Specification Sheet

Scion GC-TQ™ Select Mass Spectrometer

The Scion GC-TQ Select is the chromatographer's choice for triple quadrupole mass detector; it is designed to match your most stringent needs for analytical performance and productivity. The Scion GC-TQ Select offers superior sensitivity and robustness based on the innovative ion optics, and fast and easy methods development for multi-component quantitation following the unique Compound Based Scanning (CBS) approach with MRM library. The Scion GC-TQ Select GC-MS/MS system defines a new standard of usability for routine analysis and has the smallest bench footprint in the industry.

Analyzer - MS Specifications

- **Scan modes:** Full Scan, Precursor, Product, Neutral Loss/Gain Monitoring, Selected Ion Monitoring (SIM), Multiple Reaction Monitoring (MRM) and Result Dependent Scanning
- **Standard ionization mode:** Electron Ionization (EI)
- **On source:** Auto-aligning EI source constructed of inert materials
- **q0 ion guide**: 90° curved RF-only entrance quadrupole with active ion beam focusing and heating at 135 °C
- **Source temperature:** 100 °C to 350 °C
- **Filament and emission current:** dual filaments; up to 200 µA
- **Electron energy:** adjustable from 0 to 150 eV
- **Mass filters:** quadrupole with pre- and post-filters; high ion transmission efficiency, lens-less design
- **Collision cell:** 180° curved path with pre- and post-filter regions
- **Collision cell gas:** Argon
- **Collision energy:** selectable up to 75 eV
- **Mass range (m/z):** 1 to 1200 Da
- **Scan rate:** up to 14,000 Da/sec
- **Minimum scan time (dwell time):** 1 ms
- **Maximum acquisition MRM rate:** 500 MRM's/sec
- **Resolution:** user-adjustable from 0.7 Da (Unit) to 4 Da, also with three user-selectable settings, (Unit, Standard, Open) on both Q1 and Q3.
- **Mass axis stability:** <±0.1 Da over 24 hours
- **Transfer line temperature:** up to 350 °C
- **Manifold temperature:** 40-50 °C
- **Detector:** EDR™ Electron multiplier with ±5 kV post acceleration and with on-the-fly multiplier gain, optimization for Extended Dynamic Range (EDR); direct ion collection onto multiplier for negative ion detection without dynode loss
- **Turbomolecular pump:** dual stage, 310/400 L/sec, air-cooled for helium carrier gas flow up to 25 mL/min
- **Foreline pump:** dual-stage rotary vane; voltage 120/230V
- **Power requirements:** 100-240 Vac, 50/60 Hz ±3 Hz, 1200 VA
- **Operating environment temperature:** 15 °C to 33 °C
- **Operating environment humidity:** 20 % to 80 % relative humidity (without condensation)

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Software

- **Scion MS Workstation:** equipped with the Compound Base Scanning (CBS) MRM library for data acquisition, data handling, and reporting
- **Optional spectral libraries:** NIST, Wiley, and Maurer/Pfleger/Weber (PMW) libraries and with user-customizable libraries and automatic searching of multiple libraries

Gas Chromatograph (Scion 436 and 456 Model GC)

For more specification on GC, refer to the GC Data Sheet

- **Injectors:** Split/Splitless (SSL), Programmable Temperature Vaporization (PTV), etc., back-flush option available for all injectors.
- **Autosamplers:** CP 8400; CP 8410; CTC PAL COMBI-xt
- **GC Oven Temperature:** Ambient+4 ℃ to 450 ℃
- **Temperature Ramps/Holds:** 24/25
- **Pneumatic:** Electronic Flow Control (EFC) or Manual (Model 456)
- **ChromatoProbe™:** Direct introduction of solids, liquids or slurries (requires PTV injector)
- **MS Tuning:** tune-to-target, pump-down, and venting controlled by multi-language touchpad on the GC.

Performance Specifications*

Mode	Test (with SSL injector in hot splitless mode)	Specification†
EI Full Scan	1 pg Octafluoronaphthalene (OFN) from m/z 50 to 300 for m/z 272	S/N ≥ 1000:1
EI SIM	25 fg OFN for m/z 272	S/N ≥ 50:1
EI MRM	100 fg OFN for m/z 272>222	S/N ≥ 5000:1
EI MRM Precision (IDL**)	8 replicate injections of 50 fg OFN in EI MRM mode (m/z 272>222)	Peak Area RSD ≤ 6.7%, 10 fg

*All tests use helium as carrier gas.

EI MRM sensitivity test will be used as installation checkout specifications; not all other performance tests are confirmed at installation.

† The Signal-to-Noise ratio S/N values are based on RMS

IDL**: Instrument Detection Limit, defined as IDL = t (0.99, f=7)×S, whereas t (0.99, f=7) is the one-sided student's t-distribution value of 2.998 for 99% of confidence and for degree of freedom 7 (f=n-1, n the number of injections); S is the peak area standard deviation of 8 replicate injections.

Dimensions (H x W x D) and Weight

- **Scion GC-TQ:** 45 cm (18 in.) x 28 cm (11 in.) x 57 cm (22.5 in.), 40 kg/88 lb
- **436 GC:** 57 cm (23 in.) x 32 cm (13 in.) x 61 cm (24 in.); 27 kg/59 lb
- **456 GC:** 57 cm (23 in.) x 66 cm (26 in.) x 56 cm (22 in.); 43 kg/95 lb
- **CP-8400/8410 Auto samplers:** 40 cm (16 in.) x 22 cm (9 in.) x 47 cm (18 in.); 7 kg/15.3 lb

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