

# Avalon Compás

KICKING DYNAMICS ARE A KEY ELEMENT IN AVALON'S FLAMENCO-INSPIRED COMPAS FLOORSTANDER

Neil Patel, head and chief designer at Avalon Acoustics, thinks deeply about how his creations should sound. Whereas some operations have a notional idea of accuracy, and try to maintain it over a range of products scaled for size, price and power, Patel frequently adopts a different approach. Through the selection of customised drivers and components, he often seeks to express a particular acoustical idea which best exploits the individuality offered by a particular kit of parts.

This is true for the new *Compás*, which is allegedly 'inspired by the musical style of flamenco'. Indeed, in the flamenco tradition the Spanish word *compás* effectively translates as rhythm in the strictest sense. In a brief extract from my interview with Patel he explained: "Each completed loudspeaker system design is its own entity, hopefully with a distinct and yet truthful character."

Although I knew that these speakers would be quite large, I was not really prepared for an imposing physical presence, nearly 1.2m tall. Our samples had a faceted front and grille, the latter covered in almost black fabric. A satin finish had been applied to a really dark, highly figured burr walnut veneer, which would suit classically furnished decors; more modern arrangements will benefit from the lighter toned Cherry or Maple alternatives, or even the anticipated gloss colours.

Avalon describes the *Compás* as designed for fine rhythmic and dynamic sound reproduction, aided by "control of all pertinent time constants to an 'over-damped' condition", and free of ringing or overhang. Fortunately our review pair were demonstrators that had undergone significant use, so an extended running in period wasn't necessary.

Priced from £33,500/pair (depending on finish), one has the right to expect an impressive performance profile. An above average sensitivity of 91dB/W is claimed, alongside a commendably truthful 4ohm load impedance and a 50 – 500W power rating. The latter is an indication of the size of amplifier suitable for speech and music reproduction, rather than the possible damage limit of the loudspeaker itself. This wide power range also reflects the low rated impedance, and a 500W peak input should deliver good in-room sound levels of about 110dB for a pair.

Avalon speakers carry a three year guarantee, and finish options include figured Walnut quilted Cherry, curly Maple, Myrtle cluster burl, Walnut cluster burl (the review pair), and birds eye Maple. Gloss automotive colours are also available. The base price is £33,500 for standard woods in satin or high gloss finish; premium woods cost £37,000, and a painted finish is £35,500. A very detailed instruction manual has good guidance on room acoustics, treatment and loudspeaker placement, and suggests a toe-in of 3-10 degrees (*ie* not directly at the listener), with which we concur.

A single wire connection is provided *via* Cardas insulated clamp terminals. Heavy duty threaded sockets are supplied under the base for spikes, along with hardwood floor interface accessories.

All the drive units come from the new Accuton 'CELL concept' range of pure piston designs. These represent a unified line, and the midrange and treble units in particular are inherently time aligned. All have ceramic diaphragms (coloured black here rather than the more common natural white alumina finish), and the bass units include a honeycomb core sandwich construction with inherent damping for the diaphragm's primary structural resonances. These drivers also have high  $Q_m$  (a parameter that denotes the mechanical losses in the suspension), and may well offer a shorter running-in period here.

Avalon uses customised versions of specific Accuton production drivers. The bass uses a pair of S220-6-221 units with die-cast chassis and a 38mm diameter long-throw voice-coil wound on a high power handling titanium foil former. The midrange is based on a variant of the C90-6-724, a driver of modular appearance with a pistononic ceramic composite cone. This has a well controlled first break-up at 9kHz of only 6dB magnitude, and claims very low distortion, partly due to the magnet geometry and partly the underhung voice-coil design. The laser-machined resonance control cut-outs of earlier diaphragms have been engineered out here. This driver will actually do bass in a compact enclosure but is very capable when employed for midrange only duty. The 25mm 'ceramic' C25-6-158-based inverted dome tweeter is driven by an alloy former with copper voice-coil. The whole moving assembly measures just 0.17gram and it

delivers a high inherent sensitivity of 92.5dB at 6ohm, using double neodymium magnets and a treated fabric surround. Avalon's version is custom terminated in order to interface with the heavy duty internal wiring.

All the diaphragms are relatively sensitive to careless touch, so come permanently fitted with hexagonally perforated rigid steel grilles with large 'windows'. The midrange driver is used between 500Hz and 4kHz, and the piston tweeter extends beyond 30kHz (going beyond this hardly matters in my view). The paired bass drivers are nominally 220mm units, almost equivalent to a single 13in (330mm) example, so this speaker has ample bass radiating area. It's a step up from the *Eidolon* in this regard, for example, and the combined power handling of two voice-coils will improve the thermal behaviour. Patel has developed proprietary crossover alignments to achieve the acoustic responses responsible for the character of the loudspeaker. He notes a non-ringing Q of 0.5 for the acoustically pertinent crossover filters and also for the bass alignment.

### Sound quality

Running it in for a while after delivery, this well used demonstrator still showed significant settling-in over the first five and then a further 100 hours of use. At this point dynamics and clarity had improved and bass lines sounded deeper and more articulate.

This tall loudspeaker has a high apparent sound source, performers appearing to be standing rather than seated. The name is intended to reflect a character influenced by the flamenco – powerful music with foot-stomping and expressive rhythmic appeal – and this formidable floor stander gave us a rollercoaster ride, at times thrilling, at times disturbing. It differs from smaller Avalons in its strikingly impressive and articulate dynamics, which imbue powerful music with detail, scale and excitement. It can be thrilling, providing large scale performances which are superbly focused, together with qualities of fine width and depth to the sound stage illusion.

Its dynamic performance on percussion is undeniable, and here it was upbeat, involving and exciting. Interestingly, our view of its sound quality varied rather more than usual with different types of programming. A well balanced cathedral organ piece sounded rather dark, and was considered a little too forward on reed pipes. Orchestral material too showed some forwardness on violins at times, and mixed woodwind was somewhat unevenly voiced between different instruments, with resulting shifts in perspective.



Some interaction with programme production values was also evident. Classical, rock and jazz pieces which were more distantly and spaciously recorded, with significant reverberant energy, played well on the *Compás*, demonstrating great scale, massive detail, abundant power and an alluring sense of vibrancy. A little ironically perhaps, other more 'immediate' and 'drier' recordings sounded subtly altered, sometimes to the extent that its rhythm and timing elements were disturbed, seemingly slowed and delayed.

Familiarity with certain such tracks indicated that this speaker had a somewhat uneven midrange frequency response, leading to perceptible if mild colourations, such as a 'hardening' of midrange timbre, some 'nasality', and a less than smooth treble. Some singers, such as Eleanor McEvoy, showed a degree of added huskiness, together with mildly altered vowel sounds, different emphases and shifts in perspectives. Its character therefore differs somewhat from the well judged tonal balance found with Avalon's *Idea* (reviewed *Vol6 No4*), and for that matter that classically neutral if slightly sleepy sounding but oh so sophisticated *Eidolon Diamond*, which spent



### Review System

Krell *Evo 402E*, D'Agostino *Momentum Stereo*, Naim *NAP300* power amps; Audio Research *REF5 SE*, Townshend *Allegri* control units; MSB *Platinum Signature IVDAC* with *Diamond* supply, *Metrum Hex* DACs; Naim *UnitiServe* network server and S/PDIF source; NAIM *NDS Streamer/DAC/555 PS*, Wilson Audio *Sophia 3*, Quad *ESL63*, *Spendor D7* speakers; Finite *Elemente Pagode Reference* racks; Cardas *Golden Reference*, Transparent *XLmm2* and Naim *NAC A5* cables.

Contact:  
KOG Audio  
Tel: 02477 220650  
www.kogaudio.com

many years resident in my listening room.

Tonality notwithstanding, and by way of contrast, *Music for Six Mallet Instruments* – an old warhorse piece by Steve Reich – sounded quite exceptional, the *Compás* bringing out both the essential percussive qualities and the vital separation of the complex layering of multiple instrument voices. Likewise, mid-dominant percussion tracks, including of course flamenco material, sounded very well focused and were found most involving. However, the sense of coherent timing experienced by listeners varied with the piece chosen, and more general rock, folk and R&B material seemed a little out of time, with potentially strong, tight bass lines nonetheless lagging the more forward, projected – even accelerated and over articulated – upper midrange.

Some experiment with side wall absorption suggested that more heavily furnished and damped rooms might well suit it better than mine.

### Test Results

The mildly uneven measured frequency response made estimating the sensitivity problematic; 88.5dB was considered a fair assessment, which is somewhat less than the 91dB claimed. With an impedance which does fall below 4ohms in places (in fact to 2.8ohms at both 25 and 60Hz), while averaging about 5ohms elsewhere, this may be rated a 4ohm loudspeaker, as specified. This result actually sets the true sensitivity (ref 1W rather than the usual 2.83V input) at 85.5dB, which is rather below average. Full loudness potential will therefore be best obtained with current-capable solid state amps, and the latter, true sensitivity figure is likely to apply when driven by valve amps. Some mitigation is available because the phase angle of the load (indicative of the reactive content) is low in the low impedance regions (*eg* just 18degrees at 25Hz), so its worst case combination of phase and magnitude is not as taxing as some of the competition.

Correctly judged, frequency response measurements can often be a useful indicator of performance, even though the designer suggests that they can also be misleading in this case, and are often not a good guide to sound quality or loudspeaker character. This *Compás* measures nominally  $\pm 4.5$ dB, 40Hz - 32kHz, which is a larger amplitude tolerance than usual.

The relevant frequency response graphs are notable for significant local 1.1kHz and 3kHz prominences of about 3dB (considered an audible threshold), while the treble, 5kHz - 12kHz, also looks a bit ragged. Characteristic if moderate associated colorations could be heard on relevant programme for all three of these aberrations: 'hard'

in the midrange, 'nasal' in the low treble and 'grain' in the upper treble respectively. A hard dome tweeter generally has an upper resonance, but in this case it peaks around 11dB at a high 32kHz, and is probably inaudible. Pair matching was generally very good with mild  $\pm 0.5$ dB variations 1kHz - 15kHz, rising to  $\pm 1$ dB at lower frequencies.

Albeit with consistent 'echoes' of the axial response features, the lateral off-axis responses were tidy with a smoother if mildly decaying upper treble. Off-axis consistency is undoubtedly very good thanks to the powerful diffraction countermeasures, even if the aforementioned primary response features remain evident. Tidy off-axis behaviour certainly aids image precision, as we heard during auditioning.

However, the *Compás* is rather sensitive to vertical axis variations and hence listener ear height, as the vertical responses reveal. The orange trace is for 15 degrees below axis and highlights a more rapid falloff above a relatively inaudible 13kHz, while the above-axis trace (yellow) shows a strong phase cancellation between mid and treble units that sucks out the response above 4kHz to an average of -12dB. It is therefore inadvisable to stand up (or use a higher than usual seat) when auditioning these speakers. This off-axis feature will also dull the overall power response to some degree.

The described innate character is also revealed in the multi-position in-room averaged response, where the overall acoustic output as it's coupled to the room is seen. Here that aforementioned response 'character' is also evident. The smooth, extended, mildly rich bass precedes a 'cooler' midrange, then those noted and audible prominences at around 1kHz and 3kHz, the latter highlighted by the steeper than usual subsequent treble roll-off. In my view this is a mildly idiosyncratic tonal balance, likely to lead to the distinctive timbre and colour that we felt we heard on audition. Randomised 'pink' noise (a waterfall sound) is our usual stimulus for deriving the in-room response, and under these conditions the noted speaker response characteristics were quite audible.

The waterfall representation of output decay over frequency and time revealed impressively rapid clearing and near linear phase character of the early response up to 0.5ms, though the noted, mildly wayward upper frequency ripples are also evident. However, there is also some clutter from secondary resonances, likely emanating from the stop band of the largely piston mid driver.

The grille and the related felt absorbers beneath it are essential to this design and their removal results in excess treble, with a further 4dB of response aberration and a substantial loss of stereo focus.

The vestigial port is weakly tuned to about 30Hz

and plays little part in the overall response, its main purpose being to align the phase response. Close to a sealed box alignment, the bass is smooth, extended and well damped, with a fast time signature. Bass output is well tailored, and at moderate power extends to a low 22Hz in-room, and to a good 33Hz at higher powers.

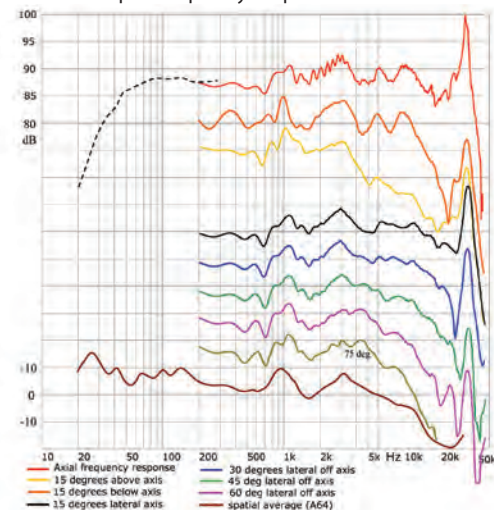
Rapping the enclosure sides showed more decay resonance than expected – more than my old *Eidolon Diamonds* for example, or for that matter a Wilson Audio *Sophia 3*. However, build quality is clearly very high, judging by various construction details, the heroic wiring and not least the fine finish.

In view of the low frequency driver excursion required, some distortion was expected at moderate powers, but the measured results were good. For example, at a low frequency extreme of 20Hz (86dB), distortion was about 3%, and it achieved an amazing 0.3% at 35Hz. At a higher level and frequency (a pretty loud 90dB at 50Hz), second was a harmless 1% and third a remarkably low 0.26%. With rising frequency (still at 90dB) the distortion figure improves first to 0.3% and then remarkably to just 0.15% by 100Hz. With the sound level reduced by 6dB, second and third now averaged a remarkably low 0.05%, which will be completely inaudible. At higher frequencies, irrespective of power, my results were in the 0.08% range regardless of frequency or sound level up to 90dB. That claim for low Accuton driver distortion is thus confirmed, except at 10kHz where 2nd harmonic showed an innocuous isolated rise above 88dBspl to 1% (though 3<sup>rd</sup> harmonic was still held to a low 0.1%).

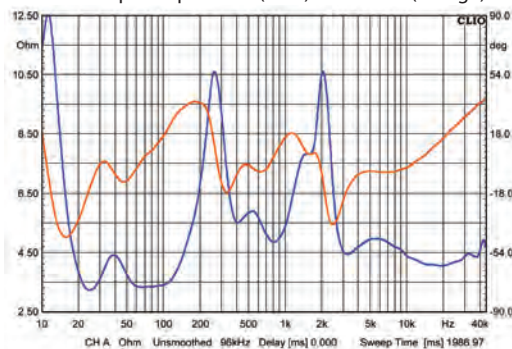
## Conclusions

This powerful loudspeaker has bags of character, and ought to be experienced if considered a contender. Tall and prismatically contoured, it offers unusually detailed, powerful and deep bass, tightly focused, audiophile quality stereo imaging, and exciting expressive dynamics, together with a heightened rendition of percussion. There is also some midrange coloration and related tonal emphases, the subjective impact of which will vary with listener taste, the matching system, and not least the room acoustics. (A rather live room, such as my own is probably less well suited than a more highly damped example, with some side wall and corner absorption.) The overall standard, including build quality and finish, and taking into account the exceptionally low overall distortion, meets the standard for recommendation, but do note that its typical 4ohm impedance loading and moderate efficiency renders it better suited to solid state than to valve amplification.

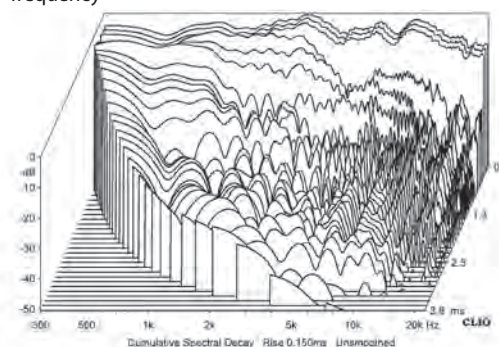
Avalon Compás Frequency Responses



Avalon Compás Impedance (blue) and Phase (orange)



Avalon Compás Waterfall response for amplitude/time/frequency



## HIFICRITIC Loudspeaker Laboratory Test Results

Make, Country	Avalon Acoustics, Boulder, USA
Model	Compás: moving-coil floorstander
Price per pair	From £33,500 depending on finish
Finishes	Various standard and luxury veneers in satin or high gloss, or painted
Size (HxWxD); weight	117x28x43cm; 68kg
Type	3-way, 2x220mm bass, 115mm mid, 25mm treble, quasi-bass reflex loaded
Sensitivity for 2.83V	88.5dB/W measured (8ohm 2.83V watt)
Amplifier loading	4ohms typical, 2.8ohm min., 'below average loading'
Frequency response, axial	40Hz to 32kHz ±4.5dB (listener axis)
Frequency response off-axis	Good + (see graphs and in-room response)
Bass extension	39Hz for -6dB, (25Hz in-room)
Max Loudness	107dBA for a stereo pair in room
Power rating (max, min)	500W, 50W
Placement	Floor; spike coupled

HIFICRITIC  
RECOMMENDED

# Q & A

## MC QUIZZES AVALON DESIGNER NEIL PATEL ON THE COMPAS



Avalon designer Neil Patel

**NP:** First may I make a brief statement regarding my personal design philosophy: all technical decisions are made in the context of achieving an aesthetic result. The sonic picture I want to paint is fully formed in the mind before the process begins. Each completed loudspeaker system design is its own entity, hopefully with a distinct and yet truthful character. Like the plays of Shakespeare, each illuminating an integral aspect of human nature, ultimately I would like our work to focus a ray of light on the opaque nexus of music, intellect, and emotion.

**Q:** The description for the *Compás* mentions design Q factors of 0.5, which is rather lower than the industry norm, here perhaps trading transient accuracy over matters of simple efficiency and loudness?

**A:** The desideratum here was first and foremost to achieve transient accuracy throughout the bandwidth. Technically, Q is defined as the ratio between energy storage and dissipation at resonance, and is indicative of transient behaviour, but is not its sole determinant or descriptor. The actual numerical quantity is actually closer to  $Q = 0.57$  in our case, reflecting a composite of proprietary Avalon bass tuning and crossover filter alignments that produce the desired transient behaviour.

**Q:** For the bass, is this achieved by ‘Bl’ or magnet strength control, or by partly damped ‘bass line’ loading, or both?

**A:** The four general variables that are manipulated in achieving our overall desired result are: driver parameters, cabinet volume and internal labyrinth length, electrical damping, and finally, venting parameters.

For the driver alone it is magnet Bl product; the force applied to the moving system, the moving mass, while voice coil inductance, capacitance, and resistance are all essential quantities in our overall mathematical modelling for low frequency design. Each of the previously discussed variables must also be quantified, with their respective components added to the overall mathematical model for the desired alignment.

**Q:** Or, is Avalon referring to the crossover transfer functions at  $Q = 0.5$ ?

**A:** Again, simply designating a specific transfer function for the crossover does not necessarily address the desired goal. In our case we have developed proprietary functions which maximise our most desired characteristics, namely phase and transient accuracy for the radiated sound.

**Q:** What factors are primarily responsible for the subjective gain in dynamics experienced with the *Compás*?

**A:** The previously mentioned transient and phase accuracy combined with low noise floor. Phase noise and energy storage will blur dynamic contrasts, both macro and micro dynamic.

**Q:** What could a purchaser expect to hear from the more costly *Compás Diamond* version, once acquainted with the standard *Compás*?

**A:** The primary function of a less deformable membrane such as super rigid diamond is an extension of bandwidth without the introduction of break-up by-products; thus lower noise. Simply substituting a stiffer diaphragm will not automatically get you more frequency response extension or better sound; in fact you must also preserve this gain in low level information from within the crossover circuitry and internal wiring.

The sonic benefit of the diamond diaphragm is similar to that found between the *Eidolon* and its *Diamond* version, a more open and relaxed high frequency presentation, and that in a certain sense it feels “less bright”. Of course maximum benefit will be realized when the entire system of electronics and front-end possesses extended and accurate bandwidth.

**Q:** The bass port is short and small, with relatively little output, what is its purpose in this design?

**A:** Considering the port as a variable in the previously discussed LF tuning question, coupled with internal baffling, it is an essential design variable used for extending the in-phase behaviour at low frequencies. This concept goes well beyond the usual simplistic discussion of group delay error, but instead gets to the heart of our sonic philosophy, that the subjective sense of time is the most important quantity in music and must be preserved.

My feeling to describe where loudspeaker design has gone generally in this regard is that of “disgust”. As a verifiable quantity and essential aesthetic quality, I feel that the valuing of the representation of time in sound reproduction has been unceremoniously left by the side of the road.

**Q:** Is it correct to say that the *Compás* is a 4ohm speaker but that the quoted sensitivity is scaled to an 8ohm watt, relying on a current reserve from a (solid state) amplifier?

**A:** This is correct. I’m still not quite sure that efficiency per se has much place in high-end audio as a quoted specification. Except for those who mistakenly think that efficiency is related to dynamic contrast. In my view issues of drivability are vastly more important than this single specification.

**Q:** Is achieving for the purchaser the inherent *Compás* timbre, its innate tonal balance, more reliant on room absorption than say an *Eidolon Diamond* or an *Idea*?

**A:** An excellent question for which I have only this answer: If the absorption of the room is smooth and even over frequency, the quantity of absorption should be irrelevant. Technically speaking, if a room is highly absorptive and there are no suck-outs that significantly color the sound, then only more amplifier power would be required to achieve a similar subjective result. Unfortunately in the real world the results of incompetently conditioned rooms will be blamed on the transducer.

**Q:** Compared with the *Eidolon Diamond*, are the larger mid and treble drivers in the *Compás* to do with the goal of increased dynamics and efficiency?

**A:** That wasn't my intention. The idea was to present a more open soundstage by carefully smoothing the polar response lobes. Stage width and depth are better defined in the new design through careful attention to detail regarding phase and the 3D, lateral off-axis lobing behaviour.

In my view the suggested increased dynamic impact in this design is little affected by those slight increases in driver diameters.

**Q:** I note that great advances have also been made for distortion in the new driver technology employed in the *Compás*

**A:** Improvements for intrinsic driver distortion parameters are significantly due to the radial magnetic

structures, and then the type of crossover and bass tuning alignment avenues they open. Once again, I consider that the actual radiation area is a less significant parameter.

**Q:** Are those Accuton drivers modified or special to Avalon?

**A:** Over the last 25 years or so we've developed a close working relationship with those who produce our most technically demanding components. We have encouraged and participated in many of the innovations you see in these particular drive units. Above and beyond this, controlling each of the driver parameters I have previously discussed requires custom specification and structures. Many of these characteristics, while essential for our proprietary combination of electroacoustical elements, would render them unusable and unsuitable for off the shelf applications.

**Q:** Will the traditional Avalon crisp veneer edges and corners be softened slightly to accommodate the new gloss finishes?

**A:** No. More 'shine' (when available) will be done without compromising the crispness of the form.

**Q:** And a range of matching grille cloth colours?

**A:** Don't press your luck; we're still trying to run a business here!

MARTIN COLLOMS

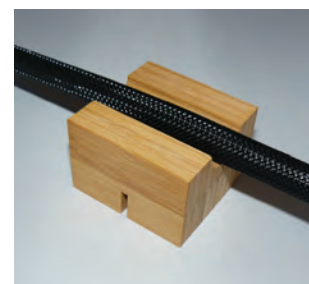
# Panda Feet!

STRICTLY FOR ENTHUSIASTS SEEKING THE ULTIMATE, PANDA FEET PROVIDE A DISCREET AND CONVENIENT MEANS OF SUPPORTING AUDIO (ESPECIALLY LOUDSPEAKER) CABLES FOR BEST PERFORMANCE. MARTIN COLLOMS TRIES THEM OUT

**M**anufactured for Dave Jackson at High End Cable by established audio stand maker Atacama, these renewable-resource eco-friendly 'carbonised' bamboo cable supports cost £100 for a set of four. The modus operandi is a reduction in the coupling of floor and frame vibration to the cable that is in contact with them, especially speaker cable where longer lengths may be exposed to a vibrating surface. In addition, if there's a dielectric effect on the cable, the supports will provide a largely air-spaced environment. The main premise is that by reducing conducted vibration, its consequences will be rendered less audible. The type of flooring

is relevant, for example whether plain wooden flooring or carpeted, and the latter is likely to have less effect. One face of each *Panda Foot* is slotted, the better to suit cables of ribbon construction.

We tried them in a high end system with both Transparent *XLmm2* and Naim NACA5 cables and found some improvement in clarity, focus and particularly in musical timing. The sound was less congested (already very good here) while subtly clearer transients and firmer bass sharpened the beat. On a mail order, return-intact-if-they-don't-suit basis, these cable supports represent a win win proposition.



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High End Cable  
Tel: 01775 761880  
[www.highendcable.co.uk](http://www.highendcable.co.uk)