

*Old and established it may
be, but Quad's traditional
approach extends only to its
basic philosophy – to make
accurate hi-fi equipment*

by PETER J COMEAU



QUAD 67

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Though Quad does not make a big noise about it, innovation has always been an element in the design process. The current 66 pre-amplifier places its control panel on your coffee table. Eschewing the 'point and press' approach, this marvellously ergonomic control unit floods the room with its infra-red output so that it can be held on the lap or placed next to you irrespective of the position of the hi-fi. Whereas the 67 CD player is supplied with a conventional handset, the 66 control pad has the necessary functions (play, pause, track selection and programme store) built in.

The featureless but brilliantly styled 66 front panel is matched on the 67CD by the triangular display window and a large, easy to find, drawer open/close switch. Pressing this gives you an indication of the advanced technology inside the player as the latest Philips CDM9 transport, with its fully floating platform for disc and laser head glides forward. It is now easier to drop a disc into the drawer recess, in fact the whole process of disc location and removal is now practically fumble proof – good news for those who find the little silver discs difficult to pick up and handle.

Other than a power button, and the aforementioned drawer switch, there are no transport controls, headphone socket or programming buttons on the front panel. While the stand alone operation of the 67CD is available through the supplied remote, the unit is obviously designated for the Quad 'rack'. As such I tested it with the 66 pre-amp and 606 power amplifier combination, on top of which it happily and elegantly sits.

Power interconnection between these three is supplied, so that switching from standby on the pre-

amp activates the other components. Interconnects are provided by Quad, but I found that much better results were available from more esoteric products in the Audioquest range.

Most CD players require a protracted warm up period before they reach their best performance; for some reason with the 67CD this was shorter than typical, there being no appreciable improvement in musical presentation after 30 minutes' use. During this period the output is a little coloured and lacking in the ultimate detail analysis, but never sharp or bright. Most users will be happy with the sound from cold, which fits in with the system standby method of operation.

Similarly there is little need for special supports for the CD player. Placing the unit on a lone Sound Organisation table certainly did improve the abilities of the Quad to sustain a deep stereo image, and those in search of the greatest transparency might care to arrange the units on something like a Tripod stacking table, but the move back to the Quad stack still retains 90% of the output quality. This may well be due to the new suspension composition of the CDM9 transport. It will be interesting to see whether other players using such mechanics maintain reasonable independence of mounting surface.

SOUND QUALITY

There is a certain synergy in the Quad combination described. Not only does operation become fool-proof (this is one of those remotes that you can hand to the technologically disadvantaged and still expect them to press the right buttons instinctively) but there is a balance of performance which is

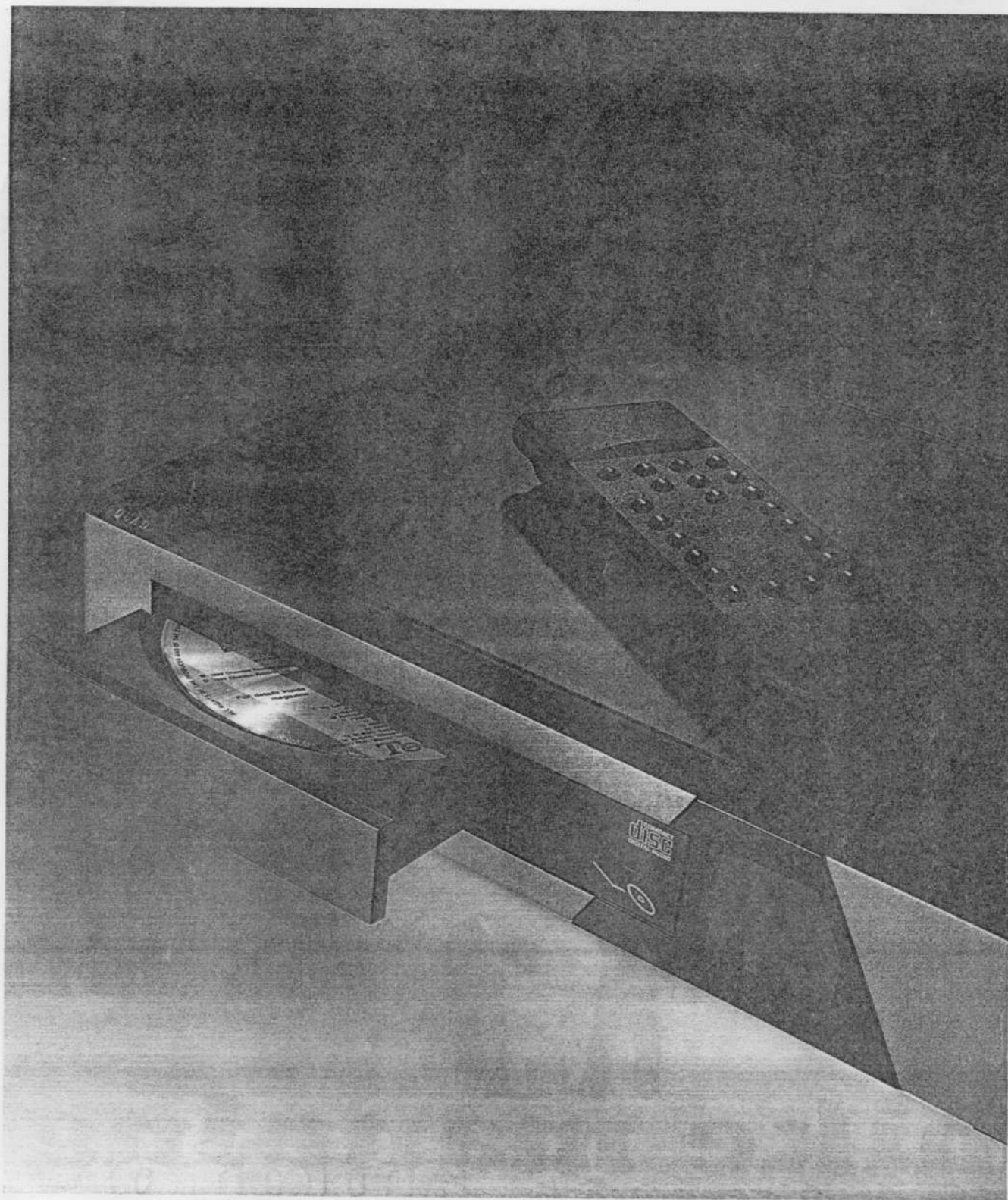
otherwise difficult to achieve. Slotting the 67CD into my current system of passive control unit and Chord SPM3000 power amp, the qualities of the player were immediately apparent. The first thing you notice is an outstanding coherence across the frequency range, with speed and dynamics unaffected by type of music or weight of tone. This harmonious balance encourages the exploration of musical relationships, making the interplay between voices or instruments attractive and enticing. Also astonishing is the depth of the stereo image; not over extended in width, the focus, however, is excellent across the soundstage and, where well recorded, stretches back behind the speakers forming palpable and believable images.

As befits a well balanced sound, the treble output is marvellously smooth and civilised without losing the brilliance of the original. In this instance the tidiness of the high frequency output is a detail enhancer, the lack of grain or any suspicion of roughness allowing treble minutiae to shine through.

Ambience recovery is generally very good giving – with the benefit of the deep, three dimensional image – a fine portrayal of the original recording acoustic. Where the Quad loses out to separate CD transports and DAC units is in the dying away of reverberation. There is cut-off a little too soon, limiting the full extent of the natural echoes of church acoustics, for instance. Otherwise, the precision and articulation of minor detail are exemplary, and the tactile quality of the acoustic effigies is highly satisfying.

Of course there is more to music than the straight reproduction of recorded detail. It is the presentation of timing and dynamics that frequently separates the accomplished from the also-ran hi-fi components. In this respect I found myself calling upon familiar two-box players, such as Arcam's D170/ Black Box 5 combo and the Meridian 600 series, to form an adequate comparison. There are few integrated units which blossom in this area, the Micromega Solo being one of the outstanding contenders. That we should therefore have to turn to vastly more expensive units to find a competitor to the 67CD is a compliment to the Quad design.

Once again 'civilised' is an adjective that springs to mind when assessing the musical characteristics of the 67CD. Fully at home with classical music, there is little to complain about the dynamic



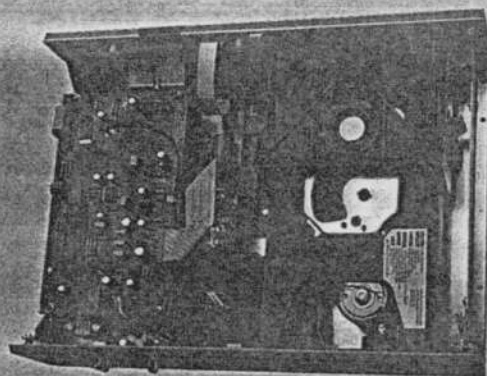
envelope, exhibiting a sense of scale that is perfectly in proportion to the performance. Given the harder, driving rhythms of rock music, the Quad does seem to hold back a little, tidying up brash midrange energy and holding percussion under total control. While bass energy is not compromised, and indeed extends downwards naturally creating a good foundation for the rest of the range, there is a lack of 'freedom' to low-end power and momentum as exhibited

by the likes of the Arcam. This can have the effect of taking the edge off the most exciting and precocious of pop offerings, mildly by sanitising the issue, which some listeners might prefer to the full blown, unadulterated presentation. This level of control is admirable when lighter musical styles are involved. Indeed the Quad is able to bring a level of structure to contemporary music, whether classical or popular, that can allow great insight into the more 'dif-

ficult' compositions or expositions.

The compact disc genre is not well known for extremes of passion and rapture, with only a couple of high end players offering the excitement that the best turntables were able to extract from vinyl, but the Quad does its best within the limitations of the medium. Unlike some units, the 67CD does not achieve presence and vitality by highlighting mid-range output; there are no spot-lit areas of the spectrum. Neither is

QUAD 67 CD PLAYER



undue warmth imparted to the sound in order to extract an emotional response from the listener. Instead, the Quad concentrates on musical form, leaving the performers to generate tension, anticipation and feeling through line and pattern. In this respect the ability to keep everything in its place is highly valuable; don't expect vocalists to pop up in front of you, but they will appear as almost holographic images between the speakers. The Quad does not attempt to shock you into attention with dramatic exposures or temperous outbursts, instead responding to the music in an utterly natural way and with admirable consistency.

Inserting the 67CD into the rest of the Quad equipment chain brings a new level of confidence and finesse, almost as though partnering with other equipment has unsettled the player. Naturally the 606 is unable to keep up with the delivery of the Chord, presenting a dynamically limited and more prosaic version of the latter's 'studio transparent' parentage, but the overall effect is one of balance and grace. This is a balance of strengths, not weaknesses, so that the pre-power and CD combination presents its best face to the world. The result is charming and delightful, and confirms the Quad's ability to remain unruffled under the duress of severe conflicts of musical form, retaining poise and decorum no matter which CD is thrown in the disc drawer. Old favourites remain that way, while the parts of your CD collection which have been gathering dust may just come up fresh and inviting. Certainly discs which have been put on the back burner because of their difficult recording or performance natures can suddenly become enjoyable, encouraging one to explore both old and new aspects of the art of music.

TECHNOLOGY

Inside the Quad are four simple circuit boards, two of which are concerned with transport logic and control and digital decoder, and one which carries the front panel display and operational micro-processor. The key to the straight-forward nature of the electronics is on the final pcb encompassing power supply and digital to analogue converter. This latest CS4328 DAC from Crystal Semiconductor incorporates all the components necessary, from digital filter to analogue output amplifier, on one IC. From the I2S bus serial interface each channel is fed to its own 8-times oversampling digital in-

terpolation filter and 8-times sample-and-hold with delta-sigma modulator section, translating the resulting 64-times oversampled 18-bit signal to a 1-bit bitstream. On a separate CMOS die within the package, two 1-bit DACs convert the bitstream to a series of charge packets which are applied to fourth-order switched capacitor, low pass, analogue filters. Any switched capacitor clock noise is quelled by a further second-order continuous time filter, leaving the analogue signal to pass through Mosfet amplifiers to the chip's output pins.

Quad adds its own final output stage with a first-order filter on the output of the DAC to remove any spurious, and the usual de-emphasis facility. The final traces of distortion are thus effectively lost in the noise floor, and the rise in spurious noise at high frequencies is extremely well controlled [Fig 1]. As is typical with bitstream noise shapers, low level signals are inhibited in resolution by noise at the -90dB level.

Thus our -90dB sine wave is recovered satisfactorily but overlaid with noise [Fig 2]. Linearity, however, at these levels is good and depreciates only below the -90dB level, with noise taking the prominent part in deviation [Fig 3].

Perhaps the best indication of the skilful blend of this new 18-bit DAC and Quad's surrounding circuitry is the 19/20kHz intermodulation test [Fig 4]. Both tones are accurately depicted showing just how well the level of spurious tones and distortion stays down with the noise. There are various benefits resulting from the use of the Crystal single chip DAC in the circuit board layout. As the typical three circuit blocks (serial interface, digital filter, DAC) are incorporated in one device, radiated noise is much lower than normal. In conjunction Quad has found that the I2S bus also radiates EMS interference strongly, and has concentrated on transmission of the signal over a correctly terminated line. In addition the L/R clock signal at TTL level is prone to disruption and has been heavily screened on its path to the serial input. Digital output from a phono socket on the rear panel is high quality S/PDIF.

CONCLUSION

Whether you are adding to an existing Quad system, or investigating players which offer something more than the humdrum output of the mid-market integrators, the 67CD is unlikely to disappoint. If this is a mark of the way Quad is going in the world of hi-fi fashion then they could generate many more dedicated followers. ✧

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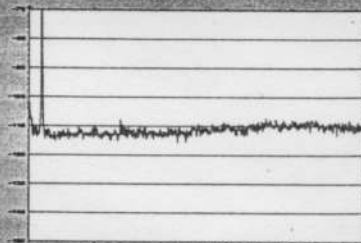


Fig 1. Quad 67: spurious (0-25kHz) from 1kHz tone at -70dB

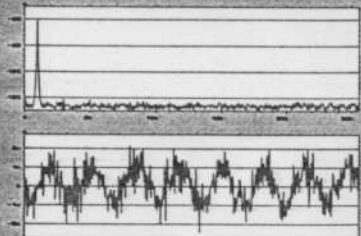


Fig 2. Quad 67: dithered 1kHz sine wave at -90dB, with distortion spectrum above

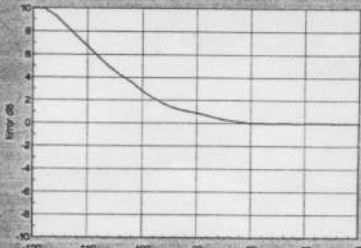


Fig 3. Quad 67: low-level linearity (below -60dB)

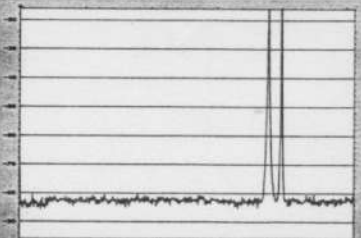


Fig 4. Quad 67: intermodulation from 19kHz/20kHz tones at 0dB

Test results				Quad 67 CD Player		
	20kHz	10kHz	20kHz			
Channel balance (dB)	0.05	0.05	0.05			
Stereo separation (dB)	105	103	78dB			
Distortion (0dB)	-91	-90	-92			
-10dB			-83			
-70dB			-37			
Frequency response L (dB)	-0.05	0	-0.01			
R (dB)	-0.05	0	-0.02			
De-emphasis (error in dB)	-0.04	-0.1	+0.1			
Output level (dB)		2.08V				
Track access time (tr15)		3.15secs				
Maximum program		50 tracks				
Error at -90dB		+0.9dB				
Dimensions (whd, mm)		321x80x275				
Typical price (inc VAT)		£790				

Supplier:
Quad
Electroacoustics
Ltd, Huntingdon
PE18 7DB.
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