

CLAIMS

1. A communication device having a radiofrequency chip, said device comprising:

5 - an insulating support layer (12) of a module (2),

10 - an electrical and/or electronic radiofrequency circuit on said insulating support layer, wherein said circuit comprises plates of an adjustable capacitor and/or an antenna helix (5) with adjustable inductance, and

15 - at least one element (17) for adjusting a tuning frequency of the radiofrequency circuit, said element (17) connecting an intermediate point of the antenna helix to reduce the available inductance and/or splitting or connecting the plates to adjust the capacitance, characterised in that said plates (13A-13H) and/or said antenna helix (5) extend(s) over said insulating support layer (12) of the module (2).

20 2. The device (2) according to claim 1, characterised in that the module (2) has a primary face (12A) having an area less than or equal to 375 mm².

25 3. The device according to any of the preceding claims, characterised in that said adjustment equals or compensates for a variation in internal capacitance (cc) of the chip of more than 5 μ F.

4. The device according to any one of the preceding claims, comprising a support body (3) incorporating or cooperating with said module (2), characterised in that the support body (3) bears an
5 electrical element (6, 4, 5, 20) of the electrical and/or electronic radiofrequency circuit, wherein said electrical element being configured to connect or interact with the module (2).

5. The device according to the any one of the
10 preceding claims, characterised in that said electrical element (6, 4, 5, 20) is selected from a radiofrequency chip (6), a second antenna (5), a relay antenna (20) and a second capacitance (14) configured to connect or interact with said circuit.

15 6. The device according to any one of the preceding claims, characterised in that the module (2) comprises at least two second conductive plates (13B, 13C) on a second face (12B) arranged opposite at least said first plate (13A) so as to form said adjustable
20 capacitor (14), wherein said second plates (13B, 13C) are connected electrically by at least one electrical connection (17).

7. The device according to the preceding claim, characterised in that said electrical connection (17)
25 between said two second plates (13B, 13C) is a bonded wire.

8. The device according to claim 7, characterised in that said electrical connection (17) between said two second plates (13A, 13B) is a conductive printing or an electrically conductive deposit.

5 9. The device according to claim 7, characterised in that said electrical connection (17) is pre-wired by metallization of the insulating layer and has a de-short-circuiting break mark.

10 10. The device according to any one of claims 6-9, characterised in that the antenna helix (5) comprises several turns (11) and features connection ends or terminals (15A, 16A) emerging on the second face (12B).

15 11. The device according to any of one of claims 6-10 characterised in that the antenna helix (5) is formed outside the module (2) and in that the module comprises interconnection pads (15B, 16B) emerging on the second face (12B), wherein said pads are configured to connect antenna connection ends or terminals (15A, 20 16A).

12. The device according to claim 11, forming a chip card or a passport and comprising a passive antenna (20) coupled electromagnetically to the module antenna (5).

25 13. A method for producing a communication device with a radiofrequency chip, wherein said device comprises:

- an insulating support layer (12) of a module (2),

- an electrical and/or electronic radiofrequency circuit on said insulating support layer, wherein said
5 circuit comprises plates of an adjustable capacitor and/or an antenna helix with adjustable inductance,

- at least one element for adjusting a tuning frequency of the radiofrequency circuit, said element (17) is configured so as to connect an intermediate
10 point of the antenna helix to reduce the available inductance and/or to split or connect the plates to adjust the capacitance, characterised in that said plates (13A-13H) and/or said antenna helix (5) are/is
15 configured so as to extend over said insulating support layer (12) of the module (2).