

THE SOUNDING FACILITY OF THE IONOSPHERE ON A BASE OF THE SPECIAL DESIGNATION HF RADIO STATION

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The sounding facility of the ionosphere (SFI) was designed on a base of the special designation radio station (SDR) with an operatively tuned synthesizer of working frequencies. SFI consists of the frequency synthesizer, receiver, transmitter, control unit and personal computer (PC). PC controls the facility operation, performs the collection and processing of data.

The regular control unit of SDR was replaced with an interface, which is connected with PC through the analog-to-digital converter (ADC). The ADC digital input/output ports are used for the SFI control by means of the special PC program. The main source of interferences in the SFI receiver work is radio communication stations, whereas the level of the atmospheric, industrial and cosmic noise is much lower. Therefore, the PC program picks out a working frequency with a lowest interference level by using the receiver with the frequency synthesizer. Furthermore, the suitable frequency are chosen with a special algorithm which selects some frequencies by the linear or logarithmic distribution law.

Thus, the SFI working algorithm contains the following points:

- a) scanning of the suitable frequencies from 2 MHz to 17.999 MHz;
- b) determination of working frequencies amount within the frequency band;
- c) data collection and primary processing;
- d) secondary data processing and recording for a storage.