

## Rechipping results part 3

Optionen

## Diskussionen

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**Ted Spencer** [Profil anzeigen](#) Übersetzen in die Sprache: Deutsch [Weitere Optionen](#) 8 Sep. 2000, 21:17

Please see my previous "rechipping" themed threads for the pertinent history.

Part 3

I've completed the process of replacing all the Linear Technologies 1358 "high speed" opamps installed by Audio Upgrades in my never-gonna-call-it-a-Tascam-M3500-again-now-I-call-it-"custom" console with various Burr Brown chips. As stated in previous posts, after becoming thoroughly disenchanted with the LT1358s I began experimenting with alternatives. I've now replaced all the input strips (5 dual opamps each including the mic pre) with Burr Brown OPA2604APs. These cost \$1.80 each bought in quantities of 100 or more (I used 160). As stated previously these chips have a great sound and do appear to be fully compatible and functional under the circumstances, showing none of the oscillation tendencies I was warned about (at least as far as my ears can tell - I haven't used a 'scope). The program busses and last-stage outs to 2 buss were fitted with OPA2132Ps (\$6.91 apiece). The first-stage 2 buss and control room outs were fitted with 2604s.

Some thoughts:

Like fucking \*wow\*! This board is slammin'! Seriously, the console sounds just amazing now. The 2604s give the heart of the console (the input section) a really satisfying combination of warmth, clarity and depth that is entirely unlike the original stock sound or the original Audio Upgrades sound. I'm able to get the kind of kicking low end and depth that was so sorely absent with the 1358s and the clarity and imaging that was unobtainable with the stock chips. While my impressions must be taken as preliminary (I just completed the installation yesterday) I feel quite confident that this puppy will definitely sit up and bark when papa says bark <g>. One thing I'm noticing to my unexpected delight is the tendency of the 2604s to react a bit like tubes when overdriven. In other words, when intentionally turning up gain trims or overfeeding the inputs via an outboard limiter or whatever, the chips don't go all "hashy" and transistory as they distort. Rather, they quite calmly begin to "fold in" the top end and seem to compress the mids in a surprisingly smooth way. I've found this to be a very useful crayon in my coloring box as I've experimented with some fairly gritty electric guitar sounds. Crank it up into overload a bit and the grit smooths right out. Really cool. I must say that in regard to this, Tascam did a nice thing by offering a metering switch that will show post-eq level on all channels. This enables me to view exactly how hard I'm hitting the channel and is a feature I've always used to manage headroom issues. I wish all consoles showed this - most just show tape in.

I arrived at the decision to use the BB2132Ps in the busses and the 2 buss outs because it seemed that too many stages of 2604s were clouding things up a bit. The 2132s are less tubby in the lower middle and have a more extended and really solid low end, and although they are a bit shallower sounding than the 2604s the combination seems to work very well.

While my test mixes over the last day or so with the fully rechipped console have been primarily with more "rocking" tracks, I've used five 2604 equipped input channels (with the 1358s still in the output section) for some middle-of-the-road piano/vocal recordings over the last several weeks and felt the sound was \*much\* better than with the 1358s in the inputs. Warm, very sweet and with lots of depth. I actually preferred the sound of the 2604 equipped board mic pres to my Neve 1073s on the piano. About two weeks ago I installed the 2132s in the master section, and with a film score project on Pro Tools last week I was able to hear the benefit from them even while still using the

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1358 equipped inputs (since I didn't have enough 2604 equipped ones to cover all 8 outs of the 888/24). They have a much more lively low end, more depth and a slightly hotter top end than the 1358s. The hotter top end is why I ended up using the 2132s for the masters only to offset the 2604s slightly warm-ish quality.

Speaking into a Stephen Paul 3 micron U87, I made some comparisons of the mic pre (via channel direct out, and recording to a Sony PCM 2300 DAT using stock converters) to a Neve 1073, Avalon 737sp and a Millenia STT-1 "Origin", all units flat with no compression. The board pre, while presenting no real competition to the other contestants (and with the others being \$2-\$3k apiece lord knows it had no right to), nonetheless held its own very well, having a nice fat low end surprisingly comparable to the transformer equipped units (737, 1073). There was a slight sense of "bloom" in the lower mids - probably related to the tubbiness I've observed elsewhere - which gave an impression of having more ambience around the sound - almost a kind of room sound in the tone although the mic proximity was carefully matched in all cases. I'm going to keep my ears open for other manifestations of this effect, although again, these pres sounded better on my Yamaha grand piano (with a 414EB on the low end and a stock U87 on the high end) than the 1073s or 737s. Lastly, the top end was beautifully detailed and clean. As for the winner in the voice test, I would probably choose the Millenia (in tube mode) if a "natural" sound were the desired effect.

I think this probably sums up my experience with this process. It's taken me 10 months and over \$4500. I could probably be rightly called nuts for investing that much in a console that I might not be able to sell for what the upgrade cost. But IMHO, had I sold it and spent the proceeds plus \$4500, it wouldn't get me a tenth of the way to the sound I've now got. This sucker sounds \*way\* better than any SSL I've ever used and better than most Neves I've tried (I've tried lots of them and don't particularly care for all but the great ones from the 70s). So...I'm a happy camper. If that changes I'll post an update <g>.

Sorry to be so long-winded. I hope my experiences can be of benefit to others.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

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**EggHd** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 8 Sep. 2000, 21:27

<< Sorry to be so long-winded. I hope my experiences can be of benefit to others. >>

I learned from it.

-----  
"I know enough to know I don't know enough"

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**IV Mahn** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 8 Sep. 2000, 22:34

On 09 Sep 2000 01:17:18 GMT, presto...@aol.com (Ted Spencer) wrote:

Bravo! Probaly one of the most interesting threads, to me, since I've been hanging around.

>I think this probably sums up my experience with this process. It's taken me 10 >months and over \$4500.

This I don't get though. How did you spend \$4500? Did you have williams mod the whole board (all the inputs, master, etc.)?

A couple other questions too. I know you had Jim do the mods and have basically swapped his chip choice for the BB's... (this question only makes sense if the whole board was modded) But? Do you think it would sound as good as it does with no Williams mod and just a simple chip replacement?

Also, did you try the 2 bus with Jim's chips once the rest of the board was done? Just wondering how that tightness and so forth would work against the general tendency for the tubbiness of the rest of the board.

I'm curious about this because I've had Jim mod my master module (love it by the way; tight, clear, in your face) and it seems to work well with the rest of my board, Soundcraft 2400, because the inputs and groups tend to have a general smooth quality to them. So the cut coming off the video chips seems to help balance it out.

Thanks again for the post, great stuff.

Adios,  
IV

"...anyone seen houdini around here?"

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**Ted Spencer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 8 Sep. 2000, 23:33

IV Mahn wrote:

>Bravo! Probaly one of the most interesting threads, to me, since I've  
>been hanging around.

Thanks!

> How did you spend \$4500? Did you have  
>williams mod the whole board (all the inputs, master, etc.)?

Yes Jim did the entire console. With shipping charges (section by section from NYC to LA and back) it cost me over \$4100. The rest is for the Burr Brown chips I substituted.

>Do you think it would  
>sound as good as it does with no Williams mod and just a simple chip  
>replacement?

Probably not. Jim did many other things like recapping everything with high end caps and redesigning of the eq and mic pre circuits. I'm sure he could answer this question more fully.

>Also, did you try the 2 bus with Jim's chips once the rest of the  
>board was done? Just wondering how that tightness and so forth would  
>work against the general tendency for the tubbiness of the rest of the  
>board.

Yes I did try 5 inputs worth of 2604s with Jim's chips (1358s) in the master section. A big improvement but much better still with the 2132/ 2604 combination in the masters. And I really shouldn't overstress the "tubbiness" thing. The console was \*vastly\* tubbier when it was stock. The very slight tubbiness of the 2604s compared to the 1358s is a price I'll happily pay versus the hard, dry shallow overtightness of the 1358s or the ultra loose, high distortion character of the stock chips. Furthermore the 2604s were by far the most tube-like sounding of all the chips I tried (warm, sweet, clear) and had by far the greatest sense of 3 dimensionality.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

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**Army Krueger** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 9 Sep. 2000, 09:16

"IV Mahn" <ivm...@earthlink.net> wrote in message

[news:39b99d5f.1919312@news.zipcon.net...](mailto:news:39b99d5f.1919312@news.zipcon.net...)

> On 09 Sep 2000 01:17:18 GMT, presto...@aol.com (Ted Spencer) wrote:  
> Bravo! Probably one of the most interesting threads, to me, since

I've been hanging around.

Skeptic that I am, I'm withholding judgement until I see the DBTs and technical tests.

Constructor's ear, anyone? ;-)

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**Mike Rivers** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 9 Sep. 2000, 11:10

In article <20000908211718.10997.00000...@ng-ch1.aol.com> presto...@aol.com writes:

> I think this probably sums up my experience with this process. It's taken me 10  
> months and over \$4500. I could probably be rightly called nuts for investing  
> that much in a console that I might not be able to sell for what the upgrade  
> cost. But IMHO, had I sold it and spent the proceeds plus \$4500, it wouldn't  
> get me a tenth of the way to the sound I've now got.

Congrats on finishing the project, and even better, recognizing when you're as finished as you need to be. This is a good illustration of why there's really a difference between a \$3,000 console and a \$30,000 console other than more knobs.

I wrote up a couple of paragraphs translating your \$4500 (which I thought was your investment in parts by the time you were through) to the commercial world, then adding in labor, coming up with a \$34K console. Then you went and spoiled all my fun by saying that you had Jim Williams do the modifications, so I guess a lot of that \$4500 was for his labor, not a couple of hours a night for ten months of your time for "engineering".

You got a bargain! Better hope the switches and faders hold up for a while longer, though. <g>

--

I'm really Mike Rivers (mriv...@d-and-d.com)

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**Ted Spencer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 9 Sep. 2000, 22:59

Arny Krueger wrote:

>Skeptic that I am, I'm withholding judgement until I see the DBTs and  
>technical tests.

>Constructor's ear, anyone? ;-)

DBTs (double blind tests) are not really what this is about. Technical tests? Sorry...you're talking to a recording engineer here - not a scientist.

As I implied in a previous post, I'm not trying to prove a point. I'm simply stating my observations as they appear to me in the course of my humble but quite intensive experiments. I'm not attempting to offer definitive evaluations of one opamp versus another for all the world to live by. My observations should be taken more as the folk-knowledge/opinion that they are. They have meaning for me in my experience and my studio and my equipment. YMMV as has so succinctly been said before.

Constructor's ear? Not if I can help it. Do I think I'm fooling myself? No I really don't. But we live in a very subjective realm here - a realm where audiophiles wax eloquent about green ink on CDs or God knows what else. I laugh at these types as I think many of us here do. I'd like to count myself among the non-members of that group.

My efforts and my position in this endeavor are for one purpose only: to do the best possible job of knocking my and my clients' socks off sonically. I only

feel successful when I've accomplished that goal. I think my recent efforts got me closer.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

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**Ted Spencer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 9 Sep. 2000, 23:13

Mike Rivers wrote:

>You got a bargain! Better hope the switches and faders hold up for a  
>while longer, though. <g>

I do think it was a good investment. Thanks.

And yeah the switches and faders are a concern. So far so good, though. Interestingly, the sort of "oil damped" mechanics (anybody know what this is exactly?) of the stock pots on the board seem to result in much longer than expected longevity before the dreaded scratchy pot syndrome kicks in. This, and De-Oxit are my hope for the future <g>.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

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**Arny Krueger** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 10 Sep. 2000, 08:35

"Ted Spencer" <presto...@aol.com> wrote in message

[news:20000909225808.29037.00000934@ng-cg1.aol.com...](mailto:news:20000909225808.29037.00000934@ng-cg1.aol.com...)

> Arny Krueger wrote:

> >Skeptic that I am, I'm withholding judgement until I see the DBTs  
and  
> >technical tests.

> >Constructor's ear, anyone? ;-)

> DBTs (double blind tests) are not really what this is about.

Really? I thought this was about making an audible difference?

>Technical tests?

> Sorry...you're talking to a recording engineer here - not a

scientist.

Are you suggesting to me that one must be a scientist in order to do technical tests on audio equipment?

> As I implied in a previous post, I'm not trying to prove a point.

Sure you are.

>I'm simply stating my observations as they appear to me in the

course of my humble but

> quite intensive experiments.

Lets review this:

Good experimental design (which applies to \*ALL\* experiments) says that you make a change in a relevant controlled fashion

(1) Try to pick a good chip and try to install them properly) and then

(2) Do a good job of evaluating the results. OK?

So why work so hard on (1) and drop the ball with (2)?

> I'm not attempting to offer definitive evaluations  
> of one opamp versus another for all the world to live by.

No, but

(1) You do want good sound that is not just an illusion or just bragging or just enthusiasm for your own skills, right?

(2) You are telling the world about your results, right?

> My observations  
> should be taken more as the folk-knowledge/opinion that they are.

Why not raise the bar at least and take the time and effort to determine that:

(1) All or part of your console is not now oscillating at some supersonic frequency.

(2) The console is not so close to being unstable that its high frequency response has been significantly affected and you now have a console that basically acts like a treble control pushed quite a ways up.

> They have  
> meaning for me in my experience and my studio and my equipment.  
YMMV as has so  
> succinctly been said before.

AFAIK, what you did is like the following, since you mentioned gas economy:

(1) Change gasoline or add an additive

(2) Claim improved gas economy without even running a few tankfuls and dividing the mileage by the gallons on the back of an envelope.

> Constructor's ear? Not if I can help it. Do I think I'm fooling myself? No I  
> really don't.

Please name me someone who does things like this and would think otherwise, (except of course older and wiser heads who have been bitten exactly this way?)

> But we live in a very subjective realm here - a realm where  
> audiophiles wax eloquent about green ink on CDs or God knows what  
else.

The fact that people do this is supposed to be some kind of a defense or guide for professional activity?

> I laugh  
> at these types as I think many of us here do. I'd like to count myself among  
> the non-members of that group.

I think your membership card for that group has been given to you and you are waving it proudly for all the world to see. If you don't want to be in that club, I think you need to arrange a few technical tests at the very least, and try to prove that you aren't a proud member of that group!

> My efforts and my position in this endeavor are for one purpose only: to do the  
> best possible job of knocking my and my clients' socks off

sonically.

Works for me. But what if there are now some subtle technical problems with your console? What if your clients who hear better than you hear garbage and blame it on your mods to your consoler?

> I only feel successful when I've accomplished that goal. I think

my recent efforts got me closer.

Lets presume that my worst fears are true (I hope to God they are not, but just lets think about it)

(1) Your console now has one or more op amps that are oscillating madly at 3 MHz thus vastly degrading noise and distortion.

(2) Your console now acts like every treble control is turned up about half way.

OK, you in your enthusiasm don't listen as critically as you might and don't hear that this is happening.

Some of your clients do hear that stuff like this is happening.

They blame it on your lack of professionalism because you never did or had any standard tests done to confirm the actual technical operation of your console after your modifications.

They take their work elsewhere.

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**Mark Plancke** [Profil anzeigen](#) [Übersetzen in die Sprache: Deut](#) [Weitere Optionen](#) 10 Sep. 2000, 11:21

- Zitierten Text anzeigen -

He's not dropping the ball. He made a change that he felt was beneficial to him and his studio, I can live with that. Ted doesn't have to prove anything beyond that, it's about the usefulness of his modifications in his environment not yours.

>> I laugh

>> at these types as I think many of us here do. I'd like to count

>myself among

>> the non-members of that group.

>I think your membership card for that group has been given to you and >you are waving it proudly for all the world to see. If you don't want >to be in that club, I think you need to arrange a few technical tests >at the very least, and try to prove that you aren't a proud member of >that group!

What tests would prove that \*Ted\* likes his board better than before Arny? It's really a ridiculous notion.

>Lets presume that my worst fears are true (I hope to God they are >not, but just lets think about it)

>(1) Your console now has one or more op amps that are oscillating >madly at 3 MHz thus vastly degrading noise and distortion.

I highly doubt that this is the case especially since the mods performed by Jim Williams included video opamps with slew rates 100 times great than what Ted replaced them with.

>OK, you in your enthusiasm don't listen as critically as you might >and don't hear that this is happening.

>Some of your clients do hear that stuff like this is happening.

>They blame it on your lack of professionalism because you never did >or had any standard tests done to confirm the actual technical

>operation of your console after your modifications.

The bottom line is that Ted's clients pay for his sound, his abilities. If Ted likes the results that's all that matters.

As David Josephson said once.

"but hey, it should be about playin' that funky music, and not getting worked up over some technical dance that doesn't matter."

In other words, relax.

Mark Plancke  
SOUNDTECH RECORDING STUDIOS  
Windsor, Ontario, Canada  
<http://SoundTechRecording.com>

Let's say you were miking Russian ass flutes with both mics going into a Martec preamp. How many people here have done or will do that? -- Jay Kahrs

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**mrcdeckard** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 10 Sep. 2000, 12:20

In article <20000908211718.10997.00000...@ng-ch1.aol.com>, presto...@aol.com (Ted Spencer) wrote:

> Please see my previous "rechipping" themed threads for the pertinent history.

> Part 3

> I've completed the process of replacing all the Linear Technologies 1358 "high speed" opamps installed by Audio Upgrades in my > never-gonna-call-it-a-Tascam-M3500-again-now-I-call-it-"custom" console with > various Burr Brown chips.....

Hi Ted, thanks for a very informative and interesting thread...I just finished reading the archives. It is of particular interest since I have a m3700, and have been looking at the BB2604's for a bit. I have a couple of questions, though:

someone warned against the danger of >1Mhz oscillations. Recently, M Plancke mentioned that, since Jim modded it with video chips, it's probably not a concern. My question is what, if anything, did Jim do to combat any hf oscillations (p/s by-pass caps, etc).

Also, looking at the schematics (I'm assuming the m3500 and m3700 are identical in this regard), I see that there are 10 op-amp gain stages per channel (in the form of dual chips..making 5 chips per ch): did you replace all 5 (including the ones used in the eq)?

Thanks again,

Chris Deckard

ps. I got my m3700 for 1k since the p/s was gone. I thought it was a m3500 since "m3500" is stamped on it very largely, so I found and purchased a m3500 p/s...then I found out I had a m3700...(see "my \$%#^@ m3700" thread). The thing is, is that I like the layout of the board, but I'm not sure that it's worth anything. This thread has been a great inspiration....I'm already warming up my iron....

Chris Deckard  
radiopenny  
SaintLouis, Moe

<http://www.radiopenny.com>

Sent via Deja.com <http://www.deja.com/>

Before you buy.

[Weiterleiten](#)

**Mark McQuilken** [Profil anzeigen](#) Übersetzen in die Sprache: [C](#) [Weitere Optionen](#) 10 Sep. 2000, 16:26

- Zitierten Text anzeigen -

Chris:

Also check out the OP275...I re-did an M3700 for a friend with those, and he \*LOVED\* the result (YMMV, but it's probably worth a check).

With regard to HF oscillations, one does have to be careful with a retrofit since the original design was probably debugged/proven with the stock amplifiers. With really wide bandwidth stuff, even inconsiderate power supply trace runs (relative to bypassing and the amps in question) can cause problems. \*IF\* you're gonna retrofit, it's best to set-up a bench test fixture for the individual modules (groups of 8 on the M3500/3700 if I remember correctly) so that you can instrument every point in the signal path properly. After retrofitting and testing this way (you'll want to go through stuff like thermal cycling--no matter how crudely-- and power-up testing), you'll either find everything is fine or go searching for further details on bypassing, etc...

Good luck,  
McQ

—  
Mark McQuilken  
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(512)280-6557 Voice  
(512)280-8627 Fax

[Weiterleiten](#)

**hank alrich** [Profil anzeigen](#) Übersetzen in die Sprache: [Deutsch](#) [Weitere Optionen](#) 10 Sep. 2000, 19:48

Amy Krueger <ar...@flash.net> wrote:

> Do I think I'm fooling  
> myself? No I  
> > really don't.

> Please name me someone who does things like this and would think  
> otherwise, (except of course older and wiser heads who have been  
> bitten exactly this way?)

I think I've commented before on the amazing transparency of the RNC, independent of settings, that I discovered in its Bypass mode. "Blind in both ears, I am."

--  
hank alrich \* secret\_\_mountain  
audio recording \* music production \* sound reinforcement  
"If laughter is the best medicine let's take a double dose"

[Weiterleiten](#)

**Ted Spencer** [Profil anzeigen](#) Übersetzen in die Sprache: [Deutsch](#) [Weitere Optionen](#) 10 Sep. 2000, 20:51

Gotta tell ya gang... I hate debating. I'll stand up and take my knocks when I'm full of shit but I really hate turning a disagreement into an ongoing process. So in that spirit I'll respond to Amy Krueger's post with respect but I'm loath to go much further in this direction.

Amy wrote:

> I thought this was about making an audible difference?

It's \*all\* about making an audible difference. And I have very very good ears. I'd put you in touch with some of my famous clients who'll happily tell you that but I'd rather not waste their time

>Are you suggesting to me that one must be a scientist in order to do  
>technical tests on audio equipment?

In a manner of speaking, yes. Just as a scientist would be better qualified than me to do an analysis of the food at my favorite Indian restaurant for chemical anomalies. I'm quite thrilled to just enjoy the flavor and not worry about it. Likewise I'm quite content to use my considerable ear training over 3 decades of making a living as an engineer as my compass in determining whether an equipment change is successful or not. And in my previous post I did leave the door open to the possibility of a further refinement of the effort.

>Good experimental design (which applies to \*ALL\* experiments) says  
>that you make a change in a relevant controlled fashion

Did that: Replace chip. Listen extensively. Repeat.

> Do a good job of evaluating the results.

Did that too: Was made aware of possible oscillation anomalies. Listened extensively. Stopped worrying about oscillation anomalies (although I may attempt to use a 'scope plugin on Pro Tools to see whatever I might see - hell it might be fun).

>Why not raise the bar at least and take the time and effort to  
>determine that:  
<snip>

>The console is not so close to being unstable that its high  
>frequency response has been significantly affected and you now have a  
>console that basically acts like a treble control pushed quite a ways  
>up.

You think I wouldn't notice that? Who do you think you're talking to? An amateur? I spent hours listening to console output versus original source to arrive at my conclusions. The console throughput sounds close enough to the source that most of my clients would have to be trained to recognize the difference.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

[Weiterleiten](#)

**Ted Spencer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deut:](#) [Weitere Optionen](#) 10 Sep. 2000, 21:41

Chris Deckard wrote:

>someone warned against the danger of >1Mhz oscillations. Recently, M  
>Plancke mentioned that, since Jim modded it with video chips, it's  
>probably not a concern. My question is what, if anything, did Jim do to  
>combat any hf oscillations (p/s by-pass caps, etc).

Jim's mod was done in conjunction with the LT1358 chips. I asked and he recently told me that there should be no oscillation problem in my using the BB2604s. Whether the mods concerning the 1358s obviated this problem, or whether it wouldn't have been a problem anyway, I don't know. And there were no mods done to the power supply, but virtually all capacitors inside the board itself were replaced or added to (there are some places where caps were soldered on to other caps).

>I see that there are 10 op-amp gain stages  
>per channel (in the form of dual chips..making 5 chips per ch): did you  
>replace all 5 (including the ones used in the eq)?

Yes

> I thought it was a  
>m3500 since "m3500" is stamped on it very largely, so I found and  
>purchased a m3500 p/s....then I found out I had a m3700

Hmm. The M3700 is an automated version of the M3500. It includes an automation control section including a floppy disk drive and alphanumeric LCD display on a large panel surface between the 2 buss meters and the effect return faders. Also VCAs and other added internal components, and various additional automation buttons on each channel fader. The 3500 has none of these, and a blank panel where the automation control section would be . Are you sure it's a 3700?

>I'm already warming up my iron....

I'd recommend caution. Jim did all the work for me aside from my subsequent chip swapping. I think you'd be wise to hire him or someone of his level of experience to guide you before you start making modifications.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

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**mrcdeckard** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 10 Sep. 2000, 23:20

. And there  
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> mods done to the power supply, but virtually all capacitors inside the board  
> itself were replaced or added to (there are some places where caps were  
> soldered on to other caps).

What I was wondering is if any bypass caps were installed on the p/s leads on the chips. It seems that, from your reply, that there were none added. Do you know what caps were replaced? Just ones in the signal path? <sorry for all the ??'s>

>. Are you  
sure it's a  
> 3700?

yeah, absolutely. When I first got it, I was unfamiliar with the series. It has the computer, vca's the whole bit. It just says m3500 on the meter bridge. It wasn't until after I received the manual from Tascam that I realized that what I had was a m3700...

> I'd recommend caution. Jim did all the work for me aside from my subsequent  
> chip swapping. I think you'd be wise to hire him or someone of his level of  
> experience to guide you before you start making modifications.

understandable, and I respect your advice. I don't have \$4k to put into the board, though, although \$500 or so for chips I can afford. Perhaps I could talk with Jim for advice? I could afford a consulting fee.

Once again, thanks for your time. This thread has been a great help.

Chris Deckard  
radiopenny  
Saint Louis, Moe

<http://www.radiopenny.com>

Sent via Deja.com <http://www.deja.com/>  
Before you buy.

[Weiterleiten](#)

**boomer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 11 Sep. 2000, 01:01

Ted... thanks for sharing your experiences.

I'm planning to swap out the mic preamps (5532s) in my Roland VM-7200 digital mixer with the BB2604s. I figure it can't hurt the sound to pick up some speed and some headroom. I have a 4 channel Sytek mic preamp that uses 5532s in channels 1 & 2 and the 2604s in 3 & 4 (same circuit otherwise). Honestly I don't hear a ton of difference between the two but when you get on it hard I think the channels with the 2604s sound a little warmer (in a good way). If nothing else it will probably make me feel better about it and I like feeling good about my toys.

boomer

[Weiterleiten](#)

**Army Krueger** [Profil anzeigen](#) [Übersetzen in die Sprache: Deu](#) [Weitere Optionen](#) 11 Sep. 2000, 09:05

"Ted Spencer" <presto...@aol.com> wrote in message

[news:20000910205133.23413.00001360@ng-fi1.aol.com...](mailto:news:20000910205133.23413.00001360@ng-fi1.aol.com...)

> Gotta tell ya gang... I hate debating. I'll stand up and take my  
knocks when  
> I'm full of shit but I really hate turning a disagreement into an  
ongoing  
> process. So in that spirit I'll respond to Army Krueger's post with  
respect but  
> I'm loath to go much further in this direction.  
> Army wrote:  
> > I thought this was about making an audible difference?  
> It's \*all\* about making an audible difference. And I have very very  
good ears.  
> I'd put you in touch with some of my famous clients who'll happily  
tell you  
> that but I'd rather not waste their time

So, you think you hear \*everything\*?

> >Are you suggesting to me that one must be a scientist in order to  
do  
> >technical tests on audio equipment?  
> In a manner of speaking, yes. Just as a scientist would be better  
qualified  
> than me to do an analysis of the food at my favorite Indian  
restaurant for  
> chemical anomalies. I'm quite thrilled to just enjoy the flavor and  
not worry  
> about it.

OK, but that is food. This is audio. Audio is both an art and a  
science. IME people lose out big time when they forget that audio is  
an art and exclusively treat it like a science. The converse is also  
true.

> Likewise I'm quite content to use my considerable ear training over  
3  
> decades of making a living as an engineer as my compass in  
determining whether  
> an equipment change is successful or not. And in my previous post I  
did leave  
> the door open to the possibility of a further refinement of the  
effort.

Please take my two posts as support for the idea that you walk  
through that door.

> > Good experimental design (which applies to \*ALL\* experiments) says  
> > that you make a change in a relevant controlled fashion  
> Did that: Replace chip. Listen extensively. Repeat.  
> > Do a good job of evaluating the results.  
> Did that too: Was made aware of possible oscillation anomalies.  
Listened  
> extensively. Stopped worrying about oscillation anomalies (although  
I may  
> attempt to use a 'scope plugin on Pro Tools to see whatever I might  
see - hell  
> it might be fun).

Unless you have a ADC that digitizes well up to 10 MHz and beyond,  
this would not be as conclusive of a test as you could get with a  
cheap oscilloscope.

> > Why not raise the bar at least and take the time and effort to  
> > determine that:  
> <snip>  
> > The console is not so close to being unstable that its high  
> > frequency response has been significantly affected and you now  
have a  
> > console that basically acts like a treble control pushed quite a  
ways  
> > up.  
> You think I wouldn't notice that?

It is a possibility.

> Who do you think you're talking to?

With all due respect, the same to you!

> An amateur?

No, I was thinking in terms of a person who is 40-50 years old, has  
normal or better-than-normal hearing for his age, and is a trained  
listener. That makes you very good, but not perfect.

> I spent hours listening to console output versus original source to  
arrive at my conclusions.

If more than about 20 seconds elapsed between when you heard the  
unmodified console and a modified console your ability to hear small  
artifacts fell into a big hole. Yet, once a listener becomes  
sensitized to small artifacts, they can be very irritating.

> The console throughput sounds close enough to the  
> source that most of my clients would have to be trained to  
recognize the  
> difference.

This is an interesting contrast. At the beginning of your post you  
said: "I'd put you in touch with some of my famous clients who'll  
happily tell you that but I'd rather not waste their time." Now you  
seem to be saying that few if any of them are in your opinion  
credible judges...

I think this is my last post on this topic. I've taken the horse to  
water...

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**Mark Plancke** [Profil anzeigen](#) [Übersetzen in die Sprache: Deut](#) [Weitere Optionen](#) 11 Sep. 2000, 11:21

"Army Krueger" <ar...@flash.net> wrote:

> This is an interesting contrast. At the beginning of your post you  
> said: "I'd put you in touch with some of my famous clients who'll

>happily tell you that but I'd rather not waste their time." Now you  
>seem to be saying that few if any of them are in your opinion  
>credible judges...

>I think this is my last post on this topic. I've taken the horse to  
>water...

Actually all you proved to me Arny is that you haven't actually done a modification on something that you are infinitely familiar with and use everyday (we're not talking CD players here). It's very easy to tell the differences when you modify a console, I've done it many times with my Ward Beck. In most cases we're not talking subtle differences here especially when you're dealing with things like summing 24 channels of audio through a single opamp.

I think you really need to step back from you're assertion that everything must be proven with "tests" in order to be reality. In this crazy audio world of ours it's just not done that way, at least not in my experience.

Mark Plancke  
SOUNDTECH RECORDING STUDIOS  
Windsor, Ontario, Canada  
<http://SoundTechRecording.com>

Let's say you were miking Russian ass flutes with both mics going into a Martec preamp. How many people here have done or will do that? -- Jay Kahrs

[Weiterleiten](#)

**Ted Spencer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deut:](#) [Weitere Optionen](#) 11 Sep. 2000, 11:28

Arny wrote:

>If more than about 20 seconds elapsed between when you heard the  
>unmodified console and a modified console your ability to hear small  
>artifacts fell into a big hole. Yet, once a listener becomes  
>sensitized to small artifacts, they can be very irritating.

The time lag between A and B was somewhere south of a millisecond. As in hearing a pair of unmodified channels then simultaneously muting them and unmuting a pair of modified channels, both being fed by the same stereo source hard-wire muted to the four channels via a patchbay. Levels were \*precisely\* matched to each other and also to the source's return to the monitor section (an A/B/C scenario) using a 1K tone. This enabled me to hear input chipset A versus B and either one versus source repeatedly, switching instantly back and forth. I also occasionally sat back and listened more unobjectively - letting myself forget about the "test" and just letting the music do its thing to me. This can be quite revealing.

Several different sources were used and several listening sessions were conducted with various chip combinations, each session lasting 3 hours or so. In at least one test I had four different chipsets installed (BB2604, LT1358, BB2132 and BB2134). The differences between these chips were clearly audible. The final choice was really quite easy to make.

>I think this is my last post on this topic.

Thank you for your input. I \*did\* listen to your ideas, and I don't mean to discredit your point of view.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

[Weiterleiten](#)

**Ted Spencer** [Profil anzeigen](#) [Übersetzen in die Sprache: Deut:](#) [Weitere Optionen](#) 11 Sep. 2000, 12:02

Chris wrote:

>What I was wondering is if any bypass caps were installed on the p/s  
>leads on the chips. It seems that, from your reply, that there were  
>none added. Do you know what caps were replaced? Just ones in the  
>signal path? <sorry for all the ??'s>

Honestly I don't know. It appears by the bag of old parts that Jim sent me that almost all of the caps were replaced. He could tell you exactly what they were replaced with and where. As for me, I'd have to pull a module and look at it and the schematics and board layout diagrams (credit to Tascam by the way for providing extensive technical documentation in the manual) to tell. And I'm no expert at circuit design by a long shot. I'm much more of a "have ears will travel" guy although I do have some pretty stringent listening test criteria for making my choices in these kinds of efforts, as I unfortunately had to stand up and defend myself about in another branch of this thread.

>Perhaps  
>I could talk with Jim for advice? I could afford a consulting fee.

I'm almost \*sure\* Jim would work something out with you in that regard. He's one of those members of our community who seems to be more interested in offering good value and results than just building a bigger money pile. I actually asked him originally about doing the upgrade as a kit - he'd send me instructions and a batch of parts. He expressed some willingness to do this and suggested something like \$300 or so for the instructions if my memory serves me. I decided against it, but it might be a solution for you. Try calling him in CA at Audio Upgrades. The number is 818-780-1222.

Good luck in your efforts and please keep us posted. I'll be curious to know what you might be able to add to the knowledge base here.

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

[Weiterleiten](#)

**Wisch** [Profil anzeigen](#) [Übersetzen in die Sprache: Deutsch](#) [Weitere Optionen](#) 11 Sep. 2000, 12:05

What he said. And as another said, one of the most interesting threads in a long time. Thank you, Ted, for taking the time to write a careful and comprehensive report on your mods.

Wisch

"EggHd" <eg...@aol.com> wrote in message

[news:20000908212736.11033.00000792@ng-ch1.aol.com...](mailto:news:20000908212736.11033.00000792@ng-ch1.aol.com...)

- Zitierten Text anzeigen -

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**Army Krueger** [Profil anzeigen](#) [Übersetzen in die Sprache: Deu](#) [Weitere Optionen](#) 11 Sep. 2000, 12:31

"Mark Plancke" <M...@SoundtechRecording.com> wrote in message

[news:rorprs01n2emdtvic54Ingplumjosrce9r@4ax.com...](mailto:news:rorprs01n2emdtvic54Ingplumjosrce9r@4ax.com...)

> Actually all you proved to me Army is that you haven't actually  
> done a modification on something that you are infinitely familiar  
with  
> and use everyday (we're not talking CD players here).

Your claims of omniscience are noted. ;-(

> It's very easy  
> to tell the differences when you modify a console, I've done it  
many  
> times with my Ward Beck.

The "audible differences" may be there. They may be due to pathologies. They may be placebo effects.

- > In most cases we're not talking subtle
- > differences here especially when you're dealing with things like
- > summing 24 channels of audio through a single opamp.

Back in the days of 12AX7's that might have even been the case.

Nothing like some DBTs involving say, 20 cascaded high quality op amps to make a person think twice about claims like that.

- > I think you really need to step back from you're assertion that
- > everything must be proven with "tests" in order to be reality.

Let's say that tests (either measurements or DBTs) say there are no differences. Or what about this one: you find that the guts of the console are oscillating vigorously at 2 MHz? What is your reality and why?

- >In this
- > crazy audio world of ours it's just not done that way, at least not in
- > my experience.

One of my goals in life is to help make audio less crazy.

Unfortunately, in the process I run into all these people who think they are omniscient and omnipotent. I have a hard time relating to them because I'm demonstrably neither... ;-)

[Weiterleiten](#)

**Army Krueger** [Profil anzeigen](#) [Übersetzen in die Sprache: Deu](#) [Weitere Optionen](#) 11 Sep. 2000, 12:46

"Ted Spencer" <presto...@aol.com> wrote in message

[news:20000911112753.28971.00001388@ng-cg1.aol.com...](mailto:news:20000911112753.28971.00001388@ng-cg1.aol.com...)

- > Arny wrote:
- > >If more than about 20 seconds elapsed between when you heard the
- > >unmodified console and a modified console your ability to hear small
- > >artifacts fell into a big hole. Yet, once a listener becomes
- > >sensitized to small artifacts, they can be very irritating.
- > The time lag between A and B was somewhere south of a millisecond.

Given your procedure and having measured such things, I know that it was probably way more than that. But I'll bet you've never measured that, either! ;-)

- > As in
- > hearing a pair of unmodified channels then simultaneously muting them and
- > unmuting a pair of modified channels, both being fed by the same stereo source
- > hard-wire muled to the four channels via a patchbay. Levels were \*precisely\*
- > matched to each other and also to the source's return to the monitor section
- > (an A/B/C scenario) using a 1K tone.

This begs a question: if you could measure 1 KHz so well, why couldn't you measure 20 Hz and 20 KHz as well?

- >This enabled me to hear input chipset A
- > versus B and either one versus source repeatedly, switching instantly back and
- > forth. I also occasionally sat back and listened more

unobjectively - letting  
> myself forget about the "test" and just letting the music do its

thing to me.

I get this feeling you think you think you are telling me something I don't know about doing sensitive reliable listening tests at this point ;-(

> This can be quite revealing.

IME attempting a "gestalt" listening evaluation under sighted conditions is VERY good for revealing placebo effects.

> Several different sources were used and several listening sessions were

> conducted with various chip combinations, each session lasting 3 hours or so.

> In at least one test I had four different chipsets installed (BB2604, LT 1358,

> BB2132 and BB2134). The differences between these chips were clearly audible.

> The final choice was really quite easy to make.

I'm trying to remember the last time I saw someone correctly identify subtle differences in a sighted evaluation

> Thank you for your input. I \*did\* listen to your ideas, and I don't mean to

> discredit your point of view.

Me testing your claims is tough because you are there and I am here.

However, you can test my claims very easily, probably without moving off your chair. Try [www.pcabx.com!](http://www.pcabx.com!) ;-)

[Weiterleiten](#)

**Ted Spencer** [Profil anzeigen](#) Übersetzen in die Sprache: Deut: [Weitere Optionen](#) 11 Sep. 2000, 13:24

Arny wrote:

>yadda yadda yadda

Let's give it a rest

Ted Spencer, NYC

"I'm a lot more like I used to be than I am" - James Taylor

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