

Re: measuring distance between two cars using infrared circuits

Source: <http://sci.tech-archive.net/Archive/sci.electronics.basics/2005-01/1689.html>

From: Mac (foo_at_bar.net)

Date: 01/26/05

Date: Wed, 26 Jan 2005 04:27:48 GMT

On Sun, 23 Jan 2005 22:59:46 -0500, keith wrote:

> On Mon, 24 Jan 2005 00:09:10 +0000, Mac wrote:

>

>> On Sun, 23 Jan 2005 14:07:55 -0500, keith wrote:

>>

>>> On Sun, 23 Jan 2005 17:51:45 +0000, Mac wrote:

>>>

>>>> On Sat, 22 Jan 2005 23:41:45 -0500, keith wrote:

[snip]

>>>>> *Ok, what's the bandwidth of a kHz modulated ~2GHz carrier (wherever there
>>>>> is some free bandwidth). It should be trivial to measure the round-trip
>>>>> delay to within a nS, which is about six inches. At a kHz,
>>>>> that gives us a distance measurement every millisecond, which should be
>>>>> enough for distance and differentiate to give a relative velocity
>>>>> number.*

>>>>

>>>> *Are you talking about on/off modulation of a 2GHz carrier at a 1KHz
>>>> rate? How long is the "on" time?*

>>>>

>>>> *Yes, pick your poison.*

>>>>

>> *It looks like it doesn't really matter, anyway. The Fourier transform is
>> just a sum of two sinc() functions, one shifted right and one shifted left
>> by the carrier frequency. The pulse duration controls the magnitude of the
>> FT.*

>

> *Sure. I'm looking at launching a ~2GHz (wherever the FCC allows) CW pulse
> and measuring its time in flight. At a ns/ft that's 6"/ns round-trip.
> Some tricks should be able to get this down significantly less than this.
> A ns is a long time these days.*

>

>> *I believe the total bandwidth is infinite, but any finite signal
>> has infinite bandwidth, so that doesn't really help us.*