Printable Anti-Tampering and Security E-Tag

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Traditional anti-tampering and security technology rely on paper-based labels or tapes. Generally, the labels and tapes are stuck on the open area of the package. When the package is opened or changed, the anti-tampering labels will be broken or can be distinguished from the appearance. However, this kind of anti-tampering or security labels is easy to be replaced or duplicated, which is difficult to be discovered by the user. So the anti-tampering and security performance is not good. This paper design and fabricate a novel anti-tampering security label. Conductive circuit with random pattern is fabricated on a special label using low-cost printing technology. Different conductive pattern have different resonance frequency when exposed to an electromagnetic field. The resonance frequency of the conductive circuit represents the ID of the labels, which can be measured by a wireless reader. Conductive ink and adhesive glue are separately printed on the label with special order and pattern,so that the conductive pattern will be broken and cannot be recovered once the label is torn off. The conductive pattern can be random and unit for each label. Therefore, the label is hard to be duplicated. User use a portable wireless reader can easily to detect whether the package is authentic or has once been opened. Testing results show that the label has good anti-tampering and security performance. The fabrication of the label is easy, fast and cheap, which is suitable for mass production. The new anti-tampering security label can be widely used on anti-tampering of commodity or sealing confidentiality documents. Key words: Printing technology, anti-tampering, security, label, wireless reader

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