

- Power consumption of 1 mW.

The main goal of this project is to create a device capable of measuring the ECG by eliminating the necessity to use [4]. This means that the system will be required to have specifications which can encompass such ECG monitoring systems.

The integrity of the signal, which is wirelessly transmitted to the receiver or relayed to an electrocardiograph via input cables, is a very important aspect of this system. It is important that a doctor or astronaut, who uses continuous ECG monitoring, will be able to objectively notice variations in a subject health status based on the trends of the waveform of the signal. Moreover, a distorted signal can cause erroneous medical diagnostic or inaccuracy of measured values (e.g. heart rate).

For this reason, the wireless biomonitoring system must have a signal to noise ratio (SNR) deemed acceptable for ECG signals and possibly for other types of signals.

In order to optimize the performance of the signal acquisition system, the desired SNR will be set at 60 dB. It will allow our system to receive useful and cut off unwanted signals.

We strive to make the system as little as possible, with weight about 100 grams and dimensions about 5x10x2 sm. Now, the dimensions are slightly different from the planned (weight is about 200 grams and dimensions are about 7,5x12x2,75sm).

Now, work on the project continued.

References:

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3D Modeling Elements of Devices for Space Application

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Complex technical objects design is executed via 3D-modelling. 3D- modelling is creation, visualization, editing of 3-dimensional object in any 3D-modelling program.

Design's key problem is to create and set off design documentation (blueprints, specifications) to the manufacturer. Any ware's design works take a lot of time. Engineers of various specializations are involved into process. Applying modern high-power calculating equipment and specialized software leads to significant reduction of time spent on design works and, consequently, reduces laboriousness. Computer-aided design (CAD) usage allows to run virtual check outs of designed objects declining outlays for prototypes production.

At present offered on the market large numbers Cad-systems that can be used in the design elements of devices space use. It SolidWorks, Autodesk Inventor, AutoCAD, КОМПАС and others. Among all these systems is located Russian CAD-system T-Flex CAD is containing more effective means of parametrization as compared to other mentioned systems. 3D-functionality of system T-FLEX CAD based of graphic core called Parasolid, which at present is one of the best for

3D-modeling. This fact means that T-FLEX CAD has a wide composition tools for solid and surface modeling. The graphic subsystem of T-FLEX CAD based on graphic engine from company called "Топ Системы" that provides comfortable operations when creating large 3D's mounting which consisting of hundred of thousand details in computers that has a non-professional video card. CAD use a single document structure: 3D models and building, multipage drawings, specifications, graphics, databases, application data and macros all is this kept inside the file of document. This permits to use common set of commands to creating and edition all elements of the model and also to provide the associativity and integrity of data. For example, T-FLEX CAD provides bi-directional association between drawing and 3D-model: when changing the 2D's drawing is automatically change 3D's picture of the product and the contrary. Package T-Flex CAD includes functions that in some competing systems are available only in form of additional modules. Among them: surface modeling, including the smoothing edges, deformation, many of the functions of the finite element and dynamic analysis, optimization module, import/export, the module of creation, specifications module that creating photorealistic images and animations, a large number of free parametric libraries. An important feature of T-FLEX CAD is the ability to connect into a single information model and use all elements and objects in accordance with the required logic such as the drawing, the 3d model, databases, variables and own interface to control the parameters of the model. As a result the user of the systems has it disposal a mini-CAD that is honed under this specific tasks. On pictures 1 and 2 is a 3d model of case of satellite that made in cubesat format in T-FLEX CAD system [1].

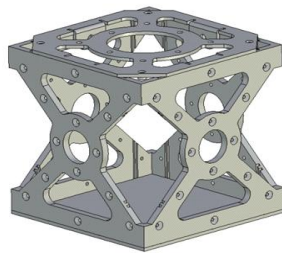


Figure 1 - 3D model of the hull of the satellite CubeSat forma

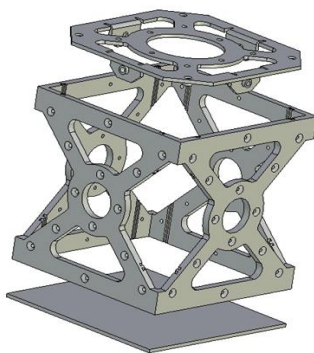


Figure 2 - 3D model of the hull of the satellite CubeSat format disassembled

Thus, 3D modeling elements of space devices can effectively be accomplished with the use of CAD T-Flex CAD.

References:

1. Электронное пособие T-Flex CAD [электронный ресурс] – URL: <http://www.tflex.ru/pdf/public/2327.pdf>.