-pigmented Teflon dielectric wound around Kimber's special X38 core compound that acts to reduce mechanical resonance and electrical interaction between strands. The cable is terminated using solderless WBT connectors.

Based upon my listening sessions, it's readily apparent that the Kimber KS3038 has a lot in common with its bigger brother. The cable earns extremely high marks for its ability to resolve the subtlest piece of information from an LP or CD, along with an uncanny ability to localize instruments. One disc that is especially revealing about a component (and audio system) is the *Ben Webster Meets Gerry Mulligan LP*. When the system is hitting on all cylinders, there's incredible sense of tonal realism along with pinpoint placement of instruments. Each instrument is clearly separated and placed in its own space. As with the best cables, the KS3038 allows for pinpoint instrumental placement and cushion of air surrounding each instrument. Soundstage width is as good as cables come and there's excellent front-to-back separation and layering of the



sax and piano. The cable's low noise floor, allows for easy recognition of the subtle piano backing in opening riff of "Chelsea Bridge."

Tonally, the Kimber is slightly to the analytical side of neutral and misses a little midrange solidity on this disc. There is a slight loss of the tonal differentiation between Mulligan's and Webster's saxes that results in a loss of harmonic richness and a "relaxed" feeling. The KS3038 preserves as

well as any cable I've heard, the contrast between the roughness (and sense of volume) of Mulligan's baritone sax and the smoothness of Webster's tenor sax.

Turning to *The Sound of Rhythm* disc, the KS3038 established its uncanny ability to reproduce a wide range of dynamics—from the most subtle percussive dynamic shadings of percussion to the large scale dynamics required of drums. Drums are incredibly tight and focussed but not overdamped. There's a real sense of volume and frame/structure of drum. Drums appear out of an ether-like background and have, as J. Gordon Holt used to refer to, real "jump" factor.

But the disc that best shows off the Kimber's strengths, namely resolution and speed, is *Favorite Chinese Instrumentals*. There's no evidence of smearing on the pipa, a lute-like Chinese instrument. Transients are razor sharp without being etched. There is a sense of musical timing that is missing from many other cables. Though slightly analytical, the music never becomes bright here or on strings on Gerhard's *Astrological Series*. Cymbals on track five are

extremely clean and open. There is a completeness to their playing. Resolution and overall clarity in the upper octaves are not quite up to the standards set by the midrange and bass but it still exhibits real solidity. A stunning achievement and the KS3038 shows how far cable design has advanced in the last 2 or three years!

NORDOST SPM REFERENCE SPEAKER CABLE

The flatline, ribbon construction and its lavender color makes Nordost's SPM Reference speaker cable the most unique looking of the four cables. While Nordost is relatively new to the high-end audio scene, they have been producing cabling for aerospace, military, medical and computer industry since 1993.

Briefly, the cable has its roots in a proprietary extrusion process originally developed for the space program. According to Nordost, one of the benefits of the cable's ribbon geometry and choice of extruded dielectric material (whose dielectric constant approaches that of air) is that the signal is conducted at 95% of the speed of light. This, according to Nordost, markedly reduces signal loss, timing errors, smearing and phase distortions. Much of the technical information goes beyond the scope of this review (readers interested in more technical details should consult Nordost's website or request a copy of their white paper). Another unique feature of the cable is Nordost's Z-plug, a low mass, one piece Be/Cu banana and Au-plated banana plug. This connector is terminated using high grade Ag solder. Both the connector and cable, exhibit low inductance and capacitance.

Nordost's SPM Reference is among the best of today's speaker cables and, with a few improvements, could arguably rank as the worlds finest. It wasn't however until the cable was raised off the floor, that I began to fully appreciate the SPM Reference's strengths (it was the most sensitive of the four cables to placement). Lifting the cable off the floor marked removed an oxidized Al-like midrange coloration, increased midrange presence and dropped the cable's noise floor.

The Nordost is without peer when it comes to soundstaging. Soundstage width, depth and height are limited only by the recording. The SPM Reference is extremely transparent with very good but not the ultimate level of clarity (something that also shows up when comparing the SPM Reference interconnect with the Quattro Fil interconnect cable). It's very interesting how the newest generation of cables reveal the difference between clarity and transparency. A lack of clarity sounds like a curtain is draped over an instrument; transparency on the other hand, is more related to the cable's noise floor and is heard as darkening/fuzziness over of the entire soundstage and between instruments and loss of low level information. In the end, few cables combine both properties.

Resolution and transient attack is also another of the cable's strengths. The SPM was unfazed by the razor sharp guitar transients on the "Sound Unheard of..." track



from the *Fi Sampler Disc*. The cable's quietness lets through unscathed the subtlest harmonic information and the feeling of resonances and vibrations of the guitar (but what happened to the sound



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of the percussion on the CD?)

I've saved the best for last. The delicacy, ambience and openness at the frequency extremes on *Favorite Chinese Instrumentals* or the sense of low end solidity is second to none. The SPM Reference retrieves every piece of upper octave information, from the ringing of percussion to the feathery sound of cymbals down to the feeling of two cymbals colliding with each other. The SPM is no slouch when it comes to dynamics, especially at the frequency extremes on *The Sounds of Rhythm* disc. There's an incredible sense of unrestrained dynamics and detail on cymbals and drums. One can almost hear skin flapping on the closely miked drum.

This somewhat unconventional cable might have been the hands down class of the survey save for two things: a slight analytical personality and a touch of dryness in the upper midrange. Take for instance the Holly Cole disc. There's a slight coloration in midrange typified as a loss of some of the vocal richness and naturalness. Mulligan's and Webster's saxes also show the same tendency with a loss of richness and harmonic fullness. These shortcomings aside, Nordost's SPM Reference speaker cable is an extremely well balanced product that is one of the best cables available on the market.

TWISTED PAIR D^{fn} CLEAR SERIES AUDIO CABLES

At \$650 for an eight foot pair, this new cable ranks as the least expensive link of the group. The Twisted Pair cable proved to be a more than adequate performer and certainly a benchmark for entry level high-end audio speaker cable performance.

Art Almstead's main goal in designing the Clear Series, was to make the cable compatible with the widest range of audio gear as possible. The Clear Series, in contrast to the other cables in the survey, is non-directional and uses a bare, litz wire-type geometry. Each signal leg consists 4 conductors adding up to a 8 gauge, yet very flexible speaker cable.

What impressed me the most about the TP Clear Series of speaker cables was its imaging ability and low frequency solidity and weight. While the slightly up front soundstage on the *Fi* disc, doesn't extend much beyond the outside edge of the speaker and there is a slight loss of depth, the cable exhibited a non-pareil sense of holographic imaging. Guitar, drums and percussion all possessed a reach out and touch sense of palpability. Instruments on the outside edges of the soundstage were as three-dimensional as images elsewhere on the stage.

The cable's other virtue is its low frequency reproduction and sense of weight. The *Sounds of Rhythm* disc, showed off the cable's capabilities in reproducing low end dynamics and extension. The drum was extremely tight and dynamic with a good sense of weight. There was feeling of the sense of the drum's



volume along with the striking of the drumhead. Drumbeats were not smeared and contributed to the cable's sense of timing.

At the same time, there was a slight loss of ambience along with the finer harmonic details from top to bottom of the frequency spectrum. For instance on the *Fi* disc, the cable's higher noise floor obscures some of the guitar's finer harmonic nuances. Take for instance the Sara K DVD audio disc. Here, there was a reduction in the 24/96 discs outstanding ability to reproduce the sound of the studio. This gives the impression of the musicians being in the room rather than the studio. In addition, there was a slight compression of upper octave dynamics.

Tonally, the TP cable lies slightly to the analytical side of neutral. Take again either the Sara K DVD audio or Holly Cole discs. Their lyrics come across as very clean and intelligible but associated with a slight graininess that extends higher up in the frequency spectrum. Voices are well focussed but don't possess as much of a "relaxed" feeling as the best cables. A great first effort from a new entry on the cable scene.

WIREWORLD GOLD ECLIPSE III™ SPEAKER CABLE

As with the best cables, the Wireworld Gold Eclipse III™ is constructed using only the finest materials including grain optimized Ag conductors coated with a microporous Teflon dielectric. One of the objectives of the cable's designer David Salz, is to control electromagnetic interaction between conductors. According to Salz, these interactions affect the harmonic structure of instruments, imaging and low level resolution. To reduce the interaction between conductors, Salz uses his patented Symmetricoax™ geometry to focus the electromagnetic field surrounding each wire to the gap between conductors. This affects a number of electrical parameters including minimizing resistance, inductance and capacitance, skin effect, mechanical instabilities and external interference. For more technical information, consult the Wireworld website.



The latest version of the Wireworld Gold Eclipse III™ speaker cable from David Salz is a quantum improvement over his original speaker cable designs. The Gold Eclipse III™ is one of the few cables that combines the properties of clarity and transparency from top to bottom of the frequency spectrum in one package.

What really sets this cable apart from the competition is its extremely low noise floor and sense of instrumental solidity, especially in the midrange. Transients emanating from the plucked pipa on *Favorite Chinese Instrumentals* start and stop on a dime without an etched or overdamped quality. It was possible to listen at lower volume levels without a loss of information. The midrange is extremely smooth and dynamic without a loss of harmonics. The cable preserves much of the tonal difference between Webster's and Mulligan's sax, though there is a slight loss of the raspiness of Mulligan's sax. If I were to select one quality for improvement in the midrange, it would be to decrease some of the illumination and increase the relaxed feeling. (Raising the cable

A Sampling of the LPs/CDs used in the listening sessions:

DIGITAL

- *Fi/Analogue Productions Sampler Disc*
- Holly Cole: *Dear Dark Heart* (Alert Records 615 281034-2)
- Flirtations: *Live Out on the Road* (Flirt Records FL1002)
- *The Sound of Rhythm* (Top Music TMCD1026)
- Sara K: *Brick House* (Chesky Records CHDVD171)
- *Favorite Chinese Instrumentals* (First Impressions Music FIM XRCD 019)

ANALOG

- *Ben Webster Meets Gerry Mulligan* (MFSL 1-234)
- *Sounds Unheard of...* (Analog Productions APR 3009)
- Stepan Wolpe: *Spectrum New American Music Vol. IV* (Nonesuch H-71302)
- Gerhard: *Astrological Series* (Decca Head 11)
- Oscar Peterson: *West Side Story* (DCC LP 2023)

decreases some of illumination and increases transparency and especially improves soundstage width).

The other area where the Gold Eclipse falls a little short of ultimate is in the area of soundstaging. For instance on *The Sounds of Rhythm* disc, the musicians are set back a little compared to the other cables. The soundstage is fine but there is a reduction in the sense of unfettered soundstage width.

Frequency extremes are extremely good but suffer a little in comparison to the standards set by the midrange reproduction. In the low end, the Gold Eclipse is very tuneful but a little rounded, softening just a little bit the dynamic impact and detail. On the Oscar Peterson disc, the Gold Eclipse avoids the looser bass of many lesser cables and gives as good a reproduction of the wooden

PRODUCT INFORMATION

▶ **Kimber Select KS3038 Speaker Cable**, Kimber Kable, 2752 South 1900 West, Ogden, UT 84401. Tel.: (801) 621-5530. Fax: (801) 627-6980. Website: www.kimber.com. Designer: Kimber Design Team. Geometry: Multi-strand, braided. Conductor: Hyper pure (Su and Cu-free) 6 N Ag. Dielectric: Pure teflon. (Measurements performed with the following equipment: HP 4194A Impedance/Gain Phase Analyzer, HP 4284 Precision LCR Meter, HP 4395A Network/Spectrum analyzer, HP 3458A digital volt meter loading with non-reactive 8 ohm load). Bandwidth: DC to 100 mHz ± 0.5 dB. Capacitance (1 kHz): 52

pF/ft. Inductance: 0.18 µH/ft. Price: \$6,950 (2.5 meter pair).

▶ **Nordost SPM Reference Speaker Cable**, Nordost Corp., 420 Franklin St., Framingham, MA 01702. Tel.: (508) 879-1242. Fax: (508) 879-8197. Designer: Nordost design team. Website: www.nordost.com. Geometry: Microlitz, solid-core flat ribbon. Conductor: Extruded X32 Ag over 6 N OFC. Dielectric: 5 mm Teflon. Capacitance: 6 pF/ft. Inductance: 0.07 µH/ft. Price: \$3395/8 ft. pair.

▶ **Twisted Pair D^{fn} Clear Series Audio Speaker Cable**, Twisted Pair Design, 15 Half Circle Rd., Germantown, NY 12526. Tel./Fax: (518) 828-2060.

Website: www.twisted-pair-design.com. Designer: Art Almstead. Geometry: Litz-like, 8 conductor. Conductor: 5 N bare OFC. DC Average capacitance: 22.6 pF/ft. Average inductance: 0.29 µH/ft.. Price: \$650/8 ft. pair.

▶ **Wireworld Gold Eclipse III Speaker Cable**, Wireworld by David Salz, 3320 Griffin Rd., Fort Lauderdale, FL 33312. Tel.: (954) 962-2650. Fax: (954) 962-2803. Website: www.wireworldaudio.com. Designer: David Salz. Geometry: Symmetricoax.[™] Conductor: Grain optimized Ag. Dielectric: Microporous Teflon. Capacitance: 48 pF/meter. Circuit inductance (1 kHz): 150 nH/M. Price: \$5,400 (2.5 meter)/\$5,600

sound and sense of size of a double bass as any cable I've heard.

In the upper octaves, the Wireworld is again exceptionally transparent and clean, if a little softened in impact and not quite as detailed as in the midrange. There's an incredible ability to both see and hear the cymbal and the musician damping its ringing a cymbal. One hears the instrument and air surrounding it without feeling like there's a curtain over the microphone. A stunning triumph from one of the pioneers in high-end audio cable design.©