

### Introduction

Rakon is one of the world's largest solution providers of high reliability frequency control products. Its high reliability solutions are found in Defense and Instrumentation applications which require the most stringent performance criteria. This is why many government and defense programmes use Rakon oscillators and sub-systems across the globe, in systems where high performance is required under the most demanding conditions. Rakon continuously develops state of the art frequency control products at the leading edge of innovative technology.

### Test Capabilities

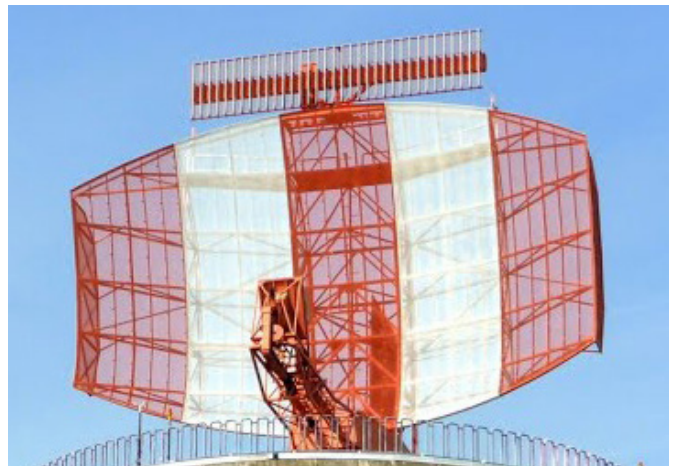
Rakon develops and manufactures custom test equipment that is tailored to the specific needs of our oscillator products, including:

- ◆ Proprietary Test Equipment for Surviving Shock Test up to >30,000 g to test our high shock resistant and highly stable TCXOs.
- ◆ High performance phase noise analyzers using cross-correlation technique to measure our ultra low phase noise OCSOs (SAW oscillators) and OCXOs.
- ◆ Rakon has a unique capability for high resolution testing in production. 100% parameter test guarantees oscillator performance.
- ◆ Very high resolution Frequency Stability vs. Temperature measurement, microjump screening, acceleration sensitivity, crystal assembly and tuning test.



### Rakon is Qualified in Many MIL Programmes

Rakon's high reliability frequency control product solutions meet the most demanding performance expectations for the Defense market. Rakon has developed a wide range of oscillators and sub-systems to meet advanced technical requirements making them ideal for instrumentation, ground, shipboard and airborne applications. Rakon offers a complete range of ITAR-free frequency control products, with 30 years heritage in Defense applications including well-known international programmes.





# Hi-Reliability Products for Defense & Instrumentation

## Defense and Instrumentation Solutions



Rakon has an extensive portfolio of products with extreme capabilities. We have frequency control solutions for all types of defense and instrumentation applications.

### Crystal Resonators MIL-PRF-3098 crystals\*

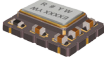

- RHX3500**  Crystals for ultra stable TCXOs and OCXOs in harsh environments.
- Frequency up to 140 MHz
  - High stability and low ageing
  - Low phase noise and low *g*-sensitivity
  - Swept HQ crystal premium
- RHX3700** 
- Frequency up to 140 MHz
  - High stability and low ageing
  - Low phase noise and low *g*-sensitivity
  - Swept HQ crystal premium

\* Crystals fully manufactured and tested following the guidelines of MIL-PRF-3098.



### XO Low noise and low jitter

- RXO5032AD**  XO meets the demanding environmental requirements for Aeronautics and Defense.
- Size: 5.0 x 3.2 mm
  - Frequency: 8 to 1500 MHz
- QEN55, 49**  QEN series for Avionics, rugged radios.
- Package: 20.7 x 13.1 x 5, 14 x 9 x 3 mm
  - Frequency: 1.5 to 100 MHz


### TCXO High performance

- RPT7050A**  Pluto+™ ultra stable TCXO.
- Frequency: 10 to 52 MHz
  - Size: 7.0 x 5.0 mm
  - FvsT: ±0.2 ppm (-55 to +105°C)
- RPT7050D**  Pluto+™ low *g*-sensitivity TCXO.
- Frequency: 16 to 40 MHz (10 MHz available CMOS only)
  - Low *g*-sensitivity: 0.2 ppb/*g*
  - FvsT: ±0.5 ppm (-40 to +85°C)  
±1.0 ppm (-55 to +105°C)

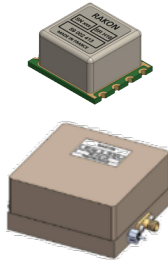
### OCXO Commercial off-the-shelf (COTS)

- RFPO40**  Mercury™ IC-OCXO.
- Frequency: 5 to 50 MHz
  - Size: 9 x 7 mm
  - FvsT: ±10 to 100 ppb (-40 to +85°C)
- ROX - T1, T2, S3, S4**  Discrete OCXO.
- Frequency: 5 to 65 MHz
  - Size: 52 x 42, 38 x 27, 25 x 22 mm
  - FvsT: ±0.1 to 10 ppb (-40 to +85°C)

### Low Noise OCXO Low *g*-sensitivity option

- LNO100**  Low noise OCXO series for Test equipment, Airborne RADAR and Synthesizers.
- Frequency: 80 to 125 MHz
  - Size: 25 x 22 x 13 mm (SMD package), 38 x 38 x 25 mm (ruggedized package with SMA connector)
  - FvsT: ±0.5 ppm (-40 to +85°C)
  - Noise floor: <-180 dBc/Hz typ, at 100 MHz


### OCXO & Multipliers Ultra low phase noise

- LNO320 - 5000**  Low noise OCXO series for Test equipment, RADAR and Electronic Warfare systems.
- Frequency: 320 MHz to 5 GHz
  - Size: 25 x 22 x 13 mm (SMD package), 70 x 70 x 35 mm (ruggedized package with shock absorbers)
  - Noise floor: <-180 dBc/Hz typ, from 320 to 500 MHz
  - g*-sensitivity: as low as 0.5 ppb/*g*
  - Supply voltage: 5 to 12 V

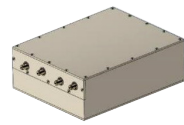
## Sub-Systems and Frequency Synthesizer

Rakon has a strong heritage in Sub-systems and low phase noise solutions. Our solutions are ideal when upgrading existing SAW-based RADAR systems. Digital Pulse Compression Sub-systems and high speed digital processing enables significant system performance improvement.

### Sub-Systems Fully programmable

- CIF 04, 05, 06, 07**  The series of Sub-Systems are provided with FPGA firmware loaded, including waveforms generation and pulse compression.
- Size: 175 x 152 x 27.1, 175 x 75 x 10 mm
  - IF analog input and output
  - BITE function
  - High BxT compression gain
  - One or two expander channels; one or two independent compressor channels

### Frequency Synthesizer I/Q Outputs or 1x RF Output

- DS-H01**  These are USB/SPI programming Frequency Synthesizer with several mode options: CW, chirp, list, pulse and burst.
- Output frequency range
    - > I/Q: 10 to 500 MHz
    - > RF with Internal Reference: 3 to 4 GHz
    - > RF with External Reference: 1 GHz bandwidth inside 2 to 4 GHz range
  - SFDR: ≥60 dBc for I/Q; ≥50 dBc for RF
  - Noise floor: ≤-155 dBc/Hz typ, at 500 MHz

