ORION™ NJE-4000

NON-LINEAR JUNCTION EVALUATOR

* High Gain ORION™ also available for specialized applications (restricted sale).

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

REI®

ORION™ NJE-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 uses electromagnetic energy to detect the presence of electronics, regardless of whether the electronic device is radiating, hard wired, or even turned off.

The ORION quickly detects and locates hidden electronic devices and is designed for:

- **Commercial security applications such as checking corporate boardrooms or offices for unauthorized or hidden electronics**
- **Searching secure areas for hidden or prohibited electronics**
- **Searching for contraband cell phones or other electronic contraband in prisons**

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 14 milliwatts to 1.4 watts PEAK power Effective Radiated Power (ERP) (High Gain model available).
4. **SYNTHESIZED TRANSCEIVER** provides frequency stability and agility to automatically search for clean operating frequencies (880–1,005 MHz; 902.2–927.8 MHz for USA).
5. **CIRCULARLY POLARIZED TRANSMIT AND RECEIVE ANTENNA** removes risk of missing a threat due to incorrect antenna polarization.
6. **AUDIO ALERTS** using wired or wireless headphones.

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. Wireless infrared headphones eliminate audio cables.
6. **REMOVABLE RECHARGEABLE BATTERIES** are included with an external charger. (Four batteries; 2.5 hours run time per battery).

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.

* High Gain ORION™ available

For specialized applications (restricted sale). Contact REI for more information.

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 (880-1005 MHz, 625 possible frequencies; USA: 902.2-927.8 MHz, 125 possible frequencies) 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. 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.

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
- Remote Control Option Available (RMO-4000)

Remote control port for optional RMO 4000 remote operation

Wireless Headphones

1. Wireless IR headphones eliminate cables that can interfere with search activities.
2. Headphones can be plugged into the main unit or the IR receiver.
3. Volume control is adjusted via the main unit.

ORION™ NJE-4000
NON-LINEAR JUNCTION EVALUATOR

ORION™ ADVANTAGES

FREQUENCY-HOPPING FUNCTIONALITY
INCREASES DETECTION RELIABILITY

REMOTE CONTROL PORT
ALLOWS USER TO OPERATE UNIT AT A DISTANCE WITH COMPUTER SOFTWARE

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

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

PROGRAMMABLE DIGITAL SIGNAL PROCESSING
PROVIDES INCREASED SENSITIVITY

ANTENNA MOUNTED DISPLAY
FOR LINE-OF-SIGHT TARGET FOCUS

WIRELESS HEADPHONES AND GRAPHIC DISPLAY
FOR SIMULTANEOUS AUDIO AND VISUAL INFORMATION

TRAINING BY REI INSTRUCTORS
REI operates the largest commercially available TSCM training facility in the world. On-site training also available.
Course dates and registration online at www.reiusa.net or email sales@reiusa.net

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TECHNICAL SPECS

TRANSMITTER

Frequency Bands: 880–1005 MHz in 200 kHz steps. USA: 902.2–927.8 MHz
Transmit Power: 14 milliwatts minimum, 1.4 watts PEAK power ERP (Effective Radiated Power)
Power Control: Manual or auto control with 30 dB range. Pulsed operation limits average output to meet USA FCC requirements

RECEIVER

Frequency Bands: Second Harmonic (1760–2010 MHz) or Third Harmonic (2640–3015 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: (4 incl.) 7.2 V NiMH

TOOL KIT OPTION

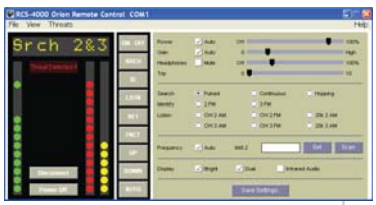
- Borescope with built-in light and right-angle viewing for inspection of walls and furniture
- Combination stud finder and metal detector for non-destructive wall evaluation
- Rubber-tipped hammer to evaluate the stability of a junction under physical vibration
- RF Wire Tracer and Multi-meter for evaluating miscellaneous wiring
- Multi-purpose geared screwdriver furnished with small drill bit for use with Borescope
- Miscellaneous Tools: pliers, wire cutters, Leatherman™, inspection mirrors, measuring tape, flashlight, UV light, UV pen, drill bits for walls

Tool Kit stows inside the ORION case for transport

RCS-4000 ORION REMOTE CONTROL SOFTWARE OPTION

Allows User to control the ORION from a computer serial port.

- Keeps user at a safe distance when using the ORION in potentially hazardous environments
- Provides the ability to "lock" ORION functions and settings
- Can be used for pre-screening of suspicious packages prior to X-Ray
- Available with a heavy-duty tripod & mounting bracket for stabilizing the ORION



HIGH GAIN ORION AVAILABLE (HGO-4000)

High Gain model (HGO-4000) provides increased transmit power (approximately 3 watts ERP) for special applications. Authorized for use only by entities not restricted by US FCC regulations.