

Re: Replacing crystal with external clock signal

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- *From:* Florian <petafrog@xxxxxxxxxxxxxxxxxxxx>
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Florian <petafrog@xxxxxxxxxxxxxxxxxxxx> writes:

"PeteS" <PeterSmith1954@xxxxxxxxxxxxxxxx> writes:

Florian wrote:

I have a chip that wants a specific low-frequency (38k) clock crystal, which are somewhat hard to find and pricy. I could synthesize a 38k clock signal, but the chip is not designed to accept an external clock – it wants that 38k crystal and a 10pF series capacitor between two pins.

Would it be possible to trick the crystal driver into syncing to an external clock by proper attenuation and filtering? What sort of voltages would be present in a running oscillator like this? Am I likely to damage the chip by experimenting?

What device are you using?

These devices usually use an oscillator across the pins of 'XTAL1', 'XTAL2' or some such. In the documentation it usually specifies which pin is the output of the amplifier and which is the input. You should be able to drive the input side without problems from an external clock at the appropriate levels, but what they are depend on the device.

The chip is a BA1404 FM transmitter. I found a datasheet at <http://www.radiochips.com/images/ba1404v2.pdf> but I can't tell from that which pin is the input. Am I likely to fry the output if I try to drive that?

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Any guesses as to the voltages to start experimenting with? I'm planning to run the chip at 1.5V.

Thanks for your help!

Ok, I think I've got things figured out. Powering up the BA1404 and looking at the two unconnected XTAL pins with a scope, pin 5 is quiet and pin 6 puts out a high-frequency signal or noise (looks like a solid band between ground and $V_{cc}=1.50V$ on my 20MHz analog scope, can't find anything periodic in it). Thus I infer 5 is the input and 6 the output.

I have an ATtiny12 producing a 38kHz clock and put that through a voltage divider (47kOhm + 10kOhm yielding a bit under a volt for high) into pin 5. This makes pin 6 produce a neat square wave at 38kHz, 0 to V_{cc} , and I get a 19kHz signal with a DC bias out of the Pilot pin, so on the surface things would seem to work.

Now comes the fun part where I get to mess around with radio frequency stuff. It remains to be seen whether the internal RC oscillator on the ATtiny is stable enough to produce decent output, or if I need to add an external crystal to /that/. At least I have some handy.

A big thank you to PeteS, who's having trouble posting, for his helpful email!

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