

Wavelength Calibration for 8614X Series Optical Spectrum Analyzers

The Agilent Technologies 8614x OSAs provide user wavelength calibration methods to compensate for environmental variations that affect the index of refraction of air in the OSA monochromator.

Wavelength calibration routines improve wavelength accuracy by determining wavelength errors and correcting them with offsets, using linear interpolation when necessary. Wavelength calibration can be accomplished using the optional internal OSA calibrator, an external source at a single wavelength, or an external source at multiple wavelengths. Each of these methods optimize wavelength accuracy near the reference wavelength source.

These methods are described in detail in Agilent Technologies Product Note 86140-2: Wavelength Calibration for the 8614X Series Optical Spectrum Analyzers publication # 5980-0043E.

Internal Wavelength Calibration

The internal calibrator provides a convenient method for increasing wavelength accuracy. The internal calibrator cell is an acetylene gas absorption cell, illuminated with an EELED. The constant wavelength positions of the gas absorption pits are used to calibrate the OSA.

After calibration, the wavelength accuracy will be +/- 0.2nm over the full wavelength range of the OSA, with improved wavelength accuracy of +/- 10pm from 1480-1570nm and +/-25pm from 1570-1620nm.

Please Note: Enhanced Wavelength Calibration must be enabled to achieve wavelength specifications.

External Single Wavelength Calibration

Using an external single-point calibration source allows calibration about a specific wavelength. This single-point user wavelength calibration can be repeated as often as necessary to correct for environmental variations, and existing multipoint wavelength offsets will be adjusted accordingly.

After a single wavelength calibration, wavelength accuracy is +/- 10pm within 10nm of the reference signal.

External Multipoint Wavelength Calibration

An external multipoint wavelength calibration can be performed over any specified wavelength range, up to and including the full wavelength range of the OSA (600 nm to 1700 nm). Narrow measurement spans can be chosen to provide greater accuracy over a selected range. After a multipoint wavelength calibration, wavelength accuracy is +/- 10pm within 10nm of each calibration wavelength.

A multipoint wavelength calibration can be performed by coupling a tunable laser source to a multi-wavelength meter and the OSA simultaneously. The OSA is corrected to the wavelength values measured by the multi-wavelength meter.

A sample program to perform multipoint wavelength calibration is provided in Agilent Technologies Product Note 86140-2: Wavelength Calibration for the 8614X Series Optical Spectrum Analyzers publication # 5980-0043E.

Technical data subject to change

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