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Photo Engraving with a 10 Watt Endurance Laser

by *John Walker*

This article covers a photo engraving comparison I did between a 10 Watt laser (compliments of George Fomitchev, CEO of Endurance Lasers) and a [JTech](#) 3.8 using a couple of commonly available woods: Baltic Birch Plywood and Bass

To my [metric-loving friends](#), it's not that I don't appreciate you guys, but the last time I converted everything for you, it cost me a lot of time. As a compromise, I hope you'll accept the conversion widget I included at the very bottom of this page. Please let me know if you have any trouble with it. You can catch me in the Endurance Lasers forum on Facebook.

A perpetual safety disclaimer: You can burn your eye out, kid! I am not a pro by any stretch of my imagination. Please verify what I'm saying here to avoid potential equipment damage, the needless wasting of materials, and, most importantly, to prevent injury to yourself and others.

Why Compare?

When I received my Endurance 10, I was dying to do some raster engraving. How would it compare with my JTech? Yes, I know, comparing a 10 watt to a 3.8 is hardly apples to apples when through-cutting, but I should be able to get something worth comparing here.

The reason I upgraded to the Endurance from the JTech was strictly for a gain in my production speed. I figured a 10 watt would cut and/or engrave more quickly than a 3.8 and, although I didn't expect the increase to be multiplicative, i.e., a 10 to be twice as fast as a 5, producing *any* more stuff in less time would make me happy.

That was my original purpose of this comparison. Once I got going, however, it quickly became apparent that there was no accurate way I could imagine to do this. How could I measure how long it took to get an identical result when objectively declaring something as "identical" was impossible? It may LOOK identical, but that merely would be my aging eyes' opinion. So, the best I could do was get it in the ballpark somewhere, which threw the science of it right out the window. (I'm pretty sure Tiger Stadium had windows.) After spending quite some time attempting to provide some semblance of empirical analysis, I threw in the towel (lots of these at a ballpark), and instead opted to offer an almost purely subjective experience. I had to do it anyway, so why not share it with all y'all? (Redundant.)

While it's not a highly technical "how to" article, I don't want to sell short its potential value to some folks. While those of you who have been burning photos on wood for a while may find this article boring, if not entirely useless, it may hit a home run for noobs (like me) who are looking for a good starting point for photo engraving on wood.

The Hardware

I have an Endurance 10 and a JTech 3.8 watt, as I mentioned earlier, and used their stock lenses for this comparison. For the Endurance lens, I have their standard 3-Element focused at 3". For the JTech, I used their [High Efficiency Lens](#) focused at 1.5". I also have their [High Resolution Lens](#), but didn't use it because I don't yet have the same type from Endurance.

Were the lenses in focus, you might ask? Why, 'Yes!', I would answer. Seriously, I devoted extra time and effort to ensuring that they were as much in focus as possible with the naked eye.

Lastly, not that it's relevant to this test, I have both lasers mounted to my [Shapeoko 3 XXL](#).

Software and Settings

I am very happy with [LightBurn](#) software, so used it here. I tried several settings, but ultimately decided on the four which seemed to best serve this comparison. From here on, I'll refer to them as Profiles 2 through 5, and will label their screenshots accordingly. (There was a 1, but I ditched it.)

I ran both lasers at 100% power, varying the speed (given in inches per minute) to get (close to) the desired effect. The only other setting I changed from LightBurn's defaults was the Image Mode where I chose Jarvis because it seemed to give the best results for this particular photo. Here's a table for quick reference:

Profile	Image Mode	Speed (ipm)	Power
2	Jarvis	100	100
3	Jarvis	150	100
4	Jarvis	50	100
5	Jarvis	75	100

The Materials

To get the best possible visual results with the materials I had in my paltry pantry, I chose to use light colored wood with the least amount of visible grain. This quickly narrowed things down to thin sheets of Baltic Birch Plywood and solid Bass. (These are the same materials I used in my [previous article](#) about through-cutting.) If you have any Alder, you might want to try that on your own projects for the same reasons.

Lettuce begin...

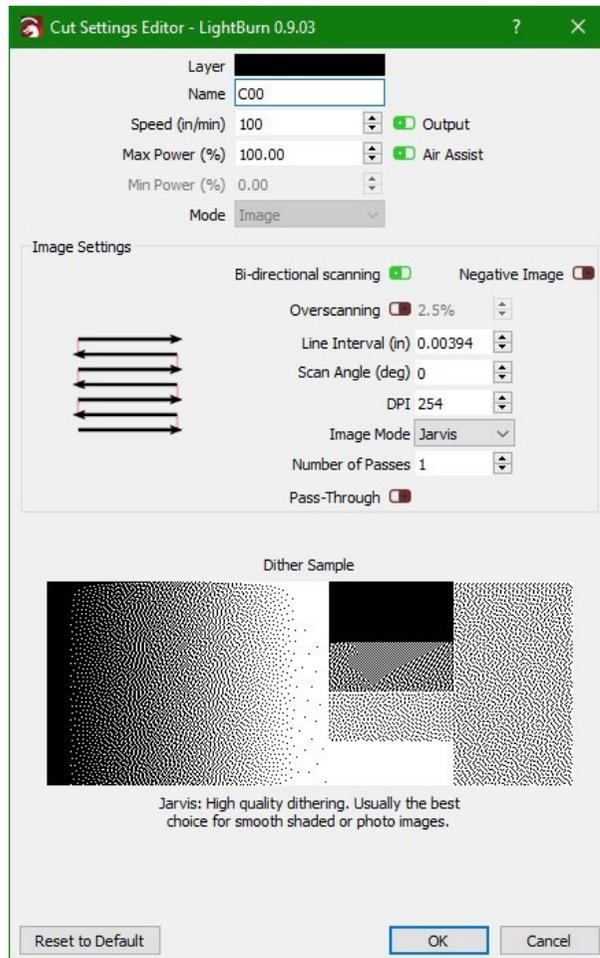
Say hello to my precious wife, Laurie, everyone. I chose a photo of her not only because I thought opting instead for my Shapeoko might cost me my life, but because I thought it contained a good assortment of tones and contrast that would be suitable for monochromatic engraving. This photo has not been edited in any way, although some might suggest that I would have gotten better results had it been. That, my friends, is a topic for another day.



Baltic Birch - Profile 2

Saying which one is "better," here, would depend on what you're looking for, I think. In the Endurance engraving, contrast appears sharper in the eyes and teeth, but some subtle details are lost in Laurie's left earring and the rhinestones on her garment's neckline. The JTech, on the other hand, while a bit muddier over all, presents more of the tiny "bits" which make it appear truer to the original photo. There is good detail in the earring and rhinestones, and the purse's straps are clearly visible.

If I had to guess, I'd proffer this is all because of the differences in lenses. While the Endurance has a more powerful beam, its 3-Element lens at 3" might not be as fine as JTech's stock lens at 1.5". But, as always, I'd be grateful to hear your feedback in the Endurance Lasers group on Facebook.

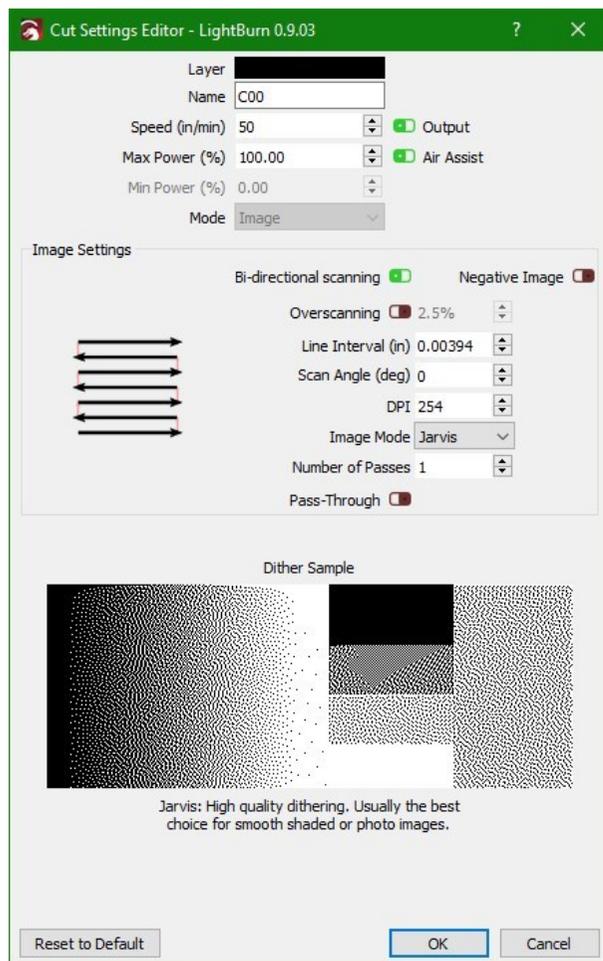
LightBurn Settings - Profile 2**Endurance****JTech****Baltic Birch - Profile 4**

If you haven't noticed, the sequencing of my profile numbers may seem to have no rhyme or reason. For example, Profile 3 is missing from this Baltic Birch section. That's because I had set 3 to travel much faster, at 150 ipm, so it would have been way too light for either laser to be of any use in the real world.

In this profile, we're a lot slower at 50 ipm, too slow (dark) for the Endurance at 100% power. But the JTech has picked up some better contrast without losing a lot of detail.

Because 3D doesn't show in a 2D world, you're really missing out on the carved effect these slower settings are beginning to show. The lasers are really cutting into the wood and creating noticeable elevations, especially with the Endurance at the same speed. It's a really cool effect, and I can't wait to start doing some 3D carving!

LightBurn Settings - Profile 4**Endurance****JTech**



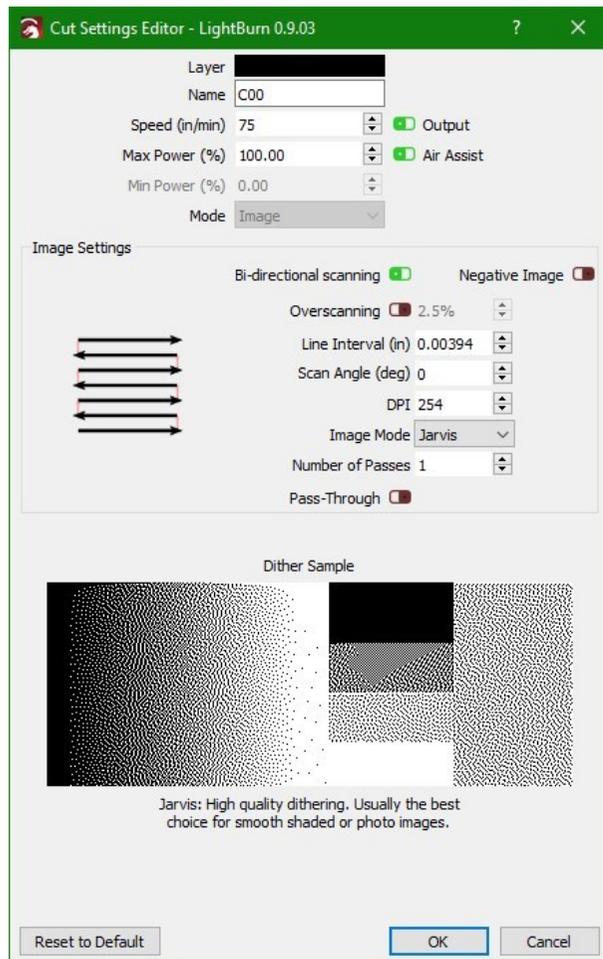
Baltic Birch - Profile 5

I just had to split the difference, didn't I? Here we're at 75 ipm, and things are looking a bit too light, especially for the JTech. In person, The Endurance engraving is probably at its best, here, in terms of overall contrast and detail.

LightBurn Settings - Profile 5

Endurance

JTech



Bass Wood - Profile 2

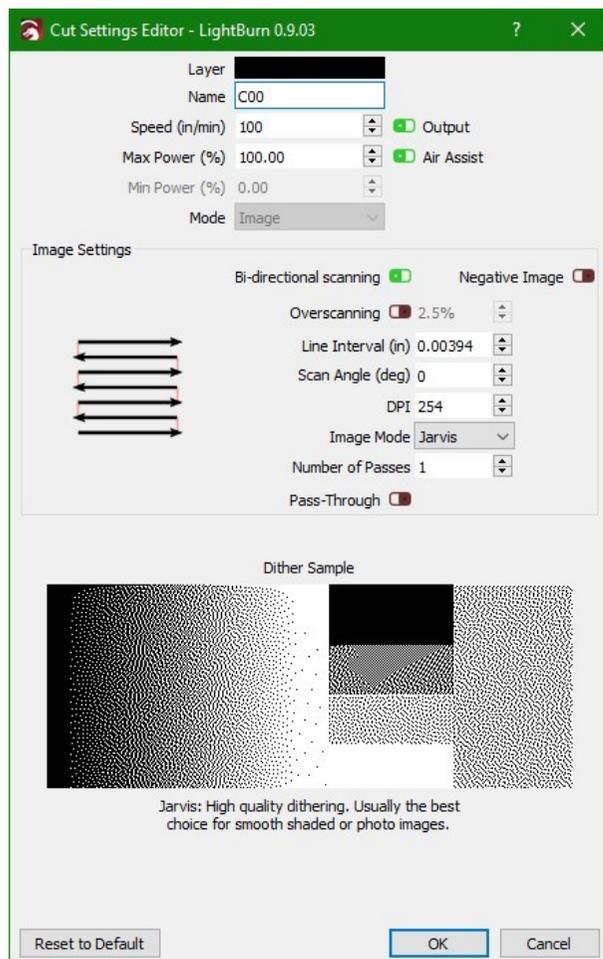
Bass is an entirely different vegetable, so to speak, than Birch. Soft and quick to toast, care must be taken not to overdo things. So, I started at a "fast" 100 ipm in this profile.

I'll tell ya, my lousy photography (at screen resolution) doesn't do justice to the real thing. In reality, they both look pretty good, albeit a tad dark. But this might be a good place to start if you're going to try this material yourself.

LightBurn Settings - Profile 2

Endurance

JTech



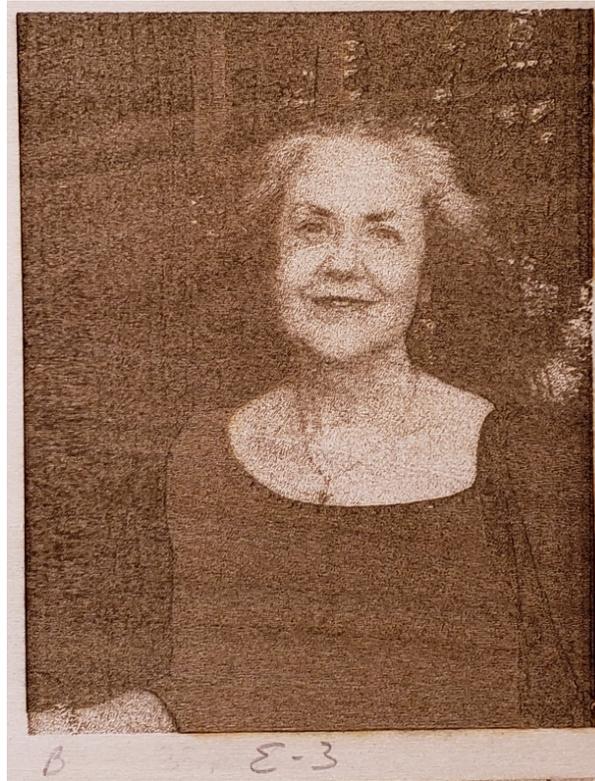
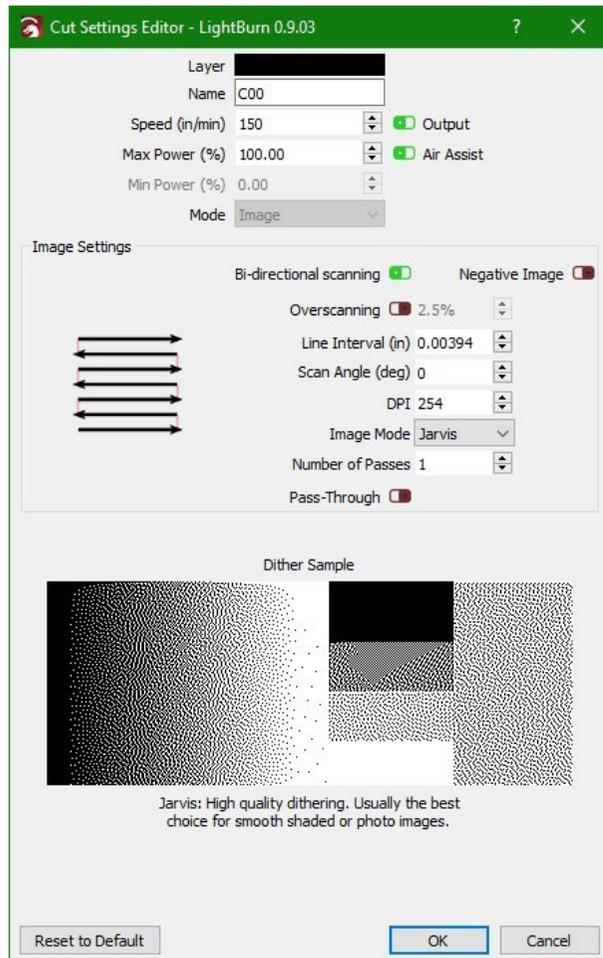
Bass Wood - Profile 3

Okay, I'm officially bummed. These pics aren't cutting it. In real life, the JTech is too light, but the detail and dithering are awesome. The Endurance's carving ability, even at this speed, is pretty impressive. I'll "dig" into this more once I have additional lenses for it.

LightBurn Settings - Profile 3

Endurance

JTech



That's It

See? I warned you. Nothing earth shattering, right?

To make up for it, I will be doing a VECTOR-based time study after I get the new lens(es) for the Endurance. I'll be comparing those results to an existing, in-house time study I've already done with the JTech on one of my products, engraving into raw MDF and its Melamine laminate. I'm hoping the time differences will be appreciable, and the visual similarities easier to spot in person and in the pics, resulting in a far less subjective comparison than this.

But first, it's time to take a 7th inning stretch to draw and print a really unique, universal Air Assist Nozzle.

Thanks ever so much for reading!

Length Conversion

1	Meter ▼
3.28084	Foot ▼

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