Claims

1. A manufacturing method of a radio-frequency (lA, lB) smart card with a metal inlay (4), said method including the following steps:

- forming a card body (lA, lB, 11) including said metal inlay (4) in the form of a metal plate equipped with a cavity (22);

- arranging at least a radiofrequency transponder (5c) antenna inside this cavity (22);

– arranging an external metal element (4e) around said metal plate, arranged as inner metal plate (4i), for forming the metal inlay (4), said external metal element being visible on the edge (14) of the card (11), wherein the external metal element (4 *e*) comprises an external metal plate (4 e) arranged around said internal metal plate (4 *i*),

characterized in that it further comprises the steps of:

assembling of a first thermosetting adhesive film (3) on a first side of a perforated core sheet (8) setting out perforation areas (P) for component locations (4);

fixing the metal plate assembly (4) and the radiofrequency transponder antenna inlay (46) to the first adhesive (3) film through insertion in the perforation areas (P);

providing a second thermosetting adhesive film (2) identical or similar to the first one on a second side opposite to a first side of said perforated core sheet (8);

thermal lamination of said core sheet (4, 8) with first and second thermosetting adhesive films (2, 3) to form a composite inlay; and

extracting each card (11) from the multiplayer card structure.

2. Manufacturing method according to the preceding claims, characterized in that said external metal element (4e) is more resistant to the corrosion than said internal metal plate (4i).

3. Manufacturing method according to any one of the preceding claims, characterized in that said internal metal element (4e) is heavier than said external metal plate (4i).

4. Method according to the preceding claims, characterized in that said external metal plate (4e) is directly fixed to said internal metallic plate (4i).

5. Method according to the preceding claims, characterized in that said external metallic plate (4e) and said internal metallic plate (4i) form together a tight or fitted or welded, glued, mechanical, eclipsed plate assembly.

6. Method according to anyone of the preceding claims, characterized in that said first internal metallic plate (4i) is chosen among tungsten, lead, gold.

7. Manufacturing method according to the preceding claims, comprising the following steps:
- assembly of a first thermosetting adhesive film (3) on a first side of a perforated core sheet (8) setting out perforation areas (P) for component locations (4),
- fixing the metal plate assembly (4) and the radiofrequency transponder antenna inlay (46) to the first adhesive (3) film through insertion in the perforation areas (P),
- providing a second thermosetting adhesive film (2) identical or similar to the first one on a second side opposite to a first side of said perforated core sheet (8),
- thermal lamination of said core sheet(4, 8) with first and second thermosetting adhesive films (2, 3) to form a composite inlay,
- extracting each card (11) from the multiplayer card structure.

8. Method according to the preceding claims, characterized in that said structure is thermal laminated with a cover layer (5, 6) on each external face and or at least one transparent overlay.

9. Method according to anyone of the preceding claims, characterized in that individual cards (11) with metal edges

(14) are obtained by cutting (10) or milling around each external metal element (4e).

10. Method according to anyone of the preceding claims, characterized by the addition of a thin metallic stainless plate (44), with the exact same profile to fit said metal inlay (4) and placed on top of a metal assembly (4) comprising said inner plate (4i) and said outer plate (4e).

11. Radio-frequency (lA, lB) smart card with a metal inlay (4), comprising:
- a card body (lA, lB, 11) including said metal inlay (4) in the form of a metal plate (4i) equipped with a cavity (22),
- at least a radiofrequency transponder (5c) antenna arranged inside this cavity (22),
characterized in that it comprises an external metal element (4e) arranged around said metal plate (4i) for forming the metal inlay (4), said external metal element (4e) being visible on the edge (14) of the card (11).

12. Radiofrequency smart card (IA) according to previous claim, comprising an assembly of:
- a first thermosetting adhesive film (3),
- an internal metal plate (4), having a recess, fixed through one of their first side to the first adhesive (3) film, an external metal element (4e) arranged around said internal metal plate (4i);
- at least a radiofrequency transponder antenna inlay (46) arranged in said recess (22),
- a second thermosetting adhesive film (2) provided on a second side of said external metal plate (4e), opposite to a first side.