ORION™ HGO-4000

NON-LINEAR JUNCTION EVALUATOR

* High Gain ORION™ for specialized applications (non-FCC).

U.S. PATENTS: 5,815,122; 6,057,765; 6,163,259
U.K. PATENTS: GB2344423; GB2351154; GB2381077; GB2381078

ORION™ HGO-4000

NON-LINEAR JUNCTION EVALUATOR

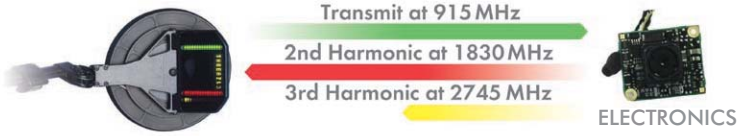
The ORION is a state-of-the-art Non-Linear Junction Detector for detecting hidden electronic devices. A Non-Linear Junction Detector transmits an RF signal and then "listens" for harmonic returns to detect the presence of electronics, regardless of whether the electronic device is radiating, hard wired, or even turned off.

- **Quickly detects and locates hidden electronic devices**
- **Locates listening devices and semiconductors in walls floors, ceilings, fixtures, furniture or containers**
- **Antenna-mounted line-of-sight display lets the operator focus on the target while sweeping**
- **Digital Signal Processing increases sensitivity and gain**

Technical Advancements

1. **PATENTED FREQUENCY HOPPING FUNCTIONALITY** displays best response using multiple transmit frequencies across a wide operating band.
2. **ADVANCED DIGITAL SIGNAL PROCESSING ALGORITHMS** provides up to 18 dB increase in detection sensitivity.
3. **MANUAL OR AUTOMATIC POWER CONTROL** ranges from 30 milliwatts to 3 watts Effective Radiated Power (ERP) (High Gain model).
4. **SYNTHESIZED TRANSCEIVER** provides frequency stability and agility to automatically search for clean operating frequencies.
5. **CIRCULARLY POLARIZED TRANSMIT AND RECEIVE ANTENNA** removes risk of missing a threat due to incorrect antenna polarization.
6. **AUDIO DEMODULATION** includes AM and FM as well as tone identification modes.

The patented technical advancements in the ORION are not paralleled in any other product in the world.



Ergonomic Advancements

1. **ANTENNA MOUNTED DISPLAY** tilts putting response information in line-of sight with the target.
2. **BALANCED, LIGHTWEIGHT DESIGN** with integrated transceiver, extension pole, antenna, and display.
3. **OPERATIONAL WEIGHT** is 3.7 lbs (1.7 kg). Carrying case is slightly larger than a briefcase.
4. **MINIMAL SETUP TIME (approximately 25 seconds)** including power-up and self test. Telescopic pole simply unfolds and extends; there are no pole sections or cables to connect.
5. **ALL TRANSMIT AND RECEIVE SIGNALS** are multiplexed onto a single concealed cable eliminating assembly and tangled cords.
6. **REMOVABLE RECHARGEABLE BATTERIES** are included with an external charger. (2 batteries; 3 hours typical run time per battery using SRCH mode).

ORION's tilting antenna- mounted display puts signal response information in the same line-of-sight as the target area being swept, allowing attention to remain focused on the target.

OPERATIONAL MODES

Search 2 & 3 Mode

Provides evaluation of both 2nd and 3rd Harmonic returns.
A Strong 2nd Harmonic (red) indicates electronic components while a Strong 3rd Harmonic (yellow) indicates corrosive (false) junctions.

- **Search CW** - continuous wave operation
- **Search 2 & 3** - pulsing operation
- **Search HOP** - Frequency hopping operation (provides increased detection reliability)

Frequency Hopping (Srch-Hop) Mode

NLJD response for a specific target varies depending on NLJD transmit frequencies. The Frequency Hopping Mode hops across the ORION's entire operational transmit frequency range (840-915 MHz) in less than 1.5 seconds, displaying the optimal response and transmit frequency.

The Frequency Hopping Mode quickly shows the frequency that produced the greatest response for a particular target, optimizing discrimination and detection.

ID Mode

Provides detection of non-linear junctions using an audible tone with headphones. This mode is optimized for long-range detection of non-linear junctions.

- Produces 1 kHz FM modulated tone
- Provides listening of 2nd & 3rd Harmonics

Using the ORION's audible tone to detect a junction takes advantage of the discrimination capability of the human ear.

Listen Mode

Provides detection and discrimination of non-linear junctions using demodulation for both 2nd and 3rd Harmonics.

Demodulation:
- AM
- FM
- 20 kHz Pulsing Mode

This mode provides excellent discrimination functions by relying on audio characteristic sounds associated with non-linear junctions or active devices.

Additional Control Functions

Control functions are easily adjusted using the ORION keypad.
- Volume
- Transmit Power
- Frequency Selection
- Signal Processing Gain
- Trip Point Warning Settings

ORION™ HGO-4000

NON-LINEAR JUNCTION EVALUATOR

ORION™ ADVANTAGES

LIGHTWEIGHT
BALANCED ERGONOMIC DESIGN FOR EASE OF USE

MINIMUM SETUP TIME
COVERT SETUP - QUICK, QUIET, EASY - NO CABLES, POLE SECTIONS, OR BULKY TRANSCEIVER TO ASSEMBLE OR CARRY

FREQUENCY-HOPPING FUNCTIONALITY
INCREASES DETECTION RELIABILITY

WIDE OPERATING BAND
MULTIPLE OPERATING FREQUENCIES MINIMIZES POTENTIAL INTERFERENCE ON SPECIFIC FREQUENCIES

DIGITAL SIGNAL PROCESSING
PROVIDES INCREASED SENSITIVITY

ANTENNA MOUNTED DISPLAY
FOR LINE-OF-SIGHT TARGET FOCUS

SENSITIVE RECEIVER
FOR RAPIDLY SEARCHING A LARGE AREA WITH GREATER SENSITIVITY

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TECHNICAL SPECS

TRANSMITTER

Frequency Bands: 840–915 MHz in 200 kHz steps.
Transmit Power: 30 milliwatts minimum to approximately 3 watts Effective Radiated Power (ERP)
Power Control: Manual or auto control with 30 dB range.

RECEIVER

Frequency Bands: Second Harmonic (1680–1830 MHz) or Third Harmonic (2520–2745 MHz)
Sensitivity: -133 dBm for both harmonics
DSP S/W Integration: Programmable between 6 and 18 dB gain in sensitivity performance
Receiver Bandwidth: 3 kHz

DISPLAY

Tilting Antenna-mounted Display
Bar Graph Display for transmit power level, 2nd harmonic level, 3rd harmonic level, data field display, for other information (operation mode, low battery, volume, DSP gain, etc.)

MECHANICAL

Extension Lengths: 16–51 in (40.6–129.5 cm)
Case Dimensions: 6.25 in x 14.9 in x 18.5 in
(15.9 cm x 37.8 cm x 47.0 cm)
Weights:
ORION Weight: 3.3 lbs (1.5 kg)
Orion Weight With Battery: 3.7 lbs. (1.7kg)
Case Weight Including ORION & Accessories: 12.8 lbs (5.8 kg)
Setup Time (including power-up self-test): 25 seconds

BATTERY

Input AC: 100–240 V, 50–60 Hz
Run Time: 3 hours per battery (typical)
Charge Time: 1 hour per battery
Batteries: (2 incl.) 7.2 V NiMH

* This device is authorized for use only by agencies, persons, and entities not restricted by US FCC regulations.