

-21-

CLAIMS

1. Antenna characterised in that it includes at least one multilevel structure which is a set of polygonal or polyhedral elements of the same type (same number of sides or faces) although not necessarily of the same size, electromagnetically coupled to each other so that the area of contact between elements does not cover a major part of the perimeter or area at least in most of the polygons or polyhedrons, so that the area of contact between elements is under 50% of the perimeter or area in at least 75% of the polygons or polyhedrons, thereby allowing to geometrically distinguish in the multilevel structure the majority of the polygons or polyhedrons which form it.

2.- Multilevel antenna, as claimed in claim 1, characterised in that the multilevel structure is formed exclusively by triangles.

3.- Multilevel antenna, as claimed in claim 1, characterised in that the multilevel structure is formed exclusively by polygons of a single type, such as four sided polygons, pentagons, hexagons, heptagons, octagons, decagons, dodecagons, circles or ellipses among others.

4.- Multilevel antenna, as claimed in claim 1, characterised in that said multilevel structure is formed exclusively by polyhedrons, cylinders or cones.

5. Multilevel antenna, as claimed in above claims, characterised in that the multilevel structure is mounted perpendicular to the earth plane in a monopole configuration.

-22-

6.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the multilevel structure is mounted parallel to the earth plane in a patch or microstrip antenna configuration.

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7.- Multilevel antenna, as claimed in claims 5 and 6, characterised in that in antennae with a patch configuration the multilevel element is one of the radiating elements of a planar microstrip or patch structure with parasite patches at several levels.

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8.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the multilevel structure forms: both arms of a dipole configuration antenna, part of the antenna in a coplanar configuration, at least one of the faces in a pyramidal horn.

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9.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the multilevel structure or its perimeter form the cross section of a conical or pyramidal horn type antenna.

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10.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the perimeter of the multilevel structure determines the shape of at least one loop in a spiral type antenna.

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11.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that it may be part of an array of antennae.

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12.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the multilevel structure is constructed from a conducting, superconducting or dielectric material, or a combination thereof.

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-23-

13.- Multilevel antenna, as claimed in claim 12, characterised in that the multilevel structure conforms the geometry of the spaces made in a metallic, superconducting or dielectric structure.

14.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the antenna has a multiband behaviour, that is, its level of impedance and radiation diagram are similar in several frequency bands, so that the antenna maintains basically the same radioelectric operativity and functionality in said bands.

15.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the antenna has a small size compared to a circular, square or triangular antenna whose perimeter can be circumscribed in the multilevel structure and which operates in the same frequency (same frequency of resonance).

16. Multilevel antenna, as claimed in claim 14, characterised in that the multiband behavior allows it to operate simultaneously in several frequencies and thereby to be shared by several communication services or systems.

17.- Multilevel antenna, as claimed in claim 14, characterised in that it is applied for base stations of mobile telephony, in communications terminals (transmitters or receivers), in vehicles, communications satellites or in radar systems.

18. Multilevel antenna, as claimed in claims 1 to 4, characterised in that the multilevel structure in those cases where it radiates inefficiently can be used as a multiband or miniature resonator.

-24-

19.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the antenna incorporates, in addition to the multilevel element, an interconnection circuit which links the structure to the input/output connector and which may be used to incorporate adaptation networks for impedances, filters or diplexers.

20.- Multilevel antenna, as claimed in claims 1 to 4, characterised in that the multilevel structure is loaded with capacitive or inductive elements to change its size, resonance frequency, radiation diagrams or impedance.

21.- Multilevel antenna, as claimed in claims 1 to 4, characterised several multilevel structures of the same type (same characteristic polygon or polyhedron, same number, arrangement and coupling between elements) referred to as first level structures, may grouped in higher order structures in a manner similar to that of the polygonal or polyhedral elements which form the first level multilevel structure.