

MODEMS

Most people who own a computer today also use a modem. Some use them to communicate over the phone lines with their favorite bulletin board system (BBS), or to access the Internet (my Internet address is listed above), or even to access one computer from another in the same home or office.

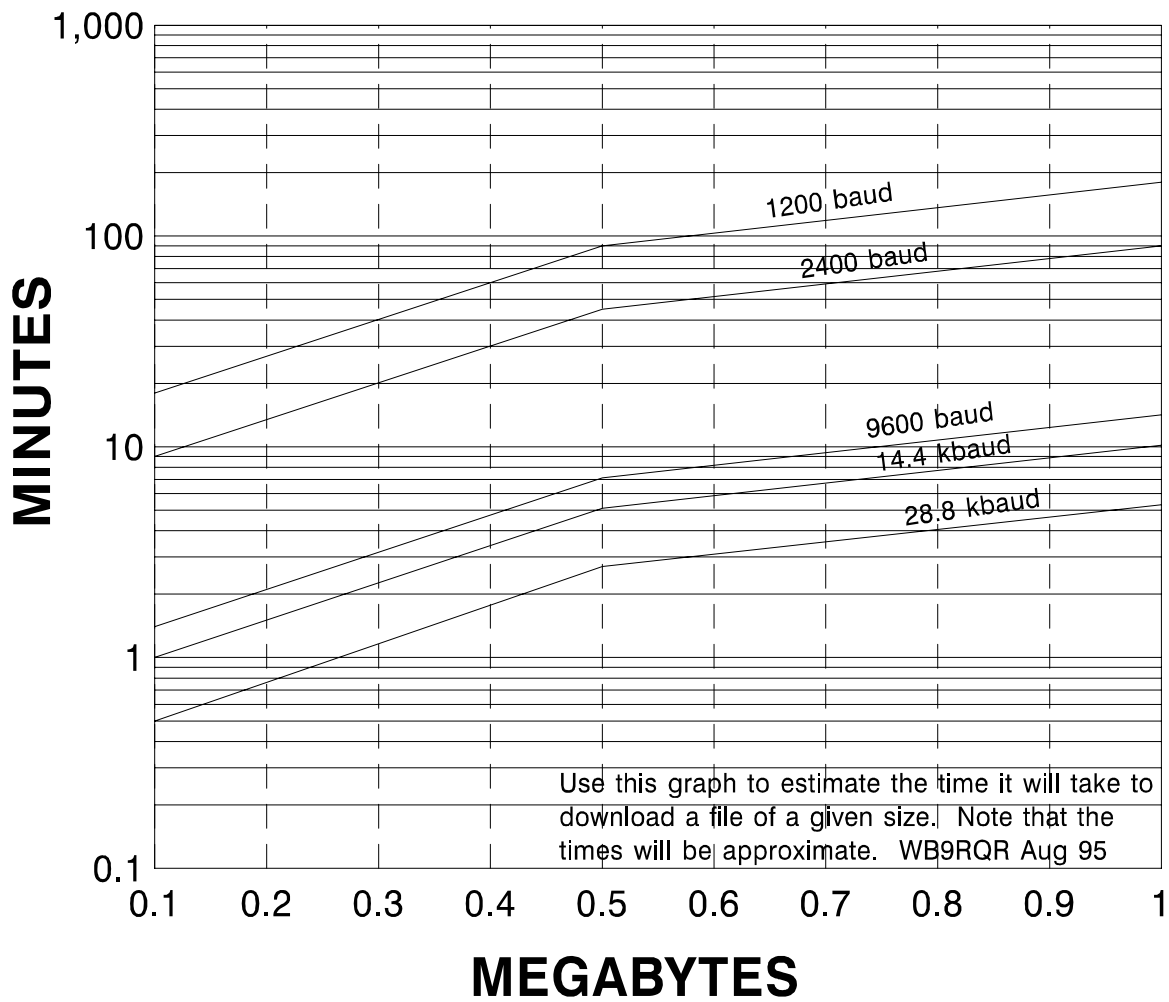
The terms and language used to describe modems and their use can be quite foreign to a new user. If you are interested or need help, an excellent dictionary exists called The Modem Dictionary, by R. Scott Perry, but you can't buy it in a store. To obtain a copy, use your modem (!) to connect to Exec-PC or other favorite BBS and look for the file MDIC150.ZIP or MODICT.ZIP or MODDIZ.ZIP. Download and UNZIP it and you have Version 1.50 (1993) of a really very good compilation of terms and definitions concerning modems. Mr. Perry did this dictionary and updates as a labor of love, and he has made it free to all who want a copy. If you have trouble finding it, send me a note and I will be happy to send you an unzipped copy (specify disk size preference).

Aside from all the esoteric words you may wish to look up in Perry's dictionary, what sorts of things are we hams most interested in with regard to modems? Most of us are interested in BAUD RATE (named after the scientist J. Baudot), which tells us something about the speed with which our modem can do file transfers. Baud rate is defined as:

$1 / \text{length of time it takes to transmit a single data bit}$

If you will recall, I have talked in the past about a single group of 8 toggle switches (8 bits) being able to represent any character in a computer, such as the letter A or the letter a. Actually, in modem work, it takes 10 bits. One bit is called a START BIT, signaling the beginning of a group of 8 data bits, and another is the STOP bit, signaling the end. Although not strictly true, BAUD RATE and BITS PER SECOND (bps) can be considered to be identical. Therefore, since it takes 10 bits to transmit a character, a 300-baud modem can send at the rate of about 30 characters per second. Fundamentally speaking, then, about 30 letters, spaces or punctuation marks will be sent every second by this modem. That seems pretty fast when one translates it to code speed - it represents about 360 words per minute. However, by today's standards a 300-baud modem is painfully slow. No one wants a 300-baud modem. You can purchase a 1200 baud unit for about \$5, 2400 baud for about \$10, 14,400 baud for under \$70 and 28,800 baud in the under \$200 range at this writing. Converted to code speed, a 28,800 bps modem sends at the rate of 345,600 words per minute!

Really, what we all want to know is how long it will take us to download a file of a particular size. Without a lot of explanations and hedging, let me answer that question with a simple graph, shown below. The graph takes into account some fancy tricks the newer modems use to speed things up, and it will provide a good approximation of the actual time it will take with modems of various speeds.



It is interesting to see from this graph that a 1200-baud modem will take close to 20 minutes to download a 100,000-byte file, while a 28.8 kilobaud modem will do it in half a minute. At the other end, a 1200-baud modem will take two hours (180 minutes on the graph) to download a 1-megabyte file, while a 28.8-kilobaud unit will do it in about 5 minutes. You get what you pay for! Happy modeming.