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GENERAL PROBLEMS OF ELECTROMECHANICS

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ABOUT DESIGNING INDUCTIVE CURRENT LIMITERS

The results of calculations for different inductive current limiters are presented in the article. Transformer and autotransformer current limiters are compared. A current limiter comprising one tapped winding and switches is offered for consideration. Key words: current limiters, transformer, autotransformer, winding

SPACE ELECTROMECHANICS. SPACECRAFT

L.A. Makridenko, I.V. Minaev (VNIIEM Corporation JSC), A.Ju. Potyupking (Peter the Great Academy of Strategic Rocket Forces) CONCEPTUAL FEATURES OF ERS SMALL SATELLITES MISSION EFFICIENCY IMPROVEMENT

The article considers general principles of improving the potential of small satellites designed for the Earth remote sensing (ERS) purposes.

Key words: ERS small satellites, designing, control and operation of small satellite clusters: cluster as a single multifunctional 'virtual' satellite, emergent properties of small satellite clusters information.

V.S. Bocharov, A.G. Generalov, E.V. Gadzhiev (JSC 'NIIEM', Istra)

DESIGNING a DUAL-FREQUENCY MICROSTRIP ANTENNA MODEL for POTENTIAL APPLICATION on IONOSPHERE SATELLITE

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The article presents modeling results of VHF and UHF microstrip (printed) antennas for future application within the 'Ionosphere' small satellite antenna assembly. A model utilizing microstrip (printed) antennas ability to operate in a dual-frequency mode is presented and considered. The model was implemented with the help of computer-aided design. The results of modeling (standing wave ratio, gain pattern, gain factor, etc.) comply with the performance requirements of 'Ionosphere' antenna assembly.

Key words: microstrip (printed) antenna, satellite, dual-frequency antenna, standing wave ratio, gain pattern, gain factor.

A.V. Esinovsky, A.V. Leontyev, A.B. Umansky (JSC 'Academician N.A. Semikhatov Scientific and Production Association of Automatics', Yekaterinburg) IMPROVED RELIABILITY COMPUTATION MODULE for SATELLITE CONTROL SYSTEMS

The article deals with the problems of designing the structures and operation algorithms of a failsafe computation module (based on Russian components) to be applied within the automatic control systems of small satellites. The application of traditional highway-modular structures for small satellites, with the view of strict requirements to mass and dimension parameters and power consumption, becomes impossible and requires new approaches. A range of hardware/software solutions to be used as a basis for designing the small-size computer control system for small satellites is presented.

Key words: control system, satellite, computation module, space environment factors, redundancy.

Yu.M. Gandlevsky, E.N. Mikhailov Yu.S. Mosolova, A.E. Rabovsky (VNIIEM Corporation JSC)

ASSESSMENT of INFRARED LOCAL VERTICAL SENSORS BASED on FLIGHT TEST RESULTS

The article presents the results of theoretical analysis and experimental study of systematic error of the local vertical sensors based on the results of 'Kondor' and 'Meteor-M' No. 2 flight developmental tests.

Key words: local vertical sensor, Earth's infrared radiation.

ELECTROMECHANICS AND SOCIOECONOMIC DEVELOPMENT OF THE COUNTRY

A.V. Karelin, (FGUE TSNIIMASH), L.A. Amelin (JSC 'NIIEM', I.N. Khiblin (VNIIEM Corporation JSC)

PHOTOELECTRIC CONVERTERS for a NOC INSTALLATION

The article presents the information on chalcopyrite and silicon photoconverters for nuclear-optical converter installation designed for radioactive waste disposal, as well as the results of comparison of their radiation stability and efficiency during their long-term operation within the nuclearontical converter.

Key words: nulear-optical converter (NOC) installations, spent nuclear fuel (SNF), radioactive waste, radiation stability, radiation, spectral range, efficiency, silicon photoconverters, chalcopyrite photoconverters.

B.V. Kostrov (Ryazan State Radio Engineering University)

METHODS of SPATIAL SPECTRAL ANALYSIS of IMAGES in FINITE BASIS

The problem of application of Vilenkin-Krestenson function for space images processing is considered in the article. The article presents a range of theorems used a basis of the methods of conversion based on the system of these functions. Methodological aspects are illustrated by examples of space image

Key words: orthogonal functions, Vilenkin-Krestenson functions, diade convolution, Rademacher function, space image filtering.

PRODUCTS AND EQUIPMENT TEST PROCEDURES

M.V. Pustobaev (VNIIEM Corporation JSC)

EXPERIMENTAL and THEORETICAL STUDY of 'TEST BENCH WITH TEST OBJECT/ SHOCK LOAD DEVICE' TEST SYSTEM PARAMETERS for ON-BOARD EQUIPMENT TESTING

The article presents the results of a study of the effect of physical, mechanical and geometrical parameters of the 'test bench with test object' shock load device' system on the generated shock loads: pulse duration and amplitude, shock spectrum. The results of comparison between the calculated and experimental data are presented. The recommendation for selection of the system parameters for testing the on-board equipment resistance to shocks generated by pyro devices, is provided in the article.

Key words: testing, plate, pyro devices, shock, eigen frequency, shock spectrum, form.