

ACOUSTOELECTRONIC SPATIAL FILTERS FOR SIGNALS PROCESSING IN SPECTRAL DOMAIN

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In this work some variants of devices are proposed with using the spatial dispersion, frequency and phase scanning in the analogue processor. The influence of the spatial dispersion of the surface acoustic wave is considered on the output signal of the spatial filter.

The mathematical expressions are obtained and they determine the main topological parameters of acoustoelectronic devices. Anisotropic properties of substrate materials are taken into account under analyses.

In this work it is shown that the analogue processor topology can be more simply when the spatial impulse characteristic has some diffraction maximums compared with the main one.

The maximum frequency resolving ability and the widest bandwidth are determined and their dependencies are obtained from anisotropic properties of processor substrate.

The spatial filter advantages are shown over group of SAW filters based on the same substrate and dispersion spectrum analyzers which are the most interesting acoustoelectronic devices today.

Availability of these device using is shown for signal spectral analysis, for creation of frequency digital scale, their application as frequency demultiplexor.

The experimental results of proposed acoustoelectronic devices investigation are made.