Infinitely better SFC performance

Agilent 1260 Infinity
Analytical SFC Solutions

Distribuido en España por:

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The Measure of Confidence

Agilent Technologies

INFINITELY BETTER SFC PERFORMANCE

Agilent 1260 Infinity solutions for analytical supercritical fluid chromatography (SFC) set higher standards in performance, cost of ownership and reliability to make your laboratory more efficient and environmentally safe. A broad range of systems with unmatched modularity gives you astonishing flexibility to adapt to changing analytical needs. System control, data analysis and result reporting are all fully integrated in Agilent OpenLab CDS and MassHunter software for straightforward, single-point operation.

Future-proof through superior green technology

Agilent 1260 Infinity analytical SFC systems reduce your dependence on expensive and toxic solvents such as acetonitrile, saving costs and contributing to a better environment. The low viscosity and exceptional diffusion characteristics of SFC help you to boost the throughput of your laboratory.

Easy to use

Agilent 1260 Infinity analytical SFC and SFC/MS systems with single quadrupole detection are fully integrated in Agilent OpenLab CDS software. For high-end SFC/MS systems with quadrupole time-of-flight or triple quadrupole detection, Agilent MassHunter software gives you a single point of control. Whatever your choice of system, all our SFC solutions are as easy to use as any Agilent LC.

Maximum flexibility

Agilent 1260 Infinity solutions for SFC give you maximum flexibility to perform automated method development, screen your columns, deploy different UV detectors or even extend your detection capabilities to MS and evaporative light scattering.

Adapt to meet your analytical needs!

Enter the world of SFC through an economical upgrade for your current Agilent 1200 Series or 1260 Infinity LC, or invest in a new 1260 Infinity analytical SFC system. For ultimate flexibility and investment-protection, consider the 1260 Infinity hybrid SFC/UHPLC system.

Agilent SFC Primer
Get a thorough understanding of basic principles and practical implementation.

Agilent publication number: 5991-5509EN

COMPREHENSIVE PORTFOLIO OF SOLUTIONS

1260 Infinity analytical SFC solutions

Agilent offers a comprehensive portfolio of SFC solutions for basic analytical work through complex separation challenges using advanced detection techniques.

1260 Infinity analytical SFC system

- SFC performance with LC-like sensitivity
- 600 bar by 5 mL/min power range
- 10- to 15-times lower operating costs with standard grade CO_2

1260 Infinity hybrid SFC/UHPLC system

- Orthogonal method screening on a single system
- Efficient instrument utilization – switch between SFC and UHPLC within a sequence
- Save costs and bench space – purchase only one system

1260 Infinity analytical SFC/FID System

- FID in combination with Agilent 1260 Infinity SFC systems
- High-sensitivity detection
- Excellent reproducibility of results

1260 Infinity analytical SFC/MS System

- Full integration of SFC and MS provides reliable instrumentation for method development and routine analysis
- MS detection increases peak capacity and provides compound identification
- Accurate mass screening with Q-TOF
- Trace-level quantification with QQQ

Agilent 1260 Infinity analytical SFC/MS System with 6100 Series single quadrupole LC/MS

Agilent 1260 Infinity analytical SFC/MS System with 6400 Series Q-TOF LC/MS

Agilent 1260 Infinity analytical SFC/MS System with 6500 Series QQQ LC/MS

LEADERSHIP THROUGH TECHNOLOGY

THE FRONT END

1260 SFC control module

Agilent sets the benchmarks in CO_2 preconditioning by transforming gaseous-grade CO_2 to the supercritical state and boosting to a pressure that relieves the pump from compression requirements. This precise metering results in the lowest baseline noise ever achieved in SFC measurements, giving you a tenfold increase in sensitivity.

THE BACK END

Far more than just another modified UHPLC

The Agilent 1260 Infinity SFC binary pump and 1260 Infinity SFC standard autosampler have been carefully optimized for superior SFC performance. Preconditioning of gaseous CO_2 achieves high purity without requiring expensive high grades.

The SFC pump delivers accurately metered flow rates up to 5 mL/min and pressures up to 600 bar – for precise control without retention-time drift. The SFC autosampler is fitted with a 5-µL fixed loop for exact injection without carryover.

SFC high-pressure detector cells facilitate UV detection with high sensitivity and high resolution.

The modularity and robustness of the Agilent 1260 Infinity LC has been maintained for the SFC system to provide highest flexibility and investment protection. Further, all components meet Agilent´s high quality standards and all modules are optimized and thoroughly tested at the factory prior to shipment.

Agilent 1260 Infinity SFC binary pump

Agilent 1260 Infinity standard autosampler

Agilent 1290 Infinity thermostatted column compartment

Agilent 1260 Infinity multiple wavelength detector

Agilent 1260 Infinity diode array detector

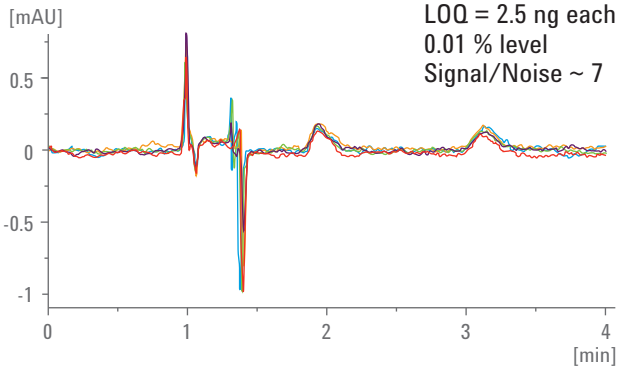
INFINITELY BETTER SFC PERFORMANCE

Superior technology in the Agilent 1260 Infinity SFC control module helps you to achieve the highest sensitivity ever obtained in supercritical fluid chromatography. Combined with the trusted quality of the Agilent 1260 Infinity modules you can now perform routine analytical SFC – and significantly reduce your mobile phase expenses compared to HPLC. With the Agilent 1260 Infinity hybrid SFC/UHPLC system can run SFC and UHPLC methods on a single instrument.

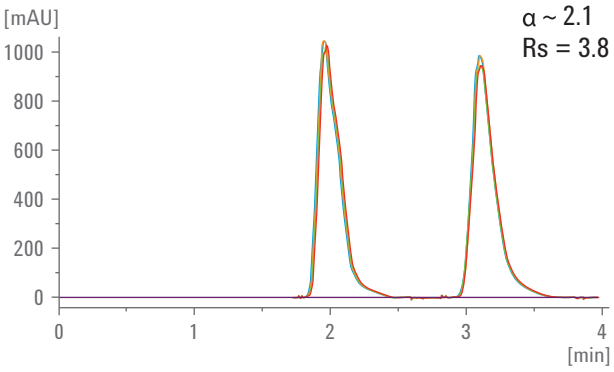
LC-like sensitivity, UHPLC-like power range

The Agilent 1260 Infinity SFC system combines next generation preconditioning of supercritical CO_2 to achieve the lowest detector baseline noise ever measured using SFC.

- Gain tenfold increase in detection sensitivity
- Approach new applications such as low-level impurity analysis for chiral and achiral separations
- Expand your selectivity range and achieve higher separation efficiency through a pressure range up to 600 bar for highly viscous solvents, columns packed with small particles, and for coupled columns



Unprecedented sensitivity for EE determinations shown by five consecutive runs of 0.005 µg of a racemic mixture of Warfarin.



Unprecedented reproducibility for EE determinations – here five consecutive runs of 50 µg of a racemic mixture of Warfarin.

Infinitely more selectivity

The Agilent 1260 Infinity hybrid SFC/UHPLC system provides full SFC and UHPLC capability in a single system. Alternate between SFC and UHPLC by simply switching a valve – no hardware modification is necessary and only a minimum of equilibration time. With two orthogonal separation techniques, you can detect hidden impurities and obtain more comprehensive information on complex mixtures, for higher productivity and more confidence in your results.

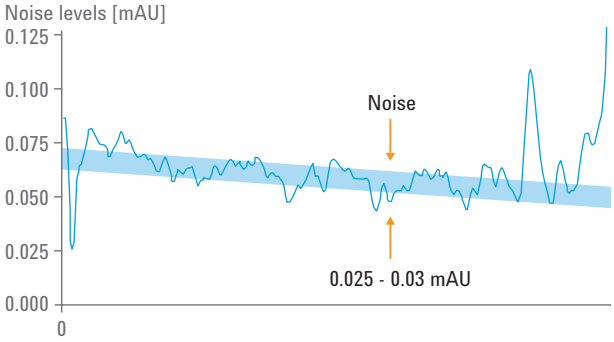
Split and splitless MS interface

Lowest detector noise ever achieved for SFC measurements with levels between 0.025 to 0.03 mAU.

Cost of ownership matters

SFC can significantly reduce the costs for expensive mobile phases such as acetonitrile or for the disposal of organic waste.

- Consumes low amount of solvents – with CO_2 being the predominate component of the mobile phase, only low percentages of organic modifiers are necessary
- Prevents dependencies on shortages as experienced with acetonitrile in 2009 – this solvent is rarely used as modifier
- Generates little waste and avoids costly waste disposal
- Use of low-cost, beverage-grade CO_2 without requiring high-purity grades, reducing CO_2 costs by a factor of 10



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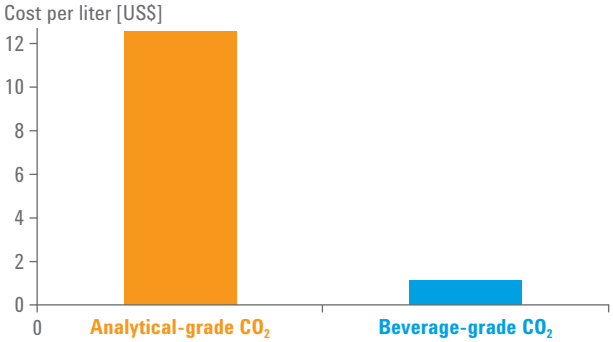
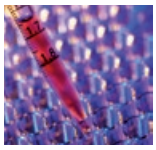
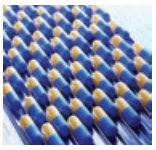


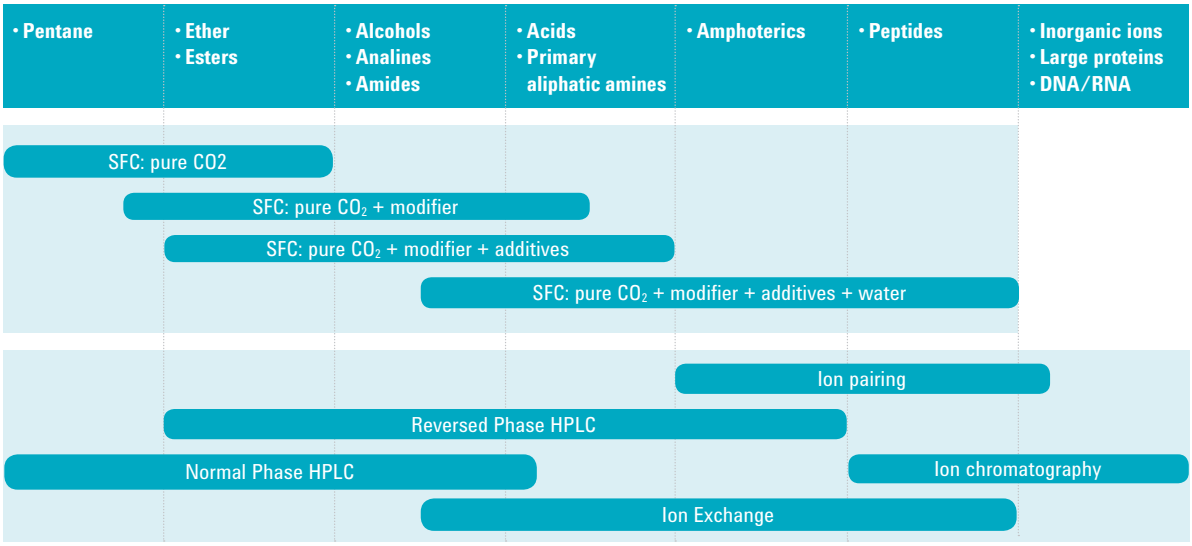
The Agilent 1260 Infinity Analytical SFC System can use beverage-grade CO_2 – reducing total CO_2 costs by a factor of 10.

BROADEN YOUR APPLICATION RANGE

The unique selectivity and speed of supercritical fluid chromatography makes it ideal for a wide range of applications in many industries – from polar molecules to peptides. Whether you are looking for trace impurities in drug development and QA/QC or developing methods for preparative separations of chiral compounds to replace solvent-consuming normal phase separations, the Agilent 1260 analytical SFC system will help you to boost your lab efficiency.

Environmental Analysis	Food Safety/Quality	Chemical QA/QC	Drug Discovery	Drug Development	Drug Manufacturing & QA/QC	
						
Chiral and achiral compounds	**Chiral and achiral small molecules**	**Chiral and achiral compounds**	**Chiral and achiral NCEs**	**Chiral drugs, enantiomeric excess, impurities**	**Chiral compounds**	**SFC – Supercritical Fluid Chromatography** New standards for ease-of-use, performance and reliability

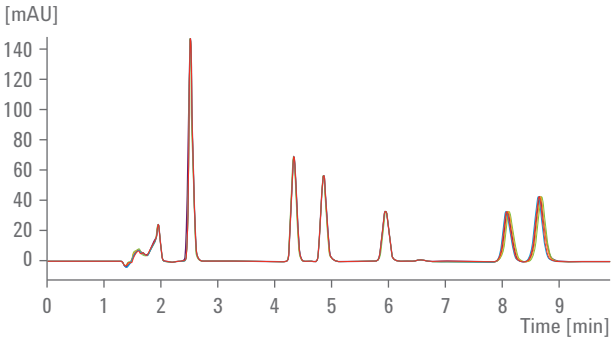
Where SFC fits in: from non-polar to highly-charged



SENSITIVITY AND SPEED FOR YOUR WORKFLOW

A workhorse for chiral and achiral analysis

SFC has long been acknowledged as the technique of choice for separation of chiral compounds. The new Agilent 1260 Infinity analytical SFC system overcomes limitations such as lack of repeatability and robustness, and low sensitivity by achieving excellent run-to-run and day-to-day repeatability as well as HPLC-like sensitivity through low UV detector noise. Agilent's 1260 Infinity-based, single-vendor solution makes SFC a routine, 24/7 tool for almost any of your small molecule applications.

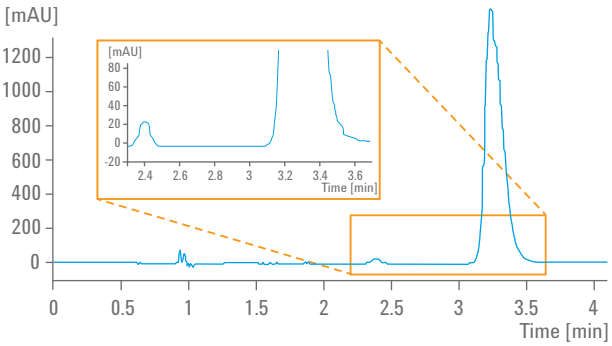


Repeatability of analyses for 10 consecutive runs using the Agilent 1260 Infinity analytical SFC System.

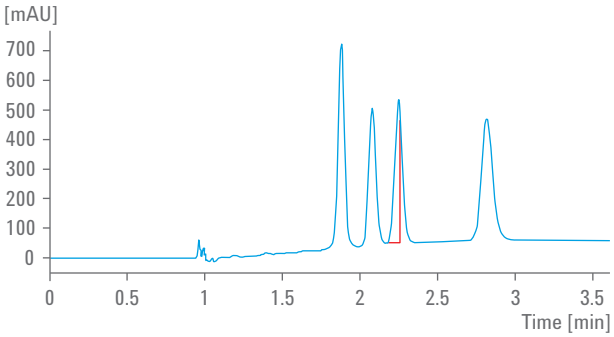
Impurities and enantiomeric excess determination now below 0.1 % of your main peak

Even today, the determination of low level impurities can still be a challenging task. The lack of impurities below 0.1 % of the main component has to be proven in many pharmaceutical assays in order to fulfill regulatory requirements.

With an order of magnitude higher sensitivity compared to other available SFC instruments, the Agilent 1260 Infinity analytical SFC system is capable of helping you to identify impurities in your chiral and achiral drug formulations in a way similar to your standard LC analyses.



Analysis of a compound with two chiral centers, showing full separation of all four stereo-isomers.



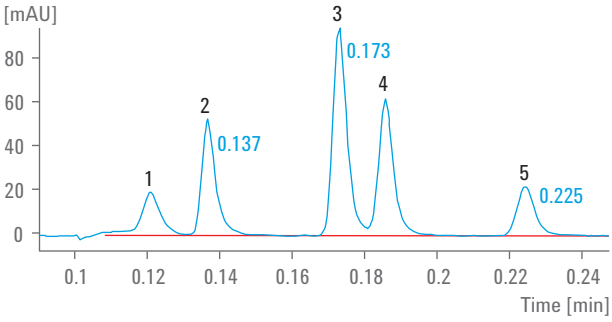
Analysis of a compound with two chiral centers contaminated with a single enantiomer, demonstrating detection below 0.05 % of the main peak.

BOOST YOUR LAB PRODUCTIVITY

Supercritical fluids possess intrinsically one major advantage over liquid-based mobile phases – they exhibit significantly lower viscosity and increased diffusivity, which provides for improved mass transfer. This facilitates significantly higher flow rates and results in very fast separations. With the Agilent 1260 Infinity analytical SFC system a standard analysis of a five-component mixture can be transformed from a five minute separation to an assay time significantly below one minute. This demonstrates clearly the power within the new generation of Agilent SFC instrumentation.

Fast and ultrafast chromatography at moderate pressures

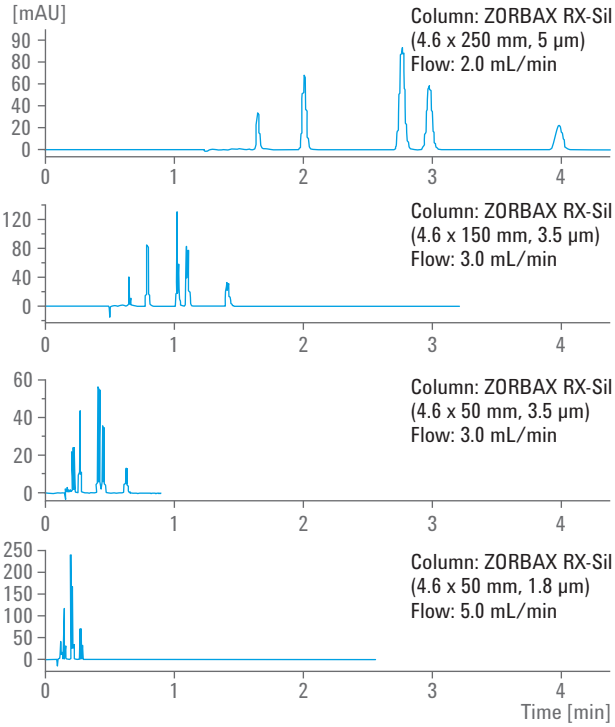
Supercritical fluids possess intrinsically one major advantage over liquid-based mobile phases – they exhibit significantly lower viscosity and increased diffusivity, which provides for improved mass transfer. This facilitates significantly higher flow rates and results in very fast separations. With the Agilent 1260 Infinity analytical SFC System a standard analysis of a five-component mixture can be transformed from a five minute separation to an assay time significantly below one minute. This demonstrates clearly the power within the new generation of Agilent SFC instrumentation.



Ultrafast separation – in 14 seconds – of ibuprofen (1), ketoprofen (2), theophyline (3), caffeine (4) and theobromine (5) using an Agilent ZORBAX RX-Sil column (4.6 x 50 mm, 1.8 µm).

Sub-2-micron column technology and extralong columns for better resolution

UHPLC is now widely accepted as the technique to push liquid-based analysis to new levels of productivity or to achieve resolution that previously was difficult to obtain within acceptable time. In contrast, the low viscosity of a supercritical mobile phase enables deployment of small particle columns or multiple columns in series – without generating excessively high backpressures. With the Agilent 1260 Infinity analytical SFC system it is now possible to use long and/or small particle columns without exceeding 600 bar and to exploit new column technology for superior resolution.

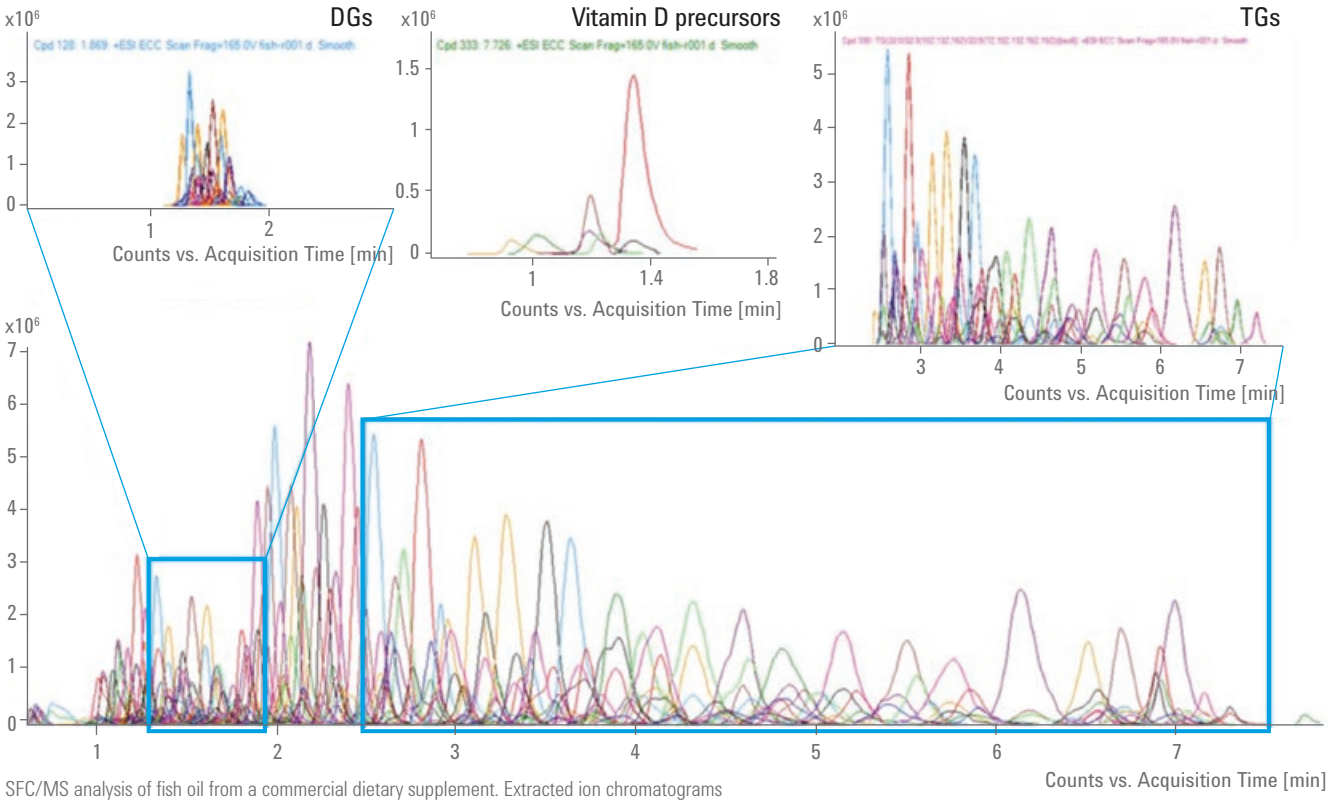


Optimization of resolution and analysis speed using sub-2-micron column technology.

SFC solves the lipidomics separation challenge

SFC is a remarkably effective technique for resolving highly complex lipid mixtures. The example here shows the separation of a large number of fish-oil lipids by SFC. The diglyceride (DG) compounds are separated at earlier retention times according to their unsaturation and the triglyceride (TG) compounds are separated at later retention times with high resolution in a very short total run time. This enables easy identification by accurate mass time-of-flight or quadrupole time-of-flight mass spectrometry.

Other compounds such as fat-soluble vitamins (vitamin D) are also identified. This proves that SFC is a broadly applicable separation technique for lipidomics applications. SFC preserves the lipid level information about the DG or TG compound and their unsaturation. Interfacing to the mass spectrometer is straightforward and derivatization is not required.



SFC/MS analysis of fish oil from a commercial dietary supplement. Extracted ion chromatograms demonstrate the high resolving power SFC offers for the analysis of complex lipid mixtures.

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Published in the USA, August 1, 2015
5990-9564EN

Agilent Technologies