

## Re: simple frequency multiplier

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"John Larkin" <[jjSNIplarkin@xx](mailto:jjSNIplarkin@xx)> wrote in message [news:b6ka511h2lr9v09flm6tblhsmcamh4h@xxxxxxxxxxx](mailto:news:b6ka511h2lr9v09flm6tblhsmcamh4h@xxxxxxxxxxx)  
> TCXOs have a temperature transient problem: the temp comp sensor never  
> has the same thermal time constant as the crystal itself, so whereas  
> the compensation averages very good, a millikelvin delta-t over 100 ms  
> can cause a lot of phase shift. A good OCXO will have a huge thermal  
> isolation system and also operates the crystal at its "turning  
> temperature" where the inherent TC is zero. All that makes a huge  
> difference in close-in phase noise. If you use a TCXO, put it in a  
> heavy aluminum can to slow down temperature transients; that alone can  
> cut thermally-induced phase noise 10:1.  
>  
> A good SC-cut OCXO is a few hundred dollars new and is the best you  
> can do without going atomic. You can get a used rubidium for about the  
> same, but I'm not sure the short-term stability is necessarily better  
> than the SC.

I guess I've been looking at too much of the sales blurb, .. yes a good thermal slug and wind proofing might be a good idea, also the device is basically on its own except for decoupling and is lightly loaded. it's also all on a single SMD chip.

I had considered OCXO or putting a peltier device to keep it at constant temp, maybe even at its lower temp turning point. even the idea of having a temp sensitive oscillator as a sensor and using a PLL to keep the temp constant. however low power battery operation would make things a lot easier. however thinking about it I might well have to resort to a ocxo. the whole thing should fit into an aluminium or steel tube.

lots of things I haven't really considered seem to be popping up I guess I'll just have to try it now and see just how much everything adds up. there's not actually a great deal to it.

> Considered an optical interferometer ?

yes I am thinking about that, however I can't simply use the same light source and bounce it back to meet the original as this would cause an immeasurable result, the Sagnac effect is measured with a single source, but

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i would need 2 lasers and be able to tune one of them and keep it in synch with the other one. im not sure how feasible this is. maybe two closely matched laser diodes could be kept in synch by controlling the temperature, i guess they must have some temperature sensitivity.

Colin =^.^=

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• **References:**

- ◆ [simple frequency multiplier](#)  
◇ From: colin
- ◆ [Re: simple frequency multiplier](#)  
◇ From: Mark
- ◆ [Re: simple frequency multiplier](#)  
◇ From: colin
- ◆ [Re: simple frequency multiplier](#)  
◇ From: Frank Raffaeli
- ◆ [Re: simple frequency multiplier](#)  
◇ From: colin
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◇ From: John Larkin
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