

ELECTRONICS & DEFENSE



MRO-50

DESIGNED FOR COMMERCIAL APPLICATIONS



Safran mRO-50

Designed for Commercial Applications



The mRO-50 is Safran's low SWaP-C Miniaturized Rb Oscillator, specifically designed to meet core telecom, autonomous vehicles, aircrafts and underwater geological research applications. It provides better holdover and higher stability in the same volume as a standard OCXO oscillator but with much lower power consumption. It can be a drop-in replacement for most applications.

Precision frequencies to improve radio reception

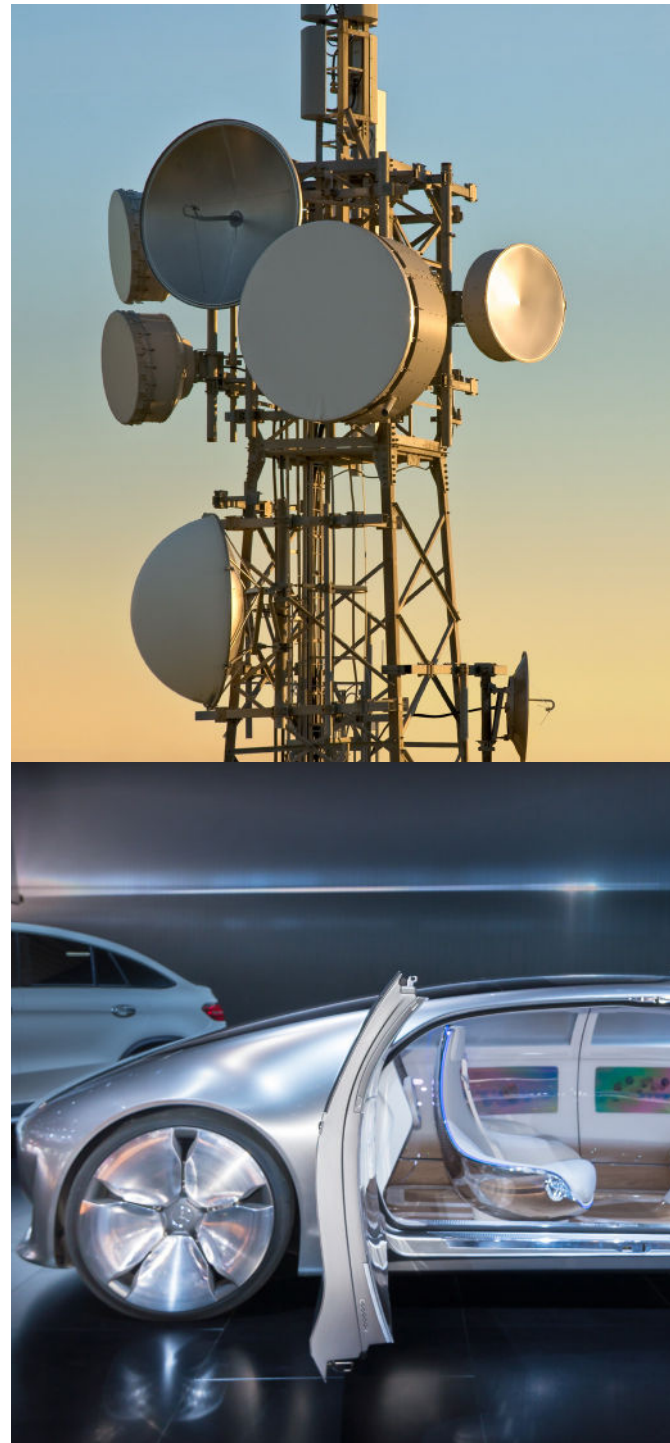
Communications systems need specific frequencies to operate, which are typically generated by phase-locked loops and standard Crystal oscillators.

The new mRO-50 technology generates precision frequencies with excellent phase noise while putting less burden on phase-locked loop gains for radio receiver architectures. This combination provides lower power consumption and higher reliability for radio reception.

Holdover mode to support Vehicle-to-Everything (V2X) technology

Drivers often experience outages of GNSS navigation or communication links when driving through “urban canyons” - streets surrounded by high-rise buildings.

As new autonomous vehicles need a continuous network connection and accurate position data, the new mRO-50 technology can provide Holdover Synchronized Time. For networks, this means the receiver stays on frequency and in time sync during extended fades; for navigation, it means the GNSS receiver recovers faster after the fade and the inertial system drifts less during the fade.





Stabilization of sensor measurement data collection for AUVs

Seismic mapping and seabed exploration involve placing many geophysical sensors in a grid over the ocean floor. Because wireless signals do not transmit well underwater, the sensors must operate autonomously from battery power, storing their data to be eventually collected by an Autonomous Underwater Vehicle (AUV). Moreover, to measure sonic and seismic waves, all the sensors must remain synchronized with each other over long periods of time, using an atomic clock.

The new mRO-50 technology provides the highly stable, precise time synchronization even under the demanding environmental conditions of the cold, deep sea without consuming much battery power.



AEROSPACE

- GNSS operation through interference
- Low Earth Orbit satellite missions



MILITARY

- Military communication systems
- Key Infrastructure Emergency Vehicles
- Radars
- Aircraft and UAVs



COMMERCIAL

- Secured telecom
- Underwater geological applications
- Autonomous cars
- Aircrafts

Key features

- Power consumption: 0.45W
- Long term stability: $< 5 \times 10^{-12}/\text{day}$
- ADEV: $\leq 4 \times 10^{-11}$ @ 1s
- Frequency retrace: $< 1 \times 10^{-10}$ within 1 h
- Operating Temperature: -10°C to $+60^{\circ}\text{C}$

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