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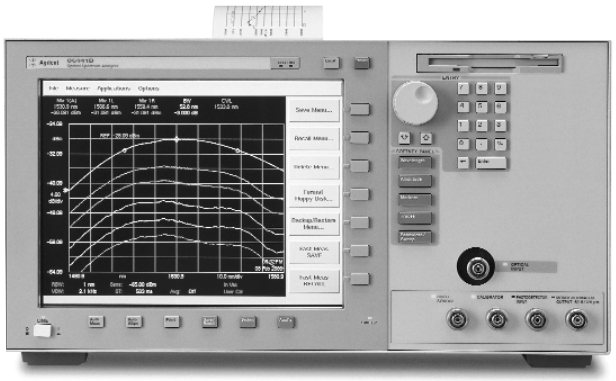
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Agilent 8614xB Series Optical Spectrum Analyzers

Remote measurement speed enhancements



With the increase in demand and competition for optical components and subsystems, measurement speed is becoming ever more critical. Faster test times can increase production volume, reduce cost of test, and shorten time to volume. The Agilent 8614xB series of optical spectrum analyzers (OSAs) already offer unparalleled reliability and fast sweep speed, which makes them ideal for the manufacturing environment. Additionally, Agilent OSAs now include, with firmware version B.04.00 and later, two new software features designed specifically to optimize the speed of remote programs. First, the front panel display of the OSA can now be turned off during remote operation. This feature provides a significant improvement in the measurement speed of the instrument, as processor power is no longer used to update the display. Second, a GPIB command buffer can be enabled so that the OSA will behave like most other GPIB instruments and accept several commands in quick succession. This feature will remain disabled by default so that legacy code will be fully compatible with the newer versions of the OSA firmware. With these improvements, overall program execution times can be reduced on the order of 30 to 50 percent. Individual results will vary, however, due to such factors as application, the controller and GPIB hardware, and specific commands used.

"Display-off" operation mode

Constantly updating the OSA display uses up a significant amount of computing power and slows down the instrument. Changing almost any setting or running any operation requires that the display be updated in some way. If the OSA display is turned off, this step is eliminated. In many remote applications, the OSA display is not used, so why not turn it off? In firmware versions B.04.00 and later, a single command can turn off the display and greatly increase the overall speed of the instrument in almost all remote operations. The display can easily be re-enabled by a single command or by pressing the front panel Local button. The process of switching the display on or off itself usually requires between 10 and 15 seconds, but this is easily recouped in the time saved from a having the display off. Figure 1 illustrates the speed improvements achieved by turning off the display on several commonly executed processes. In these tests, average execution times decreased from 32 to 55 percent.

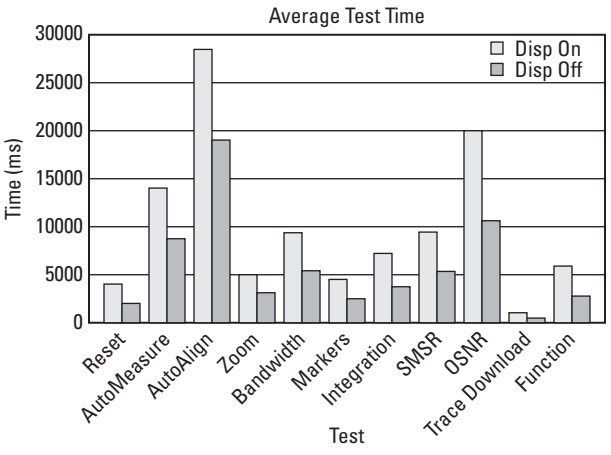


Figure 1. Program execution times with the display on and off

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GPIB command buffer

Versions of the 8614xB OSA firmware before B.04.00 allow only one command to be sent to the OSA at a time. If a second command is sent before the first is finished, the GPIB bus will simply hang until the first command is finished at which point the second command will be read by the instrument. The advantage is that there is no need for program synchronization because commands cannot be executed out of sequence. The disadvantage to this approach is that overall program speeds are decreased as the controller cannot send any more commands to the OSA nor can it communicate with any other instruments on the same bus while there is an OSA command hanging.

The command buffer in the 8614xB firmware with version B.04.00 and later allows the instrument to receive several commands in quick succession without having to worry about tying up the bus. Figure 2 illustrates this process. For example, a time consuming operation like an AutoAlign or a high-resolution sweep can be performed while communicating with any other instruments on the bus. The disadvantage of the command buffer is that the program now requires synchronization so that operations occur sequentially. For example, it is possible with the buffer enabled to attempt to perform calculations on data that is not yet fully acquired, so synchronization using either an "*OPC?" (operation complete) query or "*WAI" (wait) command should be used immediately after any sweep. As mentioned in the introduction, the command buffer has to be enabled and can be disabled with a single command. With the buffer disabled any existing 8614xB code will perform exactly as it did with firmware versions B.03.01 and earlier.

A free firmware upgrade is available to owners of Agilent 8614xB optical spectrum analyzers. For more information contact your local sales office or visit our website at www.agilent.com/comms/lightwave to download or order the latest OSA firmware.

For more information you may also refer to the following:

- Agilent 86140B Users Guide (part number 86140-90053)
- Product Note 86140-1 "Remote programming for the Agilent 8614x series of optical spectrum analyzers" (literature number 5968-1548E)
- Product Note 86140-3 "Optimizing remote measurement speed for the Agilent 8614xB series of optical spectrum analyzers" (literature number 5988-2918EN)

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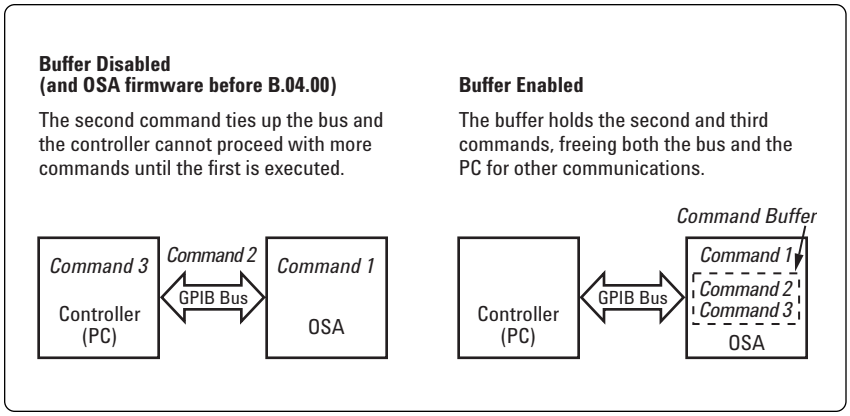


Figure 2. Command buffer modes

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