Cello Chorale Preamplifier and Cello Rhapsody PowerAmplifier:

Technical Analysis by Fulvio Chiappetta

The technical analysis of the Cello Chorale/Master and Rhapsody has been as uneventful as any in recent memory. Even so we enthusiastically tested both to standards that bordered on the harsh.We checked the output power with every possible load. The result: even better than Matthew James specifies.We checked the input impedances. The result: so high that you could get dizzy. Both preamp and amp will mate excellently with any other high-end component connected to them.We checked noise and distortion. The results aren't worth mentioning.As stated at the outset, completely uneventful.

Are they perfect components? We have to presume that nothing man made can be truly perfect. And so with real excitement we went beyond the norm in trying to locate the weak point of these Cellos.

So, do they have a weak point?

While I believe that most certainly they must, I did not manage to identify it.

The circuits are the continuation of a design tradition going back some number of decades, through some number of design revisions, to the point where these products are rich with sophisticated solutions. It is quite an extraordinary thing to witness so many together in the same equipment.

What is certainly unique are the choices made with respect to the quality of the components and the intricate assembly techniques. The solutions chosen are admirable, both beautiful to see and extremely high performing.

While all internal components are carefully selected, a particular mention for the power semiconductors, deserves special mention. In production quantities, individual electronic components seldom cost multiples of other similar components. Even though there are some exceptions, for instance a 1% resistor, or a capacitor that exhibits great stability, surely costs more than normal production ones, yet they do not represent significant increase in cost relative to the entire product.

So why do we underline the choices of Cello in this regard? Let me cite an example:

Cello decided to use metal case enclosed power semiconductors in the power amplifier and the preamp power supply. These components do cost more than normal ones, but this is not the heart of the difference. Metal case components do not simplify the mounting, at the contrary the require an exacting degree of detail at the design level and much more time to be mounted and connected in production, operations which must be done by specialized personnel. In this case the choice of metal case components becomes a costly one primarily because it requires extremely careful manufacturing in which the cost of the part itself is not an important parameter.

The advantages brought by the metal case semiconductors are various but one is of particular note: their unit to unit performance and reliability are higher than average and we'll see hereafter how the manufacturer wisely used this advantage.

Internal view of Cello Preamp. It's easy to notice the components quality: capacitors of signal coupling and power supply decoupling are made by WIMA and they belong to the polypropylene series (MKP) much better than the MKT series in polystyrene.
Remarkable: A particular mention for the shielded interconnect cable, deliberately made with wire rather than with a circuit: it's a handmade cable of the highest quality silver with dielectric and protection made in Teflon.

A special mention must be made of the tightness of the manufacturing tolerances: starting from the sumptuous and massive chasses, continuing with the sturdiness of the circuit boards, and finishing up with the copper bar delivery of the audio signal into the critical sections of the circuits. All is indicating a true enthusiast's care both in the materials chosen (some really special and of military standard quality), and the extremely precise mounting of the components themselves.

THE ELECTRONIC CIRCUIT

We did not examine the electrical schematics of this Cello components but, as we remarked earlier, it is not far from the classical high standard schematic. In more detail we note techniques like current mirrors in order to improve symmetry, and power stages made of semiconductors in a cascade configuration, providing exceptionally clean current gain. However, the situation here is completely different from previous classic designs.

Normally the designer is obliged to overcome some component's deficiency, in particular active components, with circuit strategies to compensate or at least diminish that deficiency. In the Cello's case, the things are very different.

The Matthew James design team started from the hypothesis, largely verified, that the components chosen have almost ideal characteristics, so that the circuit can be simplified, in the interest of maximizing all aspects of the signal path.
What we find in the Cello products is that the real secret in the performance excellence lies in the individual components.

MEASURING PERFORMANCES

We already noted that the Chorale and Rhapsody displayed an excellent behaviour without any exceptions under test conditions. Disappointed from having not managed to put the Cello in any difficulty, we decide to run a test, exclusively for the Rhapsody power amp, which only a few amplifiers may hope to pass without problem.

The speaker interfaces the amplifier as a load with its impedance: all know the impedance is varies in relationship with frequency, but just a few are aware that the impedance is a function of the instant in which it is measured. The correct load to test an amplifier is certainly not a resistive one, but rather the load offered by a real speaker whose impedance changes in function both of frequency and time.

In order to test our amplifier in a condition near to the real thing, we linked the Cello Rhapsody to the most difficult speaker we happened to have at the Magazine. Just to give an idea, the impedance reaches values far below 1 Ohm with worrisome phase fluctuations. In order to measure such a load is not easy at all, because under these circumstances, the measurement can easily be influenced by the connectors' and cables' resistance.

After connecting the speaker to the amplifier, we input a trapizioidal wave, a very peculiar signal with a quick rise, which makes it easy to detect any kind of compression. In this way you can also easily detect any insufficiency in the slew rate. The Cello amplifier did not show any sign of weakness at all. We were encouraged by such a start and bridged the amp into a mono configuration, driving the 2 speakers in a parallel configuration on the same channel. Astoundingly the Cello accepted without any problem such a heavy duty application. "Heavy duty" is a euphemism when you consider that this way the load represented by the parallel speakers is lower than 1/4 ohm. Even at high volume levels The Rhapsody amplifier did not show any hesitancy. Even though the Cello amplifier is equipped with electronic protections, the protection is so well conceived and implemented that, in normal usage conditions, the amp transistors behave as if they were absolutely free to deliver as much current as requested by the speaker load, without any limitation.

We also repeated the test connecting a ¼ ohm resistance to the amplifier output and since this is a static load we had to drive the system with short bursts of square waves. The Cello amplifier did not show a single sign of stress even with a peak-peak signal of 20 volts! The secret of this generosity is to be found in the power transformer, in the amplification circuit, and last, but not least, in the amplification transistors in metal case.

Internal view of the Cello Power Amp. You can see the toroidal transformer, the filtering electrolytics, remarkable the great bars to deliver the high alimentation currents into the amplification SHEDE. A remark also for the cooling section hosting the power transistors: Cello deliberately choose a complex mounting technique, consequently a costly one, which delivers many sonic advantages.

The Cello Chorale Preamplifier and Rhapsody Power Amplifier from Matthew James

by Andrea Della Sala

The system we are presenting here, from Cello by Matthew James, is as close as I can imagine (who really knows for certain what is on the record) to perfection.

Cello Rhapsody

Cello Chorale

Cello Master

Let's begin with a bit of history.

Cello is universally acknowledged as one of the most important, respected and famous brands among audiophiles. The true origins lie back in the 1970s when Mark Levinson founded Mark Levinson Audio Systems (MLAS). What only a few know, and it may be helpful to clarify, is that good old Mark was not a designer, but rather the marketer behind the brand. Mythical, revolutionary and great sounding products like the ML-1, ML-6, and ML-7 were designed and developed by people like John Curl, George Mayhew and, in later times by Tom Colangelo and Daniel Schaar (yes, Mr. Micromega).

In 1984 Mark lost his company, though bankruptcy, to Madrigal Audio Labs. And this is when Cello starts. In 1985 the fantastic Audio Palette and Audio Suite were introduced by Cello, in 1986 the Performance power amps and the Amati speakers, and in 1988 the Encore amp and preamp, and in 1990 the Palette Preamp. I don't know the effect on you, but my hands are trembling simply writing these prestigious names all together.

In these early days, Cello products were direct derivatives of the best technology from MLAS.

But Mark was always enamored with new adventures and opportunities, and this lead him to realize a project out of

"audiophile scale" which included 7 North American Cello Music & Film Showrooms (the NY and LA versions of which also included a men's fashion design fitting room, and in NY a gourmet restaurant). During the year 2000 Cello Technologies closed all of its activities (including the Cello, Ltd manufacturing division) because it was losing too much money due to a business structure too lofty for the real potential of high end audio.

Within 6 months, Matthew James purchased the assets and licensed the Cello brand name. Development activity restarted in the original factory in New Haven Connecticut and Matthew James examined all evolutions of the products designed by Cello Ltd. They evaluated objectively both the strong and weak points, even if it is acknowledged that we (and they) are speaking of absolutely excellent products. The attentions were concentrated on the potentiometer, power transformers and chassis. The present chassis are milled from a massive block of aircraft aluminium and are completed with 3 specific feet able to dissipate the most part of the vibrations. The potentiometer is, and for once it's actually true, derived from aerospace technology and the preamp power supply is housed in a separate chassis.

DESCRIPTION

CHORALE PREAMP AND SEPARATE MASTER POWER SUPPLY

The Chorale is an elegant two chassis preamplifier. Identical in dimensions and in their considerable weight, the Chorale and Master top covers are vertically carved with an axial blue interruption in the heavy front panels. Centrally, in the blue part of the front panel, is hosted the complex and fascinating volume attenuator flanked by the input and monitoring knobs to the left and the individual channel balance controls to the right. The Cello products are completely crafted by hand, and when I say completely I mean it. Every single part is hand soldered onto the mother board circuitry.

All the internal wiring is realized by handmade, carefully grounded and shielded with Teflon, silver cables of substantial size. As with the volume attenuator, Matthew James determined to make the cable themselves as there wasn't anything available at the required level to meet the Chorale project standards.

The partnership with a mechanical company operating in the military field, made it possible to improve considerably the precision in the metal shop of the machining of the various parts of the volume control. A metal matrix of Gold, Silver and Platinum, grants the attenuator contacts stability up to 50 years, eliminating consideration of any of any remote or motorized volume controls. You will have to set the desired volume by hand, actually getting up and sitting back down in your chair. The decision not to incorporate remote control the volume control, allowed for the decision to use the highest performance mechanical contacts for input selection and monitoring.

The chassis is made out of heavy aluminium and the front and top panel are extensively machined. The feet are made out of tempered steel and are also chromed and treated with a hardening process using diamond particles. Within each foot three stainless steel balls suspend the Chorale, almost as if were floating, always on 3 points.

The Chorale is provided with six (6) inputs: one (1) phono with adjustable gain to match most cartridges, four (4) single-ended line level inputs and one (1) balanced input. There are two gain regulators with a range from 0 to 10 Db which allow the best matching with particular amplifiers and which, ifset at different levels from each other, making a extraordinarily well conceived balance control.

The Master power supply is linked to the Preamp with a multi-starnded cable, locked in place with screws and spades, this is a rare thing. A part of the Cello philosophy holds that, in many circumstances, the use of a pre-made connector limiting signal or power flow, for some cosmetic consideration, is impossible to conceive, and for this reason both the power supply's DC output and the amplifier's speaker outputs must be secured in a metal-to-metal contact, with spade lugs or bare cable. The purpose built spade lugs on the DC cable and Cello Strings speaker cables are made from pure copper, flashed with a rhodium (including silver particles) finish.

RHAPSODY AMP

Basically, the Rhapsody amp shares the same industrial design (although much larger and far heavier) as the Chorale preamp and Master power supply. The Rhapsody also shares the same isolation feet as the other Cello products. The on/off button is located on the central blue area of the faceplate of this quite substantial unit.

The Rhapsody is specified by the manufacturer to deliver 200 watts into an 8 Ohm load, and 400 watts into a 4 Ohm load. The design goal, quoting Matthew James', has been to build an amplifier capable of remaining stable under every possible load, with the greatest dynamics and the minimum distortion level possible.

When opened, the Rhapsody reveals a number traditional high end audio solutions, as well as high tech solutions (consider the solid, flat cables that conduct the signal (internally) from the amplification devices to the speaker connectors, the audio signal with silver and the ground with copper, and shielded with the space age material Kapton!).

That said, internal wiring is kept to a minimum and the quality of all of the internal components is simply incredible.

THE SOUND

As I wrote at the start, I have to clearly state that my initial impression left no doubt that these are masterful audio components, well beyond the ordinary, and capable of astounding

On the Rhapsody back at the left the 3 channel outputs are realized to accept only bare cable blocked with it's screw.. At the centre the RS 232 link.

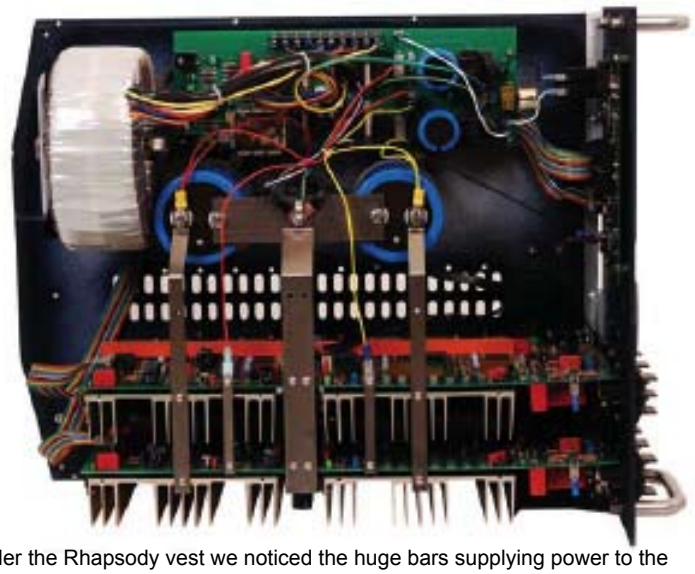
The Chorale's beautiful back panel with it's connections: left to right the multipole link to the Master power supply, the fixed monitor outputs, the variable outputs (managed by the mighty attenuator control), the RCA, XLR and Phono inputs.

The Master external power supply back panel shows on the right the multi-pole connections to fix the sleeves of the multi-pole cable (pay attention to the colour code).

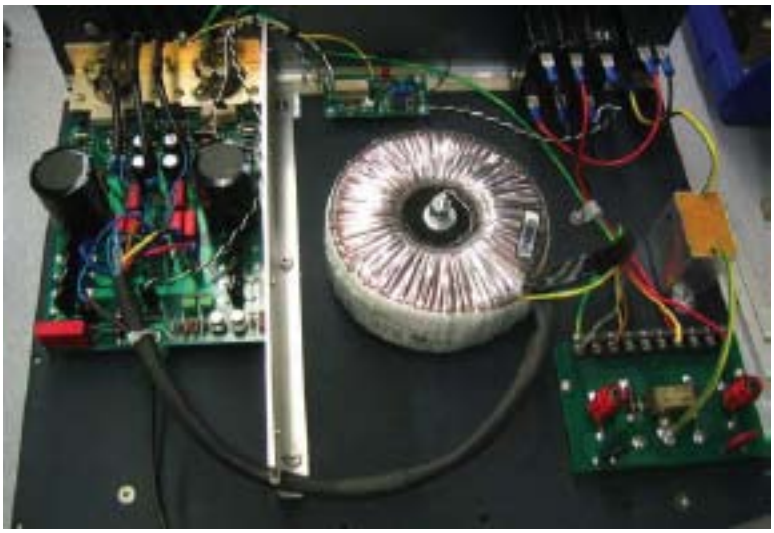
performance. I must hasten to add that there should be no misunderstanding, these are expensive pieces of equipment. Even though the manufacturer and distributor have managed to make the products available in Italy at the same retail price that they are available in the US (and everywhere else in the world; this being something unique in audio that we must acknowledge and praise) we are still considering equipment that very few people on this earth can even consider purchasing.

There's no question that from a $23,500 preamp and a $20,000 amplifier one should expect nothing less than superior performance. However, in our fascinating world of high end audio, where sometimes the only certainty is that nothing is for certain, we occasionally get to go beyond the even extraordinary and glimpse nirvana. When dealing with products universally praised by the international press with superlatives, we can yet appreciate different approaches from different brands, and sonic results that are occasionallycompletely different from another. Nevertheless, truly high end systems, unique unto themselves are typically correct with respect to frequency response, speed and dynamics.
Even so, it is possible to make a discrimination smong even those components that are amongst the best. I am thinking that even when we judge a system to be transparent, coherent, and pleasant, we must yet determine how much it diverts from the only real rule to be targeted when designing a high end audio system: achieving absolute neutrality with respect to the signal to being amplified.
This single rule holds true for every piece of equipment, including source components and loudspeakers, but it's in the electronics, which amplify the signal by a factor of dozens, where there exists the greatest risk to "color" the sound.

I preferred a sound that is reflective of the sound of music performed naturally, as opposed to sound that appears even more beautiful than the real thing. No gratuitous euphony for me, of course. And while I am an



Under the Rhapsody vest we noticed the huge bars supplying power to the amplification boards, behind the front panel the big transformer.



Internal of the CELLO Master power supply. On the left the big board includes the rectifying, the filtering and stabilizing sections of input current: the components used are of the highest quality; in particular, a part from the electrolytics, outshine the power transistors in metal case, a very particular component chosen for the high reliability. On the right you may notice, a part from the huge toroidal transformer, a RF filter realized on custom specifications just to underline, if still necessary, all the attention the manufacturer paid to all the details, including the suppression of spurious signals, always present on the electric network.

enthusiastic lover of realism in timber and soundstage, I also love that comforting sense of the "warm glow of a sunset", to use a visual analogy for the ideal sound to be composed by my system. Up until this moment, the amplifier nearest to my conception of coherent and lovely sound reproduction has been the recently reviewed Lamm 1.2. It has, coincidentally, a similar kind of sound to that produced in the past by the Mark Levinson and Cello amplifiers, as well as the sound produced by the Violas, themselves designed by staff previously involved at MLAS and Cello, Ltd.

This extended introduction is intended to make completely clear that I never, ever listened, until today, to an amplifier and preamplifier capable of handling audio signals with neutrality, control, speed, and such a sense of absolute transparency and such an organic state of readiness to let the signal flow through them without any suppression, modification or apparent distortion.

At first, I have to admit I was actually surprised because the sound seemed different from what I was expecting. As the days passed the initial surprise turned into enchantment, and then on to absolute love and finally into a sonic addiction, really difficult to put down.

Every other piece of electronics sounded, in comparison, “fat”, “slow”, and somehow “dirty”. As difficult as it is to return to the rest of the real world, I can do it only with the consideration that I have had the pleasure to evaluate two components whose sound is as close as is possible to the original sound as I have heard. I take some solace knowing that if they sounded like my reference electronics (even though these are quite good sounding) then there would b no reason for these Cello products to exist and cost the equivalent of an average annual salary.

In my listening room at home, with the Kharma speakers, the conclusion of my evaluation can be expressed in the three areas which define the unique character of these components:

-The highest, absolute, most infinite sense of transparency
-Breath taking speed (both rise and fall)
-Total control of every transient, with every last bit and micro detail of information in the bass range clearly audible as never before.

From these capabilities flow dynamics so natural, and immediately recognizable to those experienced with live music, that any further comment would risk tainting such a basic and essential concept as naturalness (everyone recognizes the naturalness of timber, speed and sound, even in a fallen object). From such a great transparency comes a reconstruction detailed and focused, able to depict with outstanding skill and precision any location of the instruments relative to each others location and with respect the entirety of the sound space around them.

The great control over the entirety of the frequency range, and it’s important to emphasize “the entirety of the frequency range”, allows upper harmonics the potential to be heard and to clearly distinguish one timber from the other, to distinguish a fundamental from its harmonics. And this is to say that through this same ability at the other frequency extreme, in the bass, new life is given to records you’ve listened to throughout your life, simply by revealing every little nuance, many never previously heard.
While all of this is wonderful, the Cello user is obliged to carefully consider the matching with speakers and the particular listening environment. In the end the only thing I missed was a bit more of involvement sometimes provided by other electronics through increased energy in the bass frequency range. The problem is that while those other electronics appear to provide give more bass frequencies, the truth is now clear that this sound is an artefact, the result of them not being capable of completely controlling the speakers and playing only what’s on the recording.

When you face a speed and control, like the ones of the Cellos under review, that do not diminish any harmonics or details, you can be sure you have found not only a great audio components but also a milestone by which to measure the extent to which all others diminish or add to reproduction. My advise would be to couple these products with big loudspeakers that are both coherent and speedy, in order to achieve the subtle pleasures of a naturally proportioned bass. With this you will be treated, at last, to the way music can and should sound, with the ability to convey emotion, and even, as with music itself, to make you cry.

To support my theory, I listened to the CELLOS with a high quality omni- directional loudspeaker, capable of delivering a terrific bass but contemptuous of amplifiers unable to control them. And the result did square the circle. The soundstage enchanted all the people at our magazine, the graphic designer included. The harmonics conveyed the presence of music throughout the whole listening room, while the dynamics

reached the level of an AC/DC concert with a total absence of grain. Again I must emphasize the necessity of finding the best possible match with associated equipment, when we are dealing with such “thoroughbreds” as the CELLOS.

CONCLUSIONS

These Cello components have been designed to be the State of the Art in high quality musical reproduction. In my opinion, the target is absolutely achieved. This definitive couple, the Chorale preamp with its Master power supply and the Rhapsody amplifier, although only available to the very few, most wealthy among us, provide a guarantee that the listener will be hearing everything on the record, and only what is actually on the record.

Components like these establish a benchmark, which occasionally allows a company to produce a generation of less expensive, capable of approximating the sound of the original. It is my personal hope to someday discover future Cello products at a lower price. Perhaps this hope will only remain a dream, given the exclusivity of the products produced under the Cello brand, but I am allowed to have my dreams.

Long live music!