

### About New Space

The traditional space sector has been dominated by governments. Only the space communications sector has developed a dominant private component. The other traditional space sectors (e.g. launchers, human spaceflight, earth observation, global navigation systems and scientific missions) have remained subject to government control.

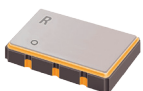
New Space refers to the recent democratisation of the space sector, which implies that more private companies, including startups, participate in this industry. This transformation is driven by innovations in launch and satellite manufacturing technology. In 60 years, the satellite launch mass has evolved from 20,000 kg to less than 4 kg.

A major trend in the New Space sector is the Commercial-off-the-Shelf (COTS) approach, in which satellite manufacturers use standard commercial products in order to fly them directly in space or in order to upscreen them for spaceflight. This new approach speeds up the development times and reduces significantly the production costs, particularly for the small LEO (Low Earth Orbit) satellites with a short mission lifetime which do not require the same reliability standards as the large GEO (Geostationary Earth Orbit) satellites. However, it does not fit always the needs of New Space programmes, which require at the same time cost-effective and reliable enough solutions in demanding environmental conditions.

### ◆ New Space Products

#### Radiation Tolerant COTS XO RK105

New Space grade radiation tolerant COTS XO for LEO satellites/mega-constellations.



- Frequency: 8 to 1500 MHz
- Hermetically sealed package: 5.0 x 3.2 mm SMD
- TID limit: 72/100 kRad
- Latch-up free till 32.4/62 MeV
- Quick time to market

#### Radiation Tolerant COTS VCXO RK205

New Space grade radiation tolerant COTS VCXO for LEO satellites/mega-constellations.

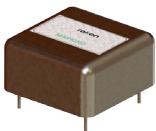


- Frequency: 8 to 1500 MHz
- Hermetically sealed package: 5.0 x 3.2 mm SMD
- Absolute Pull Range (APR):  $\pm 50$  ppm
- TID limit: 72/100 kRad
- Latch-up free till 32.4/62 MeV
- Quick time to market

### ◆ Sub-System Solutions

#### New Space OCXO RK406 NS

The RK406 NS is a low cost and low power consumption Space OCXO dedicated to the New Space market.



- Frequency: 10 to 125 MHz
- Package: 25.4 x 25.4 x 12.7 mm
- Overall freq. stability:  $\pm 0.5$  ppm (5y)
- ADEV (1s):  $< 2E-11$
- Supply voltage: 5V
- Power consumption: 400 mW
- Output waveform: Sine 50  $\Omega$
- TID limit: 30 kRad
- Latch-up free up to LET 60 MeV/mg/cm<sup>2</sup>

#### Master Reference Oscillator (MRO)

This MRO is an ideal solution for LEO satellite constellations, where ultra-low noise and very-low power consumption features are essential.



The test and screening flows can be tailored according to customer requirements to reduce cost and lead time.

- Frequency: 10 to 125 MHz
- Overall freq. stability:  $\pm 0.5$  ppm (5y)
- Freq. distr. unit with up to 48 outputs
- Integrated DC/DC converter
- Synchro to the 1PPS/1kHz
- TM/TC
- Output power up to 23 dBm

