

CLAIMS

1 - A chip card (1) with dual, contact and contactless, communication
5 interface, comprising a card body comprising two metal sheets (2, 3) and an electronic
module (4) provided with a contact terminal block (11) and with an antenna (12)
intended for radiofrequency communication with the antenna of a remote reader,
characterized in that the electronic module (4) comprises an active communication
circuit (16) supplied with power by a battery (8) located in the chip card and configured
10 to generate a carrier signal capable of interacting with the carrier signal emitted by a
remote contactless reader so as to establish an active radiofrequency communication
between the chip card (1) and said remote reader.

2 - The chip card (1) as claimed in claim 1, characterized in that the active
15 communication circuit (16) is configured to emit an electromagnetic field at the same
carrier frequency as the reader and in phase with the carrier of the reader in order to
encode a high modulation state (corresponding to a binary "1"), and to emit an
electromagnetic field at the same carrier frequency as the reader and in phase
opposition with the carrier of the reader in order to encode a low modulation state
20 (corresponding to a binary "0").

3 - The chip card as claimed in either one of the preceding claims,
characterized in that at least one of the metal sheets (2, 3) is provided with a cavity
(9, 9') able to accommodate said battery (8).
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4 - The chip card as claimed in claim 3, characterized in that the metal sheets
(2, 3) are each provided with a blind cavity (9, 9'), the two blind cavities being located
facing one another and able to accommodate said battery (8).

5 - The chip card as claimed in one of the preceding claims, characterized in that the two metal sheets (2, 3) comprise two through-cavities (5, 7), located facing one another and able to accommodate the electronic module (4).

5 **6** - The chip card as claimed in any one of the preceding claims, characterized in that the area of the two metal sheets (2, 3) is greater than or equal to 90% of the total outer area of the chip card.

10 **7** - The chip card as claimed in any one of the preceding claims, characterized in that the terminals of the battery (8) are connected to power supply pads (14) located on the electronic module (4), via conductive tracks (6) arranged on the inner face of one of the two metal sheets (2, 3).

15 **8** - The chip card as claimed in any one of the preceding claims, characterized in that the metal sheets (2, 3) have a thickness of about 400 micrometers.

9 - The chip card as claimed in any one of the preceding claims, characterized in that the two metal sheets (2, 3) are made of stainless steel or of an alloy.

20 **10** - The chip card as claimed in any one of the preceding claims, characterized in that it comprises a layer of electrically insulating resin or of insulating lacquer, arranged between the two metal sheets (2, 3).

25 **11** - The chip card as claimed in any one of the preceding claims, characterized in that the active communication circuit (16) is provided with diodes (17) allowing the battery (8) to be charged via the contacts (11) of the module when the chip card is inserted into a contact chip card reader.

30 **12** - A process for producing a chip card as claimed in any one of the preceding claims, characterized in that it comprises steps consisting in:

- Cutting out two metal sheets (2, 3) in ISO 7816-1 chip card format, wherein the two metal sheets, one sheet placed on top of another, comprise of an upper metal sheet (2) and a lower metal sheet (3);
- Machining, into the two metal sheets, through-openings (5, 7) at the installation location intended for the electronic module (4);
- Machining blind cavities (9, 9') at the location on each metal sheet (2, 3) intended for accommodating a battery (8);
- Interposing an electrical insulator between the two metal sheets, by deposition on one of the inner faces of the metal sheets;
- Placing the battery 8 in the blind cavity 9 in one of the metal sheets 2, 3;
- Adding conductive tracks (6) and connecting them between the terminals of the battery (8) and the power supply pads of the module (4) using an anisotropic conductive film;
- Adding and bonding the upper metal sheet (2) to the lower metal sheet (3);
- Adding and bonding the electronic module (4) into the cavity (5) in the upper metal sheet (2).