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## A SATELLITE BASED LOW POWER LOW VOLUME RECEIVER SYSTEM FOR TRACKING OF MIGRATING BIRDS

### **Abstract**

Tracking of long distance migrating birds has long been desired by ornithologists. The ideal tracking system is satellite based as it offers global coverage. Systems in existence today only cover the upper fraction of the total number of bird species simply because the transmitters are too heavy. Thus there is a need for miniaturization, albeit without reducing the system performance in terms of accuracy. The bird tracking system developed for DTUosat consists of custom built 5 gram transmitters and a custom built receiver system on-board the satellite. The system offers GPS accuracy thereby expanding the area of research of migrating birds. Here the part of the tracking system on-board the satellite is presented. The system consists of three consecutive blocks; an RF frontend which filters, amplifies and down converts the signal an ADC and finally a digital processing unit realized inside a FPGA. DTUosat-2 is a one unit CubeSat measuring 100mm on the side with a maximum allowed mass of 1,333kg thus all resources in terms of mass, volume and power is limited. Therefore the receiver system has been designed and optimized with respect to mass, volume and power consumption while maintaining the required sensitivity.