

Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms

J. Melngailis and R.C. Williamson. "Surface-Acoustic-Wave Device for Doppler Filtering of Radar Burst Waveforms." 1976 MTT-S International Microwave Symposium Digest of Technical Papers 76.1 (1976 [MWSYM]): 289-291.

A new type of reflective-grating matched filter has been developed for processing a Doppler-sensitive burst waveform consisting of 16 equally spaced phase-coherent linear-FM subpulses. The subpulses have 60-MHz bandwidth, are 3- μ s long, and have a period of 5 μ s. After addition of internal phase compensation, the phase response of the device over all 16 subpulses is within $\pm 20^\circ$ of ideal. When a burst waveform is compressed in this burst matched filter, the range (time) sidelobes are approximately -40 dB down except for some near-in at -33 dB, and the Doppler (velocity) sidelobes are -32 dB down.

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