TAITIEN

The Frequency Control and Timing Solutions Specialist

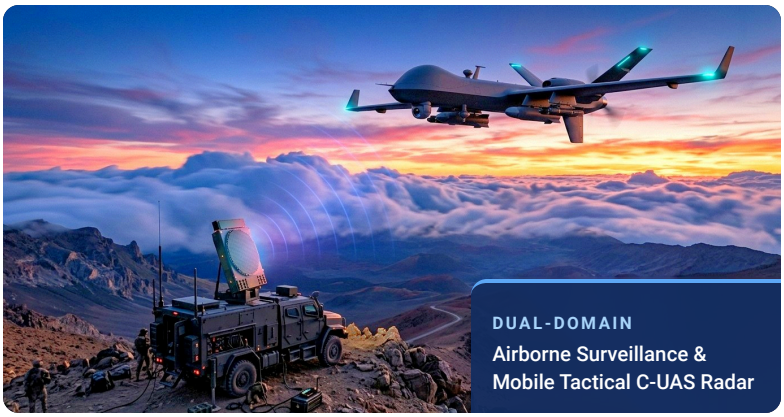
AEROSPACE & DEFENSE PRECISION TIMING

ISO 9001 / IATF 16949 Certified · AEC-Q200 Qualified

MISSION-CRITICAL AIRBORNE UAV & COUNTER-UAS RADAR TIMING

Viewing the World from the Clouds, Securing the Skies Below

Next-generation crystal oscillators engineered for high-dynamic UAV payloads and tactical C-UAS radar. Delivering **sub-ppb/g** acceleration immunity, ultra-low phase noise down to **-170 dBc/Hz @ 1 kHz**, and **micro-atomic holdover** in contested environments.



DUAL-DOMAIN
Airborne Surveillance & Mobile Tactical C-UAS Radar

CLOSE-IN PHASE NOISE Range-Doppler Clutter Suppression	**-170 dBc/Hz** @ 1 kHz (100 MHz)
DYNAMIC G-SENSITIVITY Mobile / Vehicle / Rotor Vibration	**<0.05 ppb/g** All 3 Axes Guaranteed
EXTREME THERMAL RANGE MIL-STD High-Reliability Envelope	**-40 to +125 °C** Industrial to Defense Grade
GNSS HOLDOVER / 1PPS DTA-450 Micro Atomic Clock	**±1.5 µs** Over 24 Hours

01 Resilient Airborne UAVs

High-end tactical drones operate in contested, GNSS-denied airspaces where precision timing is survival.

- **Resilient PNT:** Ultra-stable TCXOs & OCXOs power GNSS-INS dead-reckoning holdover.
- **Sensor Clarity:** Direct georeferencing for airborne LiDAR & 4K/thermal gimbal stabilization.
- **Secure Mesh Comms:** Low-jitter clocks drive frequency-hopping tactical radios (Blue UAS compliant).

02 Tactical C-UAS Radar

Counter-drone radars must discriminate micro-UAVs (low RCS) from massive ground and foliage clutter.

- **Micro-Doppler Fidelity:** -170 dBc/Hz @ 1 kHz phase noise exposes rotor modulation signatures.
- **Clutter Rejection:** Clean LO synthesizers extend detection envelope by 30%+.
- **TDOA Localization:** Nanosecond multi-sensor sync isolates RF drone controllers accurately.

03 Mobile Low-G Immunity

Unmanned defense is mobile. Vehicle road shock and rotor vibration ruin standard quartz references.

- **Sub-ppb/g Design:** <0.05 ppb/g each axis prevents vibration-induced FM sideband spikes.
- **Preserved Spectral Purity:** Eliminates false Doppler targets on moving Humvees / naval craft.
- **Low-Power SWaP:** 145 mW 7000 series OCXOs bring OCXO stability to battery-operated tactical nodes.

DUAL-DOMAIN PRECISION TIMING ARCHITECTURE

Integrated Timing Assurance Engine

AIRBORNE UAV PAYLOADS

- Resilient GNSS / PNT & INS Dead Reckoning
- Secure Tactical Mesh Radio (SDR / Hopping)
- LiDAR & EO/IR Camera Direct Georeferencing

→ **Enabled by TP / TT-L series TCXOs & 7000 series OCXOs**

↔

TAITIEN TIMING ENGINE

6700 series OCXOs <0.05 ppb/g each axis	6800 series OCXOs -170 dBc/Hz @ 1 kHz
7000 series OCXOs <145 mW	DTA-450 Micro Atomic Clock ±1 ppb · 1PPS

↔

C-UAS RADAR & RF SENSING

- Compact 3D/4D Phased-Array AESA Radar
- Micro-Doppler & Clutter Suppression LO
- Mobile On-The-Move (OTM) Shock Resilience

→ **Enabled by 6700 / 6800 / 6900 series OCXOs**

KEY TECHNOLOGICAL FEATURES — SPEC HIGHLIGHTS

- **Extreme Temp:** -40°C to +125°C
- **Phase Noise:** -170 dBc/Hz @ 1 kHz
- **Ultra Low G:** <0.05 ppb/g each axis
- **TCXO Stability:** ±0.1 ppm
- **Noise Floor:** -185 dBc/Hz @ 100 kHz
- **1PPS Sync:** <50 ns

TARGET APPLICATION VECTORS — TIERED COVERAGE

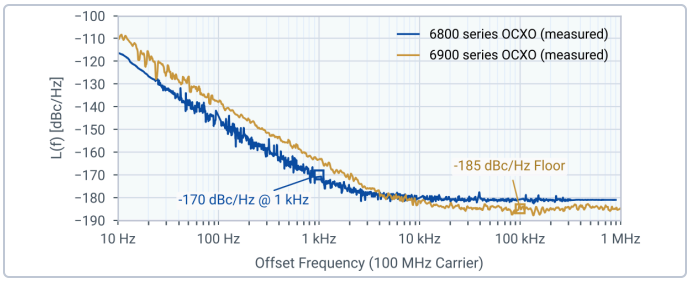
Tier 1
Automated Flight Control · GNSS / Anti-Jam Receivers · Tactical C-UAS Radar (AESA) · RF / TDOA Direction Finding

Tier 2
IMU & Flight Gyroscopes · High-Speed Video Downlink · LiDAR / EO-IR Sensor Fusion · Collision Avoidance & Weather Radar · Mobile Interceptor Drones · Engine & Landing Propulsion

100 MHz Phase Noise Spectral Purity

Ultra-Low Noise SC-Cut Resonators

-170 dBc/Hz @ 1 kHz

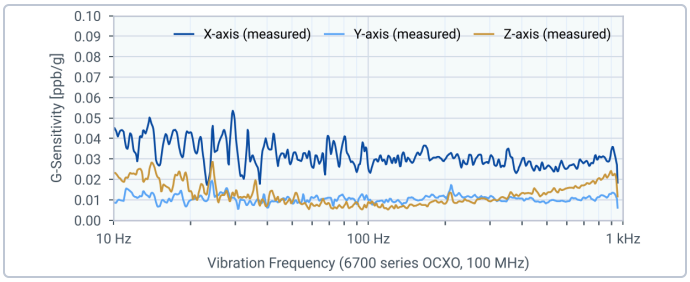


Radar Clutter Rejection: 6900 series OCXOs drop the phase noise floor to -185 dBc/Hz, while 6800 series reach -170 dBc/Hz @ 1 kHz, preventing close-in Doppler masking and extending detection range for small Class 1/2 drones in high clutter.

Vibration Immunity: Each Axis G-Sensitivity

Dynamic Performance (10 Hz – 1 kHz)

<0.05 ppb/g Each Axis · Spec



20× Superior Vibration Resilience: 6700 series OCXOs maintain pristine spectrum under 7.5g RMS random vibration, eliminating FM sideband corruption in vehicle-mounted radars and high-G UAV maneuvers.

Category	Series / Footprint	Frequency Range / Output	Stability / Tolerance	Phase Noise	G-Sensitivity	Supply Current	Key Features / Best Fit
Quartz Crystal	XD AEC-Q200 2.0 × 1.2 mm	32.768 kHz	±20 ppm tolerance	–	–	–	**Standard ESR, ultra-miniature SMD:** RTC for flight logging & sleep modes
	XZ AEC-Q200 2.05 × 1.65 mm	16 – 100 MHz	±15 ppm @ -40 to +85 °C ±30 ppm @ -40 to +125 °C	–	–	–	**High Fundamental Q, harsh-environment certified:** MCU & flight sensor reference
Crystal Oscillator	O3 1.6 × 1.2 mm	3 – 60 MHz CMOS	±20 ppm @ -40 to +85 °C ±50 ppm @ -40 to +105 °C	0.4 ps jitter (typ.)	–	–	**Low Jitter:** high-speed camera DSP, SoC & Gigabit Ethernet PHY
	OZ-D 2.05 × 1.65 mm	32.768 kHz CMOS	±25 ppm @ -40 to +105 °C	–	–	1.4 µA @ 1.5 / 1.8 V	**Ultra-Low Power:** always-on sensor hub, micro-power standby
TCXO / VCTCXO	TZ 2.0 × 1.6 mm	10 – 52 MHz Clipped Sine	±0.5 ppm @ -40 to +85 °C	-135 dBc/Hz @ 1 kHz	–	–	**Ultra-Small:** GPS / GNSS receiver module
	TP 3.2 × 2.5 mm	10 – 52 MHz CMOS / Clipped Sine	±0.1 ppm @ -40 to +85 °C	-145 dBc/Hz @ 1 kHz	0.3 ppb/g	–	**Low-G:** precision RTK-GNSS, tactical mesh radios
	TT-L 7.0 × 5.0 mm	10 – 52 MHz CMOS / Clipped Sine	±0.5 ppm @ -40 to +85 °C	-149 dBc/Hz @ 1 kHz	0.3 ppb/g	–	**Low-G:** high-performance SDR, tactical datalinks, EW drone detectors
	TK 14.5 × 9.6 mm	40 – 150 MHz CMOS / Sine	±0.28 ppm @ -40 to +85 °C	-140 dBc/Hz @ 1 kHz	–	–	**High-Frequency Fundamental:** reference for converters
OCXO	NP-100M-7000 20.6 × 20.6 mm	100 MHz Sine	±0.1 ppm @ -40 to +85 °C	-150 dBc/Hz @ 1 kHz -168 dBc/Hz @ 100 kHz	<0.5 ppb/g	<145 mW	**SWaP:** battery C-UAS nodes & tactical UAVs
	NA-100M-6700 25.4 × 25.4 mm	100 MHz Sine	±0.1 ppm @ -40 to +85 °C	-160 dBc/Hz @ 1 kHz	<0.05 ppb/g	–	**Mobile Defense Standard:** vehicle-mounted radar, OTM mast & airborne
	NA-100M-6800 25.4 × 25.4 mm	100 MHz Sine	±20 ppb @ -20 to +70 °C ±50 ppb @ -40 to +85 °C	-170 dBc/Hz @ 1 kHz -180 dBc/Hz @ 100 kHz	<1 ppb/g	–	**Benchmark Radar LO, extreme spectral purity:** AESA radar & SIGINT
	NA-100M-6900 25.4 × 25.4 mm	100 MHz Sine	±50 ppb @ -40 to +85 °C	-164 dBc/Hz @ 1 kHz -185 dBc/Hz @ 100 kHz	<1 ppb/g	–	**Ultra-Low Floor, deepest clutter rejection:** long-range C-UAS radar
Micro Atomic Clock	DTA-450 41 × 35 mm	10 MHz CMOS + 1PPS In/Out	±1 ppb @ -10 to +70 °C	-125 dBc/Hz @ 1 kHz	–	<130 mW	**GNSS-Denied Holdover, 1PPS disciplining (<50 ns):** distributed C2 radar node fusion

RADAR LO REFERENCE

6800 / 6900 series OCXOs

-170 dBc/Hz @ 1 kHz ensures crystal-clear micro-Doppler separation from ground clutter.

VEHICLE & MOBILE OTM

6700 series OCXOs

<0.05 ppb/g each axis g-sensitivity preserves radar tracking while navigating rugged terrain.

SWaP TACTICAL DRONES

7000 series OCXOs / TP series TCXOs

145 mW OCXO & ±0.1 ppm TCXO deliver mission-grade stability without draining payload battery.

GNSS-DENIED HOLDOVER

DTA-450 Micro Atomic Clock / GNSSDO

±1 ppb stability and 1PPS time sync preserve sensor fusion coherence during EW jamming.

ACCELERATE YOUR OEM DESIGN-IN WITH TAITIEN FAE & EVALUATION KITS

Direct North American engineering support, custom frequency synthesis, vibration phase-noise validation reports, and rapid evaluation board delivery.

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