Subject: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Wed, 07 Feb 2024 03:34:17 GMT
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Has anyone gotten Sergey's Micro8088 to work with XT bios 1.0?

Specifically, are you seeing the keyboard die a few seconds after the video bios splash screen, with the keyboard clock going high and staying high?
Can you reboot the Micro8088 before that happens with ctrl-alt-delete, but afterwards (because the keyboard clock is high) nothing happens when you type?
Ditto the caps lock key/light?

The reason I'm asking is that
a. I saw a discussion between Sergey and Wayne a few years back talking about the keyboard code being broken in the bios for both XI and Micro8088 as of version 9.7. What was unclear was whether this was fixed.

b. Poking through the bios source code,(BIOS.asm line 817) I see a point where the keyboard clock is disabled (and thus pulled up by the pullups in the at2xtkb MCU for testing memory and so forth. In the Book 8088, it's re-enabled on line 1052, but in the Micro8088 code it doesn't seem to be.This is exactly the behavior I'm seeing on the keyboard clock line between the at2xtkb MCU and the FE2010 chip.

If you *have* gotten it to work, and I'm barking up the wrong tree, it means there's a problem with my build, and I'm suspicious that something bad has happened to one of my backplane's IRQ lines, but before I go tracing through all of those and/or downgrading the bios, I'd like to know if anyone else is seeing this kind of thing.

I haven't tried modifying the bios source code yet because I'm a complete newb at assembly, and it would take me quite some time to figure out how to compile the existing code, let alone modify it constructively.

Thanks.
-JRS

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by briano on Thu, 08 Feb 2024 00:56:02 GMT
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Yes, I have had similar issues. Mine does work, but it is sporadic, and it definitely points towards the keyboard handling at start up. When it freezes the address on the bus shows it is stopping at the keyboard bios - but I haven't got the exact line written down anywhere. It's been a while since I last looked into this and I haven't the time these days. But I would say you are not imagining it - your description matches my experience.

If a fix presents itself I would be interested in hearing about it.

Brian

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Thu, 08 Feb 2024 02:39:53 GMT
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Given that disabling the keyboard during memory testing would make it impossible to exit the memory test with esc, which the BIOS screen says you can do, my working hypothesis is that the call on line 817 to disable the keyboard was meant to be ifdeffed for the book-8088 only, which later re-enables it. It doesn't look that way in the github blame system, but as I said, it doesn't make sense to disable the keyboard during the ramtest loop. I'll poke at that when I have some time.

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Sat, 24 Feb 2024 02:04:50 GMT
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As a quick followup, I rolled my Micro-8088 back to 8088Bios 0.95 and the keyboard works fine. It boots Dos5 from floppy without (much) trouble. (Video flakiness--I had to hack my video board--not Sergey's--to run in 8 bit mode.) No joy with my XTide board. It appears to have hardware problems, or is grossly misconfigured. I'm still planning to poke through the bios source and see what changed.

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Sat, 09 Mar 2024 07:28:40 GMT
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Sorting the XTide board took a couple things: using the right IC for the bios helped a lot. :p
Switched to a Paradise 8 bit vga card from back in the day (1988, in fact), and the video flakey problems went away.
Ethernet works, now that I've chipped the rust off my packet-driver setup skills.
0.95 bios doesn't seem to have a way to go into turbo mode, which is probably ok. I need to check the speed on my 8087 and make sure it won't smoke if I turn the clock up.

Still poking at the keyboard clock disable on the 1.0 version of the bios. I think what happened is that the reenable code was changed to work with the book8088 and ifdeffed, leaving it missing for the micro8088. I'll hack on it when next I have a block of time for retrocomputing.

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Fri, 29 Mar 2024 19:06:12 GMT
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Okay, my keyboard clock set/clear idea was a red herring, based on me reading an ifndef as an ifdef.

However, I've gotten 1.0.0 to work on my Micro8088. In the config.inc for 8088_Bios-1.0.0, I commented out lines 99 and 100, which enable the realtime clock and probe for it. As a result, the speaker click o' doom never happens, and my keyboard clock never gets stuck high. Everything seems to work, pending more in-depth testing. As I don't have an RTC in this system, this isn't a huge sacrifice for me.

It's gratifying to discover that the fast "intel inside" beep is not, in fact, a function of the turbo setting, another red herring. (I did try commenting out the "has turbo" code in config.inc, but it didn't help in any way. Having four spare BIOS eeproms was a huge time saver).

I'm less clear *why* disabling RTC and RTC probing fixed my problem. Sergey assures me that bios 1.0.0 works fine in his Micro8088s, which negates the research I did here where it was implied the keyboard code was messed up. (Old discussion, obviously no longer relevant).

Some specific wierdnesses to my build:

I used the FE2010 chipset instead of the FE2010A. Sergey's documentation says it should work, and it does in every other respect I've been able to test. (I haven't been able to test turbo, as my 8087 is a 5mhz part).

I have the 14.31818 MHz crystal instead of the faster one. The jumper is set open, which I believe is correct. I'm getting performance consistent with a 4.77mhz pc.

At this point, I'm going to shrug and say "AT RTCs are not compatible with *my* hardware, reason unknown." I may try replacing the chipset at some point to see if I can fix that. (Might also try a faster 8087 so I can turbo with the cool kids. :)

Hope this helps someone.
-JRS

edits: No, a period followed by a right-paren is NOT a wink, BBCODE. Winks are semicolon right-paren. Sheesh.

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Wed, 24 Jul 2024 04:50:45 GMT
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To follow up:

I switched to the Proton chipset and the faster clock, and the stock bios works fine on my system without modification. I also switched to a v20/8087 at 10mhz.

I sent the old chipset to Sergey in exchange for an RTC board so he can test it at more length. It *looks* like it was a chipset problem. Apparently, I'm the only person who's built the micro_8088

with the FE2010 (not the FE2010A). I'll be interested to hear the results of his testing.

Upshot: if you have this problem, and you have the FE2010 (not A) chipset, my bios hack might get you going.

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by jrs on Sat, 29 Mar 2025 07:27:03 GMT
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To follow up again: Sergey posted in discussions about the bios that the FE2010 (not the A revision) has a bug(?) that it doesn't handle the RTC addressing properly, and instead jumps into the keyboard routines.

Subject: Re: Sergey's Micro8088 + 8088 Bios v1.0
Posted by Sergey on Fri, 28 Nov 2025 00:04:10 GMT
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The FE2010 (without A) doesn't do full I/O address decode for the integrated peripherals. Therefore accessing the RTC at 0x70-0x71 ends up modifying chipset PPI registers at 0x60 and 0x61, disabling the keyboard...

I added FE2010 detection in the 8088 BIOS version 1.0.1, so it will avoid using the RTC at 0x70-0x71 if it detects FE2010 chipset.
