Hi Frequency Voltage Probe

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Hello,

I'm trying to troubleshoot a receiver that works up to 350 MHz. It's sort of a background project − not urgent, I just poke at it a bit once in a while.

Desiring something that could actually _see_ the RF at the requisite levels (low), I bought a Texscan VSM−5D spectrum analyzer on Ebay.

The Texscan can see signals down to about 30 microvolts, which though not stellar, is adequate for the task at hand. But its input impedance is 75 ohms.

A friend suggested piping the output from my scope into the analyzer. That way, I'd get to use the hi−z low capacitance probe in the scope, AND have the benefit of part of the vertical chain.

Alas, the scope (a 150MHz Tektronix) just does not have the frequency response to do this well.

So now I am thinking of some sort of homemade active probe. Be something fun to make on my Sherline lathe & mill.

I went down to the electronics shop and bought an NTE316 transistor, which is supposed to have a gain/bandwidth product of 1400MHz. My thought is to make an emitter follower encased in a probe. Wouldn't need anything inside the probe except the transistor, a coupling cap, and a load resistor. Well, there'd need to be a decoupling cap for the collector.

The other parts would be in a box further up the line. Heck, even the load resistor could be in that box.

Another possibility − one that occurred to me while paying for the transistor − was an MMIC. I seemed to remember buying a development kit from Mini−Circuits about 15 years ago. Sure enough, a baggie of MMICs showed up in the junkbox. I could do a probe with an MMIC, and a series resistor at the input. Or to make it more general

purpose, just an amplifier module with the MMIC, a BNC at each end,
and a separate "probe" with just the resistor.

− Jerry Kaidor (jerry@xxxxxxx)

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