Abstracts

Range Measurement of Nonreflecting and Reflecting Targets Using Interaction of Ultrasound and Microwaves

M. Daas and R. Knochel. "Range Measurement of Nonreflecting and Reflecting Targets Using Interaction of Ultrasound and Microwaves." 1991 MTT-S International Microwave Symposium Digest 91.3 (1991 Vol. III [MWSYM]): 1013-1016.

A new measurement technique for simultaneous remote range and temperature determination is reported, which utilizes the microwave (10.0 GHz) back-scatter from a traveling ultrasound wave (about 22 KHz) /1/. For the first time, such a system is operated in a closed environment which suffers from clutter echoes. Maximum range in the order of 30 m can be measured with an accuracy of better than 1%. Multiple targets are detectable with a resolution of at least 2%. The air temperature profile along the path can be determined with the same local resolution and with an accuracy of better than ± 0.10° C.

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