Zoom H2 Second Opinion

I liked what I saw of the H2 mockup at the January 2007 NAMM show and eagerly awaited its arrival. While I wouldn't expect a recorder like this to be one I'd take to a professional gig, I've been looking for something I could carry in a pocket or banjo case to record a good jam session or grab tune that I wanted to learn. The H2 fits this niche nicely. It's small, the case is smooth with no pointy things or fragile projections, the built in mics are well protected, and there don't seem to be any obvious mechanically weak parts waiting to break. I really can carry the H2 in my pants pocket if I'm careful not to sit down on it.

The display is clear and the menus are, for the most part, self explanatory. It took a while to get used to using the left-right buttons to scroll up and down through the menu, but otherwise menu operation is just fine.

Typical of this genre, the record volume up/down buttons adjust the digital level after the A/D converter, so it's important to understand the H2's gain structure. Using the Rec Level Down button to bring the meters on scale will almost surely result in a clipped recording. The scale on the (digital) record level runs from 0 to 127, with 100 apparently being the unity gain setting. I'd have preferred this to be calibrated in dB, and of course anything below 100 (0 dB) is the danger zone. The bright MIC ACTIVE LED flashes to indicate analog clipping, but it's only active when using the internal mics.

There's a three position analog attenuator switch (0, -10, and –24 dB) to get the analog level into the ballpark. It works on the built-in mics and external Mic Input, but not on the Line Input. When recording from a mixer, I needed a 20 dB pad ahead of the H2's Line Input in order to avoid clipping.

The mics sound fairly good and provide a reasonably well defined and stable stereo image. I found the front-and-back 2-channel "surround" mode to be particularly useful for interviews. Sitting across the table from my subject with the recorder in the middle and turned about 30 degrees off axis yielded a stereo recording with the two of us separated left and right.

My gripe list is fairly short. Some of these things can be fixed with a firmware update if Sam Zoom thinks they're sufficiently important, while others are inherent in the hardware architecture and we'll have to live with them.

The 2000 mA-H NiMH batteries that I used for testing provided just over three hours of recording time on a charge. This is a near perfect match for 44/16 recording on a 2 GB memory card (both power and file space run out at about the same time), but I didn't get significantly more recording time from a charge using the 192 kbps MP3 mode, a mode that I'd be more likely to use for informal recordings. My battery gripe is that there's no provision for charging the installed batteries when operating on AC power or from the USB port. Since there's a

menu-operated switch to select between alkaline and NiMH batteries (this changes the characteristics of the battery life indicator), if the hardware was there, the charging function could be enabled when the NiMH mode was selected.

The H2 records time stamped Broadcast Wave files (BWF), but the time stamp of each file is 00:00:00 rather than the BWF standard time based on the number of samples after midnight. There's a clock/calendar which time-stamps the files, so the recorder knows what time it is and could use this information for the BWF time stamp as well. In a related issue, when viewing File Information, the "Time" displayed is the length of the recording. It would be useful if the file date and time were also displayed. Since files are named automatically (they can be renamed, up to 7 characters, with patience), when browsing the file list, knowing when the recording was made might help to identify the material.

Although the clock/calendar keeps alive for several hours without batteries, the "preferences" (sample rate, pre-record mode, compressor/limiter mode, low-cut filter, etc.) are stored in a file on the flash memory card. When you install a new or freshly formatted card, the recorder reverts to its default settings, some of which you may need to change before recording again. This can increase your "reel change" time.

My one totally out-of-scope wish is that the H2 could write data to an external USB storage device (like a hard disk drive) as an alternative to the flash memory card. I've dreamed of this for a while now (I do a lot of all-day recording gigs), and my crystal ball tells me that we may start seeing this feature in the next generation of portable recorders.

There's a lot to like with the H2. It makes perfectly good casual recordings with its internal mics, it sounds pretty good when fed from a good quality line level source as long as you don't let it clip, and it's size, shape, and weight make it no hassle to carry along if I think I might want to record something. At the price, it's going to be hard to resist.

Afterward:

Following the publication of the full review and this Second Opinion in the April 2008 issue of Pro Audio Review magazine, the magazine got a letter from a reader regarding the external mic inputs of the Zoom H2. You might be interested in reading his review and the follow-ups on the forum that he references in his letter. Here's my response to him, which you might find interesting. The names have been recuced to protect the innocent:

Peter wrote:

I've just read the Zoom H2 review. I'm an enthusiastic Zoom H2 owner, and author of a widely read guide on its use at http://www.2090.org/zoom/bbs/viewtopic.php?t=9745

While it's good to see a generally positive review, I am very surprised that your reviewer failed to mention the widely acknowledged problem with the Zoom H2 mic input. The first question that potential buyers of any audio device with a mic input socket ask is "what's the mic preamp like - is it noisy?" In the case of the H2 it is seriously noisy, which is very odd as the internal mics are quiet. Everyone has commented on this, except your reviewer.

So I wonder why your reviewer failed to mention this. Did he not test this aspect of the recorder? Did he test it and fail to spot the glaring problem? Did he spot the problem and decide not to mention it? Did Zoom supply a test model which had been tweaked to fix the problem, and if so, can other users get theirs tweaked?

My reply:

Your observation about the external mic inputs is valid.

Normally when I review a product, I examine the interfaces in great detail, and in fact I thoroughly investigated the line input characteristics since one application for the H2 which I anticipated was recording a “board feed” at a concert. This is often a condition under which the recordists often has no control over the input level, and I found that the lack of a true input attenuator could be a problem. I didn’t, however, dwell on the external mic input on the H2 beyond verifying that it worked, simply because I couldn’t see any reason why I’d want to use it with an external microphone. Allow me to elaborate.

As much as much as possible I try to use the right tool for the job and don’t try to do everything with one tool. The H2 with its built-in mics is ideal for grabbing a tune at a jam session, recording a workshop or seminar, recording an interview for transcription or broadcast, or to make a quick practice or rehearsal recording. Its most important feature to me as a user is its ability to make a competent recording with practically no setup and fuss, and this was the light in which I reviewed it.

Now, as far as the external mic input, I concur that it really doesn’t work very well in practice. The problem isn’t quite as you state it, however. The input stage isn’t unusually noisy, it just doesn’t have very much gain. On the high sensitivity range and with the record level set to 100, unweighted quiescent noise is around –60 dBFS, around 5 dB worse than mic inputs of some “home studio quality”

recording interfaces that I have tested under similar conditions. The problem with the H2 is that at this setting, reaching peak recording level requires –28 dBu into the mic input. It takes about 104 dB SPL to get that level out of a Shure SM57 mic, and that's mighty loud. At a more tolerable 80 dB SPL, the meters barely hit –20 dBFS on peaks. Boosting the level in playback or post-processing boosts the noise along with it.

Still, the net result, regardless of how you look at it, is the same – noisy recordings with a common (and typical) mic connected to the external input. As a few people on the Zoom forum to which you post have observed, the H2 does better with microphones that have a higher sensitivity (higher output level for a given SPL). I suspect that a Røde NT-4 with its sensitivity of –38 dBV@1 Pa (about 12 dB hotter than the SM57) would work well with the H2. But in reality, would you want to use a $450 microphone with a $200 recorder, and then trust your connection to a 1/8" phone jack?

It's unfortunate that the H2 doesn't do well in this respect. Mic placement is probably more important than anything else for making a high quality recording, and using an external mic can expand your placement options. However, in my Second Opinion review (which you hadn't read when you wrote your letter) I emphasized its value as a self-contained recorder and how surprisingly good its performance is within reasonable bounds. I honestly hope that nobody buys one for the wrong reason based on the PAR article.

To add a couple of other things not related specifically to your comment about the mic input:

Trevor, another poster to that Zoom forum, commented on non-symmetrical clipping with the external mic input. I also observed that the positive half of the cycle clips before the negative half, however that clipping is in the output stage rather than the input. Audio files recorded with an input that clips the input stage, whether from the built-in mics or the external mic or line inputs, are clipped symmetrically. The non-symmetry is only at the line/phone output. Reducing the playback volume to below the 90% solves this problem.

In Bruce's review, he mentioned that left and right imaging was from the perspective of the front microphones, and the stereo image was backwards when using the rear microphones. There is a menu selection to reverse the channels, though this may have been added in a firmware update since the initial review.

It's good to have the opportunity to follow up on a review with a software-based product that's subject to frequent change over its life cycle and we thank you for your input.