

CLAIMS

1. A method for manufacturing a module ~~(10)~~ intended for a portable object having at least a contact function and a contactless function comprising at least the following steps:

- providing an assembly comprising a flexible carrier ~~(3)~~ on which are arranged, on at least one of its faces ~~(3i)~~, a conductive layer ~~(2)~~ and, on at least an opposite face ~~(3s)~~, a conductive region ~~(1)~~ of contacts ~~(5)~~,
- etching the conductive layer ~~(2)~~ with a laser beam in order to define a shape configured to form one or more conductive surfaces ~~(4a, 4b, 4)~~ to produce an antenna composed of a plurality of turns and conductive pads located at each end of the antenna,
- using said laser beam to make, in the flexible carrier ~~(3)~~, one or more openings ~~(6)~~ intended for connections between an integrated circuit ~~(7)~~ and said contacts, without perforating the conductive region bearing the contacts,
- depositing said integrated circuit ~~(7)~~ on the face opposite the face bearing the contacts ~~(5)~~,
- electrically connecting the integrated circuit ~~(7)~~ to the conductive region ~~(1)~~ bearing the contacts ~~(5)~~ and/or to the conductive layer ~~(4a, 4b, 4)~~.

~~2. The method as claimed in claim 1, characterized in that the conductive layer (2) is etched with a laser beam in order to produce an antenna (4) composed of a plurality of turns (4i) and of conductive pads (4p1, 4p2) located at each end of the antenna.~~

~~32.~~ 32. The method as claimed in claim 1, characterized in that the conductive layer (2) is etched with a said laser beam in order to produce conductive lands ~~(4a, 4b)~~ capable of being coupled or connected to the ~~an~~ antenna arranged in the portable object.

~~43.~~ 43. The method as claimed in ~~one of the preceding claims 1 or 2~~, characterized in that the contacts ~~(5)~~ are produced beforehand by chemical etching.

54. The method as claimed in one of the preceding claims, characterized in that the conductive layer ~~(2)~~ is produced beforehand by chemical etching.

65. The method as claimed in one of the preceding claims, characterized in that the integrated circuit ~~(7)~~ is deposited directly on the flexible carrier ~~(3)~~ and the integrated circuit ~~(7)~~ is connected by connections ~~(8)~~ via the ~~connection~~ openings ~~(6)~~.

76. The method as claimed in one of the preceding claims, characterized in that the integrated circuit ~~(7)~~ is deposited on the a conductive layer of the flexible carrier ~~(3)~~.

87. The method as claimed in one of the preceding claims, characterized in that aluminum is used to form the conductive region and/or the conductive layer ~~(2)~~.

98. The method as claimed in one of the preceding claims, characterized in that a material chosen from the following list is used as the flexible carrier ~~(3)~~: PET, PI, PVC.

109. A module obtained by implementing the method as claimed in one of claims 1 to 9-8 and intended to be incorporated into a portable object, characterized in that it comprises at least the following elements:

- an assembly comprising a flexible carrier ~~(3)~~ on which are arranged, on at least one of its faces, a conductive layer ~~(2)~~ and, on at least an opposite face, a conductive region ~~(1)~~ bearing contacts ~~(5)~~, the conductive layer being etched using a laser beam in order to define a shape configured to form one or more conductive surfaces ~~(4, 4a, 4b)~~ to produce an antenna comprising a plurality of turns made of aluminum and two connection pads,
- one or more openings ~~(6)~~ intended for connections, said openings being obtained with ~~a~~ said laser beam,
- an integrated circuit ~~(7)~~ positioned on the face opposite the face bearing the contacts ~~(5)~~, said integrated circuit ~~(7)~~ being electrically connected to the conductive layer and/or to the contacts ~~(5)~~.

~~11. The module as claimed in claim 10, characterized in that the integrated circuit (7) is a chip and in that the conductive region (2) is an antenna (4) comprising a plurality of turns made of aluminum and two connection pads (4p1, 4p2).~~

5 ~~1210.~~ The module as claimed in claim ~~109~~, characterized in that the integrated circuit (7) is a chip and in that the conductive region (2) is formed of conductive lands (4a, 4b) capable of being coupled or connected to ~~the~~an antenna arranged in the portable object.

10 ~~1311.~~ The module as claimed in ~~one of claims 10-9 or~~ 1210, characterized in that the flexible carrier (3) is made of a material chosen from the following list: PET, PI, PVC.