

EVOLUTION/4-QUAD

(reprinted from August 16th edition of the L.A. Herald Examiner)

AUDIOGRAMS

by Robert Pierce Mercer

A few weeks ago this column addressed the reemergence of four-channel sound on the audio scene and this week the subject once again is worth mentioning. A group of people has devoted itself to keeping quad alive and to keeping interested parties up to date in the four-channel world. The club boasts a membership internationally of several hundred dyed-in-the-wool "quaddies," who receive a monthly newsletter containing all the latest fact — and even the latest rumors — about quad. The club is called Evolution/4 QUAD, 23757 Canzonet Street, Woodland Hills, Ca. 91367.

A recent newsletter features articles on the Magnivision Video Disk Player; a fairly detailed story on the Ambisonics Surround Sound System; a question-and-answer section where quad fans trade secrets about their little-known world; a section on current records and tapes encoded for quad reproduction; a section on speaker placement for the best quad listening experience; a classified advertising section where quad fans buy, sell and trade their wares; and reviews of four-channel decoders.

The most interesting item in the issue was the newest state of the art four-channel decoder, made by Audionics of Oregon. This decoder has been promised for quite some time but up to now it has only been available to insiders in electronics and to high fidelity magazine editors.

Greg Badger and Jay Frank of 4 Quad received one of the first units in town, which I heard perform last week. I must say that it's the best I've heard. Audionics call its device a Space and Image Composer, and the amount of control available to the listener is absolutely astounding. Tate Audio Ltd. and Audionics have really put together a unit that shows what quad is all about.

I took a number of SQ encoded disks with me to see how they worked through the machine and the results were spectacular. I have never liked many of the Columbia Records mixes of the SQ version of hit albums and the device could not change my opinion of those mixes, but for the first time I could really hear the separation that originally intended.

Jazz producer Ed Michel and a friend were with me and although Michel had some technical questions about the system,

he was impressed. He has mixed dozens of his own productions for four-channel sound using the Sansui QS method for Impulse Records. The unit worked very well on the QS records when played through the synthesizer mode, offering 30-40 db of separation all four ways. The discrete system of quad only claimed 20 db's of separation. The synthesizer mode might perhaps eliminate the added expense of mixing in four channels all together. Old stereo mixes are separated into beautiful four-channel sound with no added coloration or crosstalk at all. Certain classic two-channel recordings, like "Sgt. Pepper's Lonely Hearts Club Band" and "Magical Mystery Tour," are stunning.

There are plenty of controls to tailor the amount of separation to your own personal liking. The machine has none of the pumping or distortion that plagued many of the earlier four-channel devices. This one will, I'm sure, satisfy the most demanding critic. It must be heard to be appreciated. The units are commercially available for around \$900.

On The Horizon!!!

Future newsletters will include exciting and in-depth reports on the following topics:

- ★ Dolby Movie Sound
- ★ A guide to the selection of an optimized surround sound system for the home and car
- ★ FM Quadraphonic and AM Stereo
- ★ Digital Recording
- ★ Metal Particle Tapes
- ★ Broadcasting
- ★ Articles from key figures in the recording industry
- ★ Record Reviews
- ★ Video equipment

PLUS MANY EXTRA BENEFITS FOR THE MEMBER . . .

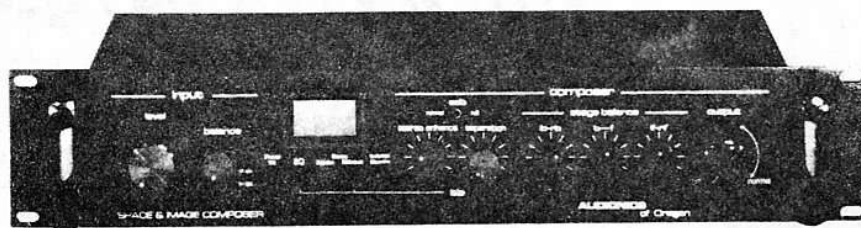
- ★ Club discounts on select items
- ★ High definition Audiophile and Quadraphonic Recordings (Artists such as Pink Floyd, Santana, Gordon Lightfoot and more . . .)

To become a member of Evolution/4QUAD see reverse side . . .



The State of the Art Four Channel Decoder by Audionics of Oregon

4 QUAD



SPACE AND IMAGE COMPOSER™

Reprinted by permission

Four Quad
23757 Canzonet St.
Woodland Hills, CA 91367

June, 1979, Vol. III, No. 3

1979 Consumer Electronics Show
Peter Scheiber Sonics
Audionics of Oregon

by Bob Hoffman

I had waited for this event for quite some time. This was my first chance to see and hear the Audionics Tate Unit and Peter Scheiber's 360 Degree Spatial Decoder.¹ Before I left the house, I picked out two of my favorite SQ² records: Santana's Greatest Hits and Blood, Sweat and Tears Greatest Hits. Why did I pick these two for demonstration? I have both in quad tape, so I know exactly how the discrete version sounds! This way I would know for sure how good these units replicate the exact quad tape.

The first stop was Peter Scheiber Sonics. They had the 360° Spatial Decoder on display, but it was not hooked up! According to their representative, Tony Fedarici, they were not planning on demonstrating the decoder. However, he did mention that they had sold over 100 units so far and they are backlogged with orders for over three months. In fact, famous composer Henry Mancini just ordered one! I asked Tony if he had the chance to hear the Audionics Tate unit. He did not have very kind things to say about the TATE people. Essentially what was said was the Scheiber decoder was the ultimate and nothing could surpass it. Hmmmmm—interesting!

With my SQ records under my arm, I proceeded to my next stop—Audionics of Oregon. Mr. Charles Wood was the first person I met. We sat down and had a question and answer session about the Audionics Space and Image composer.³ The unit was balanced, set up, and ready to demonstrate. I requested Charles to play, "Evil Ways" off my Santana's Greatest Hits. I didn't believe it!! It was just like the quad tape. **Instruments were distinct, clear and locked in. There was not a trace of distortion or image shifting.**

Next was a demonstration of a stereo record being synthesized. It was 4-Quad's own Dave Vaccaro and his stereo album "FM Black Noise." This album has some panning from left to right. The synthesizer worked very smoothly. It sounded like the album was specially coded for quad. I was very impressed with the way it bends the sound field into a horseshoe. The unit also has a control that is used to adjust how much separation is wanted in both the synthesized and SQ mode. Depending on what type of music is being listened to, the control can be adjusted for maximum separation or a pleasing blend.

I asked Charles to play, "I Can't Quit Her" from my B, S & T SQ Album with the front channels turned off. I simply couldn't believe it!! The rear channels sound exactly like they do while listening to the quad tape. I mean **EXACTLY** the same. There is not a trace of crosstalk. Audionics has done a superb job with their unit.

The final recording I heard was an RCA import album accidentally recorded in SQ (Charles Wood smiled when he told me that. Maybe that means something?). It was called "Quad Rocker." This album featured some electronic music that was consistently panned around the room. Needless to say, the Audionics unit did a fabulous job handling the material. Instruments and vocals were distinct, clear and discrete. **There is something more to this decoder that can't be explained with words. Instead of instruments being in a channel, they seem to appear a point in space. It was a very natural and smooth sound. You really have to hear this decoder to understand what I mean.**

To sum it up, I would have to say that we must take our hats off to Audionics of Oregon. All of us have waited a long time for this decoder. I assure you quad fans, the wait has been worth it. It has to be the most advanced piece of electronics on the market. I urge all 4-Quad members to audition the unit. You won't believe what you hear.

¹ TM, Peter Scheiber Sonics, Inc.

² TM, CBS, Inc.

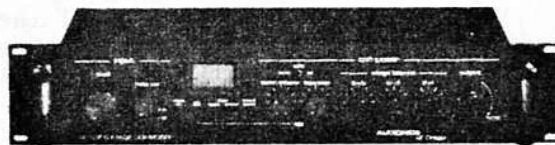
³ TM, Audionics, Inc.

(Bold emphasis added. Ed.)

AUDIONICS of Oregon

REPRINTED BY PERMISSION OF

HIFI BUYER'S REVIEW



Audionics Space and Image Composer

AUDIONICS

Many audiophiles will remember the quadrasonic 'boom' of several years ago. Despite heavy promotion, none of the systems available achieved any extensive popular success. Much SQ equipment was characterized by poor decoder design, leading to lack of separation and often audible decoding effects, while CD-4 required a special stylus, low-capacitance cables and an often expensive external decoder. Four-channel receivers and amplifiers were often technically deficient, and program material was limited in both quantity and quality. The buying public, faced with conflicting systems and inadequate material, largely ignored the whole affair, and quadrasonics apparently faded quietly away.

But before the much publicized advent of four-channel, a number of companies were already working on 'surround sound' systems, which are intended to reproduce a full ambient sound field rather than just 'ping-pong' four-channel effects. One of these companies is Audionics of Oregon, and after five years research they have developed what they call the Space and Image Composer. This is an advanced surround sound decoder designed to produce accurate results from SQ sources and also providing a Stereo Enhance model to generate sur-

round sound effects from stereo sources. The Composer measures 19 inches wide by 3 1/2 inches high by 9 inches deep, and weighs 12 pounds. Both cabinet and front panel are finished in black, with white and blue lettering on the panel. Construction is solid and precise. The unit is designed to accept a stereo, line level input signal, and provide four line level output signals to drive two stereo power amplifiers (or one four-channel amplifier). Many special features are built into the Composer, and a description of the front panel controls is probably the best way to present all the functions.

The unit is subdivided into three main sections. On the left is the Input section, with rotary level and balance controls. Next is the function select and display area, containing a row of five pushbuttons, and a multiple-LED display behind a red window. The pushbuttons select various operation modes. SQ switches the appropriate decoder into circuit, while Stereo Enhance provides a variation on the decoding characteristic more suited to stereo discs. Bypass allows the stereo input signal to be fed directly to the output, while External Discrete allows four-channel signals to be input for further processing. The most unusual function is Axial Tilt, which allows the user to electronically correct axial tilt errors in the phono cartridge to improve channel separation. This function

AUDIONICS
of Oregon

may be used in conjunction with any of the decoder options, and is also effective on tape sources to correct phase errors.

The display consists of six triangular LED's arranged in a rectangle, three along the top and three along the bottom, and these provide a direct dynamic readout of the spatial characteristic of the reproduced sound. A seventh LED in the center acts a pilot if no signal is present. On straight stereo material, only the top row of lights is enabled, while with surround sound all the lights are active in a constantly changing pattern reflecting the sonic image being produced.

The third main group of controls is the Composer, occupying most of the right half of the panel, and itself comprised of two sections, the Tate Directional Enhancement System and the multi-axis balance controls. The Tate system is the heart of the unit, providing all of the sophisticated decoding networks required to generate the surround image. Included in this area are the Stereo Enhance control, which sets the 'width' of the audio image, and Separation, which varies the channel separation in the SQ and Stereo Enhance decoding modes. The Solo Null switch is used during setup, and also provides cancellation of center front sounds for special effects.

The balance controls allow precise level matching of the four loudspeakers, and provide front to back, left front to right front, and left back to right back balance, all independently adjustable. The Output level control sets the overall volume of all four channels.

Inputs and outputs are by means of phono sockets at the rear of the unit, and instead of being mounted on the rear panel they are set on a horizontal extension of the main printed circuit board. This simplifies any interconnections which the user might wish to make or change with the unit installed on a shelf or in a cabinet. The rear apron also holds the four discrete input and left and right tape monitor sockets, plus a multi-pin remote socket. The vertical rear panel contains a two-pole AC outlet and the user-adjustable Axial Tilt preset potentiometers.

Laboratory Tests

One of the most important performance characteristics of a decoder of this type is its capability to determine the correct spatial location of the sound. Since most SQ material originates from records, we tested each corner-to-corner separation characteristic using the CBS Laboratories SQ test disc. The results were excellent, with maximum separation in most cases set by the inherent performance limitations of the disc and phono cartridge. A typical cartridge has a stereo separation of no more than 25 dB, and the Audionics Composer met or exceeded this figure on almost every measurement.

Frequency response was flat within 0.5 dB from 20 Hz to 20 kHz, and signal-to-noise ratio was confirmed at 80 dB (A weighted). Distortion measured less than 0.1% at output levels up to 0.5 V. Audionics specify maximum output level as 2 V, and we found that the distortion started to rise when we approached this figure. It is possible that the Composer might not develop sufficient output to drive less sensitive amplifiers, and we would recommend installing it in the Tape Monitor loop in such cases.

Listening and Use Tests

We were very interested to try the Audionics Composer, since we have been monitoring the progress of surround sound for some time, and are currently using a somewhat simpler decoder on our four-channel system. Our system includes four identical monitor speakers, and a custom designed and built discrete four channel amplifier. Interconnection was simply a matter of feeding the stereo output from the preamplifier into the Composer, and the four outputs from the Composer into the power amplifier. Users with a more typical receiver setup can use tape monitor outputs and inputs for the front channels, and any good quality stereo amplifier to drive the rear channels. For best results, though, the four speakers should be closely matched. Audionics have several suggestions for speaker location to suite a variety of requirements.

With the installation completed, we began the adjustment pro-

cedures. Although the manual we received was marked 'preliminary,' it contained comprehensive instructions for making the various adjustments necessary for optimum results. Using the test record supplied, it was a simple matter to check for correct speaker connection, and to set up the axial tilt and four-channel balance controls.

We auditioned a wide range of material, including both SQ and conventional stereo records, and tape and FM sources. A particularly effective use of the SQ medium is the recording of *Dark Side of the Moon* by Pink Floyd, which produced spectacular results, with precise instrument location and movement over the full 360 degree sound stage, and no audible decoding noise (a common fault with earlier SQ decoders). Classical material, on which SQ is used for creating a sound field rather than for artistic effect, proved to be very realistic when reproduced through the Composer. The precise positioning ability of the Audionics unit was a pleasing contrast to the performance of earlier SQ equipment, which often did little to enhance the sound.

Stereo material, too, benefited from the Stereo Enhance model of the Composer, although the effect varied depending on the microphone placement and recording technique on each individual source. Certainly, some recordings which had previously sounded a little dry were greatly improved by the added dimension of the surround sound field. Judicious adjustment of the Enhance and Separation controls allowed us to obtain the best results, although we found that in most cases little change was necessary from our initial settings.

In the Space and Image Composer, Audionics have substantially advanced the art of four-channel reproduction to the point where most of the criticisms of previous systems do not apply. The catalog of SQ records which Audionics thoughtfully supply shows an ever-expanding repertoire, and we feel that a surround sound decoder of this quality can be considered a worthwhile addition to a high fidelity audio system. — *Bill Burns/Mike Sharp*

AUDIO NEWS

VIEWS AND COMMENT
By LARRY KLEIN
Technical Editor

● DURING the recent Consumer Electronics Show in Chicago (covered in detail by Ralph Hodges in the September issue), I had an opportunity to hear a prototype of what can only be described as a revolutionary SQ-decoder "logic system" created by Tate Audio, an English firm. It has always seemed evident (to my ears, at least) that CD-4 discs—when they worked, that is—delivered a separation between channels superior to anything that any matrixed disc, however assisted by "logic" or other circuits, seemed able to provide. And without adequate separation, the location of the listener within the speaker quadrangle becomes so critical that channel balance can shift radically if one so much as moves from one end of a couch to another. I haven't tried to correlate just what "adequate" is with respect to precise decibel measurements, but I know it when I hear it. For me, four-channel matrix equipment that doesn't have *full* logic, wave matching, Vario-Matrix, or some other very sophisticated technique for untangling the channels is barely worth installing.

When listening to the Tate matrix decoder, however, if I hadn't known there was an SQ record on the turntable I would have sworn I was hearing either a CD-4 disc or a discrete four-channel tape—the separation was *that* good. I don't know how well the Tate unit will stand up under the toughest test of all—a direct A-B comparison between a well-recorded four-channel master tape and an SQ-encoded/Tate-decoded disc of the same material. But I've never been terribly concerned about whether or not I'm hearing a perfect sonic facsimile of what I would have heard during the recording session (it would be impossible with studio-made rock recordings anyway). What I want to hear in my home is music reproduced in a way that is either sonically plausible (if "reality" is the goal) and/or clean and interesting. The Tate decoder, depending on the quality of the SQ program fed to it, was both. With SQ discs playing, I could approach any one speaker and still hear apparently "discrete" sound coming from the other three. In addition, normal stereo discs, tapes, and FM broadcasts were reproduced with the best *synthesized* quadraphonic effects I have ever heard.

Tate won't reveal the operating principles, since their protective patents are still pending. In the form in which I saw it, incidentally, the four inputs of the black box were connected to the four outputs of a conventional no-logic SQ decoder—which indicates its potential as an add-on *super*-logic enhancer for existing SQ equipment. The Tate integrated-circuit modules will probably not be appearing in any original hardware for at least six months, but when they do, SQ will finally have an effective answer to CD-4's separation challenge.

Reprinted with permission from November 1974 issue of Stereo Review. Copyright © 1974 Ziff-Davis Publishing Company.



23757 CANZONET STREET
WOODLAND HILLS, CALIF.
91367

JULY 1979

ISSUE 4 VOLUME II

To say the very least, July has been quite a month for the struggling art of Quadraphonic sound. The Tate units which have filled these pages over the past year or so are now being shipped to customers as this is typed. Our 4 Quad members in France, Eric and Dominique Salles, will most likely be the first people in Europe to own a *Space* and *Image* Composer. Right now, in 4 Quad's possession is one of the units. IT REALLY WORKS!!! It does everything that it's claimed to do, and does it flawlessly. The unit is layed out well, feels and looks great. We even found that in some instances, that the separation was TOO discrete for our taste and had to soften it up! I never thought that I'd ever have to worry about a program being too discrete!!!

But this is the whole point. We are now at the crossroads of the dawning in the new age of surround sound. At the start, before all the various systems were presented to the consumer, all of us were entranced by the idea of quad sound. That was our audio "roots". Then came the competing companies with all their various systems flooding the market place with the "our system is better then theirs philosophy" and confused all of us. We, the consumer became split on our preferences. The manufacturers became split on what system they would build. Ultimately, between the splits developed a ever widening void. And into this void fell the idea of quadraphonics. It's taken a long time, but quad is slowly crawling out into the sunlight again.

Now that we have one system that truley exceeds any other on the market, it's time to move this important art form into high gear. Even if you haven't had a chance to audition the Tate unit, don't dismiss it as being the

audition the Tate unit, do not dismiss it as being the political hype for the SQ camp. It is definitely not!! It is the system that all of us expected ten years ago when we first jumped on the quad bandwagon. When your local dealer has one for demonstration, please do yourself a favor and go down for a listen. Or if you're ever in Los Angeles, call us and we'll be more than happy to accommodate you.

All 4 Quad is trying to get across is that we now have the system that all of us expected from the beginning. This is honest quadrasonic sound. It is now at our finger tips. What can we, as a club, do next?

QUAD NEWS AND VIEWS

****4 QUAD and AUDIONICS OF OREGON are making available the SPACE AND IMAGE COMPOSER (tate unit) to all club members. List price is over \$800.00. But, for a limited time, club members will be able to purchase the unit for only \$680.00!! Are limit is 80 units and they're going fast. The next run won't be until the end of summer and prices will be subject to change. So don't delay! All checks sent to us, will be held to clear up to 14 days and then sent directly to Audionics! Audionics will send your unit to you direct from their factory. Units are shipping NOW!!! Money orders will clear and be sent the same day if possible. Make all checks/money orders out to 4 Quad and send them to the club address...not to Audionics!!! These units are definitely HOT!!! Don't be left out!!!

****RETRACTION****Last month in this column we ran a special for PHOTOLUME on their SQL-400 decoders. Since then we've received many complaints about their lack of service and reliability. Many people sent money into PHOTOLUME and DID NOT RECEIVE THEIR DECODER. Do not send any money to this company. For those of you who have, please be patient, 4 Quad is looking into the matter. We will give you an up-date as soon as possible.

****The FCC is still on hold as they ponder the quadrasonic broadcasting question. Some insiders say that a decision will be forthcoming in this year.

****Many of you have been asking the question, "What has happened

(continued on page 16)

~~XXX~~ Recently, Charles Wood and Steve Kenedy of AUDIONICS, flew to Mexico City to visit their distributor. It would seem that Mexico might a Quad revolution over the SPACE & IMAGE COMPOSER. Their distributor has installed these units in every disco he can cover. Even the central park area, Chapultepec Park, will have two SPACE & IMAGE COMPOSERS installed just for the people to listen to as they stroll through or sit in the park to have lunch. It will be a permanent installation! (Take that and play it, in Joubert Park fans!) Anyways, their distributor is so enraptured by this unit, that he has personally installed not one, but three SPACE AND IMAGE COMPOSERS in his private residence! That proves the fact that the AUDIONICS unit sounds fantastic in any language.

~~XXX~~ Now for the bad news. We heard that FOSGATE ELECTRONICS who were involved with Quad with their TETRA I & TETRA II units are closing down as their are bank rupt. One of our Quad hopes that desapears, we are sincerely sorry for FOSGATE.