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Tamperproof package for integrated circuit card comprising remote communication means.

5 The invention concerns an anti-fraud wrapper for an integrated circuit card having means for remote communication by electromagnetic means.

10 The invention relates particularly to a wrapper for an integrated circuit card of the contactless type, for example of the type in which a card body in board form carries an integrated circuit and an antenna by means of which the integrated circuit is able to communicate remotely with a receiving terminal, and of the type in which the antenna, which extends in the plane of the card body, is implemented in the form of a turn or a winding, in a number of turns, of a
15 conductive path.

In a particularly common application, the integrated circuit cards, also referred to as chip cards, are used as a means of paying for a service. Each time the corresponding service is used, at least

one value unit is decremented from an initial stock of value units loaded in the memory of the chip card. Such applications are found for example in telephone cards and photocopier cards.

5 Also, users purchase a card which is initially provided in memory with a given number of value units corresponding to the maximum credit.

10 In the majority of applications in which the integrated circuit card is used as a payment means, the cards used are of the type with contacts in which the card has conductive tracks which are connected to the electronic module or integrated circuit, and which are designed to allow an electrical connection between the card and the receiving terminal.

15 In this case, it is fairly easy to give a guarantee to the user who purchases a card alleged to have the maximum number of value units, quite simply by surrounding the card with a sealed envelope, for example in the form of a "cellophane" wrapper, that is to say one made of plastic. The absence of tampering with the wrapper vouches for the presence of a maximum number of units.

20 Such a solution is not however satisfactory when a contactless card is concerned, with which the information exchanges are performed remotely, for example by electromagnetic waves. This is because this information exchange can then take place through the cellophane envelope, which can therefore no longer act as a guarantee of the previous non-use of the card.

The aim of the invention is therefore to propose a solution to the above problem.

To that end, the invention proposes placing anti-fraud means in the wrapper of an integrated circuit card, or chip card, making it possible to prevent any fraudulent use of the card before it is first used by an authorized user.

More precisely, the invention proposes an anti-fraud wrapper containing an integrated circuit card having means for remote communication by electromagnetic means, of the type comprising an envelope around the card. It is characterised in that it comprises at least one barrier sheet made of conductive material which is arranged opposite one face of the card and which extends substantially opposite the communication means.

According to other characteristics of the invention:

- the envelope comprises a sheet made of plastic on which the barrier sheet made of conductive material is superimposed;

- the envelope comprises at least one sheet made of plastic and one sheet made of conductive material, juxtaposed;

- the barrier sheet made of conductive material is a sheet which is distinct from the envelope and which is inserted between the card and the envelope;

- the communication means are constituted by a winding of an electrical conductor, and the barrier sheet made of conductive material is arranged opposite

the winding, over the whole surface area of said winding;

5 - the wrapper comprises two barrier sheets made of conductive material each positioned on one side of the card;

 - the barrier sheet is implemented in metallic material;

 - the barrier sheet (24) is implemented in aluminium.

10 The invention also concerns an anti-fraud wrapper for an integrated circuit card having means for remote communication by electromagnetic means, of the type comprising an envelope around the card. It is characterised in that the envelope comprises at least
15 one barrier sheet made of conductive material.

 Other characteristics and advantages of the invention will emerge from a reading of the following detailed description, for the understanding of which reference will be made to the accompanying drawings in
20 which:

 - Figure 1 is a schematic view in the flat of an integrated circuit card having an antenna for remote communication by electromagnetic means;

 - Figure 2 is a view similar to that of Figure 1
25 illustrating the integrated circuit card once wrapped in its wrapper in accordance with the teachings of the invention;

 - Figure 3 illustrates a string of wrapped cards in accordance with the teachings of the invention; and

- Figures 4, 5 and 6 are schematic views in cross-section along the line 5-5 of Figure 3 illustrating three embodiments of the invention.

Figure 1 illustrates an integrated circuit card 10 of a type known per se. The card 10 comprises essentially a card body 12, implemented for example in plastic in the standardized format of a credit card. The card 10 has an electronic microcircuit 14 arranged inside the card body 12, and communication means 16 which allow the microcircuit 14 to communicate remotely with an appropriate read/write circuit (not depicted) belonging to a card reader.

In this case, the communication means are implemented in the form of an antenna 16 itself implemented by the winding of a conductor 18 in coplanar concentric turns, contained in the plane of the card 10.

In a known manner, the antenna 16 can be implemented using a wound metal wire or it can be implemented by deposition of a conductive ink.

This antenna 16 is therefore capable of converting an electromagnetic field into an electric current, and vice versa, so as to allow remote interrogation of the microcircuit 14 and possibly allow modification of the content of a memory of the microcircuit 14.

Of course, in certain applications, the integrated circuit card 10 can, in addition, have means for communication by contact allowing an exchange of information between the microcircuit 14 and the card

reader by means of contact tracks arranged on the card and connected to the microcircuit 14.

Wrapping is known of the card 10 in a wrapper of the type of that illustrated in Figure 2 comprising an envelope 20 formed from a film made of plastic which completely envelops the card 10 and which is sealed on its edges 22. According to circumstances, the sealed edges 22 can be closer or less close to the edges of the card 10.

In accordance with the teachings of the invention, the wrapper of the card 10 which is illustrated in Figure 2 furthermore comprises a sheet made of conductive material 24 which is positioned against one of the faces of the card, opposite the antenna 16, so as to inhibit the antenna 16 or interfere with the signals between the reader and the card, that is to say so as to make the latter ineffective, thus preventing all remote communication between the microcircuit 14 and any read or write device.

This is because the sheet 24 made of conductive material forms an electromagnetic barrier which prevents the antenna 16 from fulfilling its function.

Figures 4 to 6 illustrate schematically a number of embodiments which make it possible to implement simply and economically a wrapper for an integrated circuit card 10 in accordance with the teachings of the invention.

In the examples illustrated, the envelope 20 is composed of a lower sheet 26 and an upper sheet 28 between which the card 10 is designed to be interposed.

5 In the example illustrated schematically in Figure 4, the barrier sheet 24 is implemented in the form of a sheet made of conductive material distinct from the envelope 20. The sheet 24 extends opposite one of the faces of the card 10, and it is therefore located inserted between one of the sheets of the
10 envelope 20 and the card 10. The barrier sheet 24 is therefore introduced into the envelope at the same time as the card 10.

In the example of Figure 5, the barrier sheet 24 is superimposed on the plastic film constituting the
15 envelope 20 of the wrapper. This plastic sheet can for example be laminated on one of the faces of the wrapper, preferably on the internal side of the envelope, and it can also be glued by any appropriate means.

20 In the example of Figure 6, it can be seen that the barrier sheet 24 made of conductive material forms part of the envelope 20 which surrounds the card 10. In the case illustrated, the upper sheet 28 of the envelope 20 is therefore composed of a central strip
25 formed by the barrier sheet 24 and of two lateral strips 32 made of plastic. The lateral strips 30 are then juxtaposed with the barrier sheet 24.

Of course, as can be seen in Figure 3, the wrapper of the integrated circuit cards 10 is generally
30 implemented in the form of a string, that is to say the

sheets forming the envelope 20 of the cards are continuous, the envelope of each card being individualized for example by pre-cut lines 32 implemented at a transverse sealed edge 22.

5 In order to guarantee perfect inhibiting of the antenna 26, it is necessary to make sure that the barrier sheet 24 extends opposite the whole of the extent of the antenna 26. Also, depending on the card positioning tolerances, and depending on the different
10 possible positions of the antenna 26, a barrier sheet 24 of sufficient size will be provided.

 In the embodiment illustrated in the Figures, the wrapper comprises only one barrier sheet 24 but, in certain applications, it may prove necessary to provide
15 two sheets 24 each arranged on one side of the card 26 opposite one another.

 The barrier sheet 24 can be implemented in any conductive material and notably using a sheet of metallic material such as aluminium. However, other
20 metallic materials may be suitable and it is also possible to use a polymer film charged with conductive particles.

 Similarly, it is possible to provide that the whole of the envelope 20 is implemented in conductive
25 material, which then removes the necessity of providing an added-on barrier sheet.

 Although the invention has been described with reference to a chip card, it can also apply to any chip support containing an electromagnetic communication

interface, such as an electronic label, a self-adhesive contactless module with antenna, etc.

The term chip card must therefore be understood in the present invention in the broad sense of any chip support.



CLAIMS

1. An anti-fraud wrapper containing an integrated circuit card having means (16) of remote
5 communication by electromagnetic means, of the type comprising an envelope (20) around the card, characterised in that it comprises at least one barrier sheet (24) made of conductive material which is arranged opposite one face of the card (10) and which
10 extends substantially opposite the communication means (16).

2. A wrapper according to Claim 1, characterised in that the envelope (20) comprises a sheet (28) made of plastic on which the barrier sheet (24) made of
15 conductive material is superimposed.

3. A wrapper according to Claim 1, characterised in that the envelope comprises at least one sheet made of plastic (24) and one sheet made of conductive material, juxtaposed.

20 4. A wrapper according to Claim 1, characterised in that the barrier sheet (24) made of conductive material is a sheet which is distinct from the envelope (20) and which is inserted between the card (10) and the envelope (20).

25 5. A wrapper according to any one of the preceding claims, characterised in that the communication means (16) are constituted by a winding of an electrical conductor (18), and in that the barrier sheet (24) made of conductive material is



arranged opposite the winding, over the whole surface area of said winding.

5 6. A wrapper according to any one of the preceding claims, characterised in that the wrapper comprises two barrier sheets (24) made of conductive material each positioned on one side of the card (10).

7. A wrapper according to any one of the preceding claims, characterised in that the barrier sheet (24) is implemented in metallic material.

10 8. A wrapper according to any one of the preceding claims, characterised in that the barrier sheet (24) is implemented in aluminium.

15 9. An anti-fraud wrapper for an integrated circuit card having means (16) of remote communication by electromagnetic means, of the type comprising an envelope (20) around the card, characterised in that it comprises at least one barrier sheet (24) made of conductive material.