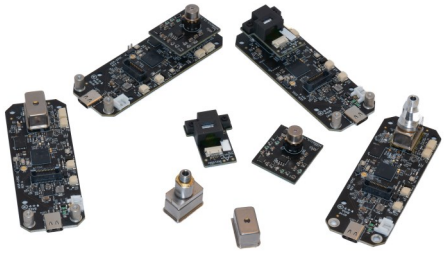
Spectre® MINI Full Catalogue

100+ Modular Combinations Powered by Hamamatsu Photonics

We See the *Invisible* ®

Sensor

- ◊ **UV Enhanced** [190nm – 440nm]: C16767MA
- ◊ **UV-VIS-NIR** [340nm – 850nm]: C12880MA
- ◊ **UV-VIS-NIR with Integrated SMA** [340nm – 850nm]: C12880MA-20
- ◊ **NIR Enhanced** [640nm – 1050nm]: C14384MA-01
- ◊ **SWIR 1** [1350nm – 1650nm]: C14272 – *Special Order*
- ◊ **SWIR 2** [1550nm – 1850nm]: C13272-03 – *Special Order*
- ◊ **SWIR 3** [1750nm – 2150nm]: C14273 – *Special Order*



Interface

- ◊ **USB** 2.0 Type C
- ◊ **UART & I2C** Board-Level
- ◊ **PoE** M12 X-Coded or RJ45 Ethernet – *Special Order*
- ◊ **Wireless** Bluetooth & Wi-Fi – *Under Development*

Housing

- ◊ **Board-Level**
- ◊ **Enclosed**
- ◊ **MagSafe** Smartphone Mount
- ◊ **Rugged** [IP69K] – *Under Development*
- ◊ **Detached Sensor Cards** with FFC Cables for Flexible Mounting
- ◊ **Accessory Optical** Diffusers, Fibers, Extension Tubes & Lenses

Buy Now

Custom AI Models | We see the *invisible*®, and you can too by contacting AGR® for tailored analytics.

System Integration | Customize for original design manufacturing (ODM) with AGR® & integration partners.

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Spectre® MINI Full Catalogue

Pushing AI to the Edge for Embedded Deployment

We See the *Invisible* ®

Get Results over *1000X* Faster than Imaging

Measure

Plug in Spectre® and start collecting signatures of known samples to build a library of training data that improves with use.

Train

Use AGR's® tailored training pipeline & services to build AI models 1000X faster than imaging: No complex or costly compute required.

Deploy

Run those tailored AI models on the edge to analyze unknown samples and make real-time decisions about process and quality control.

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Spectre® MINI [UV-VIS-NIR]

Powered by the Hamamatsu Photonics C12880MA

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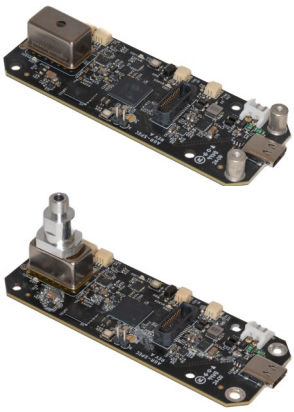

Save Money.
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Compact plug-and-play spectroscopy module made in the USA for edge AI and industrial integration

Features

See *Faster*

- Minimize data processing time and errors with **high frame rates** and **onboard calibrations** powered by 5 proprietary algorithms.
- Start today with AGR's® **evaluation apps** and sample embedded **Python scripts**.

See *Farther*

- Send analysis-ready data **hundreds of feet** using PoE or within the same housing with **board-to-board** connectors and USB.
- Deploy like a camera for **non-contact** scans to **mitigate the risk** of cross-contamination.

See *Fearless*

- Scale from **prototype to production** with a customizable OEM module reliably made in **America's Optics Capital**: Rochester, NY.
- **Solid state** sensors and rugged environmental ratings ensure **performance-critical integrity**.

APPLICATIONS

See the ***Invisible*** to Control Your Quality

- Agriculture, Forestry, Food & Beverage
- Medical & Pharmaceutical
- Water Quality & Environmental Monitoring
- Manufacturing & Recycling
- Lighting & Calibration

Contact us for inspiration from 100+ case studies.

Specifications

Sensor		Hamamatsu Photonics C12880MA Micro Spectrometer
AGR® Part Number	Board-Level	9001 (USB), 9001-E (PoE)
	Board-Level (SMA)	9002 (USB), 9002-E (PoE)
	Enclosed	9003 (USB), 9003-E (PoE)
Electrical Interfaces	Enclosed	USB 2.0 Type C PoE M12 X-Coded Ethernet
	Board-Level	USB 2.0 Type C PoE M12 X-Coded or RJ45 Ethernet UART Board-to-Board [3.3V] I2C Board-to-Board [3.3V] Power Board-to-Board [5.0V I/O] Input & Output Triggers [Up to 24V]
Optical Interfaces		Free-Space SMA Fiber: With Housing Adapter or Board-Level SMA Connector Lenses and Diffusers by Request
Spectral Range		340 nm - 850 nm
Numerical Aperture		0.22
Free-Space Full Field of View		25˚
Nominal Spectral Resolution		1.77 nm
FWHM Spectral Resolving Power		8 nm - 10 nm
Bit Depth		Linearized 16-bit
Integration Time (Exposure)		10µs to 10s
Maximum Frame Rate		840 FPS Calibrated | 2,000 FPS Raw
Optical & Temperature Calibrations		Embedded Onboard
Operating Temperature		+5˚ to +50˚ C [+41˚ to +122˚ F]
Mechanical Dimensions		Drawings Available upon Request
Ingress Protection		Untested
Interface Protocol		EMI-Resistant Standard JSON
Operating Modes		Automatic & Manual
Compatible Off-the-Shelf Accessories		Detached Sensor Card & FFC Cable Housed SMA Fiber Adapter Calibrated Armored Optical Fiber Calibrated Glass Diffuser

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Spectre® MINI [UV-VIS-NIR]

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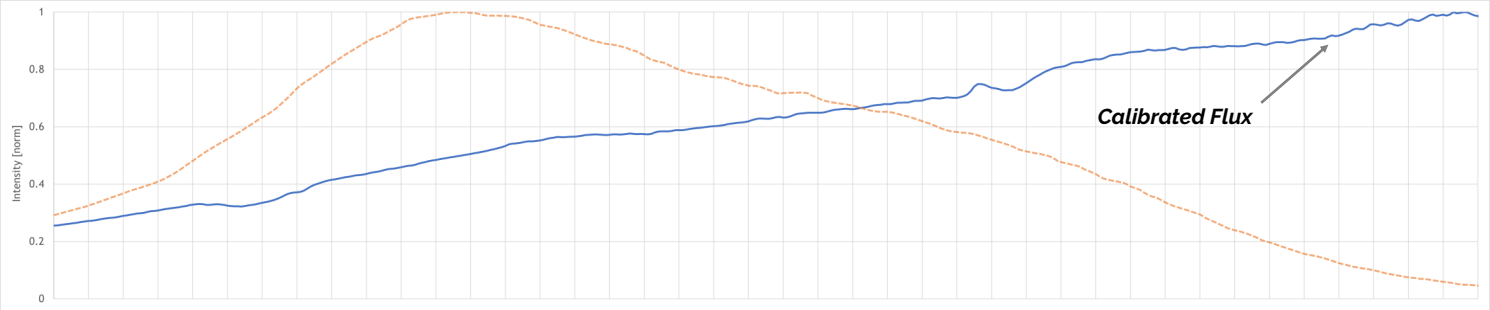
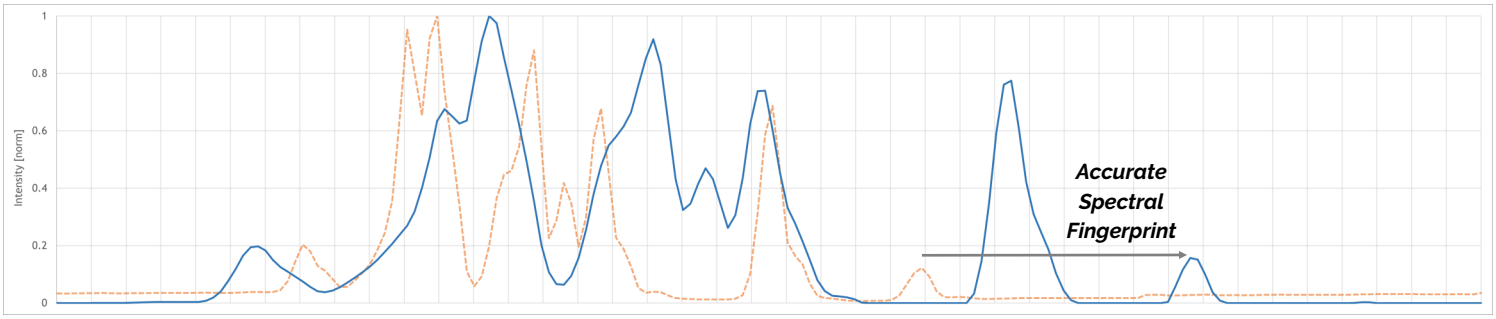


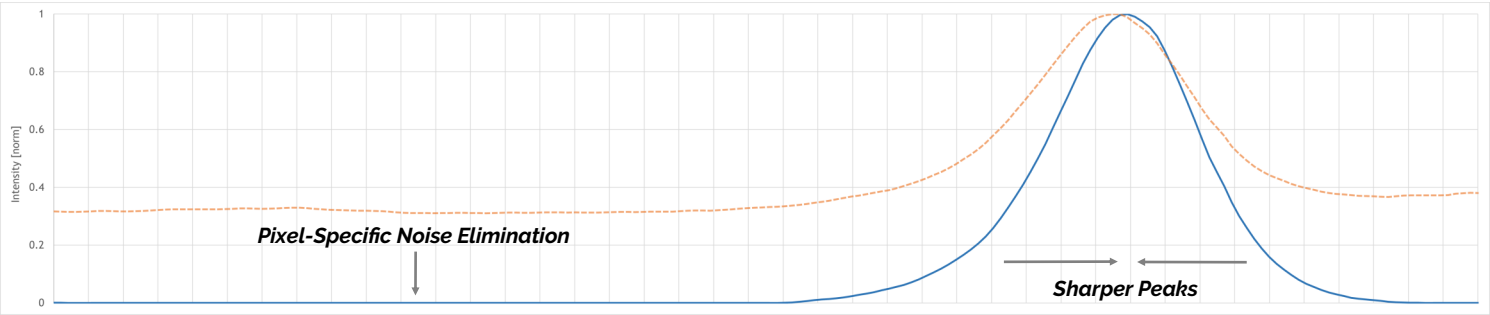
Y-Axis [Quantum Efficiency and Auto-Exposure]

Calibrated reading (blue) directly overlaps tungsten-halogen data from NIST calibrated reference spectrometer, in contrast to raw reading (orange).



X-Axis [Optical Alignment and Temperature Shift]

Calibrated reading (blue) correctly identifies primary Mercury-Argon atomic emission peaks, in contrast to wavelength-shifted raw reading (orange).



Multi-Dimensional [Predictive Patterned Dark Noise]

Calibrated reading (blue) mitigates dark noise and its spectrally-dependent pattern *without* requiring the installed unit to be covered for dark readings.

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Spectre® MINI [NIR Enhanced]

Powered by the Hamamatsu Photonics C14384MA-01

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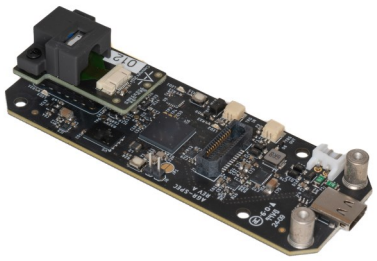

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Specifications

Sensor		Hamamatsu Photonics C14384MA-01 Micro Spectrometer
AGR® Part Number	Board-Level	9004 (USB), 9004-E (PoE)
	Enclosed	9005 (USB), 9005-E (PoE)
Electrical Interfaces	Enclosed	USB 2.0 Type C PoE M12 X-Coded Ethernet
	Board-Level	USB 2.0 Type C PoE M12 X-Coded or RJ45 Ethernet UART Board-to-Board [3.3V] I2C Board-to-Board [3.3V] Power Board-to-Board [5.0V I/O] Input & Output Triggers [Up to 24V]
Optical Interfaces		Free-Space SMA Fiber: With Housing Adapter Lenses and Diffusers by Request
Spectral Range		640 nm - 1050 nm
Numerical Aperture		0.22
Free-Space Full Field of View		25˚
Nominal Spectral Resolution		2.14 nm
FWHM Spectral Resolving Power		11 nm - 13 nm
Bit Depth		Linearized 16-bit
Integration Time (Exposure)		10µs to 10s
Maximum Frame Rate		840 FPS Calibrated | 2,000 FPS Raw
Optical & Temperature Calibrations		Embedded Onboard
Operating Temperature		+5˚ to +50˚ C [+41˚ to +122˚ F]
Mechanical Dimensions		Drawings Available upon Request
Ingress Protection		Untested
Interface Protocol		EMI-Resistant Standard JSON
Operating Modes		Automatic & Manual
Compatible Off-the-Shelf Accessories		Flex Cable to Detach Sensor Card Housed SMA Fiber Adapter Calibrated Armored Optical Fiber Calibrated Glass Diffuser

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Spectre® MINI [NIR Enhanced]

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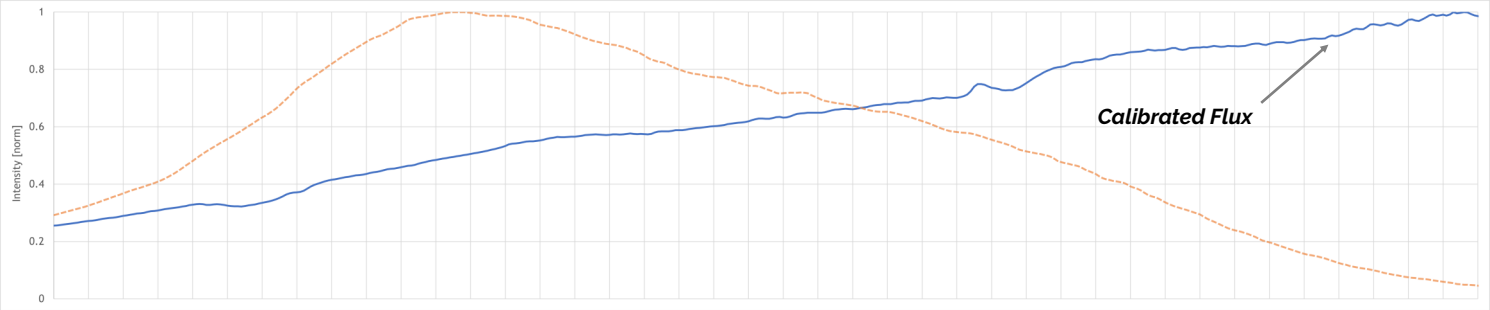
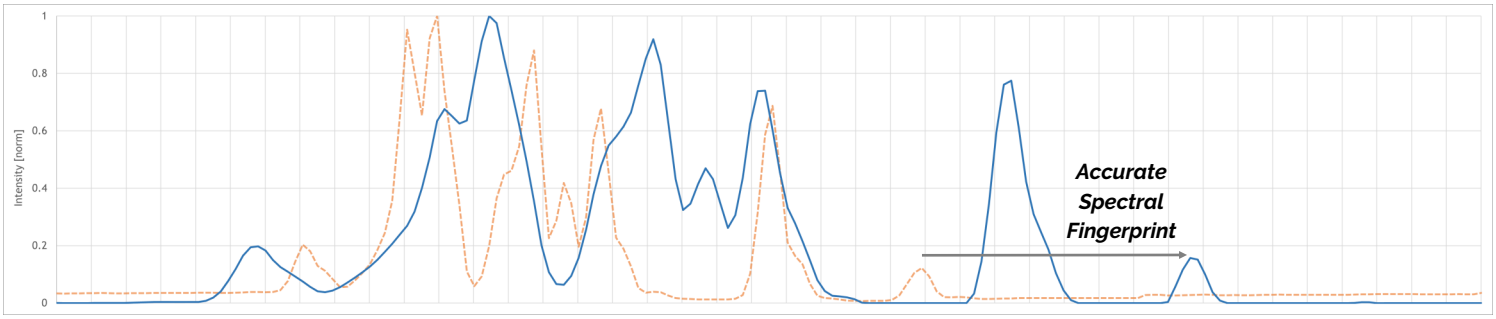


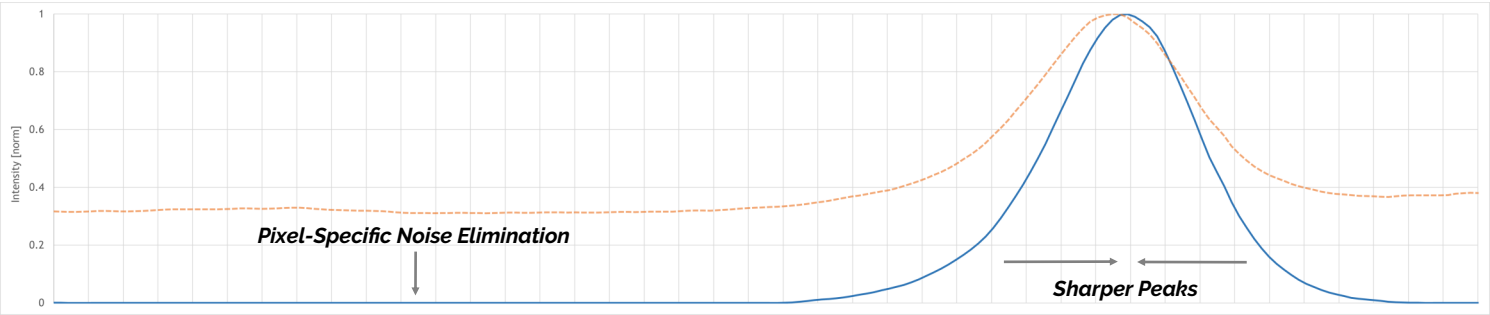
Y-Axis [Quantum Efficiency and Auto-Exposure]

Calibrated reading (blue) directly overlaps tungsten-halogen data from NIST calibrated reference spectrometer, in contrast to raw reading (orange).



X-Axis [Optical Alignment and Temperature Shift]

Calibrated reading (blue) correctly identifies primary Mercury-Argon atomic emission peaks, in contrast to wavelength-shifted raw reading (orange).



Multi-Dimensional [Predictive Patterned Dark Noise]

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Spectre® MINI [UV Enhanced]

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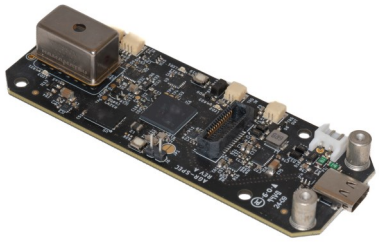

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- Manufacturing & Recycling
- Lighting & Calibration

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Specifications

Sensor		Hamamatsu Photonics C16767MA Micro Spectrometer
AGR® Part Number	Board-Level	9006 (USB), 9006-E (PoE)
	Enclosed	9007 (USB), 9007-E (PoE)
Electrical Interfaces	Enclosed	USB 2.0 Type C PoE M12 X-Coded Ethernet
	Board-Level	USB 2.0 Type C PoE M12 X-Coded or RJ45 Ethernet UART Board-to-Board [3.3V] I2C Board-to-Board [3.3V] Power Board-to-Board [5.0V I/O] Input & Output Triggers [Up to 24V]
Optical Interfaces		Free-Space SMA Fiber: With Housing Adapter Lenses and Diffusers by Request
Spectral Range		190 nm - 440 nm
Numerical Aperture		0.22
Free-Space Full Field of View		25°
Nominal Spectral Resolution		0.87 nm
FWHM Spectral Resolving Power		5 nm - 6 nm
Bit Depth		Linearized 16-bit
Integration Time (Exposure)		10µs to 10s
Maximum Frame Rate		840 FPS Calibrated | 2,000 FPS Raw
Optical & Temperature Calibrations		Embedded Onboard
Operating Temperature		+5° to +50° C [+41° to +122° F]
Mechanical Dimensions		Drawings Available upon Request
Ingress Protection		Untested
Interface Protocol		EMI-Resistant Standard JSON
Operating Modes		Automatic & Manual
Compatible Off-the-Shelf Accessories		Detached Sensor Card & FFC Cable Housed SMA Fiber Adapter Calibrated Armored Optical Fiber Calibrated Glass Diffuser

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Spectre® MINI [UV Enhanced]

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NIST

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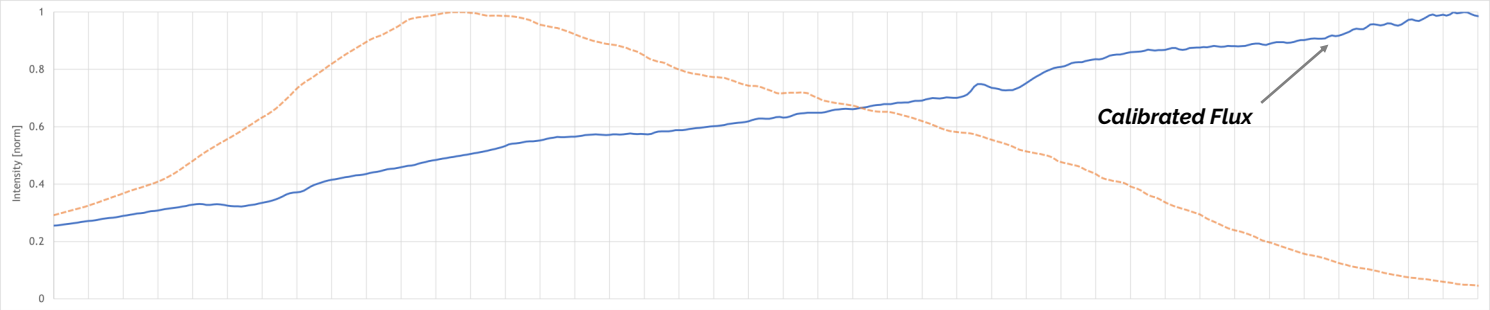

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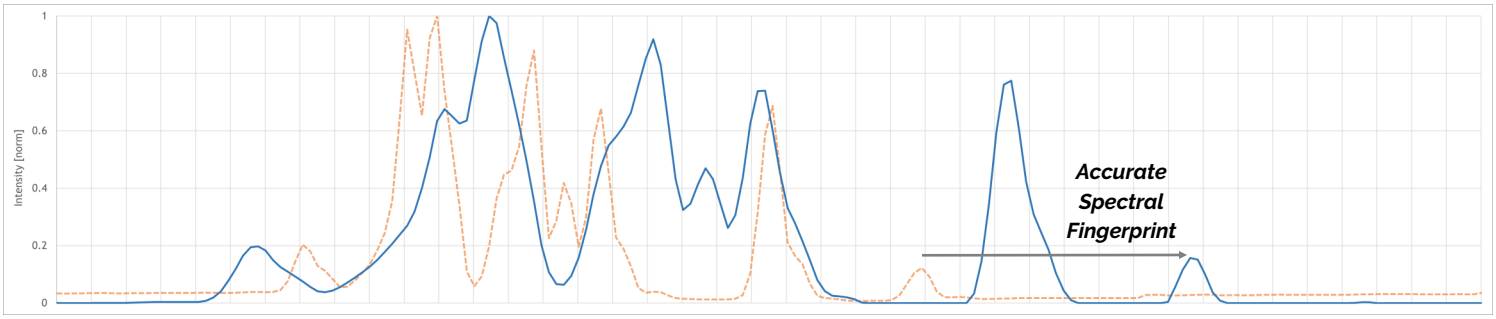

X-Axis [Optical Alignment and Temperature Shift]

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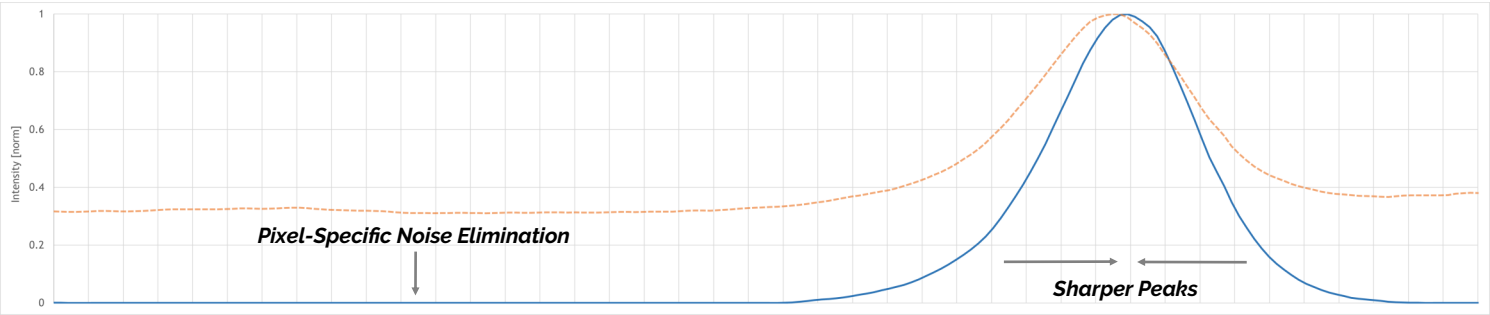

Multi-Dimensional [Predictive Patterned Dark Noise]

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Spectre® MINI [SWIR 1]

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Features

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APPLICATIONS

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- Agriculture, Forestry, Food & Beverage
- Medical & Pharmaceutical
- Water Quality & Environmental Monitoring
- Manufacturing & Recycling
- Lighting & Calibration

Contact us for inspiration from 100+ case studies.

Specifications

Sensor		Hamamatsu Photonics C14272 MEMS-FPI Spectrometer
AGR® Part Number	Board-Level	9008 (USB), 9008-E (PoE)
	Enclosed	9009 (USB), 9009-E (PoE)
Electrical Interfaces	Enclosed	USB 2.0 Type C PoE M12 X-Coded Ethernet
	Board-Level	USB 2.0 Type C POE M12 X-Coded or RJ45 Ethernet UART Board-to-Board [3.3V] I2C Board-to-Board [3.3V] Power Board-to-Board [5.0V I/O] Input & Output Triggers [Up to 24V]
Optical Interfaces		Free-Space SMA Fiber: With Housing Adapter Lenses and Diffusers by Request
Spectral Range		1350 nm - 1650 nm
Numerical Aperture		0.09
Free-Space Full Field of View		10˚
Nominal Spectral Resolution		1 nm (Specific Mode) 7.5 nm (Full-Spectrum Mode)
FWHM Spectral Resolving Power		18 nm
Bit Depth		Linearized 16-bit
Integration Time (Exposure)		10µs to 10s
Maximum Frame Rate		840 FPS (Specific Mode) 15 FPS (Full-Spectrum Mode)
Optical & Temperature Calibrations		Embedded Onboard
Operating Temperature		-40˚ to +85˚ C [-40˚ to +185˚ F]
Mechanical Dimensions		Drawings Available upon Request
Ingress Protection		Untested
Interface Protocol		EMI-Resistant Standard JSON
Operating Modes		Automatic & Manual
Compatible Off-the-Shelf Accessories		Flex Cable to Detach Sensor Card Housed SMA Fiber Adapter Calibrated Armored Optical Fiber Calibrated Glass Diffuser

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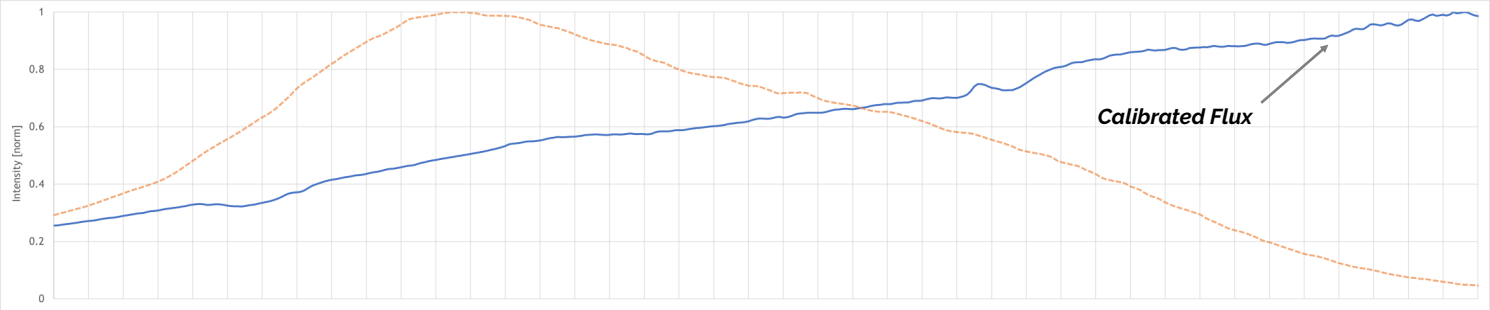

Y-Axis [Quantum Efficiency and Auto-Exposure]

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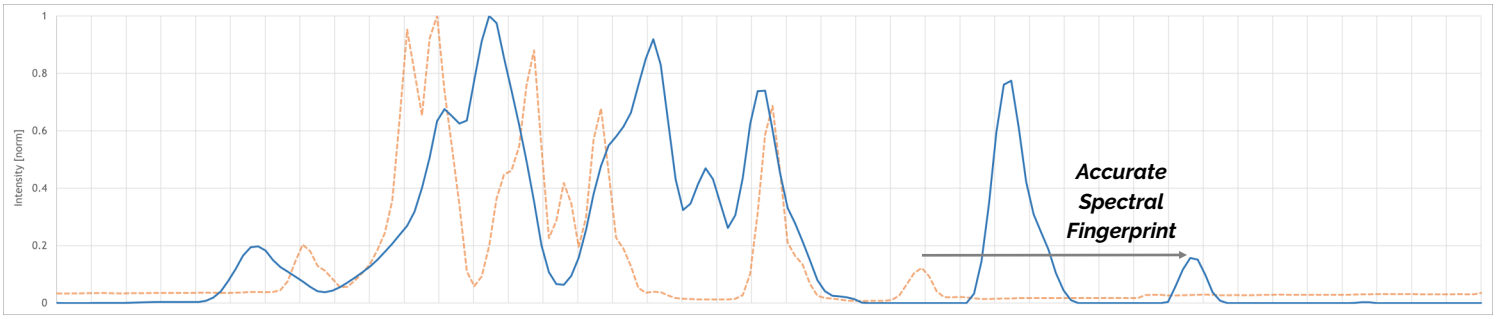

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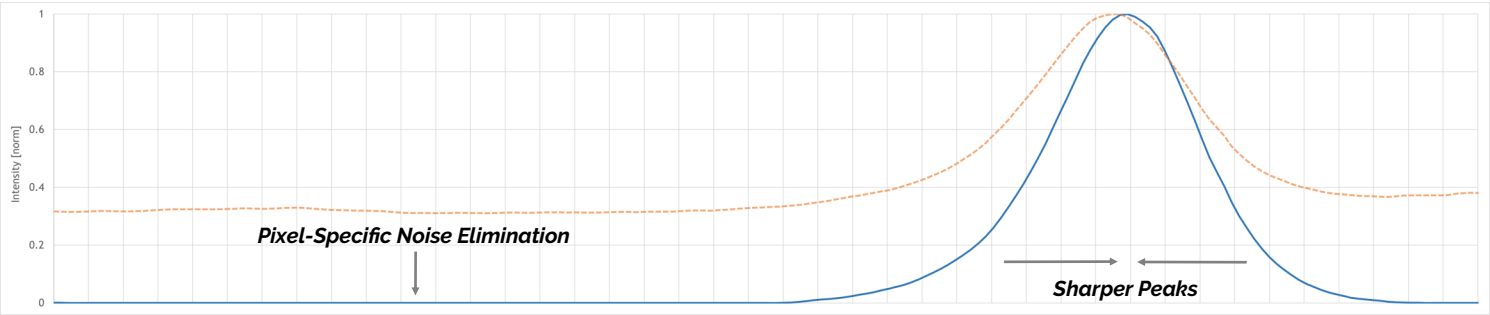

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Spectre® MINI [SWIR 2]

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APPLICATIONS

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Specifications

Sensor		Hamamatsu Photonics C13272-03 MEMS-FPI Spectrometer
AGR® Part Number	Board-Level	9010 (USB), 9010-E (PoE)
	Enclosed	9011 (USB), 9011-E (PoE)
Electrical Interfaces	Enclosed	USB 2.0 Type C PoE M12 X-Coded Ethernet
	Board-Level	USB 2.0 Type C PoE M12 X-Coded or RJ45 Ethernet UART Board-to-Board [3.3V] I2C Board-to-Board [3.3V] Power Board-to-Board [5.0V I/O] Input & Output Triggers [Up to 24V]
Optical Interfaces		Free-Space SMA Fiber: With Housing Adapter Lenses and Diffusers by Request
Spectral Range		1550 nm - 1850 nm
Numerical Aperture		0.09
Free-Space Full Field of View		10°
Nominal Spectral Resolution		1 nm (Specific Mode) 7.5 nm (Full-Spectrum Mode)
FWHM Spectral Resolving Power		20 nm
Bit Depth		Linearized 16-bit
Integration Time (Exposure)		10µs to 10s
Maximum Frame Rate		840 FPS (Specific Mode) 15 FPS (Full-Spectrum Mode)
Optical & Temperature Calibrations		Embedded Onboard
Operating Temperature		-40° to +85° C [-40° to +185° F]
Mechanical Dimensions		Drawings Available upon Request
Ingress Protection		Untested
Interface Protocol		EMI-Resistant Standard JSON
Operating Modes		Automatic & Manual
Compatible Off-the-Shelf Accessories		Flex Cable to Detach Sensor Card Housed SMA Fiber Adapter Calibrated Armored Optical Fiber Calibrated Glass Diffuser

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Spectre® MINI [SWIR 2]

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We See the *Invisible* ®

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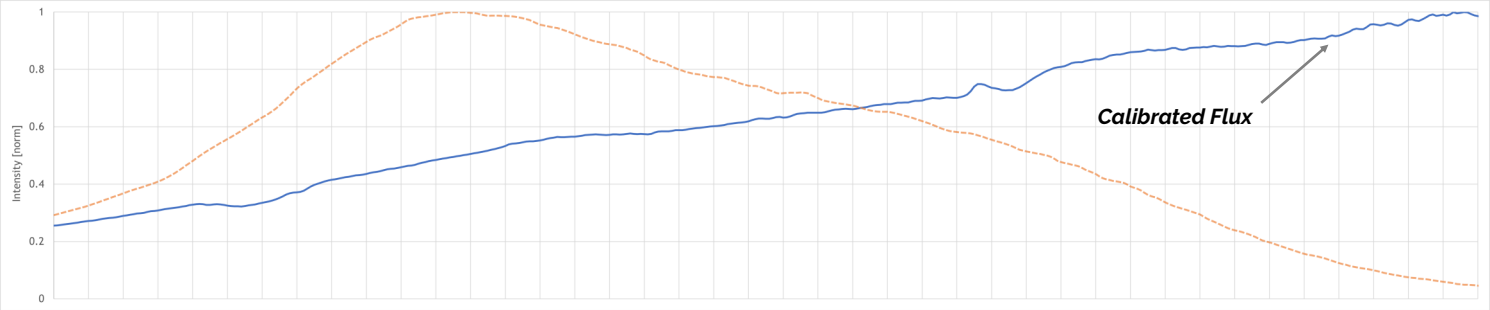
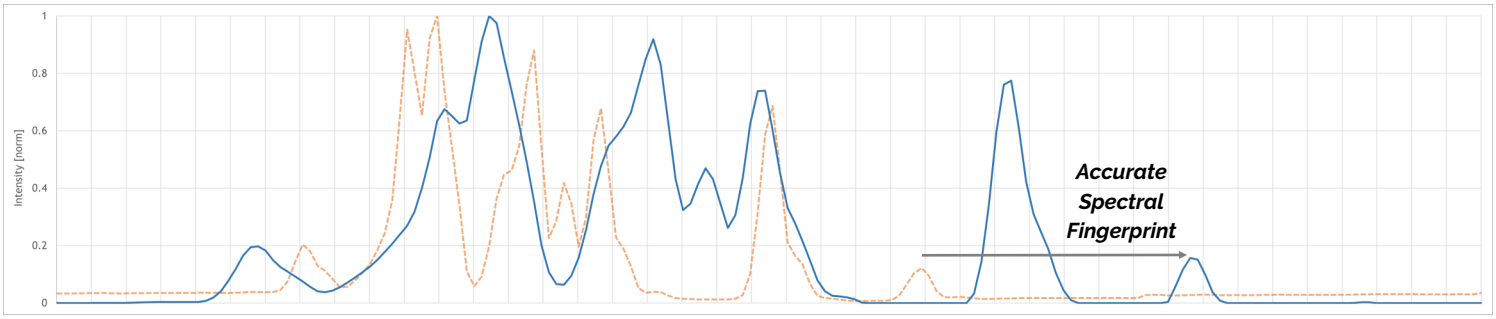
Ready or not, it's already here. That's why you need the **AGR® Advantage** to outperform standard imaging in **accuracy and training time**. Every Spectre® is factory-embedded with the 5 proprietary onboard calibrations demonstrated below to **minimize post-processing** time while **maximizing signal and accuracy** for high-performing spectral analytics.

You take the scan, we do the rest.



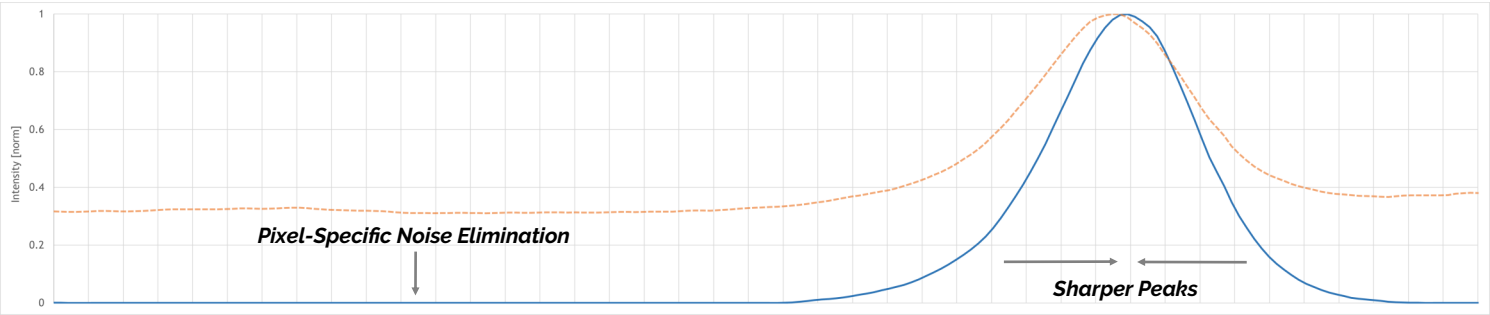
Y-Axis [Quantum Efficiency and Auto-Exposure]

Calibrated reading (blue) directly overlaps tungsten-halogen data from NIST calibrated reference spectrometer, in contrast to raw reading (orange).



X-Axis [Optical Alignment and Temperature Shift]

Calibrated reading (blue) correctly identifies primary Mercury-Argon atomic emission peaks, in contrast to wavelength-shifted raw reading (orange).



Multi-Dimensional [Predictive Patterned Dark Noise]

Calibrated reading (blue) mitigates dark noise and its spectrally-dependent pattern *without* requiring the installed unit to be covered for dark readings.

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System Integration | Customize for original design manufacturing (ODM) with AGR® & integration partners.

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Spectre® MINI [SWIR 3]

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Save Money.
Reduce Waste. Go Faster.

Compact plug-and-play spectroscopy module made in the USA for edge AI and industrial integration

Features

See *Faster*

- Minimize data processing time and errors with **high frame rates** and **onboard calibrations** powered by 5 proprietary algorithms.
- Start today with AGR's® **evaluation apps** and sample embedded **Python scripts**.

See *Farther*

- Send analysis-ready data **hundreds of feet** using PoE or within the same housing with **board-to-board** connectors and USB.
- Deploy like a camera for **non-contact** scans to **mitigate the risk** of cross-contamination.

See *Fearless*

- Scale from **prototype to production** with a customizable OEM module reliably made in **America's Optics Capital**: Rochester, NY.
- **Solid state** sensors and rugged environmental ratings ensure **performance-critical integrity**.

APPLICATIONS

See the ***Invisible*** to Control Your Quality

- Agriculture, Forestry, Food & Beverage
- Medical & Pharmaceutical
- Water Quality & Environmental Monitoring
- Manufacturing & Recycling
- Lighting & Calibration

Contact us for inspiration from 100+ case studies.

Specifications

Sensor		Hamamatsu Photonics C14273 MEMS-FPI Spectrometer
AGR® Part Number	Board-Level	9012 (USB), 9012-E (PoE)
	Enclosed	9013 (USB), 9013-E (PoE)
Electrical Interfaces	Enclosed	USB 2.0 Type C PoE M12 X-Coded Ethernet
	Board-Level	USB 2.0 Type C PoE M12 X-Coded or RJ45 Ethernet UART Board-to-Board [3.3V] I2C Board-to-Board [3.3V] Power Board-to-Board [5.0V I/O] Input & Output Triggers [Up to 24V]
Optical Interfaces		Free-Space SMA Fiber: With Housing Adapter Lenses and Diffusers by Request
Spectral Range		1750 nm - 2150 nm
Numerical Aperture		0.09
Free-Space Full Field of View		10°
Nominal Spectral Resolution		1 nm (Specific Mode) 7.5 nm (Full-Spectrum Mode)
FWHM Spectral Resolving Power		22 nm
Bit Depth		Linearized 16-bit
Integration Time (Exposure)		10µs to 10s
Maximum Frame Rate		840 FPS (Specific Mode) 15 FPS (Full-Spectrum Mode)
Optical & Temperature Calibrations		Embedded Onboard
Operating Temperature		-40° to +85° C [-40° to +185° F]
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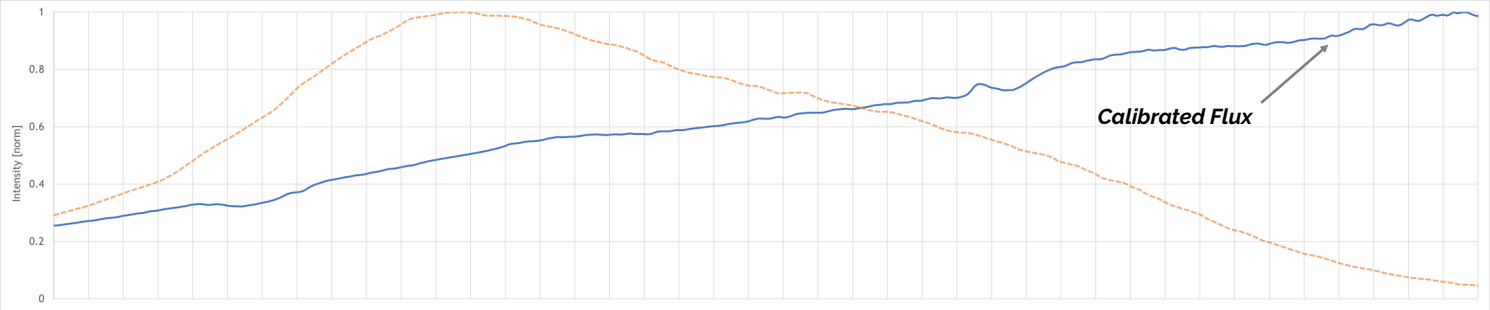

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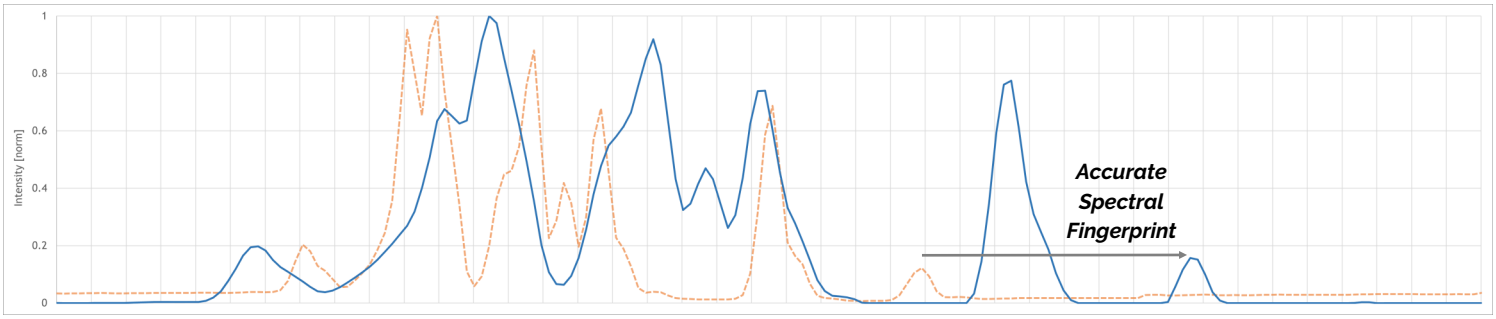

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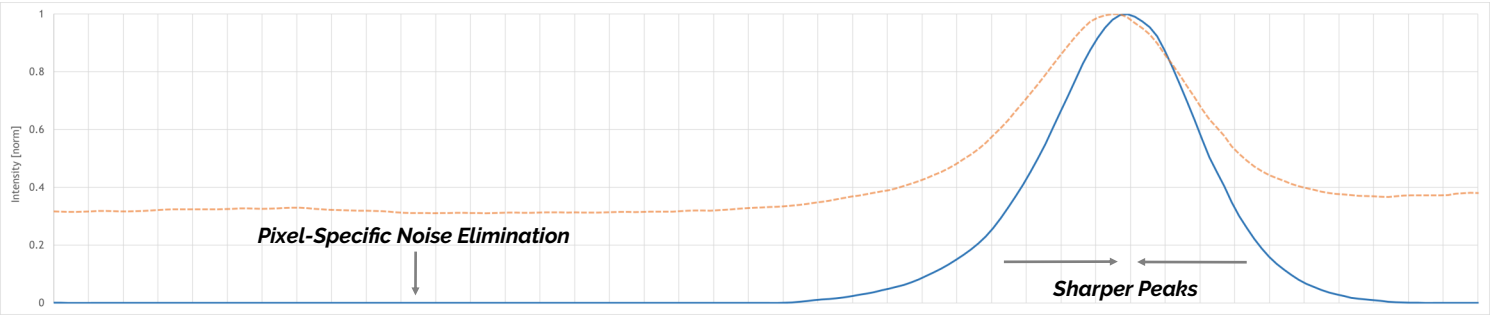

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