

The SDSS-3 broadband stand-alone digital seismic station

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Abstract. The SSD-3 three-channel seismic recorder and on its basis together with the SM-3E seismic sensors the ADSS-3 three-component broadband stand-alone digital seismic station were developed. Main advantage of the developed equipment in comparison with foreign and domestic analogs is simplicity and convenience in maintenance with keeping their high technical characteristics. Structure and operation of the seismic sensor and seismic recorder are considered, and their main technical characteristics are given. Laboratory, stand and cross-validation tests of the created seismic recorder and station showed their working capacity and compliance of the development aim. According to the tests results the ADSS-3 station was accepted as three-component broadband observation point of the "Mikhnevo" small-aperture seismic array. Data obtained with the ADSS-3 station allowed carrying out the investigation of the crust and the upper mantle structure under this territory by the receiver function method.

Keywords: stand-alone seismic station, broadband seismic receiver, seismic recorder, analog-to-digital converter, GPS receiver, microcontroller, receiver function.