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A SYSTEM ENGINEERING APPROACH TO THE AUTOMATED DESIGN OF THE LOW-ORBIT ADDITION TO THE GLONASS SYSTEM AND OTHER GNSS

Abstract

The purpose of this report is to formulate the idea of building a low-orbit addition to the GLONASS system and other GNSS in semi-automatic mode and to form an approach to further study of the issue. The analysis of the current state and direction of GNSS development regarding the introduction of low-orbit addition to existing systems is carried out. Since the automation of the orbital group structure design process requires taking into account a huge number of design parameters, a mathematical image has been formed that allows operate with groups of such parameters and formulate further tasks for research. Each task is reduced to the study of the group of parameters and their optimization in relation to the system of a higher hierarchical level. The text of the report presents the first step - the decomposition of these groups, which allows you to get an idea of a mathematical model that will form the basis of the automated part of the design, create standard approaches to the manual part of the design, will clearly formulate the technical specification for the system and even signal that the technical specification requires adjustments, because it is not possible or adequate to design the system according to the specified conditions.