Subject: Digital Optimized
Posted by GarMan on Mon, 07 Mar 2005 18:27:31 GMT
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Last week, I did something that I haven't done in over five years in my other hobby of photography: buy new equipment. Ever since I stopped obsessing over equipment over five years ago, I found myself enjoying shooting a lot more, and was also better at it. However, my abstinence from equipment purchase ended when I finally decided to make to move to digital.Since my manual focus Canon FD system is incompatible with any D-SLR on the market, it meant I had to purchase lens(es) in addition to the body. After a bit of research, I notices that the latest trend in the lens market is a category call "digital optimized" - lenses optics that are optimized for digital camera, but can also be used for film. These lenses have higher quality levels "to meet the demands of digital cameras."My first thought was "Oh no, another piece of marketing B.S. designed to capitalize on the digital market. I mean, optics are optics, right?" Sure, most digital sensors are smaller than the full frame of 35mm film, so lenses that are designed only for use with digital cameras can be smaller, lighter, and placed closer into the camera body. But why should optics quality be any different? Well, after a bit of reading, it seems to be some legitimacy to this.Apparently, digital sensors are less forgiving and more difficult to work with than film surfaces. For example, a film surface can pick up light coming at it at all different angles, while individual sensors on a digital array, which sits recessed to surface, can only pick up light that comes in more or less perpendicular to the surface. Therefore, "digital" lenses have to be designed so that light comes into the camera perpendicular to the sensor surface.Another difference is that the surface of the sensor tends to be a lot more reflective than film surfaces. To address this, the back element of "digital" lenses have a higher grade of anti-reflective coating so that light does not bounce back and forth inside the camera. There a list of other differences that I wouldn't go into, but the long and short of it is that digital sensors are harder to work with than film and require lenses of higher quality to make up for these shortcomings. Photographers who uses these "digital" lenses with film can only benefit from it.So, what does this have to do with audio?!Digital source has been around for over 20 years. In that time, I've seen more than my fair share of components and speakers "designed for digital." A lot of it was during the hype of hi-rez digital sources requiring hi-rez amps and speakers. I've always blown these off as marketing gimmicks. But are they? Is there anything inherent in digital source that requires an amp or speaker to be designed differently?What about the introduction (and eventual acceptance) of digital amps. What would a set of speakers that are "digitally optimized" for these amps look like?Gar.

Subject: Re: Digital Optimized
Posted by Wayne Parham on Tue, 08 Mar 2005 02:37:15 GMT
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No, the digitally optimized thing for loudspeakers and amps is just hype. I can see what you're saying about video gear and that has merit. It's a different set of rules.Something else I think is worth noting is that the granuality of film makes it very high resolution. For example, if I am going to render a computer generated image and take it to film, it has to have tens of thousands of lines

of resolution before the pixel density is greater than the film grain density. Said another way, the film is much higher resolution than the digital image. So if you want the best quality, I think film is still the way to go.

Subject: Re: Digital Compromised
Posted by DRC on Tue, 08 Mar 2005 11:11:04 GMT
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Agreed on both.On digital amps: they have to convert back to analog at some point, unless our brains are going to be modified. We don't listen digitally. And pushing the digital compromise further down the chain doesn't improve things. I listen to some of the best digital front ends on the market every day, and they still suffer a 4-8:1 cost disadvantage compared to analog, and never actually catch up.A large chunk of higher resolution material (35mm film) has a huge advantage over a sensor 2/3 the size with lower resolution. If you want smoothly graduated grainless tonality, film is still IT. Full sized sensors get you closer. Medium or large format digital backs get you closer still, but now we're up to the price of a subcompact car.Digital sources and cameras win on convenience and ubiquity. I use my digicam for product shots for the web and trade show coverage. I use film for personal satisfaction. The digits still lose out on quality. IMHO. YMMV.

Subject: Re: Digital Compromised
Posted by GarMan on Tue, 08 Mar 2005 18:28:25 GMT
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Digital and analogue sources are different. No doubt about that. I think both have their strengths and weakness. I'm just wondering if in the past 20 years, as digital source established itself as the mainstream standard, if manufacturers have redesigned amps and speakers (consciously or unconsciously) to better match the medium.For example, output from CDP's can easily be in the 2V range. So, why are preamp/amps still designed with such high gain that clipping occurs with only milli-volts? Is today's preference for soft dome tweeters over metal domed tweeters driven by the introduction of digital source (ie "brittle" HF), or just coincidence?On the photo front, I've always considered myself "anti-digital." In the past three years, I've been shooting primarily B&W, I process my own film, and do my own printing. 35mm, but sometimes 4x6 when I can get my hands on a view camera from my courses. Most prints are 8x10, with about a third at 11x14 or 16x20. I never believed that you can get the same level of quality from digital as you can from film in a 16x20 print, especially one that's shot on a 4x6 negative. I still don't think you can. But you can't deny the convenience and consistency of digital. It's also next to impossible now to get a gig if you're still only using film.Gar.

Subject: Re: Digital Compromised
Posted by Wayne Parham on Wed, 09 Mar 2005 19:42:24 GMT
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I've always had an appreciation for systems that were setup so that full gain is reached just under the point where the system clipped. If each gain stage is configured properly, each will reach clipping at about the same point. That maximizes signal to noise ratio and provided the point of clipping is never exceeded, keeps the system in its best performance.Most systems provide much more gain control and allow you to reach clipping far before they run out of room on the volume knob. I always hated that. I suppose it's good to be able to turn up very soft sounds, but I'd rather have the increased power to match the increased gain than to just have the increased gain by itself.There is a standard for the preamp signal, and it's 0.775v peak. If the preamp level exceeds that, it is going past what is expected on the preamp input. Obviously some don't adhere to this standard, and I suppose if it works with everything attached, that's OK. And there's another standard for prosound that uses a 2.0v preamp level. All that's fine, but if things aren't matched, then the system will suffer. Go one way and there's too much noise, go the other and there's a tendency to overload and clip.So all that to say it isn't an analog/digital thing. It's a systemic thing. In this particular situation, the potental problem is the same. If you overdrive an analog system, you hit the limits of conduction or the power supply rails. If you overdrive a digital system, your data sample hits all ones. If you underdrive an analog system, your noise floor is above your signal level. If you underdrive digital, the bits are all zeros. Same deal.

Subject: Re: Digital Optimized
Posted by cfranz on Fri, 03 Mar 2006 13:55:40 GMT
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Reply is a little late.No. But you have to remember that the digital camera is recording, the 'digital enhanced' speaker is playing back. Metaphorically, if you buy into the logic for ‘digitally optimized speaker’, you would have to optimize your eye to view a digital photograph. I hope that made sense.Perhaps a better metaphor would be the speaker=photographic paper. Either way it makes no sense. At that end of the process, you need something to reproduce a sinusoidal waveform, not a bunch of bits.Quite frankly, I’d be terrified of a speaker which could faithfully translate from digital to something useful for your ear. Between the sub/ultrasonic artifacts, I suspect it would be a really uncomfortable experience.And this from a guy who makes a heck of a living herding bits.