Oscillators available for Meinberg GNSS Receivers: TCXO, OCXO, Rubidium

	TCXO	OCXO LQ	OCXO SQ	OCXO HQ	OCXO DHQ	Rubidium
Pulse-per-Second Accuracy GNSS-Synchronized	< ± 100 ns	< ± 100 ns	< ± 50 ns	< ± 50 ns	< ± 50 ns	< ± 50 ns
10 MHz Short-Term Stability (1) GNSS-Synchronized, τ = 1 sec	2×10^{-9}	1×10^{-9}	5×10^{-10}	5×10^{-12}	2×10^{-12}	2×10^{-11}
10 MHz Frequency Accuracy (2) (4) GNSS-Synchronized, 24 Hours	$\pm 1 \times 10^{-11}$ ± 0.1 mHz	$\pm 1 \times 10^{-11}$ ± 0.1 mHz	$\pm 1 \times 10^{-11}$ ± 0.1 mHz	$\pm 1 \times 10^{-12}$ ± 0.01 mHz	$\pm 1 \times 10^{-12}$ ± 0.01 mHz	$\pm 1 \times 10^{-12}$ ± 0.01 mHz
10 MHz Frequency Accuracy (2) (3) (4) After 24 Hours in Holdover	$\pm 1 \times 10^{-7}$ ± 1000 mHz	$\pm 2 \times 10^{-8}$ ± 200 mHz	$\pm 5 \times 10^{-9}$ ± 50 mHz	$\pm 5 \times 10^{-10}$ ± 5 mHz	$\pm 1 \times 10^{-10}$ ± 1 mHz	$\pm 1 \times 10^{-11}$ ± 0.2 mHz
10 MHz Frequency Accuracy (2) (3) (4) (5) After 1 Year in Holdover	$\pm 1 \times 10^{-6}$ ± 10000 mHz	$\pm 4 \times 10^{-7}$ ± 4000 mHz	$\pm 2 \times 10^{-7}$ ± 2000 mHz	$\pm 5 \times 10^{-8}$ ± 500 mHz	$\pm 1 \times 10^{-8}$ ± 100 mHz	$\pm 5 \times 10^{-10}$ ± 5 mHz
Phase Drift (3) (4) After 24 Hours in Holdover	± 4.3 ms	± 865 µs	± 65 µs	± 10 µs	± 4.5 µs	± 800 ns
Phase Drift (3) (4) After 7 Days in Holdover	± 128 ms	± 32 ms	± 9.2 ms	± 1.0 ms	± 204 µs	± 34 µs
Phase Drift (3) (4) After 30 Days in Holdover	± 1.1 s	± 330 ms	± 120 ms	± 16 ms	± 3.3 ms	± 370 µs
Phase Drift (3) (4) After 1 Year in Holdover	± 16 s	± 6.3 s	± 4.7 s	± 788 ms	± 158 ms	± 8 ms
Phase Noise	1 Hz -60 dBc/Hz 10 Hz -90 dBc/Hz 100 Hz -120 dBc/Hz 1 kHz -130 dBc/Hz	1 Hz -60 dBc/Hz 10 Hz -90 dBc/Hz 100 Hz -120 dBc/Hz 1 kHz -130 dBc/Hz	1 Hz -70 dBc/Hz 10 Hz -105 dBc/Hz 100 Hz -125 dBc/Hz 1 kHz -140 dBc/Hz	1 Hz < -85 dBc/Hz 10 Hz < -115 dBc/Hz 100 Hz < -130 dBc/Hz 1 kHz < -140 dBc/Hz	1 Hz < -80 dBc/Hz 10 Hz < -110 dBc/Hz 100 Hz < -125 dBc/Hz 1 kHz < -135 dBc/Hz	1 Hz -75 dBc/Hz 10 Hz -89 dBc/Hz 100 Hz -128 dBc/Hz 1 kHz -140 dBc/Hz
Temperature-Dependent Freq. Drift (3) Holdover/Free-Run Mode	$\pm 1 \times 10^{-6}$ (-20...70°C)	$\pm 2 \times 10^{-7}$ (0...60°C)	$\pm 1 \times 10^{-7}$ (-10...70°C)	$\pm 1 \times 10^{-8}$ (5...70°C)	$\pm 2 \times 10^{-10}$ (5...70°C)	$\pm 6 \times 10^{-10}$ (-25...70°C)

(1) Maximum frequency deviation in a given second, represented as a factor of 1 second, average of measurements taken over a 24-hour period.

(2) Maximum frequency drift relative to the 10 MHz reference frequency, represented as a factor of 10 MHz, followed by the absolute maximum deviation in millihertz.

(3) Values assume the use of a free-running oscillator that has been in operation for at least 30 days and has been previously disciplined by a GNSS reference continuously for 24 hours.

(4) Frequency accuracy & phase drift values assume a constant environmental temperature.

(5) Accuracy values over one-year horizon have been extrapolated mathematically and are not based on actual measurements.