Data Sheet

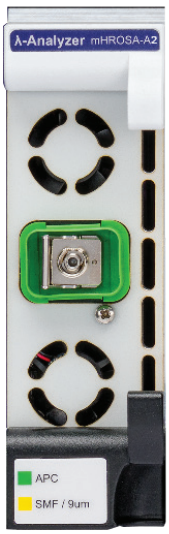
VIAVI Solutions

# VIAVI

# High Resolution Optical Spectrum Analyzer (mHROSA-A2)

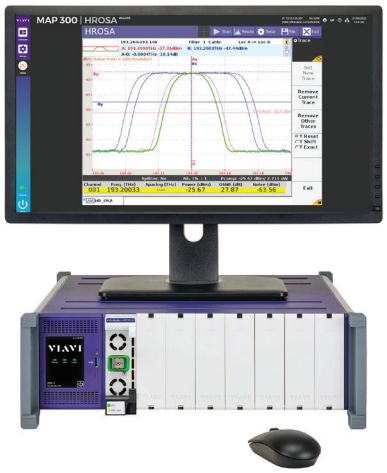
MAP Series Multi-Wavelength and High Resolution OSA

The Multiple Application Platform (MAP) based high resolution OSA module (mHROSA-A2) combines sub-GHz resolution with a low noise floor in a compact modular single-slot cassette. With no moving parts this module is ideal for coherent transport testing in manufacturing.




The MAP Series High-Resolution Optical Spectrum Analyzer (mHROSA-A2) leverages coherent detection to measure the precise spectral characteristics of C-band optical sources. With 300MHz resolution bandwidth it can resolve details missed by traditional grating based OSA's. With a wavelength accuracy of ±3 pm it can also be used as a wavelength meter.

Critical measurements, such as OSNR, are available through an easy-to-use GUI or the MAP-300 automation interface. When combined with the wide array of VIAVI MAP modules, such as power meters, attenuators, switches, sources, and a range of signal conditioning modules, a powerful coherent test solution can be created.




## Key Benefits

- No moving parts improves reliability over traditional WMs and OSAs
- Multi-wavelength meter and high-resolution OSA for lab and production providing real time measurements
- Supports all coherent modulation formats and flexible grid WDM signal analysis
- MAP-based modular design enables process integration into more comprehensive optical test systems

## Key Features

- Sub-GHz resolution bandwidth
- Extended C-band acquisition range
- Measures frequency, power level, and OSNR
- Continuous and averaging test modes

## Applications

- DWDM transmission systems test
- OSNR, peak power and wavelength reporting.
- Qualification of optical sources, transponders and linecards
- Validate and deploy Coherent flex-grid DWDM modules and systems

## Safety Information

- The MAP Series platforms, mHROSA cards comply to CE requirement EN61010–1:2001, UL61010-1 and CAN/CSA-C22.2 No.61010–1–04 (see CE certificate of compliance).

The mHROSA provides the ideal solution for both lab and manufacturing test systems, where reliability, compactness, and performance are critical.

The absolute wavelength accuracy of the HROSA allows the device to be used as a multi-wavelength meter in many applications. The HROSA has full graphing capability and analysis tools for OSNR, peak power and wavelength reporting.


Figure 1: The mHROSA-A2 is a member of the MAP LightDirect family. The flexibility of the MAP platform enables users to deploy the same OSA in multiple environments. Modules can be combined to build powerful measurement solutions for technology across telecom photonics.

## Module Details

VIAVI has been a leader in the design of optical test systems for over 30 years dating back to its heritage as JDSU. Decades of geometric optics, alignment, system control and analogue measurement are critical. Leveraging advanced optical components and next generation system on a chip technology, the HROSA provides high resolution bandwidth with no-moving parts.

Unlike conventional grating based OSA's, the HROSA uses coherent heterodyne detection. The incoming signal is mixed with tunable local oscillator (tunable laser). The resolution bandwidth is not governed by a mechanical slit in a classic monochromator, rather the linewidth of the local tunable laser and the electrical bandwidth of the heterodyne receiver. A polarization diverse optical mixer ensures the amplitude of the input signal is independent of polarization. The wavelength of the tunable laser is referenced to a frequency stabilized artifact to ensure continuous wavelength accuracy across the scan.

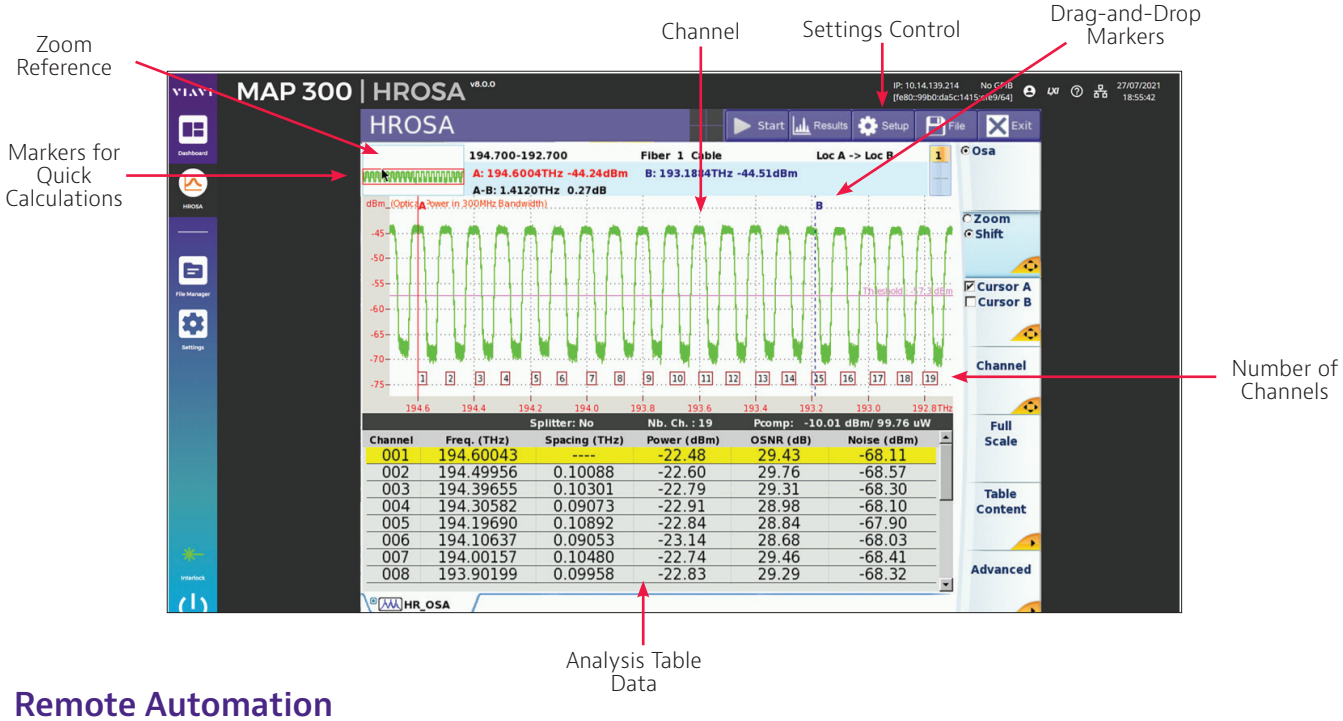
The HROSA provides best-in-class wavelength uncertainty of ±3 pm in the extended C-band with a resolution bandwidth of 300MHz. This allows the HROSA to replace both a regular OSA and wavelength meters, thus lowering costs and reducing space by using one single instrument.

Designed to the need of R&D and manufacturing, the HROSA offers a wide range of measurement modes. OSNR and channel detection parameters can be modified to adapt to user needs. This includes modifying the minimum channel spacing, minimum channel elevation and OSNR method amongst other WDM settings. When the measurement is made after a tap coupler, it is possible to set a splitter compensation value to enable displaying the real optical power in the fiber.

With the combination of sensitivity, resolution bandwidth and wavelength accuracy, the HROSA is ideally suited for measuring modern coherent transport like 400GZR and 800GZR. When deployed in manufacturing it is able to support spectrum shaping and tuning application as well as measuring the impact of spectral shaping and filter optimization.

## Simple User Interface

The mHROSA-A2 has a powerful yet simple user interface. Users can either access the GUI remotely over a simple web connection, use an HDMI monitor, or order a version with an integrated touchscreen. The super application enables operators to perform measurements and analyze the data obtained.




| Channel | Freq. (THz) | Spacing (THz) | Power (dBm) | OSNR (dB) | Noise (dBm) |
|---|---|---|---|---|---|
| 001 | 194.60043 | ---- | -22.48 | 29.43 | -68.11 |
| 002 | 194.49956 | 0.10088 | -22.60 | 29.76 | -68.57 |
| 003 | 194.39655 | 0.10301 | -22.79 | 29.31 | -68.30 |
| 004 | 194.30582 | 0.09073 | -22.91 | 28.98 | -68.10 |
| 005 | 194.19690 | 0.10892 | -22.84 | 28.84 | -67.90 |
| 006 | 194.10637 | 0.09053 | -23.14 | 28.68 | -68.03 |
| 007 | 194.00157 | 0.10480 | -22.74 | 29.46 | -68.41 |
| 008 | 193.90199 | 0.09958 | -22.83 | 29.29 | -68.32 |

## Remote Automation

Remote automation that is simple, intuitive, and fast to implement is a recognized benefit of all MAP modules. The mHROSA-A2 has been developed with these ideas at its core. Using SCPI compliant commands over Ethernet has proven to be simple and efficient. The MAP may be ordered with an optional GPIB port if that is the preferred interface.

## Chassis and Modular Family

The VIAVI Multiple Application Platform (MAP) is a modular, rack mountable or benchtop, optical test and measurement platform with mainframes that can host 2, 3 or 8 modules. The LightDirect family of modules are characterized by their simple control and single function nature. Individually or together, they form the foundation of a diverse array of optical test applications. The HROSA-A2 is compatible with the MAP-300 mainframes only.

Light Direct

## Specifications (At 25°C over the entire frequency range)

| Parameter[1, 2, 3] | mHROSA-A2 |
|---|---|
| **Spectral** | |
| Optical Frequency (wavelength) range | 190.7 THz – 196.65 THz |
| | 1572.06 – 1524.5 nm |
| Absolute Uncertainty of Frequency (wavelength)[1,2] | ± 370 MHz (±3 pm) |
| Minimum resolvable separation | 2 GHz (16 pm) |
| Resolution Bandwidth | 300 MHz (2.4 pm) |
| Display Resolution | 0.0001 nm |
| **Power** | |
| Input Power Range[3] | -60 to +10 dBm |
| Noise Floor | -80 dBm |
| Maximum Total Input Power[4] | +17 dBm |
| Close-in Dynamic Range | > 40 dB ± 8 pm (±1 GHz) |
| | > 50 dB ± 16 pm (±2 GHz) |
| Spurious-Free Dynamic Range | > 45 dB |
| Absolute Uncertainty of Power Level[1,5] | ± 0.5 dB |
| Power Linearity[6] | ± 0.74 dB |
| Polarization Dependence | ± 0.2 dB |
| Display Resolution | ± 0.01 dB |
| **Other** | |
| Return Loss | > 50 dB |
| Measurement Time[7] | 1s for 50GHz |
| | 5.6s per 50 GHz ranges >that 50GHz |
| Fiber Type | 9/125 µm single-mode fiber |
| Connector Type | FC/APC |
| Operating Temperature | 10 to 40 |
| Storage Temperature | -20 to +50 |
| Humidity | Maximum 95% RH from +10 to +40 noncondensing |
| Dimensions | 4.06 x 13.26 x 37.03 cm |
| Weight | 1.4 kg |
| Calibration Period | 1 year |

1. Over the entire frequency range.
2. Average of five consecutive sweeps.
3. Power of unmodulated single-frequency laser or peak power of modulated signal in 300 MHz optical bandwidth.
4. Total power for all input signals.
5. At –20 dBm input power.
6. For input power from –10 to –40 dBm.
7. Over 50 GHz sweep range, no averaging.

## Ordering Information

For more information on this or other products and their availability, please contact your local VIAVI account manager or VIAVI directly at 1-844-GO-VIAVI (1-844-468-4284) or to reach the VIAVI office nearest you, visit viavisolutions.com/contacts.

| Order Code | Description |
|---|---|
| mHROSA-A2CB10-M100-MFA | Wavemeter and high-resolution optical spectrum analyzer C-band FC/APC |

## Accessories

| Accessories (Optional) | Product and description | |
|---|---|---|
| **Inspection and Cleaning Tools** | CleanBlastPRO | The patented VIAVI Solutions® CleanBlastPRO fiber end-face cleaning system provides a fast, effective, and cost-efficient solution for removing dirt and debris from connectors in most common applications. |
| | FiberChek probe microscope | One-button FiberChek Probe delivers a reliable, fully utonomous, handheld inspection solution for every fiber technician. |
| | P5000i fiber microscope | Automated Fiber Inspection and Analysis Probe provides PASS/FAIL capability to PC, laptops, mobile devices and VIAVI test solutions. |

A wider range of inspection tools are available at VIAVI. More information about the products and accessories can be accessed through our website at www.viavisolutions.com. For further assistant please contact your local VIAVI account manager or VIAVI directly at 1-844-GO-VIAVI (1-844-468-4284) or to reach the VIAVI office nearest you, visit viavisolutions.com/contacts.

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