

MS9740A Optical Spectrum Analyzer

Release Note

38th Edition

Thank you for choosing Anritsu products as your business solution.

This release note explains new functions added to our MS9740A Optical Spectrum Analyzer by software version 1.06.06, as well as any remaining known software bugs, and usage precautions.

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1. Released Software

The version of this released software and the operation manual are listed below. For details on functions, refer to “[5. New and Changed Functions](#)” and “[6. Bug Fixes](#)”.

Download File Name	File Name	Version
MS9740A Download File	MS9740A_vxxx_E.zip	v1.06.06
Operation Manual	Model	Edition
MS9740A Optical Spectrum Analyzer Operation Manual	M-W3328AE	23
MS9740A Optical Spectrum Analyzer Remote Control Operation Manual	M-W3329AE	13
MS9740A Optical Spectrum Analyzer SCPI Remote Control Operation Manual	M-W3696AE	05

2. Upgrade Target

Target instrument for upgrade:

- MS9740A

3. Precautions When Upgrading the Software

When updating the software of this instrument, read the *MS9740A Optical Spectrum Analyzer Software Update Procedure* and the *MS9740A Optical Spectrum Analyzer Operation Manual*.

4. Version Information

The software versions for this upgrade are listed below. Check the installed versions in the System Information screen.

(To display the System Information screen, press F6[Config] → f5[System Info] → f1[System Info View].)

Software	Version
MS9740A Package Version	1.06.06
Optical Spectrum Analyzer	1.06.06
Application Manager and Config	1.06.06
Optical Unit Firmware	1.28
Optical Unit FPGA	1.02
Optical Unit CPLD	1.1

5. New and Changed Functions**Function added and changed by V1.06.06**

None

Function added and changed by V1.06.05

None

Function added and changed by V1.06.04

None

Function added and changed by V1.06.03

- Added Search Threshold to WDM test Application.
The setting range of Search Threshold is from 0.01 to 10.00 dB. The default is 0.10dB. This sets the threshold value for detecting the peak for the next highest and subsequent levels after the maximum level peak. .

- Changed the setting ranges of some parameters

Changed the setting ranges of the following parameters

Parameter	V1.06.03	V1.06.02 or earlier
WDM test Signal Span	0.01 to 50.00 nm	0.01 to 1.00 nm
WDM Filter test Signal Span	0.01 to 50.00 nm	0.01 to 1.00 nm
LD Module test Signal Span	0.01 to 50.00 nm	0.01 to 1.00 nm

Function added and changed by V1.06.01 and V1.06.02

None

Function added and changed by V1.06.00

The software for MS9740A-007/107/207 has been added to the installer from this version.
There is no change to the software for the equipment without the 007/107/207 options.

Function added and changed by V1.05.10

None

Function added and changed by V1.05.09

None

Function added and changed by V1.05.08

None

Function added and changed by V1.05.07

None

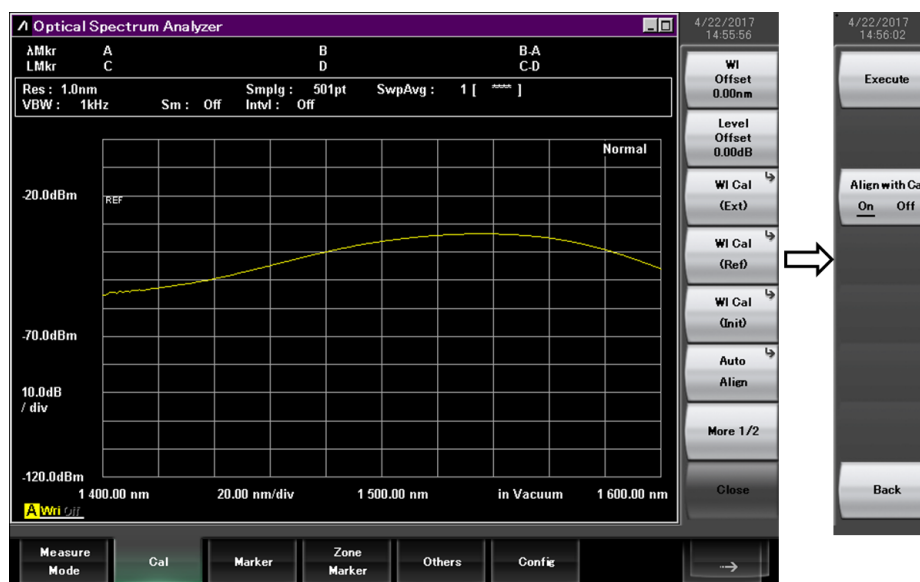
Function added and changed by V1.05.06

- Added the remote commands that turn On or Off the function where optical alignment and wavelength calibration are simultaneously performed.

Refer to the *MS9740A Optical Spectrum Analyzer SCPI Remote Control Operation Manual* and *MS9740A Optical Spectrum Analyzer Remote Control Operation Manual* for details.

Function added and changed by V1.05.05

- Addition of optical alignment using option wavelength calibration light source
Added the function where optical alignment and wavelength calibration are simultaneously performed using Option 002 wavelength calibration light source.
Press Wl Cal (Ref) and turn on Align with cal.



Function added and changed by V1.05.04

None

Function added and changed by V1.05.03

- Changed the default values of some parameters

Changed the default values of the following parameters:

Parameter	V1.05.03	V1.05.02 or earlier
DFB-LD test Search Resolution	2.0dB	0.1dB
LD Module test Search Resolution	2.0dB	0.1dB

- Changed the start screen

Changed the start screen displayed after MS9740 is powered on.

**Function added and changed by V1.05.02**

None

Function added and changed by V1.05.01

None

Function added and changed by V1.05.00

➤ Addition of SCPI remote commands

Added the commands that follow the rules specified in the SCPI (Standard Commands for Programmable Instruments) standard.

MS9740A can now support the following two types of remote commands:

MS9740A's unique remote commands and SCPI commands.

Refer to the *MS9740A Optical Spectrum Analyzer SCPI Remote Control Operation Manual* for details.

➤ Addition of the WDM Filter Test application

Added the application that can simultaneously analyze characteristics of a wavelength division multiplexed (WDM) optical filter, separately for each wavelength.

Simultaneous measurement of the following items is now available: Wavelength, level, bandwidth and spacing of signals.

Refer to Section 5.9 in the *MS9740A Optical Spectrum Analyzer Operation Manual* for details.

➤ Addition of analysis items to the LD Module Test application

Added the following analysis items to the LD Module Test application, for evaluation of the DFB light source: Center Offset and Stop Band.

➤ Changed the default values of some parameters

Changed the default values of the following parameters:

Parameter	V1.05.00	V1.04.07 or earlier
Value in Air/Vacuum	Vacuum	Air
WDM test Display Mode	SNR	Multi Peak
WDM test Noise BW	0.1nm	1.0nm
LD Module test Noise BW	0.1nm	1.0nm

For default values of all parameters, refer to Appendix B in the *MS9740A Optical Spectrum Analyzer Operation Manual*.

Function added and changed by V1.04.07

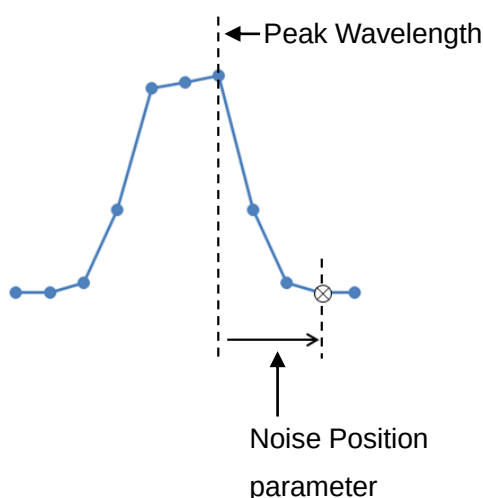
None

Function added and changed by V1.04.06

- Measurement Result Display of WDM and LD Module Application
 Changed the position where the WDM/LD Module Test Application performs noise level measurement if the following three settings are applied at the same time.
 Signal Parameter -> Wavelength Detection Type -> Threshold
 Noise Parameter -> Detection Type -> Point
 Noise Position -> On

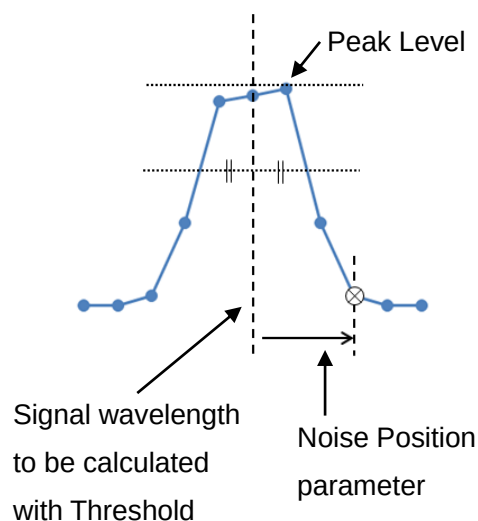
⊗ Position of measured noise level

(Before change)



Measurement position of noise level — Position with a shift as specified by the Noise Position parameter from peak wavelength.

(After change)



Measurement position of noise level — Position with a shift as specified by the Noise Position parameter from signal wavelength calculated with the Threshold analysis.

Function added and changed by V1.04.05

None

Function added and changed by V1.04.04

None

Function added and changed by V1.04.03

None

Function added and changed by V1.04.02

None

Function added and changed by V1.04.01

None

Function added and changed by V1.04.00

- Addition of Opt Amp (Multi-channel) Application
Added the EDFA evaluating applications supporting inputting and simultaneously analyzing the multichannel (WDM) signals.
- Addition of VBW parameter
Added 2 kHz and 200 Hz to VBW
- Addition of All Trace CSV Output function
Added function to save data for all traces in a single CSV file
- Display of "Unable to Calculate" message for Opt Amp Test Application
Displayed "Invalid masked span" when the Fitting span/Mask span settings are invalid and the calculation cannot be performed at Opt Amp Test Application
- Improved accuracy analysis
For the following Analysis/Application, the accuracy analysis is improved.
Threshold, ndB-Loss, Envelope, RMS, Spectrum Power, DFB-LD, FP-LD, LED, WDM, LD Module, Opt Amp

Function added and changed by V1.03.08

- Improved wavelength flatness
Wavelength flatness is improved.

Function added and changed by V1.03.07

None

Function added and changed by V1.03.06

- Changed the default file name at File Save screen
When File Name Settings is set to User-Specified Name at Copy Settings under Config screen, change is made so that the default file name becomes that of last-saved file name.

Function added and changed by V1.03.05

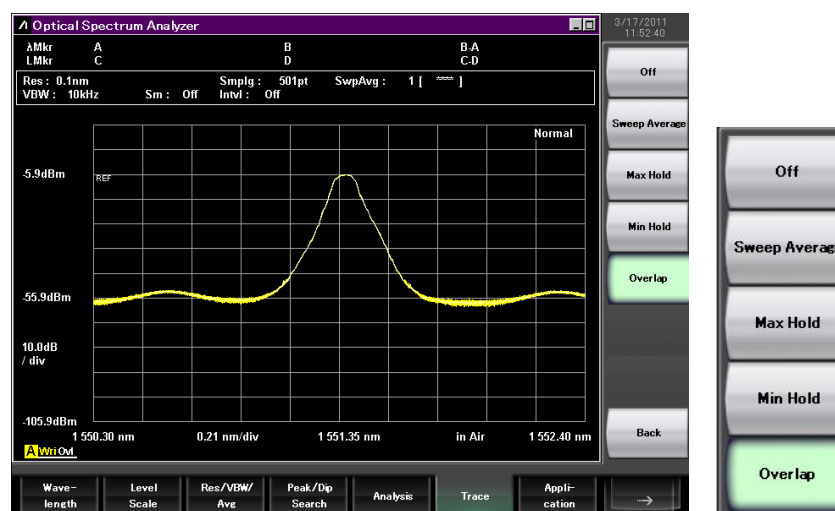
None

Function added and changed by V1.03.04

None

Function added and changed by V1.03.03

- Added Overlap function to Trace menu.
Overlap function is added to Trace menu. The Overlap function overwrites the newly acquired trace data on top of the previous trace data. It does not erase the previous data.
This is useful for monitoring drift orientation of level and wavelength when measuring the light source output over a long time.

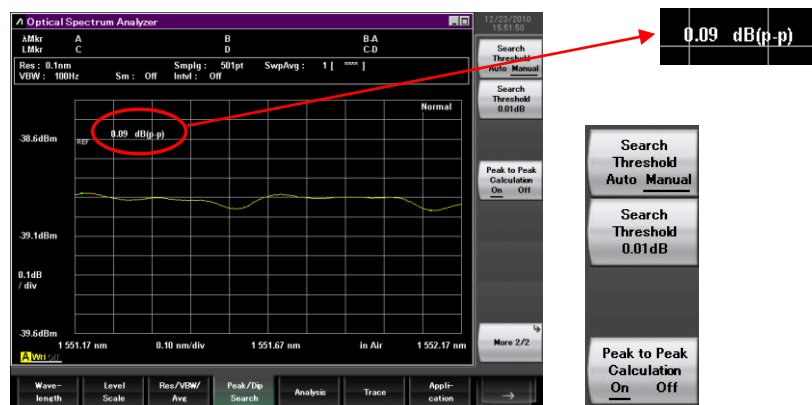


Functions added and changed by V1.03.02

None

Functions added and changed by V1.03.01

- Added Peak to Peak calculation function to Peak/Dip Search menu.
The level difference between Peak and Dip can now be displayed. Using threshold setting, it auto-detects the level difference between Peak and Dip; the minimum difference of 0.01 dB can be displayed. It is effective for evaluating laser with small ripple characteristics.

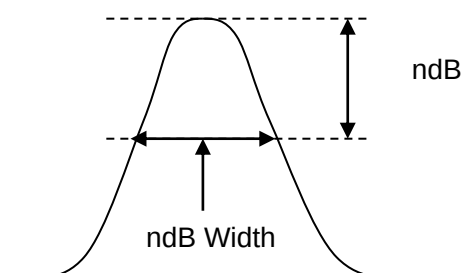


- Re-evaluated the OSNR calculation method for LD and WDM applications.
Refer to Chapter 5.6 and 5.7 of the operation manual for details.

Functions added and changed by V1.03.00

- Fixed measurement sequence execution
The measurement sequence has been revised to shorten the wait time until measurement starts caused by switching VBW and Res settings.
- Fixed offset processing method
It is now possible to select whether or not offset processing is executed when the VBW setting is switched. When offset processing is not executed, the wait time until measurement starts caused by switching the VBW settings is shortened. Refer to section 3.1.2 "Calibrating Wavelength" in the Operation Manual for details of offset setting.

- Added ndB Width analysis method to DFB-LD, and LD applications
The ndB method has been added to the previous computation method using RMS analysis at spectrum width analysis. This function is useful for DFB-LD and LD applications.

**Functions added and changed by V1.02.00**

None

Functions added and changed by V1.01.03

➤ Changed Threshold analysis calculation method

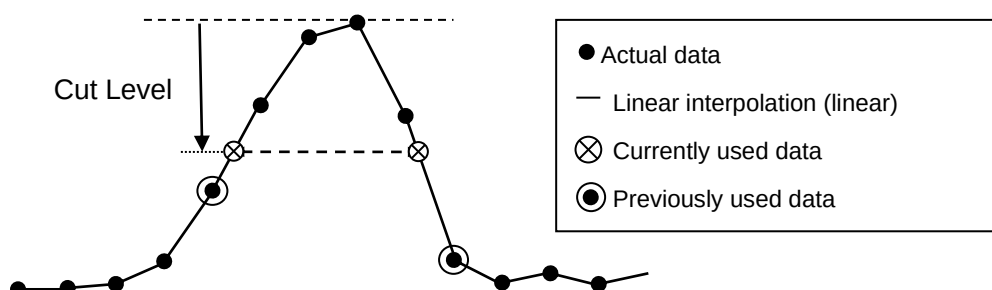
When there is no actual measurement data at the Cut Level below the peak, the around actual measured data is linearly interpolated and the spectrum width and center wavelength are calculated from the point where the Cut Level and linear interpolation cross.

In previous versions, the spectrum width and center wavelength were calculated from the actual measured data point near the Cut Level. This revised method yields more accurate analysis results than previously.

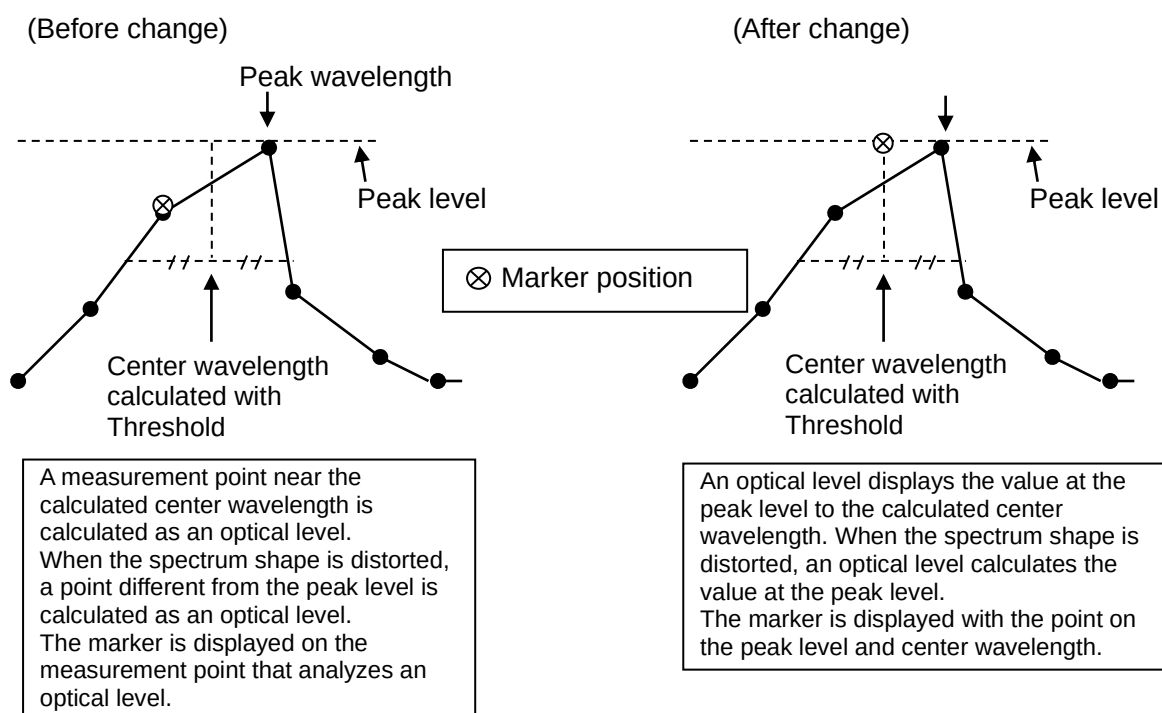
(Changed calculation item)

Analysis menu: Method of analyzing center wavelength and spectrum width when analyzing Threshold, n dB Loss and Envelope

Application menu: Method of analyzing center wavelength and spectrum width on WDM and LD Module application and spectrum width



- Measurement Result Display of WDM and LD Module Application
When selecting Signal Parameter -> Wavelength Detection Type -> Threshold, the measurement result (level value) and the marker display position on the graph is changed in the WDM and LD Module application.



Functions added and changed by V1.01.02

None

Functions added and changed by V1.01.01

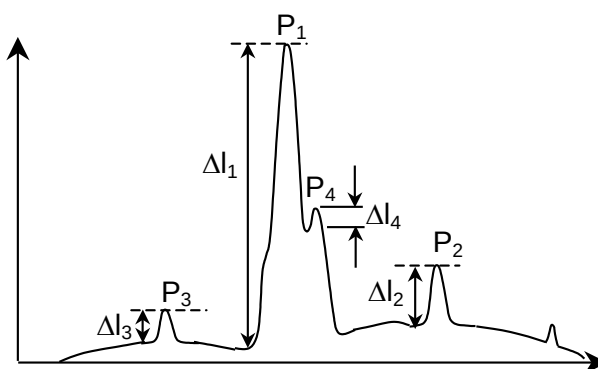
None

Functions added and changed by V1.01.00

- Added Side Mode Evaluation Level Resolution Setting (dB) Function for DFB-LD, LD Measurement

The level resolution (dB) to define the side mode can be set.

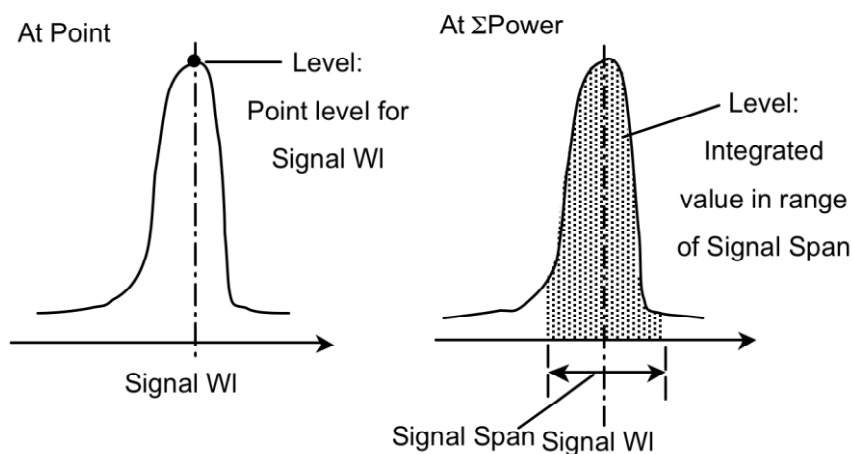
In the previous version, if Peak P1 in the following diagram has ripple P4 of $\Delta 4$ dB as shown in the below figure, this ripple is evaluated as a side mode and the SMSR is not measured correctly. In this case, if the level resolution is set to a larger value than $\Delta 4$ dB, the P4 ripple is not detected and SMSR can be measured.



Example of Waveform where 2nd Peak Not Measured Correctly

- Added Integration Calculation to Optical Signal Level Calculation for WDM and LD Measurement

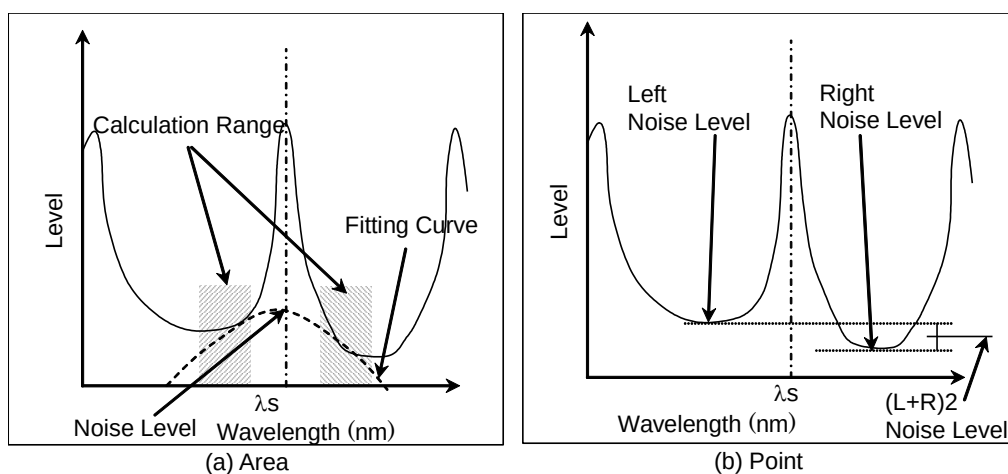
Integration calculation has been added for the specified range to the optical signal power calculation. In addition to the prior Point setting, a Power setting has been added too.



Measurement Method for Signal Level

- Added Detection using SNR Noise Level Approximation for WDM and LD Measurement

A function for calculating the noise level at the optical signal wavelength calculated from the fitting curve has been added. In addition to the prior Point level SNR noise level calculation, an Area specification (detection using approximation) has been added too.



Detection Method for Noise Level

- Added Noise Bandwidth Setting at SNR per Noise Bandwidth for WDM and LD Measurement

Previously this setting was fixed to 1 nm but now it is possible to specify the noise bandwidth setting in the range from 0.1 to 1.0 nm.

Functions added and changed by V1.00.02

- Backwards Compatibility with MS9710C Remote Commands
The specifications for the following remote commands have been changed or modified to maintain compatibility with the MS9710C. For details of the command specifications, refer to the Remote Command Operation Manual.
 - ✧ DCA? to DCJ?
 - ✧ AP WDM,SNR
 - ✧ AP
 - ✧ ANA
 - ✧ ITM
 - ✧ RES

6. Bug Fixes

The following list shows the bug fixes implemented up to v1.06.06 of this software.

Version	Upgrade Change (Mngmt No.)
V1.06.06	➤ Fixed a bug that prevented the wavelength offset value from being set when the MS9740B recalls the saved XML file. The bug occurred when the wavelength display setting is Vacuum . (CM3019-162)
V1.06.05	➤ Fixed a bug that decreased the sweep speed when the sweep was repeated under certain condition settings. (CM3019:0163)
V1.06.04	➤ Fixed a bug where “Out of Memory” error occurred when turning on and off the application was repeated frequently. (CM3019:0145)
V1.06.03	➤ Fixed a bug where sweeping was interrupted midway occasionally when Point Average was ON and Resolution was smaller than Sampling Interval. (Bug 12229) ➤ Fixed a bug where sweeping was interrupted midway occasionally when Dynamic Range was set to High. (Bug 12231) ➤ Fixed a bug where the measuring instrument stopped in rare cases when remote command was executed consecutively. (Bug 12234)
V1.06.02 V1.06.01	➤ Improved the function relating to manufacturing inspection of MS9740A. (Bug 12208)
V1.05.10	➤ Fixed a bug where “Out of Memory” error occurred when turning on and off the application was repeated frequently. (CM3019:0141)
V1.05.10	➤ Fixed a bug where Error_0008 occurred when the power was turned on. (CM3019:0142)
V1.05.09	➤ Improved efficiency in MS9740A production. It is not related to the product performance. (CM3019:0140)
V1.05.08	➤ Fixed a bug where Error_0008 occurred when changing wavelength during the repeat test. (CM3019:0139)
V1.05.07	➤ Fixed a bug where Error_0008 occurred when the power was turned on at low temperature (CM3019:0138)
V1.05.06	➤ Fixed a bug that infrequently prevented a software update from being performed. (CM3019:0134)
V1.05.04	➤ Fixed a bug that interrupted the measurement infrequently during the execution of the Opt Amp (Multi Channel) Test application. (CM3019:0124)
V1.05.02	➤ Fixed a bug that in rare cases caused a Grating control error when measuring with the VBW set to 10Hz. (CM3019:0119)
V1.05.01	➤ Fixed bug that may stop a measuring instrument when executing Repeat sweeping in the Opt Amp (Multi Channel) Test application. (CM3019:0111)

Version	Upgrade Change (Mngmt No.)
V1.05.00	➤ Fixed bug that would not return any response to the *OPC? query when executing the Auto Measure remote command repeatedly. (CM3019:0074)
V1.04.07	➤ Fixed bug that may stop a measuring instrument when a remote command outputting a spectrum waveform is repeatedly executed with the number of sampling points set to 5,001 or more. (CM3019:0043)
V1.04.06	➤ Fixed bug that infrequently drew a noise fitting curve when the Opt Amp (Multi Channel) Test application could not analyze it due to the parameter settings. (CM3019:0028)
V1.04.05	➤ Fixed bug that infrequently prevented a noise fitting curve from being drawn in the Opt Amp (Multi Channel) Test application. (CM3019:0025)
V1.04.05	➤ Fixed bug that infrequently displayed an abnormal peak wavelength value when shifting the center wavelength of the screen during the execution of Peak/Dip Search. (CM3019:0022)
V1.04.05	➤ Fixed bug that infrequently caused an error resulting in an interruption of the measurement during the execution of the Opt Amp (Multi Channel) Test application. (CM3019:0021)
(V1.04.05)	➤ Fixed bug that prevented "Invalid Masked Span" from being normally displayed in the WDM/LD Module/Opt Amp/Opt Amp (Multi Channel) Test application. (CM3019: 0001)
V1.04.04	➤ Fixed bug that causes changes in the measured level of the Power Monitor in Measure Mode due to Res setting before execution of the Power Monitor. (CM3019: 0019)
V1.04.03	➤ Fixed bug that infrequently causes "a large oscillation in the measured level" or "an error interrupting the measurement" at the Power Monitor in Measure Mode. (CM3019: 0015)
V1.04.02	➤ Fixed bug causing level difference when changing Res to 0.03nm or 0.05nm. (CM2540: 0154)
V1.04.01	➤ Fixed bug that the measurement is interrupted when the error is generated while sweeping. (CM2540: 0170)
V1.04.00	➤ Fixed bug preventing setting of bit 0 of End Event Status Register (ESR2) to 1 when "LAST", "LEFT", "NEXT", and "RIGHT" set at argument of PKS (or DPS) command. (CM2540: 0158)
V1.04.00	➤ Fixed bug causing hang when invalid command sent at Config window display. (CM2540: 0141)
V1.04.00	➤ Fixed bug setting 0 bit for ESR2 when WCAL command completed. (CM2540: 0137)

Version	Upgrade Change (Mngmt No.)
V1.04.00	➤ Fixed bug causing calculation error to 1 point at the utmost data in the integration range depending on Σ Power Signal Span setting at WDM Test Application. (CM2540: 0095)
V1.03.07	➤ Fixed bug that the minus trace data in a csv file are converted to 10^{-15} . This malfunction is reported for v1.03.06. (CM2540: 0073)
V1.03.06	➤ Fixed bug that prevented Level Offset from being applied to the waveform data saved in a csv file. (CM2540: 0066)
V1.03.06	➤ Fixed bug that caused the return response of only upper digit, when sending *STB? query command. (CM2540: 0065)
V1.03.05	➤ Fixed bug that was causing the absence of comma between the numerical value and unit of measurement for the following items in a csv file. Resolution, VBW, Sampling Points, Smooth (CM2540:0063)
V1.03.04	➤ Fixed bug causing the stoppage of the instrument, when measurement is performed in repeat mode with the number of sampling points exceeding 10,001. (CM2540:0060)
V1.03.03	➤ Fixed bug causing incorrect display of Level axis in Trace screen. This happens when executing "Peak Ref Lvl" at Trace screen without trace data, after executing Auto Measure. (CM2540:0058)
V1.03.03	➤ Fixed bug that prevents inputting Zone Marker with Rotary knob under particular Span. (CM2540:0057)
V1.03.03	➤ Fixed bug causing erroneous calculation during Σ Power calculation process at OSNR measurement. This malfunction is reported for v1.03.02, WDM/LD Module Test menu. (CM2540:0038)
V1.03.02	➤ Fixed bug causing error display (peak point not found) at peak search off. (CM2540:0047)
V1.03.01	➤ Fixed bug causing the data loss when saving CSV files at Continuous measurement. (CM2540:0018)
V1.03.01	➤ Fixed bug causing LD Module Test to calculate the OSNR measurement result based on Peak Level. (CM2540:0037)
V1.03.00	➤ Fixed bug preventing the correct data acquisition of some of waveform data at specific conditions. (CM2540:0014)
V1.02.01	➤ Fixed bug causing a few instances of ripple during Repeat measurement. (CM2512:0018)
v1.02.00	➤ Fixed bug causing Optical FIFO Error when continually changing Span during sweeping (CM2114:2010Q4_0081)

Version	Upgrade Change (Mngmt No.)
v1.01.03	➤ Fixed bug causing grating error, interrupting sweeping (CM2512:0014)
v1.01.02	➤ Fixed bug causing drift in waveform data after executing WICal(Ref) (CM2114:2010Q4_0084)
v1.01.01	➤ Fixed bug displaying error message when performing a continuous operation using remote command (CM2114:999, 2010Q4_0078,2010Q4_0080)
v1.01.01	➤ Fixed bug not resetting average count after executing single sweep (CM2114:2010Q4_0077)
v1.01.01	➤ Fixed bug deleting error display when occurring another error after optical hard error (Error_0008) (CM2114: 2010Q4_0079)
v1.01.01	➤ Fixed bug causing extended measurement time at external trigger (CM2114:2010Q4_0082)
v1.01.00	➤ Fixed bug causing abnormal error message when AutoMeasure execution fails at wavelength Span 0 nm setting (CM2114:2010Q4_0070)
v1.01.00	➤ Fixed bug causing abnormal error display for analysis results at DFB-LD application zone marker display (CM2114:2010Q4_0069)
v1.01.00	➤ Fixed bug causing abnormal error display for SNR analysis results at LD application (CM2114:2010Q4_0066)
v1.01.00	➤ Fixed bug related to analysis results at Threshold analysis (CM2114:2010Q4_0063)
v1.01.00	➤ Fixed bug in SNR analysis results display at LD application SMSR analysis error (CM2114:2010Q4_0043)
v1.01.00	➤ Fixed bug causing return of -1 at measurement error when reading WDM SNR analysis results with APR? remote command (CM2114:2010Q4_0042)
v1.01.00	➤ Fixed bug causing absence of ESR2 analysis end bit at execution of ANA THR remote command (CM2114:993)
v1.01.00	➤ Fixed bug prevent normal termination processing and continued sending of remote command after generation of Error (0008) (CM2114:987)
v1.01.00	➤ Fixed bug causing extended measurement startup when executing AutoMeasure with many sampling triggers (CM2114:986)
v1.01.00	➤ Fixed bug causing inability to query measurement results using APR? when more than 128 peaks detected at WDM application (CM2114:985)
v1.01.00	➤ Fixed bug causing abnormal error message contents at trace with Calc Error status (CM2114:984)
v1.01.00	➤ Fixed bug causing incorrect error display for SNR analysis results at error in SMSR analysis results for LD application (CM2114:983)

Version	Upgrade Change (Mngmt No.)
v1.01.00	➤ Fixed bug causing extremely slow waveform display at measurement Span setting of less than 1 nm for HiDynamic range measurement (CM2114:982)
v1.00.05	➤ Fixed bug causing drift in waveform data to short wavelength side when performing continuous execution using ResCal remote command (CM2114:996) Use the following calibration procedures to remove accumulated waveform drift after version upgrades: <Waveform calibration using external light source> Perform auto-adjustment of the optical axis as described in section 3.1 of the Operation Manual. Press F2[Cal] → f5[Wl Cal(Init)] → f1[Execute] in this sequence to recall the wavelength values at shipment. Perform calibration using an external light source as described in section 3.2.1 of the Operation Manual. <Waveform calibration using Opt-002 Wavelength Calibration Light Source> Perform auto-adjustment of the optical axis as described in section 3.1.1 of the Operation Manual. Perform calibration using the Opt-002 Wavelength Calibration Light Source as described in section 3.1.2 of the Operation Manual.
v1.00.05	➤ Fixed bug causing incorrect display of analysis results at Spectrum power analysis (CM2114:992)
v1.00.04	➤ Fixed bug causing incorrect display of Actual Resolution results (CM2114:994)
v1.00.03	➤ Fixed bug causing incorrect display of analysis results at Spectrum power analysis (CM2114:981)
v1.00.02	➤ Fixed bug causing incorrect generation of Error_0007 and Error_0014 when SLD option not installed (CM2114:980)
v1.00.02	➤ Fixed bug causing non-return of response to ERR? remote command after executing *RST remote command (CM2114:979)
v1.00.02	➤ Fixed bug preventing ability to obtain correct DCA? to DCJ?, and PRE remote command error information using ERR? remote command (CM2114:978)
v1.00.02	➤ Fixed bug causing application freeze when executing DMA? to DMJ? remote commands continuously (CM2114:977)
v1.00.02	➤ Fixed bug causing incorrect setting to TraceType Calc during execution of application function (CM2114:976)
v1.00.02	➤ Fixed bug disabling Set and Cancel of next and subsequent Trace Calc dialog when switching function during Trace Calc dialog display (CM2114:975)

Version	Upgrade Change (Mngmt No.)
v1.00.02	➤ Fixed bug preventing query of error results using ESR? at error during execution of Overlap command (CM2114:974)
v1.00.02	➤ Fixed bug causing application freeze when alternately and continuously pressing F7(Config) and F6(Other) (CM2114:965)
v1.00.01	➤ Fixed bug causing grating error (Error_0008) at power-on (CM2114:964)
v1.00.01	➤ Fixed bug causing command error when inputting numeric parameters without units using VBW remote command (CM2114:962)
v1.00.01	➤ Fixed bug causing application freeze when executing SYS CONFIG remote command after power-on (CM2114:961)

7. Remaining Known Bugs

This version has the following known bugs.

- None