

It is remarked that application of onboard wireless communication between spacecraft subsystems is particularly desirable since it improves the flexibility of the spacecraft design, integration and testing. Statistics show that 6 to 10 percent of the mass of a spacecraft is due to wires and electrical interfaces. Furthermore, wireless communication can address other problems of wired communication as well, such as: failures of wires and connectors, high cost of late design changes, undesired ground loops. A need therefore exists in particular for integrated autonomous wireless onboard modules which require a low-energy demand.

In order to promote the objectives of the invention, it is proposed that the attitude determination system has the features of one or more of the appended claims.

In a first aspect of the invention the attitude determination system comprises sensors with a variable sampling rate and an energy manager module for saving on energy consumption by determining the value of the variable sampling rate of the sensors depending on an estimated measurement error in the calculated attitude. The invention is also embodied in a method to determine the attitude of a spacecraft, making use of such a system in which the value of the variable sampling rate of the sensors is varied depending on an estimated measurement error in the attitude of the spacecraft. This is a very effective way to save on energy consumption of the system, considering that the sensors are then only employed when they are needed to improve the accuracy of the attitude determination.

The objective of the invention is best attained when the variable sampling rates of the sensors are lowered when the estimated measurement error in the calculated attitude is reducing, and that the variable sampling rate of the sensors is increased when the estimated measurement error in the calculated attitude is increasing.

For arranging a stable operation of the attitude determination system of the invention it is preferable that the variable sampling rates of the sensors are updated when the estimated measurement error surpasses a pre-determined threshold.

As mentioned above with reference to the attitude determination system known from US 5,109,346, it is known that the computation unit can be provided with a Kalman filter. In con-