



# Agilent 7000B Triple Quadrupole GC/MS System

## Data Sheet



Agilent is leading the way by introducing IDL, Instrument Detection Limit, as a new metric for meaningful indication of system sensitivity. In MS/MS base-lines with very little noise, the dubious selection of noise region highly influences and inflates the S/N values. IDL is a true reflection of the whole system performance and a more accurate expression of achievable detection limit than the customary S/N specification.

## Agilent 7000B Triple Quadrupole GC/MS System

### Triple Quadrupole Mass Spectrometer

Mode (standard)	EI (High Sensitivity Extraction Source)
Modes (optional)	PCI and NCI
Ion source material	Noncoated, proprietary inert source
Ion source temperature	106 to 350 °C
Filaments	Dual filaments for EI
Electron energy	10 to 300 eV
Mass range ( <i>m/z</i> )	10 to 1,050
Resolution (width at half height)	Selectable, 0.7 to 2.5 Daltons using default tune Settable, 0.4 to 4.0 Daltons using custom tune
Dynamic range (electronic)	> 10 <sup>6</sup>
Scan rate (electronic)	Up to 6,250 u/s
MRM speed (transitions/sec)	500
Minimum MRM dwell	1 msec
Mass filters (2)	Proprietary monolithic hyperbolic gold-coated quadrupole
Mass axis stability	< ± 0.10 u over 24 hours (10-40 °C)
Quadrupole temperature	106 to 200 °C
Collision cell	Linear hexapole
Collision cell gas	Nitrogen with helium quench gas for reduction of metastable helium
Collision energy	Selectable up to 60 eV
Detector	Triple-Axis HED-EM with extended-life EM and dynamically ramped-iris
Tuning	Autotune or manual
Total gas flow	Up to 8 mL/min GC carrier plus another 5 mL/min of methane for CI operation, plus an additional 1–2 mL/min of N <sub>2</sub> and He for the collision cell gases
Pumping system	Dual stage turbomolecular pump
Software	Agilent MassHunter acquisition, data handling (quant/qual) and reporting
Simultaneous MS and GC	Can collect 2 GC detector signals while acquiring MS data



Agilent Technologies

## Gas Chromatograph (Agilent 7890A GC)

For more specifications on GCs refer to the GC Data Sheet

Injector	Split/splitless, Multi-mode inlet, PTV and others
Autosampler	7693 ALS, CombiPAL, 7697A Headspace Sampler
Oven temperature	Ambient + 4 to 450 °C
Oven ramps/plateaus	20/21. Negative ramps are allowed.
Electronic pneumatic control (EPC)	Auto pressure regulation for split/splitless, septum purge
Carrier gas control modes	Constant pressure and flow modes; pressure and flow programmable
Pneumatic splitter	Capillary Flow Technology devices for effluent splitting, backflushing, and column switching

## Installation Checkout Specifications

Instrument Detection Limit (IDL) is a more accurate indication of true sensitivity (minimum detectable quantity) than signal-to-noise (S/N), particularly when background noise levels are low relative to signal variance, as is often the case in MS/MS measurements. IDL verification is a more extensive (eight injections versus one) and reliable test that will be performed upon installation to assure proper system qualification. See more about this type of test at

<http://www.chem.agilent.com/Library/technicaloverviews/Public/5990-8341EN.pdf>

EI MRM IDL	12 fg or less octafluoronaphthalene (OFN) Statistically derived at 99% confidence level from the area precision (<4% RSD) of eight sequential splitless injection <sup>1</sup> of 1 µL, 100 fg/µL OFN. MS/MS transition of $m/z$ 272→222, 100 msec dwell time.
PCI MRM S/N	1 µL of 5pg/µL Benzophenone (BZP) will produce > 2500:1 RMS S/N for the transition of $m/z$ 183→105 (using methane)

## Typical Performance in Other Modes<sup>2</sup>

EI scan S/N	1 µL of 1pg/µL OFN will produce > 300:1 RMS S/N for $m/z$ 272 scanning from $m/z$ 50 to 300
PCI MRM S/N	1 µL of 100 fg/µL BZP will produce > 50:1 RMS S/N for the transition of $m/z$ 183→105 (using methane)
NCI SIM S/N	1 µL of 100 fg/µL OFN will produce > 2000:1 RMS S/N for $m/z$ 272 (using methane)
EI MRM S/N	1 µL of 100 fg/µL of OFN will produce > 1500:1 RMS S/N for the transition of $m/z$ 272→222

## Physical Parameters

Triple Quad MS	Dimensions: 35 cm (w) × 86 cm (d) × 47 cm (h) Weight: 59 kg Additional space for the data system and printer
Mechanical pump	Dimensions: 18 cm (w) × 35 cm (d) × 28 cm (h) Weight: 21.5 kg
7890A GC	Dimensions: 58 cm (w) × 54 cm (d) × 57 cm (h) Weight: 45 kg

1. IDL specification only demonstrated if an autosampler is part of the installed system. If an autosampler is not present the EI MRM S/N spec will be performed.

2. Other modes represent typical performance and are not confirmed at installation

## For More Information

For more information on our products and services, visit our Web site at [www.agilent.com/chem](http://www.agilent.com/chem).

[www.agilent.com/chem](http://www.agilent.com/chem)

Agilent shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Information, descriptions, and specifications in this publication are subject to change without notice.

© Agilent Technologies, Inc., 2011  
Printed in the USA  
October 18, 2011  
5989-9625EN



Agilent Technologies