

## Title (en)

Magnetically-coupled, two-resonant-circuit, frequency-division tag.

## Title (de)

Magnetischgekoppelte, Zweiresonanz-Schaltung, Frequenz-Teilungsetikett.

## Title (fr)

Etiquette à division de fréquence ayant un circuit birésonnant accouplé magnétiquement.

## Publication

**EP 0469769 A2 19920205 (EN)**

## Application

**EP 91306658 A 19910722**

## Priority

- US 56247190 A 19900803
- US 56247590 A 19900803

## Abstract (en)

A batteryless, portable, frequency divider includes a first resonant LC circuit (70) that is resonant at a first frequency for receiving electromagnetic radiation at the first frequency; and a second resonant LC circuit (74) that is resonant at a second frequency that is one-half the first frequency for transmitting electromagnetic radiation at the second frequency. The first circuit is coupled only magnetically to the second circuit to transfer energy to the second circuit in response to receipt by the first circuit of electromagnetic radiation at the first frequency. At least one of the resonant circuits includes a variable reactance element, such as a variable capacitance diode (D1<.>, D1<..>) or a varactor. In a variable reactance element (D1<.>) of the first circuit (70), the reactance varies with variations in energy received by the first circuit for causing the second circuit to vary in reactance due to mutual reactive coupling to cause the second circuit to transmit electromagnetic radiation at the second frequency in response to the energy transferred from the first circuit at the first frequency. In a variable reactance element (D2<.>) of the second circuit (74), the reactance varies with variations in energy transferred from the first circuit for causing the second circuit to transmit electromagnetic radiation at the second frequency in response to the energy transferred from the first circuit at the first frequency. Both resonant circuits include inductance coils (L1<.>, L2<.>) that are disposed on a ferrite rod (72), for enhancing the magnetic coupling. The frequency divider is included in a tag utilized in a presence detection system. <IMAGE>

## IPC 1-7

**G01S 13/02; G08B 13/24**

## IPC 8 full level

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