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Michael Yee Audio PA-3 Power Amplifier

And Musical Surroundings Super Nova Phono Preamplifier

Review By Ron Nagle

Mike Yee seems to have befriended me, I'm not exactly sure why but I think it's all to the good. It turns out that he designs and manufactures Audio components that I think have a musical purity hard to match anywhere else. In a phone conversation Mike explained his methods. I'm going to have to paraphrase his explanation a little because some time has passed. Mike: "I first breadboard an electronic circuit and then pass an undistorted signal through it. Using a computer program I extract the spurious contents (distortion) impinging on the original signal as it exits the device. The process then is to find and analyze and eliminate the causes of the distortion". This refining process is something he now refers to as *Tonal Imaging*.

Before I ever met the man I knew albeit indirectly about Mike Yee and his work. As you might know he was commissioned by Garth Leehrer of Musical Surroundings to design the cost effective Phenomena Phono Amplifier. I first met the designer of the Phenomena in room ST1906 at the St. Tropez hotel. I was in Las Vegas attending the 2005 Consumer Electronics Show (**CES**) and The Home Entertainment Show (**T.H.E. Show**).



It was a freaky January in the desert with down pouring rain. At the time I thought I would sit down for a quick listen. But after a while Mike and I struck up a conversation about a new circuit refinement that he wanted to implement, one that would replace the PA-2 amplifier circuit. He asked me if I would like to beta test this new PA-3 amplifier design for him and so I agreed. I think I should take a moment to explain his approach to circuit design. Let me now quote from the Michael Yee web site. "My research has lead to the concept of *Tonal Imaging* and this in turn has lead to the development of harmonic integrity. When we evaluate component systems it enables us to subjectively listen for characteristics of the various images. These characteristics are: location, size, focus, realism and stability. In this way, we listen to tonality indirectly and if these characteristics of the images are good, than tonality falls into place". There is more to this conceptual approach but in the interests of brevity after reading my review you can visit his website.

The PA-3

I guess it was three months after the 2005 CES that a kindly UPS man delivered the PA-3 prototype amplifier. Thus began a sonic journey that has lasted nigh on to eighteen months. And even now as I write this I still can be surprised by small but audible details I hear in a performance. In the last 19 months I have used the MYA PA-3 to review four pairs of speakers and three sets of interconnects and two pairs of speaker cables. I used this same amplifier for the Enjoy The Music June review of the Reference 3A Aveena speakers. There are many unique innovative aspects of this design still the PA-3

is an amplifier adhering to an ethic of straight-line simplicity. It is basically a 25WPC Class A Mosfet dual mono one chassis amplifier. The most unique aspect of this PA-3 design is its differential current source output stage. This output works as a current mode source to the speakers and generates a more organic sound.

With the top cover removed there is not a lot of junk in the trunk. Upfront just behind the 0.25" black anodized faceplate are two very standard looking silicon steel laminated plate transformers. Most of the business inside is on a circuit board mounted vertically on the back panel. On the outside of that same rear panel there is a fairly large heat sink that runs too hot to touch. Then on either side of this same heat sink are RCA plugs that only allow for the use of unbalanced interconnect cables. Additionally at the back panel you will find a pair of standard plastic 5-way speaker binding posts and a receptacle for a 115-volt IEC style line cord. Knowing something about the effort Mike Yee takes in refining his circuit designs I'm not at all surprised that the inside of his amplifier looks under populated. After all if it doesn't help than it doesn't belong. Last but not least I must not fail to tell you that at the present time the PA-3 amplifier is in production and replaces the PA-2.

The Musical Surroundings SuperNova Phono Preamplifier

Let us wormhole our way one year ahead to the present time. It is DeJa Vu all over again as I stand in AP 2103 that's Michael Yee's room at the Alexis Park hotel. This time it is CES 2006 and Mike is proudly displaying his new baby the SuperNova. In the course of this conversation he suggests that the very best way to evaluate this new component is to run it straight into his PA-3 power amplifier that I have in my home. And so



not long after that I received his finalized production design/version of the SuperNova. And so I have taken on the task of Beta testing this latest and greatest Phono step up stage. The task of reviewing A Phono Preamplifier is absolutely the hardest job any reviewer can take on. That would be normal for any electronic component placed right in the middle of a highly interdependent audio system. You can screw up any analogue Phono Preamplifier in two basic ways. We can divide these gross set up errors into two broad areas. The first is failing to adjust the settings of the Phono Preamplifier so it does not optimize the cartridge and secondly failing to optimize the arm and cartridge setup geometry. Beyond these obvious errors there are countless smaller interacting adjustments that might compromise performance. Keep reading I have some more information about cartridge setup farther along in this review.

If we consider all of the possible cartridge settings that are available with the SuperNova I think you will agree this Preamplifier just happens to be the most flexible feature laden vinyl Preamp made anywhere. The gain stage topology is designed around large area monolithic super matched bi-polar transistor pairs and the component layout is kept as short and simple as possible.

The physical appearance is of two separate black anodized boxes connected by a ribbon cable. The power supply is a box with an IEC style power cord in the back and a Light Emitting Diode and square shaped push button switch on the front panel. The rectangular control Preamplifier is mounted vertically with a slight backward tilt. The thin profile black anodized enclosure is supported by an "L" shaped bracket. The chassis sports two large selector knobs on the front face. Between these knobs are two red LED power-indicating lights one each for left and right channels. The left side knob is a high quality attenuator marked with 11 switch positions 9 of these positions have markings in negative decibels.

This attenuator would normally be used like a volume control with the Super set up and wired straight into a power amplifier. The first leftmost position is labeled MUTE rotating the attenuator knob clockwise the settings range from - 17dB on up to -0.5dB and the last position is marked at 0dB corresponding to full gain.

The knob on the right side is the source select with 3 positions one for each cartridge input section. The rear of the control panel is the place where the 3-section cartridge input RCA female plugs are located. There are a total of 10 RCA connectors, two for each of the 3 input sections and 4 more for the two output selections labeled Pre-amp out and Power amp out. At each of the 3 sections there is a cut out on the rear panel allowing access to board mounted DIP (dual inline pin) red colored switches. Each of the 3 amplifier sections has two separate right and left channel loading and gain switches. The larger DIP switch has at switch position 1 a capacitive loading option there are 2 capacitive loading positions on this single switch of either 200pf or 300pf that correspond to a off and on. On the same DIP switch positions numbered 2-8 are additional values selectable for resistive loading.



On the back panel are two separate left right channel 4-position gain switches for each input. The loading DIP switches allows for a binary on/off selection of 44 different values of resistive cartridge loading ranging from 31 Ohms up to a maximum of 100,000 Ohms. The gain DIP switches provide gain settings ranging from 40db up to a max of 59.9db. There are 256 possible combinations of loading settings and 16 independent combinations of gain settings that are separate for the left and right channels. And all that is true for each of the three cartridge inputs so you could conceivably multiply all that by a factor of 3 for a total of 816 settings and again by 2 for left and right channels for a total of 1,632 possible adjustments.

Hold on because there is more to come, there are two choices of amplifier out put. You can go dedicated vinyl source straight into your power amplifier or chose the more normal route into a preamplifier line input. The SuperNova has an out board battery power supply that provides a trickle charge to it's NiMH battery pack whenever it is powered on. Four seven cell NiMH "AA" battery packs provide power, one for each positive and negative power supply section for each channel. When the battery pack reaches full charge a blinking red light emitting diode now goes steady state red. At this point you now have a choice, you can press a button on the face of the out board power supply and run on pure battery power at this selection the indicator LED turns green. Or you can run off of the battery charging system if the battery is depleted. Normally you should be able run the system for 3 hours just on battery power and when the battery charge drops below a preset level a sensing chip turns the charging system back on.

The Devil Is In The Details

It occurs to me as I write this that in this digital age there are some who may be just now buying their first record Turntable system. I would not recommend this device for any novice vinyl spinner who has not done a little homework beforehand. I'd like to comment at this point that you should start out with a fairly good working familiarity with turntable basics. The mounting and alignment of a cartridge in a tone arm is of course the first step to master. But for this Phono Amp review I will have to assume that you have already mastered that phase. And so I think we should look at the many myriad cartridge interactions or maybe I should sub title this as a primer of the many ways not to screw up. Understand that some of the setup values can only be found and finalized by listening and then fine-tuning your

adjustments to get the best sound. That said I will cover some basic principles concerning this older audio medium. The grooves cut into the vinyl surface of a record are a physical analog of the sound patterns of the original performance. A vinyl cutting head mounted on a lathe is powered by an electrical sum and difference signal that cuts the grooves in a blank master disk. These grooves mimic the sound pressure waves of the original performance. A company called Westrex was a pioneer of this process and manufactured many of the cutting heads that are used in disk mastering. In order to reverse this analog encoding an accurate copy of the original electrical signal must be generated by the cartridge and stylus. This requires us to consider the adjustments we can make that will optimize our results.

A Primer

Generally speaking capacitive loading is used with moving magnet cartridges and has lesser effect on moving coil cartridges. Moving magnet and high-output moving coil cartridges generally use resistive loading somewhere around 50,000 Ohms. Low output moving coil cartridges typically use resistive values for cartridge matching below 1000 Ohms. A general rule of thumb is to resistively load a low-output moving coil with at least 10 times the value of its internal impedance. So for a moving coil cartridge with a coil resistance of 10 Ohms settings between 300 and 100 Ohms will have the largest audible effect on the sound. If you want to know why all this is important then we will just have to go a little deeper into electrical theory. It has to do with something called damping.

Each cartridge has an optimal load impedance. When it is set correctly the output signal from the cartridge starts and stops when the encoded signal starts and stops this is what happens in a properly damped system. This electrical characteristic is called transient rise time and can be measured and displayed on an oscilloscope screen. Using an impedance that is too low is in fact overloading the generator system that is the cartridge. This condition is referred to as over damping and can result in an output signal with a slow transient rise time. Conversely just the opposite is true if you select an impedance that is too high the result is under damping. The effect is something called ringing or the continuation of the signal after it should stop. The result generally is a brighter more open sound with subjectively less bass. The effect of all this is not subtle it will influence the subjective results. It can shift the top to bottom frequency response change the size of the sound stage and rob the excitement and life from the performance.

Aural Aspects

I used three different cartridges mounted in my Grado Reference arm and SOTA Sapphire turntable. I used an Alpha 1 low output-moving coil this cartridge is specified at 0.30 milliVolts into 80 Ohms. I briefly set up a Blue point Special hi output-moving coil. However the cartridge I am most familiar with is the Shure V15 V-MR moving magnet. The Shure is probably the most widely used and they're for the most well known cartridge. This then became my primary test vehicle with its 3.2 milliVolts output and recommended 47k Ohm load in combination with its excellent tracking ability. I reason there is much less of a chance that you will get different results than I did. I tried using the SuperNova on and off battery power and straight into Mike Yee's PA-3 power amplifier. But the majority of my listening was done running the SuperNova into one of the line inputs of my Audio Research SP-9 Mark 3 with a pair of 1.5 meter Revelation solid silver cables. I would like to thank Greg Hovsepian of DH Labs for lending me these 1.5-meter Revelation interconnects. They really helped open up the sound stage. This is the system hookup into a preamp I believe most people would use for a Phono Amplifier in their systems.

The two Mike Yee components were combined to power a pair of Quad ESL 63 USA Monitors, also my

stand mounted Aurum Cantus Leisure 2SE monitors and the Reference 3A Avena speakers. Now for this writer this is where the going gets really difficult. I can approach the results I obtained in two very different ways. I can simply tell you I listened to the usual lineup of reference recordings and describe what I heard that is pretty much the default review method. And then I could talk about the Pre-amp settings I used. But if I did that you almost certainly will not have the same recordings that I have and you would most certainly be listening through a different audio system in an entirely different room. And so I think it would serve you the reader far better by letting you do a little self experiment, try adjusting the cartridge loading in and out of the recommended settings. That should give you an idea of how to set up this device to optimize your system no matter what you have. Let me provide you with one little didactic detail to make a point. The Shure V-15 V-MR has a factory recommended resistive loading of 47k Ohms this is a common value for moving magnet cartridges. The SuperNova has two capacitive load settings either 300pf or the default setting of 200pf. I remember some years ago when I had a completely different system. I preferred the results I obtained with the resistive loading set at around 33 k Ohms.













Listening to this system I managed to brighten up the sound and add a little more spaciousness and life to the performances. I hope you see what I am trying to get at, you could just set everything according to that little slip of paper that comes with the cartridge, but! You would be setting the cartridge loading at some factory predetermined electrical value. I much prefer to set the cartridge to specifically match and optimize my own Stereo system. If you decide to fine-tune your system stay within reasonable limits centered on the factory specifications. I only offer this as a statement of my predilections and I would not presume to tell you what you should do. Using my ear tuning process and only after I have locked in the cartridge settings I played a familiar recording with a quiet surface.





I then switched over to battery power as I listened. The result is that the noise floor drops to reveal yet another level of resolution. The audible effect is comparable to installing a very competent AC line noise filter (I live in an apartment complex) to power your system. The performance space is deeper darker and the music overlays this space in greater dimensional detail. The reproduction of excellent vinyl recordings through this Preamp is most certainly state of the art sound far exceeding anything done digitally. Have we exhausted what is possible? When we ask this of the SuperNova the answer is not yet. The very last step was to go directly into Mike Yee's PA-3 super low distortion power amplifier. And once again yet another layer of amorphous detritus background noise was removed. The storied audiophile concept of a deep and dark background overlaid by a clean and distortion less musical performance was realized. This was for me a higher plateau; in my many years I do not believe I have ever before elicited this much musical nuance and detail from my vinyl. I guess I shouldn't be so surprised after all I just bypassed a ton of wires and hardware in the form of my Audio Research preamplifier.










Conclusions








I honestly don't know how any other Phono Preamplifier could exceed what I just heard. If you were to disagree than I would have to believe that you would actually be favoring some very subtle forms of coloration or nonlinear frequency response. But this I can understand because I am no different. I have some favorite tube components that will portray a pleasing pallet of tones in brighter than life Technicolor. The SuperNova electronics offer a straight super clean path and the device is flexible enough to do anything you would need a Phono Amplifier to do. There is no modern cartridge that it will not optimize, if you can afford it than I say go for it. Mike Yee's PA-3 amplifier is another very neutral low distortion component. I don't have a lot to say about it because it is capable of doing a disappearing act. Some systems and speakers are going to need a lot more balls in the form of high current than the PA-3 can muster. But that is a system matching choice and not a fault of this fine amplifier.

When it comes to all things audio it is my unquenchable curiosity that drives me forward. You see for me that is the fun in this avocation I do not consider the true Audiophile experience as a static sedentary couch potato pastime. At the end of all of this I believe I have learned a lot and I have gotten even closer to the music I care about. Find Mike Yee and his talented designs there is a lot of musical enjoyment waiting for you.

Michael Yee Audio PA-3 Amplifier	
Tonality	
Sub-bass (10Hz - 60Hz)	
Mid-bass (80Hz - 200Hz)	
Midrange (200Hz - 3,000Hz)	
High-frequencies (3,000Hz on up)	
Attack	
Decay	
Inner Resolution	
Soundscape width front	
Soundscape width rear	
Soundscape depth behind speakers	
Soundscape extension into the room	

Imaging	
Fit and Finish	
Self Noise	
Value for the Money	

Musical Surroundings Super Nova	
Tonality	
Sub-bass (10Hz - 60Hz)	
Mid-bass (80Hz - 200Hz)	
Midrange (200Hz - 3,000Hz)	
High-frequencies (3,000Hz on up)	
Attack	
Decay	
Inner Resolution	
Soundscape width front	

Soundscape width rear	
Soundscape depth behind speakers	
Soundscape extension into the room	
Imaging	
Fit and Finish	
Self Noise	
Value for the Money	

Specifications

Michael Yee Audio PA-3 Power Amplifier

Type: solid-state stereo power amplifier

Power Output: 25 Watt

Frequency Response: 2Hz to 20kHz (+/- .02dB)

Input Impedance: 50k Ohms

Output Impedance: 0.1 Ohms

Input Sensitivity: 1.5 Volts

Dimensions, 18 x 16.5 x 5.5 (WxDxH in inches)

Shipping Weight, 30 lbs.

Price: \$1,795

Musical Surroundings Super Nova

Type: solid-state phonostage

Input: Three phono

Outputs: line and attenuated

Gain: user adjustable from 40dB to 60dB

Loading: user adjustable from 30 Ohms to 100kOhms

Independent Gain and Loading settings for each of the 3 Phono Inputs

There are no "signal path" switches except for passive attenuator if used

Price: \$2,800

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