



CHANDLER CURVE BENDER EMI EQUALISER

We threw this esoteric 'curve ball' at William Bowden who hit it right out of the park!

Text: William Bowden

► I've just had a great month reviewing what I consider to be an absolute ripper of a unit – Chandler's new Curve Bender EQ. It's a hell of a lot of fun, a very musical box and I wish it were mine...

Every so often a piece of gear comes along that reminds you of why you got into music in the first place. One of my first true loves was the equaliser; the way it remolded and reshaped sounds into something else was a source of fascination to me that continues to this day – I guess that's why I ended up in mastering. I was never one to hold the view that "EQ is bad – get the sound right at the source". I mention all this because if you are someone who sees equalisation as a 'corrective' tool to be deployed only in the event of a 'problem' then don't bother reading this review – the Chandler Curve Bender is probably not for you... you're boring anyway, go away! [Charming – Ed.] If, however, you like to play with EQs, enjoy devices with character, are interested in the sound of vintage EMI designs, or simply like The Beatles, then I think the Curve Bender is definitely worth an audition. Really.

The Curve Bender is Chandler's advanced two-channel recreation of the 'vintage' four-band desk EQ originally found in the legendary EMI TG 12345 consoles from the late '60s (see AT back issue 25 for an article on TG series mixers or go to www.tgmixers.co.uk for a look at these amazing consoles). Now just to get that clear, these were the recording and mixing consoles, *not* the TG 12410 mastering consoles, and Pink Floyd and The Beatles (among others) used these desks at various times. The Curve Bender has come about as a result of a collaboration between Chandler's founder Wade Goeke and Abbey Rd Studios' senior recording engineer Pete Cobbin (*Anthology*, *Yellow Submarine*, *Imagine* – need I say more?).

The Chandler unit features all original circuits closely based

on original EMI designs. What that means is that they've kept all the original features, but added a whole load of extras, all of which are extremely useful. You get a selection of bonus frequencies, separate high and low shelving, a choice of Q/boost values, a couple of band bypass options, variable output gain (nice), and it's all in a ruddy solid 3U box with a separate power supply. The switches are all 1 or 1.5dB stepped/indexed (Elma gold rotary), and a variant of the famous EMI MkI germanium line amp (there are three per channel in the Curve Bender) handles the audio.

But all this doesn't come cheap. At \$6820 it's for serious players only I'd say – but in comparison with tracking down original EMI modules, it's a) cheaper, b) more flexible and quieter, c) under warranty, and d) you can find one easily! I won't tell you how much my own TG mastering console cost, but if Chandler had been around with these sorts of products just five years ago...

Anyway before we get to the sound of the unit it's worth mentioning a few things about the Curve Bender. These days, boutique products are on the rise, either revising older designs, or simply recreating them. People are looking for 'classic' flavours to help flesh out digital textures, and with tape under the threat of extinction, the demand for good analogue gear is again on the rise – just look at the prices of 'vintage' on eBay.

There's a reason why these units cost a little more than your average all-surface-mount mass-produced jobbie (and don't let that polished aluminium exterior fool you either – it could still be surface-mount inside). Chandler units are handmade in the classic tradition: hand soldered and hand assembled. If you have a look at the photo of the inside of the box, you can see a series of resistors clustered around each of the rotary switches. These are all done by hand, very neatly; and just look at those wiring looms, a thing of beauty – and, again, true to the nature of the original EMI desks (see the

accompanying interview with Wade Goeke for more on this).

In comparison with some other units in Chandler's range, the Curve Bender is surely one of the most labour-intensive units to construct, and as such I believe the price is fair. The unit is easily as well made as my EMI mastering console (which is still going strong at the tender age of 34). The other great thing about designs like these is that there's a solid signal path going through large chunky components. Overheating is never a problem (unlike some vintage tube or Class A designs) and they sound pretty cool – guess we'd better get to that bit now.

ON A BENDER

So what does an EMI TG EQ sound like then? I'll give you a general impression first, since not many people in Australia have heard them! (Unless you've mastered at Studios 301 or erm... with me!)

Well, for starters, it's rather vibrant sounding, which is why it's become a sought after item. The design of the EQ is inductor-based, and solid state. EMI engineers were trying to avoid tube output stages back in the late '60s – their REDD series tube consoles kept overheating, so the TG series was a great leap forward back then.

Starting from the bottom end frequencies, EMI designs are famous for a chunky but smooth low end; the kind of low end that somehow seems to boost the tone of a bass note, rather than just generate a boomy bassy area.

Low mids tend to be a problem area for many EQ designs (and engineers) and in this area I find EMI designs generally best for subtractive work – especially in mastering. In tracking, however, the denseness of these areas can work very well for guitars and some thump on snares/toms.

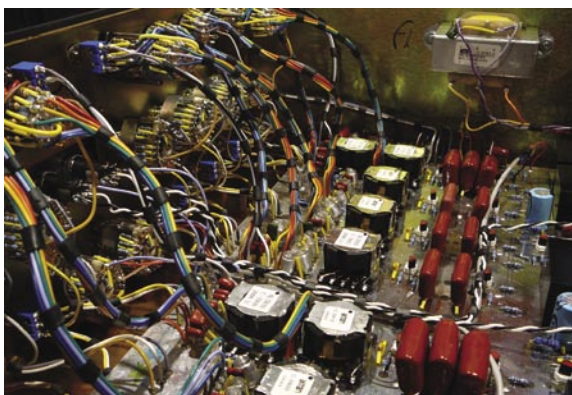
Moving up to about 700Hz or so, though, the flavour begins to change radically and a fairly dramatic presence begins to emerge as you head up through the midrange. This is the area perhaps where EMI designs are most distinctive – I'll expand a little on this later.

In terms of the top end, EMI designs tend to be more on the soft side, they're rarely harsh or thin, but they don't possess the kind of super clarity of say an Avalon, a Sontec, or even an API. Overall the flavour of TG EQ is quite 'retro', not pure or clean but loaded with rich harmonic content, and as such may not suit everyone.

CURVEBENDING

So is it a mastering EQ, a tracking unit, or mainly for mixing? Well, I'd suggest all three uses are fine for this box, although for mastering I would have preferred a review version with 1/2dB steps (now available). This unit was serial number 27... so let's bend some curves shall we?

The first thing I did was just run some material through the box. Unusually the front panel *bypass* switches leave the germanium amps in circuit and just toggle the equalisation





"To me an EQ without inductors is like de-caffinated coffee."

itself in or out. This is actually a good thing, because the sound of the germanium amps is really quite something – a great tone-shaping tool in itself without the EQ. And if you want *real* bypass then, well... bypass the unit entirely! The review unit wasn't exactly set at unity gain though; patching the unit in gave a jump in level of 0.25dB and engaging the EQ jumped the level by about half a dB!

It's difficult to describe in words how the MkI amps sound but the upper mids seem to gain a slight presence, the upper bass region seems to sit out in the mix more – maybe even gets a bit reduced in the subs – and the tops feel smooth but present. The odd thing is, looking at this description, it 'reads' a lot like my Neve 1272 line amp, but it's so totally different sonically. The Curve Bender amps feel smooth and spongy, the mix almost feels a bit more glued together in some weird way, and next to it the Neve feels a little cloudy and thick in the lower mids (sorry Rupert). In comparison with the sound of the MkIV silicon amps in my TG mastering console the Curve Bender is brighter in overall tone, a little more 'forward' but of a similar character generally.

Onto the actual EQ itself. Firstly Chandler's new high- and low-pass filters deserve some mention. The high-pass filter is nice and smooth and surprisingly effective at getting rid of junk in the low region. It starts at a subtle 20Hz (up to 320Hz) and is a very worthy addition. The low-pass filter is perhaps best described as not quite so subtle – even the 30kHz filter was quite radical in my opinion, and 20kHz more so. Even so, these filters sound really good and their addition is a very welcome one. I have one nit to pick though: the low-pass filter has an unfortunate twist, which is that the first position next to 'Off' is 2kHz, so you first lose all the top end above 2kHz before heading up to more subtle roll-offs like 20kHz. I've drawn Wade's attention to this flaw and hopefully it'll be resolved.

BASS – POWERHOUSE

The Bass band is a powerhouse and it's switchable between peak and shelving. In shelving mode it has a kind of resonating/singing quality and when taking away even a couple of dB it's extremely apparent. Combining this band with a roll off on the high-pass filter and dialling in some dBs provides hours of fun, and can really clean up or exaggerate various areas. This is very effective on many types of bass-heavy music from dub to hip-hop, and also generated a new-found octave (almost) on my Maton JB-4 bass. It's huge! In peak mode there are a few frequencies worth mentioning: 35Hz is earth shattering, 75Hz is a very funky '70s sounding vibe, and 150Hz can be very musical

if used responsibly. 91Hz is kept from the TG mastering console (often a fave) but sadly the lovely 128Hz doesn't get a guernsey. Well at least there's a plug-in (can't believe I said that). 200Hz and 300Hz worked very well in 'cut mode' in mastering situations, but subtlety was vital. Peak mode also works well in conjunction with the high-pass filter, and being able to gain range the boost to 15dB (via the multiplier) opens up even more bowel-loosening bass possibilities.

MIDS – FRUITFUL & LIVELY

The two mid bands are Presence 1 and Presence 2 and they range from 300Hz to 8.1kHz (peaking only). The great thing about the frequency selection of these bands (and in general) is that there is plenty of overlap between bands. So you can boost 800Hz on one and cut 800Hz on another (which sounds weird but it's very interesting), or more typically, you could do a dip at 3.6kHz and a boost at 2.8kHz to change the character of, say, a nasally vocalist. The midrange flavour of the Curve Bender is one of its most distinctive areas and it's a very fruitful and lively region. The thing that continually surprised me about this unit was that the boosts could be wildly outrageous and yet they never seemed to hurt my ear. I found that when using the EQ in sum & difference mode, the almost Telecaster-like presence (but not harshness) was absolutely amazing at lifting guitars up without pain. In fact, the sheer presence of tone meant that I needed to boost far less on the Curve Bender than on most of my other EQs, including my TG mastering desk, my Sontec, or the Manley Massive Passive. These bands are incredibly individual sounding and as such they didn't work on everything I tried, but for getting a presence of tone that was kind of transistor-like, but not harsh or pointed (think radio-friendly) they were very effective. I suspect that for its unique midrange signature alone this unit will garner many fans – there's nothing else like it and that includes the original mastering series EQs, which in comparison were always more subtle somehow.

TREBLE – AIRY NOT SPARKLY

Finally, the Treble band (3.6–20kHz) is like the Bass band in that you can switch between shelving and peak. I found that in many ways this was the underrated part of the unit, because I spent so much time playing with the bass and presence bands that I didn't spend enough on the HF area. Suffice it to say, though, that its character is typically EMI: airy, not sparkly... sort of old fashioned – never too brittle, but not the most authoritative tops you've ever heard. Luckily, again, the wide range of frequencies makes the band useful, not just for the super-highs. For example the incredibly handy 4.2kHz is there and I can't tell you how many times I've had

NEED TO KNOW

Price
\$6820

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Pros
Great sound.
Nicely hand-made.
Very musical EQ.
Worthwhile improvements on original design.
Lots of fun to use.

Cons
Bypass buttons click in audio.
Flavour may overwhelm some people!

Summary
A unique sonic flavour with an 'esoteric' price tag. Lovingly constructed, beautiful sounding – a highly desirable piece of kit for those who already have the more regular EQ bases covered.

to pull that wretched frequency back in mastering. Also 8.1kHz makes it over from the mastering EQ, which is a very useful thing to have. The shelving and peak of this band also interact interestingly with the low-pass filter, and on certain solo vocals I was able to reduce some of the very modern sounding (condenser) top end and yet inject some more old fashioned-sounding brightness – lovely.

LEARNING THE CURVE

I didn't start out expecting to like the Curve Bender as much as I did. I've got a lot of EQ units: Pultecs, EAR, Z-Systems, Sontec, API, UREI, even a bloody EMI console – why would I want or need another variation on that! Still, as you can tell from this review, the Curve Bender won me over with its sheer strength of personality. Now, Bowden's Law of new gear states there are three phases: 1) initial excitement/novelty in which you try it on everything; 2) tragic disappointment when it doesn't seem to work on everything; and, finally, 3) the 'Zen' stage when you come around to knowing when to use it. I was just entering the Zen stage when it was suddenly time to hand the box back! Damn! Too soon...

Now this unit won't appeal to everyone because it has a rather unique sound and price tag. I believe, however, that if you give the Curve Bender a whirl, it may remind you that equalisers are like guitars; they all sound different, and yet you may find you really enjoy making music with it, as I did.

INTERVIEW WITH 'MR. CHANDLER' – WADE GOEKE

His surname is pronounced 'Gurk' and he's the man behind the resurgence of all things EMI. We caught up with Wade over the phone to get the skinny on that big EMI sound.

William Bowden: What was the first EMI TG module you encountered Wade, and what did you think of it at the time?

Wade Goeke: About 12 years ago I stumbled onto a pair of TG12413 Limiters I was totally blown away by. It was a sound I had always heard in my head but had been unable to achieve with other compressors – total vintage squeeze but still very musical. I knew I would be doing something with them in the future...

WB: Had you encountered a TG console in The States or did it all really get under way with your EMI/Abbey Road association?

WG: I own a TG12410 Mastering Desk that I purchased before contracting with EMI so I was well on my way at contract time. Plus I owned the Limiters 12 years prior, and the TG preamps about five years prior.

WB: How did the Chandler Curve Bender come about then?

WG: Pete Cobbin (Abbey Road) and I really liked the TG12345 recording console sound, so we decided to make a super version of the 'Beatles desk' EQ. We didn't set out to make a 'mastering EQ', just a cool-sounding comprehensive EQ. We liked that it had some germanium stuff in it as well which gives it even more flavour and separates it from other EQs, except for the Germanium Tone Control. We ended up making the TG12412 (Mastering EQ) and TG12414 (Compressor) as plug-ins instead (don't shoot me!).

WB: Calling the new EQ a Curve Bender has seemingly confused a great many people – I 'spose you just thought it was a cool name?

WG: Basically, yes. None of the EMI EQs were officially titled 'Curve Bender'; it was a term used by EMI engineers to describe equalisers *in general* and I *have* seen the term used in the design information of several different units. We just wanted to continue that tradition.

WB: I notice all the resistors are hand soldered around the Elma switches, although this is as per the originals – the originals



Wade Goeke

"I totally believe that if you change the manufacturing process you will change the sound."

occasionally had dry joints! Is there a danger in being *too* original, or does hand soldering somehow affect the sound?

WG: I totally believe that if you change the manufacturing process you will change the sound. We make *everything* by hand like it would have been done 30 years ago. It takes much more time and money to do that, but I believe it's almost sacrilege to make so-called 'vintage' equipment with interlocking circuit boards, surface mount components, and other modern techniques that are basically used to make computers and cell phones. They've only been adopted by the audio industry to cheapen the process (and change the sound).

WB: I love the fact that any of the four bands on the mastering EQ on my TG console can be switched to shelving. I think the Massive Passive is about the only other EQ that has this brilliant feature. Were you not tempted by that idea for the Curve Bender?

WG: We were really trying to keep it more in the tradition of the TG12345, which did not have that feature. It's a cool feature that has been a trick of Abbey Road mastering guys for decades, but we just followed another direction.

WB: When you decide to depart from the original frequency selection and specs, who chooses what frequencies 'fill the gaps', so to speak.

WG: On the Curve Bender Pete Cobbin pretty much left it to me to pick the frequencies and he yelled at me if he didn't like them (that's a joke, by the way... Pete is totally cool and not like that). They were chosen to fill out the spaces or picked because I liked a certain frequency on a certain instrument etc. The 8.1k came from the TG12412 Mastering EQ as did the 91Hz that I like a lot. On the TG12412 Mastering EQ the frequencies were $\frac{1}{2}$ and $\frac{1}{3}$ octaves based on Middle C – a very musical approach. But on the TG12345 there was no apparent method to the choices, even when examining the extensive original design notes I've seen, so we just continued with the second approach.

WB: I noticed the rather hand-made looking inductors inside the Curve Bender. Can you tell me how close they are to the originals?

WG: The values have to be spot on with the old ones or the curves won't match up. We use a slightly different bobbin but they are very authentic overall when compared to the oldies...

WB: Can you characterise your own impressions of the sound of the inductors?

WG: To me an EQ without inductors is like de-cafeinated coffee. It tastes similar but what's the point? A major part of all my EQ designs is the extensive use of inductors. They have a sound that is unachievable by any other method. Fat, thick low end, slightly aggressive mids and smooth highs. Of course, the rest of the circuits and the Qs will affect the sound as well, but for me inductors are just about the most important ingredient...

WB: What prompted you to have two 'off' positions for the EQ sections, i.e., one above the frequency selector and another in between the two 'Q' shapes down below?

WG: I really wanted a simple way to bypass each band on its own. I find it useful, for example, if you've tweaked some low/mid out of a drum and want to move on to the high end. You can leave the low/mid adjustment in place and just check the high frequency changes. With the 'multiple bypass' it's a simple matter checking each band without having to sweep back through the frequencies to get there.

WB: Can you tell us some of your favourite applications for

the Curve Bender, and what was the biggest difficulty along the way of its development?

WG: Although it has inevitably drawn comparisons to mastering EQs, Pete and I were really just looking to do a full-featured four-band EQ. My use has mostly been tracking and mixing – guitars, drums etc all with the sound of the early Beatles and Pink Floyd records. Much thought went into the circuit layout for the EQ as the originals were somewhat noisy and had very low headroom. So it was quite a challenge to lower the noise floor while raising the headroom – two things that don't always see eye to eye. At the same time I had to stay completely within the framework of the original designs.

WB: In shootouts with my TG mastering console EQ, the flavour of the midrange bands common between the two units sounds quite close. How similar is the actual EQ circuitry between the two?

WG: There are some basic design similarities. I would almost say the TG12345 was the 'prototype' of the TG12412 Mastering EQ. The original designs were by the same man, Mike Batchelor, and you can see a similar approach. The major difference is that the TG12345 uses a germanium amplifier while the TG12412 uses silicon.

WB: EMI TG gear used a 200 Ω impedance scheme, which seemed to be some bizarre EMI-only standard. What did you do in terms of keeping the authenticity of the sound in our modern 600 Ω world?

WG: I do think the low impedance contributes to the sound of the unit. Changing the load can very quickly change the sound, so you have to be listening constantly! It's about working the transformers and circuits. I also had a little more playroom because I knew we'd have to expand the circuit and adjust some things. In the end I was able to increase the headroom and still lower the noise floor considerably. Since the TG was designed to work at a specific impedance and operating level it's not necessarily a simple process. It was a bit easier with the Curve Bender because the MkI germanium amplifier is a bit more forgiving than the later MkIV silicon amp.

WB: I've often felt that the TG EQs seem to add in extra harmonics, which is why they can often clarify the bass areas well – any thoughts or measurements in this regard?

WG: Yeah. They have their own signature in that area. People always comment about the low/mids, bass, and punch you can get from a TG – It's a very big part of the special sound they have – but it's not anything you can point to on a measurement really. It just comes down to the circuit design, transformers etc... I'm just happy we were able to recreate some of the magic!

WB: Any plans for the future you'd care to divulge; a large format console perhaps? It seems that you're heading down a germanium highway at present. Or are there plans to resuscitate the REDD tube series as well?

WG: We've been up to our neck in console design for some time. We *are* working on a design that will fit any 19-inch rack module into the channel and buses of the desk. We are very near completion of the prototype and it's going well. The Germanium Channel (Pre, Tone Control, and Compressor) was developed primarily for this project, so you could have complete strips on the channels and buses of the desk. Pretty much anything you can think of we've talked about making. I think it's safe to say that you'll see a bunch of things! ■