Principles of NLJDs

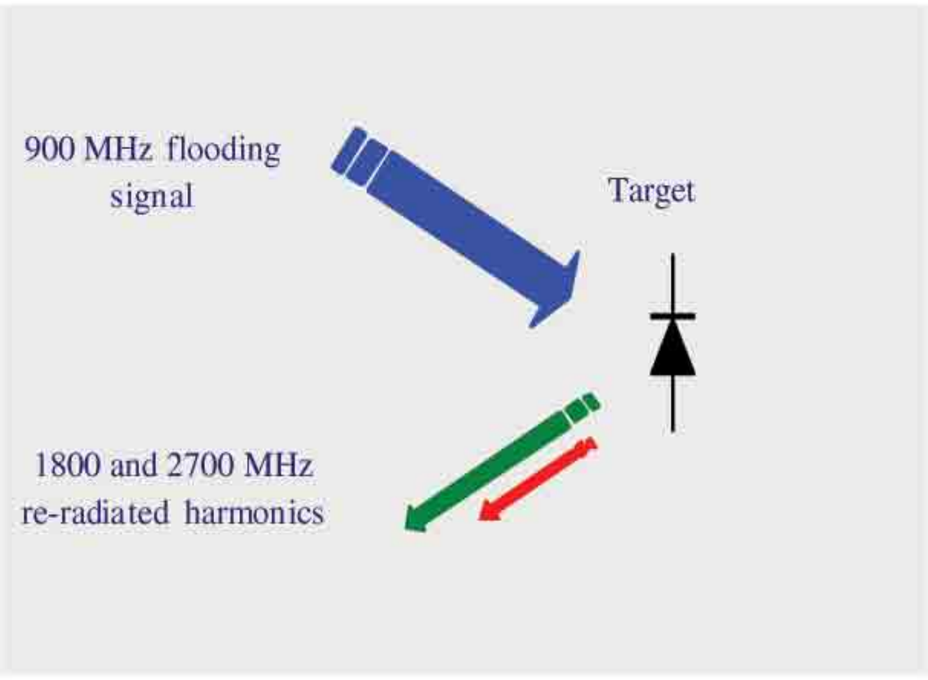
What is a NLJD?

A Non-Linear Junction detector (NLJD) is a piece of electronic equipment designed to find hidden or inoperative electronic devices.

An electronic circuit usually consists of a number of active components. Typical examples of active components are diodes, transistors, intergrated circuits (computer chips), etc. These components contain Non-Linear Junctions (NLJs), that is, connections that branch off at angles. (Most electronic components are designed with connections at right angles).

Electronic NLJs naturally react to a high frequency radio energy signal absorbing some of the energy from the flooding signal. This causes the NLJ to become energised and radiate the energy back as radio energy, effectively form a miniature transmitter in its own right.

The signal transmitted from the NLJ will be at twice and three times that of the flooding frequency. In the example below the flooding frequency is 900MHz therefore, the NLJ transmits signals at 2X 900MHz (1800 MHz) and 3X 900MHz, (2700MHz). These are known as the 2nd and 3rd harmonics.



AUDIOTEL INTERNATIONAL

Principles of NLJDs

The same is true of any naturally occuring NLJ such as rusty nails, furniture springs etc.

However, as figure 2 shows there is one difference between electronic and naturally occuring NLJs. Namely that electronic NLJs return proportionally more 2nd harmonic signal than 3rd harmonic. Whereas within naturally occurring NLJs the opposite is true tuning one receiver to each of these harmonics and by the use of simple comparative circuitry the exact nature of the target can be assessed . Modern NLJDs therefore, can determine if the object being detected is electronic or not.

The Audiotel International Superbroom Advanced is an example of one such non linear junction detector.

AUDIOTEL INTERNATIONAL