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can you get an oscilloscope with a spectrum analyzer in it?

Students in the edX class may purchase their own Analog Discovery logic analyzer/scope at http://www.digilentinc.com for $99 plus shipping. This hardware debugging tool is not required for this class, but we love ours a lot. When purchasing the Analog Discovery identify your school as edX and your class as UT.6.01x. If you have any questions about the Analog Discovery logic analyzer/scope please contact Digilent at awong@digilentinc.com.

Video 5 logic analyzer (the above cut and pasted from the C10 lecture video on Robot Car Demo)

I attended an Agilent seminar a few weeks ago (titled "Back to Basics RF") where they advertised network analyzers, logic analyzers, spectrum analyzers, etc, and while I was there, I asked someone sitting next to me about the spectrum analyzer, being curious about how you would debug something with wireless communications, since in past lives, it was easy for me to debug wired things, by connecting up sniffers to see the packets being sent on the wire, but never really knew of anything to help with wireless debug. It is no urgent need to me, but if there is a deal with Digilent (in regard to the logic analyzer / scope),
perhaps now even while still unemployed perhaps I may invest in it. The person sitting next to me at this seminar told me that in his experience, and he was a bit
older than me, said that he has used oscilloscopes that have spectrum analyzers built into them. My husband has an oscilloscope here at home, (but no logic analyzer unfortunately!), but I asked if it had a spectrum analyzer, and he said no. So I was wondering if Digilent had any oscilloscope deals such as the one mentioned above for the logic analyzer for an oscilloscope that also had a spectrum analyzer built into it.

other

1 month ago by Karen West

the students' answer, *where students collectively construct a single answer*

Hi.

Have a look at the product flyer; Digilent Analog Discovery FFT.
The FFT part of this is really a software thing analyzing - performing FFT - on the input signal.
Be aware of the "limited" frequency on this - you would not be able to do FFT on RF signals with the Analog Discovery.
Anyway the Analog Discovery looks like a great tool.
I have ordered mine!

RGDS
Ragnar

1 month ago by Ragnar

followup discussions *for lingering questions and comments*

Resolved
Unresolved

Karen West 1 month ago
Thank you!! I'll have a look.

Resolved
Unresolved

Anonymous 1 month ago
Thanks!

Resolved
Unresolved

FractalBrain 1 month ago
I received my Analog discovery last week and am really happy with it. They really put some thought into it. I have not yet played with the spectrum analyzer, but it is there.

I just finished lab 11 today, so I rewarded myself with playing with the Nokia 5110 and the logic analyzer part of the Analog. Today I successfully used the logic analyzer to determine what letters were being sent from the micro-controller to the LCD. Very exciting!

So, the Analog discover is probably really useful for "standard" embedded and analog electronics and education and the spectrum analyzer will indeed give a plot of frequency vs. time. It essentially fits the requirements of a college educational electronics lab.

However, as Ragnar said, it is not suited to RF frequencies. This is more for making and troubleshooting embedded circuits (wired).

If you are designing a computer, or making a wifi card that works in GHz, you will need a much, much more, much expensive device. Even if you are making high powered embedded devices you will need something faster. And if you are interested in wifi you will probably want an actual radio with an antenna. USB devices (with associated software) do exist for doing RF spectrum analysis.

So, if you want to analyze wifi and high speed RF communication, you will probably need a USB radio dongle. The software often has a spectrum display.

If you want to analyze wired networks, then a normal computer with Wireshark will do (and perhaps a switch in monitor mode, or a hub). No spectrum display here. This is the land of packets and data frames.

If you want to analyze very high speed circuitry (i.e. computers and network hardware), or optical system, or radar hardware, then you need some reaaaaalllly expensive equipment.

If precision and accuracy are absolutely critical to a project, then you probably want something more robust with registered calibration.

But If you want to analyze and make basic circuitry with low speed micro-controllers, then this is awesome!! Especially as a learning tool!

Disclaimer: I'm still carrying the plastic case around trying to show my wife how cool my new toy is...I may be biased and I really have not used it that long :-)

Karen West 1 month ago Thank you for that! I am printing it to a file for future reference when I may have the budget for these things! It's good to know which things work in which wireless and wired areas though - so thank you.

Karen West 1 month ago I was wondering if you knew what people use for analyzing WiFi and high speed RF communications (the USB radio dongle?)
I am currently unemployed and NOT in the market for one, but thought I'd ask while we are on the topic here.
So if you went to your search engine (or would you recommend a specific manufacturer?) to search for something that would help you analyze data coming from WiFi or high speed RF communications - would you search for "USB radio dongle?" Or is that also called a "spectrum analyzer"?

Also, you mentioned that you would need "reaaaaaalllly expensive equipment" to analyze data from either high speed circuitry (computers and network hardware) or optical system, or radar hardware. I am not surprised -- but let's say you wanted to search for it since you did have the budget for such things--what would you search for in the search engine?

Would you do your search based on frequency ranges for analyzers?

It was good to hear your commentary on the Analog Discovery as well, and that you are happy with how it works for low speed microcontrollers and basic circuitry.

I am not in the market for any of these products at this time, but filing the information away for future reference once employed again, and not on such a restricted budget.

In any case -- thank you for sharing what you know on this topic! ;-)

Brian 9 hours ago If you want something cheap to play around with radio signals then you can look into SDR. They have a usb tv tuner called rtl-sdr for about $20 that is able to pick up radio signals up to a few thousand Mhz. Not fast enough for wifi but fun to play around with nonetheless with SDR# or other guis.

http://www.rtl-sdr.com/about-rtl-sdr/