

femto
ENGINEERING



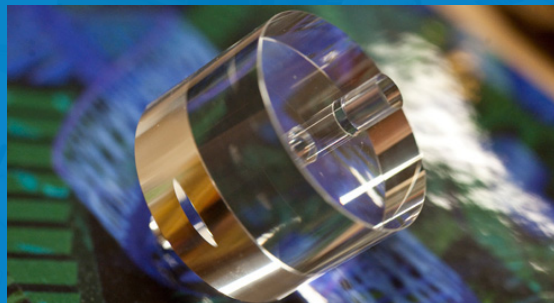
Uliss

ULTRA-LOW INSTABILITY
SIGNAL SOURCE

Commercially
available

ULTRA-STABLE CRYOGENIC SAPPHIRE OSCILLATOR

- Outstanding performance
- Relative frequency stability
 $< 3 \times 10^{-15}$ for integration times
from 1 s to 10,000 s at 10 GHz
- Continuous operation without user
intervention for 1 year



ULISS

Ultra-low instability signal source

Applications

- Space navigation
- Radioastronomy
- Geodesy
- Metrology for primary labs
- Qualification for industrial oscillators
- Fundamental physics and special relativity

References

- European Space Agency (ESA)
- CNES (France)
- Airbus Defense & Space (Germany)
- Neuchâtel University (Switzerland)
- Geodetic Observatory Wettzell (Germany)
- SYRTE, Observatoire de Paris

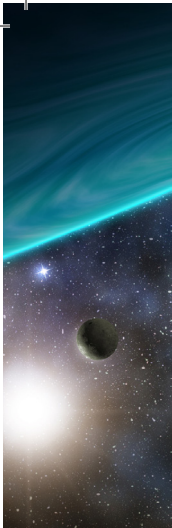


Technical specifications

- Standard frequency outputs 10 GHz and 100 MHz
- Options: 2.5 MHz output or 5 MHz output
- System equipped with water or air-cooled compressor
- 115 or 220 VAC, 50 Hz or 60 Hz single phase power
- Power requirements: 4kW 220V @50Hz single phase
- 24/7 operation without any user intervention or maintenance anymore regularly than once per year
- Delivery time: 3 months

Services

- Equipment available for lease and for sale
- Installation on site and training
- Product support
- Customized after-sales support and services



PERFORMANCE

Resonator frequency

	Allan deviation	$1\text{ s} < \tau < 10,000\text{ s}$	$\leq 3 \times 10^{-15}$
	Phase Noise	1Hz offset	-100 dBc/Hz
		10 Hz	-110 dBc/Hz
		100 Hz	-115 dBc/Hz
		1,000 Hz	-127 dBc/Hz
		10,000 Hz	-130 dBc/Hz
10 GHz			
	Allan deviation	$1\text{ s} < \tau < 10,000\text{ s}$	$\leq 3 \times 10^{-15}$
	Phase Noise	1Hz offset	-100 dBc/Hz
		10 Hz	-110 dBc/Hz
		100 Hz	-115 dBc/Hz
		1,000 Hz	-127 dBc/Hz
		10,000 Hz	-130 dBc/Hz
100 MHz			
	Allan deviation	$\tau = 1\text{ s}$	4×10^{-15}
		$10\text{ s} < \tau < 1,000\text{ s}$	$\leq 3 \times 10^{-15}$
	Phase Noise	1Hz offset	-130 dBc/Hz
		10 Hz	-140 dBc/Hz
		100 Hz	-149 dBc/Hz
		$\leq 1,000\text{ Hz}$	-153 dBc/Hz
10 MHz (optional)			
	Allan deviation	$1\text{ s} < \tau < 10,000\text{ s}$	8×10^{-15}
		$10\text{ s} < \tau < 10,000\text{ s}$	$\leq 3 \times 10^{-15}$
5 MHz (optional)			
	Allan deviation	$\tau = 1\text{ s}$	1.2×10^{-14}
		$\tau = 10\text{ s}$	4×10^{-15}
		$100\text{ s} < \tau < 10,000\text{ s}$	$\leq 3 \times 10^{-15}$

ULISS data sheet on <http://www.uliss-st.com>



Different views of the heart of ULISS: the sapphire resonator and its cryogenic cavity



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