CLAIMS

1 – A process for manufacturing an electronic module intended to be implemented in a dual-interface portable object, characterized in that it comprises at least the following steps:

- Using a single-sided film consisting of one or more contact regions and a dielectric layer comprising one or more apertures,
- Using a single substrate comprising one or more electrically conductive regions intended for contactless communication of the object and having at least a connection pad,
- Securing said single-sided film and said single substrate together,
- Positioning an integrated circuit and connecting it to the contact regions of the single-sided film and at least to one connection pad of at least one of said electrically conductive regions,
- Depositing a protective layer incorporating at least said integrated circuit.

2 – The process as claimed in claim 1, characterized in that said single substrate comprises at least one electrically conductive region consisting of turns forming an antenna and at least one connection pad located at at least one end of the antenna.

3 – The process as claimed in claim 1, characterized in that at least one of said electrically conductive regions consists of at least one area of conductive material.

4 – The process as claimed in one of the preceding claims, characterized in that a region is cut out in the center of the at least one of said electrically conductive regions and the integrated circuit is bonded on the opposite face of the film bearing said contact regions.

5 – The process as claimed in one of the preceding claims, characterized in that one or more apertures are made at the level of the single substrate corresponding to the apertures that are located in the film in order to form soldering wells between the integrated circuit and contact regions.

6 – The process as claimed in one of the preceding claims, characterized in that a single substrate is used which has one or more electrically conductive regions made of aluminum to form the antenna or the areas of conductive material.

7 – The process as claimed in one of the preceding claims, characterized in that the pattern of the electrically conductive region or the areas of conductive material are produced using an etching technique, an additive process by means of screen printing or transfer.

8 – An electronic module intended to be implemented in a portable object comprising a contact function, characterized in that it comprises the following elements:

- A single-sided film consisting of one or more contact regions and a dielectric layer comprising one or more apertures,
- A single substrate comprising one or more electrically conductive regions intended for contactless communication, said single substrate being secured to the single-sided film, and each electrically conductive region having at least one connection pad,
- An integrated circuit connected to the contact regions of the single-sided film and at least to one terminal of at least one of said electrically conductive regions,
- A protective layer incorporating at least said integrated circuit.

9 – The module as claimed in claim 8, characterized in that at least one of said electrically conductive regions takes the form of turns comprising, at one end, a connection pad.

10 – The module as claimed in claim 8, characterized in that at least one of said electrically conductive regions consists of at least one area of conductive material.

11 – The module as claimed in one of claims 8 to 10, characterized in that the single substrate comprises a hollowed-out central region having a geometry adapted for accommodating an integrated circuit and the protective layer.

12 – The module as claimed in one of claims 8 to 11, characterized in that the single substrate comprises one or more perforations corresponding to the apertures of the single-sided film in order to connect the integrated circuit to the contact regions.

13 – The module as claimed in one of claims 8 to 12, characterized in that the dielectric and/or the single substrate are chosen from: epoxy glass, polyethylene naphthalate PEN, polyethylene terephthalate PET, or polyvinyl chloride PVC.