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(12) **United States Design Patent**
Oliver

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(54) **BROKEN-LOOP RFID READER ANTENNA
FOR NEAR FIELD AND FAR FIELD UHF
RFID TAGS**

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(**) Term: **14 Years**

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(52) **U.S. Cl.** **D14/230; D14/233**

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455/90.3, 91, 128, 269, 344, 347, 562.1
See application file for complete search history.

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(57) **CLAIM**

The ornamental design for a broken-loop RFID reader antenna for near field and far field UHF RFID tags, as shown.

DESCRIPTION

An article in which the design is embodied is an antenna for a Radio Frequency Identification (RFID) reader system, as it would be used for reading Ultra High Frequency (UHF) RFID tags.

The design includes one or more conductive loops, at least one of which is broken into segments. The segments can be electrically driven at feedpoints by an electrical signal alternating at the proper frequency, which can be around 900 MHz.

In the far field, an electromagnetic pattern is formed that is equivalent to, and sometimes indistinguishable from, that of a dipole. This way RFID tags can be read as known.

In the near field, each segment generates an individual magnetic field. Plus, the segments are so arranged that the individual magnetic fields are cumulated, to form an aggregate magnetic field that can be used for reading the UHF RFID tags. The magnetic field can read RFID tags better than an electromagnetic field, in some instances that involve fluids or metals with which the RFID tags can be associated.

Advantageously, the segments of the broken loop(s) are further arranged so that not all of them need be electrically driven. Only some need be driven; and the driving field couples also into the others. By proper geometry, dimensioning, and the like, the phase difference of each field propagating within a segment can be substantially matched to that of coupling to another segment, so that the generated individual magnetic fields are cumulated.

The FIGURE is a top plan view of a broken-loop RFID reader antenna for near field and far field UHF RFID tags showing my new design. It is understood that the broken line segments in the drawing form no part of the claimed design.

1 Claim, 1 Drawing Sheet



