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(54) **MICRO STRIP ANTENNA**

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(58) **Field of Classification Search** ..... None  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,697,189 A *	9/1987	Ness	343/700 MS
6,400,322 B2 *	6/2002	Fang et al.	343/700 MS
6,819,290 B2 *	11/2004	Hani et al.	343/700 MS
7,099,686 B2 *	8/2006	Ro et al.	455/550.1
7,173,564 B2 *	2/2007	Park et al.	343/700 MS
7,403,159 B2 *	7/2008	Gooshchin	343/700 MS
2005/0116867 A1 *	6/2005	Park et al.	343/725
2006/0001574 A1 *	1/2006	Petros	343/702

\* cited by examiner

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(57) **ABSTRACT**

The invention provides a micro strip antenna used for both a near-field region and a remote-field region. A micro strip antenna comprises: a first dielectric substrate; a main patch, having a triangle shape under the first dielectric substrate, configured to feed a radiation current; a second dielectric substrate over the first dielectric substrate; and a sub patch, formed under the second dielectric substrate, configured to desert a current from the main patch to provide a vertical magnetic field.

**6 Claims, 13 Drawing Sheets**

