

[ XEVO TQ-S ]

STEP UP TO THE CHALLENGE  
WITH A **STEP CHANGE**  
IN SENSITIVITY.



Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

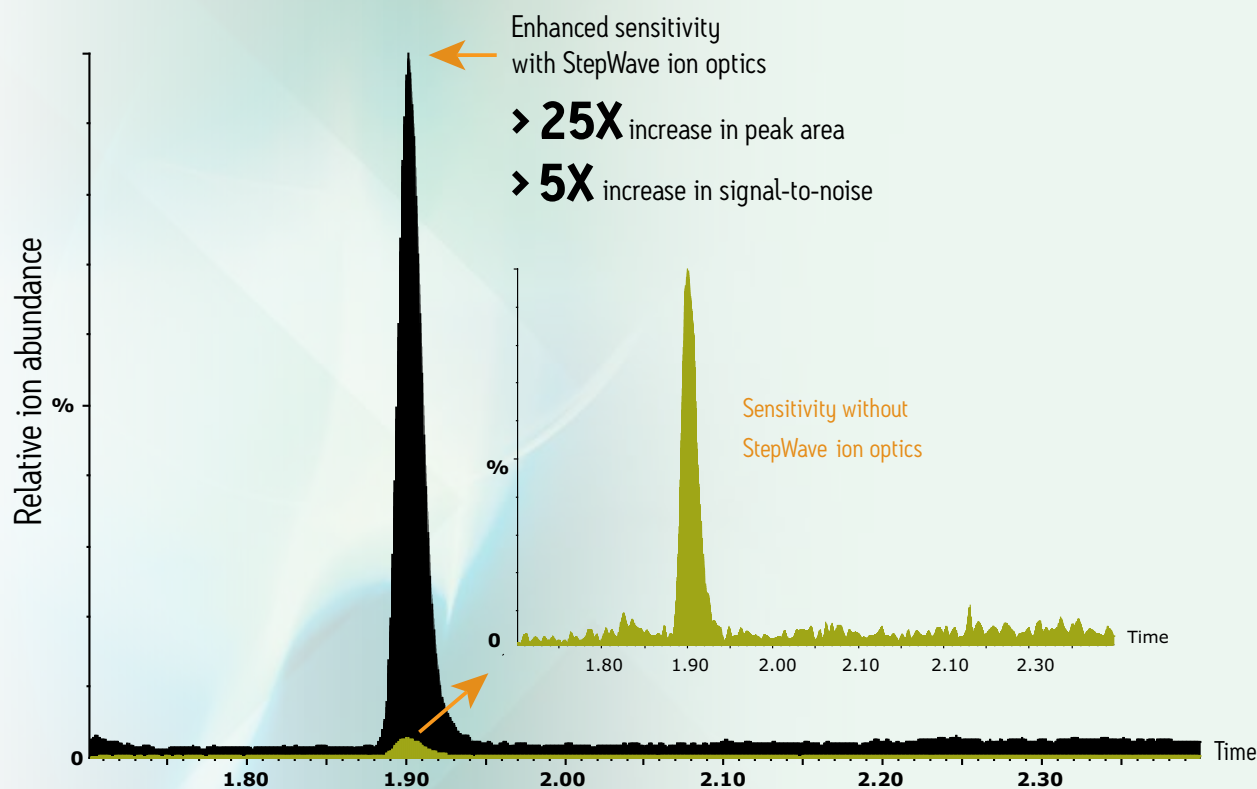
When you need an MS system that is more sensitive.

[ XEVO TQ-S ]

# Introducing Xevo TQ-S

Now you can quantify compounds at concentrations lower than you ever thought possible. This step change in sensitivity delivers the highest-quality, most comprehensive information — so you can consider quantification studies that were previously beyond your reach.

## UPLC/MRM 50 fg Reserpine ESI+



## Innovative features **for impressive results.**

Thanks to a revolutionary new off-axis ion source technology known as StepWave™, Xevo™ TQ-S delivers unprecedented levels of sensitivity, selectivity, and accuracy.

Both the Xevo TQ and Xevo TQ-S are designed for quantitative UPLC®/MS/MS applications. With the increased sensitivity of the Xevo TQ-S, you can quantify and confirm trace components at even lower levels in the most complex sample. Best of all, both Xevo systems allow you to achieve your goals with unparalleled speed and ease.

With Xevo TQ-S, suddenly your laboratory will develop methods to advance biological and medical research, bring drugs to market faster, identify a broader array of food or environmental contaminants, or report reliable forensic data with total confidence.



[ X E V O T Q - S ]

### ENGINEERED SIMPLICITY

the combination of highest performance with system versatility and simplicity of operation

### high performance

#### ■ StepWave

A revolutionary off-axis ion source technology that's unique to Xevo TQ-S and delivers class-leading UPLC/MS/MS sensitivity

#### ■ ScanWave™

Innovative technology that provides rapid, high-quality, UPLC-compatible, MS/MS data acquisition

#### ■ RADAR™

An information-rich acquisition approach that allows you to collect highly specific quantitative data for target compounds while providing the ability to visualize all other components in sample matrices

### versatility

#### ■ Ion sources

Versatility of an extensive range of interface capabilities to service the broadest range of applications

### simplicity of operation

#### ■ The accessibility of Engineered Simplicity™

Guarantees maximum system performance and usability — as well as superior support to ensure your continued success

[ T Q - S ]

[ T Q & T Q - S ]

Step up to your analytical challenges with **StepWave**  
the latest breakthrough in ion transfer optics



## Ultimate sensitivity. In all acquisition modes.

Specifically designed to maximize sensitivity in all data acquisition modes, Xevo TQ-S is equipped with a larger ion sampling orifice, an enhanced vacuum pumping configuration, and revolutionary StepWave ion transfer optics.

With the sensitivity of Xevo TQ-S, now you can:

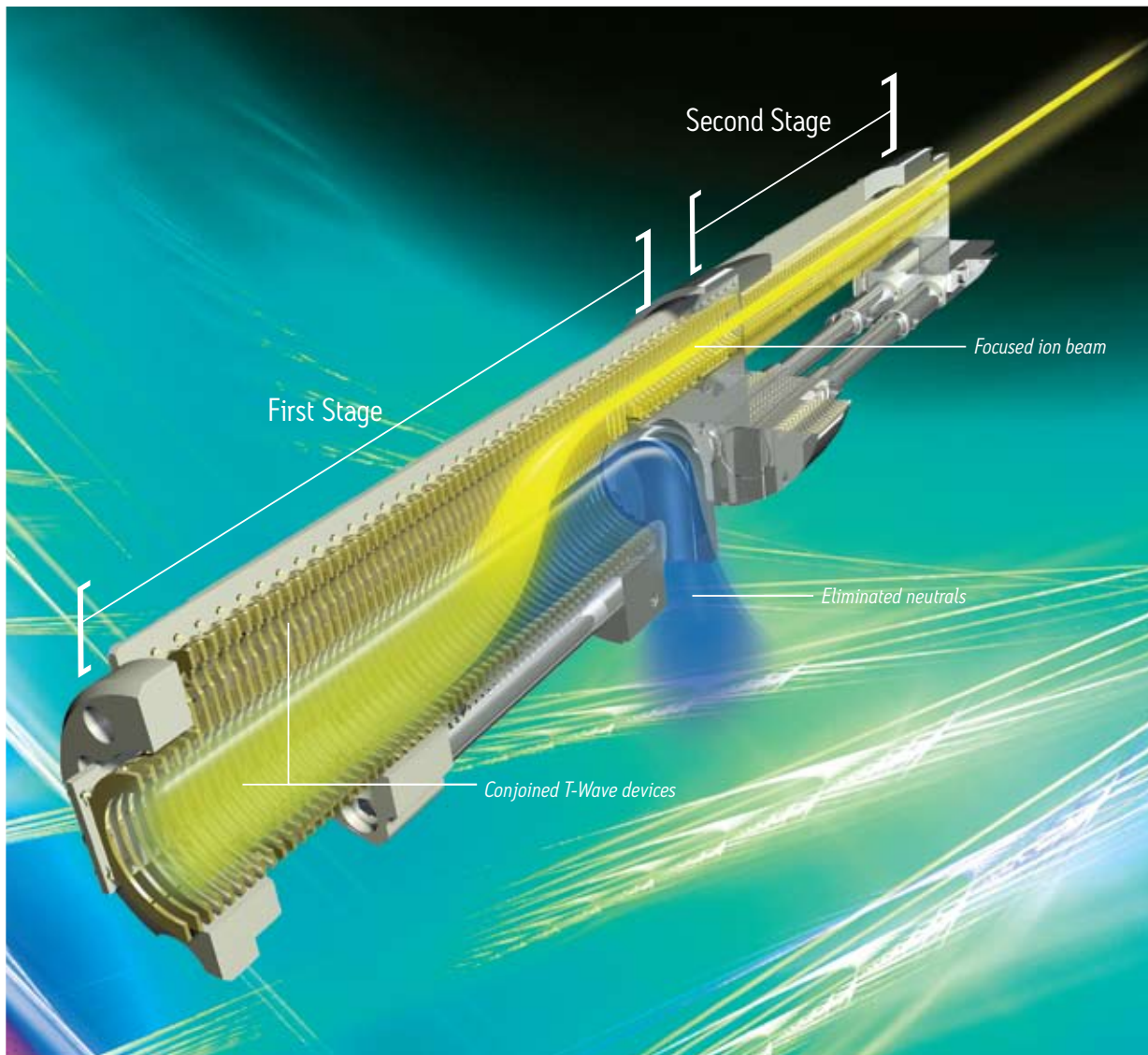
- Detect target compounds in complex samples at the very lowest concentrations
- Dilute samples to reduce matrix effects
- Work with smaller sample volumes

In the end, it means you can detect compounds you may never have been able to detect before.

This groundbreaking design transfers ions from the ion source to the quadrupole MS analyzer with the highest possible efficiency, at the same time ensuring undesirable neutral contaminants are actively filtered out. This dramatically increases MS ion intensities while minimizing background noise — for more confidence in the repeatability of your assay.

# StepWave

one giant step for science.



The patented StepWave consists of two ion transfer stages both of which are T-Wave™\* enabled. The first stage is revolutionary in its design, constructed from two stacked ring electrode devices that are conjoined to give a single off-axis ion transfer lens with unique properties.

As the ion beam passes through the source sampling orifice it undergoes a certain amount of expansion. The entrance of the StepWave is designed to be large enough to efficiently capture all of the ions in this expanded ion cloud.

The design of the first stage ensures that all the ions are efficiently focused and directed up into the second stage. The unique off-axis design ensures that any neutral materials entering the source sampling orifice are actively extracted from the system.

\*The traveling wave device described here is similar to that described by Kirchner in US Patent 5,206,506; 1993.

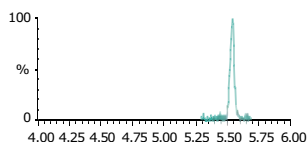
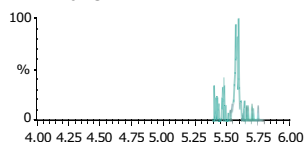
Market-leading limits of quantification allow you to take **giant steps forward** in your most challenging **UPLC/MS/MS** quantification applications.

**Pesticides in Drinking Water ESI+**

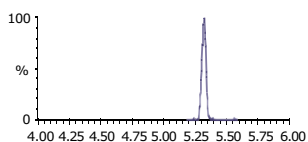
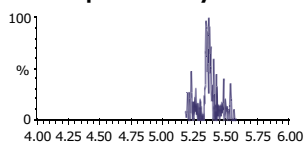
Sensitivity without StepWave ion optics

Enhanced sensitivity with StepWave ion optics

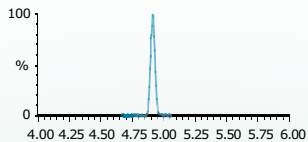
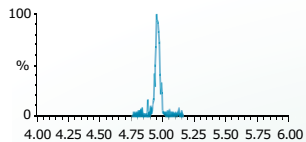
**Linuron**



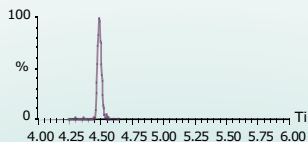
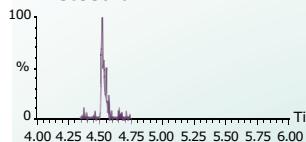
**Azinphos-methyl**



**Atrazine**



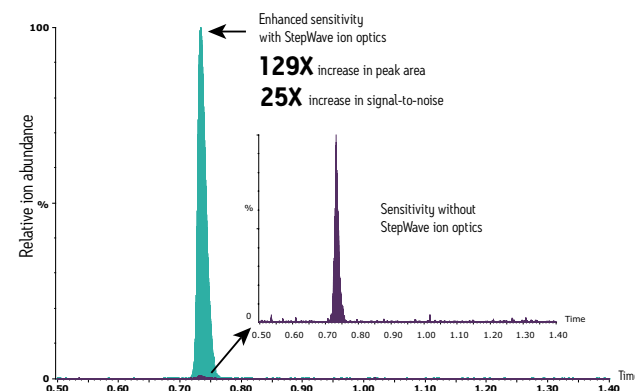
**Metosulam**



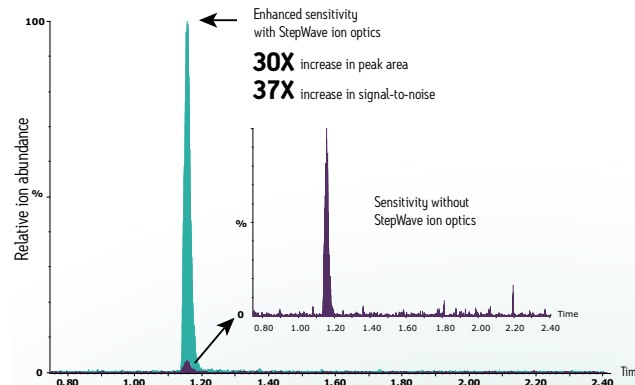
uPLC/MRM COMPARISON OF XEVO TQ-S  
RELATIVE TO XEVO TQ

COMPOUND NAME	IONIZATION MODE	RELATIVE PEAK AREA	RELATIVE S:N
Fenuron	ESI+	30	7
Metamitron	ESI+	32	15
Acephate	ESI+	27	7
Chlortoluron	ESI+	27	8
Adicarb	ESI+	27	6
Demeton S Methyl	ESI+	26	9
Phoxim	ESI+	64	19
Kresoxim Methyl	ESI+	64	4
Azinphos Methyl	ESI+	42	6
Azoxystrobin	ESI+	45	4
Dimethoate	ESI+	23	10
Acetamiprid	ESI+	30	28
Fluticasone	ESI+	30	3
Formoterol	ESI+	39	4
Nefadazone	ESI+	28	3
Desmopressin	ESI+	129	25
Salmeterol	ESI+	41	8
Alprazolam	ESI+	21	13
Reserpine	ESI+	25	5
Ibuprofen	ESI-	13	16
Prostaglandin E2	ESI-	30	17
<b>Mean Value</b>		<b>38</b>	<b>11</b>

**Therapeutic Peptide Desmopressin ESI+**



**Prostaglandin Protein in ppt plasma ESI-**



## SCANWAVE™

## Spectral confirmation. Enhanced.

Unlike conventional tandem quadrupole mass spectrometers, Xevo TQ-S gives you both the very best quantitative data as well as superior spectral MS/MS information. With a single instrument platform adaptable to a variety of different UPLC/MS/MS

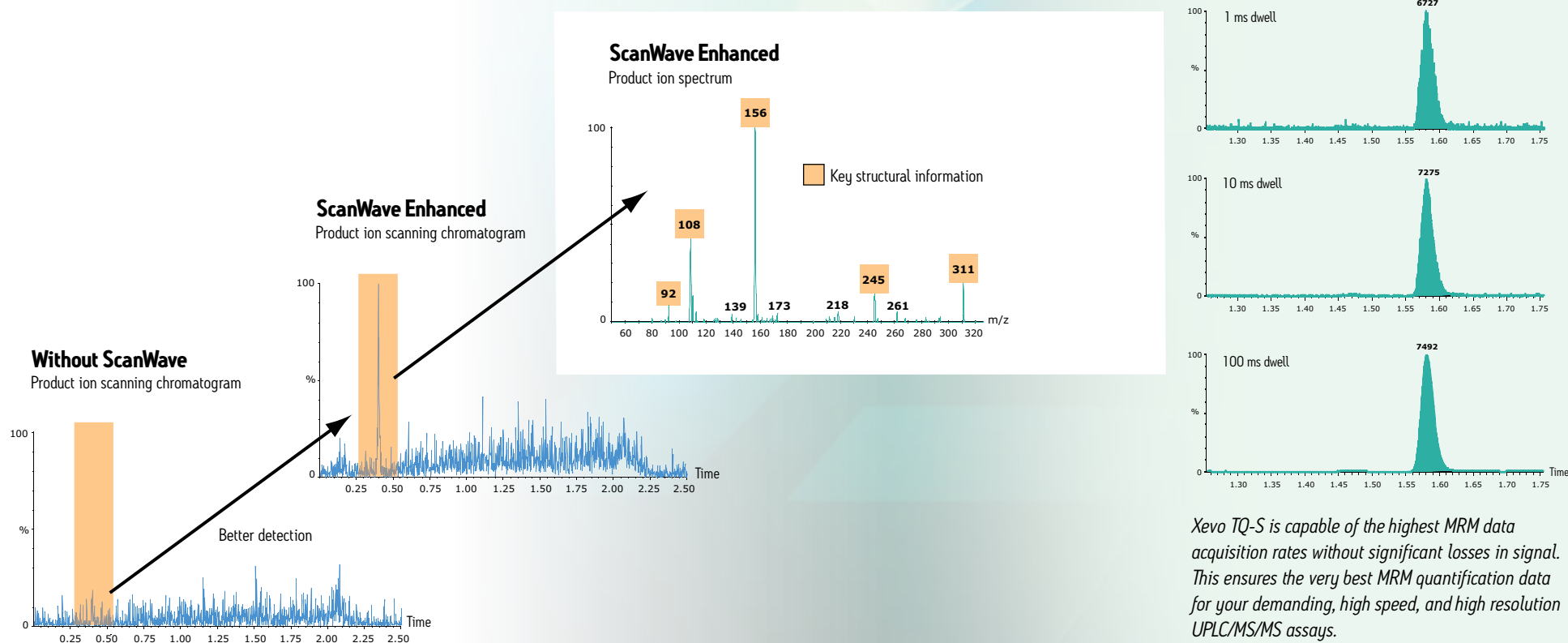
applications, you'll quickly maximize your return on investment.

Conventional tandem quadrupole MS instruments are sensitive enough when used to monitor targeted compounds in MRM mode, but they are significantly

less sensitive when used to acquire UPLC/MS/MS data in spectral mode.

ScanWave technology allows ions within the collision cell to be accumulated and then separated according to their mass-to-charge ratio ( $m/z$ ). Synchronizing

the release of these ions with the scanning of the second quadrupole mass analyzer significantly enhances the signal intensity of full scan product ion spectra. Simply put, this enables you to more easily confirm the identities and structures of your analytes of interest.



*Xevo TQ-S is capable of the highest MRM data acquisition rates without significant losses in signal. This ensures the very best MRM quantification data for your demanding, high speed, and high resolution UPLC/MS/MS assays.*

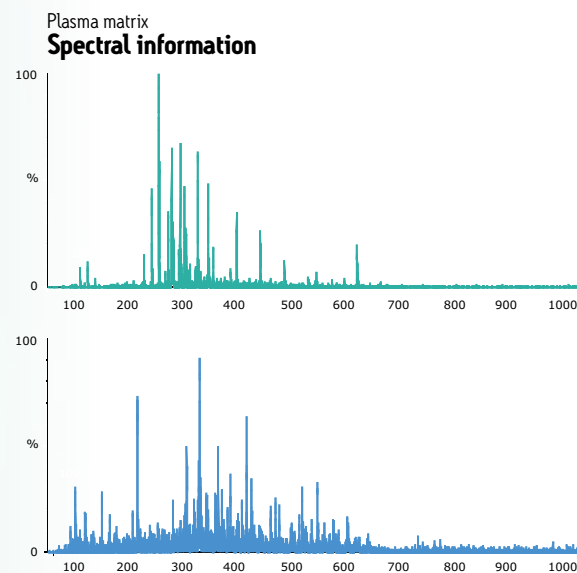
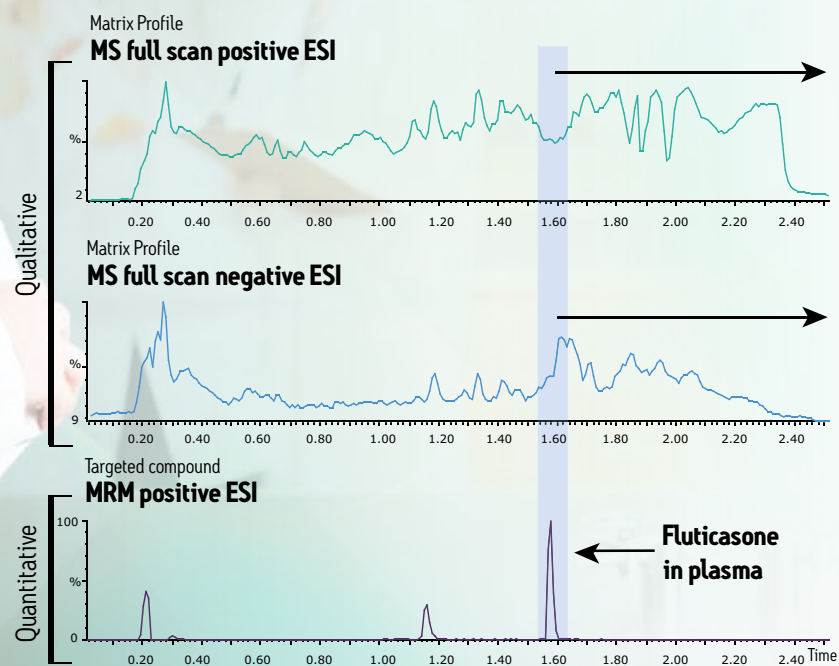


**(RADAR)**

## Know the secrets of your sample.

You no longer have to accept the complications and uncertainty associated with matrix effects. When performing targeted quantification, RADAR allows you to see the whole picture, and have total confidence.

In RADAR mode, you can monitor for matrix interferences, metabolites, impurities, and degradants in your sample while accurately quantifying your target compounds.



With RADAR you can collect data in both multiple reaction monitoring (MRM) and full scan spectral acquisition modes at the same time. In addition, RADAR mode acquires all detectable ions in both positive and negative full scan MS, arming you with a depth of knowledge about your sample not previously possible from a traditional quantitative assay.

RADAR is only possible because of the ability to rapidly alternate between MS, MS/MS, positive, and negative ion modes without compromising performance in any mode.



## Testing the limits of **your imagination.**

The universal ion source architecture of Xevo TQ-S allows the widest range of ionization techniques to be utilized as well as the very latest innovations in ionization technologies. You'll have limitless choice in experimental options.



**Change your ion sources. >**

**< Not your instrument.**

**When you need options and time is critical, the ion sources are quickly interchangeable and ready to use within minutes.**

## Total flexibility.



*ESI – Electrospray Ionization  
APCI – Atmospheric Pressure  
Chemical Ionization  
ESCI® – Dual ESI and APCI*



*APPI – Atmospheric Pressure  
Photo Ionization*



*ASAP – Atmospheric Solids  
Analysis Probe*



*TRIZAIC UPLC® –  
Plug and Play nanoFlow*



*APGC – Atmospheric Pressure  
Gas Chromatography*



*nanoFlow™ ESI*

*Also compatible with DESI (Prosolia),  
DART (IonSense), and LDTD (Phytronix)  
ion source technologies.*

## Simplicity starts **with IntelliStart.**

Xevo TQ-S simplifies your system set-up with IntelliStart™, a user-friendly interface that automates routine tasks and reduces the burden of complicated operation and time-intensive troubleshooting. This technology ensures all levels of scientists can operate the instrument quickly and confidently, to generate reproducible UPLC/MS/MS data of the highest quality.

**INTELLISTART™**

**Automated System  
Monitoring**



**Automated MS Resolution  
& Claibration Checks**



**Automated MRM  
Method Developer**



**Automated LC/MS  
System Check**

# A workflow that works for you.

**REVOLUTIONIZE YOUR WORKFLOW WITH XEVO TQ-S AND ENGINEERED SIMPLICITY.**

## PREPARE

Waters MS technologies ensure that your system is operating optimally – ready to run for experts and beginners alike.

### ■ **IntelliStart**

Our unique IntelliStart technology allows quick and confident system setup – so it's always ready.

### ■ **Quanpedia**

Our extensible and searchable Quanpedia database allows for quantitative LC/MS method information (**automatic scheduling of MRMs**).

### ■ **Proven sample preparation**

With proven sample preparation tools such as Oasis® and DisQuE™ Dispersive SPE, rugged, faster, and more efficient assays are guaranteed.

## ANALYZE

UPLC-compatible data acquisition rates, optimal ion source designs, together with innovative StepWave and ScanWave technologies enable the lowest limits of quantification and the highest quality of spectral information to be generated within a single analytical run.

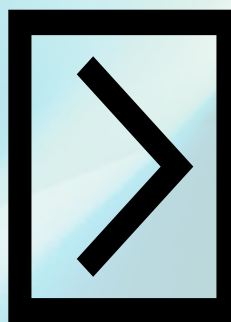
## INTERPRET

Redefine your analytical workflow with an unprecedented ability to process, visualize, compare, and interpret the most complex data, automatically. Then turn it into meaningful information quickly with targeted MassLynx™ Application Managers.

## DECIDE

It's easier than ever to manage and act on the results of your data with MassLynx and NuGenesis® SDMS Software. With the ability to compile clear and accessible reports to share throughout your organization and store centrally, you'll be able to make decisions faster and better than ever before.

See tomorrow's potential  
**Today.**



Waters scientists and engineers are focused on delivering you solutions that suit your specific purposes. So whether your focus is in pharmaceuticals, proteomics, clinical, or chemical analysis, you'll be able to make even greater contributions to science.

Xevo TQ-S demonstrates our commitment to bringing you the highest-performing tandem quadrupole mass spectrometer and enhancing your laboratory's scientific potential.

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[www.waters.com/XevoTQS](http://www.waters.com/XevoTQS)

# Waters

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