From:	John Monteith
To:	mark@whiteboxsolar.com
Cc:	JShen
Subject:	RE: GP22: Clock speed
Date:	Wednesday, January 16, 2013 8:55:30 AM

Hi Mark,

I may be missing your question, but I think you may be tripped up by a very common problem I see from many developers. The value you are dividing by is 1 more than the hex setting of DIV_FIRE. I will show you in the two examples you site:

From the data sheet: [4 MHz] → [4MHz/DIV_CLKHS] → [f / 0.5 (doubler)] → [f / DIV_FIRE] → fire pulse frequency

Plugging in the values you describe in the first example:
DIV_CLKHS parameter of 0x01 → Divide by 2
DIV_FIRE parameter of 0x03 → Divide by 4
Then running through the formula:
[4 MHz] → [4MHz/2] → [2MHz / 0.5 (doubler)] → [4MHz / 4] → fire pulse frequency →1MHz

Plugging in the values you describe in the second example:
DIV_CLKHS parameter of 0x01 → Divide by 2
DIV_FIRE parameter of 0x04 → Divide by 5
Then running through the formula:
[4 MHz] → [4MHz/2] → [2MHz / 0.5 (doubler)] → [4MHz / 5] → fire pulse frequency →800KHz

This is very common and I see this a lot. The other place people trip up is on the DIV_FIRE setting, where 0x01 is a divide by 2. If I am misunderstanding the question, please correct me, but I think this is the problem.

Also, I have an answer back from ACAM on your other question and I will be sending that shortly.

Best Regards,
John

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From: Mark Richards [mailto:mark@whiteboxsolar.com]
Sent: Wednesday, January 16, 2013 7:17 AM
To: John Monteith
Cc: JShen
Subject: GP22: Clock speed

Hello John Monteith, (copying John Shen on this also)

The 4 MHz crystal in our GP22 prototype measures 4.000143 MHz. Seems close enough for our application. When a pulse train is triggered with a DIV_FIRE parameter of 0x03 and a DIV_CLKHS parameter of 0x01, the period of the pulses is exactly 1.0 MHz. At the expected setting for 1 MHz (0x04) I get 800KHz or so. There seems to be an issue here.

As I read the data sheet the fire pulse frequency is established through the two parameters in this flow:

[4 MHz] --> [4MHz/DIV_CLKHS] --> [f / 0.5 (doubler)] --> [f / DIV_FIRE] --> fire pulse frequency

Perhaps the setting is wrong and/or there is another factor which sets the pulse frequency?

Would you please consider this question and let me know your thoughts?

Thank you,

/mark richards