CLAIMS

1. A measuring device (100) for a monitoring system intended to be installed in an aircraft, the measuring device being adapted for functioning in accordance with a first operating mode referred to as “on the ground” or a second operating mode referred to as “in flight”, the measuring device comprising:

a sensor adapted for measuring at least one physical parameter of the environment of the aircraft,

a radio module compliant with a low power wide area network standard, the radio module being adapted for sending messages comprising measurement data issuing from the sensor to a radio access point, the radio module being adapted for sending each message with a transmission power chosen from a predefined plurality of transmission powers,

an electrical supply source,

a module for managing the electrical supply source connected to provide cutoff between the radio module and the electrical supply source, the module managing the electrical supply source being an energy storage element for supplying the radio module,

a control module, the control module being adapted for switching the operating mode of the measuring device between the first so-called “on the ground” operating mode and the second so-called “in flight” operating mode,

the measuring device being adapted for:

in the first so-called “on the ground” operating mode:

before the sending of each message, charging the energy storage element with a predefined energy supplied by the electrical supply source,

in the second so-called “in flight” operating mode:

for each message to be sent, choosing a transmission power of the radio module,

determining, according to this transmission power, an energy necessary for the sending of the message by the radio module,

before the sending of the message, charging the energy storage element with the necessary energy determined and supplied by the electrical supply source.

2. A measuring device according to Claim 1, the measuring device being characterised in that the radio module furthermore comprises means for sending a message according to a spread factor, the spread factor being chosen from a predefined plurality of spread factors, the measuring device being adapted, in the second so-called “in flight” operating mode, for:

for each message to be sent, choosing a transmission power of the radio module and a spread factor,

determining the energy necessary for the sending of the message by the radio module according to the transmission power chosen and the spread factor chosen.

3. A measuring device according to Claim 2, characterised in that the measuring device further comprises, in the second so-called “in flight” operating mode, following the sending of a message by the radio module with a first power and according to a first spread factor, and in the absence of acknowledgement response from the radio access point:

means for choosing a second transmission power of the radio module and a second spread factor, for resending the message,

the second transmission power and the second spread factor corresponding to an entry in a predetermined list, the list comprising a plurality of pairs formed by the plurality of transmission powers and the plurality of spread factors, each pair being associated with an energy necessary for sending a message with the transmission power of the pair and in accordance with the spread factor of the pair, the list being ordered according to the energy necessary for sending the message associated with each pair, the second transmission power and the second spread factor corresponding to the pair following the pair formed by the first transmission power and the first spread factor.

4. A measuring device according to Claim 3, characterised in that the list does not comprise pairs formed by a transmission power and a spread factor requiring an energy for sending a message higher than a predetermined energy threshold.

5. A measuring device according to Claim 3 or 4, characterised in that the measuring device comprises a list associated with each size of a message to be sent.

6. A measuring device according to any preceding claim, characterised in that the module for managing the electrical supply source comprises a coulomb meter.

7. A monitoring system of an aircraft, the system comprising:

a plurality of measuring devices, each according to any preceding claim,

a radio access point, the radio access point being connected to an item of equipment of the aircraft.