



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 ⁶
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 ₂ 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



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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 ¹ 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 Modes²

EI MRM IDL	4 fg or less OFN. Statistically derived at 99% confidence level from the area precision of eight sequential splitless injection of 1 µL, 10 fg/µL OFN. MS/MS transition as above.
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

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