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FIBER-OPTICAL TRANSMISSION SYSTEM FOR HYDROACOUSTIC STATIONS WITH TOWED ANTENNA

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ABSTRACT

Digital fiber-optic data transfer systems are included into up-to-date sonar stations with a flexible and stretchable towed array. A sonar station is an equipment set including a towed sector with acoustoelectric devices and on-board one with data processing devices. The system consists of a main channel and a hot stand by channel. A breadboard of duplexing circuit of solitary single-mode optical fiber data transmission (wavelengths of 1.31 and 1.55 microns) was created by the open joint-stock company “Okeanpribor” and the Bonch-Bruevich Saint-Petersburg State University of Telecommunications. The concept of operation is based on combining a synchronous duplex channel of data acquisition and control with asynchronous Ethernet protocols. The breadboard was tested with the purpose of detecting its major technical features and operational properties such as dynamic optical attenuation range, on-board and array sectors electric capacity, phase characteristics of synchronization pulses received and system health data. In this study we have presented the tests results.

Key words: fiber-optic data transfer system, acoustic array, stand by channel, transceiving module, Ethernet, synchronization, in-line coding, phase-jitter.

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